

# The ISAAC Story



**Africa**

- Asia-Pacific
- Eastern
- Mediterranean
- Indian Sub-Continent
- Latin America
- North America
- Northern and Eastern Europe
- Oceania
- Western Europe

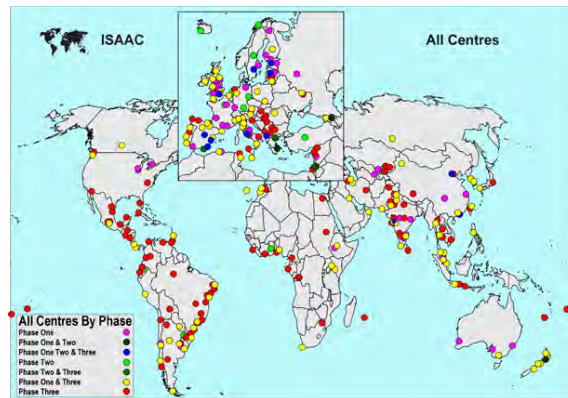
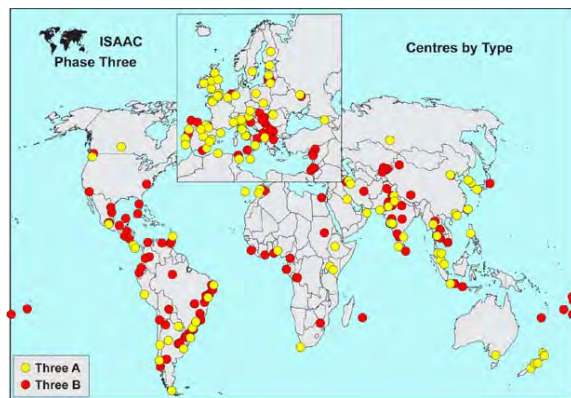
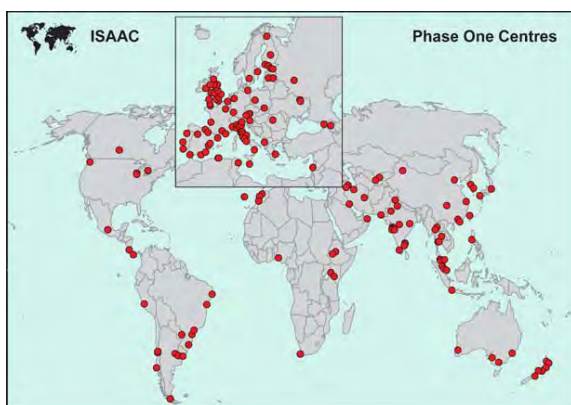
## ISAAC Centres

The ISAAC collaboration has involved 306 research centres in 105 countries, which were grouped for organisational purposes into 9 regions. In addition to the regional co-ordinators, who are members of the ISAAC Steering Committee, many countries had a national ISAAC co-ordinator. The international Steering Committee which comprises of 26 scientists including clinicians, some from developing countries, oversees all aspects of the programme. Many of the Steering Committee members also have positions on or are advisors to other international bodies.

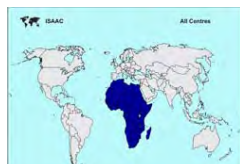
The Steering Committee meets yearly and the ISAAC Executive has a monthly telephone conference. As can be seen from the diagram, decisions from the Steering Committee are then passed from the Regional Coordinators to the National Coordinators, and then to the individual research centres. The International Data Centre receives data from the centres, as well as advising at all levels on methodology or other aspects of the programme.

This section of the ISAAC Story documents the contribution of each centre to the success of the worldwide initiative, and includes reflections and recollections of centre investigators, national co-ordinators and regional co-ordinators.

Organisation of ISAAC



# The ISAAC Story



## Africa Region

### Countries

Country	Phase One Centres	Phase Two Centres	Phase Three Centres
Algeria	2		1
Cameroon			1
Congo			1
Cote d'Ivoire			1
Ethiopia	2		1
Gabon			1
Ghana		1	
Kenya	2		2
Morocco	3		4
Nigeria	1		1
République de Guinée			1
Republique Democratique du Congo			1
Reunion Island			1
South Africa	1		2
Sudan			1
Togo			1
Tunisia	1		2
<b>Total</b>	<b>12</b>	<b>1</b>	<b>22</b>

### Regional Publications

The following publications used ISAAC data from the Africa region:

Aït-Khaled N, Odhiambo J, Pearce N, Adjoh KS, Annesi-Maesano I, Benhabyles B, Bouhayad Z, Bahati E, Camara L, Catteau C, Asma El S, Esamai FO, Hypolite IE, Melaku K, Musa OA, Ng'ang'a L, Onadeko BO, Saad O, Jerray M, Kayembe JM, Koffi NB, Khaldi F, Kuaban C, Voyi K, M'Boussa J, Sow O, Tijani O, Zar HJ. *Prevalence of symptoms of asthma, rhinitis and eczema in 13- to 14-year-old children in Africa the International Study of Asthma and Allergies in Childhood Phase III.* Allergy 2007; 62(3), 247-258.

### Regional Coordinator:

#### Professor Gabriel Anabwani

Department of Paediatrics  
Princess Marina Hospital  
P.O. Box 258

Botswana



**Roles:**

### Regional Coordinator:

#### Professor Nadia Aït-Khaled

Head of Asthma Division  
Union Internationale Contre la Tuberculose  
et les Maladies Respiratoires  
68, Boulevard Saint-Michel

France



**Roles:**

- ISAAC Steering Committee
- Regional Coordinator for Africa

### Regional Coordinator:

#### Dr Joseph A Odhiambo

Centre for Respiratory Diseases Research,  
Kenya Medical Research Institute  
(KEMRI)  
P O Box 606  
00621 Village Market  
Kenya



**Roles:**

- ISAAC Steering Committee
- Regional Coordinator for Africa
- Phase One Principal Investigator for Nairobi

### Anglophone Africa

Regional Coordinator, Joseph Odhiambo

### Background:

In Africa, especially sub Saharan Africa, the dominant burdens of poverty-related diseases such as acute respiratory infections, malaria, tuberculosis, HIV and malnutrition have overshadowed equally economically devastating burdens of allergic disorders such as asthma, rhinitis and eczema. Due to earlier perceptions that these disorders were rare in Africa, epidemiological studies to test the hypothesis that parasitic and other infections prevalent in the continent are protective of asthma have been considered

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Africa is made up of some 50 countries which contribute to vast diversities in race, culture, languages and socio-economic levels. The continent has a population of 680,000,000 people and this contributes to about 10% of the world population. Based on her colonial history, African countries are broadly divided into English-speaking (Anglophone) and French-speaking (Francophone) groups but there are also pockets of Portuguese speaking groups in the south and largely Arab-speaking or Arabophone groups in the north. About 15 countries speak English.

The International Study of Asthma and Allergies in Childhood (ISAAC) was formed 20 years ago to facilitate research into asthma, allergic rhinoconjunctivitis and atopic eczema using standardised epidemiological tools and approaches between centers in different countries worldwide, including those in Africa. Out of 56 countries and 156 centers that participated in ISAAC Phase One worldwide, Anglophone Africa contributed 4 countries and 6 centers, respectively. Similarly, out of 90 countries and 237 centers that participated in ISAAC Phase Three worldwide, Anglophone Africa also contributed 4 and 6, respectively. Due to limited resources, participation of Anglophone Africa in ISAAC Phase Two studies, which were both labor and resource intensive, was extremely limited, although the contribution of this region to the international ISAAC data base appears small, the impact of ISAAC, as explained below, has been immense and continues to grow by the day.

Prof Gabriel Anabwani, my mentor in pediatric cardiology at the University of Nairobi many years ago, was the Anglophone Africa Regional Coordinator at the inception of ISAAC and took responsibility for successful conduct of ISAAC Phase One in this part of the world. Anglophone Africa and indeed the whole world is indebted to Prof Anabwani whose invaluable contribution is well documented in several ISAAC publications and the ISAAC website.

At personal level, I have been greatly honored not only for the opportunity to coordinate the implementation of ISAAC Phase III, but also for the opportunity to work together in Africa with Prof Nadia Ait-Khaled, the Regional Coordinator for Francophone Africa. Prof Ait-Khaled has done a great job not only at consolidating Africa's ISAAC data in published reports, but also spearheading efforts to expand access to life-saving asthma treatment. Best of all has been the opportunity to work together with great professional minds that constitute the ISAAC Steering Committee and contribute, in some ways, to better understanding of the epidemiologic basis and management of asthma and other allergic disorders in Africa and the world at large.

## Regional findings in Anglophone Africa and their interpretation

- Although only three countries (Kenya, Ethiopia and S Africa) participated in ISAAC Phase One, the outcome provided valuable information and data on prevalence patterns and potential risk factors for asthma, allergic rhinitis and eczema in Anglophone Africa.
- In ISAAC Phase Three, participation expanded to four countries with inclusion of Nigeria.
- The large variations in the prevalence of the three diseases within countries and within centers witnessed globally is mirrored by findings in Anglophone Africa.
- Overall, 15.9% of 13-14 year old participants in Anglophone Africa had "wheeze in the last 12 months". Several centers (Cape Town, 20.3%; Polokwane, 18.0%; Nairobi, 18.0%) showed relatively high asthma symptom prevalence comparable to those in Europe and elsewhere.
- The prevalence of current wheeze was generally the highest in urban centers (Nairobi, Kenya; Cape Town, S Africa). This position may be attributable to environmental risk factors linked to urbanisation and adoption of western lifestyles. Large differences in urban-rural asthma prevalence rates have been reported separately in African children of the same genetic background although recent reports from S Africa suggest the urban-rural gradient may be narrowing.
- Anglophone Africa centers reported large variation in the prevalence of rhinoconjunctivitis with high rates among 13 – 14 year old children in Cape Town (>20%).
- High eczema rates reported in some centers need to be treated with caution given possible confusion of symptoms with other itchy skin conditions such as scabies that are common in some parts of Africa.
- ISAAC Phase One and Three Anglophone Africa data indicate high rates of asthma, rhinitis and eczema. These findings demonstrate that these are important emerging public health problems in Africa that call for appropriate national and regional policy, political, advocacy and research responses.
- Moving forward, we hope more Anglophone Africa countries will carry out ISAAC Phase One surveys to provide essential and representative data this region critically needs. In addition, resources allowing, we hope those countries that are ready can undertake ISAAC Phase Three studies for the same purpose.
- ISAAC has established networks with organisations such as WHO and IUATLD who are concerned with health in developing countries. It is noteworthy that ISAAC Phase Four provides a platform for developing and expanding the ISAAC website as a resource for collaboration especially with low and middle income countries. This includes management plans and other resources that are useful for managing asthma, eczema and rhinitis.

## Reminiscences/thoughts/experiences of participating in ISAAC

- The use of simple, relatively cheap and standardised tools - *written and video questionnaires* - to generate key global epidemiologic data has been one of the strongest contributions made by ISAAC.
- By showing rather than describing the signs and symptoms of asthma through video captions in ISAAC Phase One and Three, it was thought that this approach would provide more accurate recognition of clinical asthma independent of the cultural backgrounds of the 13-14 year old children. For the wheezing to be clearly heard by all children seated in a classroom, we often set the TV volume to sufficiently audible levels. It is an open question to speculate on what proportion of children might have inappropriately responded "no" to what they commonly experienced but thought was not as loud as presented? Could this have led to underestimation of asthma in settings where such perceptions were common?
- One of important ISAAC milestones was the award of the Guinness World Record. Reference is made to ISAAC's strength in rallying international collaboration with the "*single focus of understanding the trends of asthma, allergic rhinoconjunctivitis and atopic eczema in children all over the world. And with the aim of reducing the personal burden of these diseases*" Children constitute the future and any effort that promotes the welfare of mankind's future is spot on!

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## Impact of ISAAC in Anglophone Africa

- For those countries that participated in ISAAC Phase One and Three, the prevalence data on asthma, allergic rhinoconjunctivitis and atopic eczema have provided important advocacy tools for policy and prioritisation of these illnesses in national health programs.
- Based on ISAAC findings, efforts are being made by a cross-section of African countries, specially those who participated in ISAAC Phase One and Three to provide increased research funding to identify local environmental and lifestyle risk factors that could be modified to check disease burden in a complementary manner to expanding access to optimised clinical care of the three diseases.
- There is growing interest among countries that had not participated in ISAAC before to use ISAAC tools and approaches to generate similar data to inform national policy and prioritise their research agenda.
- ISAAC and ISAAC epidemiological tools are positively branded products in Anglophone Africa. At scientific meetings in this region, research findings from asthma, rhinitis and eczema epidemiological studies enjoy great credibility if authors quote or adapt ISAAC approaches in their work.
- ISAAC data and ISAAC expertise continues to contribute immensely to policy development and to formulation and use of updated national care guidelines in South Africa, Kenya, Ethiopia and other countries.
- Participation of several ISAAC centers in Anglophone Africa demonstrated the feasibility of involving institutions and clinicians from Africa in rigorous international surveys and provided impetus and opportunity for advancing research in Anglophone Africa
- Kenya was greatly honored to host the ISAAC Steering Committee Meeting in Anglophone Africa in November 2003. The meeting was held at the Naivasha Country Club, located by the shores of Lake Naivasha some 90 km west of Nairobi. This meeting reaffirmed the global spirit and inclusiveness of the ISAAC initiative. The one day Symposium at the Kenya Medical Research Institute (KEMRI) campus in Nairobi after the Steering Committee put together stimulating presentations on epidemiology and clinical care of asthma, rhinitis and eczema by experts provided by the Steering Committee and local Kenyan practitioners. The Kenya audience and expertise were drawn from medical schools, research institutes and medical students. The Symposium provided a unique platform for sharing essential data and evidence-based approaches to clinical care of the three diseases.



## Francophone Africa

*Regional Coordinator, Nadia A t-Khaled*

### Background

Very few previous epidemiological studies of asthma or allergies had been done in Francophone Africa, and these were only in adults and only in Algeria, Morocco and Tunisia. Thus, asthma was generally not identified as a public health problem in Francophone Africa, except in big cities in the Maghreb.

ISAAC offered a unique possibility to raise awareness of asthma, with an international collaborative study that uses a reasonably simple methodology based on a standardised questionnaire with precise, standardised procedures that could be used in African countries.

The development of ISAAC in Francophone Africa positively interfaced with my work at the International Union against Tuberculosis and Lung Disease (IUATLD or The Union). ISAAC demonstrated the high and increasing prevalence of asthma, rhinitis and eczema in Africa. By doing so, it highlighted the need for countries to establish or improve the organisation of asthma management in Africa and in other low- and middle-income countries. These results have been crucial and have already increased the political commitment and funding at national and international level for asthma management.

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## Regional findings in Francophone Africa

ISAAC demonstrated that:

- The prevalence of asthma, rhinitis and eczema is high in big cities of Francophone Africa
- The prevalence is higher in big cities of Sub-Sahara Africa than in the Maghreb
- The prevalence of asthma, rhinitis and eczema increased between Phase I and Phase III in the majority of centres
- Asthma has been identified as a public health issue, not only in the Maghreb but also in Sub-Saharan Africa
- A large part of the diseases are not allergic suggesting the existence of other specific risk factors
- There is a need for new research to examine the new trend of prevalence of these diseases and to explore the existence of other specific risk factors

## Impact of ISAAC

*Impact in Francophone Africa:* The main impact has been the creation of a network of investigators who, despite the limited resources, were interested in participating in future studies in this region. There has been an increase in political awareness of asthma management at a national level in ISAAC countries and the majority of the investigators began to organise management and/or improve management of asthma in their countries.

*Impact of ISAAC at The Union:* During my activity at The Union as Chief of Asthma Division my involvement in ISAAC study was very positive and played a role mainly in 2 important issues:

- Encouraging operational research on asthma and other respiratory diseases: the majority of ISAAC principal investigators committed their time to participate with me in some collaborative Union studies (asthma in emergency, rhinitis and COPD)
- Creation of the Asthma Drug Facility (ADF): ADF was created by The Union to provide developing countries with quality-assured and affordable essential medicines for asthma. The creation of ADF was promoted by Dr Nils Billo Director, executive of The Union, based on 2 main arguments: Firstly, The Union study identified low affordability of asthma drugs for patients as a main barrier for management of asthma in low and middle income countries and secondly, the ISAAC results identified asthma as a large and increasing public health problem in developing countries.

*Impact at the World Health Organisation:* As a technical expert participating in several WHO meetings, the ISAAC methodology and results presented during these meetings may have played a role in increasing international political commitment for asthma.

*Personal Impact:* ISAAC is one of the most important experiences in my professional life. Being a member of ISAAC steering committee has allowed me to discuss, even if I am only a clinician, with other members of the steering committee that have different experiences in the world and different skills, particularly with prestigious epidemiologists and researchers. It has also been a pleasure to work in a such a friendly atmosphere with special colleagues, to meet during the various "ISAAC collaborators reception" different PIs working in different parts of the world. Finally, it is for me a big honour to be a member of "The ISAAC family"

## Reminiscences/thoughts/experiences of participating in ISAAC

The main challenges were:

- Scarcity of health personnel or epidemiologists who are capable of conducting scientific epidemiological studies, particularly in sub-Saharan Africa
- The ISAAC Manual was in English and could not be used by the majority of the Francophone African investigators
- Translation of the ISAAC manual into French: thanks to Karen Bissell from IUATLD who helped me to translate the ISAAC manual into French

Our experiences were:

- A limited number of centres were included in Phase I due to the very limited funding for centres. There was no funding for a regional meeting and communication with the centres was difficult.
- A workshop was organised in Paris in 2001 at the HQ of The Union. Phase I investigators participated along with and investigators from other Francophone African countries that are members of The Union to encourage them to conduct ISAAC Phase III in their respective countries
- The number of centres included in Phase III increased dramatically due to the encouraging results from Phase I and the workshop organised in Paris. In addition, communication improved as the regional coordinator was able to use email correspondence to a much greater extent during phase III
- Several presentations of the results were made in international and regional conferences of The Union (the main ones are listed in a footnote)
- A poster session on ISAAC Phase III results was organised with the principal investigators of the region at one of the international conferences in Paris
- Publications were prepared for Morocco centres and for ISAAC Phase III in Africa
- Organisation of the ISAAC Steering Committee in Casablanca (Morocco) in collaboration with the principal investigator of Morocco: this was a big honour for myself as the regional coordinator of Francophone Africa and for all the region to receive the other members of the ISAAC Steering Committee.

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## Conclusion

In conclusion, I want to echo the words of Prof Donald Enarson, former director of the IUATLD Scientific Activities, who wrote in his editorial about ISAAC:

*“What, to my mind, was most unique about ISAAC was its capacity to engage people in research. ‘Professional’ researchers often have a strange ability to frighten people away from research by emphasising its complexity and intimidating those with little self confidence, thus excluding individuals from what is, in essence, not only something eminently worthwhile but something downright fun. By ‘democratising’ critical thinking, ISAAC has been able to break through this barrier and engage people not previously involved in research in an exercise in disciplined measurement and critical thinking. These are basic skills in the health sciences beyond their utility in research and for this ISAAC is to be heartily congratulated. As stated by the Commission on Health Research for Development, ‘. . . for the world’s most vulnerable people, the benefits of research offer a potential for change that has gone largely untapped’. This report has emphasised the essential nature of research in achieving the changes necessary to improve health globally and the requirement that all public health action must have inbuilt research if it is to be appropriate, efficient and equitable. A major barrier to realising these lofty objectives is the lack of confidence of health care workers in involving themselves in research. ISAAC is to be applauded for addressing this obstacle through open-minded, inclusive collaboration that has produced a base of knowledge that is used globally to inform policy. ISAAC is a model that should be followed by all those of us who are committed to improving public health in low-income countries”*

## Footnote: ISAAC presentations, meetings, and training in Francophone Africa

- ISAAC Workshop , HQ Union, Paris, 2001. A workshop organised with the participation of Phase I investigators and of investigators from other Francophone African countries to encourage them to conduct in their respective countries ISAAC Phase III
- Poster discussion at the 34th Union World Conference on Lung Health, October 2003, Paris. Presentation of preliminary results of ISAAC III and poster discussion with the PIs of ISAAC Phase III in Africa
- World Asthma Meeting, Bangkok 2004. Presentation on asthma epidemiology in Africa.
- Union Africa Regional Conference, Algiers 2004. Presentations on ISAAC methodology and preliminary results in Africa
- 36th Union World Conference on Lung Health, 18-22 October 2005, Paris. ISAAC III in Africa
- 16th Union Africa Regional Conference, November 2007, Cape Town, South Africa. Asthma Burden in Africa
- The Union World Conference, Paris, 2008. The Union’s reply to the rising prevalence of Asthma in low and middle income countries.
- Presentation of ISAAC update at each annual Lung Department meeting of the Union
- Presentation of ISAAC results at several WHO experts Meetings: 1996-1999 to establish the WHO/TB Initiative “Practical Approach For Lung Health” and since 2007 to establish with WHO/Non-communicable Diseases a new initiative “Approach on Package of Essential Non-communicable Diseases”.
- Presentation of ISAAC methodology and results in several training courses or post graduate courses in Mexico, Syria, Benin, Kenya, Soudan, Algiers, and China.
- ISAAC Phase III results are included in the training module done by The Union for Asthma Drugs Facility Clients.

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## Asia-Pacific Region

### Countries

Country	Phase One Centres	Phase Two Centres	Phase Three Centres
China	5	2	5
Indonesia	1		3
Japan	1		2
Malaysia	5		3
Philippines	1		1
SAR China	2	1	2
Singapore	1		1
South Korea	2		2
Taiwan	1		2
Thailand	2		6
Vietnam			1
<b>Total</b>	<b>21</b>	<b>3</b>	<b>28</b>

### Regional Coordinator:

#### Dr Christopher Lai

Department of Medicine and Therapeutics  
The Chinese University of Hong Kong  
Room 1403, Takshing House  
20 Des Voeux Road Central  
SAR China



#### Roles:

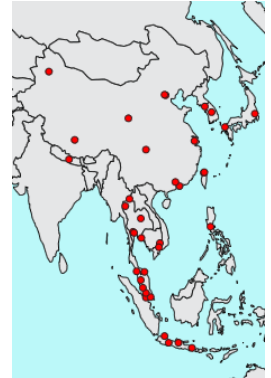
- ISAAC Steering Committee
- Regional Coordinator for Asia-Pacific
- National Coordinator for SAR China
- Phase One Principal Investigator for Hong Kong 13-14
- Phase Two Principal Investigator for Hong Kong

### Pre- ISAAC era

Before the mid-1990's, existing literature published in English on asthma epidemiology in the Asia-Pacific consisted of studies from only a handful of countries/areas. Data for other allergic conditions such as rhinitis and eczema were even scarcer. At that time, medical research, including that on asthma and allergy, was a novelty for many developing countries. Even for areas where data was available, it was difficult to make valid inter-population or time-trend comparisons as recruitment methodology and definitions for asthma, rhinitis and eczema varied among different studies. Thus, when ISAAC was launched in the mid-1990's, calls to participate in the study were met with an overwhelming response within the Asia-Pacific region.

### Findings

The prevalence of asthma symptoms varies widely between participating centres, ranging from less than 1% in Tibet (China) to almost 30% in Ho Chi Minh City (Vietnam) amongst adolescents. In general, the more affluent centres have a higher prevalence of asthma than the less affluent ones. For example, children in Hong Kong have a much higher rate of asthma than their counterparts in Mainland China, even though there is little difference in ethnicity between the participants. Further support for the significance of environmental factors in the pathogenesis of asthma comes from differences in prevalence rates among ethnic Chinese children in Beijing and Guangzhou (both in Mainland China), Hong Kong, and Vancouver (Canada). Those living in Vancouver have the highest rates of asthma symptoms, while those living in Mainland China have the lowest, with rates in Hong Kong being intermediate. Asthma symptoms are also more prevalent in those who have lived in Vancouver for their entire lives than those who have lived in Vancouver for less than 7 years. Analysis of the Phase 2 data for Hong Kong, Beijing, and Guangzhou demonstrates that the higher prevalence of asthma in 9-10 year-old children in Hong Kong than those in the Mainland could also be explained by environmental factors. However, the ISAAC data leaves unanswered the question of why Tibet has the lowest prevalence of asthma symptoms worldwide, while most urban cities in Mainland China are seeing an increase in rates of prevalence. Equally intriguing is why children in Ho Chi Minh City are demonstrating such a high prevalence of asthma symptoms when compared to their counterparts in neighbouring countries.



### Regional Publications

The following publications used ISAAC data from the Asia-Pacific region:

Wickens K, de Bruyne J, Calvo M, Choon-Kook S, Jayaraj G, Lai CK, Lane J, Maheshwari R, Mallol J, Nishima S, Purdie G, Siebers R, Sukumaran T, Trakultivakorn M, Crane J. *The determinants of dust mite allergen and its relationship to the prevalence of symptoms of asthma in the Asia-Pacific region.* *Pediatr Allergy Immunol.* 2004 Feb; 15(1):55-61.

Wong GW, Leung TF, Fok TF. *ISAAC and risk factors for asthma in the Asia-Pacific.* *Paediatr Respir Rev.* 2004; 5 Suppl A:S163-9. Review.

Fok AOL, Wong GWK. *What have we learnt from ISAAC phase III in the Asia-Pacific rim?* *Curr Opin Allergy Clin Immunol* 2009; 9(2):116-122.

Lee H-B, Shin S-A, Oh J-W. *New Patterns of Childhood Asthma Prevalence in Six Asian Countries: Comparison of ISAAC Phases I and III* *Pediatr Allergy Respir Dis(Korea)* 2008; 18: 70-77

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## Impact

ISAAC has vastly raised the awareness of asthma and allergies in the Asia-Pacific region. It has also provided clinicians here with the opportunity to understand how to properly conduct research and publish data in peer-reviewed journals. We now have good quality data that provide an estimate on the burden as well as insights on the aetiology of these common allergic diseases. ISAAC has also helped bring together those in the region interested in asthma and allergies to form a network, enabling collaboration for future studies, including those outside of ISAAC. Indeed, one could say that ISAAC is a forerunner of FACEBOOK in the medical fraternity!

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## Eastern Mediterranean Region

### Countries

Country	Phase One Centres	Phase Two Centres	Phase Three Centres
Egypt			1
Iran	2		4
Jordan			1
Kuwait	1		1
Lebanon	1		
Malta	1		1
Pakistan	1		2
Palestine		1	2
Sultanate Of Oman	1		1
Syria			3
<b>Total</b>	<b>7</b>	<b>1</b>	<b>16</b>

### Regional Coordinator:

#### Professor Stephen Montefort

Department of Medicine  
University of Malta  
Appt 121 Tas- Sellum Residence

Malta



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Eastern Mediterranean
- National Coordinator for Malta
- Phase One Principal Investigator for Malta
- Phase Three Principal Investigator for Malta

### Co-ordinating ISAAC in the Eastern Mediterranean region

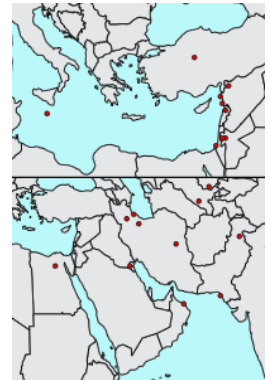
There were various major problem encountered in recruiting, coordinating and monitoring centres in this region. These stemmed from the fact that although Malta is closer to mainland Europe it is included in this region by the WHO and thus it was decided that ISAAC should follow suit. The fact that this region extended geographically from Malta in the middle of the Mediterranean Sea to Pakistan made this a very diverse region geographically, culturally and scientifically. My attempts to recruit as many centres as possible was difficult seeing that I did not have many contacts in the Middle East and in the early nineties email was not well-established so communication was even more difficult. The political situation in the area did not help much either. Research funding in this region was difficult to come by and the nominal funds given to some of these centres by ISAAC helped a lot. In spite of these difficulties we did manage to recruit and help complete ISAAC phase 1 in 10 centres in 7 countries – though we were unsuccessful to find co-ordinators in Libya, United Arab Emirates and Saudi Arabia after promising initial contacts. In Phase 3 of the study we managed to increase to 19 centres in 10 countries, losing only Lebanon in this later phase. All in all this has been a fruitful venture which has led to important data on childhood allergic conditions in these countries being published and a standardised Arabic version of the ISAAC questionnaire being established.

### Regional findings

As only 4 centres took part in both Phase 1 and phase 3 of the 6 – 7 year old ISAAC study, time trend findings were rather limited. But one could still see that there was a consistent increase in the prevalence of wheezing and rhinitis but not eczema. In the older age group there was a mix of trends with Malta and Kuwait showing a decrease in prevalence of wheezing, rhinitis and eczema while the rest of the centres showed mixed trends for the three allergic conditions studied.

### Regional impact

This study has surely opened up new research avenues for reliable epidemiological studies and other collaborations between the neighbouring centres in the Middle East that will hopefully bear more fruit in the future



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## Indian Sub-Continent Region

### Countries

Country	Phase One Centres	Phase Two Centres	Phase Three Centres
India	14	1	19
Sri Lanka			1
<b>Total</b>	<b>14</b>	<b>1</b>	<b>20</b>

### Regional Coordinator:

#### Dr Jayant Shah

Jaslok Hospital & Research Centre

15 - Dr. Deshmukh Marg  
Pedder Road,  
India

India, one of the most populous countries of the world, is almost a region in its own right. Dr Jayant Shah acted as both national co-ordinator for India and regional co-ordinator. Indian centres were numerous in both Phases One and Three, and also contributed one centre to Phase Two. Dr Shah attended the ISAAC Steering Committee meeting in Auckland in 2000.



#### Roles:

- Regional Coordinator for Indian Sub-Continent
- National Coordinator for India
- Phase Two Principal Investigator for Mumbai (16)



- Africa
- Asia-Pacific
- Eastern Mediterranean
- Indian Sub-Continent**
- Latin America
- North America
- Northern and Eastern Europe
- Oceania
- Western Europe

# The ISAAC Story



Africa  
Asia-Pacific  
Eastern  
Mediterranean  
Indian Sub-Continent  
**Latin America**  
North America  
Northern and Eastern Europe  
Oceania  
Western Europe

## Latin America Region

### Countries

Country	Phase One Centres	Phase Two Centres	Phase Three Centres
Argentina	3		4
Bolivia			1
Brasil	5	1	20
Chile	4		5
Colombia			3
Costa Rica	1		1
Cuba			1
Ecuador		1	2
El Salvador			1
Honduras			1
Mexico	1		10
Nicaragua			1
Panamá	1		1
Paraguay	1		1
Peru	1		1
Uruguay	1		2
Venezuela			1
<b>Total</b>	<b>18</b>	<b>2</b>	<b>56</b>

### Regional Coordinator:

#### Professor Javier Mallol

Department of Pediatric Respiratory Medicine  
Hospital CRS El Pino  
University of Santiago de Chile (USACH)  
Avenida Alberto Hurtado 13560  
Chile



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Latin America
- National Coordinator for Chile

### ISAAC in Latin America

ISAAC has become the largest study ever performed in the world on asthma epidemiology in childhood and also the most important and respected fountain of information on related matters. The participation of Latin America in ISAAC was a big success. ISAAC-Latin America provided approximately the 25% of the children aged 6-7 and 13-14 years who participated in ISAAC Phase III all over the world. However, before ISAAC the prevalence of respiratory symptoms related to asthma in children from this region was largely ignored.

The Region participated in Phase I and III of the International Study of Asthma and Allergies in Childhood (ISAAC) with 18 participating centres in Phase I and 56 centres in Phase III, obtaining data on asthma, rhinitis and eczema from countries and centres which despite sharing same languages (Spanish and Portuguese) have markedly different conditions of climate, socioeconomic development, cultural and environmental conditions. The countries of this region are all developing countries and share more or less the same problems related with low socioeconomic status and large income inequities.

### Findings

The consistently high figures for asthma symptoms prevalence in a region with high burden of acute respiratory and gastrointestinal infections occurring early in life, high level of gastrointestinal parasites infestation, severe environmental and hygiene problems, suggested for the first time that these factors, considered as protective in developed regions of the world, in fact may act as risk factors for asthma prevalence and severity in developing regions. Furthermore, those aggressive environmental conditions acting together from very early in life might condition several different asthmatic phenotypes with more severe clinical presentation in infancy (first 2 years of life), lower atopy with enhanced airways reactivity, among others. ISAAC in Latin America indicates that prevalence of asthma and related symptoms in this region is as high and variable as in developed regions of the world and that environmental risk factors, mainly related with poverty, could be responsible for the marked difference in clinical and functional aspects of asthma between children worldwide.



### Regional Publications

The following publications used ISAAC data from the Latin America region:

Mallol J, Solé D, Asher MI, Clayton T, Stein R, Soto-Quiroz M, on behalf of the Latin American ISAAC Collaborators Group. *Prevalence of asthma symptoms in Latin America: The International Study of Asthma and Allergies in Childhood (ISAAC)*. *Pediatr Pulmonol* 2000; 30: 439-44.

Solé D, Mallol J, Camelo-Nunes IC, Wandalsen GF and Latin American ISAAC Study Group. *Prevalence of rhinitis-related symptoms in Latin American children – Results of the International Study of Asthma and Allergies in Childhood (ISAAC) Phase Three*. *Pediatr Allergy Immunol* 2010; 21 (1): e127-e136. E pub 24 Sept 2009.

Solé D, Mallol J, Wandalsen GF, Aguirre V and the Latin American ISAAC Phase 3 Study Group. *Prevalence of Symptoms of Eczema in Latin America: Results of the International Study of Asthma and Allergies in Childhood (ISAAC) Phase 3*. *J Invest Allergol Clin Immunol* 2010; 20(4): 311-323.

Mallol J, Solé D, Baeza-Bacab M, Aguirre-Camposano V, Soto-Quiros M, Baena-Cagnani C and the Latin American ISAAC Group. *Regional variation in asthma symptom prevalence in Latin American children*. *J Asthma*. 2010; 47(6):644-50.

Neto HJC, Rosário NA, Solé D, and the Latin American ISAAC Group. *Asthma and Rhinitis in South America: How Different They are From Other Parts of the World*. *Allergy Asthma Immunol Res*. 2012;4(2):62-67

# The ISAAC Story

## Impacts

During the last 17 years I have had the honour to work with ISAAC as Regional Coordinator for Latin America and as a member of the ISAAC Steering Committee. I am very grateful to those who have generously collaborated for the big success of ISAAC Phase I and III in this Region. The creation of such a large scientific network has demonstrated its great functionality with the undertaking of the International Study of Wheezing in Infants whose results are being currently published in the medical press.

Latin America -thanks to its participation in ISAAC- has got for the first time in its history robust and reliable regional information on childhood asthma regarding prevalence, severity, risk-protective factors and ecological aspects. This should allow for a better understanding of the complexities of asthma and to improve several aspects on managing the disease in the different participating countries, hopefully resulting in the implementation of modern asthma management programs aiming to improve the quality of life of asthmatic children in this and other developing regions of the world.

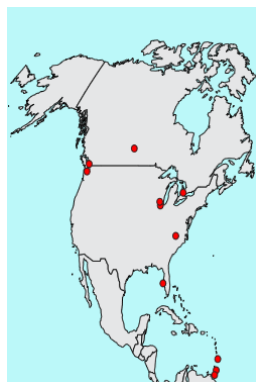
## North America Region

### Countries

Country	Phase One Centres	Phase Two Centres	Phase Three Centres
Barbados	1		1
Canada	2		2
Trinidad and Tobago			2
USA	3		3
<b>Total</b>	<b>6</b>	<b>0</b>	<b>8</b>

The development of ISAAC in North America did not follow the pattern adopted elsewhere with regional and national co-ordinators. Centres tended to liaise directly with the ISAAC International Data Centre, although in Canada Prof Malcolm Sears acted as an able and willing national co-ordinator. One of the regrettable deficiencies in ISAAC is the small number of participating centres in the United States, perhaps related to the difficulty in identifying a regional co-ordinator for North America early in the development of ISAAC.

Prof Fernando Martinez from Tucson, Arizona, was an active and enthusiastic member of the ISAAC Steering Committee but devoted much of his energies to establishing ISAAC in the Latin American countries, where the number of participating centres exceeded all expectations.



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# The ISAAC Story

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Oceania  
Western Europe

## Northern and Eastern Europe Region Countries

Country	Phase One Centres	Phase Two Centres	Phase Three Centres
Albania	1	1	1
Bulgaria			1
Croatia			1
Estonia	2	1	1
Finland	4		1
Georgia	2	1	1
Hungary			2
Iceland		1	
Kyrgyzstan			3
Latvia	2	1	1
Lithuania	1		3
Poland	3		2
Republic of Macedonia			1
Romania	1		1
Russia	2		1
Serbia and Montenegro			5
Sweden	2	2	1
Ukraine	1		2
Uzbekistan	2		
<b>Total</b>	<b>23</b>	<b>7</b>	<b>28</b>

### Regional Coordinator:

#### Professor Bengt Björkstén

National Institute of Environmental  
Medicine /IMM  
Division of Physiology  
Karolinska Institutet  
PO Box 287  
Sweden



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Northern and Eastern Europe

### ISAAC in Eastern Europe; Education and contribution to democratisation

#### Regional context

The enormous political changes in Eastern Europe in 1989 and 1990 opened an entire region for epidemiological research. During the era of socialist governments, epidemiological studies were mostly conducted in order to confirm the superior health of people living in these countries. The academic system was even more hierarchical than in other parts of the world and leadership was not always exclusively granted on research qualifications. In most universities, the standard of clinical research was not up to international standards and many academic teachers had never published in international peer reviewed journals. In addition, the economic situation was very difficult in all the countries. This was the situation when ISAAC entered into research-wise virgin territory.

The opportunity to participate in an international study attracted clinicians in 16 centres in 10 countries; Albania, Estonia, Georgia, Latvia, Lithuania, Poland, Romania, Russia, Ukraine and Uzbekistan. The regional co-ordination was done in Sweden and as a consequence the seemingly illogical ISAAC region "Northern and Eastern Europe" was created.

There was a reason to co-ordinate all centres in the formerly socialist countries from one place; academic structures in these countries were hierarchic and in most cases the seniors on top of the pyramid had little experience of actually conducting studies, in which strict adherence to an agreed protocol was required. The challenge was therefore to find young, flexible persons were open to learn from outsiders and lacking prestige, would accept to be co-ordinated and, at the same time, it was essential that the senior heads would accept that a study was performed in his department but without his direct control.

Most of the 16 local studies in the region were conducted over a three-year period, starting in March 1993. All salaries were funded locally but ISAAC could provide modest financial support for printing costs and stamps. The lack of financial resources was well compensated for by the enthusiasm of the local and national investigators. Many practical issues were solved *ad hoc*, participation rates were high and data were compiled and diligently reported to the regional centre.



### Regional Publications

The following publications used ISAAC data from the Northern and Eastern Europe region:

Björkstén B. *Epidemiology of pollution-induced airway disease in Scandinavia and Eastern Europe [Review]*. *Allergy* 1997; 52(38 Suppl): 23-5; discussion 35-6.

Björkstén B, Dumitrascu D, Foucard T, Khetsuriani N, Khaitov R, Leja M, Lis G, Pekkanen J, Priftanji A, Riikjäär MA. *Prevalence of childhood asthma, rhinitis and eczema in Scandinavia and Eastern Europe*. *Eur Respir J* 1998; 12(2): 432-7.

# The ISAAC Story

## Regional findings

So what was found? It was confirmed in many countries that allergy associated symptoms are much less common in Eastern, as compared to Western Europe, thus confirming the then novel hypothesis that the increasing prevalence of allergies in the west was due to a changed life style, probably less exposure to microbial diversity. An interesting finding was that in all the formerly socialist countries, the peak months of rhinitis symptoms occurred during the winter months, in contrast to the spring-summer peaks recorded in the Scandinavian countries in the region.

## Regional impact

The impact of ISAAC in the region goes far beyond the epidemiological data of high quality that were generated in the centres. The investigators were mostly clinically working doctors with little previous experience of research. Participation in ISAAC provided research education and practical experience. Working with computers was a new experience for some.

Participation in a large global research project was a new experience and was for many a practical consequence of the freedom their country. This was perhaps particularly obvious in the Baltic countries and Poland. The informal, consensus-oriented, democratic structure of ISAAC set an example for others.

For many of the local investigators, participation in ISAAC became a starting point for further clinical research of such quality that their results could be published internationally. Many of the investigators also inspired and encouraged colleagues to launch epidemiological studies in other fields, mostly in paediatrics.

It is reasonable to conclude that the significance of ISAAC in Eastern Europe went far beyond the epidemiological data on childhood allergies that were generated. In a small fashion, ISAAC contributed to the democratization process by empowering hard working clinical researchers and exposing the academic system to alternatives to traditional hierarchical structures.

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## Oceania Region Countries

Country	Phase One Centres	Phase Two Centres	Phase Three Centres
Australia	5		1
Cook Islands			1
Fiji			1
French Polynesia			1
New Zealand	6	1	5
Niue			1
Nouvelle Calédonie			1
Samoa			1
Tokelau			1
Tonga			1
<b>Total</b>	<b>11</b>	<b>1</b>	<b>14</b>

### Regional Coordinator:

#### Dr Sunia Foliaki

Director  
Research Unit  
Ministry of Health  
P.O. Box 59  
Kingdom Of Tonga



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Oceania
- Phase Three Principal Investigator for Nuku alofa

### Oceania: A role for Research in the smaller countries in Oceania

Oceania as the name suggests consists of a region with countries and islands linked by oceans rather than countries that are adjacent and land-linked to one another. As a continental group it has the second smallest population, after Antarctica. Australia and New Zealand are by far the bigger and economically most developed compared to the smaller Polynesian and Melanesian island countries in the lower region of Oceania. The formal academic and research infrastructure likewise are more developed in these two larger countries as well as the various phases of the ISAAC studies having been well established therein. The relative isolation of smaller Oceania Pacific island countries and migration to Australia and New Zealand encouraged research activities in the Pacific and on Pacific people in their newly adopted residents. Most of the researches however were done by outsiders and on other illnesses of interest but very little on asthma. The collaborative nature of ISAAC in Oceania raised the need for capacity building and creating networks and environments that enhance health research in areas other than asthma as well as encouraging the establishment of health research as a vital tool for achieving better health.

### The findings

Early studies involved Australia and New Zealand and two Polynesian island territories showed differences in reported asthma severity between Oceania and European centres with differences in exposure to risk factors and differences in the management of asthma as possible explanations. Asthma is more severe in Pacific people and Maori with a higher frequency of hospitalizations. Similar findings of the greater severity, and the greater adult prevalence, in Pacific people and Maori in New Zealand may be partly or wholly due to problems of access to culturally appropriate asthma health care and asthma education. Phase III studies in New Zealand shows increasing trends of current wheeze among Pacific people in New Zealand with a non-significant increase in Māori, and a significant decrease among Europeans/Pakeha children. The inclusion of Pacific people in Pacific islands for the first time in ISAAC III showed that although there is a significant level of morbidity, asthma prevalence in Pacific countries is lower than those among Pacific people in New Zealand and Australia. The large variations in prevalence between the six Pacific countries further lends support for the role of environmental risk factors in asthma



### Regional Publications

The following publications used ISAAC data from the Oceania region:

Foliaki S, Annesi-Maesano I, Daniel R, Fakakovikaetau T, Magatongia M, Tuuau-Potai N, Waqatakirewa L, Cheng SK, Pearce N. *Prevalence of symptoms of childhood asthma, allergic rhinoconjunctivitis and eczema in the Pacific: The International Study of Asthma and Allergies in Childhood (ISAAC)*. *Allergy* 2007; 62(3), 259-64.

Foliaki S, Annesi-Maesano I, Tuuau-Potai N, Waqatakirewa L, Cheng S, Douwes J, Pearce N. *Risk factors for symptoms of childhood asthma, allergic rhinoconjunctivitis and eczema in the Pacific: an ISAAC Phase III study*. *Int J Tuberc Lung Dis* 2008; 12(7): 799-806.

# The ISAAC Story

## Impact

The ISAAC Study and partnership with collaborators created an environment and network that encourages and strengthens the establishment of health research as one of the vital tools for achieving better health. The local collaborators gained recognition and contributed to research activities including publications. This was also an opportunity in the smaller centres at least to gain some understanding of how people with asthma are able to achieve a level of self-care that can extend to the primary health care level and the community. In this context an intervention study was conducted with the ISAAC collaborators in Tonga to introduce an asthma self-management plan intervention. The success of the introduction of the self-management plan, in the context of an asthma clinic, was reflected by improvement in measures of asthma morbidity, such as peak expiratory flow rates and nights woken with asthma or coughing. There was also a reduction in the requirement for acute medical treatment, indicated by a decrease in emergency department hospital visits for asthma and hospital admissions. The availability and access to such international studies that are systematic and standardised is valuable in assessing the patterns and extent of asthma morbidity throughout the Pacific. The high turn-over of health staff in a dynamic population does not allow for an environment for research in small Pacific island states that also lack infrastructure for health research. The ISAAC studies has played a major role in creating networks and environments to address some of these shortfalls.

Africa  
Asia-Pacific  
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# The ISAAC Story

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Northern and  
Eastern Europe  
Oceania  
**Western Europe**

## Western Europe Region

### Countries

Country	Phase One Centres	Phase Two Centres	Phase Three Centres
Austria	3		2
Belgium	1		1
Channel Islands	2		2
France	5	1	
Germany	2	2	1
Greece	1	2	1
Isle Of Man	1		1
Italy	14	1	13
Netherlands		1	1
Norway		1	
Portugal	4		5
Republic of Ireland	1		1
Spain	9	4	12
Turkey		1	
United Kingdom	12	1	6
<b>Total</b>	<b>55</b>	<b>14</b>	<b>46</b>

### Regional Coordinator:

#### Prof Dr Ulrich Keil

Institut für Epidemiologie und  
Sozialmedizin  
Westfälische Wilhelms Universität  
Domagkstrasse 3

Germany



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Western Europe
- National Coordinator for Germany
- Phase One Principal Investigator for Münster
- Phase Three Principal Investigator for Münster

### History of ISAAC in the Region of Western Europe

At the time of the two international workshops (monitoring trends of asthma and allergies in childhood) in Bochum in 1990 and 1991, which marked the beginning of ISAAC, the world had changed dramatically. The Berlin wall had collapsed, the unification of Germany became reality and the iron curtain between eastern and western Europe did not exist any longer. (Some sociologists talked of the end of history!)

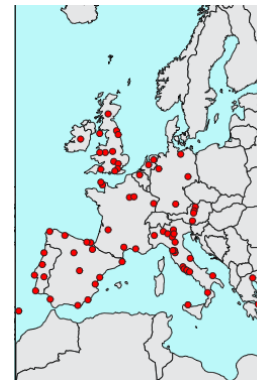
Colleagues in Germany with an interest in asthma epidemiology capitalized on the unification of Germany and immediately started projects comparing prevalence figures of asthma in the eastern and western part of Germany, such as the comparison study between Munich and Leipzig. As was hypothesized prevalence figures of asthma and allergies in children were higher in the west (Munich) than in the eastern part of Germany (Leipzig). Such studies obviously stimulated interest for comparisons between east and west not only in Germany but also within the whole of Europe.

From the workshops in Bochum it had become obvious that the UK was a stronghold for research into the epidemiology of asthma and allergies and could contribute to a European and worldwide project with a lot of different centres.

The restructuring of the university system in eastern Germany required a lot of consulting and support by professors from the west. Having become a consultant to the medical faculties of the old Baltic Sea universities of Rostock and Greifswald I took the chance and asked the professor of hygiene in Greifswald, if he was willing to perform ISAAC Phase I in Greifswald. He responded affirmatively, managed to obtain the necessary funding from local sources and was very happy to be able to contribute to a worldwide study. Thus we secured at least two ISAAC Phase I centres in Germany, namely Münster in the northwest and Greifswald in the northeast of the country.

Unfortunately it was not possible to recruit more ISAAC phase I centres in Germany because the respective colleagues wanted to do more "sophisticated" studies. These more "sophisticated" studies materialized a few years later when the "Verbundprojekt" with study centres in Munich and Dresden and a coordinating centre in Münster (PIs Ulrich Keil and Stephan Weiland) was funded by the German Federal Ministry of Research. The "Verbundprojekt" became later the nucleus of ISAAC Phase II.

All the other ISAAC Phase I centres in Western Europe like the many centres in Italy, Spain, France and Portugal were recruited by professional networks and by announcing the ISAAC project at congresses of the European Respiratory Society.



# The ISAAC Story

## Experiences of participating in ISAAC

One of the most moving moments I had with ISAAC was at the 8th International Workshop (ISAAC Steering Committee Meeting) in September 1997 in Berlin. The workshop took place at Gendarmenmarkt in the building of the Akademie Berlin-Brandenburg and it came to my mind that I had been in the same building exactly 10 years earlier at a WHO MONICA PIs meeting. (In 1987 the building represented the headquarters of the Akademie der Wissenschaften der DDR in East Berlin) In 1987 nobody in the west had the slightest idea that within less than 3 years the world would change so dramatically.

The ISAAC Steering Committee Meeting in 1997 was also the time when Stephan Weiland was elected member of the ISAAC Executive, a position he very much deserved but tragic enough could fill out only for a decade.

## Impact of ISAAC in the Region of Western Europe

The impact of ISAAC phase I and III in the region of western Europe is remarkable, because never before had such a systematic, standardized and population based study of asthma, rhinoconjunctivitis and eczema in children and adolescents been done before. In most countries of western Europe ISAAC phase I stimulated ISAAC phase III and a number of countries, respectively centres managed to obtain funding also for the "sophisticated" ISAAC phase II project.

## Regional Findings and their interpretation

When considering the whole of EUROPE, this region of the world depicts the greatest range in the 12 month prevalence of self-reported asthma symptoms (written questionnaire), ranging from the highest prevalence centre in the UK to the one centre in Albania. When considering only western Europe the wide range is not much diminished, because Greece also has a very low prevalence of asthma.

When comparing the German centres Münster and Greifswald our results confirmed the hypothesis that asthma prevalences should be higher in the east compared to the west.

When looking at the changes from ISAAC phase I to II over a median time of 7 years it is interesting to note that there are quite a number of countries where prevalences of asthma, rhinoconjunctivitis and eczema are on the increase, though not dramatically. The biggest decrease for all three disease groups, however, was noted for the UK centres plus Channel Island and Isle of Man centres. It is relieving to see that centres with very high prevalences of asthma are showing a decline over time.

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# The ISAAC Story



Regional

National

Albania

Local

## Albania, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Tiranë	1	Professor Alfred Priftanji	13-14, 6-7
Tiranë	2	Professor Alfred Priftanji	10-11 y. old
Tiranë	3	Professor Alfred Priftanji	13-14, 6-7

### National Coordinator:

#### Professor Alfred Priftanji

Faculty of Medicine, University of Tirana  
 Head, Department of Allergology and Clinical Immunology  
 University Hospital Center "Mother Theresa"  
 Tiranë  
 Albania

#### Roles:

- National Coordinator for Albania
- Phase One Principal Investigator for Tiranë
- Phase Two Principal Investigator for Tiranë
- Phase Three Principal Investigator for Tiranë



### National Publications

The following publications used ISAAC data from Albania:

Priftanji A, Strachan D, Burr M, Sinamati J, Shkurti A, Grabocka E, Kaur B, Fitzpatrick S. *Asthma and allergy in Albania and the UK*. Lancet. 2001; 358(9291):1426-7.

## Why we were chosen for the ISAAC study

Albania is a small European country with approximately 3 million people. Until 1990 we were under an extremely closed communist regime. Later on, we understood that the Albanian population, as an isolated community, with a very simple lifestyle, different from "western" lifestyle, was an ideal sample for the Strachan Hygiene Hypothesis.

In 1992, Dr. Jane Layzell, a collaborator of Dr. Michael Burr in the ECRHS in Cardiff, came to Albania as part of "Feed the Children" programme. She proposed that I apply for epidemiological surveys of asthma & allergies in Tirana. In 1994 I received an EU grant and started the ECRHS in Albania, so called Albanian Respiratory Health Survey (ARHS). Dr. Michael Burr was appointed as a coordinator. Our center took part actively in this study and we got the first prevalence ever for adult asthma in Albania and in Balkan areas.

At the same period, with the recommendation of Dr. Michael Burr and Dr. Jane Layzell, we applied and were accepted in the ISAAC Phase One Study. The prevalence of asthma & allergies were the lowest in Europe and it was postulated that our population was not exposed to the risk factors present in the western countries. After that we were part of ISAAC family and participated in all phases of ISAAC.

The factors associated with asthma & allergy in Albania were therefore of particular interest. Prof. Alfred Priftanji and his team were supported in all other ISAAC Phases by ISAAC Steering Committee members like Prof. Stefan Weiland, Prof. David Strachan, Prof. Bengt Björkstén, Dr. Michael Burr, Prof. Erika Von Mutius, etc. The Albanian team worked meticulously and hard in order to be an active, reliable partner in this study. So, for the first time in Albania & Balkan we achieved a plausible data base for the prevalence, the risk factors of the asthma & allergic diseases in children and we had the opportunity to compare these data with the other centers worldwide.

Albania took part also in ISAAC phases Two and Three. Outstanding work was done from the teams of each phase and the primary investigator on fulfilling the work and persuading the children and the parents in order to take part in the study. The data we received from ISAAC surveys helped us to raise the awareness of the medical community, health policy makers for asthma & allergies as a growing problem.

We are very proud that Albania, a small country, thanks to all our work was able to participate in equal terms in this enormous study. We had the opportunity to work with eminent names in this field and we are grateful for to all the scientists that supported our involvement.

Now, in September 2011, with financial support from GlaxoSmithKline we will repeat the protocol of ISAAC phase One and partially phase Two in Tirana. In these 16 years the Albanian people have adopted the western lifestyle, so have been exposed to the same risk factors as in all other parts of Europe. We are really enthusiastic for this study because we are very curious to see the trend of asthma and allergic diseases and also evaluate the role of risk factors after 16 years.

## Our acknowledgement goes to the team of ISAAC-Albania:

Primary Investigator: Prof. Alfred Priftanji.

Doctors: Anila Shkurti, Juventila Sinemati, Edi Grabocka, Anxhela Gurakuqi, Sokol Agolli, Kastriot Shytaj, Mira Ziqishti, Xhilda Raço.

Nurses: Frasete Kasemi, Loreta Laho.

Secretary: Margarita Doci

# The ISAAC Story



## Algeria, Africa

Centres:	Phase:	PI:	Age Groups
Algiers	1	Dr A Bezzaoucha	13-14
West Algiers	1	professor Badia Benhabylès	13-14
Wilaya of Algiers	3	Professor Badia Benhabylès	13-14

**Algeria has no National Coordinator**



## Argentina, Latin America

Centres:	Phase:	PI:	Age Groups
Buenos Aires	1	Dr Natalio Salmun	13-14, 6-7
Córdoba	1	Dr Carlos E Baena-Cagnani	13-14
Rosario	1	Dr Natalio Salmun	13-14, 6-7
Córdoba	3	Dr Carlos E Baena-Cagnani	13-14, 6-7
Neuquén	3	Professor Gustavo Enrique Zabert	13-14, 6-7
Rosario City	3	Prof Dr Carlos D Crisci	13-14, 6-7
Salta	3	Dr Maximiliano Gómez	13-14

### National Coordinator:

#### Dr Carlos E Baena-Cagnani

Faculty of Medicine  
Catholic University of Córdoba  
Santa Rosa 381

Argentina

### Roles:

- National Coordinator for Argentina
- Phase One Principal Investigator for Córdoba
- Phase Three Principal Investigator for Córdoba



## Australia, Oceania

Centres:	Phase:	PI:	Age Groups
Adelaide	1	Dr Declan Kennedy	13-14, 6-7
Melbourne	1	Professor Colin F Robertson	13-14, 6-7
Perth	1	Professor Louis Landau	13-14, 6-7
Sydney 13-14	1	Professor Adrian Bauman	13-14
Sydney 6-7	1	Dr Jennifer Peat	6-7
Melbourne	3	Professor Colin F Robertson	13-14, 6-7

### National Coordinator:

#### Professor Colin F Robertson

Director, Department of Respiratory Medicine  
Royal Children's Hospital  
Flemington Rd (Affiliation is: Murdoch Children's Research Institute, Melbourne)  
Parkville, VIC 3052  
Australia



### Roles:

- ISAAC Steering Committee
- National Coordinator for Australia
- Phase One Principal Investigator for Melbourne
- Phase Three Principal Investigator for Melbourne

## National Publications

The following publications used ISAAC data from Australia:

Tunon De Lara JM, Kopferschmitt Kubler MC, Raheison C, Quoix E, Taytard A, Annesi-Maesano I. *Prevalence of atopic dermatitis and atopy in general in children.[in French].* Rev Mal Respir 1997; 14(suppl.4): 4S47-4S54.

Robertson CF, Dalton MF, Peat JK, Haby MM, Bauman A, Kennedy JD, Landau LI. *Asthma and other atopic diseases in Australian children.Australian arm of the International Study of Asthma and Allergy in Childhood.* Med J Aust 1998; 168(9): 434-8.

Regional  
National

**Algeria**  
**Argentina**  
**Australia**

Local

# The ISAAC Story

Regional

National

Austria

Barbados

Local

## Austria, Western Europe

Centres:	Phase:	PI:	Age Groups
Kärnten	1	Associate Professor Gerald Haidinger	6-7
Salzburg	1	Dr Josef Riedler	13-14, 6-7
Urfahr-Umgebung	1	Associate Professor Gerald Haidinger	13-14, 6-7
Kärnten	3	Associate Professor Gerald Haidinger	6-7
Urfahr-Umgebung	3	Associate Professor Gerald Haidinger	13-14, 6-7

### National Coordinator:

#### Associate Professor Gerald Haidinger

Department of Epidemiology  
Centre of Public Health  
Medical University of Vienna  
Borschkegasse 8a, 1090 Vienna  
Austria



#### Roles:

- National Coordinator for Austria
- Phase One Principal Investigator for Kärnten, Urfahr-Umgebung
- Phase Three Principal Investigator for Kärnten, Urfahr-Umgebung

### National Publications

The following publications used ISAAC data from Austria:

Eder W, Gamper A, Oberfeld G, Riedler J. *Prevalence and severity of bronchial asthma, allergic rhinitis and atopic dermatitis in Salzburg school children.*[German]. Wien Klin Wochenschr.1998; 110(19): 669-77.

Riedler J, Gamper A, Eder W, Oberfeld G. *Prevalence of bronchial hyperresponsiveness to 4.5% saline and its relation to asthma and allergy symptoms in Austrian children* Eur Respir J 1998; 11: 355–360

Eder W, A Gamper, G Oberfeld, J Riedler. *Clinical follow-up of an epidemiological study of asthma and allergies in children [Klinische Nachuntersuchung einer epidemiologischen Studie über Asthma und Allergien im Kindesalter.](article in German).* Wien Klin Wochenschr 1998; 110(19):678-685.

Zacharasiewicz A, Zidek T, Haidinger G, Waldhör T, Suess G, Vutuc C. *Indoor factors and their association to respiratory symptoms suggestive of asthma in Austrian children aged 6-9 years.* Wien Klin Wochenschr.1999 Nov 12;111(21):882-6.

Zidek T, Haidinger G, Zacharasiewicz A, Waldhör T, Vutuc C. *[Prevalence of smoking habits of Upper Austria students of the 7th and 8th grade and effect of smoking habits of family and peers].* Soz Präventivmed.2000;45(4):174-81.German.

Zacharasiewicz A, Zidek T, Haidinger G, Waldhör T, Vutuc C, Zacharasiewicz A, Goetz M, Pearce N. *Symptoms suggestive of atopic rhinitis in children aged 6-9 years and the indoor environment.* Allergy.2000 Oct;55(10):945-50.

Schernhammer ES, Vutuc C, Waldhör T, Haidinger G. *Time trends of the prevalence of asthma and allergic disease in Austrian children.* Pediatr Allergy Immunol.2008 Mar;19(2):125-31.Epub Dec 2007.

Haidinger G, Waldhor T, Meusburger S, Suss G, Vutuc C. *The prevalence of childhood asthma and of allergies in 7 districts of Upper Austria - ISAAC III.* Allergologie 2008; 31(1):17-22.

Weber AS, Haidinger G. *The prevalence of atopic dermatitis in children is influenced by their parents' education: results of two cross-sectional studies conducted in Upper Austria.* Pediatr Allergy Immunol 2010; 21(7): 1028–1035. Epub 27 Apr.

## Barbados, North America

Centres:	Phase:	PI:	Age Groups
Barbados	1	Dr Malcolm E Howitt	13-14, 6-7
Barbados	3	Dr Malcolm E Howitt	13-14, 6-7

### National Coordinator:

#### Dr Malcolm E Howitt

Medical Practitioner  
Carlton Clinic  
Carlton Shopping Plaza  
Black Rock  
Barbados

#### Roles:

- National Coordinator for Barbados
- Phase One Principal Investigator for Barbados
- Phase Three Principal Investigator for Barbados

# The ISAAC Story

## Belgium, Western Europe

Centres:	Phase:	PI:	Age Groups
Antwerp	1	Professor Paul Vermeire	13-14, 6-7
Antwerp	3	Professor Joost Weyler	13-14, 6-7

### Belgium has no National Coordinator

## National Publications

The following publications used ISAAC data from Belgium:

Vervloet D, Godard P, Taytard A, Oryszczyn MP, Tunon De Lara JM, Pauli G, Groupe ISAAC France. *Prevalence of atopic dermatitis in teenagers.[in French]*. Rev Mal Respir 1997; 14(suppl.4): 4S55-4S60.

Wieringa MH, Weyler JJ, Van Bever HP, Nelen VJ, Vermeire PA. *Gender differences in respiratory, nasal and skin symptoms: 6-7 versus 13-14-year-old children*. Acta Paediatr 1999; 88(2):147-9.

Vellinga A, Droste JH, Vermeire PA, Desager K, De Backer WA, Nelen VJ, Weyler JJ. *Changes in respiratory and allergic symptoms in schoolchildren from 1996 to 2002, results from the ISAAC surveys in Antwerp (Belgium)*. Acta Clin Belg.2005 Sep-Oct;60(5):219-25.

## Bolivia, Latin America

Centres:	Phase:	PI:	Age Groups
Santa Cruz	3	Dr Rosario Pinto-Vargas	13-14

### National Coordinator: Dr Rosario Pinto-Vargas

Pediatric Pneumology  
C.P.S Hospital  
475 Lagunillas Street

Bolivia



#### Roles:

- National Coordinator for Bolivia
- Phase Three Principal Investigator for Santa Cruz

For the first time Bolivia is part of an international study of the magnitude of ISAAC Phase III. It was during the Latin American Congress of Pediatric Pulmonology in Central America, we received the invitation of Dr. Javier Mallol, International Coordinator of ISAAC Phase III for Latin American, and we gladly accepted the challenge.

Our intention was to have two teams, one team that covers the western Bolivia, La Paz, city over 3500 meters above sea level and eastern Bolivia, Santa Cruz de la Sierra, less than 400 m (asl), geographical areas with different environmental as well as different feeding habits. We got in contact with the Society of Pediatric located in La Paz, the Andean region, to propose a study, but this could not be completed on time.

THE STATE OF BOLIVIA, in central South America. (In red), department of Santa Cruz. Santa Cruz is the largest recipient of migrants from other departments, currently has 1,678,849 inhabitants

'The city of **Santa Cruz de la Sierra** is located in the eastern part of Bolivia (17°45', South, 63°14', West) at 416m above sea level. It is part of the province of Andrés Ibáñez and the capital of the department of Santa Cruz' (from Wikipedia:Santa Cruz de la Sierra [http://en.wikipedia.org/wiki/Santa\\_Cruz\\_de\\_la\\_Sierra#Geography](http://en.wikipedia.org/wiki/Santa_Cruz_de_la_Sierra#Geography))



BOLIVIA SANTA CRUZ

Regional

National

**Belgium**

**Bolivia**

Local

# The ISAAC Story



Regional

National

**Bolivia**

Local

To finalize the project we asked for the cooperation and sponsorship of various institutions and the formation of a multidisciplinary team of professionals who are motivated only by their scientific interest.

Strictly fulfilling the criteria issued by ISAAC in the selection of schools and children from 13 to 14 years, we interviewed 3292 (three thousand two hundred ninety-two) students in 120 schools (one hundred twenty) of the city of Santa Cruz de la Sierra. After adapting the survey in Spanish to the used language and local customs, and completed the legal procedures we initiated the surveys.

- The question that apparently caused the most concern to the students Surveyed was about whether they had ever smoked. Most did not want to answer to the questionnaire until we assured them those responses would not be known either by their teachers nor by their parents.
- Among the key findings of the study was that many students reported having had wheezing without an asthma diagnosis and those who reported having or having had wheezing without an established diagnosis of asthma was about twice of those who were diagnosed.
- The study also showed that there was a significant association between rhinitis and asthma, which also was related to having adult smokers at home.

## **AGRADECIMIENTOS:**

NUESTRO AGRADECIMIENTO A TODOS LOS COLEGAS QUE DIERON SU TIEMPO INCONDICIONAL PARA LLEVAR A CABO ESTE ESTUDIO, A TODAS LAS INSTITUCIONES QUE TRABAJARON COORDINADAMENTE CON NOSOTROS: COLEGIO MEDICO DEPARTAMENTAL –SANTA CRUZ, UNIVERSIDAD CRISTIANA DE BOLIVIA, SOCIEDAD BOLIVIANA DE PEDIATRIA, SECRETARIA DE EDUCACION–GOBERNACION SANTA CRUZ, A LOS PROFESORES Y ALUMNOS QUE APORTARON CON SUS DATOS, AL PROFESOR JAVIER MALLOL NUESTRO COORDINADOR INTERNACIONAL; EAMON ELLWOOD, PROFESOR INES ASHER STEERING COMMITTEE NUESTROS TUTORES DE AUCKLAND QUE NOS MANTUVIERON SIEMPRE INFORMADOS SOBRE TODOS LOS AVANCES Y PUBLICACIONES DEL ESTUDIO Y A NUESTRO CO AUSPICIADOR LABORATORIO GLAXO.

# The ISAAC Story



## Brasil, Latin America

Centres:	Phase:	PI:	Age Groups
Curitiba	1	Professor Nelson Rosário	13-14
Porto Alegre	1	Professor Renato Stein	13-14, 6-7
Recife	1	Dr Patricia Gomes M Bezerra	13-14, 6-7
Salvador	1	Associate Professor Leda de Freitas Souza	13-14
São Paulo	1	Professor Dirceu Solé	13-14, 6-7
Uruguaiana	2	Professor Renato Stein	
Aracaju	3	Dr Jackeline Machado Motta Franco	13-14, 6-7
Belo Horizonte	3	Associate Professor Paulo Augusto M Camargos	13-14
Brasília	3	Dr Wellington G Borges	13-14
Caruaru	3	Assistant Professor Almerinda Silva	13-14
Curitiba	3	Professor Nelson Rosário	13-14
Feira de Santana	3	Associate Professor Leda de Freitas Souza	13-14, 6-7
Itajaí	3	Dr Cláudia dos Santos Dutra Bernhardt	13-14, 6-7
Maceió	3	Professor Francisco José Passos	13-14, 6-7
Manaus Amazonas	3	Dra Maria do Socorro Cardoso	13-14, 6-7
Nova Iguaçu	3	Associate Professor Antônio José Ledo Aves Cunha	13-14, 6-7
Passo Fundo	3	Dr Arnaldo C Porto Neto	13-14
Porto Alegre	3	Dr Gilberto B Fischer	13-14
Recife	3	Dr Murilo de Britto	13-14
Rural Santa Maria	3	Professor Dirceu Solé	13-14
Salvador	3	Associate Professor Leda de Freitas Souza	13-14, 6-7
Santa Maria	3	Professor Dirceu Solé	13-14
Santo Andre	3	Associate Professor Neusa Wandalsen	13-14, 6-7
São Paulo	3	Professor Dirceu Solé	13-14, 6-7
São Paulo West	3	Dr Antonio Carlos Pastorino	13-14, 6-7
Vitória da Conquista	3	Associate Professor Leda de Freitas Souza	13-14, 6-7

### National Coordinator: Professor Dirceu Solé

Professor of Allergy, Clinical Immunology and Rheumatology  
Dept of Pediatrics  
Federal University of São Paulo-Escola Paulista de Medicina  
São Paulo  
Brasil

#### Roles:

- National Coordinator for Brasil
- Phase One Principal Investigator for São Paulo
- Phase Three Principal Investigator for Rural Santa Maria, Santa Maria, São Paulo

### ISAAC in Brazil

The International Study of Asthma and Allergies in Childhood (ISAAC) in Brazil was a real watershed of our knowledge about the true prevalence of asthma and allergic diseases in the country.

Prior to this study, the Brazilian epidemiologic data were restricted to small population samples, mostly from large urban centers and educational institutions, and without any standardization that would allow the comparison between the data obtained. In 1996, for the first time, reliable epidemiological data were obtained in seven major Brazilian centers, when it was possible to verify the heterogeneity of asthma and allergic diseases in our environment.

Once consolidated for use in the Brazilian population, the ISAAC protocol has been used by other national groups and has further expanded the knowledge about the prevalence of asthma in the entire national territory.

In phase 3, the number of participant centers was significantly higher and it was possible to obtain a map of the distribution of asthma and allergic diseases in the country. These data made it possible to better inform public health systems and that their participation was more effective in controlling asthma and allergic diseases. The use of the complementary questionnaire in part of the population studied enabled the identification of risk factors and/or protection associated with asthma in the adolescent population. Regional differences were more evident taking into account that Brazil is a country with continental dimensions and that besides the native Indian population, has received the most diverse ethnic groups around the world, which resulted in high degree of miscegenation.

Regional  
National  
**Brasil**  
Local



# The ISAAC Story

Regional

National

**Brasil**

Local

## National Publications

The following publications used ISAAC data from Brasil:

Solé D, Vanna AT, Yamada E, Rizzo MCV, Naspitz CK. *International Study of Asthma and Allergies in Childhood (ISAAC) written questionnaire: Validation of the asthma component among Brazilian children.* J Investig Allergol Clin Immunol 1998; 8(6): 376-382.

Werneck G, Ruiz S, Hart R, White M, Romieu I. *Prevalence of asthma and other childhood allergies in Brazilian schoolchildren.* J Asthma.1999 Dec;36(8):677-90.

Solé D, Yamada E, Vana AT, Werneck G, Solano de Freitas L, Sologuren MJ, Britto M, Rosário Filho NA, Stein RT, Mallo J. *International Study of Asthma and Allergies in Childhood (ISAAC): prevalence of asthma and asthma-related symptoms among Brazilian schoolchildren.* J Investig Allergol Clin Immunol 2001; 11(2): 123-8.

Solé D, Camelo-Nunes IC, Vana AT, Yamada E, Werneck F, de Freitas LS, Sologuren MJ, Britto M, Rosário Filho NA, Stein RT, Naspitz CK. *Prevalence of rhinitis and related-symptoms in schoolchildren from different cities in Brazil.* Allergol Immunopathol (Madr). 2004 Jan Feb;32(1):7-12.

Solé D, Camelo-Nunes IC, Wandalsen GF, Sarinho E, Sarinho S, Britto M, Rosário NA, de Freitas Souza LS, Stein R, Fischer GB, Naspitz CK. *Ecological correlation among prevalence of asthma symptoms, rhinoconjunctivitis and atopic eczema with notifications of tuberculosis and measles in the Brazilian population.* Pediatr Allergy Immunol.2005 Nov;16(7):582-6.

Solé D, Camelo-Nunes IC, Wandalsen GF, Mallozi MC, Naspitz CK, for members of the Brazilian ISAAC Group. *Prevalence of atopic eczema and related symptoms in Brazilian schoolchildren: results from the International Study of Asthma and Allergies in Childhood (ISAAC) Phase 3.* J Investig Allergol Clin Immunol 2006; 16(6): 367-76.

Solé D, Wandalsen GF, Camelo-Nunes IC, Naspitz CK, Naspitz CK, Brazilian ISAAC's Group. *Prevalence of symptoms of asthma, rhinitis, and atopic eczema among Brazilian children and adolescents identified by the International Study of Asthma and Allergies in Childhood (ISAAC) - Phase 3.* J Pediatr (Rio J) 2006; 82(5): 341-6.

Solé D, Camelo-Nunes IC, Wandalsen GF, Pastorino AC, Jacob CMA, González C, Wandalsen NF, Rosário Filho NA, Fischer GB, Naspitz CK. *Prevalence of symptoms of asthma, rhinitis, and atopic eczema in Brazilian adolescents related to exposure to gaseous air pollutants and socioeconomic status.* J Investig Allergol Clin Immunol 2007; 17(1): 6-13.

Solé D, Cassol VE, Silva AR, Teche SP, Rizzato TM, Bandim LC, Sarinho ES, Camelo-Nunes IC. *Prevalence of symptoms of asthma, rhinitis, and atopic eczema among adolescents living in urban and rural areas in different regions of Brazil.* Allergol Immunopathol (Madr). 2007 Nov-Dec;35(6):248-53.

Pereira MU, Sly PD, Pitrez PM, Jones MH, Escouto D, Dias AC, Weiland SK, Stein RT. *Non-atopic asthma is associated with helminth infections and bronchiolitis in poor children.* Eur Respir J 2007; 29:1154-1160.

Solé D, Melo KC, Camelo-Nunes IC, Freitas LS, Britto M, Rosário NA, Jones M, Fischer GB, Naspitz CK. *Changes in the prevalence of asthma and allergic diseases among Brazilian schoolchildren (13-14 years old): comparison between ISAAC Phases One and Three.* J Trop Pediatr.2007 Feb;53(1):13-21.Epub Sep 2006.

Solé D, Camelo-Nunes IC, Wandalsen GF, Rosário Filho NA, Naspitz CK, Brazilian ISAAC's Group. *Prevalence of rhinitis among Brazilian schoolchildren: ISAAC phase 3 results.* Rhinology.2007 Jun;45(2):122-8.

Solé D, Camelo-Nunes IC, Wandalsen GF, Mallozi MC, Naspitz CK, Brazilian ISAAC's Group. *Is the prevalence of asthma and related symptoms among Brazilian children related to socioeconomic status?.* J Asthma.45(1):19-25, 2008 Jan-Feb.

# The ISAAC Story



## Bulgaria, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Sofia	3	Dr Todor Popov	13-14, 6-7

### National Coordinator:

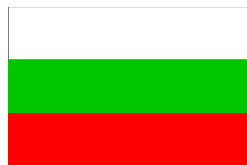
#### Dr Todor Popov

Clinical Centre of Allergology  
SUH 'Alexandrovska' Medical University  
1, 'Georgy Sofiyiski' St.

Bulgaria

### Roles:

- National Coordinator for Bulgaria
- Phase Three Principal Investigator for Sofia



## Cameroon, Africa

Centres:	Phase:	PI:	Age Groups
Yaounde	3	Professor Christopher Kuaban	13-14

### National Coordinator:

#### Professor Christopher Kuaban

Faculty of Medicine  
University of Yaounde  
Centre Pasteur DU  
B.P. 4021  
Cameroon

### Roles:

- National Coordinator for Cameroon
- Phase Three Principal Investigator for Yaounde

## ISAAC in Yaounde, Cameroon

Cameroon is a small central African country with a population presently estimated at 20 million inhabitants. Asthma is not an uncommon disease in the country but before the ISAAC adventure only a limited number of hospital based studies had been carried out in the country. Consequently, the magnitude of asthma and allergies in Cameroon is not known. When we therefore heard about it, we thought it was an opportunity that would let us have real data about the prevalence of these diseases in our country.

We learnt about ISAAC Phase Three through Professor Nadia Ait-Khaled, the regional coordinator for francophone African countries and without hesitation decided we would participate in the venture. Our regional coordinator then asked us to register with the ISAAC steering committee in New Zealand. This was immediately done. She also asked us to help in the translation of the core questionnaire as well as the environmental questionnaire from English to French given that in Cameroon we speak and write the two languages. We willingly did the translation. But our hopes were dashed as we were told after this that we had to look for funding ourselves for the survey. Thanks to Dr Juergen Noeske, a colleague with whom I have worked for several years, we were able to obtain funding from the German Development Cooperation (GTZ, presently GIZ).

We designed our survey to be carried out in the West Region of Cameroon because in the previous years we had conducted several prevalence and operational studies there particularly in the field of tuberculosis. In this region we chose Bafoussam, the regional capital city and the third largest town of Cameroon in terms of population as our study site. All the 13-14 year old children in the 12 high schools found in the Bafoussam municipality were to be studied. We finally conducted the survey in May 2003, recruiting 2083 children out of a total of 3291 registered in these schools. Our data base was later on sent to the steering committee in New Zealand where after several correspondences checking on some inconsistencies in our data base, our data was finally validated.

Thanks to ISAAC and the publications that followed, we now have real data on the prevalence of asthma and allergies for our country. These findings have permitted us to compare our situation in this domain to that of other countries that participated in the ISAAC study. These results have also been communicated to our Ministry of Public Health and have led to asthma being packaged alongside other non communicable diseases as a major public health problem. Finally, the results of the study have given us baseline information for future interventions in the field of asthma and allergies.

Regional

National

**Bulgaria**

**Cameroon**

Local

# The ISAAC Story



- Regional
- National
- Cameroon**
- Canada
- Local

## Acknowledgements

We wish to thank immensely the education administrative authorities of the West Region of Cameroon as well as teachers and children who made it possible through their cooperation for us to realize this survey. We gratefully acknowledge financial support given us for this survey by the German Development Cooperation (GIZ). We wish to thank immensely the team of our fieldworkers for all they worked to make the survey a success.

## Canada, North America

Centres:	Phase:	PI:	Age Groups
Hamilton	1	Professor Malcolm R Sears	6-7
Saskatoon	1	Dr Brett Taylor	13-14, 6-7
Saskatoon	3	Professor Donna Rennie	13-14, 6-7
Vancouver	3	Professor Alex Ferguson	13-14

### National Coordinator: Professor Malcolm R Sears

St. Joseph's Healthcare  
Firestone Institute for Respiratory Health

Canada



#### Roles:

- National Coordinator for Canada
- Phase One Principal Investigator for Hamilton

## THE ISAAC STORY – CANADA UPDATE

Phase I was conducted in two centres – Hamilton (Professor Malcolm Sears, National Coordinator for Canada, and Dr Marcia Pizzichini) and Saskatoon (Dr Brett Taylor, Dr Donna Rennie, Dr Ambikaipakan Sentilselvan, Dr Brian Habbick) in both 6-7 yr olds (Grade 1) and 13-13 yr olds (Grade 8).

Phase I was conducted from 1993-1994. Response rates were 75.1% among 6-7 year olds and 68.6% among 13-14 year olds, with 3337, 3051, 2418 and 1901 subjects participating in younger and older age groups in Hamilton and Saskatoon respectively.

Two publications arose from the Canadian Phase 1 data:

- Habbick BF, Pizzichini MMM, Taylor B, Rennie D, Senthilselvan A, Sears MR. Prevalence of asthma, rhinitis and eczema among children in 2 Canadian cities: the International Study of Asthma and Allergies in Childhood. *Can Med Assoc J.* 1999; 160:1824-1828.
  - High prevalence rates of asthma, rhinitis and eczema were found in both cities, similar to rates in other Western countries, with up to 30% reporting wheezing in the previous 12 months
- Pizzichini MMM, Rennie D, Senthilselvan A, Taylor B, Habbick BF, Sears MR. Limited agreement between written and video asthma symptom questionnaires. *Ped Pulmonol* 2000;30:307-312.
  - This paper concluded that the video questionnaire yielded lower reported prevalence rates for asthma symptoms, and that there is limited agreement between responses to the two questionnaires that is not explained by issues of language, culture or literacy.

Phase II was not undertaken by any centre in Canada



## National Publications

The following publications used ISAAC data from Canada:

Habbick BF, Pizzichini MM, Taylor B, Rennie D, Senthilselvan A, Sears MR. *Prevalence of asthma, hay fever and eczema in children in two Canadian cities: the ISAAC study.* *CMAJ* 1999; 160: 1824-1829.

Pizzichini MM, Rennie D, Senthilselvan A, Taylor B, Habbick BF, Sears MR. *Limited agreement between written and video asthma symptom questionnaires.* *Pediatr Pulmonol* 2000; 30(4): 307-12.

Wang HY, Wong GW, Chen YZ, Ferguson A, Greene J, Ma Y, Zhong NS, Lai CKW, Sears M. *Prevalence of asthma among Chinese adolescents living in Canada and in China.* *CMAJ* 2008 179: 1133-1142.

Wang H-Y, Pizzichini MMM, Becker AB, Duncan JM, Ferguson AC, Greene JM, Rennie DC, Senthilselvan A, Taylor BW, Sears MR. *Disparate geographic prevalences of asthma, allergic rhinoconjunctivitis and atopic eczema among adolescents in five Canadian cities.* *Pediatr Allergy Immunol* 2010; 21(5): 867-877.

# The ISAAC Story

Phase III was again coordinated by Professor Malcolm Sears, with five participating centres from the east coast to the west – Halifax (Dr Brett Taylor), Hamilton (Dr Malcolm Sears), Winnipeg (Dr Allan Becker), Saskatoon (Dr Donna Rennie, Dr Ambikaipakan Sentilselvan), and Vancouver (Dr Alexander Ferguson). All centres recruited 13-14 yr olds (Grade 8) and four centres recruited 6-7 yr olds (Grade 1). The multiplicity of parental languages in Vancouver precluded developing questionnaires for 6-7 year olds, whereas 1-14 yr olds were sufficiently competent in English to use that version only. Recruitment across all sites was much more difficult than in Phase I, and only Vancouver (which used passive consent whereas the other 4 centers were all obligated by their Research Ethics Boards to use active parental consent) achieved a sufficient response rate to be included in the international study statistics.

Despite the low response rates, two useful publications arose from Phase III in Canada

Wang H-Y, Wong GWK, Chen Y-Z, Ferguson AC, Greene JM, Ma Y, Zhong N-S, Lai CKW, Sears MR. Prevalence of asthma among Chinese adolescents living in Canada and in China. *Can Med Assoc J* 2008;179:1133-1142

Asthma symptoms in Chinese adolescents were lowest among residents of mainland China, were greater for those in Hong Kong and those who had immigrated to Canada, and were highest among those born in Canada, suggesting environmental factors and duration of exposure influence asthma prevalence

Wang H-Y, Pizzichini MMM, Becker AB, Duncan JM, Ferguson AC, Greene JM, Rennie DC, Senthilselvan A, Taylor BW, Sears MR. Disparate geographic prevalences of asthma, allergic rhinoconjunctivitis and atopic eczema among adolescents in 5 Canadian cities. *Pediatr Allergy Immunol* 2010;21:867-877

The highest prevalence rates for allergic rhinoconjunctivitis or atopic eczema were not in the same regions as the highest prevalence rates of wheezing

Regional

National

Canada

Channel

Islands

Local



## National Publications

The following publications used ISAAC data from Channel Islands:

Anderson HR, Ruggles R, Strachan DP, Austin JB, Burr M, Jeffs D, Standring P, Steriu A, Goulding R. *Trends in prevalence of symptoms of asthma, hay fever, and eczema in 12-14 year olds in the British Isles, 1995-2002 a questionnaire survey.* *BMJ* 2004; 328(7447): 1052-3.

## Channel Islands, Western Europe

Centres:	Phase:	PI:	Age Groups
Guernsey	1	Dr David Jeffs	13-14
Jersey	1	Dr Richard Grainger	13-14
Guernsey	3	Dr Peter Standring	13-14
Jersey	3	Ms Rosie Goulding	13-14

### National Coordinator:

#### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and  
MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
Channel Islands



#### Roles:

- ISAAC Steering Committee
- National Coordinator for Channel Islands

# The ISAAC Story



Regional  
National  
**Chile**  
China  
Local

## Chile, Latin America

Centres:	Phase:	PI:	Age Groups
Central Santiago	1	Dr Ignacio Sanchez	13-14, 6-7
Punta Arenas	1	Dr Lidia Amarales	13-14, 6-7
South Santiago	1	Dra Eliana Cortez	13-14, 6-7
Valdivia	1	Dr Mario A Calvo	13-14, 6-7
Calama	3	Dr Luis Alberto Vera Benavides	13-14
Chiloe	3	Dra Amanda Contreras	13-14
Punta Arenas	3	Dr Lidia Amarales	13-14, 6-7
South Santiago	3	Dr Pedro Aguilar	13-14, 6-7
Valdivia	3	Dr Mario A Calvo	13-14, 6-7

### National Coordinator: Professor Javier Mallol

Department of Pediatric Respiratory  
Medicine  
Hospital CRS El Pino  
University of Santiago de Chile (USACH)  
Avenida Alberto Hurtado 13560  
Chile



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Latin America
- National Coordinator for Chile

### National Coordinator: Dra Viviana Aguirre

Departamento de Medicina Respiratoria Infantil  
Hospital CRS El Pino  
Avenida Los Morros 13560  
San Bernardo  
Chile

#### Roles:

- National Coordinator for Chile



### National Publications

The following publications used ISAAC data from Chile:

Mallol J, Cortez E, Amarales L, Sánchez I, Calvo M, et al. *Prevalence of asthma in Chilean schoolchildren. Descriptive study from 24,470 children* ISAAC-Chile. Rev Med Chil.2000; 128: 279-85.

Mallol J, Aguirre V, Aguilar P, Calvo M, Amarales L, Arellano P, Palma R. *Changes in the prevalence of asthma in Chilean school age children between 1994 and 2002. International Study of Asthma and Allergies in Childhood (ISAAC)--Chile phases I and III*. Rev Med Chil.2007 May;135(5):580-6. Epub Jul 2007. Spanish.

## China, Asia-Pacific

Centres:	Phase:	PI:	Age Groups
Beijing	1	Professor Yu-Zhi Chen	13-14
Chongqing	1	Professor Kun-Hua Chen	13-14
Guangzhou	1	Professor Nan-Shan Zhong	13-14
Shanghai	1	Dr Mao Bao-Shan	13-14
Wulumuqi	1	Professor Man-Lin Xiao	13-14
Beijing	2	Professor Yu-Zhi Chen	10-11
Guangzhou	2	Professor Nan-Shan Zhong	10-11
Beijing	3	Professor Yu-Zhi Chen	13-14
Guangzhou	3	Professor Nan-Shan Zhong	13-14
Tibet	3	Assistant Professor Osamu Kunii	13-14
Tong Zhou	3	Professor Yu-Zhi Chen	13-14
Wulumuqi(9)	3	Dr Qiao Li Pan	13-14

### National Coordinator: Professor Yu-Zhi Chen

Capital Institute of Pediatrics

No 2 Ya Bao Road  
Beijing  
China



#### Roles:

- National Coordinator for China
- Phase One Principal Investigator for Beijing
- Phase Two Principal Investigator for Beijing
- Phase Three Principal Investigator for Beijing, Tong Zhou



# The ISAAC Story

## ISAAC in China

China is a very large country, and there were several studies about asthma prevalence in 1990 and also in 2000. A nationwide and randomized survey on the prevalence of childhood asthma in 2000, compared with the same study in 1990, covered 31 provinces and 43 cities, including a population of 437873 children aged 0-14 years. The results show us that there was a concerning increase in asthma prevalence. But they had a different methodology than ISAAC Study. For this reason we considered it very important to join ISAAC. We thought joining the ISAAC study would let us get data about asthma and allergies prevalence in different cities in China and give us the opportunity of comparing our data with the data of other countries involved in this study. With ISAAC we also expected to achieve a better understanding and treatment of our patients.

When we knew that an international study about asthma and allergies was being prepared. We were very enthusiastic about including 5 cities of mainland China in that study in 1994 ISAAC Phase One. The 5 cities were Beijing, Shanghai, Guangzhou, Chongqing and Urumqi, and we worked very hard do the study.

In ISAAC Phase Two study, as the study was more difficult than Phase One, and only needed a few centres to take part in it, we chose 2 centres, Beijing and Guangzhou, to join the Phase Two study. Especially, our team did a lot of difficult work in the study. For example, in the dust collection work, you could imagine how hard it was to go to 200 children's home when the pupils were dismissed from school, and to get the dust from those children's bed, floor, etc.

In Phase Three China, a new centre, Tongzhou (Beijing rural) was added to the study in the 13-14 years group. Tongzhou is an area about 50km away from the Beijing urban city that included children from farmland. It was very important to have the centre within the study, so we could compare the result of Tongzhou with Beijing urban city, and to have a better understanding of the prevalence and mechanism of asthma and allergic diseases. And finally, we found that the wheezing and allergic diseases prevalence were much lower in rural Beijing students than in urban Beijing students, and also the prevalence of positive allergy of SPT was much lower in rural Beijing students than in urban Beijing students.

Overall, in 12 years of ISAAC Study from Phase I to Phase III, about 90,000 Chinese children joined the study, and 25,000 Beijing children joined the study.

And more, for the I-III ISAAC Study, we got the award of "Science and Technology Advancement Prize" awarded by the Beijing Municipal Government in 2006, and received 20000 RMB prize.

## National Publications

The following publications used ISAAC data from China:

Zhao T, Wang HJ, Chen Y, Xiao M, Duo L, Liu G, Lau Y, Karlberg J. *Prevalence of childhood asthma, allergic rhinitis and eczema in Urumqi and Beijing*. J Paediatr Ch Health 2000; 36(2): 128-33.

Wong GW, Hui DS, Chan HH, Fok TF, Leung R, Zhong NS, Chen YZ, Lai CK. *Prevalence of respiratory and atopic disorders in Chinese schoolchildren*. Clin Exp Allergy. 2001 Aug;31(8):1225-31.

Wong GWK, Hui DSC, Tam CM, Chan HH, Fok TF, Chan-Yeung M, Lai CKW. *Asthma, atopy and tuberculin responses in Chinese schoolchildren in Hong Kong*. Thorax 2001; 56(10): 770-773

Wong GW, Li ST, Hui DS, Fok TF, Zhong NS, Chen YZ, Lai CK. *Individual allergens as risk factors for asthma and bronchial hyperresponsiveness in Chinese children*. Eur Respir J. 2002 Feb;19(2):288-93.

Chen YZ, Wang HY, Wang HJ, Ma Y, Li S, Zhao J, Zhong NS, Huang YJ, Huo TH, Lai QW. *[Prevalence of respiratory and atopic disorders in Chinese school children]*. Chin J Tuberc Respir Dis. 2003 Mar;26(3):143-7. Chinese.

Chen YZ, Ma Y, Wang HY, Wang HJ, Zhao J, Cao L, Li S, Wong GW, Zhong NS, Fok TF, Lai CK. *[Individual allergens as risk factors for asthma and bronchial hyperresponsiveness in Chinese children]*. [Chinese]. Zhonghua Erke Zazhi. 2003 Jul. 41(7):538-41.

Wong GW, Ko FW, Hui DS, Fok TF, Carr D, von Mutius E, Zhong NS, Chen YZ, Lai CK. *Factors associated with difference in prevalence of asthma in children from three cities in China: multicentre epidemiological survey*. BMJ 2004; 329(7464): 486.

Wang HY, Chen YZ, Ma Y, Wong GW, Lai CK, Zhong NS. *[Disparity of asthma prevalence in Chinese schoolchildren is due to differences in lifestyle factors]*. Zhonghua Er Ke Za Zhi. 2006 Jan;44(1):41-5. Chinese.

Wang HY, Wong GW, Chen YZ, Ferguson A, Greene J, Ma Y, Zhong NS, Lai CKW, Sears M. *Prevalence of asthma among Chinese adolescents living in Canada and in China*. CMAJ 2008 179: 1133-1142.

Regional

National

China

Local

# The ISAAC Story

Regional

National

Colombia

Republique

Democratique

du Congo

Local

## Colombia, Latin America

Centres:	Phase:	PI:	Age Groups
Barranquilla	3	Dr Alfonso M Cepeda	13-14, 6-7
Bogotá	3	Dr Gustavo Aristizábal	13-14, 6-7
Cali	3	Dr Gustavo A Ordoñez	13-14, 6-7

Colombia has no National Coordinator



## Republique Democratique du Congo, Africa

Centres:	Phase:	PI:	Age Groups
Kinshasa	3	Prof Dr Jean-Marie Kayembe	13-14

### National Coordinator:

**Dr Etienne Bahati**

Director, PMLT

Republique Democratique du Congo

### Roles:

- National Coordinator for Republique Democratique du Congo



### National Coordinator:

**Dr Jean Paul Okiata**

Directeur du PNT RDCongo

Republique Democratique du Congo

### Roles:

- National Coordinator for Republique Democratique du Congo

Replaced Etienne Bahati in 2011

## ISAAC In DR Congo

Kinshasa, the capital of D R Congo is a big country with almost ten million habitants. The ISAAC Phase Three survey was conducted under the supervision of the Faculty of Medicine (University of Kinshasa) and the Public health school of Kinshasa for statistical analyses.

This was the first survey on allergy in schoolchildren and the selected schools were chosen with the assistance of the ministry of education. Resident students in the last year at the faculty of medicine were included for data collection among schoolchildren and all the parts of the town were concerned. French is the teaching language but we encountered many difficulties due to a poor understanding of some questions which were translated in local languages. Some schools are very far from the centre and access is limited.

Data collected are very helpful and an ongoing study is now conducted by Dr Kapinga to analyze the level of asthma control in adults in Kinshasa. Three workshops have been organized in Kinshasa under the umbrella of pharmaceutical industry (Glaxo Smith Kline) and data from the ISAAC survey were presented.

We are interested in future collaboration at the level of all sub-saharan Africa and a survey on respiratory health will take place in Kinshasa next July

Prof J M Kayembe

# The ISAAC Story



## Congo, Africa

Centres:	Phase:	PI:	Age Groups
Brazzaville	3	Professor Joseph M'Boussa	13-14

**Congo has no National Coordinator**



## Cook Islands, Oceania

Centres:	Phase:	PI:	Age Groups
Rarotonga	3	Dr Roro Daniel	13-14

**National Coordinator:**

### Dr Roro Daniel

Health Manager  
Ministry of Health, Cook Islands  
Box 109  
Avarua  
Cook Islands

**Roles:**

- National Coordinator for Cook Islands
- Phase Three Principal Investigator for Rarotonga



## Costa Rica, Latin America

Centres:	Phase:	PI:	Age Groups
Costa Rica	1	Dr Manuel E Soto-Quirós	13-14, 6-7
Costa Rica	3	Dr Manuel E Soto-Quirós	13-14, 6-7

**National Coordinator:**

### Dr Manuel E Soto-Quirós

Unidad de Enseñanza  
Hospital Nacional de Niños  
PO Box 1654-1000

Costa Rica



**Roles:**

- National Coordinator for Costa Rica
- Phase One Principal Investigator for Costa Rica
- Phase Three Principal Investigator for Costa Rica

## National Publications

The following publications used ISAAC data from Costa Rica:

Celedon JC, Soto-Quirós ME, Silverman EK, Hanson L, Weiss ST. *Risk factors for childhood asthma in Costa Rica*. Chest.120(3):785-90, 2001 Sep.

Soto-Quirós ME, Silverman EK, Hanson LA, Weiss ST, Celedon JC. *Maternal history, sensitization to allergens, and current wheezing, rhinitis, and eczema among children in Costa Rica*. Pediatr Pulmonol.2002 Apr;33(4):237-43.

Soto-Quirós ME, Soto-Martínez M, Hanson LA. *Epidemiological studies of the very high prevalence of asthma and related symptoms among school children in Costa Rica from 1989 to 1998*. Pediatr Allergy Immunol.2002 Oct;13(5):342-9.

Regional  
National

**Congo**  
Cook Islands  
Costa Rica

Local



# The ISAAC Story

Regional

National

Côte D'Ivoire

Croatia

Cuba

Local

## Cote d'Ivoire, Africa

Centres:	Phase:	PI:	Age Groups
Urban Cote d Ivoire	3	Dr Bernard Ngoran Koffi	13-14

### National Coordinator:

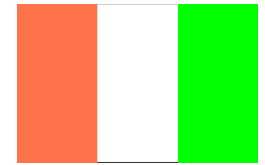
**Dr Bernard Ngoran Koffi**

27 BP 340

Côte D'Ivoire

### Roles:

- National Coordinator for Côte D'Ivoire
- Phase Three Principal Investigator for Urban Cote d Ivoire



## Croatia, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Rijeka	3	Dr Kristina Lah Tomulic	13-14, 6-7

### National Coordinator:

**Professor Vladimir Ahel**

Department of Paediatrics  
Children's Hospital Kantrida  
Istarska 43

Croatia

### Roles:

- National Coordinator for Croatia



## Cuba, Latin America

Centres:	Phase:	PI:	Age Groups
La Habana	3	Dra Patricia Varona Pérez	13-14, 6-7

### National Coordinator:

**Dra Patricia Varona Pérez**

J'Grupo de Epidemiología de la División  
Epidemiología y Salud Publica de INHEM  
Instituto Naconal de Higiene Epidemiología y  
Microbiología (INHEM)  
Infanta # 1158 e/  
Clavel y Llinás  
Cuba

### Roles:

- National Coordinator for Cuba
- Phase Three Principal Investigator for La Habana



### National Publications

The following publications used ISAAC data from Cuba:

Fabre Ortiz D, Varona Pérez P, Suárez Medina R. *[Prevalence of asthma in Cuban adolescents by different clinical criteria]*. Rev Alerg Mex.2005 May-Jun;52(3):132-7.Spanish.

# The ISAAC Story



## Ecuador, Latin America

Centres:	Phase:	PI:	Age Groups
Pichincha	2	Dr Phillip Cooper	7-17
Guayaquil	3	Dr César Bustos	13-14
Quito	3	Dr Sergio Barba	13-14, 6-7

### National Coordinator:

#### Dr Sergio Barba

Ecuadorian Allergy and Asthma Association

260 Vozandes  
 AXXIS-Medical centre of. 509  
 Ecuador



#### Roles:

- National Coordinator for Ecuador
- Phase Three Principal Investigator for Quito

Like others places in the world, the study of allergic diseases until the last century were tailored with anarchic protocols and we felt that all were segmental and with many biases, which prevented correlation with other studies performed in other countries.

On behalf of the Ecuadorian Society of Allergy, Immunology and Allied Sciences (SEAICA), Dr. Sergio Barba MD, the President, contacted Javier Mallol MD, Regional Coordinator of ISAAC and through him with the International Program obtained the best support to undertake the ISAAC Three-b study since we had not participated in ISAAC Phase One. The first action was to make an adaptation to Ecuadorian terms the questionnaire implemented in the regional study. Then we made contact with researchers of Mind Marketing, an Institution that had experience with us in other studies of allergies in our country.

With them, we planned the ISAAC WORK PLAN: we asked the Ministry of Education for the database of the primary and secondary schools of the urban area of the city, then separated the city into three sectors: North, Center and South and with socio-economic information of INEC (National Institute of Statistics and Census) we chose 40 establishments that represented the city demographically. Then we had an interview with rectors, directors and scholar physicians; we trained teachers about the questions of the poll, started the survey and sent the questions to parents of children aged 6-7 years old. With the teen's group, we gathered the students in a classroom and displayed the video. When they answered the questionnaire, with the help of an ISAAC investigator, they completed the second part of the document.

As an initiative of the SEAICA, we donated to the participating schools a First Aid Kit to thank them for their participation in the study.

The survey was finished in about 7 weeks, and then it was analyzed and sent to the ISAAC International Data Centre. Subsequently we made a few clarifications and successfully completed Phase Three-b in Quito, whose local coordinator was appointed as National Coordinator for this research.

It is important to acknowledge the support provided by the ISAAC international Data Centre. I believe that is important to emphasize that we do not receive financial aid from any pharmaceutical group to complete the work. We currently have the desire to make a new study (10 years later), and to be involved in the ISAAC Phase IV.



## Egypt, Eastern Mediterranean

Centres:	Phase:	PI:	Age Groups
Cairo	3	Dr Maggie Louis Naguib	13-14

### Egypt has no National Coordinator

Regional

National

**Ecuador**

**Egypt**

Local



# The ISAAC Story

Regional

National

**El Salvador**

**Estonia**

Local

## El Salvador, Latin America

Centres:	Phase:	PI:	Age Groups
San Salvador	3	Dr Margarita Figueroa Colorado	13-14, 6-7

### National Coordinator:

#### Dr Margarita Figueroa Colorado

Hospital Nacional San Rafael

Instituto de Ojos Blvd.  
Tutunichapa N 326  
El Salvador



#### Roles:

- National Coordinator for El Salvador
- Phase Three Principal Investigator for San Salvador



In September 1994, I knew the ISAAC project and its protocol to determine the incidence of Asthma and Allergy in the world. IN 2001 the ERS Congress in Berlin, Phillippa Ellwood, Innes Asher, Javier Mallol, was presented as Coordinator for Latin America for the ISAAC III.

Since that time it was a challenge for me, develop the study to determine first the Incidence of Asthma and Allergies in my country El Salvador. Start with the planning of the survey, supported by the University Doctor José Matías Delgado, with Dr. Clifton Huang and his group of enthusiastic students who conducted the survey.

Today our group has grown and consolidates. In the picture, in the front: Coordinator: Margarita Figueroa, William Hoyos, Reseacher , behind , Pablo Salazar, Reseacher, Mauricio Flores, Pediatric Allergist.

## Estonia, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Narva	1	Dr Mall-Anne Riiikjäv	13-14
Tallinn	1	Dr Mall-Anne Riiikjäv	13-14, 6-7
Tallinn	2	Dr Mall-Anne Riiikjäv	10
Tallinn	3	Dr Mall-Anne Riiikjäv	13-14, 6-7

### National Coordinator:

#### Dr Mall-Anne Riiikjäv

Clinical Director  
Tallinn Children's Hospital  
Tervise, 28

Estonia



#### Roles:

- National Coordinator for Estonia
- Phase One Principal Investigator for Narva, Tallinn
- Phase Two Principal Investigator for Tallinn
- Phase Three Principal Investigator for Tallinn



### National Publications

The following publications used ISAAC data from Estonia:

Annus T, Björkstén B, Mai XM, Nilsson L, Riiikjäv MA, Sandin A, Bråbäck L. *Wheezing in relation to atopy and environmental factors in Estonian and Swedish schoolchildren.* Clin Exp Allergy 2003; 31(12): 1846-53.

Sandin A, Annus T, Björkstén B, Nilsson L, Riiikjäv MA, van Hage-Hamsten M, Bråbäck L. *Prevalence of self-reported food allergy and IgE antibodies to food allergens in Swedish and Estonian schoolchildren.* Eur J Clin Nutr.2005 Mar;59(3):399-403.

### ISAAC in Estonia (East Europa)

Estonia was a socialist country, which regained its independence in 1991. In these days Estonian pediatricians met prof. Bengt Björkstén, who initiated the first epidemiological study of asthma and allergies in Estonian children. He encouraged us also to take part in the international study ISAAC, which we accepted with great enthusiasm. It was especially important for us that prof. Björkstén found the resources for the study, as the economical situation in Estonia in these times was very difficult. The group of field workers was formed from pediatricians, who did the demanding field work in addition to their everyday clinical work. Such a study in schools was rather unusual, but the school staff accepted the study group intervention into the everyday school activities rather calmly. In data processing we were pleased to receive help from an experienced statistician, whose qualified collaboration enabled us to forward high quality data to the ISAAC center.

The positive experience from the ISAAC I encouraged us also to take part in the next phases of ISAAC. The ISAAC II study with its multiple tasks and procedures was rather challenging for our small group of field workers. However, we don't remember any exceptional situations and the schoolchildren were always eager to get the reason to miss their lessons.

# The ISAAC Story

Participating in the ISAAC studies was an enriching experience in many ways for Estonian pediatricians. It was the first experience in the international scientific cooperation for us. Using the internationally accepted methods we got reliable data about the epidemiological situation on asthma and allergies in Estonian children. Several papers in international scientific journals and a doctoral thesis were based on the research data. We believe that the data from Estonia, a country in transition from socialism to the market economy, were a valuable addition to the international comparison. Such data gave the reason to the hypothesis that socialism protects from allergies.

We gratefully acknowledge prof. Bengt Björkstén, who opened the door to the International allergy world for us and warranted the financial support for the studies. We also thank the schools and families of the participating children. Our study wouldn't have been possible without enthusiastic team of pediatricians who bore the main burden.

Regional

National

Estonia

Ethiopia

Fiji

Finland

Local



## Ethiopia, Africa

Centres:	Phase:	PI:	Age Groups
Addis Ababa	1	Associate Professor Kibrebeal Melaku	13-14
Jima	1	Professor Berhane Seyoum	13-14
Addis Ababa	3	Associate Professor Kibrebeal Melaku	13-14

### Ethiopia has no National Coordinator

### National Publications

The following publications used ISAAC data from Ethiopia:

Melaku K, Berhane Y. *Prevalence of wheeze and asthma related symptoms among school children in Addis Ababa, Ethiopia*. Ethiop Med J.1999 Oct;37(4):247-54.

Haileamlak A, Lewis SA, Britton J, Venn AJ, Woldemariam D, Hubbard R, Williams HC. *Validation of the International Study of Asthma and Allergies in Children (ISAAC) and U.K. Criteria for atopic eczema in Ethiopian children*. Br J Dermatol 2005; 152(4): 735-41.



## Fiji, Oceania

Centres:	Phase:	PI:	Age Groups
Suva	3	Dr Rosalina Sa'aga-Banuve	13-14

### National Coordinator:

### Dr Lepani Waqatakirewa

Children's Hospital  
Government Buildings  
PO Box 2223

Fiji

### Roles:

- National Coordinator for Fiji



## Finland, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Helsinki	1	Dr Merja Kajosaari	13-14
Kuopio County	1	Dr Juha Pekkanen	13-14
Lapland Area	1	Dr Leena Soiminen	13-14
Turku and Pori County	1	Dr Turku Antti Koivikko	13-14
Kuopio County	3	Dr Juha Pekkanen	13-14

### National Coordinator:

### Dr Juha Pekkanen

Head, Department of Environmental  
Epidemiology  
National Public Health Institute  
KTL, P.O. Box 95

Finland

### Roles:

- National Coordinator for Finland
- Phase One Principal Investigator for Kuopio County
- Phase Three Principal Investigator for Kuopio County

# The ISAAC Story

Regional

National

Finland

France

Local

## National Publications

The following publications used ISAAC data from Finland:

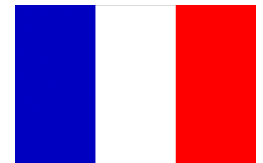
Pekkanen J, Remes ST, Husman T, Lindberg M, Kajosaari M, Koivikko A, Soininen L. *Prevalence of asthma symptoms in video and written questionnaires among children in four regions of Finland*. Eur Respir J 1997; 10(8): 1787-94.

Remes ST, Korppi M, Kajosaari M, Koivikko A, Soininen L, Pekkanen J. *Prevalence of allergic rhinitis and atopic dermatitis among children in four regions of Finland*. Allergy 1998; 53(7): 682-689.

Remes ST, Pekkanen J, Soininen L, Kajosaari M, Husman T, Koivikko A. *Does heredity modify the association between farming and allergy in children?* Acta Paediatr.2002;91(11):1163-9.

## France, Western Europe

Centres:	Phase:	PI:	Age Groups
Marseille	1	Professor Denis Charpin	13-14
Montpellier	1	Professor Philippe Godard	13-14
Pessac	1	Professor André Taytard	13-14, 6-7
Strasbourg	1	Dr Christine Kopferschmitt-Kubler	13-14
West Marne	1	Dr Isabella Annesi-Maesano	13-14
Créteil	2	Dr Isabella Annesi-Maesano	10-11 yrs.



## National Coordinator:

### Dr Isabella Annesi-Maesano

EPAR Dept, INSERM, UMR- S 707  
Faculté de Médecine Pierre et Marie Curie  
Site Saint-Antoine  
27 rue Chaligny 75571  
France

#### Roles:

- National Coordinator for France
- Phase One Principal Investigator for West Marne
- Phase Two Principal Investigator for Créteil

## National Coordinator:

### Professor Denis Charpin

Service de Pneumologie-Allergologie  
Hôpital Nord

France



#### Roles:

- National Coordinator for France
- Phase One Principal Investigator for Marseille

## ISAAC Phase One in France

Denis Charpin acted as the national coordinator for the French Phase 1 study and Isabella Annesi-Maesano for Phase 2.

Phase 1 was performed in France in 1993-1994. Five centers have been selected : Bordeaux, on the Atlantic coast, Créteil, near Paris, Reims, in the Champagne area, Strasbourg on the northeast border, and Marseille on the Mediterranean coast on the basis of these geographic locations, quite different climatic conditions and, of course, willingness to embark on a demanding survey. Overall, 8.697 children 6-7 years old and 18.555 children 13-14 years old have participated.

ISAAC has been the first national survey ever performed in France on asthma and allergy. Its results have been published in a supplement of the French review of respiratory diseases (Revue des maladies respiratoires) and the French « Bulletin épidémiologique hebdomadaire ». These results have clearly show to physicians, pharmaceuticals and the public that allergic diseases are by far the first chronic disease in childhood.

## National Publications

The following publications used ISAAC data from France:

Annesi-Maesano I, Orszczyn MP, Lanteaume A, Berlier M, Kopferschmitt Kubler MC, Godard P. *Prevalence and severity of allergic rhinitis in adolescents*. Rev Mal Respir 1997; 14(suppl.4): 4S23-4S31 [in French].

# The ISAAC Story

Charpin D, Annesi-Maesano I, Godard P, Kopferschmitt Kubler MC, Oryszczyn MP, Peray P, Quoix E, Raheison C, Taytard A, Vervloet D. *ISAAC survey. General presentation of the survey.* [in French]. Rev Mal Respir 1997; 14(suppl.4): 4S7-4S14.

Daures JP, Raheison C, Annesi-Maesano I, Berlier A, Lanteaume A, Taytard A. *Prevalence of asthma or signs suggestive of rhinitis in adolescents (13-14 years) in the ISAAC survey.* [in French]. Rev Mal Respir 1997; 14(suppl.4): 4S41-4S46.

Kopferschmitt Kubler MC, Nisand G, Raheison C, Tunon De Lara M, Taytard A, Pauli G. *Rhinitis in 6-7 year-old children. The ISAAC survey.* [in French]. Rev Mal Respir 1997; 14(suppl.4): 4S15-4S21.

Quoix E, Hedelin G, Kopferschmitt Kubler MC, Berlier M, Charpin D, Pauli G, Groupe ISAAC France. *Comparison between written and video questionnaires for assessment of asthma prevalence in adolescents.* [in French]. Rev Mal Respir 1997; 14(suppl.4): 4S61-4S66.

Raheison C, Tunon De Lara JM, Taytard A, Kopferschmitt Kubler MC, Quoix E, Pauli G. *Prevalence of asthma in children.* [in French]. Rev Mal Respir 1997; 14(suppl.4): 4S33-4S39.

Raheison C, Tunon De Lara JM, Vernejoux JM, Taytard A. *Management of asthma in a school population in Bordeaux.* [in French]. Rev Mal Respir 1997; 14(suppl.4): 4S67-4S72.

Annesi-Maesano I, Oryszczyn MP. *Rhinitis in adolescents. Results of the ISAAC survey.* Rev Fr Allergol Immunol Clin 1998; 38(4):283-289

Charpin D, Annesi-Maesano I, Godard P, Kubler MCK, Oryszczyn MP, Ray P, Quoix E, Raheison C, Taytard A, Vervloet D. *General description of the ISAAC study.* Rev Fr Allergol Immunol Clin 1998; 38(4):275-282

Koffi N, Aka J, Nigue L, Kouassi B, Ngom A, Amon-Dick F, Nibaud A, Fadiga A, Aka-Danguy E. *Prévalence des maladies allergiques de l'enfant : résultats de l'enquête ISAAC - Côte d'Ivoire phase I.* [French]. Rev Fr Allergol Immunol Clin 2000; 40(5):539-47.

Raheison C, Tunon-de-Lara JM, Vernejoux JM, Taytard A. *Practical evaluation of asthma exacerbation self-management in children and adolescents.* Respir Med.2000 Nov;94(11):1047-52.

Ramadour M, Burel C, Lanteaume A, Vervloet D, Charpin D, Dutau H, Brisse F. *Prevalence of asthma and rhinitis in relation to long-term exposure to gaseous air pollutants* Allergy 2000; 55(12): 1163-1169

Nguyen L, Raheison C, Vernejoux JM, Tunon-De-Lara JM, Taytard A. *[Impact of smoking habits on the every day life of asthmatic adolescents].* Rev Mal Respir.2002 Jun;19(3):301-9.

Prodanovic H, Raheison C, Vernejoux JM, Tunon de Lara JM, Taytard A. *[Does the presence of a pet at home influence the prevalence of asthma and rhinitis?].* Rev Mal Respir.2002 Dec;19(6):735-40.

Jouaville LF, Annesi-Maesano I, Nguyen LT, Bocage AS, Bedu M, Caillaud D. *Interrelationships among asthma, atopy, rhinitis and exhaled nitric oxide in a population-based sample of children.* Clin Exp Allergy 2003 Nov;33(11):1506-11.

Pénard-Morand C, Raheison C, Kopferschmitt C, Caillaud D, Lavaud F, Charpin D, Bousquet J, Annesi-Maesano I. *Prevalence of food allergy and its relationship to asthma and allergic rhinitis in schoolchildren* Allergy 2005; 60(9): 1165 - 1171

Pénard-Morand C, Charpin D, Raheison C, Kopferschmitt C, Caillaud D, Lavaud F, and Annesi-Maesano I. *Long-term exposure to background air pollution related to respiratory and allergic health in schoolchildren* Clin Exp Allergy 2005; 35(10): 1279-1287

Annesi-Maesano I, Moreau D, Caillaud D, Lavaud F, Le Moullec Y, Taytard A, Pauli G, Charpin D. *Residential proximity fine particles related to allergic sensitisation and asthma in primary school children* Respir Med 2007; 101: 1721-1729

Annesi-Maesano I, Caillaud D, Lavaud F, Moreau D, Le Moullec Y, Taytard A, Pauli G, Charpin D. *Exposure to fine air particles and occurrence of allergic diseases: Results of ISAAC-France phase 2.* Rev Fr Allergol Immunol Clin 2008; 48(6):427-433 Oct

Annesi-Maesano I, Caillaud D, Lavaud F, Moreau D, Le Moullec Y, Taytard A, Pauli G, Charpin D. *Exposure to fine air particles and occurrence of allergic diseases: Results of ISAAC-France phase 2.* Arch Pediatr 2009; 16(3):299-305.

Charpin D, Pénard-Morand C, Raheison C, Kopferschmitt C, Lavaud F, Caillaud D, Annesi-Maesano I. *Long-term exposure to urban air pollution measured through a dispersion model and the risk of asthma and allergy in children* Bull Acad Natl Med 2009; 193(6): 1317-1328

Randriamanantany ZA, Annesi-Maesano I, Moreau D, Raheison C, Charpin D, Kopferschmitt C, Lavaud F, Taytard A, De Blay F, Caillaud D. *Alternaria sensitization and allergic rhinitis with or without asthma in the French Six Cities study* Allergy 2010; 65: 368-375.

Pénard-Morand C, Raheison C, Charpin D, Kopferschmitt C, Lavaud F, Caillaud D, Annesi-Maesano I. *Long-term exposure to proximity air pollution and asthma and allergies in urban children* Eur Respir J Jan 2010; 36(1): 33-40 Epub January

Regional

National

France

Local

# The ISAAC Story

Regional

National

**French  
Polynesia**

Gabon

Georgia

Local

## French Polynesia, Oceania

Centres:	Phase:	PI:	Age Groups
Polynesie Francaise	3	Dr Isabella Annesi-Maesano	13-14

### National Coordinator:

**Dr René Chansin**

Directeur Institut Louis Malardé

French Polynesia

### Roles:

- National Coordinator for French Polynesia



## Gabon, Africa

Centres:	Phase:	PI:	Age Groups
Port-Gentil	3	Dr Isabelle Ekoume Hypolite	13-14

### National Coordinator:

**Dr Isabelle Ekoume Hypolite**

BP 428

Gabon

### Roles:

- National Coordinator for Gabon
- Phase Three Principal Investigator for Port-Gentil



## Georgia, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Kutaisi	1	Dr Nino Khetsuriani	13-14, 6-7
Tbilisi	1	Professor Amiran Gamkrelidze	13-14, 6-7
Tbilisi	2	Dr Maia Gotua	10-11 years
Kutaisi	3	Dr Maia Gotua	13-14, 6-7

### National Coordinator:

**Dr Maia Gotua**

Director  
Center of Allergy & Immunology  
2/6 Lubliana str.  
Tbilisi  
Georgia



### Roles:

- National Coordinator for Georgia
- Phase Two Principal Investigator for Tbilisi
- Phase Three Principal Investigator for Kutaisi



## National Publications

The following publications used ISAAC data from Georgia:

Abramidze T, Gotua M, Rukhadze M, Gamkrelidze A. *ISAAC I and III in Georgia time trends in prevalence of asthma and allergies*. Georgian Med News.2006 Aug;(137):80-2.

Abramidze T, Gotua M, Rukhadze M, Gamkrelidze A. *Prevalence of asthma and allergies among adolescents in Georgia comparison between two surveys*. Georgian Med News.2007 Mar;(144):38-41.

## Background

Georgia, which former was one of the Soviet Union countries, gained its independence in 1990 and faced most complicated political situations and hard economic conditions. Despite the mentioned Georgia was always opened to new researches, including epidemiological studies. The ISAAC regional coordinator for Northern and Eastern Europe professor Bengt Bjorksten kindly invited Georgia to participate in ISAAC study in 1994. This participation was defined according to the following key points: the lack of any epidemiological data regarding markers of allergy diseases for that time in Georgia; the interest to confirm the purpose that the prevalence of these diseases in Georgia should be much lower than in country with market economy (as it was revealed in the other less industrialized formerly socialist countries); as well as personal contact with Prof. Gamkrelidze and his team of highly-qualified allergologists at the Tbilisi State Medical University and later staff of Center of Allergy and Immunology.

# The ISAAC Story

## Impact of ISAAC

Involvement in a large global research project gave chance of new research, education and obtaining of practical experience to our country. It was extremely important for developing allergy and epidemiology fields in Georgia and learning new approaches of standardized high quality research. Participation in ISAAC expanded our professional contacts and was good opportunity for active exchanging of scientific knowledge with our colleagues in other countries.

## Findings

ISAAC Phase I and as well as ISAAC Phase III were conducted in two cities of Georgia – Tbilisi and Kutaisi, characterized by different geographical and urban peculiarities. The prevalence of symptoms of allergic diseases in Georgia according to the results of ISAAC I survey mostly was less than 5%. The exception was the prevalence of wheezing 12 months among 6-7 yrs. Old children (Kutaisi – 9.3%, Tbilisi -5.4%), which possibly could be less related to allergy and more associated with infections in the younger children. The regional differences (between two study centers) in symptoms were not obvious among 13-14 yrs. Old children. The 12 month prevalence of wheezing and conjunctivitis were slightly higher in Kutaisi than in Tbilisi among the 6-7 yr olds children.

ISAAC Phase II was performed in Tbilisi, in 2001-2002. The prevalence rate of asthma became 9.2%, the prevalence rate of 12 months of itchy rash and flexural dermatitis were 7.6% and 5.9%, respectively, which was higher than the prevalence of eczema symptoms reported in Georgia 6-7 years ago (ISAAC Phase I – 1995-1996). The prevalence of current rhinoconjunctivitis was increased as well (6.3% vs. 4.7%). An interesting finding was that the family history of allergic diseases and damp spots on the wall was the main determinants for all types of allergic symptoms as well as high co-morbidity of allergic diseases.

ISAAC Phase III was conducted in May 2003 – December 2003 in two centers. Unfortunately, Tbilisi center was excluded from the global data analysis. That was caused by very low response rate (46% - 13/14 yrs old group, 56% - 6/7 yrs old group) during the fieldwork period, due to the difficult political situation inside the country (so-called “Rose Revolution” located in Tbilisi). In order to reveal tendency of changes of allergic symptoms prevalence in our country we analyzed both centers. The results of ISAAC phase III study indicate that the epidemiological features of asthma and allergies in Georgia are changing, although the causes are still uncertain. Considerable geographic variation in time trends of prevalence of symptoms of asthma and allergies can be seen in both age groups (6/7 and 13/14 yrs old). The prevalence changes, particularly the increasing pattern, more clearly expressed in Tbilisi than in Kutaisi centre. Among adolescences in Kutaisi center only “current wheezing” increased from 1996 (3,6% (95%CI 3.1-4.1)) to 2003 (5.1% (95%CI 4.3-5.9)), the prevalence of all other allergic diseases decreased or remained without changes. It should be noted, that the prevalence of current wheezing among 6-7 yrs old children, in contrast to other age group, decreased by 2,4% (9,3% (1996) and 6,9% (2003)), the symptoms of current rhino-conjunctivitis slightly decreased and symptoms of flexural dermatitis reduced by 2.8% ( $p < 0.01$ ).

## References

1. Björkstén B, Dumitrascu D, Foucard T, Khetsuriani N, Khaitov R, Leja M, Lis G, Pekkanen J, Priftanji A, Riiikjäv MA. Prevalence of childhood asthma, rhinitis and eczema in Scandinavia and Eastern Europe. *Eur Respir J*. 1998 Aug; 12(2):432-7.
2. Weinmayr G, Weiland SK, Björkstén B, Brunekreef B, Büchele G, Cookson WO, Garcia-Marcos L, Gotua M, Gratzou C, van Hage M, von Mutius E, Riiikjäv MA, Rzehak P, Stein RT, Strachan DP, Tsanakas J, Wickens K, Wong GW; ISAAC Phase Two Study Group. Atopic sensitization and the international variation of asthma symptom prevalence in children. *Am J Respir Crit Care Med*. 2007 Sep 15; 176(6):565-74. Epub 2007 Jun 15.
3. Abramidze T, Gotua M, Rukhadze M, Gamkrelidze A. Prevalence of asthma and allergies among adolescences in Georgia: comparison between two surveys. *Georgian Med News*. 2007 Mar ;( 144):38-41

## Acknowledgment

We wish to thank Prof. Bengt Björkstén for a supervision and great support in carrying out of all phases of ISAAC study in Georgia. Many thanks to ISAAC group of University of Ulm under the leadership of Prof. Stephan Weiland and ISAAC group in Auckland for supporting in data entry and analysis. We are also grateful to all the children, parents and school staff who participated in the surveys.

Regional

National

Georgia

Local



# The ISAAC Story

## Germany, Western Europe

Centres:	Phase:	PI:	Age Groups
Greifswald	1	Professor Axel Kramer	13-14, 6-7
Münster	1	Prof Dr Ulrich Keil	13-14, 6-7
Dresden	2	Professor W Leopold	9-11
Munich	2	Professor Erika von Mutius	9-11
Münster	3	Prof Dr Ulrich Keil	13-14, 6-7

### National Coordinator:

#### Prof Dr Ulrich Keil

Institut für Epidemiologie und Sozialmedizin  
Westfälische Wilhelms Universität  
Domagkstrasse 3

Germany



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Western Europe
- National Coordinator for Germany
- Phase One Principal Investigator for Münster
- Phase Three Principal Investigator for Münster

#### Prof Dr med Stephan Weiland

Institute of Epidemiology  
Ulm University  
Helmholtzstr. 22

Germany



#### Roles:

- ISAAC Executive
- ISAAC Steering Committee
- National Coordinator for Germany

As we all know, ISAAC originated in Bochum, Auckland and London and therefore it is no surprise that the first ISAAC Study in Germany took place in Bochum. It was part of a pilot study which, besides Bochum comprised regions in New Zealand, Australia and England. The publication which originated from this pilot study has the title " Self-reported prevalence of asthma symptoms in children in Australia, England, Germany and New Zealand: An international comparison using the ISAAC written and video questionnaires." Eur Resp J 1993;6:1455-1461.

The ISAAC data from Bochum also helped producing another landmark paper, which deals with traffic density on street of residence and wheezing and symptoms of allergic rhinitis in children. The positive results derived from these data stimulated the debate on diesel exhaust and its relation to asthma and rhinitis symptoms in children. The respective publication has the title " Self-reported wheezing and allergic rhinitis in children and traffic density on street of residence" and appeared in Ann Epidemiol 1994; 4: 243-247.

In 1993 I moved from Bochum to Münster and therefore we organized the first ISAAC Phase One study in our new home town Münster. I was happy to secure funding for this study from the ministry of the environment of the state of North-Rhine Westphalia, the most populous state in the Federal Republic of Germany. (18 million)

The great political changes of 1989 and the 1990ies lead to the unification of Germany. In this context the universities in the eastern part of the country were evaluated by the German Wissenschaftsrat and among others I was asked to travel to Greifswald and help set up a community medicine program in the medical faculty of this old and prestigious university. As one can imagine ISAAC fitted very well in this community medicine program and I advised the medical faculty of the university of Greifswald to participate in the worldwide ISAAC project. Axel Kramer, professor of hygiene in Greifswald, became the principal investigator of ISAAC Greifswald and this is why Münster and Greifswald appear as the only German regions on the ISAAC world map publication in the Lancet in 1998.

The results concerning the prevalence of wheezing in Münster and Greifswald, respectively, corresponded to our expectations, namely higher prevalence figures in the west compared to the east. This was the situation in 1994/1995.

When ISAAC Phase Three came into being another cross sectional survey in Münster was performed in 2000 but the PI in Greifswald was unable to secure funding for another survey in this north eastern part of Germany. This is why time trends for asthma and allergies in the region of Greifswald are not available.

With hindsight it is sad to see that only two regions are representing Germany in ISAAC Phase One and only one region, namely Münster, is representing Germany in both ISAAC phases. Heinrich Duhme, my colleague in Münster, deserves special praise for having done such a wonderful job when organizing and carrying out the two cross sectional studies in Münster in 1994/1995 and 2000. For the ISAAC Phase One study Münster he received his PhD.

Regional

National

Germany

Local

# The ISAAC Story

Why is it that only two regions, namely Münster and Greifswald, are representing Germany on the world map of asthma and allergies? Well, the answer is quite simple: ISAAC Phase One and Three was too simple for the German mind. Most colleagues in this field, for example in Munich or Berlin, wanted to do more sophisticated studies with clinical examinations and hopefully a genetic component. In light of this, ISAAC Phase One and Three were clearly underestimated and the enthusiasm for this part of ISAAC in Germany was limited.

The big hit for the scientific community in Germany was the "Verbundstudie", which was a study on ten year olds in Munich and Dresden, promoted and funded by the Federal Ministry of Research and Technology, and organized and administered from Münster. This study contained a number of clinical assessments in ten year old participants and later on developed also a strong interest in genetic questions. From this German "Verbundstudie", whose origin was in Münster, ISAAC Phase Two developed and when Stephan Weiland moved from Münster to Ulm in 2002 he transferred administrative and scientific tasks of this project to his new university institute in Ulm.

Because of scarce resources for the funding of the "Verbundstudie" it was not possible to also establish a study centre in Münster and therefore ISAAC Phase Two by many scientists in Germany and elsewhere was not seen as a project which originated in Münster, but a project whose study centres are in Munich and Dresden, with a data centre and an administrative centre in Ulm for the worldwide ISAAC Phase Two study.

Obviously, the merits of ISAAC phases one and three are overwhelming and I am very proud that Germany is represented by two regions. By the way, I will never forget the exact year of ISAAC Phase One in Münster, namely the time 1994/1995, because my youngest daughter, who was born in 1981, participated in ISAAC Phase One Münster as a 13-14 year old adolescent.

The evaluation and appreciation of the merits of ISAAC Phase Two I will leave to others. My impression is that many expectations, especially those in the field of genetics have not (yet) been met.

Whenever I go to Berlin and pass by Gendarmenmarkt I vividly remember our ISAAC Steering Committee Meeting in 1997 at the Berlin-Brandenburgische Akademie and a very pleasant site visit to Potsdam. It was at this meeting in Berlin when Stephan Weiland was elected member of the ISAAC Executive. As we all know he served on this committee very successfully for about 10 years until his untimely death in 2007.

## National Publications

The following publications used ISAAC data from Germany:

Keil U, Weiland SK, Duhme H, Chambless L. *The International Study of Asthma and Allergies in Childhood (ISAAC): objectives and methods; results from German ISAAC centres concerning traffic density and wheezing and allergic rhinitis.* Toxicol Lett 1996; 86(2-3): 99-103.

Duhme H, Weiland SK, Rudolph P, Wienke A, Kramer A, Keil U. *Asthma and allergies among children in West and East Germany: a comparison between Münster and Greifswald using the ISAAC phase I protocol.* Eur Respir J 1998; 11(4): 840-7.

ISAAC. *ISAAC Phase II Modules.* Münster, Germany. May 1998.

Weiland SK, von Mutius E, Hirsch T, Duhme H, Fritsch C, Werner B, Hüsing A, Stender M, Renz H, Leupold W, Keil U. *Prevalence of respiratory and atopic disorders among children in the East and West of Germany five years after unification.* Eur Respir J 1999; 14(4): 862-70.

Wellie O, Duhme H, Streit U, von Mutius E, Keil U, Weiland SK. *Application of geographical information systems in epidemiological studies exemplified by the ISAAC study in Munich.* Gesundheitswesen. 2000 Aug-Sep;62(8-9):423-30. German.

Rzehak P *ISAAC Phase II Coding and Data Transfer Manual* Muenster/Ulm, Germany. October 2000

Liese AD, Hirsch T, von Mutius E, Keil U, Leupold W, Weiland SK. *Inverse association of overweight and breast feeding in 9 to 10-y-old children in Germany.* Int J Obes Relat Metab Disord. 2001 Nov;25(11):1644-50.

von Ehrenstein OS, von Mutius E, Maier E, Hirsch T, Carr D, Schaal W, Roscher AA, Olgemoller B, Nicolai T, Weiland SK. *Lung function of school children with low levels of alpha1-antitrypsin and tobacco smoke exposure.* Eur Respir J 2002; 19(6): 1099-106.

Maziak W, von Mutius E, Beimfohr C, Hirsch T, Leupold W, Keil U, Weiland SK. *The management of childhood asthma in the community.* Eur Respir J 2002 Dec; 20(6): 1476-82.

Renz H, von Mutius E, Illi S, Wolkers F, Hirsch T, Weiland SK. *T(H)1/T(H)2 immune response profiles differ between atopic children in eastern and western Germany.* J Allergy Clin Immunol 2002; 109(2): 338-42.

Maziak W, Behrens T, Brasky TM, Duhme H, Rzehak P, Weiland SK, Keil U. *Are asthma and allergies in children and adolescents increasing? Results from ISAAC phase I and phase III surveys in Munster, Germany.* Allergy 2003; 58(7): 572-9.

Regional

National

Germany

Local

# The ISAAC Story

Regional

National

Germany

Local

Nicolai T, Carr D, Weiland SK, Duhme H, von Ehrenstein O, Wagner C, von Mutius E. *Urban traffic and pollutant exposure related to respiratory outcomes and atopy in a large sample of children*. Eur Respir J 2003; 21(6):956-63.

Bolte G, Schmidt M, von Mutius E, Maziak M, Keil U, Nasca P, Weiland SK. *The relation of fetal growth with asthma, allergies and serum IgE levels in children at age 5-7 years*. Clin Exp Allergy 2004; 34(3):381-8.

Maziak W, von Mutius E, Keil U, Hirsch T, Leupold W, Rzehak P, Behrens T, Weiland SK. *Predictors of health care utilization of children with asthma in the community*. Pediatr Allergy Immunol 2004;15(2):166-71.

Behrens T, Maziak W, Weiland SK, Rzehak P, Siebert E, Keil U. *Symptoms of asthma and the home environment. The ISAAC I and III cross-sectional surveys in Munster, Germany*. Int Arch Allergy Immunol 2005 May;137(1):53-61.

Zutavern A, Hirsch T, Leupold W, Weiland SK, Keil U, von Mutius E. *Atopic dermatitis, extrinsic atopic dermatitis and the hygiene hypothesis: results from a cross-sectional study*. Clin Exp Allergy 2005;35:1301-1308.

Kabesch M, Schedel M, Carr D, Woitsch B, Fritsch C, Weiland SK, von Mutius E. *IL-4/IL-13 pathway genetics strongly influence serum IgE levels and childhood asthma*. J Allergy Clin Immunol 2006; 117(2):269-74.

Schedel M, Depner M, Schoen C, Weiland SK, Vogelberg C, Niggemann B, Lau S, Illig T, Klopp N, Wahn U, von Mutius E, Nickel R, Kabesch M. *The role of polymorphisms in ADAM33, a disintegrin and metalloprotease 33, in childhood asthma and lungfunction in two German populations*. Respir Res.2006 Jun 19;7:91.

Genuneit J, Weinmayr G, Radon K, Dressel H, Windstetter D, Rzehak P, Vogelberg C, Leupold W, Nowak D, von Mutius E, Weiland SK. *Smoking and the incidence of asthma during adolescence: Results of a large cohort study in Germany*. Thorax 2006 Jul; 61(7):572-8.

Radon K, Huemmer S, Dressel H, Windstetter D, Weinmayr G, Weiland SK, Riu E, Vogelberg C, Leupold W, von Mutius E, Goldberg M, Nowak D. *Do respiratory symptoms predict job choices in teenagers?* Eur Respir J 2006 Apr; 27(4):774-8.

Radon K, Riu E, Dressel H, Windstetter D, Weinmayr G, Weiland S, Vogelberg C, Scharrer EM, Leupold W, von Mutius E, Nowak D. *Adolescents' jobs and the course of dermatitis symptoms throughout puberty*. Scand J Work Environ Health.2006 Apr;32:132-7.

Bücheler G, Rzehak P, Weinmayr G, Keil U, Leupold W, von Mutius E, Weiland SK. *Assessing bronchial responsiveness to hypertonic saline using the stepwise protocol of Phase II of the International Study of Asthma and Allergies in Childhood (ISAAC II)*. Pediatr Pulmonol 2007 Feb;42(2):131-40.

Depner M, Kormann MS, Klopp N, Illig T, Vogelberg C, Weiland SK, von Mutius E, Combadere C, Kabesch M. *CX3CR1 Polymorphisms Are Associated with Atopy but Not Asthma in German Children*. Int Arch Allergy Immunol 2007 ;144(1):91-94. Epub May 2007.

Kabesch M, Depner M, Dahmen I, Weiland SK, Vogelberg C, Niggemann B, Lau S, Illig T, Klopp N, Wahn U, Reinhardt D, von Mutius E, Nickel R. *Polymorphisms in eosinophil pathway genes, asthma and atopy*. Allergy 2007 Apr;62(4):423-8.

Moffatt MF, Kabesch M, Liang L, Dixon AL, Strachan D, Heath S, Depner M, von Berg A, Bufer A, Rietschel E, Heinzmann A, Simma B, Frischer T, Willis-Owen SA, Wong KC, Illig T, Vogelberg C, Weiland SK, von Mutius E, Abecasis GR, Farrall M, Gut IG, Lathrop GM, Cookson WO. *Genetic variants regulating ORMDL3 expression contribute to the risk of childhood asthma*. Nature.2007 Jul 26;448(7152):470-3.Epub July 2007.

Vogelberg C, Hirsch T, Radon K, Dressel H, Windstetter D, Weinmayr G, Weiland SK, von Mutius E, Nowak D, Leupold W. *Leisure time activity and new onset of wheezing during adolescence in Germany*. Eur Respir J 2007 Oct;30(4):672-6.Epub Jun 2007.

Riu E, Dressel H, Windstetter D, Weinmayr G, Weiland S, Vogelberg C, Leupold W, von Mutius E, Nowak D, Radon K. *First months of employment and new onset of rhinitis in adolescents*. Eur Respir J.2007 Sep;30(3):549-55.Epub May 2007.

Schedel M, Pinto LA, Schaub B, Rosenstiel P, Cherkasov D, Cameron L, Klopp N, Illig T, Vogelberg C, Weiland SK, von Mutius E, Lohoff M, Kabesch M. *IRF-1 gene variations influence IgE regulation and atopy*. Am J Respir Crit Care Med.177(6):613-21, 2008 Mar 15.

# The ISAAC Story



## Ghana, Africa

Centres:	Phase:	PI:	Age Groups
Kintampo	2	Dr Emmanuel OD Addo-Yobo	

**Ghana has no National Coordinator**



## Greece, Western Europe

Centres:	Phase:	PI:	Age Groups
Athens	1	Associate Professor Christina Gratziou	13-14, 6-7
Athens	2	Associate Professor Christina Gratziou	10-11
Thessaloniki	2	Associate Professor John Tsanakas	10-11
Thessaloniki	3	Associate Professor John Tsanakas	6-7

### National Coordinator:

#### Associate Professor Christina Gratziou

Ass. Prof. Pulmonary and Critical Care Medical School, Athens University  
Head of Asthma and Allergy Centre  
Eugenidio Hospital ,Athens  
Greece



### Roles:

- National Coordinator for Greece
- Phase One Principal Investigator for Athens
- Phase Two Principal Investigator for Athens

### National Publications

The following publications used ISAAC data from Greece:

Papadopoulou A, Hatziaorou E, Matziou VN, Grigoropoulou DD, Panagiotakos DB, Tsanakas JN, Gratziou C, Priftis KN *Comparison in asthma and allergy prevalence in the two major cities in Greece the ISAAC phase II survey* Allergol Immunopathol(Madr).2011; epub ahead of print

## ATHENS ISAAC STORY

### Phase I (1994-1995)

Greece was involved as a partner in ISAAC study for the first time in 1994 taking part in ISAAC Phase I with two centers one in Athens and one in Thessaloniki.

The aim of the Phase I ISAAC study was to evaluate allergic disease in children in Greece. The standardized questionnaire was translated in Greek and was delivered at schools and completed by parents of Children 6-7years old and 13-14 yr. Questions regarding cough, wheezing, asthma history and symptoms of rhinitis without infection and atopy, rash coming and go for more than 6 months were recorded. The meaning of asthma, allergic rhinoconjunctivitis and eczema were not widely known and attempts were made to educate parents.

71 and 38 schools for 6-7 years and 13-14 years old children respectively were randomly selected and questionnaires were sent home via children. 1654 (50.2% boys) and 2561 (47% boys) fully answered data were collected from children and adolescences respectively during May 1994 and May 1995.

### Phase II (2000-2001)

Greece has also been involved in ISAAC phase II study with two centers, one in Athens and one in Thessaloniki. This study was undertaken between October 2000 - November 2001 in order to further evaluate children with asthma. In brief, children were selected from 43 primary schools (28% of the total schools) The selection of schools was random and based on the school listings provided by the Ministry of Education. All children from each school were asked to participate. The participation rates were 85%. 1003 Greek schoolchildren, aged 9-10-year-old (47.9% boys), were participated in the ISAAC-II survey. All participated children answered the ISAAC-II questionnaire, tested with skin prick testing (SPT) to seven common aeroallergen and examined for flexural dermatitis. SPTs were performed with common seasonal or perennial allergens seasonal (with additional SPTs with locally important allergens ) (mixed grass pollen, mixed tree pollen and olive tree pollen, parietaria, Dermatophagoides pteronyssinus, Dermatophagoides farinae, Alternaria tenuis and cat dander). In addition according to the protocol a provocation test was performed with hypertonic saline in 100 children selected of the participant who referred lifetime asthma. Data collected and analysed centrally.

Regional

National

Ghana

Greece

Local

# The ISAAC Story

Regional

National

Greece

République  
de Guinée

Honduras

SAR China  
(Hong Kong)

Local

## Phase III (2000-2001)

Greece has also been involved in ISAAC phase III study. According to ISAAC phase III study, questionnaire was sent to parents via children 6-7 years old at schools to re-evaluate (after some years) the epidemiology of asthma, rhinitis and atopy in young children 6-7 yr as in phase I study. This time due to practical problems there was a smaller school participation and data from 858 children were collected. Data were sent to coordination center.

Full data analysis of Phase I,II,and III was done centrally by ISAAC coordination center and presented in several ISAAC Publications.National data were presented in national and international meetings.

## République de Guinée, Africa

Centres:	Phase:	PI:	Age Groups
Conakry	3	Professeur Oumou Younoussa Sow	13-14

République de Guinée has no National Coordinator



## Honduras, Latin America

Centres:	Phase:	PI:	Age Groups
San Pedro Sula	3	Dr Agustin Bueso-Engelhardt	13-14, 6-7



### National Coordinator:

#### Dr Agustin Bueso-Engelhardt

Centro de Neumología y Alergia Siglo XXI  
Edificio CNA  
Entrada a Col.  
Los Laureles  
Honduras

#### Roles:

- National Coordinator for Honduras
- Phase Three Principal Investigator for San Pedro Sula

## SAR China, Asia-Pacific

Centres:	Phase:	PI:	Age Groups
Hong Kong 13-14	1	Dr Christopher Lai	13-14
Hong Kong 6-7	1	Professor Yu Lung Lau	6-7
Hong Kong	2	Dr Christopher Lai	10-11
Hong Kong 13-14	3	Professor Gary Wong	13-14
Hong Kong 6-7	3	Professor Yu Lung Lau	6-7



### National Coordinator:

#### Dr Christopher Lai

Department of Medicine and Therapeutics  
The Chinese University of Hong Kong  
Room 1403, Takshing House  
20 Des Voeux Road Central  
SAR China



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Asia-Pacific
- National Coordinator for SAR China
- Phase One Principal Investigator for Hong Kong 13-14
- Phase Two Principal Investigator for Hong Kong

# The ISAAC Story

I got involved in the ISAAC project when I was invited to the steering committee as the regional coordinator of Asia Pacific in the early 90's. At that time, Hong Kong already had some prevalence data on asthma, rhinitis and eczema, although these data were based on studies using different methodologies and included a wide range of subjects - children, adults and hospital patients. This makes comparison between studies from different time points and with other populations from different geographic locations difficult. The ISAAC study has allowed us to make valid comparisons with our counterparts in mainland China. The phase 1 data revealed a striking difference in the prevalence of asthma symptoms – up to a 4-fold difference – between schoolchildren in Hong Kong and those in mainland China. This, together with the demonstration that we have a relatively high asthma prevalence amongst our children, we were able to secure funding from the research grant funding bodies to further our research on asthma epidemiology.

The grants enabled us to conduct the phase 2 study not only in Hong Kong, but also in 2 mainland centres, Beijing and Guangzhou. This study identified certain environmental factors that could account for the difference in asthma prevalence between Hong Kong and its mainland counterparts. The data provided some insights to further research into the aetiology of asthma not only in China, but also in other parts of the world.

Our experience in the previous 2 phases of the study certainly helped us to conduct the phase 3 much more smoothly. We are pleasantly surprised to see the prevalence of asthma symptoms has declined though still not certain what was causing this change.

During the time of our participation in the project, we have validated the video questionnaire on asthma symptoms<sup>1</sup> and the Chinese translated version of the ISAAC core questions for atopic eczema<sup>2</sup>.

1. Lai CKW, Chan JKW, Chan A, Wong G, Ho A, Choy D, Lau J, Leung R. Comparison of the ISAAC video questionnaire (AVQ3.0) with the ISAAC written questionnaire for estimating asthma associated with bronchial hyperreactivity. *Clin Exp Allergy* 1997; 27: 540-545
2. Chan HH, Pei A, van Krevel C, Wong GWK, Lai CKW. Validation of the Chinese translated version of ISAAC core questions for atopic eczema. *Clin Exp Allergy* 2001; 31: 903-907.

## National Publications

The following publications used ISAAC data from SAR China:

Leung R, Wong G, Lau J, Ho A, Chan JK, Choy D, Douglass C, Lai CK. *Prevalence of asthma and allergy in Hong Kong schoolchildren: an ISAAC study*. *Eur Respir J* 1997; 10(2): 354-60.

Lau YL, Karlberg J. *Prevalence and risk factors of childhood asthma, rhinitis and eczema in Hong Kong*. *J Paediatr Ch Health* 1998; 34(1): 47-52.

Wong GWK, Hui DSC, Tam CM, Chan HH, Fok TF, Chan-Yeung M, Lai CKW. *Asthma, atopy and tuberculin responses in Chinese schoolchildren in Hong Kong*. *Thorax* 2001; 56(10): 770-773

Lee SL, Wong W, Lau YL. *Increasing prevalence of allergic rhinitis but not asthma among children in Hong Kong from 1995 to 2001 (Phase 3 International Study of Asthma and Allergies in Childhood)*. *Pediatr Allergy Immunol* 2004; 15(1): 72-8.

Wong GWK, Leung TF, Ko FWS, Lee KKM, Lam P, Hui DSC, Fok TF, Lai CKW. *Declining asthma prevalence in Hong Kong Chinese schoolchildren*. *Clin Exp Allergy* 2004; 34(10): 1550-5.

Regional

National

SAR China

Local

# The ISAAC Story

Regional

National

Hungary

Iceland

Local

## Hungary, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Svábhegy	3	Dr Györgyi Zsigmond	13-14, 6-7
Szeged	3	Dr Zoltán Novák	13-14

### National Coordinator:

#### Dr Györgyi Zsigmond

Senior Consultant Pediatrician, Pediatric Pulmonologist, Svábhegy Institute, Budapest,

Hungary



#### Roles:

- National Coordinator for Hungary
- Phase Three Principal Investigator for Svábhegy

### ISAAC in Hungary

I had always a feeling that the prevalence of asthma and allergic rhinitis was absolutely underestimated in my country, Hungary, during the last decades. Although there were some studies performed on this field, the questionnaires and other methods were not validated, so we could not compare the results with the international data. When I took part in the ATS Congress in the early nineties, I was aware that an international study about asthma and allergies was being prepared. In 2002, I was not only the head of the pulmonary division of the University of Szeged, but I was also the science director of the Institute of Svábhegy in Budapest, in our capital city. During this time, we could join the "ISAAC family" with these two institutions. I nominated Dr. Zsigmond to be the national coordinator, and I also invited some excellent pediatricians to participate in the trial, Dr Marianne Kovács, Dr Ildikó Kovács from Szeged and Dr Károly Berényi from Hódmezővásárhely. You can see on the picture the map of Hungary with two areas marked with red color, where ISAAC Phase Three was performed in both age groups. We translated the questionnaire into Hungarian, sent hundreds of letters to try to get some financial support – to tell the truth it was extremely difficult - sent also letters to the directors of the schools to let us perform the trial in the schools. You can see a photo, how the questionnaire was done in one of the schools.

We had difficulties of course during the investigations, but with the continuous help of Philippa Ellwood and the other staff members of the team, we were able to solve them. After finishing ISAAC Phase Three, we had clear data about the prevalence of asthma, eczema and allergic rhinitis in Hungary. We had some publications and lectures in different national conferences about our results and also proudly found the excellent publications of ISAAC Phase Three in high impact international journals.

Last but not least, it was a great pleasure to meet the other members of the ISAAC family in different international conferences, to take part in the informal meetings during the last years, with other words, we were very proud to become the members of such a nice family. I also hope, that we did not finish, and we can find other possibilities to continue our common work in the future.

As the president of the Hungarian Society of Pediatric Pulmonology and also the president of Hungarian Society of Pediatric Allergology, all the other members of ISAAC family are cordially invited to come and visit our beautiful country anytime. Please, do not hesitate to contact me if you needed any help in the future.

Zoltan Novak

Hungary.

## Iceland, Northern and Eastern Europe

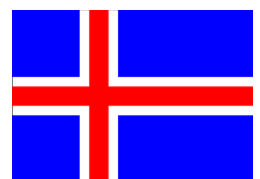
Centres:	Phase:	PI:	Age Groups
Reykjavik	2	Dr Michael Clausen	

### Iceland has no National Coordinator

#### National Publications

The following publications used ISAAC data from Iceland:

Clausen M, Kristjansson S, Haraldsson A, Björkstén B. *High prevalence of allergic diseases and sensitization in a low allergen country.* Acta Paediatr.2008 Jul 9; 97(9): 1216-1220.



# The ISAAC Story



## India, Indian Sub-Continent

Centres:	Phase:	PI:	Age Groups
Akola	1	Dr Ramesh M. Maheshwari	13-14, 6-7
Bombay (16)	1	Dr Mohan Keshav Joshi	13-14, 6-7
Bombay (17)	1	Dr Uday Anath Pai	13-14, 6-7
Bombay (18)	1	Dr Kalyani Raghavan	13-14, 6-7
Borivali	1	Dr Vasant A Khatav	13-14, 6-7
Chandigarh	1	Professor Lata Kumar	13-14, 6-7
Jodhpur	1	Dr K C Jain	13-14, 6-7
Kottayam	1	Dr T U Sukumaran	13-14, 6-7
Madras (2)	1	Dr Sarela Rajajee	13-14, 6-7
Madras (3)	1	Dr N Somu	13-14, 6-7
New Delhi (7)	1	Dr Kamlesh Chopra	13-14, 6-7
Neyveli	1	Dr G Jayaraj	13-14, 6-7
Orissa	1	Dr Pradeep Kumar Kar	13-14, 6-7
Pune	1	Dr Neeta Milind Hanumante	13-14, 6-7
Mumbai (16)	2	Dr Jayant Shah	10-11 yrs.
Bangalore	3	Professor Sylvan Rego	13-14, 6-7
Bikaner	3	Professor Mohammed Sabir	13-14
Borivali	3	Dr Vasant A Khatav	13-14, 6-7
Chandigarh	3	Dr Meenu Singh	13-14
Chennai (3)	3	Dr Gururaj Setty	13-14, 6-7
Davangere	3	Dr P S Suresh Babu	13-14, 6-7
Jaipur	3	Professor Virendra Singh	13-14, 6-7
Jodhpur	3	Dr K C Jain	13-14, 6-7
Kottayam	3	Dr T U Sukumaran	13-14, 6-7
Lucknow	3	Professor Shally Awasthi	13-14, 6-7
Ludhiana	3	Professor Jugesh Chhatwal	13-14, 6-7
Mumbai (16)	3	Dr Mohan Keshav Joshi	13-14, 6-7
Mumbai (18)	3	Dr Asha Vijaykumar Pherwani	13-14, 6-7
Mumbai (29)	3	Dr Sumant Narayan Mantri	13-14, 6-7
Nagpur	3	Dr Sundeep Salvi	13-14, 6-7
New Delhi (7)	3	Professor S K Sharma	13-14, 6-7
Pimpri	3	Dr Sundeep Salvi	13-14, 6-7
Pune	3	Dr Neeta Milind Hanumante	13-14, 6-7
Rasta Peth	3	Associate Professor Sheila Bhave	13-14, 6-7

### National Coordinator:

#### Dr Jayant Shah

Jaslok Hospital & Research Centre

15 - Dr. Deshmukh Marg  
Pedder Road,  
India



#### Roles:

- Regional Coordinator for Indian Sub-Continent
- National Coordinator for India
- Phase Two Principal Investigator for Mumbai (16)

India, one of the most populous countries of the world, is almost a region in its own right. Dr Jayant Shah acted as both national co-ordinator for India and regional co-ordinator. Indian centres were numerous in both Phases One and Three, and also contributed one centre to Phase Two. Dr Shah attended the ISAAC Steering Committee meeting in Auckland in 2000.

Regional

National

India

Local



# The ISAAC Story

Regional

National

Indonesia

Local

## Indonesia, Asia-Pacific

Centres:	Phase:	PI:	Age Groups
Bandung	1	Prof Dr Karnen Baratawidjaja	13-14, 6-7
Bali	3	Professor Putu Konthen	13-14
Bandung	3	Prof Dr Cissy B Kartasasmita	13-14, 6-7
Semarang	3	Dr Winarto Suprihati	13-14

### National Coordinator:

#### Prof Dr Karnen Baratawidjaja

Head, Allergy-Immunology Study Group  
Department of Medicine, Faculty of Medicine  
University of Indonesia  
Sisingamangaraja 49/51  
Indonesia

#### Roles:

- National Coordinator for Indonesia
- Phase One Principal Investigator for Bandung

## Iran, Eastern Mediterranean

Centres:	Phase:	PI:	Age Groups
Rasht	1	Dr Mohammed-Reza Masjedi	13-14, 6-7
Tehran	1	Dr Mohammed-Reza Masjedi	13-14, 6-7
Birjand	3	Dr Mohammed-Reza Masjedi	13-14, 6-7
Rasht	3	Dr Mohammed-Reza Masjedi	13-14, 6-7
Tehran	3	Dr Mohammed-Reza Masjedi	13-14, 6-7
Zanjan	3	Dr Mohammed-Reza Masjedi	13-14, 6-7

### National Coordinator:

#### Dr Mohammed-Reza Masjedi

Masih Daneshvary Hospital  
Dorabad  
Shaheed Bahoner Ave  
Darabad  
Iran

#### Roles:

- National Coordinator for Iran
- Phase One Principal Investigator for Rasht, Tehran
- Phase Three Principal Investigator for Birjand, Rasht, Tehran, Zanjan

### National Publications

The following publications used ISAAC data from Iran:

Masjedi MR, Fadaizadeh L, Najafizadeh K, Dokouhaki P. *Prevalence and Severity of Asthma Symptoms in Children of Tehran- International Study of Asthma and Allergies in Childhood (ISAAC)*. Iran J Allergy Asthma Immunol.2004 Mar;3(1):25-30.

Masjedi MR, Fadaizadeh L, Najafizadeh K, Dokouhaki P. *Prevalence and Severity of Asthma Symptoms in Children of the Tehran-ISAAC Study* Pediatric Asthma, Allergy and Immunology. Winter 2004, 17(4): 244-250.

Moghadam M, Jou S. *Prevalence of Asthma Symptoms among 13-14 years old Children in Birjand* TABIB-E-SHARGH Fall 2004; 6(3):183-192.

Masjedi MR, Fadaizadeh L, Najafizadeh K, Dokouhaki P. *A Study of the Prevalence and Severity of Rhinitis in Children in Tehran: ISAAC Study* Journal of Isfahan Medical School (I.U.M.S) Spring 2005; 23(76):36-41.

Fadaizadeh L, Salek S, Najafizadeh K, Masjedi MR. *Prevalence and Severity of Asthma Symptoms in Students of Tehran and Rasht: Phase III ISAAC Study* Tanaffos (2008) 7(3), 31-36

Fadaizadeh L, Keyvan S, Najafizadeh K, Masjedi MR. *Evaluation of Agreement between Video and Written Questionnaires for Asthma Symptoms Among Children of Tehran: ISAAC Study*. Journal of Shahid Sadoughi University of Medical Sciences and Health Services, summer 2008; 16(2):36-43.

Najafizadeh K, Fadaizadeh L, Salek S. *Prevalence and Severity of Asthmatic Symptoms in Rasht Students: A Report from ISAAC Study*. TANAFFOS 2008; 7(1):40-46.

# The ISAAC Story



## Republic of Ireland, Western Europe

Centres:	Phase:	PI:	Age Groups
Republic of Ireland	1	Professor Luke Clancy	13-14
Republic of Ireland	3	Professor Luke Clancy	13-14

### National Coordinator:

#### Dr Patrick Manning

National Clinical Lead – Asthma  
Health Service Executive,  
Dr Steeven's Hospital,  
Dublin  
Republic Of Ireland



#### Roles:

- National Coordinator for Republic Of Ireland

### National Publications

The following publications used ISAAC data from Republic of Ireland:

Manning PJ, Curran K, Kirby B, Taylor MR, Clancy L. *Asthma, hay fever and eczema in Irish teenagers (ISAAC protocol)*. Ir Med J 1997; 90(5): 110-2.

Manning P, Goodman P, Kinsella T, Lawlor M, Kirby B, Clancy L. *Bronchitis symptoms in young teenagers who actively or passively smoke cigarettes*. Ir Med J.2002 Jul-Aug;95(7):202-4.

Yarnell JW, Stevenson MR, MacMahon J, Shields M, McCrum EE, Patterson CC, Evans AE, Manning PJ, Clancy L. *Smoking, atopy and certain furry pets are major determinants of respiratory symptoms in children the International Study of Asthma and Allergies in Childhood Study (Ireland)*. Clin Exp Allergy.2003 Jan;33(1):96-100.

Manning PJ, Goodman P, O'Sullivan A, Clancy L. *Rising prevalence of asthma but declining wheeze in teenagers (1995-2003) ISAAC protocol*. Ir Med J.2007 Nov-Dec;100(10):614-5.

Kabir Z, Manning PJ, Holohan J, Goodman PG, Clancy L. *Active smoking and second-hand-smoke exposure at home among Irish children, 1995-2007*. Arch Dis Child 2010; 95: 42-45

Kabir Z, Manning PJ, Holohan J, Goodman PG, and Clancy L. *Prevalence of Symptoms of Severe Asthma and Allergies in Irish School Children An ISAAC Protocol Study, 1995-2007* Int J Environ Res Public Health 2011; 8(8): 3192-3201

## THE IRISH ISAAC STORY

The Irish ISAAC team consisted of Prof Luke Clancy as Principal Investigator and the national coordinator Dr Pat Manning, with technical inputs from Prof Patrick Goodman and Dr Zubair Kabir and Sheila Keogan (all based in Dublin). Ireland participated in two phases of the ISAAC study- Phase 1 in 1995 and Phase 3 in 2002/2003. 'Wave 2' was a follow-up on Phase 1 in 1998 and 'Wave 4' was follow-up on Phase 3 in 2007 and was done in collaboration with the Asthma Society of Ireland headed-up by Dr Jean Holohan. Ireland had only one centre, St. James's Hospital based in Dublin. A target of ~3000 respondents was aimed for in the probability multi-stage sampling of post-primary schools all across Ireland in all 4 surveys. Participation rates were high (>80%) and the response rates were also high (>90%) in both the Phases. A few schools did not participate and a few were closed in Phase 3 and therefore so some new schools were included in Phase 3 compared to Phase 1. Only one age group of school children between 13 and 14 years were recruited for both the Phases. The study findings were disseminated through various platforms- presentations in annual scientific meetings (both national and internationally- such as the Irish Thoracic Society Meetings and the European Respiratory Society Meetings). A few high quality publications were also published in international medical journals. Following is the list of publications from each Phase of the ISAAC study in Ireland, including key messages of each individual publication.

### Following publications arose from Phase I study

1. *Asthma, hay fever and eczema in Irish teenagers (ISAAC protocol)*. Manning PJ, Curran K, Kirby B, Taylor MR, Clancy L. Ir Med J. 1997 Apr-May; 90(3):110-2.

The prevalence values for asthma, hay fever and eczema were 15.2%, 24.8% and 9.4% respectively. Although 5.4% reported having asthma and hay fever, combinations of the other allergic conditions were less than 2%. Sex difference in prevalence rates for the various conditions occurred with asthma prevalence being higher for males, eczema in females, but hay fever was almost equally reported between males and females.

2. *Smoking, atopy and certain furry pets are major determinants of respiratory symptoms in children: the International Study of Asthma and Allergies in Childhood Study (Ireland)*. Yarnell JW, Stevenson MR, MacMahon J, Shields M, McCrum EE, Patterson CC, Evans AE, Manning PJ, Clancy L. Clin Exp Allergy. 2003 Jan; 33(1):96-100.

Questionnaires were completed by 2,364 children from Northern Ireland and 2,671 from the Republic- about 90% of those eligible to participate. The prevalences of wheeze at various levels of severity, of diagnosed asthma and of treated wheeze were very similar in Northern Ireland and the Republic of Ireland. A significant proportion of those reporting more severe symptomatology (four or more attacks of wheeze in the past 12 months and/or one or more nights disturbed and/or moderate or greater disruption of daily activities and/or speech restriction due to wheeze) had been neither diagnosed nor treated for asthma (20-37%). To investigate the determinants of the more severe symptomatology of asthma or treated wheeze a series of stepwise multiple regression analyses was performed. A history of atopy, cigarette smoking, and possession of a furry pet other than a dog or cat and age were each independently associated with severe wheeze, whilst atopy, a furry pet (as above) and gender were each independently associated with asthma or treated wheeze. Cigarette smoking is closely associated with the reporting of significant respiratory symptoms together with atopy and exposure to furry pets. Some 20-37% of severe symptoms were neither diagnosed nor treated as asthma.

Regional  
National

Republic of  
Ireland

Local

# The ISAAC Story

## The following publication arose from Phase 1 and Wave 2

1. *Bronchitis symptoms in young teenagers who actively or passively smoke cigarettes.*  
Manning P, Goodman P, Kinsella T, Lawlor M, Kirby B, Clancy L  
Ir Med J. 2002 Jul-Aug; 95(7):202-4.

This study was undertaken to examine the prevalence of bronchitis (cough with phlegm) symptoms in teenagers who either smoked cigarettes on a regular basis (active smokers) or were non-smokers but who are exposed to passive smoking (passive smokers) in the home. The study was undertaken in 1995 and repeated in 1998. The 1995 study was a cross sectional questionnaire survey of smoking habits in secondary school children aged 13-14 years and was undertaken as part of the ISAAC questionnaire survey. Thirty representative and randomly selected schools from throughout the Republic of Ireland took part in the study. In the 1995 study, 3066 students completed a questionnaire on their current smoking habits and symptoms of cough and phlegm. We found that 634 (20.7%) of these young teenagers actively smoked cigarettes with significantly more females smoking than males with 23.3% of girls compared to 17.6% boys ( $p = 0.0001$ ). We found that 46.3% of non-smoking children were exposed to smoking in the home (passive smokers) with parental smoking accounting for most of the passive smoking. Bronchitis symptoms were more commonly reported in active smokers compared to non-smokers with an odds ratio of 3.02 (95% CI 2.34-3.88) ( $p < 0.0001$ ) or in passive smokers compared to those not exposed to smoking with odds ratio of 1.82 (95% CI 1.32-2.52) ( $p < 0.0001$ ). The 1998 study showed similar results for smoking habits, passive smoking and prevalence of bronchitis symptoms as with the 1995 study. These results document that increased bronchitis symptoms occur in teenagers exposed to active or passive smoking.

## The following publication arose from Phase 1 and Phase 3:

1. *Rising prevalence of asthma but declining wheeze in teenagers (1995-2003): ISAAC protocol.*  
Manning PJ, Goodman P, O'Sullivan A, Clancy L.  
Ir Med J. 2007 Nov-Dec; 100(10):614-5.

The results of the initial International Study of Asthma and Allergies in Childhood (ISAAC) undertaken in the mid 1990s demonstrated a substantial increase in asthma and wheeze symptoms prevalence in Irish teenagers aged 13-14 years from the 1980s. International research suggests that asthma has increased further in some countries and this study was undertaken to determine whether an upward trend in childhood asthma prevalence had continued in the Republic of Ireland in recent years. We therefore conducted two further national cross sectional studies in the same previously surveyed childhood population throughout the Republic of Ireland, one in 1998 ( $n=2580$ ) and the other in 2002-3 ( $n=3089$ ). We reported here on rising prevalence trends of asthma (42.1% relative increase) but falling wheeze (10.4% relative reduction) prevalence in these teenage children in 2002-3.

Wave 4 was the final study and was conducted in 2007 as a follow-up on Phase 3. Some interesting question, for example, the inclusion of questions related to smoking in cars was found useful and was unique.

## The following publications arose from Wave 4, including analyses from previous Phases:

1. *Second hand smoke exposure - in cars and respiratory health effects in children.*  
Kabir Z, Manning PJ, Holohan J, Keogan S, Goodman PG, Clancy L.  
Eur Respir J. 2009 Sep; 34(3):629-33.

Overall, 14.8% (13.9% in young males, 15.4% in young females) of Irish children aged 13-14 yrs old were exposed to SHS in cars. Although there was a tendency towards increased likelihood of both respiratory and allergic symptoms with SHS exposure in cars, wheeze and hay fever symptoms were significantly higher (adjusted OR 1.35 (95% CI 1.08-1.70) and 1.30 (1.01-1.67), respectively), while bronchitis symptoms and asthma were not significant (1.33 (0.92-1.95) and 1.07 (0.81-1.42), respectively). Approximately one in seven Irish schoolchildren is exposed to SHS in cars and could have adverse respiratory health effects. Further studies are imperative to explore such associations across different population settings.

2. *Active smoking and second-hand-smoke exposure at home among Irish children, 1995-2007.*  
Kabir Z, Manning PJ, Holohan J, Goodman PG, Clancy L.  
Arch Dis Child. 2010 Jan; 95(1):42-5

Regional

National

Republic of  
Ireland

Local

# The ISAAC Story

There were significant reductions in active smoking rates between 1995 and 2007 (from 19.9% to 10.6%, respectively) resulting in 3.3% survey-to-survey reductions, with a significantly greater survey-to-survey decline among girls compared to boys (3.8% vs 2.7%, respectively). 45% of children were exposed to SHS at home in 2007. There was a statistically non-significant 2% overall decline in SHS exposure levels at home in 2007 relative to 2002/03, which was more pronounced in girls. The continual reduction in active smoking prevalence in children is welcome. That there was no significant increase in SHS exposure at home after the nationwide workplace smoking ban suggesting that the ban did not increase smoking inside homes as had been feared.

### 3. Prevalence of Symptoms of Severe Asthma and Allergies in Irish School Children: An ISAAC Protocol Study, 1995-2007.

Kabir Z, Manning PJ, Holohan J, Goodman PG, Clancy L.  
Int J Environ Res Public Health. 2011 Aug; 8(8):3192-201.

Childhood asthma is a recurring health burden and symptoms of severe asthma in children are also emerging as a health and economic issue. This study examined changing patterns in symptoms of severe asthma and allergies (ever eczema and hay fever). Children aged 13-14 years were studied: 2,670 (in 1995), 2,273 (in 1998), 2,892 (in 2002-2003), and 2,805 (in 2007). Generalized linear modelling using Poisson distribution was employed to compute adjusted prevalence ratios (PR). A 39% significant increase in symptoms of severe asthma was estimated in 2007 relative to the baseline year 1995 (adjusted PR: 1.39 [95% CI: 1.14-1.69]) increasing from 12% in 1995 to 15.3% in 2007. Opposite trends were observed for allergies, showing a decline in 2007, with an initial rise. The potential explanations for such a complex disease pattern whose aetiological hypothesis is still evolving are speculative. Changing environmental factors may be a factor, for instance, an improvement in both outdoor and indoor air quality further reinforcing the hygiene hypothesis but obesity as a disease modifier must also be considered.

**Funding: Royal City of Dublin Hospital Trust; Health Research Board of Ireland**

Regional

National

Republic of

Ireland

Isle Of Man

Local

## Isle Of Man, Western Europe

Centres:	Phase:	PI:	Age Groups
Isle of Man	1	Dr Peter Powell	13-14
Isle of Man	3	Dr Andreea Steriu	13-14, 6-7

### National Coordinator:

#### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and  
MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
Isle of Man



#### Roles:

- ISAAC Steering Committee
- National Coordinator for Isle of Man

### Why was this centre selected for ISAAC?

Evidence suggested that the prevalence of respiratory and related disorders increased in the British Isles over the past six decades. The Isle of Man was no exception. Hay fever and allergic symptoms have caught the attention of health professionals, not only in their own right, but also as an indicator of their association with asthma. To address these problems, a major international research project, The International Study of Asthma and Allergies in Childhood (ISAAC), was established in 1991. The Steering Committee is based in New Zealand at the University of Auckland, and a range of countries, including the United Kingdom, began their research in 1995 when Phase One was carried out. The Isle of Man and the Channel Islands, although linked to the UK, carried out their surveys independently, also known as the offshore arm of the British study.

The Isle of Man is a Crown Dependency and lies in the middle of the Irish Sea. It has its own Government and the Parliament, Tynwald, is a Parliament with the longest continuous activity in the world. In 2009 this was established at 130 years. It has a population of about 80,000 inhabitants (last interim Census in 2006) and enjoys a varied economy with financial services and e-commerce, agriculture, fisheries and tourism being the most important economic activities. The Isle of Man is mostly known for the motorbike open road race TT (Tourist Trophee). This is unique in the world and annually visitors travel from all parts of the globe to watch the races and also enjoy festivities. Since 2009 a 'Green' race has been added to the race schedule, allowing for electric motorbikes to compete in the famous circuit race.

The Island's geography is stunning and the countryside is beautiful regardless the weather. Most population (about 50%) lives in the South-East, in the capital town of Douglas and surrounding villages. The highest peak is Snaefell and on a clear day "all surrounding kingdoms can be seen from the top of it: England, Scotland, Northern Ireland, Republic of Ireland, Wales, and the Kingdom of Mann.



### National Publications

The following publications used ISAAC data from Isle Of Man:

Anderson HR, Ruggles R, Strachan DP, Austin JB, Burr M, Jeffs D, Standring P, Steriu A, Goulding R. *Trends in prevalence of symptoms of asthma, hay fever, and eczema in 12-14 year olds in the British Isles, 1995-2002 a questionnaire survey.* BMJ 2004; 328(7447): 1052-3.

# The ISAAC Story

## Our Experience of ISAAC

The aim of Phase One in the Isle of Man was to describe the prevalence and severity of asthma and related disorders in 13/14 year-old children. Results were released in 1996 and revealed the distribution and frequency of asthma and related disorders. These rates were very similar to those observed elsewhere in the UK and the Channel Islands at the time. Results were used in service planning and considered a baseline to benchmark against any new surveys. Four out of the six secondary schools took part in this round. In Phase Two of the Study the Island took part with data collection aimed at environmental factors, particularly linked with air quality. Data for the Island on daily air temperature, annual rainfall and the prevalence of chemicals such as Nitrogen Dioxide and Sulphur Dioxide in the air were collected in 1998 specifically for this phase of the Study. The results were again similar to the readings reported in the UK and the Channel Islands, as reported at the time. Such readings were considered a 'baseline' and these would be again considered in the future. It is after all that emerging climate change and other environmental monitoring will be crucial in assisting the Isle of Man government with ensuring clean air for this small country which lays in the middle of the Irish Sea.

ISAAC Phase Three was carried out in October 2001. The main objective was to identify changes that may have occurred in the last six years in the frequency of respiratory and allergic conditions in children, to evaluate any association with air quality and other environmental factors and to assess the present situation. The Study was extended to younger children (6-8 year olds) to enable long-term comparisons to be made. The 6-8 year old survey was unique to the Isle of Man of all areas in the British Isles and results were published separately in the 6-8 year olds report. The Isle of Man study was carried out as an offshore-arm of the UK study and was led by Dr David Jeffs, Director of Public Health in Guernsey. Locally, the Principal Investigator for the Isle of Man obtained LREC approval for the study and used an opt-out consent form. The 6-8 year old study was a self-responding questionnaire for parents of primary school children. The 13-14 year olds self-responded to the questionnaire. There was no sampling carried out and all children of the right age were targeted to take part: in 34 primary schools and six secondary schools. They all took part with 1,086 (6-8 years) and 1,917 (13-14 years) students. A small team of researchers carried out delivery of questionnaires and return envelopes for parental responses in the 34 primary schools and almost 60% of the 6-8 year old target population and over 80% of the 13-14 year old target population were returned for processing. All forms, over 3,000 were posted to the UK Centre at St George's Hospital Medical School and were processed in standard format along with the other centres in the British Isles. National reports were published and a paper led by Prof. Ross H Anderson and co-authored by all British centres was published in the BMJ in 2004<sup>1</sup>. The Principal Investigator supplemented the study results with other information for this paper, such as hospital admissions and GP visits recorded during the same year the survey took place. The Isle of Man has not used any of the videos in the data collection.

The burden of self reported asthma and related disorders among adolescents has changed for the better in the recent years throughout the British Isles and the Isle of Man is no exception. ISAAC has provided much needed information for policy purposes, for example establishing the need for first aid and inhalers available in all schools. Methodologically the 6-8 year old questionnaire asked parents about the administration of paracetamol to their children and the approach in the Isle of Man was to include in the questionnaires as many as known brand names of this over the counter drug. Pharmacies and supermarkets were approached and the most frequently sold paediatric brands were included in the questionnaire. The Island's data were used in the publication of a paper in the Lancet in 2009<sup>2</sup>.

## Acknowledgements

We gratefully acknowledge the financial support of the Isle of Man Government, Department of Health and Department of Local Government. We gratefully acknowledge the invaluable assistance of the offshore British Coordinator Dr David Jeffs, the UK Coordinators Prof. Ross H Anderson and David Strachan for their continuous support. As the Isle of Man Principal Investigator I am grateful for the invaluable assistance of the database management provided by the St George's Medical Hospital School Team for their help with the timely database setting and a continuous dialogue in assisting with the publication of our reports and indebted to all the children, parents and school staff who participated in the surveys. I wish to thank my fieldwork team for their enthusiasm and motivation throughout Phase Three of the Study.

Dr Andreea Steriu, Isle of Man ISAAC Phase Three Principal Investigator

Regional

National

Isle Of Man

Local

# The ISAAC Story

## References

1. The Anderson, H.R., Ruggles, R., Strachan, D.P., Austin, J.B., Burr, M., Jeffs, D., Standring, P., Steriu, A. And Goulding, R. "Trends in prevalence of symptoms of asthma, hay fever, and eczema in 12-14 year olds in the British Isles, 1995-2002: questionnaire survey". *BMJ* 2004; 328:1052-53.
2. Beasley R, Clayton T, Crane J, von Mutius E, Lai CKW, Montefort S, Stewart A, for the ISAAC Phase Three Study Group. *Association between paracetamol use in infancy and childhood, and risk of asthma, rhinoconjunctivitis, and eczema in children aged 6-7 years: analysis from Phase Three of the ISAAC programme.* *Lancet* 2008; 372(9643): 1039-48.

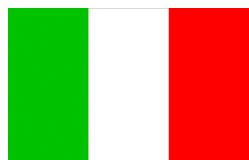
Regional

National

Isle Of Man

Italy

Local



## Italy, Western Europe

Centres:	Phase:	PI:	Age Groups
Ascoli Piceno	1	Professor Sergio Bonini	13-14
Cosenza	1	Dr Enea Bonci	13-14
Cremona	1	Mr Franca Rusconi	13-14, 6-7
Emilia-Romagna	1	Dr Marco Biocca	13-14, 6-7
Empoli	1	Ms Lucia Chetoni	13-14, 6-7
Firenze	1	Dr Elisabetta Chellini	13-14, 6-7
Frosinone	1	Mr Roberto Ronchetti	13-14
Milano	1	Dr Luigi Bisanti	13-14, 6-7
Roma	1	Dr Francesco Forastiere	13-14, 6-7
Siena	1	Ms Elisabetta Renzoni	13-14
Torino	1	Dr Giovannino Ciccone	13-14, 6-7
Trento	1	Dr Silvano Piffer	13-14
Verona	1	Professor Attilio Boner	13-14, 6-7
Viterbo	1	Mr Guiseppe Corbo	6-7
Roma	2	Dr Francesco Forastiere	9-11
Bari	3	Dr Lucio Armenio	13-14, 6-7
Colleferro-Tivoli	3	Dr Valerio Dell'Orco	13-14, 6-7
Cosenza	3	Dr Enea Bonci	13-14
Emilia-Romagna	3	Dr Claudia Galassi	13-14, 6-7
Empoli	3	Dr M G Petronio	13-14, 6-7
Firenze	3	Dr Elisabetta Chellini	13-14, 6-7
Mantova	3	Dr Gabriele Giannella	13-14, 6-7
Milano	3	Dr Luigi Bisanti	13-14, 6-7
Palermo	3	Dr Stefania La Grutta	13-14
Roma	3	Dr Francesco Forastiere	13-14, 6-7
Siena	3	Dr Piersante Sestini	13-14
Torino	3	Dr Giovannino Ciccone	13-14, 6-7
Trento	3	Dr Silvano Piffer	13-14, 6-7

## National Coordinator:

### Dr Francesco Forastiere

Department of Epidemiology  
Rome E Health Authority 00198 Roma  
Via Santa Costanza 53

Italy



#### Roles:

- ISAAC Steering Committee
- National Coordinator for Italy
- Phase One Principal Investigator for Roma
- Phase Two Principal Investigator for Roma
- Phase Three Principal Investigator for Roma

The Italian extension of the International Study of Asthma and Allergies in childhood (ISAAC) in Italy has been the SIDRIA project (Studi italiani sui disturbi respiratori nell'infanzia e l'ambiente- Italian Studies on Respiratory Disorders in Children and the Environment). Phase I and Phase III have been conducted and SIDRIA largely extended the original objectives of ISAAC, since from the first phase it was also aimed at evaluating the prevalence and the role of several potential environmental risk factors for children respiratory health. ISAAC phase II was conducted in one centre, Rome, and it included lung function measurements and prick tests to 9-11 years children.

Francesco Forastiere from the Department of Epidemiology (Lazio Region) in Rome was the coordinator of SIDRIA phase I and ISAAC phase II whereas Claudia Galassi from the Center of Cancer Prevention in Turin was the coordinator of SIDRIA phase II.

# The ISAAC Story

Regional  
National  
**Italy**  
Local

SIDRIA is a large multicentre, population based cross-sectional survey, conducted in two phases. Most of the centres that participated in ISAAC were included in the SIDRIA project. The first phase was carried out between October 1994 and March 1995, in 10 centers of Northern and Central Italy, varying in size, latitude, climate and level of urbanization (Torino, Milano, Cremona, Trento, Emilia-Romagna, Firenze, Empoli, Siena, Viterbo, Roma). The second phase was carried out between January and May 2002 in 13 Italian centers, including 3 centers from Southern Italy (Torino, Milano, Mantova, Trento, Emilia-Romagna, Firenze/Prato, Empoli, Siena, Roma, Colferro/Tivoli, Cosenza, Bari e Palermo).

In each phase, the study population consisted of a random sample of children aged 6-7 years attending the first and second grade of primary schools and adolescents aged 13-14 years attending the last grade of middle school. Standardized self-administered questionnaires were used. They included the ISAAC core questions regarding the frequency of wheezing, symptoms of allergic rhinitis and atopic eczema in the 12 months prior to the survey (defined as current symptoms), and the lifetime frequency of the diseases. In addition, the health section of the SIDRIA questionnaires included questions on medical diagnosis and access to health care for asthma, occurrence of respiratory symptoms other than asthma, medical history on episodes of respiratory diseases that occurred during the first two years of life. The questionnaires also included other sections aimed at investigating children's exposure to many known or suspected risk factors for respiratory diseases, including exposure to passive smoking, housing factors (as moulds and dampness), and traffic in the area of residence.

A questionnaire was distributed to the children and adolescents at school and filled in at home by their parents; a shorter questionnaire, mainly on current respiratory symptoms and on personal smoking habits, was filled in directly by adolescents at school. The protocols of both phases were approved by Ethics Committee of the Catholic University in Rome.

The results of the SIDRIA project have been extensively published. (see right)

## National Publications

The following publications used ISAAC data from Italy:

Anonymous. *Asthma and respiratory symptoms in 6-7 yr old Italian children: gender, latitude, urbanization and socioeconomic factors. SIDRIA (Italian Studies on Respiratory Disorders in Childhood and the Environment)*. Eur Respir J 1997; 10(8): 1780-6.

Anonymous. *Frequency of childhood asthma in various Italian regions. Results from ISAAC. Collaborating group of ISRDCE (Italian Studies of Respiration Disorders in Childhood and the Environment)*. [in Italian]. Epidemiol Prev. 1997; 21(4): 235-42. [Italian]

Ciccone G, Forastiere F, Agabiti N, Biggeri A, Bisanti L, Chellini E, Corbo G, Dell'Orco V, Dalmasso P, Volante TF, Galassi C, Piffer S, Piffer S, Renzoni E, Rusconi F, Sestini P, Viegi G. *Road traffic and adverse respiratory effects in children. SIDRIA Collaborative Group*. Occup Environ Med. 1998 Nov;55(11):771-8.

Peroni DG, Piacentini GL, Zizzo MG, Boner AI. *Prevalence of asthma and respiratory symptoms in childhood in an urban area of north-east Italy*. Monaldi Arch Chest Dis. 1998 Apr;53(2):134-7.

Rusconi F, Galassi C, Corbo GM, Forastiere F, Biggeri A, Ciccone G, Renzoni E. *Risk factors for early, persistent, and late-onset wheezing in young children. SIDRIA Collaborative Group*. Am J Respir Crit Care Med. 1999 Nov;160(5 Pt1):1617-22.

Renzoni E, Forastiere F, Biggeri A, Viegi G, Bisanti L, Chellini E, Ciccone G, Corbo G, Galassi C, Rusconi F, Sestini P. *Differences in parental- and self-report of asthma, rhinitis and eczema among Italian adolescents. SIDRIA collaborative group. Studi Italiani sui Disturbi Respiratori dell' Infanzia e l'Ambiente*. Eur Respir J. 1999 Sep;14(3):597-604.

Agabiti N, Mallone S, Forastiere F, Corbo GM, Ferro S, Renzoni E, Sestini P, Rusconi F, Ciccone G, Viegi G, Chellini E, Piffer S. *The impact of parental smoking on asthma and wheezing. SIDRIA Collaborative Group. Studi Italiani sui Disturbi Respiratori nell'Infanzia e l'Ambiente*. Epidemiology. 1999 Nov;10(6):692-8.

Fuso L, de Rosa M, Corbo GM, Valente S, Forastiere F, Agabiti N, Pistelli R. *Repeatability of the ISAAC video questionnaire and its accuracy against a clinical diagnosis of asthma*. Respir Med. 2000 Apr;94(4):397-403.

Forastiere F, Pistelli R, Sestini P, Fortes C, Renzoni E, Rusconi F, Dell'Orco V, Ciccone G, Bisanti L. *Consumption of fresh fruit rich in vitamin C and wheezing symptoms in children. SIDRIA Collaborative Group, Italy (Italian Studies on Respiratory Disorders in Children and the Environment)*. Thorax 2000 Apr;55(4):283-8.

Di Domenicantonio R, De Sario M, Sammarro S, Compagnucci P, Forastiere F, Pistelli R, Serra MG, Corbo G, Agabiti N, Perucci CA. *Asthma and allergies in childhood in Rome: Italian contribution to the ISAAC II*. Epidemiol Prev. 2003 Jul-Aug;27(4):226-33. [Italian]

Cesaroni G, Farchi S, Davoli M, Forastiere F, Perucci CA. *Individual and area-based indicators of socioeconomic status and childhood asthma*. Eur Respir J. 2003 Oct;22(4):619-24. Italian.

# The ISAAC Story

Farchi S, Forastiere F, Agabiti N, Corbo G, Pistelli R, Fortes C, Dell'Orco V, Perucci CA. *Dietary factors associated with wheezing and allergic rhinitis in children.* Eur Respir J.2003 Nov;22(5):772-80.

Sestini P, De Sario M, Bugiani M, Bisanti L, Giannella G, Kaisermann D, Frasca G, Lombardi E, Petronio MG, Dell'Orco V, Indinnimeo L, Brunetti L, La Grutta S, Gruppo Collaborativo SIDRIA-2. *[Frequency of asthma and allergies in Italian children and adolescents: results from SIDRIA-2].* Epidemiol Prev.2005 Mar-Apr;29(2 Suppl):24-31.[Italian]

Galassi C, Biggeri A, Ciccone G, Forastiere F, SIDRIA Phase 1 Collaborative Group. *Environment and respiratory diseases in childhood: the Italian experience.* Int J Occup Environ Health.2005 Jan-Mar;11(1):103-6.

Simoni M, Lombardi E, Berti G, Rusconi F, La Grutta S, Piffer S, Petronio MG, Galassi C, Forastiere F, Viegi G, SIDRIA-2 Collaborative Group. *Mould/dampness exposure at home is associated with respiratory disorders in Italian children and adolescents: the SIDRIA-2 Study.* Occup Environ Med.2005 Sep;62(9):616-22.

Galassi C, Forastiere F, Biggeri A, Gabellini C, De Sario M, Ciccone G, Biocca M, Bisanti L. *SIDRIA second phase: objectives, study design and methods.* Epidemiol Prev 2005; 29(2 Suppl):9-13. [Italian]

Anonymous. *Italian Studies on Respiratory Disorders in Children and the Environment. Second phase. Summary.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):6-8. [Italian]

Chellini E, Talassi F, Corbo G, Berti G, De Sario M, Rusconi F, Piffer S, Caranci N, Petronio MG, Sestini P, Dell'Orco V, Bonci E, Armenio L, La Grutta S; Gruppo Collaborativo SIDRIA-2. *Environmental, social and demographic characteristics of children and adolescents, resident in different Italian areas.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):14-23. [Italian]

Bisanti L, Russo A, Migliore E, Galassi C, Caranci N, Mirabelli D, Agabiti N, Dell'Orco V, Armenio L; Gruppo Collaborativo SIDRIA-2. *Respiratory and allergic disorders in children: differences in socio-economic status.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):32-5. [Italian]

Migliore E, Bugiani M, Berti G, Ciccone G, Russo A, Galassi C, Talassi F, Pistelli R; Gruppo Collaborativo SIDRIA-2. *Prevalence of asthma and allergies among migrant children and adolescents in Italy.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):36-41. [Italian]

Corbo GM, Forastiere F, Rusconi F, De Sario M, Biggeri A, Russo A, Chellini E, Brunetti L; Gruppo Collaborativo SIDRIA-2. *Dietary habits, life styles and respiratory symptoms in childhood.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):42-6. [Italian]

Rusconi F, Galassi C, Bellasio M, Piffer S, Lombardi E, Bonci E, Armenio L; Gruppo Collaborativo SIDRIA-2. *Risk factors in the pre-, perinatal and early life (first year) for wheezing in young children.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):47-51. [Italian]

De Sario M, Forastiere F, Viegi G, Simoni M, Chellini E, Piccioni P, Indinnimeo L, Brunetti L; Gruppo Collaborativo SIDRIA-2. *Parental smoking and respiratory disorders in childhood.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):52-6. [Italian]

Simoni M, Lombardi E, Berti G, Rusconi F, La Grutta S, Piffer S, Petronio MG, Galassi C, Forastiere F, Viegi G; Gruppo Collaborativo SIDRIA-2. *Effects of indoor exposures on respiratory and allergic disorders.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):57-61. [Italian]

Berti G, Migliore E, Cadum E, Ciccone G, Bugiani M, Galassi C, Biggeri A, Viegi G; Gruppo Collaborativo SIDRIA-2. *Outdoor risk factors and adverse effects on respiratory health in childhood.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):62-6. [Italian]

Forastiere F, Galassi C, Biggeri A, Richiardi L, Baussano I, Simoni M, Viegi G; Gruppo Collaborativo SIDRIA-2. *The proportion of respiratory disorders in childhood attributable to preventable and not preventable risk factors.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):67-9. [Italian]

Bellasio M, Pistelli R, Rusconi F, Caranci N, Frasca G, De Sario M, Rana M, La Grutta S, Galassi C; Gruppo Collaborativo SIDRIA-2. *Access to health care for asthma in Italian children and adolescents.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):70-6. [Italian]

Sestini P, Ciarleglio G, Forastiere F, Giannella G, Battisti L, Gentilini M, Dell'Orco V, La Grutta S; Gruppo Collaborativo SIDRIA-2. *Asthma attacks at school in Italian adolescents.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):77-9. [Italian]

Chellini E, Talassi F, Ciccone G, Bisanti L, Rusconi F, Piffer S, Biggeri A, Petronio MG, Sestini P, Forastiere F, De Sario M, Pistelli R, Corbo G, Viegi G; Gruppo Collaborativo SIDRIA-2. *Changes in social characteristics and risk factors for asthma and allergies among children and adolescents in Italy.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):80-5. [Italian]

De Sario M, Galassi C, Biggeri A, Bisanti L, Ciccone G, Piffer S, Chellini E, Petronio MG, Sestini P, Rusconi F, Pistelli R, Corbo G, Viegi G, Forastiere F; Gruppo Collaborativo SIDRIA-2. *Trends in the frequency of asthma and allergies.* Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):86-90. [Italian]

Regional

National

Italy

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Regional

National

Italy

Japan

Local

Perucci CA. *Public health implications*. Epidemiol Prev. 2005 Mar-Apr;29(2 Suppl):92-3. [Italian]

Pearce N *SIDRIA in the international context*. Epidemiol Prev 2005 Mar-Apr;29(2 Suppl):94-6. [Italian]

Galassi C, De Sario M, Biggeri A, Bisanti L, Chellini E, Ciccone G, Grazia Petronio M, Piffer S, Sestini P, Rusconi F, Viegi G, Forastiere F. *Changes in prevalence of asthma and allergies among children and adolescents in Italy, 1994-2002*. Pediatrics 2006; 117(1):34-42.

De Sario M, Di Domenicantonio R, Corbo G, Forastiere F, Pistelli R, Rusconi F, Sammarro S, Serra MG, Compagnucci P, Perucci CA. *Characteristics of early transient, persistent, and late onset wheezers at 9 to 11 years of age*. J Asthma. 2006 Oct;43(8):633-8.

Migliore E, Pearce N, Bugiani M, Galletti G, Biggeri A, Bisanti L, Caranci N, Dell'Orco V, De Sario M, Sestini P, Piffer S, Viegi G, Forastiere F, Galassi C, Ciccone G, SIDRIA2 Collaborative Group. *Prevalence of respiratory symptoms in migrant children to Italy: the results of SIDRIA-2 study*. Allergy 2007 Mar; 62(3):293-300.

Rusconi F, Galassi C, Forastiere F, Bellasio M, De Sario M, Ciccone G, Brunetti L, Chellini E, Corbo G, La Grutta S, Lombardi E, Piffer S, Talassi F, Biggeri A, Pearce N. *Maternal complications and procedures in pregnancy and at birth and wheezing phenotypes in children*. Am J Respir Crit Care Med. 2007 Jan 1;175(1):16-21. Epub Sep 2006.

Corbo GM, Forastiere F, De Sario M, Brunetti L, Bonci E, Bugiani M, Chellini E, La Grutta S, Migliore E, Pistelli R, Rusconi F, Russo A, Simoni M, Talassi F, Galassi C, Sidria2 Collaborative Group. *Wheeze and asthma in children: associations with body mass index, sports, television viewing, and diet*. Epidemiology. 2008 Sep;19(5):747-55.

Rosenlund M, Forastiere F, Porta D, De Sario M, Badaloni, Perucci CA. *Traffic-related air pollution in relation to respiratory symptoms, allergic sensitisation and lung function in schoolchildren*. Thorax 2009;64(7):573-80.

Migliore E, Berti G, Galassi C, Pearce N, Forastiere F, Calabrese R, Armenio L, Biggeri A, Bisanti L, Bugiani M, Cadum E, Chellini E, Dell'Orco V, Giannella G, Sestini P, Corbo G, Pistelli R, Viegi G, Ciccone G, Sidria- Collaborative Grp. *Respiratory symptoms in children living near busy roads and their relationship to vehicular traffic: results of an Italian multicenter study (SIDRIA 2)*. Environ Health 2009 Jun 18; 8:27.

Lombardi E, Simoni M, La Grutta S, Viegi G, Bisanti L, Chellini E, Dell'Orco V, Migliore E, Petronio MG, Pistelli R, Rusconi F, Sestini P, Forastiere F, Galassi C and the SIDRIA2 Collaborative Group. *Effects of pet exposure in the first year of life on respiratory and allergic symptoms in 7-yr-old children. The SIDRIA-2 study*. Pediatr Allergy Immunol 2010; 21(2): 268 - 276. Epub 2 July 2009.

Rusconi F, Gagliardi L, Galassi C, Forastiere F, Brunetti L, La Grutta S, Piffer S, Talassi F; the SIDRIA-2 Collaborative Group *Paracetamol and antibiotics in childhood and subsequent development of wheezing/asthma: association or causation?* Int J Epidemiol 2011; 40(3): 662-667

## Japan, Asia-Pacific

Centres:	Phase:	PI:	Age Groups
Fukuoka	1	Professor Sankei Nishima	13-14, 6-7
Fukuoka	3	Dr Hiroshi Odajima	13-14, 6-7
Tochigi	3	Professor Makino Sohei	13-14

### National Coordinator:

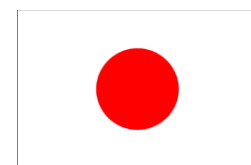
#### Professor Sankei Nishima

Director of Pediatrics  
The National Minami-Fukuoka Chest  
Hospital  
Yakatabaru 4-39-1  
Minami-ku  
Japan



#### Roles:

- National Coordinator for Japan
- Phase One Principal Investigator for Fukuoka



# The ISAAC Story

Japan has been still in confusion due to the Eastern Japan Earthquake, tsunami disaster, and nuclear plant accident. However, the heart-warming support from all over the world has been helping Japan restore the country little by little. We deeply appreciate your warm support. ISAAC Fukuoka Centre is located at the western part of Japan, and therefore we didn't have damage from the earthquake. Fukuoka city is a center of southern part of Japan, Kyusyu area, with the population of 13 million, and is now having its ordinary activities.

Our Centre participated in ISAAC Phase ????. Recently, we have started the epidemiological survey for 35,000 elementary school children of 11 prefectures at western Japan. This survey was conducted in 1982, 1992, and 2002 in the same districts with the same methods, and this recent survey is the forth survey.

The prevalence of bronchial asthma has been a 2.1 increase compared with that of 1982 and 2002. Since 1992, we have done the survey of other childhood allergic diseases besides asthma. As a result, the prevalence of atopic dermatitis has been decreased, but the prevalence of allergic rhinitis and conjunctivitis has been increased. (Sankei Nishima et al; Surveys on the Prevalence of Pediatric Bronchial Asthma in Japan: A Comparison between the 1982,1992,and 2002 Surveys Conducted in the Same Region Using the Same Methodology, Allergology International. 2009; 58:37-53). The result of our recent forth survey will come out in 2012.

Also, this year, the total guideline for pediatric allergic diseases (BA,AR,AD,FA) has been established in Japan. Furthermore, Japanese Guideline for the Diagnosis and Treatment of Allergic Diseases 2010(JAGL 2010) is published in English in the latest Allergology International and is free to be viewed. All access are welcome. ([http://www.jstage.jst.go.jp/browse/allergoint/60/2/\\_contents/-char/ja/](http://www.jstage.jst.go.jp/browse/allergoint/60/2/_contents/-char/ja/))

Regional  
National

Japan  
Jordan  
Kenya  
South Korea

Local



## Jordan, Eastern Mediterranean

Centres:	Phase:	PI:	Age Groups
Amman	3	Dr Faisal Abu-Ekteish	13-14, 6-7

Jordan has no National Coordinator



## Kenya, Africa

Centres:	Phase:	PI:	Age Groups
Eldoret	1	Dr Fabian O Esamai	13-14
Nairobi	1	Dr Joseph A Odhiambo	13-14
Eldoret	3	Dr Fabian O Esamai	13-14
Nairobi	3	Dr Lucy Ng'ang'a	13-14

**National Coordinator:**

**Dr Lucy Ng'ang'a**

Centres for Disease Control & Prevention (CDC)  
C/O American Embassy  
P.O. Box 9123

Kenya

**Roles:**

- National Coordinator for Kenya
- Phase Three Principal Investigator for Nairobi



## South Korea, Asia-Pacific

Centres:	Phase:	PI:	Age Groups
Provincial Korea	1	Dr Sang-II Lee	13-14, 6-7
Seoul	1	Dr Sang-II Lee	13-14, 6-7
Provincial Korea	3	Professor Ha-Baik Lee	13-14, 6-7
Seoul	3	Professor Ha-Baik Lee	13-14, 6-7

**National Coordinator:**

**Professor Ha-Baik Lee**

Department of Pediatrics  
Hanyang University College of Medicine  
17 Haengdang-Dong  
Sungdong-Ku  
South Korea

**Roles:**

- National Coordinator for South Korea
- Phase Three Principal Investigator for Provincial Korea, Seoul

# The ISAAC Story

Regional

National

Kuwait

Kyrgyzstan

Latvia

Local

## Kuwait, Eastern Mediterranean

Centres:	Phase:	PI:	Age Groups
Kuwait	1	Dr Jawad A al-Momen	13-14
Kuwait	3	Dr Jawad A al-Momen	13-14

**Kuwait has no National Coordinator**

### National Publications

The following publications used ISAAC data from Kuwait:

Behbehani NA, Abal A, Syabbalo NC, Abd Azeem A, Shareef E, Al-Momen J. *Prevalence of asthma, allergic rhinitis, and eczema in 13- to 14-year-old children in Kuwait: an ISAAC study.* *International Study of Asthma and Allergies in Childhood.* Ann Allergy Asthma Immunol 2000; 85(1): 58-63.

Owayed A, Behbehani N, Al-Momen J. *Changing prevalence of asthma and allergic diseases among Kuwaiti children.* *An ISAAC Study (Phase III).* Med Princ Pract.2008;17(4):284-9. Epub Jun 2008.

## Kyrgyzstan, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Balykchi	3	Dr Imanalieva Cholpon	13-14, 6-7
Bishkek	3	Dr Imanalieva Cholpon	13-14, 6-7
Jalalabat	3	Professor Shairbek Sulaimanov	13-14, 6-7

### National Coordinator:

#### Dr Imanalieva Cholpon

Kyrgyz Scientific Research Institute of Obstetrics and Pediatrics

Flat 9, 136 Panfilov str.

Kyrgyzstan

#### Roles:

- National Coordinator for Kyrgyzstan
- Phase Three Principal Investigator for Balykchi, Bishkek

The questionnaire by ISAAC technique was conducted in 2002. Employees of the National centre of motherhood and childhood protection participated in research. The ISAAC team in Bishkek was: Imanalieva Cholpon, Najimidinova Gulmira, Boronbaeva Elnura, Djanuzakova Nurgul and Moldogazieva Aigul. The ISAAC team in Balykchi was: Moldogazieva Aigul, Seitalieva Chiinara and Asankojoeva Janyl.

Before the questionnaire study began, letters of support from the Ministry of Health and the Ministry of science, formation and culture of the Kyrgyz Republic had been prepared and these departments gave the consent to carry out the research. In Bishkek 8194 children were questioned. 3146 of them were at the age of 6-7 years and 5048 children were aged 13-14 years and attended comprehensive schools. In Balykchi 2111 children were surveyed in all the comprehensive schools of the city, 729 aged 6-7 years old and 1382 aged 13-14 years.

Participation in the research has given us the invaluable experience of performing a large questionnaire study under international standards. The data have helped to achieve a representation about the prevalence of allergic diseases in the Kyrgyz Republic. Some elements of the questionnaire have now been introduced in medical institutions for diagnostics of allergic diseases.

We wish ISAAC creative successes and well-being.

## Latvia, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Riga	1	Dr Marcis Leja	13-14, 6-7
Rural Latvia	1	Dr Marcis Leja	13-14
Riga	2	Dr Vija Svabe	10-11 years
Riga	3	Dr Vija Svabe	13-14

**Latvia has no National Coordinator**

# The ISAAC Story



## Lebanon, Eastern Mediterranean

Centres:	Phase:	PI:	Age Groups
Beirut	1	Dr Fuad M Ramadan	13-14

**Lebanon has no National Coordinator**



## Lithuania, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Kaunas	1	Professor Jurgis Bojarskas	13-14, 6-7
Kaunas	3	Associate Professor Jolanta Kudzyte	13-14, 6-7
Panevezys	3	Professor Jurgis Bojarskas	13-14, 6-7
Siauliai	3	Professor Jurgis Bojarskas	13-14, 6-7

### National Coordinator:

#### Associate Professor Jolanta Kudzyte

Clinic of Children's Diseases  
Kaunas Medical University  
Eiveniu str. 2

Lithuania



#### Roles:

- National Coordinator for Lithuania
- Phase Three Principal Investigator for Kaunas

### Why our country joined ISAAC

We were late finding out about ongoing ISAAC studies, and so we were late with our Phase One results. Nevertheless, we were very eager to find out about the real situation concerning allergic diseases in Lithuania, especially among children, as being paediatric allergists and pulmonologists we saw the dramatically increasing numbers of allergic children. We selected the three biggest Lithuanian cities (Kaunas, Panevezys, Siauliai) as centres and examined all children from the secondary schools and kindergartens in them. Phase Three results were produced in time, as we already knew about the invitation to take part repeatedly in this survey. We were interested to see the dynamics of the prevalence of allergic diseases, which is why Kaunas centre completed repeat phases of ISAAC.

### Impact of ISAAC in our country

Various lecturers (pediatric and adult) and even Health Ministry representatives quote our ISAAC data, when talking about the spreading of allergies in Lithuania. Then we are sitting proud, with our heads raised, as still there are no data about the prevalence of adult allergies in Lithuania. Some data from our Lithuanian ISAAC results were published in the most popular Lithuanian medical journal 'Medicina'.



## Republic of Macedonia, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Skopje	3	Assoc Prof Emilija Vlaski	13-14

### National Coordinator:

#### Assoc Prof Emilija Vlaski

Department of Pulmonology and Allergology  
University Children's Hospital  
Vodnjanska 17  
1000 Skopje  
Republic of Macedonia



#### Roles:

- National Coordinator for Republic of Macedonia
- Phase Three Principal Investigator for Skopje

Regional  
National

**Lebanon**  
**Lithuania**  
**Republic of Macedonia**

Local

# The ISAAC Story

Regional

National

Republic of  
Macedonia  
Malaysia

Local

## WHY WAS MACEDONIA SELECTED FOR ISAAC?

The epidemiological data about the prevalence and severity of asthma and allergies in childhood in the Republic of Macedonia (FYROM) before the ISAAC Phase Three was scarce, although seen in the physician practise more frequently in the last decade. As well there was a lack of data about the influence of environmental factors on these diseases. R. Macedonia is a developing country in which some aggravating as well some preventive factors for allergic diseases are highly present. For example, the prevalence of ETS has been demonstrated to be very high. On the other hand, dietary antioxidants intake has been documented to be high as well, which may be explained by the geographical area where our country is situated and its climate.

Skopje was chosen as an investigational centre as a capital of R. Macedonia with almost one third of the inhabitants in our small country (600.000 out of around 2 millions inhabitants) and 55 primary schools with 10934 children 13-14 years old in 2001, which enabled at least 3000 respondents at this age group from randomly selected primary schools to be investigated. Contrary, other towns in R. Macedonia are much smaller with less than 3000 schoolchildren of the same age group. Compared to the rest of the country, in Skopje all proposed environmental risk factors for asthma and rhinitis and eczema, especially air pollution, are mostly present.

## IMPACT OF ISAAC IN MACEDONIA

The conduction of ISAAC Phase Three and the report of its data from Skopje have actualized the problem of childhood asthma, rhinoconjunctivitis and eczema as diseases with an increase in R. Macedonia.

Compared to the asthma, rhinoconjunctivitis and eczema prevalence rates worldwide, R. Macedonia i.e. Skopje in 2001/2002 appeared to have a moderately low prevalence of asthma and low prevalence rates of rhinitis and eczema symptoms. The much lower prevalence of ever-diagnosed asthma in contrast to the prevalence rates of current wheeze, current exercise-induced wheeze and dry night cough apart from chest infection suggested under-diagnosis of asthma and/or underreporting of the diagnosis by the young adolescents in our country. In contrast, ever-diagnosed hay fever and eczema seemed to be over-diagnosed and/or overreported. Some environmental risk factors associated with these diseases were identified in our country.

With intention to get an information about the same problem for the bigger part of the country, another study on local level using the same methodology and the ISAAC Phase Three questionnaires was performed in 2005/2006 in 7 cities in R. Macedonia, including 1000 respondents from each city. Skopje was one of the investigational centres in this study again. The two cross-sectional surveys 4-yr apart in Skopje showed a decrease in asthma symptoms accompanied with an increase in ever-diagnosed asthma, which seems to be a result to the improved awareness, diagnosis and treatment of asthma. However, the partial control i.e. under-treatment of severe asthma in the capital of our country is still present (an increase of severe asthma symptoms).

## Acknowledgments

We would like to thank children for their participation and the principals, psychologists, teachers for their collaboration in the ISAAC Phase Three survey. The Ministry of Education and Science of The Republic of Macedonia provided financial support for the study.

## Malaysia, Asia-Pacific

Centres:	Phase:	PI:	Age Groups
Alor Setar	1	Dr Keng Hwang Teh	13-14, 6-7
Ipoh	1	Dr Lim Wee Yeong	13-14, 6-7
Klang Valley	1	Associate Professor Jessie de Bruyne	13-14, 6-7
Kota Bharu	1	Associate Professor Ban Seng Quah	13-14, 6-7
Muar	1	Dr Kok Wai Chum	13-14, 6-7
Alor Setar	3	Dr Keng Hwang Teh	13-14, 6-7
Klang Valley	3	Associate Professor Jessie de Bruyne	13-14, 6-7
Kota Bharu	3	Associate Professor Ban Seng Quah	13-14, 6-7



## National Coordinator:

### Associate Professor Jessie de Bruyne

Department of Paediatrics  
Faculty of Medicine  
University of Malaya

Malaysia

#### Roles:

- National Coordinator for Malaysia
- Phase One Principal Investigator for Klang Valley
- Phase Three Principal Investigator for Klang Valley

# The ISAAC Story



## Malta, Eastern Mediterranean

Centres:	Phase:	PI:	Age Groups
Malta	1	Professor Stephen Montefort	13-14, 6-7
Malta	3	Professor Stephen Montefort	13-14, 6-7

### National Coordinator:

#### Professor Stephen Montefort

Department of Medicine  
University of Malta  
Appt 121 Tas- Sellum Residence

Malta



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Eastern Mediterranean
- National Coordinator for Malta
- Phase One Principal Investigator for Malta
- Phase Three Principal Investigator for Malta

### ISAAC in Malta

This study was a first for our small country where we managed to gather a strong set of data which we could reliably compare to other countries. This was especially significant as the numbers required by ISAAC to be recruited were a good percentage of Maltese children in the chosen age-groups. The results have opened the eyes of the health authorities and the public to the very real problem our country has with childhood allergic conditions. We have managed to publish our findings and this was an added bonus to our medical department. So all in all our experience in ISAAC has certainly been very good. This should encourage us to partake in future similar international studies.

### Findings

Malta seemed to have amongst the highest prevalences of allergic condition in the Mediterranean with the rate of rhinoconjunctivitis in 13 – 14 year olds being third highest in the world in phase 1 of the study. In the younger age group we have noticed that along the years between phase 1 and phase 3 we had a very significant increase in the prevalence of wheezing and rhinitis but not eczema. Thankfully this was also associated with better control and decrease in severity of the conditions studied. In the older age groups the prevalences tended to plateau and in the case of rhinitis and eczema, they actually decreased significantly.

### National Publications

The following publications used ISAAC data from Malta:

Montefort S, Lenicker HM, Caruna S, Agius Muscat H. *Asthma, rhinitis and eczema in Maltese 13-15 year-old schoolchildren -- prevalence, severity and associated factors [ISAAC]. International Study of Asthma and Allergies in Childhood.* Clin Exp Allergy 1998; 28(9): 1089-99.

Montefort S, Muscat HA, Caruana S, Lenicker H. *Allergic conditions in 5-8-year-old Maltese schoolchildren: Prevalence, severity, and associated risk factors [ISAAC].* Pediatr Allergy Immunol. 2002 Apr;13(2):98-104.

Montefort S, Ellul P, Montefort M, Caruana S, Muscat HA. *Increasing prevalence of asthma, allergic rhinitis but not eczema in 5- to 8-yr-old Maltese children (ISAAC).* Pediatr Allergy Immunol 2009; 20(1):67-71.

Montefort S, Ellul P, Montefort M, Caruana S, Agius Muscat H. *A decrease in the prevalence and improved control of allergic conditions in 13- to 15-yr-old Maltese children (ISAAC).* Pediatr Allergy Immunol 2010; 22(1): e107-e111

Regional

National

**Malta**

Local

# The ISAAC Story

Regional

National

Mexico

Local

## Mexico, Latin America

Centres:	Phase:	PI:	Age Groups
Cuernavaca	1	Professor Isabelle Romieu	13-14, 6-7
Ciudad de México (1)	3	Dra Blanca E Del-Río-Navarro	13-14, 6-7
Ciudad de México (3)	3	Dra Mercedes Barragán-Meijueiro	13-14, 6-7
Ciudad de México (4)	3	Dra Nelly Ramírez-Chanona	13-14, 6-7
Ciudad Victoria	3	Dr Roberto García-Almaráz	13-14, 6-7
Cuernavaca	3	Professor Isabelle Romieu	13-14, 6-7
Mérida	3	Dr Manuel Baeza-Bacab	13-14, 6-7
Mexicali Valley	3	Dr J Valente Merida-Palacio	13-14, 6-7
Monterrey	3	Dr Sandra Nora González-Díaz	13-14, 6-7
Toluca	3	Dr Francisco J Linares-Zapién	13-14, 6-7
Villahermosa	3	Dr Sergio Romero-Tapia	13-14, 6-7



### National Coordinator:

#### Dr Manuel Baeza-Bacab

Facultad de Medicina  
University Autónoma de Yucatán  
Avenida Itzáes No. 498 por calle 59-A  
Centro, Mérida  
Mexico

#### Roles:

- National Coordinator for Mexico
- Phase Three Principal Investigator for Mérida

### National Publications

The following publications used ISAAC data from Mexico:

Tatto-Cano MI, Sanin-Aguirre LH, González V, Ruiz-Velasco S, Romieu I *Prevalence of asthma, rhinitis and eczema in school children in the city of Cuernavaca, Mexico.[in Spanish]*. Salud Publica Mex 1997; 39(6): 497-506.

Del-Río-Navarro BE, Hernández-Román MP, Espinola Reyna G, Berber A, escalante Domínguez AJ, González-Reyes M, Rosas-Vargas MA, Pérez-Lopez J, Baeza-Bacab M, Sienna-Monge JJ. *A comparative study of bronchodilator reversibility with albuterol, between asthma symptomatic and asymptomatic children according to ISAAC questionnaire in Mexico City*. Allergol Immunopathol (Madr). 2004 Nov-Dec;32(6):334-9.

Violante R, Del-Río Navarro BE, Berber A, Ramírez Chanona N, Baeza Bacab M, Sienna Monge JJ. *Obesity risk factors in the ISAAC (International Study of Asthma and Allergies in Childhood) in Mexico City*. Rev Alerg Mex.2005 Jul-Aug;52(4):141-5.

Barragan-Meijueiro MM, Morfin-Maciel B, Nava-Ocampo AA. *A Mexican population-based study on exposure to paracetamol and the risk of wheezing, rhinitis, and eczema in childhood*. J Investig Allergol Clin Immunol 2006 16(4):247-52.

Del-Río-Navarro B, Berber A, Blandón-Vijil V, Ramírez-Aguilar M, Romieu I, Ramírez-Chanona N, Heras-Acevedo S, Serrano-Sierra A, Barraza-Villareal A, Baeza-Bacab M, Sienna-Monge JJ. *Identification of asthma risk factors in Mexico City in an International Study of Asthma and Allergy in Childhood survey*. Allergy Asthma Proc.2006 Jul-Aug;27(4):325-33.

Morfin-Maciel B, Barragan-Meijueiro Mde L, Nava-Ocampo AA. *Individual and family household smoking habits as risk factors for wheezing among adolescents*. Prev Med.2006 Aug;43(2):98-100.Epub May 2006.

Del-Río-Navarro B, Del-Río-Chivardi JM, Berber A, Sienna-Monge JJ, Rosas-Vargas MA, Baeza-Bacab M. *Asthma prevalence in children living in north Mexico City and a comparison with other Latin American cities and world regions*. Allergy Asthma Proc.2006 Jul-Aug;27(4):334-40.

Del-Río-Navarro BE, Luna-Pech JA, Berber A, Zepeda-Ortega B, Avila-Castañón L, Del-Río-Chivardi JM, Baeza-Bacab M, Sienna-Monge JJ. *Factors associated with allergic rhinitis in children from northern Mexico City*. J Investig Allergol Clin Immunol 2007; 17(2): 77-84.

Del-Río-Navarro BE, Ito-Tsuchiya FM, Berber A, Zepeda-Ortega B, Sienna-Monge JJ, García-Almaraz R, Baeza-Bacab M. *Study of the relationship between acetaminophen and asthma in Mexican children aged 6 to 7 years in 3 Mexican cities using ISAAC methodology*. J Investig Allergol Clin Immunol.2008;18(3):194-201.

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Gutiérrez-Delgado RI, Barraza-Villarreal A, Escamilla-Núñez MC, Solano-González M, Moreno-Macías H, Romieu I. *Food consumption and asthma in school children in Cuernavaca, Morelos, Mexico. [Consumo de alimentos y asma en niños escolares de Cuernavaca]* Salud Publica Mex 2009; 51(3): 202-211.

González-Díaz SN, Del Río-Navarro BE, Pietropaolo-Cienfuegos DR, Escalante-Domínguez AJ, García-Almaraz RG, Mérida-Palacio V, Berber A *Factors associated with allergic rhinitis in children and adolescents from northern Mexico: International Study of Asthma and Allergies in Childhood Phase IIIB* Allergy Asthma Proc 2010; 31(4): 53-62

Regional  
National

Mexico  
Morocco  
Netherlands  
Nouvelle  
Caledonie

Local



## Morocco, Africa

Centres:	Phase:	PI:	Age Groups
Casablanca	1	Professor Zoubida Bouayad	13-14
Marrakech	1	Professor Zoubida Bouayad	13-14
Rabat	1	Professor Abdelkrim Bennis	13-14
Benslimane	3	Professor Zoubida Bouayad	13-14
Boulmene	3	Professor Zoubida Bouayad	13-14
Casablanca	3	Professor Zoubida Bouayad	13-14
Marrakech	3	Professor Zoubida Bouayad	13-14

### National Coordinator:

#### Professor Zoubida Bouayad

Service des Maladies Respiratoires

Hôpital 20 Août  
CHU Ibn Rochd  
Morocco

#### Roles:

- National Coordinator for Morocco
- Phase One Principal Investigator for Casablanca, Marrakech
- Phase Three Principal Investigator for Benslimane, Boulmene, Casablanca, Marrakech



## Netherlands, Western Europe

Centres:	Phase:	PI:	Age Groups
Netherlands (Utrecht)	2	Professor Bert Brunekreef, PhD	7-12
Netherlands	3	Professor Rutger Engels	13-14

### National Coordinator:

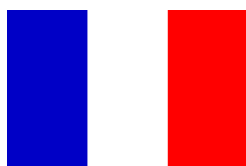
#### Mr Roy Otten

Institute of Family and Child Care Studies  
University of Nijmegen  
PO Box 9104

Netherlands

#### Roles:

- National Coordinator for Netherlands



## Nouvelle Calédonie, Oceania

Centres:	Phase:	PI:	Age Groups
Nouvelle Calédonie	3	Dr Isabella Annesi-Maesano	13-14

### National Coordinator:

#### Dr Sylvie Barny

Direction des Affaires Sanitaires et Sociales (DRASS)

Nouvelle Calédonie

#### Roles:

- National Coordinator for Nouvelle Calédonie



# The ISAAC Story

Regional

National

New Zealand

Local

## New Zealand, Oceania

Centres:	Phase:	PI:	Age Groups
Auckland	1	Professor M Innes Asher ONZM	13-14, 6-7
Bay of Plenty	1	Dr Chris Moyes	13-14, 6-7
Christchurch	1	Associate Professor Philip Pattemore	13-14, 6-7
Hawkes Bay	1	Dr David Barry	13-14, 6-7
Nelson	1	Dr Richard MacKay	13-14, 6-7
Wellington	1	Professor Julian Crane	13-14, 6-7
Hawkes Bay	2	Professor Julian Crane	10.1-12.6 years
Auckland	3	Professor M Innes Asher ONZM	13-14, 6-7
Bay of Plenty	3	Dr Chris Moyes	13-14, 6-7
Christchurch	3	Associate Professor Philip Pattemore	13-14, 6-7
Nelson	3	Dr Richard MacKay	13-14, 6-7
Wellington	3	Professor Neil Pearce	13-14, 6-7

## National Coordinator:

### Professor Innes Asher

Department of Paediatrics: Child and Youth Health  
Faculty of Medical and Health Sciences  
The University of Auckland  
Private Bag 92019  
New Zealand



#### Roles:

- Chairperson of the ISAAC Steering Committee
- Chairperson of the ISAAC Executive
- Director, ISAAC International Data Centre
- National Coordinator for New Zealand

## Why was New Zealand selected for ISAAC?

New Zealand started focusing on asthma in earnest in 1981 when it became apparent that a new epidemic of asthma deaths had arisen in 1977, affecting New Zealand more than any other country. This stimulated a range of research programmes exploring the reasons for this epidemic, starting with a prospective national asthma mortality study which confirmed the presence of an epidemic of asthma deaths. A focus on the number of admissions to hospital for asthma found that there were dramatic increases in New Zealand, Australia, The United Kingdom, Canada and USA and the highest number of admissions per capita was in New Zealand children.

In the 1980s in New Zealand there were several studies of asthma prevalence which showed a high and rising prevalence of asthma in school aged children. The 1985 Auckland asthma prevalence study of 7-10 year old children was able to explore potential reasons for differences in mortality and hospital admissions between NZ and Australia, and between European, Maori and Pacific children in Auckland. For the first time anywhere in the world, this study used the same protocol (questionnaire and histamine challenge) to compare asthma in two different countries. Current wheezing was very similar in Auckland European children (14.8%) and Wagga Wagga, inland NSW (15%) and slightly lower in Belmont, coastal NSW (10%), and these changes were paralleled very closely in the BHR prevalences (20.2%, 19.1%, 15.5% respectively). Within the Auckland sample, we found that Maori children had the highest prevalence of respiratory symptoms, and Europeans had rates similar to Pacific children. The prevalence of diagnosed asthma was similar between the three ethnic groups, whereas bronchial hyperresponsiveness to histamine, unlike the Auckland-NSW comparisons, did not parallel the symptom prevalences. Bronchial hyperresponsiveness among Europeans was 20%, Maori 13% and Pacific children 8.7%. As a result of this study it seemed that the symptoms more clearly paralleled the hospital admission and mortality data than did bronchial hyperresponsiveness, and the questionnaire used in this study therefore set the pattern for future studies.

In 1991 we received a grant from the Health Research Council of New Zealand to compare the prevalence and severity of childhood asthma in two age-groups of children both between countries and within New Zealand (by area and ethnic group). This HRC grant covered the costs of fieldwork in Auckland, Wellington and Christchurch, and in Auckland a full-time data manager, and secretarial and computing support. The funding remained conditional upon at least one other centre outside New Zealand obtaining funds for a similar survey in their own centre, a requirement which was soon met. This initiative joined with the German initiative (see 'Origins') in March 1991, which then formally became ISAAC.



## National Publications

The following publications used ISAAC data from New Zealand:

Shaw RA, Crane J, Pearce N, et al. *Comparison of a video questionnaire with the IUATLD written questionnaire for measuring asthma prevalence.* Clin Exp Allergy 1992; 22(5): 561-568.

Shaw R, Woodman K, Ayson M, Dibdin S, Winkelmann R, Crane J, Beasley R, Pearce N. *Measuring the prevalence of bronchial hyper-responsiveness in children.* Int J Epidemiol 1995; 24(3): 597-602.

Stewart AW, Asher MI, Clayton TO, Crane J, D'Souza W, Ellwood PE, Ford RPK, Mitchell EA, Pattemore PK, Pearce N. *The effect of season-of-response to ISAAC questions about asthma, rhinitis and eczema in children.* Int J Epidemiol 1997; 26: 126-36.

Asher MI, Barry D, Clayton T, Crane J, D'Souza W, Ellwood P, Ford RPK, Mackay R, Mitchell EA, Moyes C, Pattemore P, Pearce N, Stewart AW. *The burden of symptoms of asthma, allergic rhinoconjunctivitis and atopic eczema in children and adolescents in 6 New Zealand centres ISAAC Phase One.* NZ Med J 2001; 114: 114-20.

Pattemore PK, Ellison-Loschmann L, Asher MI, Barry DMJ, Clayton TO, Crane J, D'Souza WJ, Ellwood P, Ford RPK, Mackay RJ, Mitchell EA, Moyes C, Pearce N, Stewart AW. *Asthma prevalence in European, Maori, and Pacific children in New Zealand ISAAC study.* Pediatr Pulmonol 2004; 37(5): 433-42.

Erwin EA, Wickens K, Custis NJ, Siebers R, Woodfolk J, Barry D, Crane J, Platts-Mills TA. *Cat and dust mite sensitivity and tolerance in relation to wheezing among children raised with high exposure to both allergens.* J Allergy Clin Immunol 2005; 115(1): 74-9.

# The ISAAC Story

## National Publications

The following publications used ISAAC data from New Zealand:

Asher MI, Stewart AW, Clayton T, Crane J, Ellwood P, MacKay R, Mitchell E, Moyes C, Pattemore PK, Pearce N. *Has the prevalence and severity of symptoms of asthma changed among children in New Zealand? ISAAC Phase Three.* NZ Med J 2008; 121(1284): 52-63

Ellison-Loschmann L, Pattemore PK, Asher MI, Clayton TO, Crane J, Ellwood P, Mackay RJ, Mitchell EA, Moyes C, Pearce N, Stewart AW. *Ethnic differences in time trends in asthma prevalence in New Zealand ISAAC Phases I and III.* Int J Tuberc Lung Dis 2009; 13(6):775-782.

Mitchell EA, Stewart AW, Clayton TO, Asher MI, Ellwood P, Mackay R, Moyes C, Pattemore PK, Pearce N. *Cross-sectional survey of risk factors for asthma in 6-7-year-old children in New Zealand International Study of Asthma and Allergy in Childhood Phase Three.* J Paediatr Ch Health 2009 June; 45(6): 375-383.

## Our experience of ISAAC

### Phase One:

Six centres took part in both age groups in 1992-3: Auckland, Bay of Plenty, Christchurch, Hawkes Bay, Nelson, Wellington [Asher 2001]. We found that asthma, rhinitis and eczema symptoms were common in New Zealand school children with resultant morbidity and cost. The prevalence of symptoms was high, for asthma 25% and 30%, allergic rhinoconjunctivitis 10% and 19%, and atopic eczema 15% and 13% in the 6-7 year (children) and 13-14 year (adolescent) age groups respectively. More than 40% of participants had symptoms in the last year of at least one condition, most commonly asthma. There was little regional variation with the exception of lower rates in Nelson children who had significantly lower prevalence values for some symptoms of asthma and allergic rhinoconjunctivitis.

### Season of response

In New Zealand we chose to examine whether the season in which the parent/adolescent responded to the questionnaire influenced the symptom prevalence of asthma. Auckland, Wellington and Christchurch were the three New Zealand centres where this was examined. The resultant publication [Stewart 1997] showed that there was no effect for eczema symptoms, a small effect for asthma symptoms, and a significant season-of-response effect for rhinitis symptoms.

### Ethnic comparisons Phase One

We had sufficient numbers of participants to undertake a comparison based on ethnicity [Pattemore 2004]. Maori children had higher rates of diagnosed asthma and reported asthma symptoms than Pacific participants in both age groups (diagnosed asthma in 67-year-olds: Maori, 31.7%; Pacific, 21.2%; 13-14-year-olds: Maori, 24.7%; Pacific, 19.2%; recent wheeze in 6-7-year-olds: Maori, 27.6%; Pacific, 22.0%; 13-14-year-olds: Maori, 30.8%; Pacific, 21.1%). European children had rates intermediate between those of Maori and Pacific children (6-7-year-olds) or similar to those of Maori participants (13-14-year-olds), but had the lowest prevalence of night waking with wheeze in both age groups. The pattern of differences closely resembled that in the 1985 Auckland study, despite a 1.5-1.7-fold overall increase in prevalence between 1985 and 1992-3. Thus there are important differences in asthma prevalence among Maori, Pacific, and European children and adolescents. These differences are small compared to worldwide variation, but the pattern is stable over time. The higher rate of severe asthma symptoms that Maori and Pacific children and adolescents report may be one reason for the increased asthma morbidity in these groups.

### Phase Two:

One centre took part in Phase Two: Hawke's Bay. We chose to undertake ISAAC Phase Two study in Hawke's Bay because it gave us an opportunity to undertake two studies using largely a single set of fieldwork, to provide data for ISAAC Phase Two and secondly we were able to use much of the same data to provide to repeat one of the first international asthma prevalence surveys that had been undertaken by Michael Burr and David Barry in the Hawke's Bay and Wales [Barry 1991], and later included South Africa and Sweden [Burr 1994], using the same schools, methodology and personnel to give us a comparison of prevalence over a 10 year period.

The study was run by Dr Kristin Wickens in the Hawkes Bay over the summer period 2000. We had excellent help from Dr Barry himself and also from one of his retired senior paediatric nurses - Ms Ngairi Bone. We were also fortunate to have two third year medical students join us from the Netherlands looking for a small student elective to undertake research and they provided excellent additional support for the field work and also got a publication from an add on project undertaken during the fieldwork [Rhodius 2002]. The study provided New Zealand data for ISAAC Phase Two, but also provided a number of spin-off studies that looked at fast foods and asthma and changes in obesity and their relationship to asthma over 10 years [Wickens 2005(1), Wickens 2005(2)]. The data also formed the basis for some interesting work on cat allergen [Erwin 2005] undertaken by Tom Platt-Mills and colleagues who also measured sIgE levels for the study.

The Hawkes Bay turned out to be an excellent place to undertake research like this and we had tremendous co-operation from the schools and from the surrounding community and also had enormous benefit from employing people who were well known in the community and were able to encourage both schools and parents to take part.

Also we undertook two forms of measurement of airway hyperresponsiveness, exercise and hypertonic saline. The exercise challenge used a five minute running test [Burr 1989] allowing us to compare this challenge with previous studies and with the UK centre which also used it. We also undertook a hypertonic saline challenge and again were fortunate to have a visiting research fellow to help us with this.

Regional

National

New Zealand

Local

# The ISAAC Story

Regional

National

New Zealand

Local

In this 8 to 12 age group we found the prevalence of wheezing in the last year was 22.0% and asthma ever, 35.7%. A positive exercise challenge (=15% fall in PEF post exercise) was found in 8.4%. A positive skin prick test to any allergen was found in 34.7% of children. Interestingly when comparing the prevalence from 10 years before (restricted to just the 12 year old children) wheezing had increased from 17.7% to 23.3%, asthma ever from 16.9% to 37%, while a positive exercise response had fallen from 12.3% to 9.0%.

## Phase Three:

Five centres took part in Phase Three in both age groups 9 years after their participation in Phase One [Asher 2008]: Auckland, Bay of Plenty, Christchurch, Nelson and Wellington. The low response rate for children within Wellington meant that centre was excluded for the younger age group. Reported asthma ever increased from 24.6% to 30.2% in children and from 24.1% to 32.4% in adolescents. Current wheeze (written questionnaire) significantly decreased in children from 23.6% to 22.2% and in adolescents from 29.7% to 26.7%, and for the video questionnaire from 18.1% to 11.1% ( $p < 0.001$ ). There was a significant reduction in wheezing limiting speech from 5.0% to 3.7% in children, and 7.9% to 6.2% in adolescents. Little regional variation was found; the lower prevalence for some symptoms reported for Nelson in Phase One was not evident for Phase Three. A higher proportion of participants with asthma symptoms in Phase Three reported having ever had asthma compared with Phase One. The decrease in prevalence and severity of symptoms of asthma was encouraging, but the reasons for these trends are currently unclear. Increases in asthma labelling are likely to be due to greater awareness of asthma. A trend of decreasing prevalence of asthma symptoms, if maintained, has positive implications for lessened burden of disease among asthmatics and lowered cost of treatment.

## Ethnic comparisons Phase Three

Ethnic disparities were examined again, the first international report of time trends in ethnicity [Ellison-Loschmann 2009]. The prevalence of current wheeze in children was 28.5% in Maori and 25.2% in Pacific, compared with 20.7% in European/Pakeha. In adolescents, 29.9% of Maori and 20.8% of Pacific experienced current wheeze, compared to 28.6% of European/Pakeha. Between Phases One and Three, the prevalence of current wheeze increased significantly by 0.49% per year in Pacific children, increased non-significantly by 0.12% per year in Maori children, and decreased significantly by 0.25% per year in European/Pakeha children. Among adolescents, the prevalence of current wheeze increased by 0.05% per year in Pacific. In contrast, European/Pakeha and Maori adolescents showed decreases of 0.33% per year and by 0.07% per year respectively. Ethnic differences in asthma symptom prevalence in New Zealand have thus increased between Phase One and Phase Three. The reasons for this are unclear, but may reflect inequalities in access to health services.

## Risk factor analyses

Risk factor analyses are being undertaken for each of the three diseases. As for the worldwide analyses, antibiotics and paracetamol used in the first year of life were associated with an increased risk of current wheeze. Watching television for 5 or more hours per day was associated with an increased risk of current wheeze, whereas consumption of milk and eggs consumption in the last 12 months was associated with a reduced risk of current wheeze.

## Impact of ISAAC

ISAAC has provided vital information concerning prevalence and time trends of asthma, rhinitis and eczema within New Zealand, as well as providing a global context. We presumed that prevalence in New Zealand was high compared with many other countries but this could only be confirmed by a unique international study such as ISAAC. Ethnic disparities in asthma within New Zealand have been confirmed, and the widening gap for Maori could be preventable. ISAAC has also promoted development of research links within New Zealand, and with international collaborators, and has provided New Zealand researchers with invaluable experience of playing a leading role in a large international collaborative research programme.

## Acknowledgements

We gratefully acknowledge financial support from the Health Research Council of New Zealand, the Asthma and Respiratory Foundation of New Zealand, the Child Health Research Foundation, the Hawke's Bay Medical Research Foundation, the Waikato Medical Research Foundation, Glaxo Wellcome New Zealand, Nelson Marlborough Health Services Ltd, the NZ Lottery Board and Astra Zeneca New Zealand. We are also indebted to all the children, parents and school staff who participated in the surveys, and wish to thank our fieldwork teams for their enthusiasm and diligence throughout each study.

# The ISAAC Story

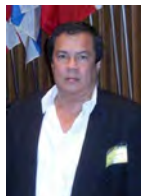
## Nicaragua, Latin America

Centres:	Phase:	PI:	Age Groups
Managua	3	Dr José Félix Sánchez	13-14, 6-7

### National Coordinator:

#### Dr José Félix Sánchez

Pediatric Pulmonologist, Director of the Department of Medicine and Pulmonology Children's Hospital "Manuel de Jesus Rivera", National Referral Hospital of Pediatrics in Nicaragua  
District V, Managua,  
Nicaragua



#### Roles:

- National Coordinator for Nicaragua
- Phase Three Principal Investigator for Managua

Regional

National

**Nicaragua**

Local

### Why was this centre selected for ISAAC?

I found out about ISAAC phase III by Dr. Manuel Soto Quiros, who was my mentor during my Pulmonology fellowship in Costa Rica. Dr. Quiros and Dr. Lars Å Hanson, Department Clinical Immunology, Göteborg University, Sweden, both were involved in the decision that Nicaragua participated in the study. Nicaragua didn't count with prevalence studies of asthma or allergies. Our country could participate in the phase III of ISAAC thanks to their collaboration.

In the survey on Conditions of Life (EMNV'98) it was found that 64.8% of the families in Nicaragua live in situation of poverty, or extreme poverty and that only one out of four homes satisfies its basic necessities. Managua, as the capital of Nicaragua, have the major density population, where the industrial development is settled. However, behind the acute conditions the chronic diseases appear, but in the developing countries they are often not noticed, diagnosed and properly treated. Such diseases may, because of their chronic nature, severely impair growth and development as well as educational capacity in children. They will also affect the whole family in many ways, not least its economy. The hospitalization rates in children with asthma have been increasing in Nicaragua, and we didn't count with studies that could measure the prevalence of symptoms and severity among our population.

The area of study was District VI of Managua (Ministry of Health), located in the eastern part of Managua (Fig 1). It has an area of 42 sq km. The total population is estimated to 146,050 inhabitants; of those 65,722 are children less than 15 years old.

The VI District of Managua was chosen because this is the city area where most of the poor people live, in "barrios" and settlements. The epidemiological profile shows a high incidence of respiratory diseases and acute diarrheas. There is a higher prevalence of malnutrition and parasitism. The sewer and drainage structures are deficient. There are unsuitable potable water services, with inappropriate liquid waste elimination. Many families do not have drain and waste water installation of the people use latrines. The garbage collection service is deficient. The electricity service is inappropriate. Their health care service is principally provided by the State.

Fig 1. Map of the capital city of Managua. Area of the study circled in black.

### Our experience of ISAAC

The ISAAC core questionnaires were translated into Spanish, according to defined guidelines, including the familiar terminology of the local community, such as "silbido", "lira" referring to wheezing. At first we applied a pilot study for the questionnaires that was reviewed by Dr. Manuel Soto Quiros, Costa Rica National Coordinator for ISAAC. We didn't use the videos mode.

School Principals that participated were very enthusiastic and their collaboration was very important to achieve the study. We had good acceptance from families and children, 95% of questionnaires were sent back complete from parents.

### Impact of ISAAC in our country

Before ISAAC data was insufficient, it was the first study for asthma and allergies in Nicaragua, and it marked the beginning for similar studies in other areas of our country, such as the rural areas. Evenly it initiated the development of health and education strategies for the accurate diagnose and treatment for these diseases.

# The ISAAC Story

Regional

National

Nicaragua

Nigeria

Niue

Norway

Sultanate Of

Oman

Local

## Acknowledgements

This study was conducted with the guidance of Dr. Manuel Soto-Quiros pediatric pulmonologist, from the National Children's Hospital of Costa Rica "Carlos Saenz" and Dr. Lars Å Hanson Department Clinical Immunology, Göteborg University, Sweden. Both were involved in the decision to develop the study, translation of the instrument, pilot study, school selection, monitoring collection of the questionnaires and finally the recording of the information according to the ISAAC protocol for the phase III.

For this study the technical and methodological quality were counted with the financial support of SAREC and VARDAL, both Swedish institutions that support scientific and development in Latin America.

For its realization we had the approval and collaboration of the Ministry of Health of Nicaragua and Ministry of Education of the government of Nicaragua.

Eduardo Parrales, M.D. was the Ministry of Health director of the area VI where we developed the study. He was a very important support to achieve the objectives.

For the collection of the questionnaires, we hired two registered nurses, Lic. Alba Sandoval and Lic. Martha Garcia who made an excellent work in the field.

We appreciate all the support and coordination of the school directors and teachers with the study. As well children and their families, they were very interested in the study and the results.

Click the link to the left to see our photos.

## Nigeria, Africa

Centres:	Phase:	PI:	Age Groups
Ibadan	1	Professor Babatunde O Onadeko	13-14, 6-7
Ibadan	3	Professor Babatunde O Onadeko	13-14, 6-7

**Nigeria has no National Coordinator**



## Niue, Oceania

Centres:	Phase:	PI:	Age Groups
Niue Island	3	Ms Moka Magatogia	13-14, 6-7

**Niue has no National Coordinator**



## Norway, Western Europe

Centres:	Phase:	PI:	Age Groups
Tromsø	2	Dr Wenche Nystad	9-11

**Norway has no National Coordinator**



## Sultanate Of Oman, Eastern Mediterranean

Centres:	Phase:	PI:	Age Groups
Al-Khod	1	Associate Professor Bazdawi Al-Riyami	13-14, 6-7
Al-Khod	3	Associate Professor Omar Al-Rawas	13-14, 6-7

**National Coordinator:**

**Associate Professor Omar Al-Rawas**

Head, Department of Medicine  
College of Medicine and Health Sciences  
Sultan Qaboos University  
P.O. Box 35; Postal Code 123  
Sultanate Of Oman



**Roles:**

- National Coordinator for Sultanate Of Oman
- Phase Three Principal Investigator for Al-Khod



# The ISAAC Story

## Why was this Centre Selected for ISAAC?

We received invitation from Professor Stephen Montfort, coordinator for the Eastern Mediterranean region as very few centres in the region had shown interest. At the time Oman did not have any community based asthma data and this was a welcome opportunity for us to collaborate with this international study. This proved to be wonderful opportunity.

In collaboration with the national school health department under the Ministry of Health we were able to survey all the health regions in the country and sample from a base of all public schools which represented more than 99% of all schools. Effectively our centre produced national data although we are known as Al Khodh centre because of the location of the Sultan Qaboos University.

## Our Experience with ISAAC

**The Pilot Study:** This was an interesting exercise because when we started the translation initially we used a written Arabic language version of the translation of key words such as wheezing, asthma, eczema, hay fever etc. only to find out later that this was not universally understood. We had to go back to the “clinical” language used during normal consultation. The video questionnaire was striking for many of the children.

**Phases One & Three:** Both age groups participated in both phases which were 6 years apart (1995 and 2001). In both surveys, the total national target samples were randomly selected from the ten administrative (representing the eight geographical) regions of Oman using the proportion allocation method. The total number of distributed questionnaires (Arabic version) was 7,625 (4,079 aged 6–7 years and 3,546 aged 13–14 years) in Phase One (April 1995) and 8,080 questionnaires (4,235 aged 6–7 years and 3,853 aged 13–14 years) in Phase Three (April 2001). In Phase Three, in addition to the written questionnaire, 13-14 year old children completed the ISAAC asthma video questionnaire.

The phase I survey in 1995 was the first survey of asthma symptoms in Oman. It showed that the prevalence rates of reported diagnoses of asthma, allergic rhinitis and eczema were higher in older children (20.7%, 10.5% and 14.4% compared with 10.5%, 7.4% and 7.5%, respectively). Although the prevalence of asthma in Omani children was in the intermediate range of the ISAAC global ranking, it was the highest among the participating Eastern Mediterranean countries and Omani children had a relatively high prevalence of severe asthma symptoms (sleep disturbance and speech limiting wheeze).

Over the 6 years there was a significant increase in the prevalence of current wheeze ‘any wheeze during the past 12 months’ in the younger group with no significant change in asthma diagnosis (10.5% vs. 10.6%) or any other asthma symptoms. In the older group, all asthma symptoms remained unchanged except speech-limiting wheeze which declined from 4.0% to 2.8. In both surveys, more than 60% of current wheezers reported severe asthma symptoms, while only 60% of these reported a diagnosis of asthma. The persistence of the relatively high prevalence of severe asthma symptoms in Omani children is of particular concern. These findings suggest under diagnosis and/or poor recognition of asthma which had not improved over time and require further studies.

Phase one result also showed a surprisingly high prevalence in all asthma symptoms in the Eastern Region (Sharqiya) of the country. This appears to be genuine as it was confirmed in the Phase Three studies. Over the period of six years, the Sharqiya (Eastern) region continued to have the highest prevalence of self-reported asthma diagnosis and all asthma symptoms in both age groups, with a significant increase in the prevalence of wheeze in the past 12 months (from 8.7% to 13.8%) and asthma diagnosis (from 13.8% to 17.8%) in the young group, and a significant increase in night cough (from 21.6% to 27.8%) in the older group. All other regions had lower prevalence rates in Phase One in both age groups, and showed either no significant change or a decline in one or two of the self-reported asthma symptoms in Phase Three (2001).

**Phase Two:** Due to the cost and logistics, we were not able to formally participate in the full ISAAC Phase Two Protocol. However, we used the questionnaire component of the survey with the addition of questions concerning the use and effect of Arabian incense (common practice in Omani households) on asthma symptoms to investigate the potential risk factors for asthma and allergies in two representative regions of Oman. A target sample (2441) of 10 year old schoolchildren was randomly selected from a representative sample of public schools from Muscat (1241 children) and South Sharqiya (1200 children) using stratified multi-stage sampling method. The selected two regions out of the ten regions of Oman were considered as potentially informative based on their different prevalence rates of asthma identified in ISAAC phase I, and the potential for differences in environmental exposures. As the capital of Oman, Muscat population comes from most regions of the country, and the prevalence of asthma symptoms and diagnosis in Muscat resembles the national average, whereas South Sharqiya (Eastern) region has the highest prevalence rates of all asthma symptoms. The results of this survey confirmed the higher prevalence of all asthma symptoms in Sharqiya in a different age group. It also identified exposure to Arabian incense as a common trigger factor for asthma symptoms in Omani children.

Our ISAAC results gave the first insight to the burden of asthma and allergies in Oman and provided a good platform for future studies.

Regional

National

**Sultanate Of  
Oman**

Local

# The ISAAC Story

Regional

National

Sultanate Of  
Oman

Pakistan

Panamá

Paraguay

Local

## Acknowledgements

Our ISAAC studies were supported by grants from Sultan Qaboos University. We also gratefully acknowledge the valuable support from Ministry of Health and Ministry of Education. We thank all children and parents who participated in the study. We also thank the school health physicians of the Ministry of Health for distributing and retrieving the questionnaires.

## Pakistan, Eastern Mediterranean

Centres:	Phase:	PI:	Age Groups
Karachi	1	Dr Zulfiqar A Bhutta	13-14
Islamabad	3	Dr Mohammad Osman Yusuf	13-14, 6-7
Karachi	3	Dr Naseeruddin Mahmood	13-14, 6-7



### National Coordinator:

#### Dr Naseeruddin Mahmood

Department of Paediatrics  
The Aga Khan University  
PO Box 3500  
Stadium Road  
Pakistan

#### Roles:

- National Coordinator for Pakistan
- Phase Three Principal Investigator for Karachi

## Panamá, Latin America

Centres:	Phase:	PI:	Age Groups
David-Panamá	1	Dr Gherson Cukier	13-14, 6-7
David-Panamá	3	Dr Gherson Cukier	13-14, 6-7



### National Coordinator:

#### Dr Gherson Cukier

Pulmonary and Bronchoscopy Pediatrics Section  
Hospital Materno Infantil Jose Domingo de Obaldia  
PO Box 662

Panamá

#### Roles:

- National Coordinator for Panamá
- Phase One Principal Investigator for David-Panamá
- Phase Three Principal Investigator for David-Panamá

## Paraguay, Latin America

Centres:	Phase:	PI:	Age Groups
Asunción	1	Dr Jaime A Guggiari-Chase	13-14
Asunción	3	Dr Jaime A Guggiari-Chase	13-14



### National Coordinator:

#### Dr Jaime A Guggiari-Chase

Jefe del Servicio de Alergia e Inmunologia  
Centro Médico Bautista  
San Antonio 1019

Paraguay

#### Roles:

- National Coordinator for Paraguay
- Phase One Principal Investigator for Asunción
- Phase Three Principal Investigator for Asunción

Due to special circumstances, Paraguay is a country that has taken long to develop, including our medicine. Until very recently, our medicine was primarily asistencialist, and mainly dealt with emergencies only. Chronic diseases were not treated and of course the prevention of these chronic diseases was not considered. Bronchial asthma, and the drama and severity of its crisis, has always occupied an important place in emergency clinics.

# The ISAAC Story

In the decade from 1950 to 60, pulmonologists were busy with tuberculosis, and the first allergists appeared. The ISAAC survey in 1998 came to fill an important place in the consideration of allergic conditions. For example, allergic rhinoconjunctivitis was a disease largely ignored by general practitioners and specialists. Five years later, in the 2nd ISAAC survey, allergic rhinoconjunctivitis, came to the fore with an incidence greater than 40% and this coincided with the appearance of ARIA (Allergic Rhinitis and its Impact on Asthma)

These events attracted the attention of specialists, and this made otolaryngologists and allergists come to a consensus on allergic diseases that affect upper respiratory conditions. Unfortunately, this consideration was not taken with atopic dermatitis. However, there is always the desire and hope of a consensus with dermatologists, to consider together the various aspects of this disease

Finally, it should be noted that the survey was received by the young people surveyed with enthusiasm and many of them were helped, because it gave them attention that they never received before.

Regional

National

Paraguay

Peru

Philippines

Local



## Peru, Latin America

Centres:	Phase:	PI:	Age Groups
Lima	1	Dr Pascual Chiarella	13-14
Lima	3	Dr Pascual Chiarella	13-14, 6-7

### National Coordinator:

#### Dr Pascual Chiarella

Universidad Peruana Cayetano Heredia  
Departamento de Pediatría  
Av. La Floresta 175 Dpto 302  
Chacarilla, Surco  
Peru

#### Roles:

- National Coordinator for Peru
- Phase One Principal Investigator for Lima
- Phase Three Principal Investigator for Lima

### ISAAC Study in Peru

On September 17, 1993, I received the invitation from Dr Javier Mallol, Regional Coordinator for Latin America, to participate in the ISAAC study as a National Coordinator for Peru. We gladly accepted a few days later, and since that time we have participated in this project; it is quite interesting to see how much time has gone by.

In 1994, we made all the arrangements to run the study in a district of Lima, Santiago de Surco; I must acknowledge the help of Drs. Eduardo Negron, Juanita Aching, Luis Vega, Aldo Navarro, and many other people. We are also thankful for the grant that Dr. Mallol gave us.

The ISAAC Phase I study was run between April and June 1995, and the data for Lima was submitted in the second part of that year. Afterwards we submitted several Phase I publications, including national publications. After Phase I, we performed several smaller studies in Peru using the ISAAC methodology; while the numbers were smaller, we used the same methodology, and the results could provide some data for comparison with ISAAC.

ISAAC Phase III Data was collected in May to July 2001, with the help of Dr. Erick Forno. In both phases we used the written and video questionnaires.

The Lima Centre in Peru is known for its particularly high prevalence of asthma symptoms in 13–14 year-old children, but with mild symptoms. The discussion continues: why do we have such high prevalence of asthmatic patients?

We want to thank Drs Mallol, Tadd Clayton, Innes Asher, Philippa Ellwood, and everyone who works on ISAAC for inviting and helping us all these years.



## Philippines, Asia-Pacific

Centres:	Phase:	PI:	Age Groups
Metro Manilla	1	Professor Felicidad Cua-Lim	13-14, 6-7
Metro Manila	3	Professor Felicidad Cua-Lim	13-14, 6-7

### National Coordinator:

#### Professor Felicidad Cua-Lim

University of Santo Tomas  
7 Roosevelt St. Green Hills West  
San Juan  
Philippines

#### Roles:

- National Coordinator for Philippines
- Phase One Principal Investigator for Metro Manilla
- Phase Three Principal Investigator for Metro Manila



# The ISAAC Story

Regional

National

Philippines

Poland

Local

## Why was this centre selected for ISAAC?

Our country was selected to participate in both ISAAC Phase I and Phase III of the study. It started on a meeting in an Asian respiratory disease convention in Tokyo in 1994. Dr Christopher Lai invited Dr Felicidad Cua-Lim, then the President of the National Asthma Movement in the Philippines, to be the National Coordinator and Principal Investigator for the ISAAC study Phase I in the Philippines.

## Our experience of ISAAC

For Phase I Dr Felicidad Cua-Lim assembled her team whose members included Drs Camilo Roa, Jose Pepito Amores, Manuel Fereria, and Madeleine Sumpaico. The questionnaires, with the help of a social scientist Nina Carandang, were translated and back translated to the local dialect – Tagalog. The study was implemented in schools in Metro Manila. Both the data for the 6-7 years old and 13-14 years old were accepted for inclusion in the Lancet publication for the global coverage of the ISAAC study.

In the phase III Dr Cua-Lim was again invited to participate in the study. Dr Rodolfo Pagcatipunan became a member of her team. Aside from the core questionnaires, an environmental questionnaire was included in this phase which was again translated and back translated to the local dialect. Only the 13-14 years old data was accepted by the data center. There were data integrity problems encountered in the 6-7 years old. This was attributed to the initially low number of returned questionnaires or drop-outs. Upon consultation with a statistician, these drop-outs were replaced by another set of responders to attain the desired sample size.

The data generated from the phase I and III studies became the source of prevalence data for asthma and allergy in children in the Philippines. It also triggered the implementation of the National Asthma Prevalence Study, an asthma prevalence study for both adult and children sponsored by the Department of Health of the Philippines.

## Poland, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Krakow (1993)	1	Associate Professor Grzegorz Lis	13-14
Kraków (1995)	1	Associate Professor Grzegorz Lis	13-14, 6-7
Poznan	1	Associate Professor Anna Bręborowicz	13-14, 6-7
Kraków (1995)	3	Associate Professor Grzegorz Lis	13-14, 6-7
Poznan	3	Associate Professor Anna Bręborowicz	13-14, 6-7

## National Coordinator:

### Associate Professor Grzegorz Lis

Department of Pediatrics  
Polish-American Children's Hospital  
ul. Wielicka 265

Poland

#### Roles:

- National Coordinator for Poland
- Phase One Principal Investigator for Krakow (1993), Kraków (1995)
- Phase Three Principal Investigator for Kraków (1995)

## National Publications

The following publications used ISAAC data from Poland:

Lis G, Bręborowicz A, Swiatly A, Pietrzyk JJ, Alkiewicz J, Moczko J. *Prevalence of allergic diseases in schoolchildren in Krakow and Poznan (based on a standardized ISAAC questionnaire).* [in Polish]. *Pneumonol Alergol Pol.* 1997; 65(9-10): 621-7.

Lis G, Pietrzyk JJ. *Evaluation of hyperresponsiveness to the exercise challenge test in school children.* [in Polish]. *Pneumonol Alergol Pol.* 1997; 65(1-2): 53-60.

Lis G, Pietrzyk JJ. *[The effect of air pollution on the prevalence of asthma in schoolchildren from Krakow].* [in Polish]. *Pneumonol Alergol Pol.* 1997; 65(9-10): 611-20.

Lis G, Pietrzyk JJ, Cichočka-Jarosz E, Szczerbinski T, Kwinta P. *Bronchial asthma: do boys or girls have the highest incidence?* [in Polish]. *Przegl Lek.* 1997; 54(9): 602-6.

Bręborowicz A, Swiatly A, Alkiewicz J, Moczko J. *Use of a video questionnaire for assessment of asthma prevalence in school children as part of the ISAAC epidemiological study.* [Polish]. *Pneumonol Alergol Pol.* 1998; 66(7-8): 368-72.

Lis G, Cichočka-Jarosz E, Gazurek D, Szczerbinski T, Głodzik I, Sawiec P, Białoruska B. *[Relationships between atopy and bronchial hyper-reactivity in Polish school age children].* *Przegl Lek.* 2002; 59(10): 780-4. Polish.

# The ISAAC Story

Lis G, Bręborowicz A, Cichocka-Jarosz E, Swiatly A, Glodzik I, Gazurek D, Sobkowiak P, Alkiewicz J, Pietrzyk JJ. [Increasing prevalence of asthma in school children--ISAAC study (International Study of Asthma and Allergies in Children)]. *Pneumonol Alergol Pol.*2003;71(7-8):336-43.Polish.

Lis G, Bręborowicz A, Cichocka-Jarosz E, Sobkowiak P, Gazurek D, Swiatly A, Alkiewicz J, Pietrzyk JJ. [The prevalence of allergic rhinitis and conjunctivitis in school children from Krakow and Poznan--ISAAC study (International Study of Asthma and Allergies in Childhood)].[Polish].[English Abstract.Journal Article.Multicenter Study]. *Otolaryngol Pol.*58(6):1103-9, 2004.

Flohr C, Williams HC *Childhood eczema according to the International Study of Asthma and Allergies in Childhood (ISAAC) questionnaire tool – response to Czarnobilska et al.* *J Eur Acad Dermatol Venereol* 2011; epub May 14, DOI: 10.1111/j.1468-3083.2011.04126 x

Regional

National

Poland

Portugal

Local



## Portugal, Western Europe

Centres:	Phase:	PI:	Age Groups
Funchal	1	Dr Fernando D Borges	13-14, 6-7
Lisbon	1	Dr José E Rosado Pinto	13-14, 6-7
Portimao	1	Dr Carlos Nunes	13-14, 6-7
Porto	1	Dr José M Lopes dos Santos	13-14
Coimbra	3	Dr M Lourdes Chiera	13-14
Funchal	3	Dra Rita Câmara	13-14, 6-7
Lisbon	3	Dr José E Rosado Pinto	13-14, 6-7
Portimao	3	Dr Carlos Nunes	13-14, 6-7
Porto	3	Dr José M Lopes dos Santos	13-14, 6-7

### National Coordinator:

#### Dr José E Rosado Pinto

Immunoallergy Department,  
Hospital da Luz,  
Av Lusíadas n. 100,  
1500-650 Lisboa  
Portugal



#### Roles:

- National Coordinator for Portugal
- Phase One Principal Investigator for Lisbon
- Phase Three Principal Investigator for Lisbon

### National Publications

The following publications used ISAAC data from Portugal:

Pinto JR, Almeida MM. *Epidemiology of asthma in schoolchildren in Portuguese speaking regions.* *Rev Fr Allergol Immunol Clin* 2005; 45(7):547-549.

Rosado-Pinto J, Gaspar A, Morais-Almeida M. *Epidemiology of asthma and allergic diseases in Portuguese speaking regions.* *Rev Fr Allergol Immunol Clin* 2006; 46(3):305-308

### ISAAC in Portugal

ISAAC Portugal started in 1991 only with Lisbon Centre 13-14 years old group. During 12 years (1992-2003) we organized a network of 7 centers with around 40,000 children (6-7; 13-14 years old) both in the continent and Madeira Island (Funchal). It is one of the largest epidemiological study produced until today in Portugal.

The results of the ISAAC study are until now the reference data of prevalence of asthma and allergic diseases in children. It is also a reference for several scientific studies and thesis. Presently there is an epidemiological study and a master dissertation using the ISAAC questionnaire.

The ISAAC study enhanced the establishment of a network among colleagues (including GP in the primary health centers), teachers, parents and children from more than 300 schools involved in the project. The ISAAC Portugal had the support of Ministry of Health and GSK for the data analysis, but the great part of the work was done without any financial support.

The annual meetings of the Western Europe Group in Munster under the coordination of Prof. Ulrich Keil and Stefan Weiland in the first years provided closer professional and personal contact. Along the years several meetings took place during phase I and III with representatives of ISAAC Spain and Brasil which gave us the opportunity to exchange experiences both at organization and scientific levels. In Portugal the main objectives were the dissemination of results in scientific journals and media at country level, as well as to stimulate other studies based on ISAAC experience focusing school and the allergic diseases in children.

# The ISAAC Story

Regional

National

**Reunion  
Island**
**Romania**

Local

## Reunion Island, Africa

Centres:	Phase:	PI:	Age Groups
Reunion Island	3	Dr Isabella Annesi-Maesano	13-14

### National Coordinator:

#### Mme Christine Catteau

Direction des Affaires Sanitaires et Sociales  
(DRASS)

2 bis, avenue Georges Brassens

Reunion Island

#### Roles:

- National Coordinator for Reunion Island

### National Publications

The following publications used ISAAC data from Reunion Island:

Martignon G, Catteau C, Debotte G, Duffaud B, Lebot F, Annesi-Maesano I. *Childhood allergies in Reunion Island: is there any difference with metropolitan*. Rev Epidemiol Sante Publique.2004 Apr;52(2):127-37.French.

## Romania, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Cluj	1	Professor Diana Deleanu	13-14
Cluj	3	Professor Diana Deleanu	13-14

### National Coordinator:

#### Professor Diana Deleanu

President of Romanian Society of Allergy and Clinical Immunology (SRAIC)  
University of Medicine & Pharmacy IULIU HATIEGANU  
3rd Medical Clinic, Allergy – Immunology Dept.  
Croitorilor 19-23;  
Romania



#### Roles:

- National Coordinator for Romania
- Phase One Principal Investigator for Cluj
- Phase Three Principal Investigator for Cluj

### The story of ISAAC in Cluj

In a hot summer day in Transylvania, an ordinary mail send to Professor Bengt Björkstén was the certificate of birth for ISAAC Cluj centre.

I was a young researcher in the field of medicine with a dream for allergy diseases. So I was looking for foreign collaboration (after many years of “iron curtain”). Professor Bengt Björkstén was very pleased with my “desire” for an epidemiological study in the field of allergic diseases (Romania was a white spot on Europe for allergy) – I was a resident in the allergy specialty at that time.

We did our collaboration during those years (beginning of 90's) by mail and after that on e-mail (which helped us a lot!).

It was difficult at the beginning but working on the project, things were moving one with a lot of enthusiasm. I was contacted by Professor Mircea Nanulescu, the chief of Pediatrics in our University, the director of 3rd Pediatric Clinic with a department for asthma, so we started an almost 20 years of collaboration. He also arranged for one of his youngest, optimistic collaborators – Paraschiva Chereches Panta (Pusa for friends) – to work at the study.

One year later I had the opportunity to met professor Bengt Björkstén, one of the most remarkable people I have known during these years. Working with the questionnaires we could see the good changes that were happening in our country: in schools, in hospitals. Pusa and I reached the title of specialty in allergy, and pediatrics respectively.

We organized a summer school in Cluj with EAACI and Ga2len and Tadd Clayton was one of our guests - speakers. He presented the phase three results from ISAAC.

Unhappily, it was difficult for us to organize the study for 6 years old children and video questionnaires. Also the phase two study was performed in only some of our responders.

But with new help we did the ISAAC phase three study: Diana Church joined us. We the ISAAC team “grew” with the study: I organized the study of allergy in our University, and became president of our Allergy Society, Pusa is one of the most famous doctors for asthmatic children, Diana Church is working in Southampton and Berlin in the field of allergy, Professor Mircea Nanulescu organized the Romanian Pediatric Society for Respiratory Diseases.

We are pleased that our work, the only one in our country is recognized by our colleagues as a priority in epidemiology of asthma and allergic diseases in Romania.

# The ISAAC Story

## Russia, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Moscow	1	Professor Rakhim M Khaitov, Director of the Institute of Immunology	13-14
Novosibirsk	1	Prof Dr Elena G Kondiourina	13-14, 6-7
Novosibirsk	3	Prof Dr Elena G Kondiourina	13-14, 6-7

### National Coordinator:

#### Professor Rakhim M Khaitov

Director, Institute of Immunology  
National Research Center  
24-2 Kashirskoye Shosse  
Moscow  
Russia



#### Roles:

- National Coordinator for Russia

## Samoa, Oceania

Centres:	Phase:	PI:	Age Groups
Apia	3	Ms Peone Fuimaono	13-14

### National Coordinator:

#### Dr Nuualofa Tuuau-Potoi

Ministry of Health, Samoa  
Preventive Health  
Department of Health  
Private Bag  
Samoa



#### Roles:

- National Coordinator for Samoa

The ISAAC Study in Samoa was the first major project handed to me to do after I completed my undergraduates and in my second year of work. It was a study introduced by Dr Sunia to Dr Nuualofa Tuuau-Potoi and supported by the then Director General of Health the late Dr Taulealeausumai Eti Enosa. It took us approximately 1 month to collate all the data and tally and ship them. We did not get an allowance for working in this study as it is the norm in projects attached to Health service but the experience obtained from this exposure has helped in the development of health research of this magnitude and taking the experience on in the law and justice sector which I am now employed in.

Mr Mose Faatamala worked on in the Ministry of Health as a leading Health Educator until 2007 when he migrated to New Zealand with his young family and where they now reside. His ability to command an audience as required by his profession and made easy by his personality was a significant contributor to the success of ISAAC Samoa. Our field survey was implemented in an unfavourable time for the Education curriculum as exams were pending. However, the speed in which the questionnaires were explained and understood and taken from one school to another favoured both the limited time granted to us by the schools and the timeframe planned for ISAAC Samoa to complete. Through this story, Mr Faatamala's contribution to the ISAAC Study in Samoa and around the world, can be acknowledged and recognised.

Due credit must also go to the then Assistant Chief Executive Officer Public Health in the Samoa Ministry of Health Namulauulu Dr Nuualofa Tuuau-Potoi for her vision in bringing ISAAC to Samoa and the late Lolofietele Dr Eti Enosa for his faith and support in Samoa joining this global study. Health resources were used to take this study to the selected schools. ISAAC and MOH also needs to acknowledge and thank the Samoa Ministry of Education, Sports and Culture without whom, the opportunity to collect this number and level of data for this study, would not have been possible. To the late Chief Executive Officer of the Ministry Mr Tupae Esera and the Division of School Operations for the prompt and organised assistance in allowing the study to be in school hours, Faafetai tele.

Samoa is aspiring to meet the MDGs and I hope the data collected will be fully utilised by health professionals to inform public health policy and improve child health in asthma and other allergies in children. Thank you ISAAC for the experience.

Soifua.

Regional

National

Russia

Samoa

Local



# The ISAAC Story

Regional

National

**Serbia and Montenegro**

Local

## Serbia and Montenegro, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Belgrade	3	Dr Zorica Zivkovic MD, Phd	13-14, 6-7
Nis	3	Asst Professor Snezana Zivanovic	13-14, 6-7
Novi Sad	3	Dr Mila Hadnadjev	13-14, 6-7
Podgorica	3	Dr Omer Adzovic	13-14, 6-7
Sombor	3	Dr Eva Panic	13-14, 6-7

### National Coordinator:

#### Dr Zorica Zivkovic

Professor in Pediatrics American School of Medicine at Belgrade  
 Pediatric pulmonologist Children's Hospital for Lung Diseases and Tuberculosis  
 Medical Center "Dr Dragisa Misovic" Belgrade Republic of Serbia



#### Roles:

- National Coordinator for Serbia and Montenegro



### National Publications

The following publications used ISAAC data from Serbia and Montenegro:

Živkovic Z, Vukašinovic Z, Cerovic S, Radulovic S, Živanovic S, Panic E, Hadnadjev M and Adžovic O. *Prevalence of childhood asthma and allergies in Serbia and Montenegro.* World J Pediatr 2010; 6(4): 331-336 epub May

## SERBIA AND MONTENEGRO

During the ISAAC Phase 3 Serbia and Montenegro consisted of one country. Currently, Serbia and Montenegro are two separate countries.

ISAAC Phase 3 is the largest and the most important epidemiological study on asthma and allergies in childhood in Serbia. Four Centers from Serbia were enrolled to study: Belgrade, Nis, Novi Sad, Sombor and one Center from Montenegro : Podgorica. Around 15000 children were recruited for the study and finally the results were obtained on approximately 13485 of children. Enormous number of colleagues, paediatricians, pulmonologists and allergologists were involved in the project, together with huge number of teachers, psychologists, medical assistants and caregivers. Having in mind the fact that we had no funds or financial support from the National, Local or Regional Authorities, the ISAAC Phase 3 has been the most successful feature of the enthusiasm and professional motivation.

For these 10 years we reported ISAAC Phase 3 protocol, methodology and results at national, international scientific meetings, published several articles in the national journals and just recently, the paper on prevalence of childhood asthma and allergies in Serbia and Montenegro has been published in World Journal of Pediatrics.

Citation from the article: Prevalence of Childhood asthma and Allergies in Serbia and Montenegro. World J Pediatr. 2010; 331-336. "In the 13 485 children from five study centers who responded to the questionnaire, the prevalence for childhood asthma ranged from 2.5% to 9.8%, for allergic rhinoconjunctivitis (hay fever) from 4.6% to 21%, and for eczema from 8.2% to 17.2%. The prevalence of current wheezing was high in both age groups (16.5% and 12.4% respectively). In conclusion : The prevalence of asthma is higher in 6-7 years old school children in the urban and largest cities of Belgrade and Nis, and in 13-14 years old children in Podgorica. The prevalence of asthma, allergic rhinitis and eczema in the school children of Serbia and Montenegro seems similar to that of other countries in Central and South-Eastern Europe."

## Singapore, Asia-Pacific

Centres:	Phase:	PI:	Age Groups
Singapore	1	Professor Bee-Wah Lee	13-14, 6-7
Singapore	3	Associate Professor Daniel Yam Thiam Goh	13-14, 6-7

### National Coordinator:

#### Professor Bee-Wah Lee

Children's Medical Center  
 National University Hospital  
 5 Lower Kent Ridge Rd

Singapore



#### Roles:

- National Coordinator for Singapore
- Phase One Principal Investigator for Singapore



# The ISAAC Story

## The Singapore ISAAC Centre

As Singapore is a small city state, our ISAAC centre was also the national centre.

It provided us with important national epidemiology data on asthma, allergic rhinitis and eczema, which hitherto, was unavailable. The prevalence data has provided us with an important reference point for the planning of educational and awareness programs, medical programs for asthma and allergies in children, as well as scientific studies.

The ISAAC prevalence obtained for Singapore was very similar urban and developed communities in the Asian region, such as Japan and Korea, and were the highest for the Asia Pacific region. For example, the prevalence for Phase one survey on current wheeze for 6-7 years old was 13.3 in Korea, 15.7 in Singapore and 17.4 in Japan.

The team acknowledges the contribution of the many student helpers that contributed to the success of these studies.

## National Publications

The following publications used ISAAC data from Singapore:

Goh DY, Chew FT, Quek SC, Lee BW. *Prevalence and severity of asthma, rhinitis, and eczema in Singapore schoolchildren.* Arch Dis Child 1996; 74(2): 131-5.

Chew FT, Goh DY, Lee BW. *Geographical comparison of the prevalence of childhood asthma and allergies in Singapore.* Ann Trop Paediatr 1999; 19(4): 383-90.

Chew FT, Goh DY, Lee BW. *Under-recognition of childhood asthma in Singapore: evidence from a questionnaire survey.* Ann Trop Paediatr 1999; 19(1): 83-91.

Wang XS, Tan TN, Shek LP, Chng SY, Hia CP, Ong NB, Ma S, Lee BW, Goh DY. *The prevalence of asthma and allergies in Singapore; data from two ISAAC surveys seven years apart.* Arch Dis Child.2004 May;89(5):423-6.

Wang XS, Shek LP, Ma S, Soh SE, Lee BW, Goh DYT. *Time trends of co-existing atopic conditions in Singapore school children: prevalence and related factors.* Pediatr Allergy Immunol 2010; 21 (1): e137-e141. E pub 21 Apr 2009.

## South Africa, Africa

Centres:	Phase:	PI:	Age Groups
Cape Town	1	Dr Hugo Nelson	13-14
Cape Town	3	Professor Heather J Zar	13-14
Polokwane	3	Professor Kuku Voyi	13-14, 6-7

## National Coordinator:

### Professor Heather J Zar

Red Cross Childrens Hospital

Klipfontein Road  
7th floor ICH Building  
South Africa

#### Roles:

- National Coordinator for South Africa
- Phase Three Principal Investigator for Cape Town

## ISAAC in South Africa

ISAAC Phase 1 in South Africa, done in Cape Town in 1995, under the direction of Dr Hugo Nelson, enrolled adolescents aged 13-14 years. ISAAC Phase 3 was performed in 2 centres, Cape Town in 2002 (led by Prof Heather Zar) and in Polokwane in 2004-2005 (led by Prof Kuku Voyi). Both these centres enrolled 13 to 14 year old adolescents, and in addition Polokwane also enrolled 6-7 year old children. These studies have greatly contributed to describing the burden of asthma, eczema and allergic rhinitis in South African children and the impact on quality of life. The ISAAC 3 studies showed that these diseases are common in both centres (asthma is now identified as one of the commonest chronic diseases in South African adolescents) and increasing in prevalence.

Although Cape Town and Polokwane represent very different parts of South Africa, and different populations, some of the results (such as the prevalence of asthma in 13 to 14 year old children) were strikingly similar. In addition, results of these studies have contributed to quantifying the burden of asthma in African children. This has been especially important as asthma has been considered to be relatively uncommon in African children, especially those in rural settings. The results of ISAAC 3 have shown a striking increase in asthma prevalence in many African countries, and prevalence rates that are similar to or higher than the global average. The results have also highlighted an emerging burden of childhood asthma in such settings, the relatively severe disease and the widespread problem of under diagnosis. Such information can greatly facilitate advocacy for better access to inhaled asthma medication and to appropriate management which remains a problem in many African settings.

Regional

National

Singapore

South Africa

Local



# The ISAAC Story

## Publications of the South African and African results include:

1. Wichmann J, Wolvaardt JE, Maritz C, Voyi KV. Household conditions, eczema symptoms and rhinitis symptoms: relationship with wheeze and severe wheeze in children living in the Polokwane area, South Africa. *Matern Child Health J.* 2009 Jan;13(1):107-18.
2. Zar HJ, Ehrlich RI, Workman L, Weinberg EG. The changing prevalence of asthma, allergic rhinitis and atopic eczema in African adolescents from 1995 to 2002. *Pediatr Allergy Immunol.* 2007 Nov;18(7):560-5.
3. Wichmann J, Wolvaardt JE, Maritz C, Voyi KV. Association between children's household living conditions and eczema in the Polokwane area, South Africa. *Health Place.* 2008 Jun;14(2):323-35.
4. Ait-Khaled N, Odhiambo J, Pearce N, Adjoh KS, Maesano IA, Benhabyles B, Bouhayad Z, Bahati E, Camara L, Catteau C, El Sony A, Esamai FO, Hypolite IE, Melaku K, Musa OA, Ng'ang'a L, Onadeko BO, Saad O, Jerray M, Kayembe JM, Koffi NB, Khaldi F, Kuaban C, Voyi K, M'Boussa J, Sow O, Tidjani O, Zar HJ. Prevalence of symptoms of asthma, rhinitis and eczema in 13- to 14-year-old children in Africa: the International Study of Asthma and Allergies in Childhood Phase III.v *Allergy.* 2007 Mar;62(3):247-58.
5. Mercer MJ, Joubert G, Ehrlich RI, Nelson H, Poyser MA, Puterman A, Weinberg EG. Socioeconomic status and prevalence of allergic rhinitis and atopic eczema symptoms in young adolescents. *Pediatr Allergy Immunol.* 2004 Jun;15(3):234-41.
6. Poyser MA, Nelson H, Ehrlich RI, Bateman ED, Parnell S, Puterman A, Weinberg E. Socioeconomic deprivation and asthma prevalence and severity in young adolescents. *Eur Respir J.* 2002 May;19(5):892-8.

## Spain, Western Europe

Centres:	Phase:	PI:	Age Groups
Barcelona	1	Dr Rosa M Busquets	13-14
Bilbao	1	Dr Alfonso Delgado Rubio	13-14, 6-7
Cádiz	1	Dr Andrés Rabadán Asensio	13-14
Cartagena	1	Professor Luis García-Marcos	13-14, 6-7
Castellón	1	Dr Alberto Arnedo-Pena	13-14, 6-7
Madrid	1	Dr Gloria García-Hernández	13-14, 6-7
Pamplona	1	Professor Francisco Guillén-Grima	13-14, 6-7
Valencia	1	Professor Maria M. Morales-Suárez-Varela	13-14, 6-7
Valladolid	1	Professor Alfredo Blanco-Quirós	13-14
Almeria	2	Dr José Batlles-Garrido	10-11 years
Cartagena	2	Professor Luis García-Marcos	10-11 years
Madrid	2	Dr Gloria García-Hernández	10-11
Valencia	2	Professor Maria M. Morales-Suárez-Varela	10-11 years
A Coruña	3	Dr Angel López-Silvarrey Varela	13-14, 6-7
Almeria	3	Dr José Batlles-Garrido	13-14, 6-7
Asturias	3	Dr Ignacio Carvajal-Urueña	13-14, 6-7
Barcelona	3	Dr Rosa M Busquets	13-14, 6-7
Bilbao	3	Dr Carlos González Díaz	13-14, 6-7
Cartagena	3	Professor Luis García-Marcos	13-14, 6-7
Castellón	3	Dr Alberto Arnedo-Pena	13-14, 6-7
Madrid	3	Dr Gloria García-Hernández	13-14, 6-7
Pamplona	3	Professor Francisco Guillén-Grima	13-14, 6-7
San Sebastián	3	Professor Eduardo G Pérez-Yarza	13-14, 6-7
Valencia	3	Professor Maria M. Morales-Suárez-Varela	13-14, 6-7
Valladolid	3	Professor Alfredo Blanco-Quirós	13-14



Regional

National

South Africa

Spain

Local

# The ISAAC Story

## National Coordinator:

### Professor Luis García-Marcos

Respiratory Medicine and Allergy Units  
'Virgen de la Arrixaca' University  
Children's Hospital  
University of Murcia  
Pabellón Docente HUVA, Campus  
Ciencias de la Salud  
Spain



#### Roles:

ISAAC Executive  
ISAAC Steering Committee  
National Coordinator for Spain  
Phase One Principal Investigator  
for Cartagena  
Phase Two Principal Investigator  
for Cartagena  
Phase Three Principal  
Investigator for Cartagena

Regional

National

Spain

Local

## The ISAAC story in Spain

The story of ISAAC in Spain is quite intermingled with that of the centre in Cartagena. As told in more detail in the story of that centre, ISAAC started in Spain after a meeting held in Madrid in March 1993 with researchers coming from different parts of the country. Prof. Weiland, coordinator for Western Europe, and Prof. Pearce from the ISAAC Executive Committee -at that time at the University of Paris- attended to the meeting. Except for one, all attendees were starting Phase One some months after the meeting. It must be said that launching and coordinating of ISAAC in Spain was in great part possible by the interest of a person working for Glaxo at that time: Mr Claudio Jansen.

### Phase One

Nine centres from all over Spain started ISAAC Phase One some time between autumn 1993 and spring 1994. Madrid was included in 1996. Most centres included children of the two age groups. ISAAC allowed having a very accurate picture of the prevalence of allergic diseases among children and adolescents in Spain for the first time. Spanish contributors were proud to offer ISAAC one of the most numerous populations within one country in this phase. The first shocking finding was that the prevalence of asthma on the coastal centres was higher than those on the central plateau.

### Phase Two.

Spain was the only country to include four centres in this phase: Almería, Cartagena, Madrid and Valencia. The study was not easy as it took some time and effort to train all fieldworkers according to the workshops held in Munster which was the coordinating and data centre for this phase. All four centres chose the 100 wheezers plus 100 non-wheezers option in the bronchial challenge test and only Cartagena provided with house dust samples. Although a very effortful and time consuming phase, it has given much information about the risk factors of asthma and allergies, as well as many international publications.

### Phase Three.

Most centres included in Phase One also performed Phase Three, thus providing with data on the change of the prevalence of allergic diseases in children in the country. Moreover, most centres included children from the two age-groups. All in all, 11 centres participated in this phase, many of which took advantage of the automatic scanning of questionnaires implemented in Cartagena. Apart from information about the change of prevalence, phase three has also provided with information about risk or protective factors with special interest in Spain such as, relative humidity, sunny hours, pollution, Mediterranean diet or paracetamol.

## National Publications

The following publications used ISAAC data from Spain:

Busquets RM, Anto JM, Sunyer J, Sancho N, Vall O. *Prevalence of asthma-related symptoms and bronchial responsiveness to exercise in children aged 13-14 yrs in Barcelona, Spain.* Eur Respir J 1996; 9(10): 2094-8.

Fernández Benítez M, Guillén F, Marin B, Pajaron MJ, Brun C, Aguinaga I, Esteban MA, García B, Martínez González MA, Notivol P, Santos MA, Zapata MA. *International study of asthma and allergies in childhood. Results of the first phase of the I.S.A.A. C.project in Pamplona, Spain.* J Investig Allergol Clin Immunol 1996; 6(5): 288-93.



# The ISAAC Story

Regional

National

Spain

Local

Grupo ISAAC Espana. [Aims and methods of the ISAAC study (International Study of Asthma and Allergy in Childhood)]. An Sist Sanit Navar.1997 Jan-Apr;20(1):57-69.Spanish.

Pierdomenico R, Bonini S Prevalence of paediatric asthma in Central Italy [Abstract] Allergy 1997; 52(s37): 188

González Díaz C, Sánchez González E, García-Marcos L, Morato Rodríguez MD, Molina Zelaia I, Burgaleta Sagaseto A, Zaballa Gorordo J, Delgado Rubio A. Prevalence and severity of asthma in 13-14-year-old children in Bilbao.[Spanish]. An Esp Pediatr.1998; 48(6): 608-14.

Aguinaga Ontoso I, Arnedo Peña A, Bellido J, Guillén-Grima F, Morales Suárez-Varela MM. The prevalence of asthma-related symptoms in 13-14-year-old children from 9 Spanish populations. The Spanish Group of the ISAAC Study (International Study of Asthma and Allergies in Childhood).[Spanish]. Med Clin (Barc) 1999; 112(5): 171-5.(published erratum appears in Med Clin (Barc) 1999; 112(13):494).

Anonymous. Prevalence of symptoms suggestive of allergic rhinitis and atopic dermatitis in adolescents (Spanish ISAAC Study Group).[Spanish]. An Esp Pediatr.1999; 51(4): 369-76.

Morales Suárez-Varela MM, González AL, Martínez Selva MI. Socioeconomic risk factors in the prevalence of asthma and other atopic diseases in children 6 to 7 yearsold in Valencia Spain. Eur J Epidemiol 1999; 15(1): 35-40.

Carvalho N, Fernández-Benitez M, Cascante L, Aguinaga I, Guillén F. International Study of Asthma and Allergies in Childhood.Results on rhinitis of first phase in Pamplona, Spain. Allergol Immunopathol (Madr). 2000 Jul-Aug;28(4):207-12.

García-Marcos Alvarez L, Martínez Torres A, Batllés-Garrido J, Morales Suárez-Varela MM, García Hernández G, Escribano Montaner A. [International Study of Asthma and Allergies in Childhood (ISAAC) Phase II: Methodology and results of the participation rate in Spain]. An Esp Pediatr.2001 Nov;55(5):400-5.Spanish.

Busquets Monge RM, Vall Combelles O, Checa Vizcaino MA, García Algar O. [Epidemiological features of exercise-induced bronchial hyperresponsiveness in children aged 13-14 years old in Barcelona (Spain)]. An Esp Pediatr.2002 Apr;56(4):298-303.Spanish.

Arnedo Peña A, García-Marcos L, Blanco-Quirós A, Martínez Gimeno A, Aguinaga Ontoso I, González Díaz C, Díaz Vazquez C, Busquets-Monge R, Morales Suárez-Varela MM, Batllés-Garrido J, López-Silvarrey Varela A, García de Andoin N. [Time trends in prevalence of symptoms of allergic rhinitis in 13-14 year-old schoolchildren in 8 areas of Spain between 1993-1994 and 2001-2002 according to the International Study of Asthma and Allergies in Childhood (ISAAC)].[Spanish]. Med Clin (Barc) 2004; 123(13): 490-5.

García-Marcos L, Quirós AB, Hernández GG, et al.Stabilization of asthma prevalence among adolescents and increase among schoolchildren (ISAAC phases I and III) in Spain. Allergy 2004; 59(12):1301-1307.

Martin Fernández-Mayoralas D, Martin Caballero JM, García-Marcos AL.Association between atopic dermatitis, allergic rhinitis and asthma in schoolchildren aged 13-14 years old.[article in spanish]. An Pediatr (Barc ) 2004; 60(3):236-242.

Martin Fernández-Mayoralas D, Martin Caballero JM, García-Marcos AL. Prevalence of atopic dermatitis in schoolchildren from Cartagena (Spain) and relationship with sex and pollution.[article in spanish]. An Pediatr (Barc ) 2004; 60(6):555-560.

Mata Fernández C, Fernández-Benitez M, Pérez Miranda M, Guillén-Grima F. Validation of the Spanish version of the Phase III ISAAC questionnaire on asthma. J Investig Allergol Clin Immunol 2005; 15(3): 201-10.

Arnedo Peña A, García-Marcos L, García HG, et al. Time trends and geographical variations in the prevalence of symptoms of allergic rhinitis in 6-7-year-old children from eight areas of Spain according to the ISAAC.[article in spanish]. An Pediatr (Barc ) 2005; 62(3):229-236.

Blanco-Quirós A, García-Marcos L, Garrote JA, et al. Antibody levels to Bordetella pertussis in 10-yr-old children with atopy and atopic asthma. Pediatr Allergy Immunol 2005; 16(8):637-640.

García-Marcos L, Castro-Rodríguez JA, Morales Suárez-Varela MM, Batlles Garrido J, Hernandez GG, Gimeno AM, González AL, Ruíz TR, Torres AM. A different pattern of risk factors for atopic and non-atopic wheezing in 9-12-year-old children. Pediatr Allergy Immunol 2005; 16(6):471-477.

García-Marcos L, Morales Suárez-Varela MM, Canflanca IM, et al. BCG immunization at birth and atopic diseases in a homogeneous population of Spanish schoolchildren. Int Arch Allergy Immunol 2005; 137(4):303-309.

Carvajal-Urueña I, García-Marcos L, Busquets-Monge R, Morales Suárez-Varela MM, García de Andoin N, Batllés-Garrido J, Blanco-Quirós A, López-Silvarrey A, García-Hernández G, Guillén-Grima F, González Díaz C, Bellido-Blasco J. Geographic variation in the prevalence of asthma symptoms in Spanish children and adolescents.International Study of Asthma and Allergies in Childhood (ISAAC) Phase 3, Spain. Arch Bronconeumol.2005 Dec;41(12):659-66.

# The ISAAC Story

Ibargoyen-Roteta N, Aguinaga-Ontoso I, Fernández-Benitez M, Marin-Fernández B, Guillén-Grima F, Serrano-Monzo I, Hermoso-de-mendoza J, Brun-Sandiumetge C, Ferrer-Nadal A, Irujo-Andueza A. *Role of the home environment in rhinoconjunctivitis and eczema in schoolchildren in Pamplona, Spain.* J Investig Allergol Clin Immunol 2007; 17(3): 137-44.

García-Marcos L, Canflanca IM, Garrido JB, et al. *Relationship of asthma and rhinoconjunctivitis with obesity, exercise and Mediterranean diet in Spanish schoolchildren.* Thorax 2007; 62(6):503-508.

García-Marcos L, García-Hernández G, Morales Suárez-Varela MM, Batlles Garrido J, Castro-Rodríguez JA *Asthma attributable to atopy: does it depend on the allergen supply?* Pediatr Allergy Immunol 2007; 18(3):181-187.

García-Marcos L, Sánchez-Solis M, Martínez-Torres AE, et al. *Phadiatop compared to skin-prick test as a tool for diagnosing atopy in epidemiological studies in schoolchildren.* Pediatr Allergy Immunol 2007; 18(3):240-244.

Morales Suárez-Varela MM, García-Marcos AL, González DC, et al. *Prevalence of atopic eczema and nutritional factors in 6-7 year old children.[article in spanish].* Aten Primaria 2007; 39(7):355-360.

López-Silvarrey Varela A, González Barcala FJ, Paz Esquete JJ, Pérez Castro TR, Valdes Cuadrado L, Castro Iglesias A. *[Prevalence of asthma and rhinitis symptoms in A Coruna (Spain)].* An Pediatr (Barc). 2007 Feb;66(2):146-53.Spanish.

Arnedo Peña A, Bellido-Blasco J, Puig-Barbera J, Artero-Civera A, Campos-Cruanes JB, Pac-Sa MR, Villamarin-Vazquez JL, Felis-Dauder C. *[Domestic water hardness and prevalence of atopic eczema in Castellon (Spain) school children].[Spanish].* Salud Publica Mex.49(4):295-301, 2007 Jul-Aug.

Tornador-Gaya E, Tosca-Segura R, Arnedo Peña A, Puig-Barbera J, Bellido-Blasco JB, Pac-Sa MR, Artero-Civera A, Campos-Cruanes JB, Museros-Recatala L. *[Incidence of allergic rhinitis in a cohort of schoolchildren between 1994 and 2002 in Castellon (Spain), following the ISAAC study].* An Pediatr (Barc). 2007 Feb;66(2):154-8.Spanish.

Arnedo A, Bellido JB, Pac MR, Artero A, Campos JB, Museros L, Puig-Barbera J, Tosca R, Tornador E. *[Incidence of asthma and risk factors in a cohort of schoolchildren aged from 6-7 years old to 14-15 years old in Castellon (Spain) following the International Study of Asthma and Allergies in Childhood (ISAAC)].* Med Clin (Barc). 2007 Jun 30;129(5):165-70.Spanish.

Fernandez-Benitez M, Antnon J, Grima FG. *Risk factors associated to the prevalence of asthma in adolescence.* Allergol Immunopathol (Madr). 2007; 35(5):193-196

Morales Suárez-Varela MM, García-Marcos L, Kogan MD, Llopis González A, Martínez Gimeno A, Aguinaga Ontoso I, González Díaz C, Arnedo Peña A, Domínguez Aurrecochea B, Busquets Monge RM, Blanco Quirós A, Batllés-Garrido J, Miner Canflanca I, López-Silvarrey Varela A, Gimeno Clemente N. *Parents' smoking habit and prevalence of atopic eczema in 6-7 and 13-14 year-old schoolchildren in Spain.ISAAC Phase III.* Allergol Immunopathol (Madr). 2008 Nov;36(6):336-342.

Morales Suárez-Varela MM, García-Marcos Alvarez L, Kogan MD, González AL, Gimeno AM, Ontoso IA, Díaz CG, Arnedo Peña A, Aurrecochea BD, Monge RM, Quirós AB, Garrido JB, Canflanca IM, López-Silvarrey Varela A. *Climate and prevalence of atopic eczema in 6- to 7-year-old school children in Spain.ISAAC phase III.* Int J Biometeorol.2008 Nov;52(8):833-40.Epub 2008 Sep 9.

García-Marcos L, Arnedo Peña A, Busquets-Monge R, Morales Suárez-Varela MM, García de Andoin N, Batllés-Garrido J, Blanco-Quirós A, López-Silvarrey Varela A, García-Hernández G, Aguinaga-Ontoso I, González Díaz C, García-Merino A. *How the presence of rhinoconjunctivitis and the severity of asthma modify the relationship between obesity and asthma in children 6-7 years old.* Clin Exp Allergy.2008 Jul;38(7):1174-8.Epub 2008 May 6.

Pac-Sa MR, Museros-Recatala L, Arnedo Peña A, Bellido-Blasco JB, Puig-Barbera J, Artero-Sivera A, Campos-Cruanes JB, Aguinaga-Ontoso I. *[Risk factors for symptoms of allergic rhinitis in adolescents in Castellon, Spain].* Rev Panam Salud Publica.2008 May;23(5):333-40.Spanish.

García-Marcos L, Batllés-Garrido J, Blanco-Quirós A, García-Hernández G, Guillén-Grima F, González Díaz C, García-Merino A, Arnedo Peña A, Busquets-Monge RM, Morales Suárez-Varela MM, López-Silvarrey-Varela A, García-Andoin N. *Influence of two different geo-climatic zones on the prevalence and time trends of asthma symptoms among Spanish adolescents and schoolchildren.* Int J Biometeorol.2009 Jan;53(1):53-60.Epub 2008 Oct 30.

Regional

National

Spain

Local

# The ISAAC Story

Regional

National

Spain

Sri Lanka

Local

Arnedo Peña A, García-Marcos L, Carvajal Urueña I, Busquets Monge R, Morales Suárez-Varela MM, Miner Canflanca I, Batllés-Garrido J, Blanco Quirós A, López-Silvarrey Varela A, García Hernández G, Aguinaga Ontoso I, González Díaz C. *Air Pollution and Recent Symptoms of Asthma, Allergic Rhinitis, and Atopic Eczema in Schoolchildren Aged Between 6 and 7 Years.* [Article in Spanish]. Arch.Bronconeumol.2009;45(5):224-9.Epub Feb 2009.

Arnedo Pena A, Puig-Barbera J, Bellido-Blasco JB, Pac-Sa MR, Campos-Cruanes JB, Artero-Sivera A, Museros-Recatala L. *Risk factors and prevalence of asthma in schoolchildren in Castellon (Spain): a cross-sectional study.* Allergol Immunopathol (Madr). 2009; 37(3):135-142.

García-Marcos L, Ruiz TR, García-Hernández G, Morales Suárez-Varela MM, Valverde-Molina J, Sánchez-Solis M. *Asthma and rhinoconjunctivitis comorbidity: United airway disease or inherited target organs?* Pediatr Allergy Immunol 2010; 21 (1): e142-e148. E pub 7 Apr 2009.

Batllés-Garrido J, Torres-Borrego J, Bonillo-Perales A, Rubí-Ruiz T, GonzálezJiménez Y, Momblán De Cabo J, Aguirre-Rodríguez J, Jiménez Liria R, Losillas-Maldonado A, Torres-Daza M. *Prevalence and factors linked to atopic eczema in 10- and 11-year-old schoolchildren. Isaac 2 in Almería, Spain* Allergol Immunopathol(Madr). 2010; 38(4): 174–180. epub May

Batllés-Garrido J, Torres-Borrego J, Rubí-Ruiz T, Bonillo-Perales A, GonzálezJiménez Y, Momblán De Cabo J, Aguirre-Rodríguez J, Losillas-Maldonado A, Torres-Daza M. *Prevalence and factors linked to atopy in 10-and 11-year-old children in Almería, Spain* Allergol Immunopathol (Madr). 2010; 38(1):13-9.

Batllés-Garrido J, Torres-Borrego J, Rubí-Ruiz T, Bonillo-Perales A, GonzálezJiménez Y, Momblán-De Cabo J, Aguirre-Rodríguez J, Losillas-Maldonado A, Torres-Daza M. *Prevalence and factors linked to allergic rhinitis in 10 and 11-year-old children in Almería. Isaac Phase II, Spain* Allergol Immunopathol (Madr). 2010;38(3):135-41.

García-Marcos L, González-Díaz C, Garvajal-Urueña I, Pac-Sa MR, Busquets-Monge RM, Suárez-Varela MM, Batllés-Garrido J, Blanco-Quirós A, Varela Á L-S, GarcíaHernández G, Aguinaga-Ontoso I. *Early exposure to paracetamol or to antibiotics and eczema at school age: modification by asthma and rhinoconjunctivitis.* Pediatr Allergy Immunol 2010; 21(7): 1036-1042. Epub 28 Jun

Morales Suárez-Varela M, García-Marcos L, Kogan MD, Costa Ferreira J, Martínez Gimeno A, Aguinaga Ontoso I, González Díaz C, Arnedo Pena A, Domínguez Aurrecochea B, Busquets Monge RM; Blanco Quiros A, Batllés Garrido J, García de Andoain N, López-Silvarrey Varela Á, García Merino A, Gimeno Clemente N, Llopis González A. *Diet and Prevalence of Atopic Eczema in 6 to 7-Year-Old Schoolchildren in Spain: ISAAC Phase III J Investig Allergol Clin Immunol 2010; 20(6): 469-475*

Arnedo-Pena A, García-Marcos L, Fernández-Espinar JF, Bercedo-Sanz A, Aguinaga-Ontoso I, González-Díaz C, Carvajal-Urueña I, Busquet-Monge R, Suárez-Varela MM, de Andoain NG, Batllés-Garrido J, Blanco-Quirós A, López-Silvarrey Varela A, García-Hernández G *Sunny hours and variations in the prevalence of asthma in schoolchildren according to the International Study of Asthma and Allergies (ISAAC) Phase III in Spain* Int J Biometeorol 2011; 55(3): 423-434

## Sri Lanka, Indian Sub-Continent

Centres:	Phase:	PI:	Age Groups
Sri Lanka	3	Dr Kirthi D Gunasekera	13-14, 6-7



### National Coordinator:

**Dr Kirthi D Gunasekera**

Consultant Chest Physician  
Respiratory Disease Control Programme  
Chest Clinic  
Ministry of Health, General Hospital Badulla  
Sri Lanka

### Roles:

- National Coordinator for Sri Lanka
- Phase Three Principal Investigator for Sri Lanka

# The ISAAC Story



## Sudan, Africa

Centres:	Phase:	PI:	Age Groups
Khartoum	3	Professor Omer Abdel Aziz Musa	13-14

### National Coordinator:

#### Dr Asma El Sony

Epi Lab Director  
AMST  
EPI LAB

Sudan

#### Roles:

- National Coordinator for Sudan

## ISAAC in Sudan

The International Study of Asthma and Allergies in Childhood (ISAAC) in Sudan was the first collaboration work between Dr Asma Elsony (Epi-Lab) and Pro Omer Musa (Ribat uinveristy). The preparation for ISAAC study started in 2002; the questionnaire was translated to Arabic by professional translator and checked, over 3000 copy were printed and Khartoum (the capital) was chosen as a research site.

The data collection took place between February-September 2003, number of student included in the in the study was 3000, their age was 13 to 14 and they were included from 55 school. Data was entered, and analyzed by Epi info 6. The collaboration between the Epi-Lab and Ribat university made it possible to carry the activities; the data was collected through the Ribat university and the data entry and analysis was done in the Epi-Lab; we have to mention here that when the data was submitted to the regional coordinator and analyzed it showed that Sudan had the highest percentage of heavy truck passing near the houses. This percentage appeared higher than expected, therefore we checked the questionnaire and we found that heavy truck was translated mistakenly in Arabic to a car. Consequently that question was eliminated from the analysis.

The most especial about the ISAAC in Sudan is that the partnership established between the Epi-Lab and Ribat University in 2002 continued up to date. The Epi-Lab and Ribat university together conducted 7 studies. Two of these studies used the same questionnaire and investigated asthma and allergies in children in rural areas (Atbra and Algardarif). The prevalence of asthma in rural areas is around 5% , a percentage much lower than that in Khartoum state (12.5%), the studies are not published. ISAAC questionnaire was later modified to study the prevalence of asthma in adult communities (five universities students in five sates) and consequently several papers were published in the International Journal of Tuberculosis and Lung Disease.



## Sweden, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Linköping	1	Professor N-I Max Kjellman	13-14, 6-7
Stockholm/Uppsala	1	Dr Tony Foucard	13-14, 6-7
Linköping	2	Dr Lennart Bråbäck	10-11
Östersund	2	Dr Lennart Bråbäck	10-11
Linköping	3	Dr Hartmut Vogt	13-14, 6-7

### National Coordinator:

#### Dr Lennart Nilsson

Department of Molecular and Clinical Medicine  
Division of Pediatrics  
University Hospital, Linköping

Sweden

#### Roles:

- National Coordinator for Sweden

#### Dr Lennart Bråbäck

Sundsvall Hospital

Mid Sweden Research and Development Centre

Sweden

#### Roles:

- National Coordinator for Sweden
- Phase Two Principal Investigator for Linköping, Östersund
- National Coordinator for Sweden Phase Two



Regional

National

Sudan

Sweden

Local

# The ISAAC Story

Regional

National

Sweden

Local

Study sites in Sweden were Linköping in phase I, II and III and Östersund in phase II. Linköping in Southern Sweden (latitude 588) is the fifth largest city in Sweden and is currently undergoing expansion with a university and several large sites of industry. At the time of ISAAC Phase II in 1997, the population was 132,089 (24% of whom were below 20 years of age). Östersund is an administrative center in Northern Sweden (latitude 618) with sparsely populated surroundings. In 1997, the total population in Östersund was 59,188 (23 % of whom were below 20 years of age).

As a member of the international steering committee and the regional coordinator in Eastern Europe, professor Bengt Björkstén had an important role as a promoter of the ISAAC studies in Sweden. The ISAAC study phase II was carried out in close cooperation with the study centres in Estonia and the field workers were trained together in skin prick test technique and bronchial hyperreactivity tests.

In phase II, clusters of children were randomly selected in each centre for the study, using schools as sampling units. In Linköping, the survey involved 15 schools and in Östersund all schools were selected due to the lower population. All 10-11 years old children (forms 4 and 5) were invited to participate in skin prick tests and parental questionnaires. Information on anthropometric measures at birth and pre- and perinatal exposures were collected from the medical birth registry. The local mass medias paid a great deal of attention to the study, particularly in Östersund. The participation rates in the questionnaire study were 82% in Linköping and 86% in Östersund. All children with a history of wheeze in the past 12 months as reported in the parental questionnaires and a random sample of non-wheezing children from the original cohorts were invited to a case-control study, which included parental questionnaire, examination for flexural dermatitis and bronchial challenge with hypertonic saline.

The sensitivity of hypertonic saline challenge test to detect asthma ever, current asthma and current atopic asthma was 62, 61 and 83%, and the specificity was 83, 81 and 60%, respectively. Also, the degree of bronchial hyperresponsiveness increased with the number of wheezy episodes. It was concluded that hypertonic saline provocation test is useful as a tool to detect asthma in epidemiological studies in children. Xiao-Mei Mai, a talented researcher, now working in Norway, wrote her thesis using data from ISAAC phase II and Professor Ulrich Wahn, Humboldt University Berlin, was her opponent.

For ISAAC III paediatrician Hartmut Vogt and the study nurses Kicki Helander and Ing-Marie Sandberg were at all schools in the municipality of Linköping evaluating children for asthma and allergy. When watching different clips of the ISAAC video questionnaire, many of the children first laughed quietly at the children in the film clips but after a while some of them seemed to become aware that this was their own problems that were shown. In almost every school, several children stayed afterwards and discussed their health problems with our research group/staff and talked about the possibilities they had, to get rid of their symptoms. This was really a sudden insight for many of the children (and us). The photo, taken by the local newspaper, shows some children and one of our research nurses.

When comparing the results from ISAAC III with ISAAC I we could, for the first time, see a decrease in the incidence of asthma symptoms in Sweden. The 12-month prevalence of wheezing in Linköping decreased from 11.2% to 9.7% among 13-14 years old children.

## National Publications

The following publications used ISAAC data from Sweden:

Nilsson L, Castor O, Löfman O, Magnusson A, Kjellman N-IM. *Allergic disease in teenagers in relation to urban or rural residence at various stages of childhood.* Allergy 1999; 54(7): 716-721.

Annus T, Björkstén B, Mai XM, Nilsson L, Riikjärv MA, Sandin A, Bråbäck L. *Wheezing in relation to atopy and environmental factors in Estonian and Swedish schoolchildren.* Clin Exp Allergy 2003; 31(12): 1846-53.

Bråbäck L, Kjellman NI, Sandin A, Björkstén B. *Atopy among schoolchildren in northern and southern Sweden in relation to pet ownership and early life events.* Pediatr Allergy Immunol. 2001;12:4-10.

Mai X-M, Nilsson L, Kjellman N-IM, Björkstén B. *Hypertonic saline challenge tests in the diagnosis of bronchial hyperresponsiveness and asthma in children.* Pediatr Allergy Immunol 2002; 13(5): 361-7.

Mai X-M, Nilsson L, Bråbäck L, Sandin A, Kjellman N-IM, Björkstén B. *High body mass index, asthma and allergy in Swedish schoolchildren participating in the International Study of Asthma and Allergies in Childhood: Phase II.* Acta Paediatr 2003; 92(10): 1144-48.

Sandin A, Annus T, Björkstén B, Nilsson L, Riikjärv MA, van Hage-Hamsten M, Bråbäck L. *Prevalence of self-reported food allergy and IgE antibodies to food allergens in Swedish and Estonian schoolchildren.* Eur J Clin Nutr. 2005 Mar;59(3):399-403.

# The ISAAC Story

## Syria, Eastern Mediterranean

Centres:	Phase:	PI:	Age Groups
Aleppo	3	Dr Khaldoun Tabbah	13-14
Lattakia	3	Professor Yousser Mohammad	13-14, 6-7
Tartous	3	Dr Samira Mohammad	13-14, 6-7

### National Coordinator:

#### Dr Samira Mohammad

Head of Paediatrics Department

PO Box 2500

Syria

### Roles:

- National Coordinator for Syria
- Phase Three Principal Investigator for Tartous

### National Publications

The following publications used ISAAC data from Syria:

Mohammad Y, Tabbah K, Mohammad S, Yassine F, Clayton T and Hassan M *International Study of Asthma and Allergies in Childhood: phase 3 in the Syrian Arab Republic* East Med Health J 2010; 16(7): 710-716

## Taiwan, Asia-Pacific

Centres:	Phase:	PI:	Age Groups
Taipei	1	Professor Kue-Hsiung Hsieh	13-14, 6-7
Taipei	3	Dr Jing-Long Huang	13-14, 6-7
Taoyuan	3	Dr Chun-Chieh Kao	13-14, 6-7

### National Coordinator:

#### Dr Jing-Long Huang

Chief, Department of Pediatrics  
Chang Gung Children's Hospital  
5, Fu-Hsin Street  
Kweishan  
Taiwan



### Roles:

- National Coordinator for Taiwan
- Phase Three Principal Investigator for Taipei

### About Taiwan

Taiwan is located on the east coast of Asia in the Western Pacific. There are 22.9 million people, and the land area is 36,188 km<sup>2</sup>; therefore, the population density is 636/km<sup>2</sup>, which is second rank in the world. Taiwan is noted for her subtropical climate. The average monthly temperature in the lowlands is 16°C in the winter and ranges between 24 to 30°C in the rest of the year. The average relative humidity is 78% year around. The gross domestic product (GDP) per person was USD 16,423 in 2010. A compulsory National Health Insurance (NHI) was implemented in Taiwan since 1995, and more than 96% of the population is covered by this system. The participation rate of medical institutions was around 94% nationwide.

### Background

The first prevalence survey of childhood asthma was conducted by Professor Hsieh in 1974. It was reported that the childhood asthma prevalence was 1.3%. In 1985, prevalence survey in school children in Taipei city was investigated again and it was found increasing to 5.0%. Tsuang et al. had reported the prevalence of childhood asthma as 6.5% in 1993 and 8.5% in 1997 in Tainan City. However, neither of the questionnaires used in these local studies was standardized. It is better to have a constructed and validated tool to investigate the prevalence.

### ISAAC Findings

Asthma, allergic rhinitis, and atopic dermatitis are very common allergic diseases in Taiwan. Although there were some reports that the prevalence of asthma might reach a plateau in western countries, the increasing prevalence of asthma and allergic rhinitis is still prominent in Taiwan. According to the International Study of Asthma and Allergies in Childhood (ISAAC) survey in different parts of Taiwan, the asthma prevalence rate was 16.8% to 19.7% in children of age 6-7 years, and 10.8% to 14.3% in age of 13-14 years. The average admission rate of childhood asthma was 105.0 per 100,000 populations. However, the admission rate was significantly lower in children than in adults

In addition to asthma, allergic rhinitis had an even higher prevalence rate than asthma. From a survey for 2,240 six- to seven-year-old children, 47.7% suffered from rhinitis, but only 10.7% of them were not troubled by it in their daily activities. As for physician-diagnosed allergic diseases, the prevalence was 24.6% for rhinitis and 18.0% for eczema, respectively.

Regional

National

Syria

Taiwan

Local

# The ISAAC Story

Regional

National

Taiwan

Thailand

Local

## Impact of ISAAC in Taiwan

From phase I to III of ISAAC survey, asthma prevalence in children was increasing in Taiwan. It was hard to ascribe to one specific reason to explain this phenomenon. However, improving awareness of disease entity might in part explain this condition. For improving asthma care in children, asthma education course was developed and conducted to all school nurses in Taiwan. This was shown to have greatly improved their asthma knowledge. The program, supported and funded by the government, was also extended to public health nurses and teachers in kindergarten in the past five years. It was also shown to improve the participants' competence on asthma care. Till now, there have been more than 2,000 school nurses and 500 community nurses who have taken the asthma education course. One of the purposes of the course is to be able to recognize the symptoms of asthma and have the patients receive appropriate treatment as early as possible. Asthma education is much more emphasized than ever. The knowledge of asthma care among patients and physicians should be reinforced by a continued educational program.

## Thailand, Asia-Pacific

Centres:	Phase:	PI:	Age Groups
Bangkok	1	Dr Pakit Vichyanond	13-14, 6-7
Chiang Mai	1	Associate Professor Muthita Trakultivakorn	13-14, 6-7
Bangkok	3	Dr Pakit Vichyanond	13-14, 6-7
Chantaburi	3	Dr Thanong Prasarnphanich	13-14, 6-7
Chiang Mai	3	Associate Professor Muthita Trakultivakorn	13-14, 6-7
Chiangrai	3	Dr Rawee Nettagul	13-14, 6-7
Khon Kaen	3	Associate Professor Jamaree Teeratakulpisarn	13-14, 6-7
Nakorn Pathom	3	Dr Aree Kongpanichkul	13-14, 6-7

## National Coordinator:

### Dr Pakit Vichyanond

Faculty of Medicine Siriraj Hospital  
Mahidol University  
2 Prannok Road  
Siriraj Bangkoknoi  
Thailand

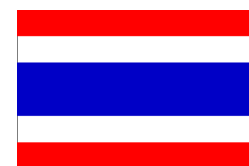
#### Roles:

- National Coordinator for Thailand
- Phase One Principal Investigator for Bangkok
- Phase Three Principal Investigator for Bangkok

## ISAAC in Thailand

In the early 1990, Richard Beasley visited me (Pakit Vichyanond) at my medical school (Faculty of Medicine Siriraj Hospital) to invite myself to function as a Thailand coordinator for starting ISAAC study in Thailand. The idea struck me so much and I immediately accepted the offer. Professor Montrich Tuchinda – my predecessor – had earlier performed questionnaire survey among children and medical students in Bangkok and demonstrated prevalence of asthma among children in Thailand to be only 4%. Such figure seemed to be too low for specialists in the field. We were in need of more well defined questionnaire survey and the idea of ISAAC was the perfect match for us at that time.

We were earlier assigned to the West Asia (Prof Shah, India) section of the ISAAC. The translation and back transferred of the data was done very quickly by a group of pediatric allergists in Thailand. At this time, the group of pediatric allergist/immunologists in the Asia Pacific region was well organized and thus Thailand was transferred to the East Asia region under Chris Lai (Hong Kong) as the regional coordinator. The initial survey was earlier launched in Bangkok by my group. In order to spread the survey across the Bangkok Metropolitan area, we mapped out schools to be surveyed to cover the entire Bangkok region. In addition, we balanced the schools to be equally include private and public schools. The high prevalence of asthma prevalence from the first survey was made known to the public (13%). In fact this figure was not that much different from figures all over Asia. This brought about a high degree of publicity among the Thai medical community since it represented such a large increase in load of asthmatic children. Additional centers from various parts of the countries including Chiangmai, Khon Kaen, Nakorn Pathom, and others applied for participating in the survey. In total, 10 centers all over the country were included (however, not all data were submitted to ISAAC center in Auckland). Results from these centers confirmed that the high prevalence of asthma (around 10%), allergic rhinitis (40%) and atopic dermatitis (10%) were corrected throughout the country. Results from Chantaburi center (east of Thailand) showed prevalence of asthma of 16%!!!



## National Publications

The following publications used ISAAC data from Thailand:

Vichyanond P, Jirapongsananuruk O, Visitsunthorn N, Tuchinda M. *Prevalence of asthma, rhinitis and eczema in children from the Bangkok area using the ISAAC (International Study for Asthma and Allergy in Children) questionnaires.* J Med Assoc Thai 1998; 81(3): 175-84.

Trakultivakorn M, Sangsupawanich S, Vichyanond P. *Time trends of the prevalence of asthma, rhinitis and eczema in Thai children-ISAAC (International Study of Asthma and Allergies in Childhood) Phase Three.* J Asthma 2007; 44(8): 609-11.

# The ISAAC Story

The Bangkok center launched their own version of ISAAC-II but due to slight variation of their methods from the official ISAAC-II, the results were not included for ISAAC-II analysis. Results of this investigation are available from myself.

Two centers, Bangkok and Chiangmai participated in ISAAC Phase One and Three time trends. Increase in prevalence was documented from the Bangkok center whereas Chiangmai center showed plateau to slight decline. Results of environment and other factors in this ISAAC-III were used in subsequent analysis forming the report by the ISAAC committee. In addition, ISAAC questionnaire survey was conducted among University students in Bangkok and data among these students were quite similar to those in children

Overall, ISAAC investigation has been well received in Thailand. This has brought a great enthusiasm on allergic diseases in children. We are keen to participate in further investigations with ISAAC committee.

Regional  
National

**Thailand**  
Togo  
Tokelau  
Tonga  
Trinidad and Tobago  
Tunisia

Local



## Togo, Africa

Centres:	Phase:	PI:	Age Groups
Lome	3	Professor Osseni Tidjani	13-14

**Togo has no National Coordinator**



## Tokelau, Oceania

Centres:	Phase:	PI:	Age Groups
Tokelau	3	Dr Tekie Iosefa	13-14

**National Coordinator:**

**Dr Tekie Iosefa**

Chief Health Advisor  
Ministry of Health

Tokelau

**Roles:**

- National Coordinator for Tokelau
- Phase Three Principal Investigator for Tokelau



## Tonga, Oceania

Centres:	Phase:	PI:	Age Groups
Nuku alofa	3	Dr Sunia Foliaki	13-14

**National Coordinator:**

**Dr Toakase Fakakovi**

Paediatrician  
Vaiola Hospital  
Box 69

Tonga

**Roles:**

- National Coordinator for Tonga



## Trinidad and Tobago, North America

Centres:	Phase:	PI:	Age Groups
St Augustine	3	Dr Michelle A Monteil	13-14, 6-7
Tobago	3	Dr Michelle A Monteil	13-14, 6-7

**Trinidad and Tobago has no National Coordinator**



## Tunisia, Africa

Centres:	Phase:	PI:	Age Groups
Sousse	1	Professeur Mohamed Jerray	13-14
Grand Tunis	3	Professeur Faouzia Khaldi	13-14
Sousse	3	Professeur Mohamed Jerray	13-14

**Tunisia has no National Coordinator**



# The ISAAC Story

Regional

National

Turkey

Ukraine

Local

## Turkey, Western Europe

Centres:	Phase:	PI:	Age Groups
Ankara	2	Dr Yildiz Saraçlar	8-11 y.

### Turkey has no National Coordinator

### National Publications

The following publications used ISAAC data from Turkey:

Saraçlar Y, Kuyucu S, Tuncer A, Sekerel B, Saçkesen C, Kocabas C. *Prevalence of asthmatic phenotypes and bronchial hyperresponsiveness in Turkish schoolchildren: an International Study of Asthma and Allergies in Childhood (ISAAC) study*. Ann Allergy Asthma Immunol.2003 Nov;91(5):477-84. Erratum in: Ann Allergy Asthma Immunol.2004 Jan;92(1):87.

Kuyucu S, Saraçlar Y, Tuncer A, Saçkesen C, Adalıoğlu G, Sümbüloğlu V, Sekerel BE. *Determinants of atopic sensitization in Turkish school children: Effects of pre and post-natal events and maternal atopy*. Pediatr Allergy Immunol 2004; 15(1): 62-71.

Kuyucu S, Saraçlar Y, Tuncer A, Geyik PO, Adalıoğlu G, Akpınarlı A, Sekerel BE, Sumbuloglu V. *Epidemiologic characteristics of rhinitis in Turkish children: the International Study of Asthma and Allergies in Childhood (ISAAC) phase 2*. Pediatr Allergy Immunol.2006 Jun;17(4):269-77.

## Ukraine, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Kharkiv	1	Associate Professor Viktor Ognev	13-14, 6-7
Kharkiv	3	Associate Professor Viktor Ognev	13-14, 6-7
Rural Kharkiv	3	Associate Professor Viktor Ognev	13-14, 6-7

### National Coordinator:

### Associate Professor Viktor Ognev

Head, Department of Social Medicine  
Organization and Economics of Public Health  
Kharkov State Medical University  
4 Lenin Avenue  
Ukraine

### Roles:

- National Coordinator for Ukraine
- Phase One Principal Investigator for Kharkiv
- Phase Three Principal Investigator for Kharkiv, Rural Kharkiv

## Ukraine

Ukraine is a sovereign state in the Eastern Europe. In 1991 Ukraine declared itself an independent state.

- Capital: the City of Kyiv.
- Population: 47 million people.
- Religions: Christianity, Islam.
- Climate: moderate, an average temperature in January is -7°C and +23°C in June.

Ukraine stretches 893 kilometers from North to South and 1316 kilometers from West to East. Ukraine is situated in the middle latitudes and has outlets to the Black Sea and the Sea of Azov. It occupies one of the first places among the European countries in area extent. Due to the favourable geographical position in the centre of Europe and divaricated network of air, railway, sea and automobile transport Ukraine is a transit country for passengers and freights from different states. Ukraine is one of the quietest and most stable among the former USSR countries. It is acknowledged as offering high quality of life. The Ukrainian nation is widely known for hospitality. The Ukrainians are always glad to welcome guests who feel here at home.

## Kharkiv

Kharkiv is the second largest city in Ukraine; its area is more than 300 km<sup>2</sup>. The city was founded in 1654. The population of the city is over 1.5 million people. In the city there is an international airport increasing a number of flights every year, railway and bus stations. A well-developed network of underground lines and other city transport (trolley buses, trams, buses, and taxis) provide transportation in the city. Kharkiv is a cultural centre. There are 10 theatres, concert halls, a city picture gallery, museums, about 80 libraries, art monuments, temples, a circus, the Chamber Music Hall, disco clubs. Kharkiv is a city of students. It takes

# The ISAAC Story

one of the leading places in Ukraine in the number of higher educational establishments (31). Today 300,000 students are trained in higher educational establishments, including 11,800 from more than 106 nations of the world. Every year more than 30,000 young specialists graduate from higher educational establishments in Kharkiv. Kharkiv is the leading scientific center of Ukraine. There are 3 Nobel Prize winners from Kharkiv scientific school:

Semen Abramovich Kuznets - in Economics;  
Ilya Ilyich Mechnikov - in Physiology and Medicine;  
Lev Davydovich Landau- in Physics.

## Kharkiv National Medical University

Kharkiv National Medical University was the first higher medical educational institution in Ukraine.

The University was founded in 1805 as the Medical Faculty of Kharkiv Emperor University. In 1920, the Medical Faculty was united with the Women's Medical Institute, and Kharkiv Medical Academy was organized.

In 1921, the Academy was renamed as Kharkiv Medical Institute.

In 1994, the Institute served as a base for establishing Kharkiv State Medical University.

Since 1998 the University has been a member of the International Association of Universities (under the aegis of UNESCO).

In 2007 the President of Ukraine issued the order to assign the National status to the University.

The Diploma of Kharkiv National Medical University is prestigious and recognized in many nations of the world. KhNMU is listed in the World Health Organization (W.H.O.) directory of medical schools.

Kharkiv National Medical University is worldwide known for high grade education. Due to favourable references of international educational and medical organizations and associations, the diploma of KhNMU is a reliable pledge of perspective career and prosperity for its graduates. Among foreign citizens who were our students there are outstanding personalities who have significantly succeeded as professionals. And this all began far in 1951 when 2 citizens of Czechoslovakia and 1 citizen of Poland came to study at Kharkiv Medical Institute and they were its first foreign graduates in 1957.

Over the next years, educational contacts of KhNMU have significantly expanded. Our University is continuously selected as a place of study by many foreign representatives.

Annually the University enrolls approximately 500 foreign citizens in the first year. The University is currently training more than 5,000 students, among them about 2,000 are foreign citizens from 60 nations including Bahrain, Belgium, China, Denmark, Germany, Israel, Jordan, India, Kenya, Lebanon, Malaysia, Mauritius, Morocco, Nigeria, Peru, Russia, Sudan, Syria, Tunisia, USA, and others. Foreign students study at the Faculty for Training Foreign Students, the Preparatory Department, or undergo the clinical postgraduate course.

About 6,000 specialists from 86 states of Europe, Asia, Africa, Latin America, Middle East have graduated from KhNMU since 1951. Among them there are 3 Doctors and 80 Candidates of Medical Science, more than 300 postgraduates.

## Department of social medicine, organization and economic of Public Health service.

History Department of social medicine, organization and economic of Public Health service of Kharkiv National medical university began from 27 of October 1923 and this department was first in Ukraine. Minister of Public Health service of Ukraine M.G. Gurevich was the founder of the Department.

It were 5 Heads of Department during the department's of social medicine, organization and economic of Public Health service work. There are: professor M.G. Gurevich (1923 – 1925), professor S.A. Tomilin (1925 – 1932), professor Z.A. Gurevich (1932 – 1974), professor N.A. Galicheva (1972 – 2002) and professor V.A. Ognev (from 2002 till now). The staff of teachers consist 16 persons. There are 3 professors (V.A. Ognev, N.A. Galicheva, K.M. Sokol), 3 vice professor and teachers. Many disciplines are studied by department. There are: History of medicine, Biostatistic, Public Health, Economy of Public Health. Over the years the department had issued 23 books, 5 textbooks and teaching aids, granted 8 patents. Since 1998, the Department is the national focal points of the international program "ISAAC" on the study of bronchial asthma in children in Ukraine. At the present stage of work the Department has taken part in international grant project "Intas", carrying the theme "Epidemiological study reproductive function of Ukraine's population, which is influenced by biologically persistent organochlorine compounds (dioxins) environment.

Regional

National

Ukraine

Local

# The ISAAC Story

Regional

National

**United  
Kingdom**

Local

## United Kingdom, Western Europe

Centres:	Phase:	PI:	Age Groups
Anglia and Oxford	1	Professor H Ross Anderson	13-14
North east and Yorkshire	1	Professor H Ross Anderson	13-14
North Thames	1	Professor H Ross Anderson	13-14
North West	1	Professor H Ross Anderson	13-14
Scotland	1	Professor H Ross Anderson	13-14
South and West	1	Professor H Ross Anderson	13-14
South Thames	1	Professor H Ross Anderson	13-14
Sunderland	1	Dr Mohammad H Shamssain	13-14, 6-7
Surrey/Sussex	1	Professor David Strachan	13-14
Trent	1	Professor H Ross Anderson	13-14
Wales	1	Professor H Ross Anderson	13-14
West Midlands	1	Professor H Ross Anderson	13-14
West Sussex	2	Professor David Strachan	
North Thames	3	Professor H Ross Anderson	13-14
Scotland	3	Dr Jane B Austin	13-14
South Thames	3	Professor H Ross Anderson	13-14
Sunderland	3	Dr Mohammad H Shamssain	13-14, 6-7
Surrey/Sussex	3	Professor David Strachan	13-14
Wales	3	Dr Michael Burr	13-14

### National Coordinator:

#### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and  
MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
United Kingdom



#### Roles:

- ISAAC Steering Committee
- National Coordinator for United Kingdom
- Phase One Principal Investigator for Anglia and Oxford, North east and Yorkshire, North Thames, North West, Scotland, South and West, South Thames, Trent, Wales, West Midlands
- Phase Three Principal Investigator for North Thames, South Thames

### ISAAC Perspective of National Coordinator – United Kingdom

Representatives from the UK were closely associated with the development of ISAAC (HR Anderson, ML Burr, B Sibbald, DP Strachan, H Williams) and have had a continuing role in the Steering Group and Executive Committee. The UK has participated in all phases of ISAAC including the early study of asthma using the video questionnaire in the counties of Surrey and Sussex.

With funding from the National Asthma Campaign we conducted Phase One in 13-14 year-olds on a nationwide basis by sampling a high school from every county in England, Scotland and Wales. The regions of England were used to define ISAAC "centres" for the purposes of international reporting, but national publications were also prepared using the combined dataset.

Phase One fieldwork was carried out concurrently in the Channel Islands (Jersey and Guernsey) and the Isle of Man. Independently, a survey of 6-7 year-olds was carried out in Sunderland. A special feature of Phase One in the UK was the inclusion of a questionnaire on domestic pollution sources, which was a precursor to the environmental risk factor questionnaire used internationally in Phase Three.

Schools from the West Sussex area of southern England participated in Phase Two.

Again with support from the National Asthma Campaign, the UK successfully completed Phase Three studies in all of the centres that took part in Phase One, with the exception of England where the survey was repeated only in South East England (London and its surrounding counties).



### National Publications

The following publications used ISAAC data from United Kingdom:

Kaur B, Anderson HR, Austin J, Burr M, Harkins LS, Strachan DP, Warner JO. *Prevalence of asthma symptoms, diagnosis, and treatment in 12-14 year old children across Great Britain (International Study of Asthma and Allergies in Childhood, ISAAC UK)*. *BMJ* 1998; 316(7125): 118-24.

Austin JB, Kaur B, Anderson HR, Burr M, Harkins LS, Strachan DP, Warner JO. *Hay fever, eczema, and wheeze a nationwide UK study (ISAAC, international study of asthma and allergies in childhood)*. *Arch Dis Child* 1999; 81(3): 225-30.

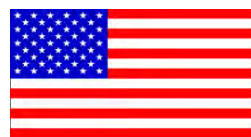
Burr ML, Anderson HR, Austin JB, Harkins LS, Kaur B, Strachan DP, Warner JO. *Respiratory symptoms and home environment in children a national survey*. *Thorax* 1999; 54: 27-32.

Priftanji A, Strachan D, Burr M, Sinamati J, Shkurti A, Grabocka E, Kaur B, Fitzpatrick S. *Asthma and allergy in Albania and the UK*. *Lancet* 2001; 358(9291):1426-7.

Anderson HR, Ruggles R, Strachan DP, Austin JB, Burr M, Jeffs D, Standing P, Steriu A, Goulding R. *Trends in prevalence of symptoms of asthma, hay fever, and eczema in 12-14 year olds in the British Isles, 1995-2002 a questionnaire survey*. *BMJ* 2004; 328(7447): 1052-3.

Austin JB, Selvaraj S, Godden D, Russell G. *Deprivation, smoking and quality of life in asthma*. *Arch Dis Child* 2005; 90(3): 253-7.

# The ISAAC Story



## USA, North America

Centres:	Phase:	PI:	Age Groups
Chicago (3)	1	Professor Victoria Persky	13-14
Chicago (4)	1	Professor Victoria Persky	13-14
Seattle	1	Professor Gregory J Redding	13-14
Chapel Hill	3	Dr Karin Yeatts	13-14
Sarasota	3	Dr Hugh H Windom	13-14
Seattle	3	Professor Gregory J Redding	13-14

**USA has no National Coordinator**



## Uruguay, Latin America

Centres:	Phase:	PI:	Age Groups
Montevideo	1	Dra Dolores Holgado	13-14, 6-7
Montevideo	3	Dra Dolores Holgado	13-14
Paysandú	3	Dra María Cristina Lapidés	13-14, 6-7

### National Coordinator:

#### Dra Dolores Holgado

Facultad de Medicina  
Cátedra de Pediatría "B"  
Department of pulmonology, allergy and immunology  
Pediatrics hospital Pereira Rossell  
Uruguay



#### Roles:

- National Coordinator for Uruguay
- Phase One Principal Investigator for Montevideo
- Phase Three Principal Investigator for Montevideo

### ISAAC in Uruguay

Uruguay is a very small country, however there were several studies about asthma prevalence since 1970, but all of them had a different methodology and differences in the age of the samples. The studies about allergies prevalence were very scarce.

In 1990 when I attended the ATS and IUATLD congress in Boston, I was aware that an international study about asthma and allergies was being prepared. When I came back to Montevideo I was very enthusiastic about including Uruguay in that study. I am a pneumologist and allergist pediatrician. At that time I was in charge of the Department of pulmonology, allergy and immunology of the Pereira Rossell hospital, so I talked with my colleagues Dra. María Julia Saráchaga and Dra. Sylvia Brea who worked with me and we decided to participate in the study. We were connected with ISAAC Steering Committee thanks to Dr. Fernando Martinez.

In the different asthma prevalence studies that had been done between 1970 and 1990, even taking into account that they had different methodology, we could see that there was a concerning increase in asthma prevalence. For this reason we considered very important to join ISAAC. We thought it was a huge step that would let us have real data about asthma and allergies prevalence in our country and give us the opportunity of comparing our data with the data of other countries involved in this study. With ISAAC we also expected to achieve a better understanding and treatment of our patients.

Since Uruguay participated in ISAAC, we can feel that there has been a growing concern about asthma in the physician community. Pediatricians were aware about the importance of ISAAC and our data by attending national congresses and courses of MCE related with these diseases. They are now more committed with the management of asthma, which is contributing to a better treatment of the patients.

We have not yet matched prevalence data between the core questionnaire and the environmental questionnaire.

In Phase One Montevideo was the only centre due to the low population of Uruguay. Montevideo the capital city of Uruguay has almost half of the population. In the hole country we are only 3.000.000 inhabitants,

In Phase Three a second centre was added thanks to the participation of Dra. Cristina Lapidés in Paysandú city and ISAAC Steering Committee who accepted a lower number of children than Montevideo Centre. In Paysandú 1512 children participated in the 6-7 years group and 1738 in the 13-14 years group. It was very important to have a second centre within an area far from the capital city that included children from farmland, to have a better idea of the prevalence of asthma and allergies in Uruguay.

We gratefully acknowledge financial support from Glaxo Wellcome. We wish to thank all parents, children and school staff who participated in the surveys and also our fieldworkers team for their enthusiasm and effort throughout each study.

Regional  
National

USA

Uruguay

Local

# The ISAAC Story

Regional

National

Uzbekistan

Venezuela

Vietnam

West Bank  
and Gaza

(Palestine)

Local

## Uzbekistan, Northern and Eastern Europe

Centres:	Phase:	PI:	Age Groups
Samarkand	1	Professor Tamara Aripova	13-14
Tashkent	1	Professor Tamara Aripova	13-14

Uzbekistan has no National Coordinator

## Venezuela, Latin America

Centres:	Phase:	PI:	Age Groups
Caracas	3	Dr Oscar Aldrey	13-14, 6-7

National Coordinator:

**Dr Oscar Aldrey**

Jefe del Instituto  
Instituto de Inmunología  
Avenida Roosevelt  
Ciudad Universitaria, Instituto de Inmunología  
Venezuela

Roles:

- National Coordinator for Venezuela
- Phase Three Principal Investigator for Caracas

## Vietnam, Asia-Pacific

Centres:	Phase:	PI:	Age Groups
Ho Chi Minh City	3	Dr Baïch Vaên Cam	13-14, 6-7

Vietnam has no National Coordinator

## Palestine, Eastern Mediterranean

Centres:	Phase:	PI:	Age Groups
Ramallah	2	Dr Nuha El Sharif	6-12
North Gaza	3	Mr Shaban Mortaja	13-14, 6-7
Ramallah	3	Dr Nuha El Sharif	13-14, 6-7

National Coordinator:

**Dr Nuha El Sharif**

Associate professor of Medical Sciences-  
Epidemiology  
Alquds University, Faculty of Public  
Health  
Abu Dies Camp PO Box 51915  
Jerusalem  
Palestine



Roles:

- National Coordinator for Palestine
- Phase Two Principal Investigator for Ramallah
- Phase Three Principal Investigator for Ramallah

## Why was this centre selected for ISAAC?

In a personal communication, year 2000, with Professor Ameen Thalji, a researcher in Pediatric's health in the West Bank and Jerusalem, he reported a gradient increase of childhood infections as seen at the emergency rooms and hospitals' clinics in the past 10 years. Thalji and Abdeen agreed that a potential justification could be the increased effect of indoor allergen especially house dusts mites and smoking, and outdoor air pollution by traffic and allergens which were also believed to be the main risk factors for increasing asthma in the Palestinian children (Professor Ameen Thalji and Professor Hani Abdeen, personal communication, 2000). Similarly, a case control study in Gaza Strip at the refugees' camps (1) indicated that house dust mites were probably important allergens in the region and has a major role in asthma trends and its severity among children especially at the coastal areas. Also, kerosene use for heating and cooking was a strong potential risk factor for developing asthma symptoms in those children, in addition to the effect of smoking and house dust mites. Therefore, poverty and humidity in Palestine and especially in Gaza Strip were considered important risk factors for asthma too.



## National Publications

The following publications used ISAAC data from Palestine:

El-Sharif NA, Nemery B, Barghuthy F, Mortaja S, Qasrawi R, Abdeen Z. *Geographical variations of asthma and asthma symptoms among schoolchildren aged 5 to 8 years and 12 to 15 years in Palestine the International Study of Asthma and Allergies in Childhood (ISAAC)*. Ann Allergy Asthma Immunol 2003 Jan;90(1):63-71.

# The ISAAC Story

## References

Mumcuoglu KY, Abed Y, Armenios B, et al. Asthma in Gaza refugee camp children and its relationship with house dust mites. *Ann. Allergy* 1994; 72: 163-166.

El-Sharif NA, Nemery B, Barghuthy F, Mortaja S, Qasrawi R, Abdeen Z. Geographical variations of asthma and asthma symptoms among schoolchildren aged 5 to 8 years and 12 to 15 years in Palestine: the International Study of Asthma and Allergies in Childhood (ISAAC). *Ann Allergy Asthma Immunol.* 2003 Jan;90(1):63-71.

El-Sharif N, Abdeen Z, Qasrawi R, Moens G, Nemery B. Asthma prevalence in children living in villages, cities and refugee camps in Palestine. *Eur Respir J.* 2002 Jun;19(6):1026-34.

El-Sharif N, Abdeen Z, Barghuthy F, Nemery B. Familial and environmental determinants for wheezing and asthma in a case-control study of school children in Palestine. *Clin Exp Allergy.* 2003 Feb;33(2):176-86.

El Sharif N, Douwes J, Hoet PH, Doekes G, Nemery B. Concentrations of domestic mite and pet allergens and endotoxin in Palestine. *Allergy.* 2004 Jun;59(6):623-31.

El-Sharif N, Douwes J, Hoet P, Nemery B. Childhood asthma and indoor aeroallergens and endotoxin in Palestine: a case-control study. *J Asthma.* 2006 Apr;43(3):241-7.

Until year 2000, there was no real work that described the real situation or explored the possible risk factors and determinants of asthma in Palestine. The urban-rural and inland-coastal area differences were not studied in depth. Therefore, we decided at Al Quds University-Palestine in cooperation with KU Leuven Belgium to initiate several studies in two selected area (West Bank and Gaza Strip) that provide a framework for further etiological research into lifestyle, environmental, genetic and medical care factors affecting asthma prevalence and incidence. Ramallah governorate, the inland area, and Gaza governorate, the coastal area, were chosen for implementing the series of studies that was planned according to ISAAC protocols (phase three and phase 2).

ISAAC studies were used as a research that led to obtaining my own PhD, Nuha El Sharif PhD, from the K.U. Leuven.

## Center findings

### ISAAC Phase Three studies:

This phase was done in two governorates: Gaza and Ramallah governorates. After a two-stage stratified systematic sampling, approximately 14,500 schoolchildren, from the first and second grades of elementary school (ages 5 to 8 years) and eighth and ninth school grades (ages 12 to 15 years), were invited to participate in a survey using ISAAC phase III questionnaires and protocols.

The main study results showed that younger children had a higher 12-month wheezing prevalence rate of 9.6% compared to older children (7.2%) and more physician-diagnosed asthma (8.4% and 5.9%, respectively). However, nocturnal cough and exercise-related wheezing were higher in the older age group compared with younger children. Younger children living in North Gaza district showed slightly higher prevalence rates for asthma and asthma symptoms, but older children had higher rates in Ramallah district. After adjustment using logistic regression analysis, male sex, living in inland areas, and younger age were shown to predict 12-month wheezing and physician-diagnosed asthma (2).

### ISAAC phase 2

In the fall of 2000, 3382 schoolchildren aged 6-12 year were surveyed in 12 schools in Ramallah governorate, using ISAAC-phase III, parents-administered translated questionnaire. The crude prevalence rates for "wheezing ever", "wheezing in the previous 12 months", and "physician-diagnosed asthma" were 17.1%, 8.8% and 9.4% respectively, with urban areas having higher prevalence rates than rural areas. Within urban areas, refugee camps had higher prevalence rates than cities. Yet, within the rural areas, the 12 months prevalence was lower in the deprived villages than other residence. Place of residence remained significant for asthma and asthma symptoms, after adjusting for gender, age, and place of birth (3).

To investigate the role of familial, early days' exposures, and indoor environmental determinants for asthma in children in Palestine, ISAAC phase 2 protocols were used. From the population of our previous study (3), a group of 273 children with wheeze in the past 12 months (of whom 99 children had physician-diagnosed asthma) were matched with an equal number of non-wheezing controls. This case-control study involved a parental questionnaire; skin prick testing (SPT) with mixed house dust mites, cat and dog dander, mixed grass, mixed trees pollen, Alternaria, olives tree, and cockroach extracts, and serum for total and specific IgE for the same 8 allergens (4). Moreover, to evaluate the relationship between wheezing or sensitization and concentrations of mites, cat and dog allergens, and bacterial endotoxin samples were taken from the mattress and floor dust of a 110 children's houses with reported wheezing and without wheezing (5,6).

The results showed that paternal asthma and maternal hay fever significantly tripled the risk for their children to have wheezing. Previous diagnoses of bronchial allergy, bronchitis, pneumonia, or whooping cough, and positive SPT for house dust mites and cockroaches were significantly more likely among wheezing and asthmatic children than controls. Specific IgE levels for house dust mites and cat allergens showed significantly higher risk to report wheezing. Domestic damp spots and visible moulds were reported more for both wheezing and asthmatic children. After adjustment for several environmental and socio-demographic factors using multivariate logistic regression analysis, paternal asthma, maternal hay fever, damp houses, and cockroach allergen positivity proved to be strong predictors for wheezing symptoms (4).

No consistent associations between allergen levels and either wheeze or specific atopic sensitization were found. Furthermore, no clear associations between mattress endotoxin levels and wheeze or atopy were found. Endotoxin in floor dust was inversely associated with atopic sensitization and wheeze, statistically significant only for atopic wheeze. Finally, a non-significant inverse association was observed between living room endotoxin and atopy within the non-wheezing control group (5,6).

The conclusion of phase 2 confirmed that familial "atopic" diseases are significant predictors of childhood asthma. Moreover, indoor environment such as domestic moulds also appears to play a role. Also, results suggest that endotoxin on living room floors might protect against atopic wheeze in the Palestinian children.

Regional

National

**West Bank  
and Gaza  
(Palestine)**

Local

# The ISAAC Story

Regional

National

Local

A Coruña

## A Coruña Centre

Phase Three			
<b>Centre:</b>		A Coruña, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Dr Angel López-Silvarrey Varela	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2003 to November 2003
<b>Sampling Frame:</b>		13-14yr: All schools in A Coruña Township 6-7yr: All schools in A Coruña, Culleredo and Oleiros townships.	

## Personnel

### Dr Angel López-Silvarrey Varela

Polígono de A Grela  
Edificio WorkCenter  
C/ Galileo Galilei, n 4A  
A Coruna  
Spain



#### Roles:

- Phase Three Principal Investigator for A Coruña

## LA CORUÑA (SPAIN) ISAAC CENTRE

The La Coruña centre joined the ISAAC initiative in phase III. Since we first became aware of this study in 1995 thanks to Professor García-Marcos (national coordinator), our interest in it has been stimulated by the enormous scientific interest of the International Study of Asthma and Allergies in Childhood, its repercussion on a worldwide scale, and the absence of epidemiological data regarding allergic illnesses in childhood in our Autonomous Community (Galicia). Unfortunately, despite several attempts, we did not receive funding for the development of the first phases of the project.

In 2003 the María José Jove Foundation ([www.fundacionmariajosejove.org](http://www.fundacionmariajosejove.org)), an organisation dedicated to childhood protection in our city, decided to promote and finance phase III of ISAAC in La Coruña. At last we were able to participate in this important project, with the satisfaction of being pioneers in Galicia and contributing our data to the data obtained at a national and worldwide level.

Both the interest generated by the initiative and the solvency of the promoters facilitated the collaboration of the University of La Coruña. Professor Castro Iglesias was chosen to follow the progress of the project, and her contributions were most valuable. Moreover, the following four students received a scholarship to participate in the project: Rosalía Pérez, Vanesa Moure, María Jesús Mella and Yolanda Iglesias. They all did a magnificent job, working tirelessly, rigorously, and more than willingly.

The study took place in the city and in some outer municipalities in the year 2003. The support and coordination of Professor Garcia-Marcos were fundamental. Both the educational authorities and the teachers made us feel very welcome and were willing to collaborate at all times.

The obtained results were both original, seen as there was hardly any previous existing data regarding the prevalence of the studied illnesses in our Autonomous Community, and striking, given the notable differences found in relation to other Spanish cities and the great similarities discovered with other cities characterized by similar climatic and environmental conditions.

The study in general, along with the results obtained, enjoyed both a strong social repercussion and coverage in the local press. On a scientific level, our work was rewarded with several regional prizes and also allowed us to put together some publications<sup>1</sup>, along with other congress communications. Moreover, we were able to contribute with our data to many national and international publications.

This important repercussion made possible a further study, with the promotion of the María José Jove Foundation and the collaboration of the Galician Paediatric Society and the Health Council of the Government of Galicia. In this later study, we were able to extend our investigation to the remaining areas and cities of our Autonomous Community. As a result of the data obtained, it was possible to estimate the global prevalence of childhood allergic diseases in Galicia<sup>2</sup>.

Participating in the ISAAC was, for us, a magnificent experience and we feel proud of our contribution. We are available to continue with future phases of this initiative, and encourage all other groups to do likewise.

<sup>1</sup>López-Silvarrey Varela A, González Barcala FJ, Paz Esquete JJ, Pérez Castro TR, Valdés Cuadrado L, Castro Iglesias A. "Prevalencia de síntomas de asma y rinitis en la población de A Coruña". *An Pediatr* 2007; 66 (2): 146-53

<sup>2</sup>López-Silvarrey Varela A, Pértega Díaz S, Rueda Esteban S, Sánchez Lastres JM, San José González MA, Sampedro Campos M, Pérez Castro T, Garnelo Suárez L, Bamonde Rodríguez L, López-Silvarrey Varela J, González Barcala J. "Prevalencia de síntomas de asma en los niños de la Comunidad Autónoma de Galicia (España) y sus variaciones geográficas". *Arch Bronconeumol* 2011; 47: 274-282.



Team and P.I. La Coruña, Spain

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from the Addis Ababa centre:

Melaku K, Berhane Y. *Prevalence of wheeze and asthma related symptoms among school children in Addis Ababa, Ethiopia.* *Ethiop Med J.* 1999 Oct;37(4):247-54.

## Addis Ababa Centre

Phase One			
<b>Centre:</b>		Addis Ababa, Ethiopia ( Africa )	
<b>Principal Investigator:</b> Associate Professor Kibrebeal Melaku			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b> All junior high schools in Addis Ababa.			
Phase Three			
<b>Centre:</b>		Addis Ababa, Ethiopia ( Africa )	
<b>Principal Investigator:</b> Associate Professor Kibrebeal Melaku			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	June 2003 to June 2003
<b>Sampling Frame:</b> 13-14yr: All schools in the city of Addis Ababa, the same sampling frame as Phase One.			

## Personnel

### Associate Professor Kibrebeal Melaku

Department of Internal Medicine  
Faculty of Medicine  
Addis Ababa University  
P.O. Box 16489  
Ethiopia

#### Roles:

- Phase One Principal Investigator for Addis Ababa
- Phase Three Principal Investigator for Addis Ababa

## Adelaide Centre

Phase One			
<b>Centre:</b>		Adelaide, Australia ( Oceania )	
<b>Principal Investigator:</b> Dr Declan Kennedy			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	August 1993 to November 1993
<b>Sampling Frame:</b> 13-14yr: All schools in the Adelaide metropolitan area. 6-7yr: All schools in the Adelaide metropolitan area except schools with combined enrolments in Years 1 and 2 of less than 40 children.			

## Personnel

### Dr David Bates

Dept Paediatrics  
University of Adelaide  
Australia

#### Roles:

- Phase One collaborator for Adelaide

### Dr Declan Kennedy

Respiratory Medicine  
Adelaide Children's Hospital  
Australia

#### Roles:

- Phase One Principal Investigator for Adelaide

## Akola Centre

Phase One			
<b>Centre:</b>		Akola, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Dr Ramesh M. Maheshwari			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 1994 to October 1995
<b>Sampling Frame:</b>			

## Personnel

### Dr Ramesh M. Maheshwari

Coordinator  
Allergy Asthma Hospital  
Yogakshem  
New Bhagvat Plot  
India

#### Roles:

- Phase One Principal Investigator for Akola

Regional

National

Local

Addis Ababa

Adelaide

Akola



# The ISAAC Story

Regional

National

Local

Al-Khod

## Al-Khod Centre

<b>Phase One</b>			
<b>Centre:</b>		Al-Khod, Sultanate Of Oman ( Eastern Mediterranean )	
<b>Principal Investigator:</b> Associate Professor Bazdawi Al-Riyami			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 1995 to April 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Al-Khod, Sultanate Of Oman ( Eastern Mediterranean )	
<b>Principal Investigator:</b> Associate Professor Omar Al-Rawas			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 2001.
<b>Sampling Frame:</b>		All the Government schools. These represent more than 99% of all schools in the country. The same sampling frame as Phase One.	

## Personnel

### Dr. Asiya A. Al Riyami,

Director of Research,  
Ministry of Health,  
Sultanate of Oman

#### Roles:

- Phase Three collaborator for Al-Khod

### Associate Professor Omar Al-Rawas

Head, Department of Medicine  
College of Medicine and Health  
Sciences  
Sultan Qaboos University  
P.O. Box 35; Postal Code 123  
Sultanate Of Oman



#### Roles:

- National Coordinator for Sultanate Of Oman
- Phase Three Principal Investigator for Al-Khod

### Associate Professor Bazdawi Al-Riyami

Sultan Qaboos University  
Department of Medicine  
P.O. Box 35  
Al-Khodh, 123  
Sultanate Of Oman



#### Roles:

- Phase One Principal Investigator for Al-Khod

### Dr. Laila Jassim,

Department of Primary Health Care and School  
Health,  
Ministry of Health,  
Sultanate of Oman

#### Roles:

- Phase Three collaborator for Al-Khod

## Why was this Centre Selected for ISAAC?

We received invitation from Professor Stephen Montfort, coordinator for the Eastern Mediterranean region as very few centres in the region had shown interest. At the time Oman did not have any community based asthma data and this was a welcome opportunity for us to collaborate with this international study. This proved to be wonderful opportunity.

In collaboration with the national school health department under the Ministry of Health we were able to survey all the health regions in the country and sample from a base of all public schools which represented more than 99% of all schools. Effectively our centre produced national data although we are known as Al Khodh centre because of the location of the Sultan Qaboos University.

## Local Publications

The following publications used ISAAC data from the Al-Khod centre:

Al-Rawas OA, Al-Riyami BM, Al-Maniri AA, Al-Riyami AA. *Trends in asthma prevalence and severity in Omani schoolchildren Comparison between ISAAC phases I and III.* *Respirology* 2008 Sep;13(5):670-3. Epub May 2008.

# The ISAAC Story

## Our Experience with ISAAC

**The Pilot Study:** This was an interesting exercise because when we started the translation initially we used a written Arabic language version of the translation of key words such as wheezing, asthma, eczema, hay fever etc. only to find out later that this was not universally understood. We had to go back to the “clinical” language used during normal consultation. The video questionnaire was striking for many of the children.

**Phases One & Three:** Both age groups participated in both phases which were 6 years apart (1995 and 2001). In both surveys, the total national target samples were randomly selected from the ten administrative (representing the eight geographical) regions of Oman using the proportion allocation method. The total number of distributed questionnaires (Arabic version) was 7,625 (4,079 aged 6–7 years and 3,546 aged 13–14 years) in Phase One (April 1995) and 8,080 questionnaires (4,235 aged 6–7 years and 3,853 aged 13–14 years) in Phase Three (April 2001). In Phase Three, in addition to the written questionnaire, 13-14 year old children completed the ISAAC asthma video questionnaire.

The phase I survey in 1995 was the first survey of asthma symptoms in Oman. It showed that the prevalence rates of reported diagnoses of asthma, allergic rhinitis and eczema were higher in older children (20.7%, 10.5% and 14.4% compared with 10.5%, 7.4% and 7.5%, respectively). Although the prevalence of asthma in Omani children was in the intermediate range of the ISAAC global ranking, it was the highest among the participating Eastern Mediterranean countries and Omani children had a relatively high prevalence of severe asthma symptoms (sleep disturbance and speech limiting wheeze).

Over the 6 years there was a significant increase in the prevalence of current wheeze ‘any wheeze during the past 12 months’ in the younger group with no significant change in asthma diagnosis (10.5% vs. 10.6%) or any other asthma symptoms. In the older group, all asthma symptoms remained unchanged except speech-limiting wheeze which declined from 4.0% to 2.8. In both surveys, more than 60% of current wheezers reported severe asthma symptoms, while only 60% of these reported a diagnosis of asthma. The persistence of the relatively high prevalence of severe asthma symptoms in Omani children is of particular concern. These findings suggest under diagnosis and/or poor recognition of asthma which had not improved over time and require further studies.

Phase one result also showed a surprisingly high prevalence in all asthma symptoms in the Eastern Region (Sharqiya) of the country. This appears to be genuine as it was confirmed in the Phase Three studies. Over the period of six years, the Sharqiya (Eastern) region continued to have the highest prevalence of self-reported asthma diagnosis and all asthma symptoms in both age groups, with a significant increase in the prevalence of wheeze in the past 12 months (from 8.7% to 13.8%) and asthma diagnosis (from 13.8% to 17.8 %) in the young group, and a significant increase in night cough (from 21.6% to 27.8%) in the older group. All other regions had lower prevalence rates in Phase One in both age groups, and showed either no significant change or a decline in one or two of the self-reported asthma symptoms in Phase Three (2001).

**Phase Two:** Due to the cost and logistics, we were not able to formally participate in the full ISAAC Phase Two Protocol. However, we used the questionnaire component of the survey with the addition of questions concerning the use and effect of Arabian incense (common practice in Omani households) on asthma symptoms to investigate the potential risk factors for asthma and allergies in two representative regions of Oman. A target sample (2441) of 10 year old schoolchildren was randomly selected from a representative sample of public schools from Muscat (1241 children) and South Sharqiya (1200 children) using stratified multi-stage sampling method. The selected two regions out of the ten regions of Oman were considered as potentially informative based on their different prevalence rates of asthma identified in ISAAC phase I, and the potential for differences in environmental exposures. As the capital of Oman, Muscat population comes from most regions of the country, and the prevalence of asthma symptoms and diagnosis in Muscat resembles the national average, whereas South Sharqiya (Eastern) region has the highest prevalence rates of all asthma symptoms. The results of this survey confirmed the higher prevalence of all asthma symptoms in Sharqiya in a different age group. It also identified exposure to Arabian incense as a common trigger factor for asthma symptoms in Omani children.

Our ISAAC results gave the first insight to the burden of asthma and allergies in Oman and provided a good platform for future studies.

## Acknowledgements

Our ISAAC studies were supported by grants from Sultan Qaboos University. We also gratefully acknowledge the valuable support from Ministry of Health and Ministry of Education. We thank all children and parents who participated in the study. We also thank the school health physicians of the Ministry of Health for distributing and retrieving the questionnaires.

Regional

National

Local

Al-Khod

# The ISAAC Story

Regional

National

Local

Aleppo

Algiers

Almeria

## Aleppo Centre

Phase Three			
<b>Centre:</b>		Aleppo, Syria ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Khaldoun Tabbah	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	April 2001 to April 2001
<b>Sampling Frame:</b>		13-14yr: All schools in Aleppo City Area (not Aleppo County)	

### Personnel

#### Associate Professor Wasim Maziak

Aleppo School of Medicine  
P O Box 12782  
Syria

#### Roles:

- Phase Three collaborator for Aleppo

#### Dr Khaldoun Tabbah

PO Box 8348  
Syria

#### Roles:

- Phase Three Principal Investigator for Aleppo

## Algiers Centre

Phase One			
<b>Centre:</b>		Algiers, Algeria ( Africa )	
<b>Principal Investigator:</b>		Dr A Bezzaoucha	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>			

### Personnel

#### Dr A Bezzaoucha

Chu de Blida  
Hôpital Frantz-Fanon  
Service d'Epidemiologie  
Algeria

#### Roles:

- Phase One Principal Investigator for Algiers

## Almeria Centre

Phase Two			
<b>Centre:</b>		Almeria, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Dr José Batlles-Garrido	
<b>Age Groups:</b>	10-11 years,	<b>Timeframe:</b>	March 2000 to June 2001.
<b>Sampling Frame:</b>		All public schools in the Almeria city district.	
Phase Three			
<b>Centre:</b>		Almeria, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Dr José Batlles-Garrido	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 1996 to January 1997
<b>Sampling Frame:</b>		The geographic area is the whole Province of Almeria	

### Personnel

#### Dr José Batlles-Garrido

Department of Pediatrics  
Torrecárdenas Hospital  
Crtra. de Ronda, 226  
Spain

#### Roles:

- Phase Two Principal Investigator for Almeria
- Phase Three Principal Investigator for Almeria

## Local Publications

The following publications used ISAAC data from the Aleppo centre:

Mohammad Y, Tabbah K, Mohammad S, Yassine F, Clayton T and Hassan M *International Study of Asthma and Allergies in Childhood phase 3 in the Syrian Arab Republic*. East Med Health J 2010; 16(7): 710-716

## Local Publications

The following publications used ISAAC data from the Almeria centre:

Batlles-Garrido J, Torres-Borrego J, Bonillo-Perales A, Rubí-Ruiz T, González-Jiménez Y, Momblán De Cabo J, Aguirre-Rodríguez J, Jiménez Liria R, Losillas-Maldonado A, Torres-Daza M. *Prevalence and factors linked to atopic eczema in 10- and 11-year-old schoolchildren. Isaac 2 in Almeria, Spain*. Allergol Immunopathol (Madr). 2010; 38(4): 174-180. epub May

Batlles-Garrido J, Torres-Borrego J, Rubí-Ruiz T, Bonillo-Perales A, González-Jiménez Y, Momblán De Cabo J, Aguirre-Rodríguez J, Losillas-Maldonado A, Torres-Daza M. *Prevalence and factors linked to atopy in 10- and 11-year-old children in Almeria, Spain*. Allergol Immunopathol (Madr). 2010; 38(1):13-9.

Batlles-Garrido J, Torres-Borrego J, Rubí-Ruiz T, Bonillo-Perales A, González-Jiménez Y, Momblán-De Cabo J, Aguirre-Rodríguez J, Losillas-Maldonado A, Torres-Daza M. *Prevalence and factors linked to allergic rhinitis in 10 and 11-year-old children in Almeria. Isaac Phase II, Spain*. Allergol Immunopathol (Madr). 2010;38(3):135-41.

# The ISAAC Story

## Alor Setar Centre

<b>Phase One</b>			
<b>Centre:</b>		Alor Setar, Malaysia ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Keng Hwang Teh	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 1995 to June 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Alor Setar, Malaysia ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Keng Hwang Teh	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	July 2002 to August 2002
<b>Sampling Frame:</b>		All government schools in the Kota Setar area of the state of Kedah. Same geographical area for both Phase One and Phase Three	

### Personnel

#### Dr Wee Teik Keng

Medical Officer  
Department of Paediatrics,  
Hospital Alor Setar  
Lebuhraya Darulaman  
05250 Alor Setar. Kedah  
Malaysia



#### Roles:

- Phase One collaborator for Alor Setar
- Left Alor Setar and is now: Consultant Clinical Geneticist Head of Department of Genetics Hospital Kuala Lumpur

#### Dr Azhar Napis

Medical Officer  
Department of Paediatrics,  
Hospital Alor Setar  
Lebuhraya Darulaman  
05250 Alor Setar. Kedah  
Malaysia



#### Roles:

- Phase Three collaborator for Alor Setar
- Left Alor Setar and is now: Medical Officer Department of Paediatrics Hospital Sultan Abdul Halim

#### Dr Chun Khian Tan

Medical Officer  
Department of Paediatrics, Hospital Alor Setar  
Lebuhraya Darulaman  
05250 Alor Setar. Kedah  
Malaysia

#### Roles:

- Phase Three collaborator for Alor Setar
- Left Alor Setar and is now in private practice as a Paediatrician in Sungai Petani Kedah

#### Dr Keng Hwang Teh

Consultant Paediatrician and Intensivist  
Department of Paediatrics,  
Hospital Sultanah Bahiyah  
(formerly Hospital Alor Setar)  
Jalan Langgar  
05460 Alor Setar. Kedah  
Malaysia



#### Roles:

- Phase One Principal Investigator for Alor Setar
- Phase Three Principal Investigator for Alor Setar

#### Dr Teik Guan Yew

Medical Officer  
Department of Paediatrics,  
Hospital Alor Setar  
Lebuhraya Darulaman  
05250 Alor Setar. Kedah  
Malaysia



#### Roles:

- Phase One collaborator for Alor Setar
- Left Alor Setar and is now: Specialist Paediatrician TK CHHAN Clinic Bandar Seri Begawan Brunei Darussalam.

Regional  
National  
Local

Alor Setar

# The ISAAC Story

Regional

National

Local

Alor Setar

Amman

## Why was this centre selected for ISAAC?

I was invited by the national Coordinator, Professor Jessie De Bruyne, to participate in ISAAC. We were really excited as we don't have much opportunity to participate in such a big study. It was also important to be able to know the prevalence of asthma and allergic disorders from this region which is known as the Rice Bowl of Malaysia and to be able to compare with other parts of Malaysia especially the urban section of the population. Alor Setar, situated in the north western region of the peninsula, has a largely rural population with padi planting as the main occupation and is also predominantly Malay. However there is also a significant population of Chinese and Indian ethnicity.

## Our experience of ISAAC

The questionnaires for conducting the survey were translated into the Malay language and Mandarin and this were tested out by Professor Jessie de Bruyne and Professor Quah Ban Seng. The students in the age group of 13-14 years were able to respond to the Malay questionnaire as this is the medium of instruction in the secondary school. As for the primary school children aged 6-7 years where the medium of instruction is mandarin questionnaires were given in that language. Teachers were very helpful in translating for the parents as well.

The initial enthusiasm in conducting the study was a bit dampened as we realized we had to undertake the survey ourselves, having to go to schools using our own transport and some of these schools were rather inaccessible and located right inside the padi fields. Nevertheless the response from everybody was heartwarming and I was very fortunate that my fellow investigators helped lighten the load. And it was a great learning experience.

Getting permission from the State Director of Education to conduct the survey was not difficult. Teachers in the school were obliging and helped arranged for a suitable time and place for the survey and video presentation. Where there was anticipated discipline problem the presence of the discipline teacher helped in maintaining order. With such co operation it is not surprising that the response rate was high.

## Acknowledgements

We wish to thank the Ministry of Education, Malaysia for granting permission to perform both phase One and Three surveys among the school children in the Kota Setar district. We are also indebted to all children, parents and school staff who participated in the surveys.

## Amman Centre

Phase Three			
<b>Centre:</b>		Amman, Jordon ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Faisal Abu-Ekteish	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 2001 to April 2001
<b>Sampling Frame:</b>		Some schools in East, Central and West Amman city including public, private and UNRWA schools.	

## Personnel

### Dr Faisal Abu-Ekteish

Jordan University of Science and Technology  
Pediatric Department  
Faculty of Medicine Jordan University of Science and Technology  
PO Box 3030  
Jordan



#### Roles:

- Phase Three Principal Investigator for Amman

## Why Amman Center was chosen for the study

Amman is the capital city and the most inhabitant area in Jordan. It is considered one of the largest cities of Jordan and encompasses one of the largest metropolitan areas in the Arab world. It is the country's political, cultural and commercial centre and one of the oldest continuously inhabited cities in the world.

Amman is a regional hub in communications, transportation, medical tourism, education, and investment. Amman is aggressively positioning itself as a hub for business, and new projects are continually transforming the city's skyline. Several industrial cities are being developed near Amman, most important being Al-Mushatta. These factors contribute to air pollution in this city and possibly increasing the risk of allergic diseases.

This is why Amman's Environment and its inhabitant are considered the best center for collecting the study data. Amman's Primary schools are divided into Governmental, Private and UNRWA. Depending on these three types of schools, we were able to collect data from different types of social environments.

## Local Publications

The following publications used ISAAC data from the Amman centre:

Abu-Ekteish F, Otoom S, Shehabi I. *Prevalence of asthma in Jordan Comparison between Bedouins and urban schoolchildren using the International Study of Asthma and Allergies in Childhood phase III protocol.* Allergy Asthma Proc 2009; 30(2):181-185.



Amman



Amman

# The ISAAC Story

## Our Experience with ISAAC

Our study was centered through the capital Amman study as mentioned above. We participated in phase three study where we studied asthma allergic diseases in children two ages' groups:

- 6 -7 yrs
- 13 -14 yrs

This study highlights our experience and knowledge and considered as the first study in such field which gives an idea about the magnitude and scale in such diseases in our country.

With the acknowledgement of the help of collecting the data for this study to Miss. Rana Saied Shehabi and her efforts in collecting the data.

Definitely we would like to keep in touch always with ISACC and keep our participation in future studies and researches which will enrich us with knowledge with such insignificant and important disease.

## Anglia and Oxford Centre

Phase One	
<b>Centre:</b>	Anglia and Oxford, United Kingdom ( Western Europe )
<b>Principal Investigator:</b>	Professor H Ross Anderson
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	All schools in East Anglia and Oxford. Stratified by county, followed by a random sample of one school from each county.

## Personnel

### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
United Kingdom



#### Roles:

- ISAAC Steering Committee
- National Coordinator for United Kingdom
- Phase One Principal Investigator for Anglia and Oxford

### Dr Balvinder Kaur

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

#### Roles:

- Phase One collaborator for Anglia and Oxford

### Dr Jan Poloniecki

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

#### Roles:

- Phase One collaborator for Anglia and Oxford

This centre formed part of a national initiative throughout the United Kingdom, as described on the UK country-level page . Resulting publications are listed on the UK national page.

Ross Anderson, David Strachan, 18 July 2011

Regional  
National  
Local

Amman  
Anglia and  
Oxford

# The ISAAC Story

Regional

National

Local

Ankara

Antwerp

## Ankara Centre

Phase Two			
<b>Centre:</b>		Ankara, Turkey ( Western Europe )	
<b>Principal Investigator:</b>		Dr Yildiz Saraçlar	
<b>Age Groups:</b>	8-11 y.,	<b>Timeframe:</b>	October 1999 to April 2000.
<b>Sampling Frame:</b>		Central administrative districts of Ankara. A sample of schools was selected, stratified by administrative borough.	

### Personnel

#### Professor Ali Kocabas

Dept. of Chest Diseases  
Cukurova Univ. School of Medicine  
Turkey

#### Roles:

- Phase Two collaborator for Ankara

#### Dr Semanur Kuyucu

Hacettepe University  
Faculty of Medicine  
Pediatric Asthma & Allergy Unit  
Sihhiye  
Turkey

#### Roles:

- Phase Two collaborator for Ankara

#### Dr Yildiz Saraçlar

Professor of Pediatrics and Allergist  
Ataturk Bulvarı 158/20  
Turkey

#### Roles:

- Phase Two Principal Investigator for Ankara

## Local Publications

The following publications used ISAAC data from the Ankara centre:

Kuyucu S, Saraçlar Y, Tuncer A, Geyik PO, Adalıoğlu G, Akpınarlı A, Sekerel BE, Sumbuloğlu V. *Epidemiologic characteristics of rhinitis in Turkish children the International Study of Asthma and Allergies in Childhood (ISAAC) phase 2*. *Pediatr Allergy Immunol*.2006 Jun;17(4):269-77.

Kuyucu S, Saraçlar Y, Tuncer A, Saçkesen C, Adalıoğlu G, Sumbuloğlu V, Sekerel BE. *Determinants of atopic sensitization in Turkish school children Effects of pre and post-natal events and maternal atopy*. *Pediatr Allergy Immunol* 2004; 15(1): 62-71.

## Antwerp Centre

Phase One			
<b>Centre:</b>		Antwerp, Belgium ( Western Europe )	
<b>Principal Investigator:</b>		Professor Paul Vermeire	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:September 1995 to November 1995 6-7yr:December 1994 to November 1995
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Antwerp, Belgium ( Western Europe )	
<b>Principal Investigator:</b>		Professor Joost Weyler	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	March 2002 to June 2002
<b>Sampling Frame:</b>		Some secondary schools in Antwerp centre and Antwerp South. Sample frame the same as for both Phase One and Phase Three.	

### Personnel

#### Professor Paul Vermeire

Dienst Lonziekten  
UZ Antwerp  
Wilrijkstraat 10  
Belgium

#### Roles:

- Phase One Principal Investigator for Antwerp

#### Professor Joost Weyler

Epidemiology & Social Medicine  
University of Antwerp CDE  
Blok S-5  
Universiteitsplein 1, R-2  
Belgium

#### Roles:

- Phase Three Principal Investigator for Antwerp

## The Belgian ISAAC story

Asthma and allergies are some of the most prevalent chronic diseases in Belgium, a small West European country with a population of almost 11 million people (2010). Before the 1990's no prevalence rates of asthma and allergic diseases were available for the general Belgian population.

## Local Publications

The following publications used ISAAC data from the Antwerp centre:

Vellinga A, Droste JH, Vermeire PA, Desager K, De Backer WA, Nelen VJ, Weyler JJ. *Changes in respiratory and allergic symptoms in schoolchildren from 1996 to 2002, results from the ISAAC surveys in Antwerp (Belgium)*. *Acta Clin Belg*.2005 Sep-Oct;60(5):219-25.

# The ISAAC Story

In Antwerp, a research group was founded in order to study the epidemiology of asthma and allergies. This research group was a unique collaboration between the Department of Respiratory Medicine of the Antwerp University Hospital (Prof. Paul Vermeire) and the Department of Epidemiology and Social Medicine of the University of Antwerp (Prof. Joost Weyler and Prof. Marc van Sprundel). In 1991-1992, the Belgian research group participated in the European Community Respiratory Health Survey (ECRHS) with two Antwerp centres; one in the centre of Antwerp (urban) and one in 13 municipalities at the southern border of the city (suburban). This was the first large epidemiologic study in which the occurrence of respiratory symptoms, asthma, allergic disorders and potential risk factors was assessed in a general adult population. In Belgium, marked differences were found in the occurrence of respiratory symptoms between young adults in an urban and suburban area. The strong indication that childhood asthma was playing an important role in the area differences has increased the interest of the Antwerp asthma research group in the occurrence of respiratory symptoms in children in these areas.

Therefore, when the international steering committee decided to initiate the International Study on Asthma and Allergies in Childhood (ISAAC), the Antwerp asthma research group (reinforced with researchers of the Department of Paediatrics of the Antwerp University Hospital (Prof. Hugo Van Bever) did not hesitate to participate with schools in the same two Antwerp regions. In total, 6342 elementary school children (6-7-year-olds) and 2864 secondary school children (13-14-year-olds) participated in the first phase of the Belgian ISAAC.

Results showed that the regional differences that were found in adults, were not present in children. To look deeper into the potential mechanisms behind these observations a prospective birth cohort study ('Prospective Study on the Influence of Perinatal factors on the Occurrence of Asthma and Allergies' or 'PIPO') was carried out in the province of Antwerp. This project is still ongoing.

## Apia Centre

<b>Phase Three</b>			
<b>Centre:</b>		Apia, Samoa ( Oceania )	
<b>Principal Investigator:</b>		Ms Peone Fuimaono	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	October 2003 to October 2003
<b>Sampling Frame:</b>		13-14yr: Primary and secondary schools in the Apia Urban Area.	

### Personnel

#### Mr Mose Faatamala

Ministry of Health  
Samoa



#### Roles:

- Phase Three collaborator for Apia

#### Ms Peone Fuimaono V Pisi

Ministry of Health  
Samoa



#### Roles:

- Phase Three Principal Investigator for Apia

#### Dr Herbert Peters

Tupua Tamasese Meaole (TTM) Hospital  
Samoa

#### Roles:

- Phase Three collaborator for Apia

The ISAAC Study in Samoa was the first major project handed to me to do after I completed my undergraduates and in my second year of work. It was a study introduced by Dr Sunia to Dr Nuualofa Tuuau-Potoi and supported by the then Director General of Health the late Dr Taulealeausumai Eti Enosa. It took us approximately 1 month to collate all the data and tally and ship them. We did not get an allowance for working in this study as it is the norm in projects attached to Health service but the experience obtained from this exposure has helped in the development of health research of this magnitude and taking the experience on in the law and justice sector which I am now employed in.

Regional

National

Local

Antwerp

Apia



# The ISAAC Story

Regional

National

Local

Apia

Aracaju

Mr Mose Faatamala worked on in the Ministry of Health as a leading Health Educator until 2007 when he migrated to New Zealand with his young family and where they now reside. His ability to command an audience as required by his profession and made easy by his personality was a significant contributor to the success of ISAAC Samoa. Our field survey was implemented in an unfavourable time for the Education curriculum as exams were pending. However, the speed in which the questionnaires were explained and understood and taken from one school to another favoured both the limited time granted to us by the schools and the timeframe planned for ISAAC Samoa to complete. Through this story, Mr Faatamala's contribution to the ISAAC Study in Samoa and around the world, can be acknowledged and recognised.

Due credit must also go to the then Assistant Chief Executive Officer Public Health in the Samoa Ministry of Health Namulauulu Dr Nuualofa Tuuau-Potoi for her vision in bringing ISAAC to Samoa and the late Lolofietele Dr Eti Enosa for his faith and support in Samoa joining this global study. Health resources were used to take this study to the selected schools. ISAAC and MOH also needs to acknowledge and thank the Samoa Ministry of Education, Sports and Culture without whom, the opportunity to collect this number and level of data for this study, would not have been possible. To the late Chief Executive Officer of the Ministry Mr Tupae Esera and the Division of School Operations for the prompt and organised assistance in allowing the study to be in school hours, Faafetai tele.

Samoa is aspiring to meet the MDGs and I hope the data collected will be fully utilised by health professionals to inform public health policy and improve child health in asthma and other allergies in children. Thank you ISAAC for the experience.

Soifua.

## Aracaju Centre

Phase Three			
<b>Centre:</b>		Aracaju, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Dr Jackeline Machado Motta Franco	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2002 to December 2002
<b>Sampling Frame:</b>		Some schools of Aracaju Municipality	

## Personnel

### Dra Jackeline Machado Motta Franco

Pediatrician and Children's Allergist  
 Graduated from: Universidade Federal de Sergipe (UFS)  
 Trained in Allergy at: Universidade Federal de São Paulo (UNIFESP)  
 Aracaju  
 Brasil

#### Roles:

- Phase Three Principal Investigator for Aracaju

The Northeast region of Brazil comprises nine states, where a population of 50 million people lives in an area of 1,561,177 km<sup>2</sup>. A tropical climate predominates with large inland areas of semiarid land and dry weather, and much more humid coastal areas. There are marked socioeconomic disparities in this part of Brazil, which is regarded as the least developed and poorest region of the country.

Sergipe is the smallest state in the Northeast. Its capital city, Aracaju, is considered to be the state capital with the lowest economic inequality in the region, as well as with the healthiest lifestyles in the country and the lowest number of smokers, according to the national Ministry of Health. With a population of 461,534 people in the year 2000 (coming to over 570,000 in 2010), according to the Brazilian Institute of Geography and Statistics census of 2010), distributed throughout 174 km<sup>2</sup>, Aracaju has a high population density of over 3,100 inhabitants/km<sup>2</sup> and human development index of 0.794 (IBGE/PNAD, 2000).

In 2002-2003, the ISAAC phase three was undertaken in Aracaju and it was the first tool to improve knowledge on asthma prevalence in this city. We used the same ISAAC methodology established by the ISAAC International Data Center for all the centers in our region. The written questionnaires were previously validated for the Portuguese language and ethical approval for the study was obtained from the Federal University of Sergipe. The questionnaires were circulated among subjects of ages 6-7 and 13-14 years old. There was great difficulty in having the questionnaires for the group aged 6-7 returned, due to some cultural misinformation on the side of the public school mothers.

The study was encouraged by the ISAAC coordinator in Brazil, Dr. Dirceu Solé, who invited me to take part in the study, including the city of Aracaju as one of the centers in the Northeast of Brazil. The data collected was later used in the preparation of my master's thesis.

The ISAAC has been an important milestone in the study of allergic conditions in the world. The conduction of this study in our city has also been considered a milestone, since it

## Local Publications

The following publications used ISAAC data from the Aracaju centre:

Franco JM, Gurgel R, Sole D, França VL, Brabin B and the Brazilian Isaac Group. *Socio-environmental conditions and geographical variability of asthma prevalence in Northeast Brazil* Allergol Immunopathol (Madr). 2009; 37(3):116-121

# The ISAAC Story

contextualized Aracaju in the international panorama of the allergic diseases prevalence, thus enabling comparisons between our rates and those of other cities in the Northeast region, in the whole of Brazil and in the world.

This work has only been possible with the important help from another colleague: Dr. Ricardo Queiroz Gurgel MD, MSc, PhD, Department of Medicine and University Hospital, Federal University of Sergipe, Aracaju, Brazil.

## Local Publications

The following publications used ISAAC data from the Ascoli Piceno centre:

Pierdomenico R. Bonini  
S. Prevalence of  
paediatric asthma in  
Central Italy [Abstract]  
Allergy 1997; 52(s37):  
188



Ascoli Piceno PI, Sergio Bonini

## Ascoli Piceno Centre

Phase One	
<b>Centre:</b>	Ascoli Piceno, Italy ( Western Europe )
<b>Principal Investigator:</b>	Professor Sergio Bonini
<b>Age Groups:</b>	13-14
<b>Sampling Frame:</b>	Local Health Authority

## Personnel

### Professor Sergio Bonini

Professor of Medicine, Second University of Naples, Institute of Translational Pharmacology, Italian National Research Council, Rome Italy



### Roles:

- Phase One Principal Investigator for Ascoli Piceno

## Background

The decision of creating the ISAAC Ascoli Piceno Centre was the natural outcome of a longstanding collaboration between the Institute of Neurobiology and Molecular Medicine of the Italian Research Council (INMM-CNR) and the Local Health Unit of Ascoli Piceno (ASL). In fact, these two institutions were already involved in an observational study on the prevalence of allergic diseases in school children and its relationship to the life-style in Rome and Ascoli Piceno. The launch of ISAAC represented an attracting opportunity to collect data with a validated questionnaire and methodology, also permitting to compare them with those collected in other centres worldwide.

For the ISAAC study, it was decided to confine the population sample to school-children in Ascoli Piceno- a middle-size city in Central Italy- since this allowed to study all the children of a Health Unit living both in the urban and the country area of Ascoli Piceno, thus avoiding the potential bias deriving from the socio-economic differences among schools in Rome.

## Impact of ISAAC on the Ascoli Piceno Centre

Although for organizational and economic reasons it was not possible to have the Ascoli Piceno Centre involved in further ISAAC phases, it was decided to repeat an ISAAC Phase one four years later, and to compare data with those collected during the original Phase One as well as with those collected in Tirana (Albania). In this second survey, following the publications from some of us of strict relationships between allergic diseases and infections (1,2) also data about early-life infections were recorded (3).

Some years later, the study was extended to children living in Maranello, a small Ferrari-Maserati Town in Central Italy, with special focus on the relationships between physical exercise, obesity and asthma.(4).

Unfortunately, most of the data collected were not published, but as abstracts. However, the ISAAC methodology represented a standard procedure for many studies and helped in educating to epidemiological research a large number of medical students and young investigators.

## Findings of our Centre

The Phase One data are summarized in the first ISAAC paper and in an abstract (5). They were made available for being accessed by everybody interested.

In addition, mostly unpublished research showed :

1. A significant increase in asthma prevalence in Ascoli Piceno after 4 years, which almost doubled being usually associated with rhinitis.
2. No association between allergy prevalence and vaccinations or respiratory infections (which, on the contrary, appeared to be a risk factor for subsequent development of asthma).
3. A marked higher prevalence of allergy and asthma in Ascoli Piceno vs Tirana, in spite of the same latitude and aerobiological features.
4. A higher prevalence of allergy and asthma in Rome vs Maranello, associated with a reduced attitude to physical exercise and a higher prevalence of increased BMI or obesity.

Regional

National

Local

Aracaju

Ascoli

Piceno

# The ISAAC Story

## Co-workers

Most of the studies were made possible by the commitment of Dr. Rosella Pierdomenico and the staff of the ASL of Ascoli Piceno. My co-ordination of the study was greatly helped at INMM-CNR by Prof. Guido Rasi and by the CNR staff made by Paolo Matricardi, Megon Bresciani and Claudia Gramiccioni, Claudio D'Ambrosio, Claudio Parisi and Andrea Torre. The Ascoli/Tirana survey was performed with the collaboration of Prof. Albert Priftanij. The Rome/Maranello study with the collaboration of Dr. Antonella Schirru and Dr. Valeria Porcaro.

1. Matricardi PM, Rosmini F, Riondino S, Fortini M, Ferrigno L, Rapicetta M, Bonini S.  
**Exposure to foodborne and orofecal microbes versus airborne viruses, in relation to atopy and allergic asthma: epidemiological study.**  
Br Med J. 2000; 320: 412-17.
2. Matricardi PM, Rosmini F, Panetta V, Ferrigno L, Bonini S.  
**Hay fever and asthma in relation to markers of infection in the United States.**  
J Allergy Clin Immunol 2002; 110: 381-387.
3. Pierdomenico R, D'Ambrosio C, Rasi G, Lapucci G, Torre A, Matricardi PM, Carlucci A, Bonini S.  
**Allergic diseases in relation to vaccinations and infectious diseases: two cross-sectional studies in schoolchildren 4 years Apart.**  
J Allergy Clin Immunol 2003; 111: S292.
4. Bresciani M, Parisi C, Schirru MA, Porcaro V, Torre A, Bonini M, Biffi A, Fernando F, D'Ambrosio C, Rasi G, Bonini S.  
**Lifestyle, Sports Activities and Allergic Diseases**  
J Allergy Clin Immunol 2006; 117: S294 (1134).
5. Pierdomenico R, Bonini  
**Prevalence of paediatric asthma in Central Italy.**  
Allergy. 1997; 52 (37): 188.

## Asturias Centre

Phase Three			
<b>Centre:</b>		Asturias, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Dr Ignacio Carvajal-Urueña	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to March 2002
<b>Sampling Frame:</b>		All schools in Asturias region (Spain)	

### Personnel

#### Dr Ignacio Carvajal-Urueña

Pediatrician Doctor  
Centro de Salud La Ería  
Oviedo  
Asturias  
Spain



#### Roles:

- Phase Three Principal Investigator for Asturias

#### Carlos Díaz Vázquez

Pediatrician  
Quality Coordinator  
Health Service of Principality of Asturias  
Asturias  
Spain

#### Roles:

- Phase Three collaborator for Asturias

#### Carmen Díez Fernández

Community Nurse  
Centro de Salud Las Vegas.  
Corvera de Asturias  
Asturias  
Spain

#### Roles:

- Phase Three collaborator for Asturias

#### Begoña Domínguez Aurrecoechea

Pediatrician  
Centro de Salud Otero.  
Oviedo  
Asturias  
Spain

#### Roles:

- Phase Three collaborator for Asturias

#### Agueda García Merino

Pediatrician  
Centro de Salud Vallobin-Concinos  
Riosa  
Asturias  
Spain

#### Roles:

- Phase Three collaborator for Asturias



Regional  
National  
Local

Ascoli  
Piceno  
Asturias

## Local Publications

The following publications used ISAAC data from the Asturias centre:

Morales Suárez-Varela MM, García-Marcos AL, González DC, et al. *Prevalence of atopic eczema and nutritional factors in 6-7 year old children.[article in spanish].* Aten Primaria 2007; 39(7):355-360.

Arnedo-Pena A, García-Marcos L, Fernández-Espinar JF, Bercedo-Sanz A, Aguinaga-Ontoso I, González-Díaz C, Carvajal-Urueña I, Busquet-Monge R, Suárez-Varela MM, de Andoín NG, Batlles-Garrido J, Blanco-Quirós A, López-Silvarrey Varela A, García-Hernández G *Sunny hours and variations in the prevalence of asthma in schoolchildren according to the International Study of Asthma and Allergies (ISAAC) Phase III in Spain* Int J Biometeorol 2011; 55(3): 423-434

# The ISAAC Story

## Ismael Huerta González

Epidemiologist  
Consejería de Salud y Servicios Sanitarios  
Oviedo  
Asturias  
Spain

### Roles:

- Phase Three collaborator for Asturias

## Mar Marcilla Escotet

Family & Community Doctor  
Asturias  
Spain

### Roles:

- Phase Three collaborator for Asturias

## Maria Olvido Díez Fernández

Family & Community Doctor  
Centro de Salud de Infiesto  
Asturias  
Spain

### Roles:

- Phase Three collaborator for Asturias

## The ISAAC Story in Asturias

In Asturias, ISAAC Phase III was developed by an enthusiastic group of primary health care professionals which are particularly interested in asthma and prevalent respiratory and allergy diseases during infancy. In this task, the ISAAC Phase III Asturias Team had the support and funding of the Public Health Service of the Autonomous Region of Asturias as well as the counseling and collaboration of ISAAC Spain Coordinator Professor Luis GarcíaMarcos. Organized as a workgroup, the participants of this effort contributed, with other professionals, in many initiatives related to asthma and allergy care, the most important being the elaboration and implementation of Asthma Guidelines and the Strategic Plan for Asthma Management in the Community.

## Asunción Centre

<b>Phase One</b>			
<b>Centre:</b>		Asunción, Paraguay ( Latin America )	
<b>Principal Investigator:</b>		Dr Jaime A Guggiari-Chase	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in Asunción.	
<b>Phase Three</b>			
<b>Centre:</b>		Asunción, Paraguay ( Latin America )	
<b>Principal Investigator:</b>		Dr Jaime A Guggiari-Chase	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	May 2002 to June 2002
<b>Sampling Frame:</b>		13-14yr: All schools in Asunción area	

## Personnel

### Dr Jaime A Guggiari-Chase

Jefe del Servicio de Alergia e Inmunología  
Centro Médico Bautista  
San Antonio 1019  
Paraguay

### Roles:

- National Coordinator for Paraguay
- Phase One Principal Investigator for Asunción
- Phase Three Principal Investigator for Asunción

Due to special circumstances, Paraguay is a country that has taken long to develop, including our medicine. Until very recently, our medicine was primarily asistencialist, and mainly dealt with emergencies only. Chronic diseases were not treated and of course the prevention of these chronic diseases was not considered. Bronchial asthma, and the drama and severity of its crisis, has always occupied an important place in emergency clinics.

In the decade from 1950 to 60, pulmonologists were busy with tuberculosis, and the first allergists appeared. The ISAAC survey in 1998 came to fill an important place in the consideration of allergic conditions. For example, allergic rhinoconjunctivitis was a disease largely ignored by general practitioners and specialists. Five years later, in the 2nd ISAAC survey, allergic rhinoconjunctivitis, came to the fore with an incidence greater than 40% and this coincided with the appearance of ARIA (Allergic Rhinitis and its Impact on Asthma)

These events attracted the attention of specialists, and this made otolaryngologists and allergists come to a consensus on allergic diseases that affect upper respiratory conditions. Unfortunately, this consideration was not taken with atopic dermatitis. However, there is always the desire and hope of a consensus with dermatologists, to consider together the various aspects of this disease

Finally, it should be noted that the survey was received by the young people surveyed with enthusiasm and many of them were helped, because it gave them attention that they never received before.

Regional

National

Local

**Asturias**  
**Asunción**

# The ISAAC Story

Regional

National

Local

Athens

## Athens Centre

<b>Phase One</b>			
<b>Centre:</b>		Athens, Greece ( Western Europe )	
<b>Principal Investigator:</b>		Associate Professor Christina Gratziou	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 1994 to May 1995
<b>Sampling Frame:</b>			
<b>Phase Two</b>			
<b>Centre:</b>		Athens, Greece ( Western Europe )	
<b>Principal Investigator:</b>		Associate Professor Christina Gratziou	
<b>Age Groups:</b>	10-11,	<b>Timeframe:</b>	October 2000 to February 2001.
<b>Sampling Frame:</b>		A sample of 58 schools selected in random order from the city centre and suburbs.	

## Personnel

### Associate Professor Christina Gratziou

Ass. Prof. Pulmonary and Critical Care Medical School, Athens University  
Head of Asthma and Allergy Centre  
Eugenidio Hospital ,Athens Greece



#### Roles:

- National Coordinator for Greece
- Phase One Principal Investigator for Athens
- Phase Two Principal Investigator for Athens

### Athanasia Magafa

Athens  
Greece

#### Roles:

- Phase One collaborator for Athens
- Nurse

### Aggeliki Michael

Athens  
Greece

#### Roles:

- Phase One collaborator for Athens
- Nurse

### Dr Athina

### Papadopoulou

Pediatrician Asthma and Allergy Unit,  
Pediatric Department,  
"KAT" General Hospital.  
Athens  
Greece

#### Roles:

- Phase One collaborator for Athens

### Dr Kostas Priftis

Ass. Prof Allergiology and Pneumology,  
3rd Department of Pediatrics,  
"Attikon" Hospital,  
Athens University  
Greece

#### Roles:

- Phase One collaborator for Athens

See Greece country page for details of ISAAC in Athens

## Local Publications

The following publications used ISAAC data from the Athens centre:

Papadopoulou A, Hatziaorou E, Matziou VN, Grigoropoulou DD, Panagiotakos DB, Tsanakas JN, Gratziou C, Priftis KN  
*Comparison in asthma and allergy prevalence in the two major cities in Greece the ISAAC phase II survey* Allergol Immunopathol(Madr).2011; epub ahead of print

# The ISAAC Story



Auckland Collaborators



Auckland Fieldwork



Auckland Centre and International Data Centre



IIDC meeting

## Auckland Centre

<b>Phase One</b>			
<b>Centre:</b>		Auckland, New Zealand ( Oceania )	
<b>Principal Investigator:</b>		Professor M Innes Asher ONZM	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: November 1992 to August 1993 6-7yr: October 1992 to August 1993
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Auckland, New Zealand ( Oceania )	
<b>Principal Investigator:</b>		Professor M Innes Asher ONZM	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2001 to September 2002
<b>Sampling Frame:</b>		All schools in the Auckland region of the Ministry of Education. The Auckland district includes the Rodney, North Shore, Waitemata, Auckland, Manukau, Papakura and Franklin territorial local authorities.	

## Personnel

### Professor Innes Asher

Department of Paediatrics:  
Child and Youth Health  
Faculty of Medical and Health  
Sciences  
The University of Auckland  
Private Bag 92019  
New Zealand



#### Roles:

- Chairperson of the ISAAC Steering Committee
- Chairperson of the ISAAC Executive
- Director, ISAAC International Data Centre
- National Coordinator for New Zealand
- Phase One Principal Investigator for Auckland
- Phase Three Principal Investigator for Auckland

### Mr Tadd Clayton

Department of Paediatrics:  
Child and Youth Health  
Faculty of Medical and Health  
Sciences  
The University of Auckland  
Private Bag 92019  
New Zealand



#### Roles:

- Phase One collaborator for Auckland
- Phase Three collaborator for Auckland
- Fieldworker Phase One and Three
- IIDC
- ISAAC Data Manager

### Mrs Philippa Ellwood

Department of Paediatrics:  
Child and Youth Health  
Faculty of Medical and Health  
Sciences  
The University of Auckland  
Private Bag 92019  
New Zealand



#### Roles:

- ISAAC Steering Committee
- Phase One collaborator for Auckland
- Phase Three collaborator for Auckland
- ISAAC Research Manager
- Principal fieldworker Phases One and Three
- Advisor for NZ centres

### Mr Eamon Ellwood

Department of Paediatrics:  
Child and Youth Health  
Faculty of Medical and Health  
Sciences  
The University of Auckland  
Private Bag 92019  
New Zealand



#### Roles:

- Phase Three collaborator for Auckland
- IIDC
- ISAAC Webmaster

Regional  
National  
Local

**Auckland**

# The ISAAC Story



Regional

National

Local

**Auckland**

## Mrs Tania Milne

Department of Paediatrics: Child and Youth Health  
Faculty of Medical and Health Sciences Private Bag 92019  
The University of Auckland  
Private Bag 92019  
New Zealand

### Roles:

- Phase One collaborator for Auckland
- Phase Three collaborator for Auckland
- Administrator Sept 2003 - Mar 2006

## Professor Ed Mitchell

Department of Paediatrics: Child and Youth Health  
Faculty of Medical and Health Sciences  
The University of Auckland  
Private Bag 92019  
New Zealand



### Roles:

- ISAAC Steering Committee
- Phase One collaborator for Auckland
- Phase Three collaborator for Auckland
- IIDC
- Professor of Child Health Research

## Mr Alistair Stewart

Epidemiology and Biostatistics  
School of Population Health  
The University of Auckland  
Private Bag 92019  
New Zealand



### Roles:

- ISAAC Steering Committee
- Phase One collaborator for Auckland
- Phase Three collaborator for Auckland
- IIDC
- Biostatistician

## Mrs Christine Thomas

Department of Paediatrics: Child and Youth Health  
Faculty of Medical and Health Sciences  
The University of Auckland  
Private Bag 92019  
New Zealand

### Roles:

- Phase One collaborator for Auckland
- Administrator Nov 1998 - Jan 2000

## Mrs Nancy Williams

Department of Paediatrics: Child and Youth Health  
Faculty of Medical and Health Sciences  
The University of Auckland  
Private Bag 92019  
New Zealand

### Roles:

- Phase One collaborator for Auckland
- Administrator Apr 2000 - Sept 2003

## Why was this centre selected for ISAAC?

Asthma symptom prevalence in children was first studied in Auckland in 1985, using a written questionnaire and bronchial hyper-responsiveness. The background context is described in 'The origins of ISAAC: a New Zealand perspective'. This led to the development of a study to explore international differences in severity of asthma symptoms in children using standardised methods, of which Auckland was to become one of five New Zealand centres.

In 1991 we successfully applied for a grant from the Health Research Council (HRC) of New Zealand to compare between countries and within New Zealand (by area and ethnic group) the prevalence and severity of childhood asthma in two age-groups of children (6-7 year old children and 13-14 year adolescents). This HRC grant covered the costs of the fieldwork in Auckland, Wellington and Christchurch, and for Auckland a full-time data manager, and secretarial and computing support. The funding remained conditional upon at least one other centre outside New Zealand obtaining funds for a similar survey in their own centre. This initiative joined with the German initiative in March 1991, which then formally became ISAAC.

Auckland is the New Zealand city with the largest population, and the most ethnically diverse with the largest populations of M?ori and Pacific children residing in Auckland

# The ISAAC Story

## Our experience of ISAAC

### Phase One:

The Auckland centre undertook Phase One core questionnaire on asthma, rhinitis and eczema without any additions. The schools were chosen from within the boundaries of the Auckland district of the Ministry of Education. There were 47 participating schools in the childrens group and 13 participating schools in the adolescent group.

In New Zealand we chose to examine whether the season in which the parent/adolescent responded to the questionnaire influenced the symptom prevalence of asthma. Auckland was one of three New Zealand centres in whom this was examined. The resultant publication [Stewart 1997] showed that there was no effect on eczema symptoms, a little effect on asthma symptoms, and a positive season-of response effect on rhinitis symptoms.

### Phase Three:

The Auckland centre undertook Phase Three core questionnaire and the complete environmental questionnaires for both age groups from the same sampling frame as Phase One. There were 37 participating schools in the 6-7 year age group and 15 participating schools in the 13-14 year age group.

## References

The data from Auckland Phases One and Three are included in all the publications from New Zealand (there are no separate Auckland –only publications)

## Acknowledgements

We gratefully acknowledge financial support from The HRC and the Hawke's Bay Medical Research Foundation for supporting the Phases One and Three Auckland fieldwork. We are also indebted to all the children, parents and school staff who participated in the surveys, and wish to thank our fieldwork teams for their enthusiasm and diligence throughout each study.

## Bali Centre

<b>Phase Three</b>			
<b>Centre:</b>		Bali, Indonesia ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Putu Konthen	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	September 2001 to January 2002
<b>Sampling Frame:</b>		13-14yr: Some schools in Buleleng County	

## Personnel

### Professor Putu Konthen

Department of Medicine  
Faculty of Medicine  
Airlangga University  
Jl. Ngagel Madya No. 25  
Indonesia

### Roles:

- Phase Three Principal Investigator for Bali

Regional

National

Local

Auckland

Bali



# The ISAAC Story

Regional

National

Local

**Balykchi**

## Balykchi Centre

Phase Three			
<b>Centre:</b>		Balykchi, Kyrgyzstan ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Imanalieva Cholpon	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2002 to October 2002
<b>Sampling Frame:</b>		All schools in Balykchi city	

### Personnel

#### Moldogazieva Aigul

National centre of motherhood and childhood protection  
Bishkek, Balykchi  
Kyrgyzstan

- Phase Three collaborator for Balykchi

#### Seitalieva Chiinara

National centre of motherhood and childhood protection  
Balykchi  
Kyrgyzstan

- Phase Three collaborator for Balykchi

#### Dr Imanalieva Cholpon

Kyrgyz Scientific Research Institute of Obstetrics and Pediatrics  
Flat 9, 136 Panfilov str.  
Kyrgyzstan

- National Coordinator for Kyrgyzstan
- Phase Three Principal Investigator for Balykchi

#### Boronbaeva Elnura

National centre of motherhood and childhood protection  
Bishkek  
Kyrgyzstan

- Phase Three collaborator for Balykchi

#### Dr Najimidinova Gulmira

National Centre of Pediatrics and Child surgery  
720020  
Kyrgyzstan

- Phase Three collaborator for Balykchi

#### Asankojoeva Janyl

National centre of motherhood and childhood protection  
Balykchi  
Kyrgyzstan

- Phase Three collaborator for Balykchi

#### Djanuzakova Nurgul

National centre of motherhood and childhood protection  
Bishkek  
Kyrgyzstan

- Phase Three collaborator for Balykchi

The questionnaire by ISAAC technique was conducted in 2002. Employees of the National centre of motherhood and childhood protection participated in research. The ISAAC team in Bishkek was: Imanalieva Cholpon, Najimidinova Gulmira, Boronbaeva Elnura, Djanuzakova Nurgul and Moldogazieva Aigul. The ISAAC team in Balykchi was: Moldogazieva Aigul, Seitalieva Chiinara and Asankojoeva Janyl.

Before the questionnaire study began, letters of support from the Ministry of Health and the Ministry of science, formation and culture of the Kyrgyz Republic had been prepared and these departments gave the consent to carry out the research. In Bishkek 8194 children were questioned. 3146 of them were at the age of 6-7 years and 5048 children were aged 13-14 years and attended comprehensive schools. In Balykchi 2111 children were surveyed in all the comprehensive schools of the city, 729 aged 6-7 years old and 1382 aged 13-14 years.

Participation in the research has given us the invaluable experience of performing a large questionnaire study under international standards. The data have helped to achieve a representation about the prevalence of allergic diseases in the Kyrgyz Republic. Some elements of the questionnaire have now been introduced in medical institutions for diagnostics of allergic diseases.

We wish ISAAC creative successes and well-being.

# The ISAAC Story

## Bandung Centre

Phase One			
<b>Centre:</b>		Bandung, Indonesia ( Asia-Pacific )	
<b>Principal Investigator:</b> Prof Dr Karnen Baratawidjaja			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 1996 to April 1996
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Bandung, Indonesia ( Asia-Pacific )	
<b>Principal Investigator:</b> Prof Dr Cissy B Kartasasmita			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 2002 to July 2002
<b>Sampling Frame:</b>		Geographic area and Government permit. The same schools were used for Phase One and Phase Three plus some others randomly selected.	

### Personnel

#### Prof Dr Karnen Baratawidjaja

Head, Allergy-Immunology Study Group  
Department of Medicine, Faculty of Medicine  
University of Indonesia  
Sisingamangaraja 49/51  
Indonesia

#### Roles:

- National Coordinator for Indonesia
- Phase One Principal Investigator for Bandung

#### Prof Dr Cissy B Kartasasmita

Department of Child Health  
School of Medicine - Padjajaran University  
Hasan Sadikin General Hospital  
Jl. Pasteur 38  
Indonesia

#### Roles:

- Phase Three Principal Investigator for Bandung

## Bangalore Centre

Phase Three			
<b>Centre:</b>		Bangalore, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Professor Sylvan Rego			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to October 2002
<b>Sampling Frame:</b>		All schools in the Ashok Nagar Region	

### Personnel

#### Professor Sylvan Rego

Department of Pediatrics  
St John's Medical College &  
Hospital  
Bangalore 560034  
India



#### Roles:

- Phase Three Principal Investigator for Bangalore

## BANGALORE CENTRE

The St John's Medical College Hospital, Bangalore, Karnataka State, India is a 1200 bed tertiary level care medical center. I head the Division of Pediatric Allergy and Immunology at St John's. My special interest in pediatric asthma and allergies was the reason that I was very keen to participate in the ISAAC Study. I informed the National Coordinator for India (Dr Jayant Shah) of my interest to participate in the study

The institutional heads of all the schools that participated in the ISAAC study from the Bangalore Centre were happy to participate in the study and their cooperation in this regard was exemplary I am very grateful to all the children, parents and school staff who participated in the study.

The results of the ISAAC study have evoked interest in the reasons for the differences in the prevalence of asthma and allergies between different geographical locations in India.

Regional  
National  
Local

**Bandung**  
**Bangalore**

# The ISAAC Story

Regional

National

Local

Bangkok

## Bangkok Centre

<b>Phase One</b>			
<b>Centre:</b>		Bangkok, Thailand ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Pakit Vichyanond	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 1995 to July 1996
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Bangkok, Thailand ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Pakit Vichyanond	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	June 2001 to August 2001
<b>Sampling Frame:</b>		Random sampling from public and private schools in Bangkok. The same sampling frame was used for both Phases.	

## Personnel

### Dr Pakit Vichyanond

Faculty of Medicine Siriraj Hospital  
Mahidol University  
2 Prannok Road  
Siriraj Bangkoknoi  
Thailand

### Roles:

- National Coordinator for Thailand
- Phase One Principal Investigator for Bangkok
- Phase Three Principal Investigator for Bangkok

## ISAAC in Thailand

In the early 1990, Richard Beasley visited me (Pakit Vichyanond) at my medical school (Faculty of Medicine Siriraj Hospital) to invite myself to function as a Thailand coordinator for starting ISAAC study in Thailand. The idea struck me so much and I immediately accepted the offer. Professor Montri Tuchinda – my predecessor – had earlier performed questionnaire survey among children and medical students in Bangkok and demonstrated prevalence of asthma among children in Thailand to be only 4%. Such figure seemed to be too low for specialists in the field. We were in need of more well defined questionnaire survey and the idea of ISAAC was the perfect match for us at that time.

We were earlier assigned to the West Asia (Prof Shah, India) section of the ISAAC. The translation and back transferred of the data was done very quickly by a group of pediatric allergists in Thailand. At this time, the group of pediatric allergist/immunologists in the Asia Pacific region was well organized and thus Thailand was transferred to the East Asia region under Chris Lai (Hong Kong) as the regional coordinator. The initial survey was earlier launched in Bangkok by my group. In order to spread the survey across the Bangkok Metropolitan area, we mapped out schools to be surveyed to cover the entire Bangkok region. In addition, we balanced the schools to be equally include private and public schools. The high prevalence of asthma prevalence from the first survey was made known to the public (13%). In fact this figure was not that much different from figures all over Asia. This brought about a high degree of publicity among the Thai medical community since it represented such a large increase in load of asthmatic children. Additional centers from various parts of the countries including Chiangmai, Khon Kaen, Nakorn Pathom, and others applied for participating in the survey. In total, 10 centers all over the country were included (however, not all data were submitted to ISAAC center in Auckland). Results from these centers confirmed that the high prevalence of asthma (around 10%), allergic rhinitis (40%) and atopic dermatitis (10%) were corrected throughout the country. Results from Chantaburi center (east of Thailand) showed prevalence of asthma of 16%!!!

The Bangkok center launched their own version of ISAAC-II but due to slight variation of their methods from the official ISAAC-II, the results were not included for ISAAC-II analysis. Results of this investigation are available from myself.

Two centers, Bangkok and Chiangmai participated in ISAAC Phase One and Three time trends. Increase in prevalence was documented from the Bangkok center whereas Chiangmai center showed plateau to slight decline. Results of environment and other factors in this ISAAC-III were used in subsequent analysis forming the report by the ISAAC committee. In addition, ISAAC questionnaire survey was conducted among University students in Bangkok and data among these students were quite similar to those in children

Overall, ISAAC investigation has been well received in Thailand. This has brought a great enthusiasm on allergic diseases in children. We are keen to participate in further investigations with ISAAC committee.

# The ISAAC Story

## Barbados Centre

<b>Phase One</b>			
<b>Centre:</b>		Barbados, Barbados ( North America )	
<b>Principal Investigator:</b>		Dr Malcolm E Howitt	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Barbados, Barbados ( North America )	
<b>Principal Investigator:</b>		Dr Malcolm E Howitt	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2001 to February 2002
<b>Sampling Frame:</b>		All schools in Barbados	

### Personnel

#### Dr Malcolm E Howitt

Medical Practitioner  
Carlton Clinic  
Carlton Shopping Plaza  
Black Rock  
Barbados

#### Roles:

- National Coordinator for Barbados
- Phase One Principal Investigator for Barbados
- Phase Three Principal Investigator for Barbados

## Barcelona Centre

<b>Phase One</b>			
<b>Centre:</b>		Barcelona, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Dr Rosa M Busquets	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in two city districts, Saut Marti and Ciutat Vella.	
<b>Phase Three</b>			
<b>Centre:</b>		Barcelona, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Dr Rosa M Busquets	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to November 2002
<b>Sampling Frame:</b>		All the schools belonging to Barcelona districts (Spain) - located in the influencing area of the hospital. The same sampling frame was used for both Phase One and Phase Three.	

### Personnel

#### Dr Rosa M Busquets

Metge Adjunt, Unitat de Pneumologia Pediatica,  
Hospital del Mar  
Paseig Marítim, 25  
Spain

#### Roles:

- Phase One Principal Investigator for Barcelona
- Phase Three Principal Investigator for Barcelona

#### Dr Oriol Vall

Servicio de Pediatria  
Hospital del Mar  
Paseo Marítimo, 25-29  
Spain

#### Roles:

- Phase One collaborator for Barcelona

## Bari Centre

<b>Phase Three</b>			
<b>Centre:</b>		Bari, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Dr Lucio Armenio	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to February 2002
<b>Sampling Frame:</b>		All schools in the Municipality of Bari.	

### Personnel

#### Dr Lucio Armenio

Dipartimento di Biomedicina dell'Età volutiva  
Clinica Pediatrica III dell'Università di Bari  
Policlinico P.zza G. Cesare 11  
Italy

#### Roles:

- Phase Three Principal Investigator for Bari

Regional

National

Local

Barbados

Barcelona

Bari

# The ISAAC Story

Regional

National

Local

Barranquilla

Bay of Plenty

## Barranquilla Centre

<b>Phase Three</b>			
<b>Centre:</b>		Barranquilla, Colombia ( Latin America )	
<b>Principal Investigator:</b>		Dr Alfonso M Cepeda	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	August 2002 to March 2003
<b>Sampling Frame:</b>		Some schools in the Barranquilla and Soledad area	

### Personnel

#### Dr Alfonso M Cepeda

Hospital Universitario Metropolitano  
Universidad Metropolitana  
Carrera 58 N 81-160 Apt. 8  
Barranquilla  
Colombia

#### Roles:

- Phase Three Principal Investigator for Barranquilla

## Bay of Plenty Centre

<b>Phase One</b>			
<b>Centre:</b>		Bay of Plenty, New Zealand ( Oceania )	
<b>Principal Investigator:</b>		Dr Chris Moyes	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: June 1993 to August 1993 6-7yr: May 1993 to September 1993
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Bay of Plenty, New Zealand ( Oceania )	
<b>Principal Investigator:</b>		Dr Chris Moyes	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	August 2002 to October 2002
<b>Sampling Frame:</b>		Geographic area, the same geographic area as Phase One.	

### Personnel

#### Dr Chris Moyes

Director of Paediatrics  
Pacific Health  
Whakatane Hospital  
P.O. Box 241  
New Zealand

#### Roles:

- Phase One Principal Investigator for Bay of Plenty
- Phase Three Principal Investigator for Bay of Plenty

#### Ms Amohaere Tangitu

Whakatane Hospital  
Whakatane  
New Zealand

#### Roles:

- Phase Three collaborator for Bay of Plenty

#### Dr John Waldon

Research Centre for Maori Health Research and Development,  
School of Public Health,  
Massey University  
Palmerston North  
New Zealand

#### Roles:

- Phase One collaborator for Bay of Plenty

ISAAC had its birth in the Bay of Plenty in a preliminary trial of the parental questionnaire in 8-12 year olds in Kawerau in 1992. The initial intent was to depend on parents returning questionnaires sent through the schools, but a poor response of less than 40% was immensely improved by use of a local public health nurse personally contacting parents, which resulted in 82% participation.

Subsequent interest was stimulated by community concerns that industrial fumes from Kawerau paper mills or natural sulphurous emissions in Rotorua might influence asthma prevalence or severity.

The Eastern Bay of Plenty has a high proportion of Maori and socioeconomic deprivation spread diffusely over a large rural area, with many small primary schools. The schools surveyed in the formal ISAAC studies included the more central parts of the Eastern Bay of Plenty around Whakatane, Kawerau, and Opotiki together with urban Rotorua. Outlying rural areas were not included.

Phase 1 was carried out by subcontracting the Hepatitis Foundation (who had extensive experience of school surveys) from May to September 1992. Questionnaires on 2681 6-7yr old children were completed (87% of target) in 45 schools. 2813 secondary school pupils participated in the survey (89% of target).

Phase 3 ran from August to October 2002 and utilised staff from the Eastern Bay of plenty Maori Health unit centred at Whakatane Hospital. It was felt that the relative lack of research experience of this team would be compensated by their positive attitude and a greater acceptance among Maori schoolchildren and parents (just under half of population studied). Training was provided by the core team at Auckland and particular thanks are due to Philippa Ellwood.

## Local Publications

The following publications used ISAAC data from the Bay of Plenty centre:

Moyes CD, Waldon J, Ramadas D, Crane J, Pearce N. *Respiratory symptoms and environmental factors in schoolchildren in the Bay of Plenty*. NZ Med J 1995; 108(1007): 358-61.

# The ISAAC Story

It was immediately apparent that the conditions for the Phase 3 survey were going to be much more difficult. Schools were generally less supportive, feeling under pressure from curriculum changes, and some schools opted out. The questionnaire was several times longer than Phase 1. Above all, the secondary students required active signed parental consent to participate rather than the 'opt-off' approach taken in Phase 1. It was therefore a credit to the Maori Health Team that completed questionnaires for 6-7 yr olds were obtained for 2150 (80%) of target children, and a much reduced but still statistically viable 1976 (76%) of target 13-14 yr olds.

## Local Publications

The following publications used ISAAC data from the Beijing centre:

Zhao T, Wang HJ, Chen Y, Xiao M, Duo L, Liu G, Lau Y, Karlberg J. *Prevalence of childhood asthma, allergic rhinitis and eczema in Urumqi and Beijing*. J Paediatr Ch Health 2000; 36(2): 128-33.

Ma Y, Zhao J, Han ZR, Chen YZ, Leung TF, Wong GWK. *Very Low Prevalence of Asthma and Allergies in Schoolchildren From Rural Beijing, China*. Pediatr Pulmonol 2009; 44(8):793-799.

Zhao J, Ma Y, Chen YZ, Han ZR. *Prevalence of allergic respiratory disorders and skin prick test in Beijing urban and suburban children a comparative study*. Zhonghua Yi Xue Za Zhi 2003; 83(21):1879-81.



Beijing



## Beijing Centre

Phase One			
<b>Centre:</b>		Beijing, China ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Yu-Zhi Chen	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All 92 junior high schools in Chaoyang District	
Phase Two			
<b>Centre:</b>		Beijing, China ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Yu-Zhi Chen	
<b>Age Groups:</b>	10-11,	<b>Timeframe:</b>	October 1997 to February 1998.
<b>Sampling Frame:</b>		A random sample of schools from the metropolitan area of Beijing.	
Phase Three			
<b>Centre:</b>		Beijing, China ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Yu-Zhi Chen	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	October 2001 to December 2001
<b>Sampling Frame:</b>		13-14yr: Some school in the Chao Yang District of Beijing	

## Personnel

### Professor Yu-Zhi Chen

Capital Institute of Pediatrics  
No 2 Ya Bao Road  
Beijing  
China



#### Roles:

- National Coordinator for China
- Phase One Principal Investigator for Beijing
- Phase Two Principal Investigator for Beijing
- Phase Three Principal Investigator for Beijing

## ISAAC in China

China is a very large country, and there were several studies about asthma prevalence in 1990 and also in 2000. A nationwide and randomized survey on the prevalence of childhood asthma in 2000, compared with the same study in 1990, covered 31 provinces and 43 cities, including a population of 437873 children aged 0-14 years. The results show us that there was a concerning increase in asthma prevalence. But they had a different methodology than ISAAC Study. For this reason we considered it very important to join ISAAC. We thought joining the ISAAC study would let us get data about asthma and allergies prevalence in different cities in China and give us the opportunity of comparing our data with the data of other countries involved in this study. With ISAAC we also expected to achieve a better understanding and treatment of our patients.

When we knew that an international study about asthma and allergies was being prepared. We were very enthusiastic about including 5 cities of mainland China in that study in 1994 ISAAC Phase One. The 5 cities were Beijing, Shanghai, GuangZhou, Chongqing and Urumqi, and we worked very hard do the study.

In ISAAC Phase Two study, as the study was more difficult than Phase One, and only needed a few centres to take part in it, we chose 2 centres, Beijing and Guangzhou, to join the Phase Two study. Especially, our team did a lot of difficult work in the study. For example, in the dust collection work, you could imagine how hard it was to go to 200 children's home when the pupils were dismissed from school, and to get the dust from those children's bed, floor, etc.

In Phase Three China, a new centre, Tongzhou (Beijing rural) was added to the study in the 13-14 years group. Tongzhou is an area about 50km away from the Beijing urban city that included children from farmland. It was very important to have the centre within the study, so we could compare the result of Tongzhou with Beijing urban city, and to have a better understanding of the prevalence and mechanism of asthma and allergic diseases. And finally, we found that the wheezing and allergic diseases prevalence were much lower in rural Beijing students than in urban Beijing students, and also the prevalence of positive allergy of SPT was much lower in rural Beijing students than in urban Beijing students.

Regional

National

Local

Bay of Plenty

Beijing

# The ISAAC Story



Regional

National

Local

Beijing

Beirut

Belgrade

Overall, in 12 years of ISAAC Study from Phase I to Phase III, about 90,000 Chinese children joined the study, and 25,000 Beijing children joined the study.

And more, for the I-III ISAAC Study, we got the award of "Science and Technology Advancement Prize" awarded by the Beijing Municipal Government in 2006, and received 20000 RMB prize.

## Beirut Centre

Phase One	
<b>Centre:</b>	Beirut, Lebanon ( Eastern Mediterranean )
<b>Principal Investigator:</b>	Dr Fuad M Ramadan
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	All private, private (subsidized), and Government schools in Beirut.

### Personnel

#### Amani Chehade

Lebanon

- Phase One collaborator for Beirut

#### Terreza Hajaar

Lebanon

- Phase One collaborator for Beirut

#### Dr Fuad M Ramadan

American University of Beirut  
Medical Center P.O. BOX: C22 Beirut  
Lebanon

- Phase One Principal Investigator for Beirut

## Belgrade Centre

Phase Three	
<b>Centre:</b>	Belgrade, Serbia and Montenegro ( Northern and Eastern Europe )
<b>Principal Investigator:</b>	Dr Zorica Zivkovic MD, PhD
<b>Age Groups:</b>	13-14, 6-7
<b>Timeframe:</b>	March 2001 to October 2001
<b>Sampling Frame:</b>	13-14yr: All schools in down city and some in suburbs. 6-7yr: All schools in central zone of the city and some in suburbs

### Personnel

#### Dr Zorica Zivkovic

Professor in Pediatrics  
American School of Medicine at Belgrade  
Pediatric pulmonologist  
Children's Hospital for Lung Diseases and Tuberculosis  
Medical Center "Dr Dragisa Misovic"  
Belgrade  
Serbia and Montenegro



#### Roles:

- National Coordinator for Serbia and Montenegro
- Phase Three Principal Investigator for Belgrade

## Local Publications

The following publications used ISAAC data from the Beirut centre:

Ramadan FM, Khoury MN, Hajjar TA, Mroueh SM. *Prevalence of allergic diseases in children in Beirut comparison to worldwide data.* J Med Liban 1999; 47(4): 216-21.

## Local Publications

The following publications used ISAAC data from the Belgrade centre:

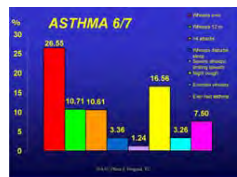
Živkovic Z. *Prevalence of childhood asthma, rhinitis and eczema in Belgrade area and Serbia.* Child Pulmonol 2002; 10(1-2): 27-43.

Živkovic Z, Živanovic S, Panic E. *International study of asthma and allergies in childhood (phase 3) in Yugoslavia.* Child Pulmonol 2001; 9(1-2): 41-44.

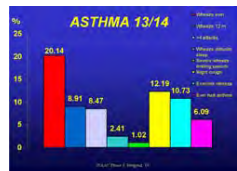
Smiljanic S, Radic S, Živkovic Z. *Asthma and allergies in childhood.* Child Pulmonol 2002; 10(1-2): 61-63.

Živkovic Z, Vukašinovic Z, Cerovic S, Radulovic S, Živanovic S, Panic E, Hadnadjev M and Adžovic O. *Prevalence of childhood asthma and allergies in Serbia and Montenegro.* World J Pediatr 2010; 6(4): 331-336 epub May

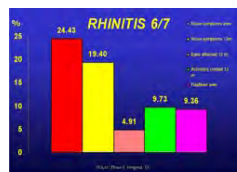
# The ISAAC Story



graph of Belgrade results



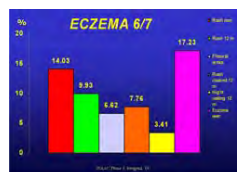
graph of Belgrade results



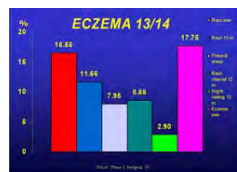
graph of Belgrade results



graph of Belgrade results



graph of Belgrade results



graph of Belgrade results

ISAAC Phase 3 in Belgrade was conducted during spring and autumn season 2001. Belgrade, the capital of Republic of Serbia, encompasses around 2 million citizens.

The location of Schools was randomly assigned to down city and suburbs as well. The number of Schools for 6/7 years of age was 21 in Belgrade and 26 for 13/14 years of age groups of pupils. In the 6/7 years of age we analyzed 1932 children. In older group of pupils we analyzed 3232 children.

The survey was performed by pediatricians from Primary Health Centers from Belgrade supported by allied medical professionals from Schools. The logistics and support were performed by pediatric pulmonologist from Children's Hospital for Lung Diseases and Belgrade Principal Investigator Zorica Zivkovic.

Overall results of our investigation in Republic of Serbia have been published in the World Journal of Pediatrics. (Živkovic Z, Vukašinovic Z, Cerovic S, Radulovic S, Živanovic S, Panic E, Hadnjadjev M, Adžovic O. Prevalence of childhood asthma and allergies in Serbia and Montenegro. World J Pediatr 2010; 6(4):331-336.)

Results of ISAAC Phase 3 Belgrade Center were published in the national paediatric journal. (Živkovic Z. Prevalence of Childhood Asthma, Rhinitis and Eczema in Belgrade area and Serbia. Child Pulmol 2002; 1-2:27-43.)

ISAAC Phase 3 in Belgrade gave us important figures on epidemiology of asthma and allergies representing the very first and for many years the only one statistical data on asthma and childhood allergies prevalence rate.

We are sharing here some of our results from Belgrade Center.

See photos (left)



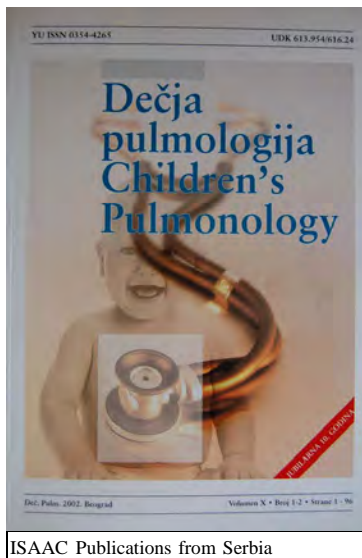
Zorica Zivkovic at the World Asthma Congress, Mexico 2006



ISAAC Steering Committee, Stockholm 2002



ISAAC Steering Committee, Stockholm 2002



ISAAC Publications from Serbia

Regional  
National  
Local

**Belgrade**



# The ISAAC Story

Regional

National

Local

**Belo  
Horizonte  
Benslimane**

## Belo Horizonte Centre

Phase Three			
<b>Centre:</b>		Belo Horizonte, Brasil ( Latin America )	
<b>Principal Investigator:</b> Associate Professor Paulo Augusto M Camargos			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	November 2001 to May 2002
<b>Sampling Frame:</b>		13-14yr: Public schools in Belo Horizonte City	

### Personnel

#### Professor Paulo Augusto M Camargos

Professor of Pediatrics  
Dept of Pediatrics, Medical School  
Federal University of Minas Gerais  
Belo Horizonte  
Brasil



#### Roles:

- Phase Three Principal Investigator for Belo Horizonte

#### Professor Cristina Gonçalves Alvim

Associate professor of Pediatrics  
Dept of Pediatrics, Medical School  
Federal University of Minas Gerais  
Belo Horizonte  
Brasil

#### Roles:

- Phase Three collaborator for Belo Horizonte

#### Professor Maria Jussara Fernands Fontes

Associate professor of Pediatrics  
Dept of Pediatrics, Medical School  
Federal University of Minas Gerais  
Belo Horizonte  
Brasil

#### Roles:

- Phase Three collaborator for Belo Horizonte

#### Professor Cláudia Ribeiro de Andrade

Associate professor of Pediatrics  
Dept of Pediatrics, Medical School  
Federal University of Minas Gerais  
Belo Horizonte  
Brasil

#### Roles:

- Phase Three collaborator for Belo Horizonte

Brazil is a large country (190,000,000 inhabitants), however there were several studies about asthma prevalence since 1970, but all of them had a different methodology and differences in the age of the samples. The studies about allergies prevalence were very scarce.

Minas Gerais State has 20,000,000 inhabitants and Belo Horizonte city, 2,500,000 inhabitants. Apart from teachers listed above, the ISAAC phase 3 team involved 18 medical students. Data collection was partially supported by 1) Federal University of Minas Gerais and 2) Belo Horizonte Municipal Health Authority, that provided cars and drivers to taken medical students and researchers to the randomly selected schools.

## Benslimane Centre

Phase Three			
<b>Centre:</b>		Benslimane, Morocco ( Africa )	
<b>Principal Investigator:</b> Professor Zoubida Bouayad			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	November 1999.
<b>Sampling Frame:</b>		13-14yr: All junior high schools of Benslimane (which is a rural area).	

### Personnel

#### Professor Zoubida Bouayad

Service des Maladies Respiratoires  
Hôpital 20 Août  
CHU Ibn Rochd  
Morocco

#### Roles:

- National Coordinator for Morocco
- Phase Three Principal Investigator for Benslimane

## Local Publications

ISAAC phase 3 at Belo Horizonte protocol generated 1) part of two PhD thesis and apart from studies authored by Prof. Dirceu Solé, 2) two other papers as listed below:

Alvim, Cristina Gonçalves ; Picinin, Isabela Mendonca ; Camargos, Paulo Moreira ; COLOSIMO, Enrico ; Lasmar, Laura Belizário ; Ibiapina, Cassio Cunha ; Fontes, Maria Jussara ; Andrade, Cláudia Ribeiro . Quality of Life in Asthmatic Adolescents: An Overall Evaluation of Disease Control. The Journal of Asthma, v. 46, p. 186-190, 2009.

ANDRADE, Cláudia Ribeiro de ; IBIAPINA, Cássio da Cunha ; ALVIM, Cristina Gonçalves ; FONTES, Maria Jussara Fernandes ; LASMAR, Laura Maria de Lima Belizário Facury ; CAMARGOS, P. A. M. . Asthma and allergic rhinitis comorbidity: a cross-sectional questionnaire study on adolescents aged 13-14 years. Primary Care Respiratory Journal, v. 17, p. 222-225, 2008.

# The ISAAC Story

## Bikaner Centre

<b>Phase Three</b>			
<b>Centre:</b>		Bikaner, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Professor Mohammed Sabir	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	April 2001 to November 2001
<b>Sampling Frame:</b>		13-14yr: Some schools in the Bikaner District, Rajasthan, India.	

### Personnel

#### Professor Mohammed Sabir

Respiratory Division, Department of Medicine  
S.P. Medical College  
Mohalla Choongaran  
India

#### Roles:

- Phase Three Principal Investigator for Bikaner

## Bilbao Centre

<b>Phase One</b>			
<b>Centre:</b>		Bilbao, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Dr Alfonso Delgado Rubio	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 1994 to November 1994
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Bilbao, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Dr Carlos González Díaz	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2001 to March 2002
<b>Sampling Frame:</b>		All schools in Bilbao city district area (Spain). The same sampling frame was used for both Phase One and Phase Three.	

### Personnel

#### Dr Carlos González Díaz

Pediatric Allergy Unit  
Department of Pediatrics  
Hospital de Basurto  
Bilbao  
Spain



#### Roles:

- Phase Three Principal Investigator for Bilbao

#### Dr Alfonso Delgado Rubio

Urgencias de Pediatría. Pabellon Makua  
Hospital de Basurto  
Avda Montevideo, 18  
Spain

#### Roles:

- Phase One Principal Investigator for Bilbao
- Phase Three collaborator for Bilbao

In 1994, the ISAAC project was started in Spain, launched by our national coordinator, Prof. Luis Garcia Marcos. At the beginning, eight centers constituted the Phase One, and ISAAC Bilbao center was led until 1998 by Prof. Alfonso Delgado. Since 1998, I have been the principal investigator and responsible for the Phases One and Three.

The results of this Project, apart from the multiple articles that have been published, have allowed me to defend my doctoral thesis entitled "Prevalence and severity of asthma in 13-14 years old children living in Bilbao" in February of 1997 with the highest grade.

It highlighted that the prevalence of asthma in our center had increased in Phase Three relative to Phase One, both in children aged 6-7 years (6.9% vs 12.2%) and in children 13-14 years (11.9% vs 12.8%)

I would like to thank all people who at some point belonged to the Bilbao ISAAC Centre in any of its phases without them it would have not be possible to perform this work: Those people are : Prof Alfonso Delgado, Dr. Andres Gonzalez, Dra. Elena Sanchez, Dra. Nelida Garcia, Dra Marga Ferrer, Dr Javier Zaballa, and Dra Nekane Morato,



Regional  
National  
Local

**Bikaner**  
**Bilbao**

## Local Publications

The following publications used ISAAC data from the Bilbao centre:

González Díaz C, Sánchez González E, García-Marcos L, Morato Rodríguez MD, Molina Zelaia I, Burgaleta Sagaseta A, Zaballa Gorordo J, Delgado Rubio A. *Prevalence and severity of asthma in 13-14-year-old children in Bilbao.* [Spanish]. An Esp Pediatr. 1998; 48(6): 608-14.

Morales Suárez-Varela MM, García-Marcos AL, González DC, et al. *Prevalence of atopic eczema and nutritional factors in 6-7 year old children.* [article in spanish]. Aten Primaria 2007; 39(7):355-360.

Arnedo-Pena A, García-Marcos L, Fernández-Espinar JF, Bercedo-Sanz A, Aguinaga-Ontoso I, González-Díaz C, Carvajal-Urueña I, Busquet-Monge R, Suárez-Varela MM, de Andoín NG, Batlles-Garrido J, Blanco-Quirós A, López-Silvarrey Varela A, García-Hernández G. *Sunny hours and variations in the prevalence of asthma in schoolchildren according to the International Study of Asthma and Allergies (ISAAC) Phase III in Spain* Int J Biometeorol 2011; 55(3): 423-434

# The ISAAC Story



Regional

National

Local

**Birjand**

**Bishkek**

## Birjand Centre

Phase Three			
<b>Centre:</b>		Birjand, Iran ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Mohammed-Reza Masjedi	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 1996 to May 1996
<b>Sampling Frame:</b>		All schools in Birjand city were included in the sampling frame	

### Personnel

#### Dr Mohammed-Reza Masjedi

Masih Daneshvary Hospital  
Dorabad  
Shaheed Bahoner Ave  
Darabad  
Iran

#### Roles:

- National Coordinator for Iran
- Phase Three Principal Investigator for Birjand

## Bishkek Centre

Phase Three			
<b>Centre:</b>		Bishkek, Kyrgyzstan ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Imanalieva Cholpon	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2002 to October 2002
<b>Sampling Frame:</b>		All schools in the Bishkek city district. Then boarding schools for handicapped children and schools with only grades 1-3 were excluded. After then every fourth school in every Bishkek city district was then chosen.	

### Personnel

#### Moldogazieva Aigul

National centre of motherhood and childhood protection  
Bishkek, Balykchi  
Kyrgyzstan

#### Roles:

- Phase Three collaborator for Bishkek

#### Seitalieva Chiinara

National centre of motherhood and childhood protection  
Balykchi  
Kyrgyzstan

#### Roles:

- Phase Three collaborator for Bishkek

#### Dr Imanalieva Cholpon

Kyrgyz Scientific Research Institute of Obstetrics and Pediatrics  
Flat 9, 136 Panfilov str.  
Kyrgyzstan

#### Roles:

- National Coordinator for Kyrgyzstan
- Phase Three Principal Investigator for Bishkek

#### Boronbaeva Elnura

National centre of motherhood and childhood protection  
Bishkek  
Kyrgyzstan

#### Roles:

- Phase Three collaborator for Bishkek

#### Dr Najimidinova Gulmira

National Centre of Pediatrics and Child surgery  
720020  
Kyrgyzstan

#### Roles:

- Phase Three collaborator for Bishkek

#### Asankojoeva Janyl

National centre of motherhood and childhood protection  
Balykchi  
Kyrgyzstan

#### Roles:

- Phase Three collaborator for Bishkek

#### Djanuzakova Nurgul

National centre of motherhood and childhood protection  
Bishkek  
Kyrgyzstan

#### Roles:

- Phase Three collaborator for Bishkek

The questionnaire by ISAAC technique was conducted in 2002. Employees of the National centre of motherhood and childhood protection participated in research. The ISAAC team in Bishkek was: Imanalieva Cholpon, Najimidinova Gulmira, Boronbaeva Elnura, Djanuzakova Nurgul and Moldogazieva Aigul. The ISAAC team in Balykchi was: Moldogazieva Aigul, Seitalieva Chiinara and Asankojoeva Janyl.

## Local Publications

The following publications used ISAAC data from the Birjand centre:

Moghadam M, Jou S. *Prevalence of Asthma Symptoms among 13-14 years old Children in Birjand*. TABIB-E-SHARGH Fall 2004; 6(3):183-192.



Philippa Ellwood's visit to Kyrgyzstan with Djanuzakova Nurgul, Imanalieva Cholpon, Moldogazieva Aigul, and collaborators.



Boronbaeva Elnura, discussing work in ISAAC research with Philippa Ellwood in Bishkek, Kyrgyzstan. background - Imanalieva Cholpon



Philippa Ellwood and Kyrgyzstan collaborators, Bishkek, Kyrgyzstan

# The ISAAC Story

Before the questionnaire study began, letters of support from the Ministry of Health and the Ministry of science, formation and culture of the Kyrgyz Republic had been prepared and these departments gave the consent to carry out the research. In Bishkek 8194 children were questioned. 3146 of them were at the age of 6-7 years and 5048 children were aged 13-14 years and attended comprehensive schools. In Balykchi 2111 children were surveyed in all the comprehensive schools of the city, 729 aged 6-7 years old and 1382 aged 13-14 years.

Participation in the research has given us the invaluable experience of performing a large questionnaire study under international standards. The data have helped to achieve a representation about the prevalence of allergic diseases in the Kyrgyz Republic. Some elements of the questionnaire have now been introduced in medical institutions for diagnostics of allergic diseases.

We wish ISAAC creative successes and well-being.

Regional  
National  
Local

**Bishkek**  
**Bogotá**  
**Bombay (16)**

## Bogotá Centre

<b>Phase Three</b>			
<b>Centre:</b>		Bogotá, Colombia ( Latin America )	
<b>Principal Investigator:</b>		Dr Gustavo Aristizábal	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2002 to August 2002
<b>Sampling Frame:</b>		Some schools in Bogata city area.	

### Personnel

#### Dr Gustavo Aristizábal

Medical Director  
Instituto de Enfermedades Respiratorias del Niño  
S.A.  
Diagonal 84 No 28-09  
Bogota  
Colombia

#### Roles:

- Phase Three Principal Investigator for Bogotá

## Mumbai (16) Centre

<b>Phase One</b>			
<b>Centre:</b>		Bombay (16), India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr Mohan Keshav Joshi	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:November 1994 to December 1995 6-7yr:December 1994 to December 1995
<b>Sampling Frame:</b>			
<b>Phase Two</b>			
<b>Centre:</b>		Mumbai (16), India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr Jayant Shah	
<b>Age Groups:</b>	10-11 yrs.,	<b>Timeframe:</b>	2000 and 2001.
<b>Sampling Frame:</b>		Municipal ward areas in which municipal doctors were working. Same study area as ISAAC Phase One (not sure which one – Bombay (16), (17), (18) – none of them fit this description well! May be better to treat Mumbai Phase Two as a separate centre (but combine in42 and in43 which is what we have done for the Phase Two papers. Currently Mumbai Phase Two is assigned to Bombay (16) Phase One centre in Eamon's database.)	
<b>Phase Three</b>			
<b>Centre:</b>		Mumbai (16), India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr Mohan Keshav Joshi	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	August 2002 to March 2003
<b>Sampling Frame:</b>		All schools in Mahim and Dadar areas with the city limits of Bombay.	

### Personnel

#### Dr Mohan Keshav Joshi

Panjat Hospital  
1st Floor, Gehi Mansion  
L.J. Road  
India

#### Roles:

- Phase One Principal Investigator for Bombay (16)
- Phase Three Principal Investigator for Mumbai (16)

# The ISAAC Story

Regional

National

Local

Bombay (16)

Bombay (17)

Borivali

## Dr Raju Khubchandani

Jaslok Hospital & Research Centre  
15, Dr. G. Deshmukh Marg  
India

### Roles:

- Phase Two collaborator for Mumbai (16)

## Dr Sumant Narayan Mantri

C/- Dr J.R. Shah  
Department of Pulmonary Medicine  
Jaslok Hospital & Research Centre  
15, G. Deshmukh Marg  
India

### Roles:

- Phase Two collaborator for Mumbai (16)

## Dr Rajiv S Mathur

Department of Chest Diseases  
Jaslok Hospital & Research Centre  
15, Dr. G. Deshmukh Marg  
India

### Roles:

- Phase Two collaborator for Mumbai (16)

## Dr Jayant Shah

Jaslok Hospital & Research  
Centre  
15 - Dr. Deshmukh Marg  
Pedder Road,  
India



### Roles:

- Regional Coordinator for Indian Sub-Continent
- National Coordinator for India
- Phase Two Principal Investigator for Mumbai (16)

## Bombay (17) Centre

Phase One			
<b>Centre:</b>		Bombay (17), India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr Uday Anath Pai	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	March 1995 to March 1995
<b>Sampling Frame:</b>			

### Personnel

#### Dr Uday Anath Pai

Consultant Pediatrician  
Block no.1, Sai-Kutir  
16th Road, Plot no 131, Maharashtra  
India

### Roles:

- Phase One Principal Investigator for Bombay (17)

## Borivali Centre

Phase One			
<b>Centre:</b>		Borivali, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr Vasant A Khatav	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:December 1994 to March 1995 6-7yr:December 1994 to February 1995
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Borivali, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr Vasant A Khatav	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2003 to March 2003
<b>Sampling Frame:</b>		Private schools in Borivali Region, the same sampling frame as Phase One.	

### Personnel

#### Dr Vasant A Khatav

Dr Khatav's Mother and Child Hospital  
Arunoday Shopping Centre  
Market Lane  
Borivali (West)  
India

### Roles:

- Phase One Principal Investigator for Borivali
- Phase Three Principal Investigator for Borivali

# The ISAAC Story

## Boulmene Centre

Phase Three			
<b>Centre:</b>		Boulmene, Morocco ( Africa )	
<b>Principal Investigator:</b>		Professor Zoubida Bouayad	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	January 2002 to March 2002
<b>Sampling Frame:</b>		13-14yr: All Junior High Schools in Boulemene	

### Personnel

#### Professor Zoubida Bouayad

Service des Maladies Respiratoires  
Hôpital 20 Août  
CHU Ibn Rochd  
Morocco

#### Roles:

- National Coordinator for Morocco
- Phase Three Principal Investigator for Boulmene

## Brasília Centre

Phase Three			
<b>Centre:</b>		Brasília, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Dr Wellington G Borges	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	July 2002 to October 2002
<b>Sampling Frame:</b>		13-14yr: All schools in Brazilia area	

### Personnel

#### Dr Wellington G Borges

Hospital de Base do Distrito Federal  
SMPW Q12 Conj 03 Lote 02-C  
Brasil

#### Roles:

- Phase Three Principal Investigator for Brasília

## Brazzaville Centre

Phase Three			
<b>Centre:</b>		Brazzaville, Congo ( Africa )	
<b>Principal Investigator:</b>		Professor Joseph M'Boussa	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	November 2002 to March 2003
<b>Sampling Frame:</b>		13-14yr: Some schools in Brazzaville region	

### Personnel

#### Professor Joseph M'Boussa

Centre Hospitalier Universitaire  
Service de Pneuema-Phtisiologie  
BP 32  
Congo

#### Roles:

- Phase Three Principal Investigator for Brazzaville

## Buenos Aires Centre

Phase One			
<b>Centre:</b>		Buenos Aires, Argentina ( Latin America )	
<b>Principal Investigator:</b>		Dr Natalio Salmun	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:September 1995 to April 1996 6-7yr:August 1995 to April 1996
<b>Sampling Frame:</b>		13-14yr: All private and public schools in 11 districts from Buenos Aires Region (Federal District, Avellaneda, Lanus, Lomas de Zamora, Moron, Balcarce, La Plata, San Nicolas, Pergamino, Bahia Blanca). 6-7yr:All private and public schools in 13 districts from Buenos Aires Region (Federal District, Alte Brown, Gral. Villegas, La Plata, Mar del Plata, San Nicolas, Pergamino, Bahia Blanca).	

### Personnel

#### Dr. Jose E. Fabiani

Director of Argentine Institute of Allergy,  
Asthma and Immunology  
Avda. Meeks 15. 2nd floor.  
Lomas de Zamora.  
Prov. de Buenos Aires  
Argentina

#### Roles:

- Phase One collaborator for Buenos Aires

Regional

National

Local

Boulmene

Brasília

Brazzaville

Buenos

Aires

# The ISAAC Story



Regional

National

Local

**Buenos**

**Aires**

**Cádiz**

## Dr Ilda María Eudosia Guimaraes

Hospital de Atención Médica Primaria de Hurlingham  
Alvear 738 (1714)  
Ituzaingo  
Argentina

### Roles:

- Phase One collaborator for Buenos Aires

## Dr. Marcelo Kohan.

Vicepresident 2nd of Fundaler.  
Laprida 1520.  
Buenos Aires. 1425  
Argentina

### Roles:

- Phase One collaborator for Buenos Aires

## Dr. Jorge Nuñez.

Co director of the Argentine Institute of Allergy, Asthma and Immunology  
Bulnes 1563.  
Buenos Aires  
Argentina

### Roles:

- Phase One collaborator for Buenos Aires

## Dr Natalio Salmun

Center of Allergy & Immunology  
Billinghurst 2565. 3. A  
Argentina



### Roles:

- Phase One Principal Investigator for Buenos Aires

## Dr. Wenceslao Sanchez de la Vega.

Vicepresident 1st of Fundaler.  
Cerviño 3220.  
Buenos Aires. 1425  
Argentina

### Roles:

- Phase One collaborator for Buenos Aires

## Dra Marcela Soria.

Serv de Alergia. Hospital.... La Plata  
Calle 73 y|129. Manzana 289  
Club El Carmen. Gutierrez 1844  
Prov. de Buenos Aires  
Argentina

### Roles:

- Phase One collaborator for Buenos Aires

## Cádiz Centre

<b>Phase One</b>	
<b>Centre:</b>	Cádiz, Spain ( Western Europe )
<b>Principal Investigator:</b>	Dr Andrés Rabadán Asensio
<b>Age Groups:</b>	13-14 <b>Timeframe:</b>
<b>Sampling Frame:</b>	All schools of our district (88) and all children of 8th grade (4344).

## Personnel

### Dr Andrés Rabadán-Asensio

Jefe de Servicio de Salud Consejería de Salud  
Delegación Provincial de Cádiz  
Junta de Andalucía  
María Auxiliadora, 2  
Spain

### Roles:

- Phase One Principal Investigator for Cádiz

# The ISAAC Story

## Cairo Centre

Phase Three			
<b>Centre:</b>		Cairo, Egypt ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Maggie Louis Naguib	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	February 2002 to March 2002
<b>Sampling Frame:</b>		13-14yr: Randomly selected schools in Misr el Qadima school district	

### Personnel

#### Dr Maggie Louis Naguib

Professor of Pediatrics & Pediatric Pulmonology  
Cairo University Children's Hospital  
Cairo University Faculty of Medicine  
Egypt



#### Roles:

- Phase Three Principal Investigator for Cairo

Cairo University Children's Hospital at Kasr Al Aini Faculty of Medicine is the largest pediatric referral center in Egypt ([http://www.medicine.cu.edu.eg/beta/index.php?option=com\\_content&view=section&id=7&Itemid=9<=en](http://www.medicine.cu.edu.eg/beta/index.php?option=com_content&view=section&id=7&Itemid=9<=en)).

Several studies were conducted concerning the epidemiology of childhood asthma and allergies in Egypt with growing concern over increasing prevalence rates; however none were incorporated into international data. I learned about the ISAAC phase III study during a working visit to the University of Michigan, USA and was very enthusiastic about the idea. Upon my return, I discussed with my colleagues and we decided to participate. We were further encouraged after contact with the team at the ISAAC International Data Centre who were very supportive.

Our team from the faculty of Medicine Cairo University, comprised members from the department of Pediatrics, the Center of Social and Preventive Medicine (CSPM) and the department of Public Health. Main tasks included organization and communication with the school district for selected schools, field work with questionnaire administration and data collection, processing and reporting.

Our selected area was the "Misr El Qadima" Old Cairo School district because it was a good example of a heavily populated urban community in Greater Cairo. It also falls within the area served by the CSPM.

Our participation in the phase III ISAAC study was a very positive experience. We learned a lot from it and enjoyed it as well. The study results were presented in many pediatric conferences and published in local scientific journals and currently serves as a recent reference for the prevalence of asthma and atopic diseases among school children in Egypt especially in Greater Cairo (of about 18,000,000 inhabitants).

I was privileged to be part of ISAAC international effort and hope that it will continue.

## Calama Centre

Phase Three			
<b>Centre:</b>		Calama, Chile ( Latin America )	
<b>Principal Investigator:</b>		Dr Luis Alberto Vera Benavides	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	October 2002 to December 2002
<b>Sampling Frame:</b>		13-14yr: All schools in the city of Calama	

### Personnel

#### Dr Luis Alberto Vera Benavides

Pedro Aguirre Cerda 231  
Centro de Salud Familiar "Las Ánimas"  
Chile

#### Roles:

- Phase Three Principal Investigator for Calama



Cairo University Children's Hospital



Cairo University Children's Hospital



Center for Social & Preventive Medicine (CSPM)

Regional

National

Local

Cairo

Calama





# The ISAAC Story

Regional

National

Local

**Cali**

**Cape Town**

## Cali Centre

<b>Phase Three</b>			
<b>Centre:</b>		Cali, Colombia ( Latin America )	
<b>Principal Investigator:</b> Dr Gustavo A Ordoñez			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	March 2002 to June 2002
<b>Sampling Frame:</b>		13-14yr: All schools in Santiago de Cali area 6-7yr: All schools in Santiago de Cali Area	

### Personnel

#### Dr Gustavo A Ordoñez

Pediatric Pulmonologist  
FUN-AIRE  
Calle 9 C # 50-25  
Cali  
Colombia

#### Roles:

- Phase Three Principal Investigator for Cali

## Local Publications

The following publications used ISAAC data from the Cali centre:

González-Díaz SN, Del Río-Navarro BE, Pietropaolo-Cienfuegos DR, Escalante-Domínguez AJ, García-Almaraz RG, Mérida-Palacio V, Berber A *Factors associated with allergic rhinitis in children and adolescents from northern Mexico International Study of Asthma and Allergies in Childhood Phase IIIB* Allergy Asthma Proc 2010; 31(4): 53-62

## Cape Town Centre

<b>Phase One</b>			
<b>Centre:</b>		Cape Town, South Africa ( Africa )	
<b>Principal Investigator:</b> Dr Hugo Nelson			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		Schools with black, coloured and white students in the Cape Town area.	
<b>Phase Three</b>			
<b>Centre:</b>		Cape Town, South Africa ( Africa )	
<b>Principal Investigator:</b> Professor Heather J Zar			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	March 2002 to September 2002
<b>Sampling Frame:</b>		13-14yr: Random sampling of schools in geographical area stratified by ethnic group (historically defined as predominantly white, mixed race or black) as was done in ISAAC Phase One. Sampling frame exactly the same for both Phases.	

### Personnel

#### Professor Rodney Ehrlich

School of Public Health and Family Medicine  
Medical School Observatory 7925  
University of Cape Town  
South Africa

#### Roles:

- Phase One collaborator for Cape Town
- Phase Three collaborator for Cape Town

#### Dr Hugo Nelson

Flat 21, Block 14  
Horsett Hospital  
Rowley Rd, Grays  
United Kingdom

#### Roles:

- Phase One Principal Investigator for Cape Town

#### Professor Heather J Zar

Red Cross Childrens Hospital  
Klipfontein Road  
7th floor ICH Building  
South Africa

#### Roles:

- National Coordinator for South Africa
- Phase Three Principal Investigator for Cape Town

## Local Publications

The following publications used ISAAC data from the Cape Town centre:

Mercer MJ, Joubert G, Ehrlich RI, Nelson H, Poyser MA, Puterman A, Weinberg EG. *Socioeconomic status and prevalence of allergic rhinitis and atopic eczema symptoms in young adolescents.* *Pediatr Allergy Immunol* 2004; 15(3): 234-41.

Poyser MA, Nelson H, Ehrlich RI, Bateman ED, Parnell S, Puterman A, Weinberg E. *Socioeconomic deprivation and asthma prevalence and severity in young adolescents.* *Eur Respir J* 2002; 19(5): 892-8.

Zar HJ, Ehrlich RI, Workman L, Weinberg EG. *The changing prevalence of asthma, allergic rhinitis and atopic eczema in African adolescents from 1995 to 2002.* *Pediatr Allergy Immunol* 2007; 18(7): 560-5.



See the South Africa National page for details of ISAAC in Cape Town

# The ISAAC Story

## Caracas Centre

<b>Phase Three</b>			
<b>Centre:</b>		Caracas, Venezuela ( Latin America )	
<b>Principal Investigator:</b>		Dr Oscar Aldrey	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2002 to January 2003
<b>Sampling Frame:</b>		Schools of South-West region of Caracas-Venezuela	

### Personnel

#### Dr Oscar Aldrey

Jefe del Instituto  
Instituto de Inmunología  
Avenida Roosevelt  
Ciudad Universitaria, Instituto de Inmunología  
Venezuela

#### Roles:

- National Coordinator for Venezuela
- Phase Three Principal Investigator for Caracas

## Cartagena Centre

<b>Phase One</b>			
<b>Centre:</b>		Cartagena, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Professor Luis García-Marcos	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 1993 to November 1993
<b>Sampling Frame:</b>			
<b>Phase Two</b>			
<b>Centre:</b>		Cartagena, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Professor Luis García-Marcos	
<b>Age Groups:</b>	10-11 years,	<b>Timeframe:</b>	March 2000 to March 2001.
<b>Sampling Frame:</b>		All schools in the Cartagena administrative district. Same study area as ISAAC Phase One.	
<b>Phase Three</b>			
<b>Centre:</b>		Cartagena, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Professor Luis García-Marcos	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	December 2001 to May 2002
<b>Sampling Frame:</b>		All schools in Cartagena city district area (Spain). Same sampling frame as for Phase One.	

### Personnel

#### Professor Luis García-Marcos

Respiratory Medicine and Allergy Units  
'Virgen de la Arrixaca'  
University Children's Hospital  
University of Murcia  
Pabellón Docente HUVA,  
Campus Ciencias de la Salud  
Spain



#### Roles:

- ISAAC Executive
- ISAAC Steering Committee
- National Coordinator for Spain
- Phase One Principal Investigator for Cartagena
- Phase Two Principal Investigator for Cartagena
- Phase Three Principal Investigator for Cartagena

Regional

National

Local

Caracas

Cartagena

# The ISAAC Story

## The ISAAC story in Cartagena (Spain)

Cartagena entered ISAAC as an individual centre and as the coordinator centre for Spain after some small local epidemiological studies which several young investigators carried out in the city in the late 80's. Those studies tried to establish the association between air pollution produced by several factories and respiratory diseases in children, especially asthma. This starting group of young researchers knew from a colleague from Barcelona about a new international survey on asthma in children that was being prepared. The group was specifically interested in the video-questionnaire. Very fortunately that colleague had a name and a mail address to ask for some information. A request letter was sent in February 1992 to Prof. Neil Pearce at the Wellington School of Medicine (New Zealand). Although the information took some time to arrive, as the study instruments were being developed, a letter from Wellington was received during the summer of 1992 in which Prof. Pearce advised to contact Prof. Weiland, at the University of Bochum (Germany), who was starting to coordinate five other centres in Europe (see attachment). After contacting Prof. Weiland the group joined the ISAAC study and started to organize the net in Spain.

The first task in Cartagena was to translate and back translate the original written questionnaire in English and to prepare the Spanish version of the video-questionnaire which arrived soon from Bochum after the first contact with Prof. Weiland in October 1992. Furthermore, a meeting in Madrid with researchers interested in the ISAAC study, previously contacted by phone from several parts of Spain, was organised. The meeting was held in Madrid in March 1993. Both Prof. Pearce (spending a sabbatical period at the University of Paris at that time) and Prof. Weiland attended, together with groups from Cartagena, Bilbao, Castellón, Pamplona, Valladolid, Barcelona and Huelva.

### Phase One.

This phase was carried out in Cartagena during autumn and winter 1993 and all schools within the city district were invited to participate: only one of them declined entering. The two age groups (6-7 and 13-14 years) were surveyed and participation rate was very high in the older group; however, it was not so high in the younger one but fortunately still enough to be included in the international analyses. As no funding for fieldworkers was possible at that time the research team, composed by Drs. García-Marcos, Dr. Guillén Pérez, Dr. Níguez Carbonell, Dr. Guillén Marco, Mrs. Martínez-Torres, Mrs. Gomez-Segado, Mrs Sánchez de Val. Mrs. Saura Robles and Mr. Amoraga Bernal, dedicated part of their own time to the survey and was very excited with the results: data on the epidemiology on asthma, rhinitis and eczema was available for the first time in the area after a never ending process of double entry of the data.

### Phase Two.

Cartagena was lucky to raise some funds from the Spanish Government in order to implement four centres of this Phase in Spain. However, that meant to be a central organizer for the four centres and to train fieldworkers not only locally but also for the rest of centres in the country. Phase Two was in itself a nightmare and was even worse because of the responsibilities of having additional centres to coordinate. The positive part was having funds enough for carrying out the project during 2000-2001. Also fortunate was the fact of having European funds for training and coordinating purposes at the University of Munster (Germany) and later at the University of Ulm (Germany). Prof. Garcia-Marcos attended to several of those training and coordination meetings during the late 90's an early 2000's and together with Mrs. Martínez Torres was responsible for performing the study in Cartagena for coordinating and training the other centres. The study was slow to perform as it included very extensive questionnaires and procedures, including prick test and blood extraction. Unfortunately, participation rate was slightly below 70% what meant some problems for prevalence publications; however more than 1500 children were surveyed and most of them had all modules completed. Cartagena did the test of bronchial hyperresponsiveness and the dust collection modules in a sub-sample of 100 healthy and 100 asthmatic children. The funniest part was sending the dust samples to the University of Utrecht in carbon dioxide snow inside a huge coffin-like polyurethane box which was given to us by a fish factory which used them to send frozen big tuna fishes to Japan!

### Phase Three.

After Phase One and Two, phase Three was an easy task. Again Cartagena performed their own survey, in the same area as in Phase One, and coordinated all Spanish centres. As some new funds arrived for the project, some fieldworkers were hired and the process was smooth and quick, mainly occupying the spring of 2000. A new system of questionnaire scanning was also implemented which made the process even easier, making possible for the principal investigator to concentrate in publishing the results of both Phases Two and Three. Almost the same schools as in Phase One were surveyed and again participation rate was very high among adolescents and not so good among school-children. Anyway, for the first time Cartagena had data on the change of prevalence of asthma and allergies. Good.

## Local Publications

The following publications used ISAAC data from Cartagena:

Arnedo-Pena A, García-Marcos L, Fernández-Espinar JF, Bercedo-Sanz A, Aguinaga-Ontoso I, González-Díaz C, Carvajal-Urueña I, Busquet-Monge R, Suárez-Varela MM, de Andoín NG, Batlles-Garrido J, Blanco-Quirós A, López-Silverrey Varela A, García-Hernández G  
*Sunny hours and variations in the prevalence of asthma in schoolchildren according to the International Study of Asthma and Allergies (ISAAC) Phase III in Spain* Int J Biometeorol 2011; 55(3): 423-434

Blanco-Quirós A, García-Marcos L, Garrote JA, et al.  
*Antibody levels to Bordetella pertussis in 10-yr-old children with atopy and atopic asthma.* *Pediatr Allergy Immunol* 2005; 16(8):637-640.

García-Marcos L, Ruiz TR, García-Hernández G, Morales Suárez-Varela MM, Valverde-Molina J, Sánchez-Solis M.  
*Asthma and rhinoconjunctivitis comorbidity: United airway disease or inherited target organs?* *Pediatr Allergy Immunol* 2010; 21 (1): e142-e148. E pub 7 Apr 2009.

Martin Fernández-Mayoralas D, Martin Caballero JM, García-Marcos AL.  
*Association between atopic dermatitis, allergic rhinitis and asthma in schoolchildren aged 13-14 years old.[article in spanish].* *An Pediatr (Barc )* 2004; 60(3):236-242.

Martin Fernández-Mayoralas D, Martin Caballero JM, García-Marcos AL.  
*Prevalence of atopic dermatitis in schoolchildren from Cartagena (Spain) and relationship with sex and pollution.[article in spanish].* *An Pediatr (Barc )* 2004; 60(6):555-560.

Morales Suárez-Varela MM, García-Marcos AL, González DC, et al.  
*Prevalence of atopic eczema and nutritional factors in 6-7 year old children.[article in spanish].* *Aten Primaria* 2007; 39(7):355-360.

Regional

National

Local

Cartagena

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from the Caruaru centre:

Franco JM, Gurgel R, Sole D, França VL, Brabin B and the Brazilian Isaac Group. *Socio-environmental conditions and geographical variability of asthma prevalence in Northeast Brazil*. *Allergol Immunopathol (Madr)*. 2009; 37(3):116-121

## Caruaru Centre

Phase Three			
<b>Centre:</b>		Caruaru, Brasil ( Latin America )	
<b>Principal Investigator:</b> Assistant Professor Almerinda Silva			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	September 2002 to December 2002
<b>Sampling Frame:</b>		13-14yr: All schools in Caruaru area (private and public schools).	

### Personnel

#### Assistant Professor Almerinda Silva

UFPE  
Rua Laurindo Coelho n 245 apt. 1202  
Casa Forte  
Recife - PE  
Brasil

#### Roles:

- Phase Three Principal Investigator for Caruaru

## Casablanca Centre

Phase One			
<b>Centre:</b>		Casablanca, Morocco ( Africa )	
<b>Principal Investigator:</b> Professor Zoubida Bouayad			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All public schools in the Casablanca area.	
Phase Three			
<b>Centre:</b>		Casablanca, Morocco ( Africa )	
<b>Principal Investigator:</b> Professor Zoubida Bouayad			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	October 2001.
<b>Sampling Frame:</b>		13-14yr: Some schools in Casablanca. The same sampling frame was used for both Phase One and Phase Three.	

### Personnel

#### Professor Zoubida Bouayad

Service des Maladies Respiratoires  
Hôpital 20 Août  
CHU Ibn Rochd  
Morocco

#### Roles:

- National Coordinator for Morocco
- Phase One Principal Investigator for Casablanca
- Phase Three Principal Investigator for Casablanca

## Castellón Centre

Phase One			
<b>Centre:</b>		Castellón, Spain ( Western Europe )	
<b>Principal Investigator:</b> Dr Alberto Arnedo-Pena			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 1994 to May 1994
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Castellón, Spain ( Western Europe )	
<b>Principal Investigator:</b> Dr Alberto Arnedo-Pena			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to June 2002
<b>Sampling Frame:</b>		All schools in Castellon and neighbouring municipalities, public and private schools. The same sampling frame was used for both Phase One and Phase Three.	

### Personnel

#### Dr Alberto Arnedo-Pena

Sección de Epidemiología  
Centro Salud Pública  
Avda. del Mar, 12  
Spain

#### Roles:

- Phase One Principal Investigator for Castellón
- Phase Three Principal Investigator for Castellón

Regional

National

Local

Caruaru  
Casablanca  
Castellón

# The ISAAC Story

Regional

National

Local

Central  
Santiago  
Chandigarh

## Central Santiago Centre

Phase One			
<b>Centre:</b>		Central Santiago, Chile ( Latin America )	
<b>Principal Investigator:</b> Dr Ignacio Sanchez			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	August 1995 to August 1995
<b>Sampling Frame:</b>			

### Personnel

#### Dr Ignacio Sanchez

Departamento de Pediatría  
Pontificia Universidad Católica de Chile  
Casilla 114-D  
Chile

#### Roles:

- Phase One Principal Investigator for Central Santiago

## Chandigarh Centre

Phase One			
<b>Centre:</b>		Chandigarh, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Professor Lata Kumar			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 1994 to May 1995
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Chandigarh, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Dr Meenu Singh			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	August 2001 to January 2002
<b>Sampling Frame:</b>		13-14yr: All schools in the Central area within the city limits of Chandigarh, the same sampling frame as Phase One.	

### Personnel

#### Professor Lata Kumar

Professor & Former Head  
Department of Pediatrics  
#1543, Sector 38-B  
India



#### Roles:

- Phase One Principal Investigator for Chandigarh

#### Dr Meenu Singh

Allergy and asthma Clinic  
Postgraduate Institute of  
Medical Education and  
Research  
Chandigarh  
India



#### Roles:

- Phase Three Principal Investigator for Chandigarh

## Chandigarh Centre

The Allergy and asthma Clinic was established in Postgraduate Institute of Medical Education and Research, Chandigarh by Dr Lata Kumar. The centre has offered treatment facilities for thousands of children with asthma and allergic disorders. Community based epidemiological investigations and several studies on clinical and experimental aspects have been carried out in this centre. More than 9000 children are registered in this centre. Currently Dr Meenu Singh is looking after this clinic providing specialized services. Several studies funded by national agencies including a birth cohort study are in progress.

### Impact

The ISAAC study has had a hypothesis generating impact on research in the Indian subcontinent. A task force to study the increasing prevalence of asthma in children was set up in India which also looked in to various protective influences responsible for lower prevalence of this disorder. Active research into environmental factors including aero allergens and food allergens is carried out.

# The ISAAC Story

## Chantaburi Centre

Phase Three			
<b>Centre:</b>		Chantaburi, Thailand ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Thanong Prasarnphanich	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	June 2001 to December 2001
<b>Sampling Frame:</b>		All schools in Amphur Muang Chantaburi area.	

### Personnel

#### Dr Thanong Prasarnphanich

Pediatrician  
Prapokklao Hospital  
Leabnern Road, Tambon Wat Mai  
Amphur Maung  
Thailand

#### Roles:

- Phase Three Principal Investigator for Chantaburi

## Chapel Hill Centre

Phase Three			
<b>Centre:</b>		Chapel Hill, USA ( North America )	
<b>Principal Investigator:</b>		Dr Karin Yeatts	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	November 1999 to June 2000
<b>Sampling Frame:</b>		13-14yr: All public middle schools in the state of North Carolina.	

### Personnel

#### Dr Stan Music

North Carolina Department of Health and Human Services  
Chapel Hill, North Carolina  
Usa

#### Roles:

- Phase Three collaborator for Chapel Hill

#### Mr Vic Rhodes

Department of Epidemiology  
Chapel Hill, North Carolina  
Usa

#### Roles:

- Phase Three collaborator for Chapel Hill

#### Dr Carl Shy

University of North Carolina at Chapel Hill  
Chapel Hill, North Carolina  
Usa

#### Roles:

- Phase Three collaborator for Chapel Hill

#### Dr Karin Yeatts

Research Assistant Professor  
Department of Epidemiology,  
Gillings School of Global  
Public Health  
University of North Carolina at  
Chapel Hill  
Chapel Hill, North Carolina  
Usa



#### Roles:

- Phase Three Principal Investigator for Chapel Hill

## ISAAC Phase III in the US

I started working with the ISAAC survey for my doctoral research in 1994. Dr. Carl Shy, former Chair of the Department of Epidemiology at the University of North Carolina at Chapel Hill had recently obtained funding to implement the survey in approximately twelve Charlotte-Mecklenburg middle schools. Once that research was complete, Dr. Shy and I began collaborating with Dr. Stan Music at the North Carolina Department of Health and Human Services (NC DHHS) (the state health department.) State interest grew in our pilot data. We also collected data on asthma-related "health consequences" and health care utilization. Subsequently, we were funded by NC DHHS to conduct asthma surveillance across the state of North Carolina in all public middle schools (approximately 192,000 students) in 1999-2000. North Carolina had approximately 7 million people at the time. We used the basic ISAAC questions with additional questions as our survey instrument. We had 499 schools participated and we obtained good quality data from approximately 125,000 students. To thank the schools for participating, we created individual "asthma reports" for each of the participating 499 schools. In these reports, we included the local asthma and wheezing prevalence, the average surrounding county prevalence, and the state asthma prevalence as well as the health consequences (such as school absences due to asthma.) These reports were used by local community's members, school administrations, and the state health department for both planning and public education on the health consequences of childhood asthma.

Regional

National

Local

**Chantaburi**  
**Chapel Hill**

# The ISAAC Story

Regional

National

Local

Chiang Mai

Chiangrai

## Chiang Mai Centre

<b>Phase One</b>			
<b>Centre:</b>		Chiang Mai, Thailand ( Asia-Pacific )	
<b>Principal Investigator:</b> Associate Professor Muthita Trakultivakorn			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: September 1995 to November 1995 6-7yr: August 1995 to November 1995
<b>Sampling Frame:</b>		13-14yr: One third of the schools in Muang (Central) District and one school in San Kam Paeng District. 6-7yr: One fourth of the schools in Muang (Central) District, two schools in Mae Rim District and one school in San Kam Paeng District.	
<b>Phase Three</b>			
<b>Centre:</b>		Chiang Mai, Thailand ( Asia-Pacific )	
<b>Principal Investigator:</b> Associate Professor Muthita Trakultivakorn			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2001 to November 2001
<b>Sampling Frame:</b>		13-14yr: One third of the schools in Muang (Central District) and one school in San Kam Paeng District. (The same schools as in ISAAC Phase One with one additional new school which was the same school as one primary school both in Phase One and Phase Three.) 6-7yr: One third of all primary schools in Muang District, two schools in Mae Rim District and one school in San Kam Paeng District.	

## Personnel

### Associate Professor Muthita Trakultivakorn

Department of Pediatrics  
Faculty of Medicine  
Chiang Mai University  
Thailand

#### Roles:

- Phase One Principal Investigator for Chiang Mai
- Phase Three Principal Investigator for Chiang Mai

## Chiangrai Centre

<b>Phase Three</b>			
<b>Centre:</b>		Chiangrai, Thailand ( Asia-Pacific )	
<b>Principal Investigator:</b> Dr Rawee Nettagul			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 1995 to December 1995
<b>Sampling Frame:</b>		Schools in main district of Chiang Rai Province only	

## Personnel

### Dr Rawee Nettagul

230/7 Thanalai Road  
Muang  
Thailand

#### Roles:

- Phase Three Principal Investigator for Chiangrai

## Chiang Rai Center, Thailand

One of the most common problems in daily pediatric practice is respiratory symptoms. A lot of them may have an underlying allergy. A long time ago, we knew nothing about asthma and allergy prevalence in Chiang Rai.

Chiang Rai is located in northern Thailand which is next to Myanmar. The population in this province is 1,000,000 approximately. The climate in this area varies a lot each day. Many people say we have three seasons in one day (Summer, Rainy and Winter) so a large amount of children suffered respiratory symptoms all year round.

The role of ISAAC coordinator was the first step for me to do further study in this interesting field. I thank Professor Dr Pakit Vichyanond who let me be a part of this work.

## Local Publications

The following publications used ISAAC data from the Chiang Mai centre:

Trakultivakorn M. *Prevalence of asthma, rhinitis, and eczema in Northern Thai children from Chiang Mai (International Study of Asthma and Allergies in Childhood, ISAAC).* Asian Pac J Allergy Immunol 1999; 17(4): 243-8.

# The ISAAC Story

## Chicago (3) Centre

Phase One	
<b>Centre:</b>	Chicago (3), USA ( North America )
<b>Principal Investigator:</b>	Professor Victoria Persky
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	The one high school in East Moline, Illinois and all 7th and 8th grade classes in East Moline.

### Personnel

#### Professor Victoria Persky

Division of Epidemiology and Biostatistics  
University of Illinois at Chicago School of  
Public Health  
Room 878a, 1603 Taylor St  
Usa

#### Roles:

- Phase One Principal Investigator for Chicago (3)

#### Ms Julie A Slezak

Division of Epidemiology-Biostatistics  
School of Public Health  
The University of Illinois at Chicago  
2121 West Taylor Street  
Usa

#### Roles:

- Phase One collaborator for Chicago (3)

## Chicago (4) Centre

Phase One	
<b>Centre:</b>	Chicago (4), USA ( North America )
<b>Principal Investigator:</b>	Professor Victoria Persky
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	All metropolitan Chicago city public and Catholic grade schools.

### Personnel

#### Professor Victoria Persky

Division of Epidemiology and Biostatistics  
University of Illinois at Chicago School of  
Public Health  
Room 878a, 1603 Taylor St  
Usa

#### Roles:

- Phase One Principal Investigator for Chicago (4)

#### Ms Julie A Slezak

Division of Epidemiology-Biostatistics  
School of Public Health  
The University of Illinois at Chicago  
2121 West Taylor Street  
Usa

#### Roles:

- Phase One collaborator for Chicago (4)

## Chiloe Centre

Phase Three	
<b>Centre:</b>	Chiloe, Chile ( Latin America )
<b>Principal Investigator:</b>	Dra Amanda Contreras
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	August 2002 to November 2002
<b>Sampling Frame:</b>	13-14yr: All urban schools in the island.

### Personnel

#### Dra Amanda Contreras

Head of Paediatrics Service, Hospital de Castro  
National Health System, Ministry of Health  
Serrano 459  
Castro  
Chile

#### Roles:

- Phase Three Principal Investigator for Chiloe

Regional

National

Local

Chicago (3)

Chicago (4)



# The ISAAC Story



Regional

National

Local

**Chongqing**  
**Christchurch**  
**Ciudad de México (1)**

## Chongqing Centre

<b>Phase One</b>			
<b>Centre:</b>		Chongqing, China ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Kun-Hua Chen	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All school in the Chongqing Downtown - seventeen schools.	

### Personnel

#### Professor Kun-Hua Chen

Children's Hospital  
136 Zhongshan Road  
Chongqing  
China

#### Roles:

- Phase One Principal Investigator for Chongqing

## Christchurch Centre

<b>Phase One</b>			
<b>Centre:</b>		Christchurch, New Zealand ( Oceania )	
<b>Principal Investigator:</b>		Associate Professor Philip Pattemore	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:November 1992 to August 1993 6-7yr:October 1992 to August 1993
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Christchurch, New Zealand ( Oceania )	
<b>Principal Investigator:</b>		Associate Professor Philip Pattemore	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2002 to August 2003
<b>Sampling Frame:</b>		All schools in the Christchurch City. The same sampling frame as Phase One.	

### Personnel

#### Dr Rodney Ford

Community Paediatrician  
Community Paediatric Unit  
Hagley Hostel  
Private Bag 4710  
New Zealand

#### Roles:

- Phase One collaborator for Christchurch

#### Associate Professor Philip Pattemore

Department of Paediatrics  
Christchurch School of  
Medicine  
P O Box 4345  
New Zealand



#### Roles:

- Phase One Principal Investigator for Christchurch
- Phase Three Principal Investigator for Christchurch

## Ciudad de México (1) Centre

<b>Phase Three</b>			
<b>Centre:</b>		Ciudad de México (1), Mexico ( Latin America )	
<b>Principal Investigator:</b>		Dra Blanca E Del-Río-Navarro	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2002 to December 2002
<b>Sampling Frame:</b>		All public schools from the north area of Mexico City (D.F.)	

### Personnel

#### Dra Blanca E Del-Río-Navarro

Hospital Infantil de México  
Federico Gómez  
Dr. Marquez #162. Col.  
Doctores, Del. Cuauhtemoc  
Mexico City,  
Mexico



#### Roles:

- Phase Three Principal Investigator for Ciudad de México (1)

## Local Publications

The following publications used ISAAC data from the Christchurch centre:

Wilkie AT, Ford RP, Pattemore P, Schluter PJ, Town I, Graham P. *Prevalence of childhood asthma symptoms in an industrial suburb of Christchurch.* NZ Med J 1995; 108(1000): 188-90.



Ciudad de Mexico (1)

# The ISAAC Story

## Mexico City - North Zone Centre -

We started our participation with ISAAC in October 2002 during Phase III-b. Together with local authorities (Secretaría de Educación Pública and Gobierno del Distrito Federal) we applied the ISAAC questionnaire to local public and private schools, obtaining a total of 3243 children (6-7 years old group) and 3333 adolescents (13-14 years old group).

With such information we have cooperated to the better understanding of the prevalence and biological, and environmental factors of this complex multifactorial inflammatory airway disease.

We have been working with the collected data, and up to date we had published 7 original articles in different indexed journals. At the moment, we are working in the identification of potential risk factors associated to the presence of atopic symptoms, and we expect to publish such information in the next few months.

We are convinced of the relevance of knowledge generation within the field of asthma and allergies, as well as its opportune diffusion in order to improve prevention, recognition and management of such disorders.

### Published articles:

“Asthma prevalence in children living in north Mexico City and a comparison with other Latin American cities and world regions” Del-Río-Navarro B, MD., Del Río-Chivardi JM, MD., Berber A, MD., Ph.D., Sienra-Monge JLL, MD., Rosas-Vargas MA, M.D. and Baeza-Bacab M, MD. (Mexico) *Allergy Asthma Proc* 2006; 27:334-340

“Identification of asthma risk factors in Mexico City in an International Study of Asthma and Allergy in Childhood survey” Del-Río-Navarro B, MD., Berber A, MD., Ph.D., Blandón-Vijil V, MD., Ramírez-Aguilar M, MD., Ph.D., Romieu I, M.D., Ph.D., Ramírez-Chanona N, MD., Heras-Acevedo S, MD., Serrano Sierra A, MD., Barraza-Villareal A, MD., Baeza-Bacab M, MD., Sienra-Monge JLL, MD. (México) *Allergy Asthma Proc* 2006; 27:325-333

“Factors Associated With Allergic Rhinitis in Children From Northern Mexico City” Del-Río-Navarro BE, Luna-Pech JA., Berber A, Zepeda-Ortega B, Avila-Castañón L, Del-Río-Chivardi JM, Baeza-Bacab M, Sienra-Monge JLL. (México) *J Investig Allergol Clin Immunol* 2007; 17(2):77-84

“Factors associated with allergic rhinitis in children and adolescents from northern Mexico: International Study of Asthma and Allergies in Childhood Phase IIIB” González-Díaz SN, Ph.D., Del Río-Navarro BE, M.D., Pietropaolo-Cienfuegos DR, M.D., Escalante-Domínguez AJ, M.D., García-Almaráz RG, M.D., Mérida-Palacio V, M.D., and Berber A, M.D., Ph.D. *Allergy Asthma Proc* 2010; 31:e53-e62

“A comparative study of bronchodilator reversibility with albuterol, between asthma symptomatic and asymptomatic children according to ISAAC Questionnaire in Mexico City” Del Río-Navarro B.E., M.P. Hernández Román MP, Espinola Reyna G., Berber A, Escalante-Domínguez A.J., Gonzalez-Reyes M., Rosas-Vargas M.A., Pérez-López J., Baeza-Bacab M. and Sienra-Monge J.J.L.. *Allergol et Immunopathol* 2004; 32(6):334-9

“Study of the Relationship Between Acetaminophen and Asthma in Mexican Children Aged 6 to 7 years in 3 Mexican Cities Using ISAAC Methodology” Del-Río-Navarro BE, Ito-Tsuchiya FM, Berber A., Zepeda-Ortega B., Sienra-Monge JLL, García-Almaráz R., Baeza-Bacab M. *J Investig Allergol Clin Immunol* 2008; 18(3):194-201

“Obesity risk factors in the ISAAC (International Study of Asthma and Allergies in Childhood) in Mexico City” Violante R. del Río Navarro BE., Berber A., Ramirez Chanona N., Baeza Bacab M., Sienra Monge JJ. *Rev Alerg Mex* 2005; 52(4):141-5

## Ciudad de México (3) Centre

<b>Phase Three</b>			
<b>Centre:</b>		Ciudad de México (3), Mexico ( Latin America )	
<b>Principal Investigator:</b>		Dra Mercedes Barragán-Meijueiro	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2002 to November 2002
<b>Sampling Frame:</b>		Public schools in the southeast area of Mexico City.	

### Personnel

#### Dra Mercedes Barragán-Meijueiro

Pediatric Allergist  
CoMAAIPE  
París 227  
Colonia del Carmen  
Mexico

#### Roles:

- Phase Three Principal Investigator for Ciudad de México (3)

Regional

National

Local

Ciudad de  
México (1)  
Ciudad de  
México (3)

# The ISAAC Story

Regional

National

Local

Ciudad de  
México (4)  
Ciudad  
Victoria  
Cluj

## Ciudad de México (4) Centre

Phase Three			
<b>Centre:</b>		Ciudad de México (4), Mexico ( Latin America )	
<b>Principal Investigator:</b> Dra Nelly Ramírez-Chanona			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2002 to November 2002
<b>Sampling Frame:</b>		All public schools from the north area of Mexico City (D.F).	

### Personnel

#### Dra Nelly Ramírez-Chanona

Pediatric Allergist  
CoMAIPE  
Mérida No. 170 Planta baja  
Mexico

#### Roles:

- Phase Three Principal Investigator for Ciudad de México (4)

## Ciudad Victoria Centre

Phase Three			
<b>Centre:</b>		Ciudad Victoria, Mexico ( Latin America )	
<b>Principal Investigator:</b> Dr Roberto García-Almaráz			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 2003 to April 2003
<b>Sampling Frame:</b>		Some schools in Ciudad Victoria City, located in Tamaoulipas state, in Mexico	

### Personnel

#### Dr Roberto García-Almaráz

Hospital Infantil de Tamaulipas  
15 Abasolo No. 277  
Ciudad Victoria  
Mexico

#### Roles:

- Phase Three Principal Investigator for Ciudad Victoria

## Cluj Centre

Phase One			
<b>Centre:</b>		Cluj, Romania ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Professor Diana Deleanu			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		Randomized schools in town Cluj (all schools enrolled)	
Phase Three			
<b>Centre:</b>		Cluj, Romania ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Professor Diana Deleanu			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	February 2001 to December 2001
<b>Sampling Frame:</b>		13-14yr: All schools in Cluj-Napoca area for the aged group of 13-14 years old children, the same sampling frame as in Phase One.	

### Personnel

#### Dr Paraschiva Chereches Panta

University of Medicine & Pharmacy IULIU HATIEGANU  
3rd Medical Clinic, Allergy – Immunology Dept.  
Romania



#### Roles:

- Phase One collaborator for Cluj
- Phase Three collaborator for Cluj

#### Diana Church

University of Medicine & Pharmacy IULIU HATIEGANU  
3rd Medical Clinic, Allergy – Immunology Dept.  
Romania

#### Roles:

- Phase Three collaborator for Cluj

#### Professor Diana Deleanu

President of Romanian Society of Allergy and Clinical Immunology (SRAIC)  
University of Medicine & Pharmacy IULIU HATIEGANU  
3rd Medical Clinic, Allergy – Immunology Dept.  
Croitorilor 19-23;  
Romania



#### Roles:

- National Coordinator for Romania
- Phase One Principal Investigator for Cluj
- Phase Three Principal Investigator for Cluj

## Local Publications

The following publications used ISAAC data from the Ciudad Victoria centre:

González-Díaz SN, Del Río-Navarro BE, Pietropaolo-Cienfuegos DR, Escalante-Domínguez AJ, García-Almaraz RG, Mérida-Palacio V, Berber A *Factors associated with allergic rhinitis in children and adolescents from northern Mexico International Study of Asthma and Allergies in Childhood Phase IIIB Allergy Asthma Proc* 2010; 31(4): 53-62

# The ISAAC Story



## Local Publications

The following publications used ISAAC data from Cluj:

Chereches-Panta P, Man SC, Dumitrascu D, Mirestean I, Iacob D, Ichim GE, Nanulescu MV. *Epidemiological Survey 6 Years Apart Increased Prevalence of Asthma and Other Allergic Diseases in Schoolchildren Aged 13-14 Years in Cluj-Napoca, Romania (Based on Isaac Questionnaire)* Maedica 2011; 6(1): 10-16

Chereches-Panta P, Popa MD, Iacob D, Muresan M, Man SC, Farcau M, Indolean C, Ichim GE, Mirestean I, David L, Nanulescu MV. *[Increase of the prevalence of bronchial asthma and related symptoms in students in Cluj-Napoca. Epidemiologic study with a five-years interval]*. Pneumologia.2004 Jan-Mar;53(1):47-52.

Nanulescu MV, Chereches-Panta P *Tendinta prevalentei astmului bronic la s colarul de varsta 13-14 ani in municipiul Cluj-Napoca, in perioada 1994/1995-2000/2001. [Asthma prevalence trend in the school age 13-14 years in Cluj-Napoca, during 1994/1995 - 2000/2001]* J Rom Soc Allergol Clin Immunol 2005; 2(3): 26-31. (CNCSIS B+)

## Professor Mircea Nanulescu

Chief of Pediatrics  
Director of 3rd Pediatric Clinic  
University of Medicine & Pharmacy IULIU HATIEGANU  
Romania



### Roles:

- Phase One collaborator for Cluj
- Phase Three collaborator for Cluj

## The story of ISAAC in Cluj

In a hot summer day in Transylvania, an ordinary mail send to Professor Bengt Björkstén was the certificate of birth for ISAAC Cluj centre.

I was a young researcher in the field of medicine with a dream for allergy diseases. So I was looking for foreign collaboration (after many years of “iron curtain”). Professor Bengt Björkstén was very pleased with my “desire” for an epidemiological study in the field of allergic diseases (Romania was a white spot on Europe for allergy) – I was a resident in the allergy specialty at that time.

We did our collaboration during those years (beginning of 90’s) by mail and after that on e-mail (which helped us a lot!).

It was difficult at the beginning but working on the project, things were moving one with a lot of enthusiasm. I was contacted by Professor Mircea Nanulescu, the chief of Pediatrics in our University, the director of 3rd Pediatric Clinic with a department for asthma, so we started an almost 20 years of collaboration. He also arranged for one of his youngest, optimistic collaborators – Paraschiva Chereches Panta (Pusa for friends) – to work at the study.

One year later I had the opportunity to met professor Bengt Björkstén, one of the most remarkable people I have known during these years. Working with the questionnaires we could see the good changes that were happening in our country: in schools, in hospitals. Pusa and I reached the title of specialty in allergy, and pediatrics respectively.

We organized a summer school in Cluj with EAACI and Ga2len and Tadd Clayton was one of our guests - speakers. He presented the phase three results from ISAAC.

Unhappily, it was difficult for us to organize the study for 6 years old children and video questionnaires. Also the phase two study was performed in only some of our responders.

But with new help we did the ISAAC phase three study: Diana Church joined us. We the ISAAC team “grew” with the study: I organized the study of allergy in our University, and became president of our Allergy Society, Pusa is one of the most famous doctors for asthmatic children, Diana Church is working in Southampton and Berlin in the field of allergy, Professor Mircea Nanulescu organized the Romanian Pediatric Society for Respiratory Diseases.

We are pleased that our work, the only one in our country is recognized by our colleagues as a priority in epidemiology of asthma and allergic diseases in Romania.

## Coimbra Centre

Phase Three			
<b>Centre:</b>		Coimbra, Portugal ( Western Europe )	
<b>Principal Investigator:</b> Dr M Lourdes Chiera			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	December 2001 to May 2002
<b>Sampling Frame:</b>		13-14yr: All schools in Coimbra area and two in F.Foz area, but in the same district.	

### Personnel

#### Dr M Lourdes Chiera

Chief of Service  
Hosp. Ped. Coimbra  
AV. Bissaya Barreto  
3041-853  
Portugal

### Roles:

- Phase Three Principal Investigator for Coimbra

#### Dr Emilia Faria

Serviço de Imunoalergologia  
Hospitais da Universidade de Coimbra  
Portugal

### Roles:

- Phase Three collaborator for Coimbra

Regional

National

Local

Cluj

Coimbra

# The ISAAC Story

Regional

National

Local

**Colleferro-  
Tivoli**  
Conakry  
Córdoba

## Colleferro-Tivoli Centre

Phase Three			
<b>Centre:</b>		Colleferro-Tivoli, Italy ( Western Europe )	
<b>Principal Investigator:</b> Dr Valerio Dell'Orco			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 2002 to March 2002
<b>Sampling Frame:</b>		All schools in the area of the Local Health Unit rm28 and rm 30	

### Personnel

#### Dr Valerio Dell'Orco

Local Health Unit  
ASL Rm/G  
Corso Garibaldi 7  
00034 Colleferro  
Italy

#### Roles:

- Phase Three Principal Investigator for Colleferro-Tivoli

## Conakry Centre

Phase Three			
<b>Centre:</b>		Conakry, République de Guinée ( Africa )	
<b>Principal Investigator:</b> Professeur Oumou Younoussa Sow			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	September 1996 to December 1997
<b>Sampling Frame:</b>		13-14yr: Public and Private schools in Conakry	

### Personnel

#### Dr Camara Lansana Mady

Service de Pneumo-Phtisiologie  
Centre Hospitalier Universitaire  
B.P: 634  
République De Guinée

#### Roles:

- Phase Three collaborator for Conakry

#### Professeur Oumou Younoussa Sow

Service de Pneumo-Phtisiologie  
Centre Hospitalier Universitaire Ignace Deen  
B.P: 634  
République De Guinée

#### Roles:

- Phase Three Principal Investigator for Conakry

## Córdoba Centre

Phase One			
<b>Centre:</b>		Córdoba, Argentina ( Latin America )	
<b>Principal Investigator:</b> Dr Carlos E Baena-Cagnani			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		Municipality of Cordoba city area.	
Phase Three			
<b>Centre:</b>		Córdoba, Argentina ( Latin America )	
<b>Principal Investigator:</b> Dr Carlos E Baena-Cagnani			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2002 to April 2003
<b>Sampling Frame:</b>		Private and Public schools from Córdoba city. The same sampling frame as Phase One.	

### Personnel

#### Dr Carlos E Baena-Cagnani

Faculty of Medicine  
Catholic University of Córdoba  
Santa Rosa 381  
Argentina

#### Roles:

- National Coordinator for Argentina
- Phase One Principal Investigator for Córdoba
- Phase Three Principal Investigator for Córdoba

# The ISAAC Story

## Cosenza Centre

Phase One			
<b>Centre:</b>		Cosenza, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Dr Enea Bonci	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		Local Health Authority	
Phase Three			
<b>Centre:</b>		Cosenza, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Dr Enea Bonci	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	May 2002 to June 2002
<b>Sampling Frame:</b>		13-14yr: Local Health Authority (municipalities of Cosenza and Rende - the same of Phase One)	

### Personnel

#### Dr Enea Bonci

Università degli Studi di Roma "La Sapienza"  
Istituto di Clinica Pediatrica  
Viale Regina Elena, 324  
Italy

#### Roles:

- Phase One Principal Investigator for Cosenza
- Phase Three Principal Investigator for Cosenza

## Costa Rica Centre

Phase One			
<b>Centre:</b>		Costa Rica, Costa Rica ( Latin America )	
<b>Principal Investigator:</b>		Dr Manuel E Soto-Quirós	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 1994 to September 1995
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Costa Rica, Costa Rica ( Latin America )	
<b>Principal Investigator:</b>		Dr Manuel E Soto-Quirós	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2001 to March 2002
<b>Sampling Frame:</b>		Schools from central valley and North. The sampling frame is the same as the sampling frame for Phase One.	

### Personnel

#### Dr Manuel E Soto-Quirós

Unidad de Enseñanza  
Hospital Nacional de Niños  
PO Box 1654-1000  
Costa Rica



#### Roles:

- National Coordinator for Costa Rica
- Phase One Principal Investigator for Costa Rica
- Phase Three Principal Investigator for Costa Rica

## Cremona Centre

Phase One			
<b>Centre:</b>		Cremona, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Mr Franca Rusconi	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: November 1994 to November 1994 6-7yr: October 1994 to November 1994
<b>Sampling Frame:</b>			

### Personnel

#### Mr Franca Rusconi

Istituto di Clinica di Perfezionamento  
Azienda Ospedaliera, Clinica Pediatrica "G. e D.  
De Marchi"  
dell'Università di Milano, Seconda Clinica  
Via Commenda, 9  
Italy

#### Roles:

- Phase One Principal Investigator for Cremona

Regional

National

Local

Cosenza  
Costa Rica  
Cremona

# The ISAAC Story

Regional

National

Local

Crétail

Cuernavaca

Curitiba

## Crétail Centre

Phase Two			
<b>Centre:</b>		Crétail, France ( Western Europe )	
<b>Principal Investigator:</b> Dr Isabella Annesi-Maesano			
<b>Age Groups:</b>	10-11 yrs.,	<b>Timeframe:</b>	June 1996 to December 1996.
<b>Sampling Frame:</b>		All public elementary schools in the city of Crétail.	

### Personnel

#### Dr Isabella Annesi-Maesano

EPAR Dept, INSERM, UMR- S 707  
Faculté de Médecine Pierre et Marie Curie  
Site Saint-Antoine  
27 rue Chaligny 75571  
France

#### Roles:

- National Coordinator for France
- Phase Two Principal Investigator for Crétail

## Cuernavaca Centre

Phase One			
<b>Centre:</b>		Cuernavaca, Mexico ( Latin America )	
<b>Principal Investigator:</b> Professor Isabelle Romieu			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 1994 to July 1995
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Cuernavaca, Mexico ( Latin America )	
<b>Principal Investigator:</b> Professor Isabelle Romieu			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	June 2002 to June 2002
<b>Sampling Frame:</b>		All schools in Cuernavaca, Mexico. Same sampling frame as Phase One.	

### Personnel

#### Dr Albino Barraza

Instituto Nacional de Salud Pública de México  
Avenida Universidad 655  
Colonia Santa Maria Ahuacatlán, C.P. 62,508  
Mexico

#### Roles:

- Phase Three collaborator for Cuernavaca

#### Professor Isabelle Romieu

Head, Nutrition and Metabolism section  
International Agency for Research on Cancer  
150, cours Albert thomas,  
69372 Lyon Cedex 08,  
France

#### Roles:

- Phase One Principal Investigator for Cuernavaca
- Phase Three Principal Investigator for Cuernavaca

## Curitiba Centre

Phase One			
<b>Centre:</b>		Curitiba, Brasil ( Latin America )	
<b>Principal Investigator:</b> Professor Nelson Rosário			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in Curitiba district.	
Phase Three			
<b>Centre:</b>		Curitiba, Brasil ( Latin America )	
<b>Principal Investigator:</b> Professor Nelson Rosário			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	May 2001 to June 2001
<b>Sampling Frame:</b>		13-14yr: Some private and public schools in Curitiba District. The same sampling frame was used for both Phase One and Phase Three.	

### Personnel

#### Professor Nelson Rosário

Rua General Carneiro 181 14 andar  
Parigot de Souza, 1861  
Brasil

#### Roles:

- Phase One Principal Investigator for Curitiba
- Phase Three Principal Investigator for Curitiba



## Local Publications

The following publications used ISAAC data from the Cuernavaca centre:

Tatto-Cano MI, Sanin-Aguirre LH, González V, Ruiz-Velasco S, Romieu I. *Prevalence of asthma, rhinitis and eczema in school children in the city of Cuernavaca, Mexico.* [in Spanish]. *Salud Publica Mex* 1997; 39(6): 497-506.

Gutiérrez-Delgado RI, Barraza-Villarreal A, Escamilla-Núñez MC, Solano-González M, Moreno-Macías H, Romieu I. *Food consumption and asthma in school children in Cuernavaca, Morelos, Mexico.* [Consumo de alimentos y asma en niños escolares de Cuernavaca]. *Salud Publica Mex* 2009; 51(3): 202-211.



Curitiba Group 2009

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from Curitiba:

Ferrari FP, Rosário Filho NA, Ribas LF, Calfe LG. *Prevalence of asthma in schoolchildren in Curitiba - ISAAC*. J Pediatr (Rio J). 1998 Jul-Aug;74(4):299-305. Portuguese.

Riedi CA, Rosario NA. *Prevalence of allergic conjunctivitis a missed opportunity?* Allergy 2010; 65(1):131-132

Riedi CA, Rosário NA, Ribas LF, Backes AS, Kleiniibing GF, Popija M, Reisdorfer S. *Increase in prevalence of rhinoconjunctivitis but not asthma and atopic eczema in teenagers.* J Investig Allergol Clin Immunol.2005;15(3):183-8.

Solé D, Melo KC, Camelo-Nunes IC, Freitas LS, Britto M, Rosário NA, Jones M, Fischer GB, Naspitz CK. *Changes in the prevalence of asthma and allergic diseases among Brazilian schoolchildren (13-14 years old) comparison between ISAAC Phases One and Three.* J Trop Pediatr.2007 Feb;53(1):13-21.Epub Sep 2006.

## Why was Curitiba selected for ISAAC

This is a well known University Center with teaching and research tradition, and previous involvement in national multicenter studies. ISAAC was the great opportunity for an ambitious multinational project. Curitiba is a prosperous metropolitan city with close to 2 million inhabitants, 4 medical schools and good public health care system.

## Our experience of ISAAC

We participated in phases 1 and 3 with questionnaires only. The involvement of enthusiastic medical students (field workers), committed physicians and post-graduate students made the project well accepted by researchers, school personnel and children. Following the protocol was like playing music by partitur.

I have to mention as Professor of Pediatrics that co-authoring several ISAAC papers contributed to my CV and to the rank of our Institution among other medical schools in Brazil.

## Davangere Centre

<b>Phase Three</b>			
<b>Centre:</b>		Davangere, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr P S Suresh Babu	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2001 to August 2002
<b>Sampling Frame:</b>		All schools in Davangere City	

### Personnel

#### Dr P S Suresh Babu

Bapuji Child Health Institute and Research Centre  
J.J.M. Medical College  
761, Chaitanya  
P.J. Extension, 4th Main Road  
India

#### Roles:

- Phase Three Principal Investigator for Davangere

## David-Panamá Centre

<b>Phase One</b>			
<b>Centre:</b>		David-Panamá, Panamá ( Latin America )	
<b>Principal Investigator:</b>		Dr Gherson Cukier	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:April 1995 to January 1996 6-7yr:June 1995 to February 1996
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		David-Panamá, Panamá ( Latin America )	
<b>Principal Investigator:</b>		Dr Gherson Cukier	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	July 2001 to August 2002
<b>Sampling Frame:</b>		Some Private and Public schools in the Provinces of: Panama city, Chiriqui-David, Veraguas and Herrera. The same sampling frame was used for both Phase One and Phase Three.	

### Personnel

#### Dr Gherson Cukier

Pulmonary and Bronchoscopy Pediatrics Section  
Hospital Materno Infantil Jose Domingo de Obaldia  
PO Box 662  
Panamá

#### Roles:

- National Coordinator for Panamá
- Phase One Principal Investigator for David-Panamá
- Phase Three Principal Investigator for David-Panamá

Regional

National

Local

Curitiba

Davangere

David-

Panamá



# The ISAAC Story

Regional

National

Local

Dresden

## Dresden Centre

<b>Phase Two</b>			
<b>Centre:</b>		Dresden, Germany ( Western Europe )	
<b>Principal Investigator:</b>		Professor W Leopold	
<b>Age Groups:</b>	9-11,	<b>Timeframe:</b>	September 1995 to June 1996.
<b>Sampling Frame:</b>		A random sample of school classes in the 9-11-year age-group across Dresden.	

## Personnel

### Prof Dr Ulrich Keil

Institut für Epidemiologie und  
Sozialmedizin  
Westfälische  
Universität  
Domagkstrasse 3  
Germany



#### Roles:

- Chairperson of the ISAAC Steering Committee
- ISAAC Steering Committee
- Director, ISAAC International Data Centre
- Regional Coordinator for Western Europe
- National Coordinator for Germany
- Phase Two collaborator for Dresden

### Professor W Leopold

Universitätsklinikum Carl Gustav Carus  
Klinik und Poliklinik für Kinder- und  
Jugendmedizin  
Fetscherstr. 74,  
Germany

#### Roles:

- Phase Two Principal Investigator for Dresden

### Dr Christian Vogelberg MD

University of Dresden  
Pediatric Department  
Fetscherstr. 74  
Germany

#### Roles:

- Phase Two collaborator for Dresden

### Professor Erika von Mutius

Dr. von Haunersches University  
Children's Hospital  
Ludwig-Maximilians University  
Lindwurmstrasse 4  
Germany



#### Roles:

- ISAAC Steering Committee
- Phase Two collaborator for Dresden

## Local Publications

The following publications used ISAAC data from Dresden:

von Mutius E, Illi S, Hirsch T, Leupold W, Keil U, Weiland SK. *Frequency of infections and risk of asthma, atopy and airway hyperresponsiveness in children.* Eur Respir J.1999 Jul;14(1):4-11.

Hirsch T, Weiland SK, von Mutius E, Safeca AF, Grafe H, Csaplovics E, Duhme H, Keil U, Leupold W. *Inner city air pollution and respiratory health and atopy in children.* Eur Respir J.1999 Sep;14(3):669-77.

Beimfohr C, Maziak W, von Mutius E, Hense HW, Leupold W, Hirsch T, Keil U, Weiland SK. *The use of anti-asthmatic drugs in children: results of a community-based survey in Germany.* Pharmacoepidemiol Drug Saf.2001 Jun-Jul;10(4):315-21.

Kuhlisch W, Hirsch T, Olunczek U, Vollheim B, Gross B, Düring I, Weiland SK, Leupold W. *Validation and subjective reports of exposure to traffic by traffic count, NO2 dispersion modeling and measuring NO2 emissions.[article in german].* Soz Praventivmed.2002; 47(2): 116-23.

von Ehrenstein OS, Maier EM, Weiland SK, Carr D, Hirsch T, Nicolai T, Roscher AA, von Mutius E. *Alpha1 antitrypsin and the prevalence and severity of asthma.* Arch Dis Child.2004 Mar;89(3):230-1.

Pinto LA, Stuedemann L, Depner M, Klopp N, Illig T, Weiland SK, von Mutius E, Kabesch M. *STAT1 gene variations, IgE regulation and atopy.* Allergy 2007 Dec; 62(12):1456-61.

Büchle G, Rzehak P, Weinmayr G, Keil U, Leupold W, von Mutius E, Weiland SK. *Assessing bronchial responsiveness to hypertonic saline using the stepwise protocol of Phase II of the International Study of Asthma and Allergies in Childhood (ISAAC II).* Pediatr Pulmonol 2007 Feb;42(2):131-40.

Riu E, Dressel H, Windstetter D, Weinmayr G, Weiland S, Vogelberg C, Leupold W, von Mutius E, Nowak D, Radon K. *First months of employment and new onset of rhinitis in adolescents.* Eur Respir J.2007 Sep;30(3):549-55.Epub May 2007.

Cameron L, Depner M, Kormann M, Klopp N, Illig T, von Mutius E, Kabesch M. *Genetic variation in CRTh2 influences development of allergic phenotypes.* Allergy 2009; 64(10): 1478-1485.

Zeilinger S, Pinto LA, Nockher WA, Depner M, Klopp N, Illig T, von Mutius E, Renz H, Kabesch M. *The effect of BDNF gene variants on asthma in German children.* Allergy 2009 Dec; 64(12): 1790-1794

Pinto LA, Depner M, Klopp N, Illig T, Vogelberg C, von Mutius E, Kabesch M. *MMP-9 gene variants increase the risk for non-atopic asthma in children.* Respir Res Feb 2010; 11: 23

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from the Eldoret centre:

Esamai F, Anabwani GM. *Prevalence of asthma, allergic rhinitis and dermatitis in primary school children in Uasin Gishu district, Kenya.* E Afr Med J 1996; 73(7): 474-8.

Esamai F, Ayaya S, Nyandiko W. *Prevalence of asthma, allergic rhinitis and dermatitis in primary school children in Uasin Gishu district, Kenya.* E Afr Med J 2002; 79(10): 514-8.

## Eldoret Centre

<b>Phase One</b>			
<b>Centre:</b>		Eldoret, Kenya ( Africa )	
<b>Principal Investigator:</b>		Dr Fabian O Esamai	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in the Uasin Gishu District, Ainabkoi and Kapsaret divisions, that have a homogeneous ethnic Kalenjin population.	
<b>Phase Three</b>			
<b>Centre:</b>		Eldoret, Kenya ( Africa )	
<b>Principal Investigator:</b>		Dr Fabian O Esamai	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	February 2001 to April 2001
<b>Sampling Frame:</b>		13-14yr: All schools in Aiwabkoi, Kapsaret and Kesses Divisions in Uasin Gishu District. The same sampling frame as Phase One.	

## Personnel

### Dr Fabian O Esamai

Department of Child Health and Paediatrics  
Moi University  
PO Box 4606  
Kenya



#### Roles:

- Phase One Principal Investigator for Eldoret
- Phase Three Principal Investigator for Eldoret

## Eldoret Kenya ISAAC centre

The Eldoret centre is one of the two in Kenya and participated in Phase One of ISAAC as the rural centre while Nairobi was the urban centre. This enabled a rural – urban comparison on the prevalence of asthma, allergic rhinitis and allergic conjunctivitis. The researchers were based at the Moi University School of Medicine in the Department of Child Health and Paediatrics. Moi University School of Medicine was the second medical school in Kenya after the Nairobi Medical School. It applies the innovative problem based approach to medical education with a strong community based component.

The investigators for Phase One were Gabriel Anabwani, who was also the Regional Coordinator and Fabian Esamai, the Principal Investigator for the Eldoret centre in Kenya. Prof. Gabriel Anabwani has since 1997 left the Department for Botswana. Prof. Gabriel Anabwani was the Professor of Paediatrics in the department until his departure in 1997. Professor Fabian Esamai who was a Senior lecturer at the time of Phase One is the Professor of Paediatrics in the department since 2005. He has been in the department since the start of the Moi University Medical school in 1990. The field work for Phase One was conducted by Joel Kirinyet, the Chief technician in the department, as the coordinator of the field team.

ISAAC Phase One was the first rural study in Kenya to study the prevalence of asthma and allergies. Most earlier studies were urban and more so for adults.

The participants for Phase Three included Prof. Fabian Esamai, Dr. Samuel Ayaya and Dr. Winstone Nyandiko. This phase was conducted in 2001. ISAAC Phase Three was led by the Public Health team of the Uasin Gishu district Ministry of Health.

The prevalence of asthma remained unknown in Eastern Africa for decades as there were limited studies especially community based studies until about a decade ago when the International Study of Asthma and allergies in Children (ISAAC) was conducted worldwide. In East Africa two Kenyan centres (Nairobi and Eldoret) and Ethiopia were included in the phase I between 1994 and 1996. The Nairobi centre represented studies on urban children while the Eldoret centre represented the rural based children. Eldoret is situated in the Rify valley highlands of Kenya 340 kilometres west of Nairobi. The same study procedure was repeated 6 years later in the same locations and schools in Nairobi and Eldoret in a phase III to assess trends between 2001 and 2003. The ISAAC study in these centres included school children aged 13-14 years of age.

Regional

National

Local

Eldoret

# The ISAAC Story

Regional

National

Local

Eldoret

Emilia-  
Romagna

With the establishment of industries in urban and rural East African countries, the risk of allergic induced asthma and asthma related to industrial pollution is on the increase and could be responsible for the rise in both urban and rural asthma prevalence. The adoption of western lifestyles and associated improvement in living standards could be a contributor to the increasing prevalence of asthma in children. Other risk factors include indoor pollution from smoke from cooking in poorly ventilated houses, indoor cigarette smoking by parents or guardians and indoor allergens like dust mites in the home. Allergies to pollens could be another risk factor especially with increase flower farming for export in the horticulture industry in which Kenya and other east African countries have extensively expanded over the last decade. Other risk factors includes keeping of pets and domestic animals like dogs, cats, chicken etc to which children develop allergy to their droppings, fur and other parts. Some children react to animal protein and with improved purchasing power, more children get exposed to these products. The use of processed and canned foods could have contributed to the development of allergies that predispose to asthma symptoms. The genetic risk factor has been known for years in developed and developing countries and still contributes to about 40% of all asthmatics among children. Asthma has been observed to run in families and therefore this should always be established from family interviews.

Avoidance of asthma triggers reduces the development of asthma symptoms and attacks and reduces the need for medications. Common asthma triggers include domestic dust mites, tobacco smoke, animal fur, cockroach allergens, outdoor pollens and molds, indoor mold and physical activity for exercise induced asthma.

Bed linens and blankets should be washed weekly in hot water and dried, pillows should be encased in pillow cases and avoid carpets or they should not be in sleeping rooms.

Children should be kept away from tobacco smoke and parents or guardians should not smoke.

Animals should be kept away from sleeping areas of the home.

Spray homes frequently to kill cockroaches using pesticides but in the absence of children.

Children should be kept away from farms during the period of pollination of crops and plants.

Doors and windows should be closed during these periods.

Clean damp areas frequently and children with exercise induced asthma should avoid physical activity.

## Emilia-Romagna Centre

<b>Phase One</b>			
<b>Centre:</b>		Emilia-Romagna, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Dr Marco Biocca	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:October 1994 to December 1994 6-7yr:October 1994 to March 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Emilia-Romagna, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Dr Claudia Galassi	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to March 2002
<b>Sampling Frame:</b>		All public schools in the Emilia-Romagna Region (the same as Phase One).	

## Personnel

### Dr Marco Biocca

CDS Aziende USL Città di Bologna  
Via Gramsci, 12  
Italy

#### Roles:

- Phase One Principal Investigator for Emilia-Romagna
- Phase Three collaborator for Emilia-Romagna

### Dr Claudia Galassi

Servizio di Epidemiologia dei tumori  
AO San Giovanni Battista - CPO Piedmont  
Via Santena 7  
Italy

#### Roles:

- Phase Three Principal Investigator for Emilia-Romagna

### Ms Mariella Martini

Servizio Igiene Pubblica  
Dipartimento di Prevenzione  
Azienda USL di Reggio Emilia  
Via Amendola, 2  
Italy

#### Roles:

- Phase One collaborator for Emilia-Romagna

# The ISAAC Story

## Empoli Centre

<b>Phase One</b>			
<b>Centre:</b>		Empoli, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Ms Lucia Chetoni	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 1994 to December 1994
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Empoli, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Dr M G Petronio	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to February 2002
<b>Sampling Frame:</b>			
All public schools in the area of the Local Health Unit of Empoli (the same as Phase One).			

## Personnel

### Ms Lucia Chetoni

Italy

#### Dr Maria Paola Di Pietro

Public Health Service  
Local Health Authority ASL  
No. 11 Empoli  
Piazza della Costituzione, 2  
Italy

#### Roles:

- Phase One Principal Investigator for Empoli

#### Dr M G Petronio

Responsabile Struttura Operativa  
Salute/Ambiente  
Az. USL 11 di Empoli  
Piazza Costituzione n.1  
San Romano  
Italy

#### Roles:

- Phase Three Principal Investigator for Empoli

## Local Publications

The following publications used ISAAC data from the Feira de Santana centre:

Franco JM, Gurgel R, Sole D, França VL, Brabin B and the Brazilian Isaac Group. *Socio-environmental conditions and geographical variability of asthma prevalence in Northeast Brazil* Allergol Immunopathol (Madr). 2009; 37(3):116-121

## Feira de Santana Centre

<b>Phase Three</b>			
<b>Centre:</b>		Feira de Santana, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Associate Professor Leda de Freitas Souza	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	June 2002 to August 2002
<b>Sampling Frame:</b>			
All schools in Feira de Santana area.			

## Personnel

### Associate Professor Leda de Freitas Souza

Faculty of Medicine  
Universidade Federal da Bahia  
Rua Alm. Ernesto Mello Jr. 79 (Pituba)  
Salvador 41820-060  
Brasil

#### Roles:

- Phase Three Principal Investigator for Feira de Santana

## Firenze Centre

<b>Phase One</b>			
<b>Centre:</b>		Firenze, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Dr Elisabetta Chellini	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:October 1994 to December 1994 6-7yr:November 1994 to December 1994
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Firenze, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Dr Elisabetta Chellini	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to March 2002
<b>Sampling Frame:</b>			
All public schools in the Florence Area (cities of Firenze, Prato, Campi, Calenzano, Scandicci and Sesto Fiorentino); the same of Phase One.			

Regional

National

Local

**Empoli**  
**Feira de Santana**  
**Firenze**

# The ISAAC Story

Regional

National

Local

Firenze

Frosinone

## Personnel

### Professor Annibale Biggeri

Dipartimento Statistico  
Università di Firenze  
Viale Morgagni, 59  
Italy

#### Roles:

- Phase One collaborator for Firenze

### Dr Elisabetta Chellini

Epidemiologist, MD  
Unit of Environmental and  
Occupational Epidemiology  
Cancer Prevention and Research  
Institute (ISPO)  
Firenze  
Italy



#### Roles:

- Phase One Principal Investigator for Firenze
- Phase Three Principal Investigator for Firenze

## Why Firenze was chosen

Firenze Centre includes 6 Tuscan municipalities (about 713,000 inhabitants), located in Central Italy: Firenze, Calenzano, Campi Bisenzio, Scandicci, Sesto Fiorentino and Prato. The area is characterized by cold winters and hot summers, due to its location, inland in the River Arno's basin. Firenze Centre participated in two ISAAC Phases: Phase One and Phase Three. Firenze Centre was identified in relation to the presence in the area of an epidemiological study group (the Unit of Environmental and Occupational Epidemiology of the Cancer Prevention and Research Institute) that was responsible for the two cross sectional studies in the area. As well, the definition of the area/population of Firenze Centre was opportunistic in relation to the feasibility to carry out the study in collaboration with the Public Health services of the Local Health Administrations of Firenze and Prato. The opportunity to estimate the prevalence of asthma and allergies and known or suspected risks factors with a standardized procedure allowing comparisons with other areas in Italy and in other countries was considered a good step for further preventive activities.

## Our experience in ISAAC

Since the beginning the participation was made possible through SIDRIA (ISAAC Phase One) and SIDRIA-2 (ISAAC Phase Three) study group, an Italian cooperative study group that applied standard ISAAC protocol in Italy. ISAAC questionnaires were translated and validated in the Italian setting. The Italian cooperative study group, that included also the personnel of the Firenze Centre, defined the operational standardized procedure to be applied in all Italian ISAAC Centres, from Northern to Southern Italy. Local funds were used to carry out the first ISAAC Phase, meanwhile the ISAAC Phase 3 was funded by the Italian Minister of Health. We had a high compliance: either the directors of the randomly selected schools either the parents were very compliant and we wish to thank all of them. The self administered questionnaires completed by parents were used since ISAAC Phase One to collect information not only on asthma and allergies histories but also on various known or suspected risk factors for respiratory and allergic diseases (i.e., parental smoking, family history of asthma and allergies, indoor mould and dampness, traffic in the residential areas) in Italian Centres characterized by different climate, latitude and level of urbanization. The results of the Firenze Centre together with the other Italian Centres cooperating in SIDRIA (ISAAC Phase One) and SIDRIA-2 (ISAAC Phase Three) were published in two supplements of an Italian epidemiological magazine: *Epidemiol Prev*, 1997, 21 (1 suppl) and *Epidemiol Prev* 2005, 29 (2 suppl). Other scientific papers have been also published on specific aspects, where Firenze Centre data have been pooled with the data of the other Italian Centres. The obtained results have been presented during local congresses too.

In conclusion, the involvement in ISAAC studies was a great occasion for personnel with different expertise (epidemiologists, paediatricians, lung specialists, biologists, environmental specialists, statisticians, youth workers) engaged in different public bodies to work together, in national and international epidemiological studies.

## Frosinone Centre

Phase One	
<b>Centre:</b>	Frosinone, Italy ( Western Europe )
<b>Principal Investigator:</b>	Mr Roberto Ronchetti
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	Local Health Authority

## Personnel

### Mr Roberto Ronchetti

Università degli Studi di Roma "La Sapienza"  
Istituto di Clinica Pediatrica  
Policlinico Umberto I  
Viale Regina Elena, 324  
Italy

#### Roles:

- Phase One Principal Investigator for Frosinone

# The ISAAC Story

## Fukuoka Centre

<b>Phase One</b>			
<b>Centre:</b>		Fukuoka, Japan ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Sankei Nishima	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 1994 to March 1995
<b>Sampling Frame:</b>		13-14yr: All public schools in Fukuoka city, second grade in junior high school. 6-7yr: All schools are in Fukuoka city as shown in next figure	
<b>Phase Three</b>			
<b>Centre:</b>		Fukuoka, Japan ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Hiroshi Odajima	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2002 to November 2002
<b>Sampling Frame:</b>		All public schools in Fukuoka. Same sampling frame as Phase One.	

## Personnel

### Professor Sankei Nishima

Director of Pediatrics  
The National Minami-Fukuoka  
Chest Hospital  
Yakatabaru 4-39-1  
Minami-ku  
Japan



#### Roles:

- National Coordinator for Japan
- Phase One Principal Investigator for Fukuoka

### Dr Hiroshi Odajima

Department of Pediatrics  
The National Minami Fukuoka Chest Hospital  
4-39-1 Yakatabaru Munami-kui  
Fukuoka  
Japan

#### Roles:

- Phase Three Principal Investigator for Fukuoka

Japan has been still in confusion due to the Eastern Japan Earthquake, tsunami disaster, and nuclear plant accident. However, the heart-warming support from all over the world has been helping Japan restore the country little by little. We deeply appreciate your warm support. ISAAC Fukuoka Centre is located at the western part of Japan, and therefore we didn't have damage from the earthquake. Fukuoka city is a center of southern part of Japan, Kyusyu area, with the population of 13 million, and is now having its ordinary activities.

Our Centre participated in ISAAC Phase ????. Recently, we have started the epidemiological survey for 35,000 elementary school children of 11 prefectures at western Japan. This survey was conducted in 1982, 1992, and 2002 in the same districts with the same methods, and this recent survey is the fourth survey.

The prevalence of bronchial asthma has been a 2.1 increase compared with that of 1982 and 2002. Since 1992, we have done the survey of other childhood allergic diseases besides asthma. As a result, the prevalence of atopic dermatitis has been decreased, but the prevalence of allergic rhinitis and conjunctivitis has been increased. (Sankei Nishima et al; Surveys on the Prevalence of Pediatric Bronchial Asthma in Japan: A Comparison between the 1982,1992,and 2002 Surveys Conducted in the Same Region Using the Same Methodology, Allergology International. 2009; 58:37-53). The result of our recent fourth survey will come out in 2012.

Also, this year, the total guideline for pediatric allergic diseases (BA,AR,AD,FA) has been established in Japan. Furthermore, Japanese Guideline for the Diagnosis and Treatment of Allergic Diseases 2010(JAGL 2010) is published in English in the latest Allergology International and is free to be viewed. All access are welcome.? [http://www.jstage.jst.go.jp/browse/allergolint/60/2/\\_contents/-char/ja/](http://www.jstage.jst.go.jp/browse/allergolint/60/2/_contents/-char/ja/)

Regional

National

Local

Fukuoka

# The ISAAC Story

Regional

National

Local

Funchal

Grand Tunis

Greifswald

## Funchal Centre

<b>Phase One</b>			
<b>Centre:</b>		Funchal, Portugal ( Western Europe )	
<b>Principal Investigator:</b>		Dr Fernando D Borges	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	March 1995 to April 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Funchal, Portugal ( Western Europe )	
<b>Principal Investigator:</b>		Dra Rita Câmara	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2002 to July 2002
<b>Sampling Frame:</b>		All schools of urban and suburban Funchal area. Municipalities of Funchal, Camera de Lopes and Sata Cruz.	

### Personnel

#### Dr Fernando D Borges

Serviço de Medicina  
Centro Hospitalar do Funchal  
Medicina II - CHF  
Portugal

#### Roles:

- Phase One Principal Investigator for Funchal

#### Dra Rita Câmara

Serviço de Medicina  
Centro Hospitalar do Funchal  
Medicina II - CHF  
Portugal

#### Roles:

- Phase Three Principal Investigator for Funchal

## Grand Tunis Centre

<b>Phase Three</b>			
<b>Centre:</b>		Grand Tunis, Tunisia ( Africa )	
<b>Principal Investigator:</b>		Professeur Faouzia Khaldi	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	March 2001 to March 2001
<b>Sampling Frame:</b>		13-14yr: Some schools in the Grand Tunis	

### Personnel

#### Professeur Faouzia Khaldi

Chef de Service de Médecine Infantile A  
Hôpital d'Enfants Bab Saadoun  
C.P. 1007  
Tunisia

#### Roles:

- Phase Three Principal Investigator for Grand Tunis

## Greifswald Centre

<b>Phase One</b>			
<b>Centre:</b>		Greifswald, Germany ( Western Europe )	
<b>Principal Investigator:</b>		Professor Axel Kramer	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: May 1995 to May 1995 6-7yr: January 1995 to May 1995
<b>Sampling Frame:</b>			

### Personnel

#### Prof Dr med Wolfgang Hoffmann

Institute for Community Medicine  
Section Epidemiology of Health Care and  
Community Health  
Ernst-Moritz-Arndt-University Greifswald  
Ellernholzstr. 1/2  
Germany

#### Roles:

- Phase One collaborator for Greifswald

#### Professor Axel Kramer

Institut für Hygiene und Umweltmedizin  
Hainstrasse 26  
Germany

#### Roles:

- Phase One Principal Investigator for Greifswald

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from the Guangzhou centre:

Ko FWS, Wang HY, Wong GWK, Leung TF, Hui DSC, Chan DPS, Zhong NS, Lai CKW. *Wheezing in Chinese schoolchildren: disease severity distribution and management practices, a community-based study in Hong Kong and Guangzhou.* Clin Exp Allergy 2005; 35(11): 1449-56.

Wang HY, Zheng JP, Zhong NS. *Time trends in the prevalence of asthma and allergic diseases over 7 years among adolescents in Guangzhou city.* Zhonghua Yi Xue Za Zhi. 2006 Apr 18;86(15):1014-20.

## Guangzhou Centre

Phase One			
<b>Centre:</b>		Guangzhou, China ( Asia-Pacific )	
<b>Principal Investigator:</b> Professor Nan-Shan Zhong			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in the Dongshan, Yuexiu, Liwan, Haizhu districts	
Phase Two			
<b>Centre:</b>		Guangzhou, China ( Asia-Pacific )	
<b>Principal Investigator:</b> Professor Nan-Shan Zhong			
<b>Age Groups:</b>	10-11,	<b>Timeframe:</b>	October 1997 to February 1998.
<b>Sampling Frame:</b>		A random sample of schools from the metropolitan area of Guangzhou.	
Phase Three			
<b>Centre:</b>		Guangzhou, China ( Asia-Pacific )	
<b>Principal Investigator:</b> Professor Nan-Shan Zhong			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	November 2001 to December 2001
<b>Sampling Frame:</b>		13-14yr: All schools in the four central districts of Guangzhou city.	

## Personnel

### Professor Nan-Shan Zhong

Guangzhou Institute of Respiratory Disease  
The First Affiliated Hospital of Guangzhou  
Medical College  
151 Yangjiang Rd  
PO 510120  
China

#### Roles:

- Phase One Principal Investigator for Guangzhou
- Phase Two Principal Investigator for Guangzhou
- Phase Three Principal Investigator for Guangzhou

## Guayaquil Centre

Phase Three			
<b>Centre:</b>		Guayaquil, Ecuador ( Latin America )	
<b>Principal Investigator:</b> Dr César Bustos			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	September 2001 to November 2002
<b>Sampling Frame:</b>		13-14yr: Some schools in Guayaquil	

## Personnel

### Dr César Bustos Cajas

Pulmonologist  
Chief of Service of Pneumology  
Hospital Alcivar private university  
Guayaquil  
Ecuador

#### Roles:

- Phase Three Principal Investigator for Guayaquil

### Rocío De Janón

Guayaquil  
Ecuador

#### Roles:

- Phase Three collaborator for Guayaquil

### Mireya Rodas Suárez

Guayaquil  
Ecuador

#### Roles:

- Phase Three collaborator for Guayaquil

### Alfredo Sierra Rabascal

Guayaquil  
Ecuador

#### Roles:

- Phase Three collaborator for Guayaquil

### Dr Jose Ulloa Correa

Guayaquil  
Ecuador

#### Roles:

- Phase Three collaborator for Guayaquil

## GUAYAQUIL ISAAC CENTER

Ecuador is a country of 14.3 million inhabitants, the most densely populated is Guayaquil with 2.3 million inhabitants. It is located in coastal region where the climate is tropical, with high temperatures most of the year, with an average of 25 ° C approximately. It has two seasons, winter or rainy season, which runs from January to May and summer or dry season from June to December.

Regional

National

Local

Guangzhou

Guayaquil



# The ISAAC Story



Regional  
National  
Local

Guayaquil  
Guernsey  
Hamilton

There was no specific epidemiological data of asthma or related diseases in our population before our participation in the ISAAC study. In our center with the principal investigator was Dr. Jose Ulloa Correa, Mireya Rodas Suárez, Rocío De Janón, Alfredo Sierra Rabascal, latter pediatric pulmonologist.

Through Dr. Javier Mallol, coordinator for Latin America of ISAAC, we had knowledge of the implementation of phase III of the study. We started our business on September 11, 2001 for two consecutive years. 3082 students were surveyed belonging to the group of 13-14 years.

The sample was chosen for convenience according to the school agreed to participate in the ISAAC study. We were always trying to cover diverse socioeconomic and different geographical areas of the city.

In this study also allowed us to establish data on the prevalence of asthma in our city, the environmental questionnaire allowed us to learn more about the relationship between feeding our young and bronchial asthma.

## Guernsey Centre

Phase One			
<b>Centre:</b>		Guernsey, Channel Islands ( Western Europe )	
<b>Principal Investigator:</b>		Dr David Jeffs	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools containing age-appropriate children on the island of Guernsey.	
Phase Three			
<b>Centre:</b>		Guernsey, Channel Islands ( Western Europe )	
<b>Principal Investigator:</b>		Dr Peter Standing	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	November 2001 to November 2001
<b>Sampling Frame:</b>		13-14yr: All schools in Guernsey containing age appropriate children on the Island.	

## Personnel

### Dr David Jeffs

Director of Public Health  
John Henry House  
St Martin's  
Guernsey  
United Kingdom

#### Roles:

- Phase One Principal Investigator for Guernsey
- Phase Three collaborator for Guernsey

### Dr Peter Standing

Community Paediatrician  
Princess Elizabeth Hospital  
St Martins  
Guernsey G74 6UU  
United Kingdom

#### Roles:

- Phase Three Principal Investigator for Guernsey

## Hamilton Centre

Phase One			
<b>Centre:</b>		Hamilton, Canada ( North America )	
<b>Principal Investigator:</b>		Professor Malcolm R Sears	
<b>Age Groups:</b>	6-7	<b>Timeframe:</b>	May 1994 to October 1994
<b>Sampling Frame:</b>		6-7yr: All schools of Hamilton, Halton, Brant County Boards of Education (public schools) and all schools in separate School Boards of Hamilton-Wentworth, Halton and Brant County (Catholic schools), excluding 3 schools using the French language only.	

## Personnel

### Professor Malcolm R Sears

St. Joseph's Healthcare  
Firestone Institute for  
Respiratory Health  
Canada



#### Roles:

- National Coordinator for Canada
- Phase One Principal Investigator for Hamilton

### Dr Hongyu Wang

Research Fellow of McMaster  
University  
Firestone Institute for  
Respiratory Health  
Juravinski Innovation Tower  
Canada

#### Roles:

- Phase One collaborator for Hamilton

See the Canada country page for details of ISAAC in Hamilton

## Local Publications

The following publications used ISAAC data from the Guernsey centre:

Anderson HR, Ruggles R, Strachan DP, Austin JB, Burr M, Jeffs D, Standing P, Steriu A, Goulding R. *Trends in prevalence of symptoms of asthma, hay fever, and eczema in 12-14 year olds in the British Isles, 1995-2002 a questionnaire survey.* BMJ 2004; 328(7447): 1052-3.

Jeffs D, Grainger R, Powell P. *Is childhood allergy more common amongst an island population?* J R Soc Health.2000 Dec;120(4):236-41.

## Local Publications

The following publications used ISAAC data from the Hamilton centre:

Habbick BF, Pizzichini MM, Taylor B, Rennie D, Senthilselvan A, Sears MR. *Prevalence of asthma, hay fever and eczema in children in two canadian cities the ISAAC study.* CMAJ 1999; 160: 1824-1829.

Pizzichini MM, Rennie D, Senthilselvan A, Taylor B, Habbick BF, Sears MR. *Limited agreement between written and video asthma symptom questionnaires.* Pediatr Pulmonol 2000; 30(4): 307-12.

Wang H-Y, Pizzichini MM, Becker AB, Duncan JM, Ferguson AC, Greene JM, Rennie DC, Senthilselvan A, Taylor BW, Sears MR. *Disparate geographic prevalences of asthma, allergic rhinoconjunctivitis and atopic eczema among adolescents in five Canadian cities.* Pediatr Allergy Immunol 2010; 21(5): 867-877.

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from the Hawkes Bay centre:

Erwin EA, Wickens K, Custis NJ, Siebers R, Woodfolk J, Barry D, Crane J, Platts-Mills TA. *Cat and dust mite sensitivity and tolerance in relation to wheezing among children raised with high exposure to both allergens.* J Allergy Clin Immunol 2005; 115(1): 74-9.

Wickens K, Barry D, Friezema A, Rhodius R, Bone N, Purdie G, Crane J. *Fast foods - are they a risk factor for asthma?* Allergy 2005; 60(12): 1537-41.

Wickens K, Barry D, Friezema A, Rhodius R, Bone N, Purdie G, Crane J. *Obesity and asthma in 11-12 year old New Zealand children in 1989 and 2000.* Thorax 2005; 60(1): 7-12.

Wickens K, Crane J, Kemp T, Lewis S, D'Souza W, Sawyer G, Stone L, Tohill S, Kennedy J, Slater T, Rains N, Pearce N. *A case-control study of risk factors for asthma in New Zealand children.* Aust N Z J Pub Health.2001;25(1):44-9.

Wickens K, Pearce N, Siebers R, Ellis I, Patchett K, Sawyer G, Stone L, Tohill S, Kennedy J, Slater T, Lewis S, Fitzharris P, Crane J. *Indoor environment, atopy and the risk of the asthma in children in New Zealand.* Pediatr Allergy Immunol.1999 Aug;10(3):199-208.

## Hawkes Bay Centre

Phase One			
<b>Centre:</b>		Hawkes Bay, New Zealand ( Oceania )	
<b>Principal Investigator:</b>		Dr David Barry	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	June 1993 to August 1993
<b>Sampling Frame:</b>			
Phase Two			
<b>Centre:</b>		Hawkes Bay, New Zealand ( Oceania )	
<b>Principal Investigator:</b>		Professor Julian Crane	
<b>Age Groups:</b>	10.1-12.6 years,	<b>Timeframe:</b>	February 2000 to June 2000.
<b>Sampling Frame:</b>		All schools within the municipalities of Hastings and Havelock North.	

## Personnel

### Dr David Barry

Paediatrician  
Hawke's Bay Regional Hospital  
Private Bag 9014  
New Zealand

#### Roles:

- Phase One Principal Investigator for Hawkes Bay
- Phase Two collaborator for Hawkes Bay

### Professor Julian Crane

Wellington Asthma Research Group  
Wellington School of Medicine,  
University of Otago Wellington  
P O Box 7343  
Wellington South  
New Zealand



#### Roles:

- ISAAC Steering Committee
- Phase Two Principal Investigator for Hawkes Bay

### Dr Kristin Wickens

WARG  
Wellington School of Medicine  
P O Box 7343  
New Zealand

#### Roles:

- Phase Two collaborator for Hawkes Bay

## Phase Two in Hawke's Bay

We chose to undertake ISAAC Phase Two study in Hawke's Bay because it gave us an opportunity to undertake two studies using largely a single set of fieldwork, to provide data for ISAAC Phase Two and secondly we were able to use much of the same data to provide to repeat one of the first international asthma prevalence surveys that had been undertaken by Michael Burr and David Barry in the Hawke's Bay and Wales[Barry 1991], and later included South Africa and Sweden[Burr 1994], using the same schools, methodology and personnel to give us a comparison of prevalence over a 10 year period.

The study was run by Dr Kristin Wickens in the Hawkes Bay over the summer period 2000. We had excellent help from Dr Barry himself and also from one of his retired senior paediatric nurses – Ms Ngaire Bone. We were also fortunate to have two third year medical students join us from the Netherlands looking for a small student elective to undertake research and they provided excellent additional support for the field work and also got a publication from an add on project undertaking during the fieldwork[Rhodius 2002]. The study provided New Zealand data for ISAAC Phase Two, but also provided a number of spin-off studies that looked at fast foods and asthma and changes in obesity and their relationship to asthma over 10 years[Wickens 2005(1), Wickens 2005(2)]. The data also formed the basis for some interesting work on cat allergen[Erwin 2005] undertaken by Tom Platt-Mills and colleagues who also measured spIgE levels for the study.

The Hawkes Bay turned out to be an excellent place to undertake research like this and we had tremendous co-operation from the schools and from the surrounding community and also had enormous benefit from employing people who were well known in the community and were able to encourage both schools and parents to take part.

Also we undertook two forms of measurement of airway hyperresponsiveness, exercise and hypertonic saline. The exercise challenge used a five minute running test[Burr 1989] allowing us to compare this challenge with previous studies and with the UK centre which also used it. We also undertook a hypertonic saline challenge and again were fortunate to have a visiting research fellow to help us with this.

In this 8 to 12 age group we found the prevalence of wheezing in the last year was 22.0% and asthma ever, 35.7%. A positive exercise challenge (=15% fall in PEFr post exercise) was found in 8.4%. A positive skin prick test to any allergen was found in 34.7% of children. Interestingly when comparing the prevalence from 10 years before (restricted to just the 12 year old children) wheezing had increased from 17.7% to 23.3%, asthma ever from 16.9% to 37%, while a positive exercise response had fallen from 12.3% to 9.0%.

Regional

National

Local

**Hawkes Bay**

# The ISAAC Story

Regional

National

Local

Hawkes Bay

Helsinki

Ho Chi Minh

City

## References

1. Barry DM, Burr ML, Limb ES. Prevalence of asthma among 12 year old children in New Zealand and South Wales: a comparative survey. *Thorax*. 1991;46(6):405-9.
2. Burr M, Limb E, Andrae S, Barry D, Nagel F. Childhood asthma in four countries: A comparative survey. *Int J Epidemiol*. 1994;23(2):341-7.
3. Rhodius R, Wickens K, Cheng S, Crane J. A comparison of skin test methodologies and allergens from two different manufacturers. *Ann Allergy Asthma and Immunol*. 2002;88:374-9.
4. Wickens K, Barry D, Friezeema A, Rhodius R, Bone N, Purdie G, Crane J. Fast foods are they a risk factor for asthma. *Allergy*. 2005;60:1537-41.
5. Wickens K, Barry D, Friezeema A, Rhodius R, Bone N, Purdie G, Crane J. Obesity and asthma in 11-12 year old New Zealand children in 1989 and 2000. *Thorax*. 2005;60:7-12.
6. Erwin E, Wickens K, Custis N, Siebers R, Woodfolk J, Barry D, Crane J, Platts-Mills T. Cat and dust mite sensitivity and tolerance in relation to wheezing among children raised with high exposure to both allergens. *J Allergy Clin Immunol*. 2005;115:74-9.
7. Burr ML, Butland BK, King S, Vaughan WE. Changes in asthma prevalence: two surveys 15 years apart. *Arch Dis Child*. 1989;64(10):1452-6.

## Helsinki Centre

Phase One	
<b>Centre:</b>	Helsinki, Finland ( Northern and Eastern Europe )
<b>Principal Investigator:</b>	Dr Merja Kajosaari
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	All schools from City of Helsinki, City of Espoo, City of Vantaa

### Personnel

#### Dr Merja Kajosaari

Department of Paediatrics  
Helsinki University Central Hospital  
Stenbäckinkatu 11  
Finland

#### Roles:

- Phase One Principal Investigator for Helsinki

## Ho Chi Minh City Centre

Phase Three	
<b>Centre:</b>	Ho Chi Minh City, Vietnam ( Asia-Pacific )
<b>Principal Investigator:</b>	Dr Baich Vaên Cam
<b>Age Groups:</b>	13-14, 6-7
<b>Timeframe:</b>	October 2001 to December 2001
<b>Sampling Frame:</b>	All schools in Ho Chi Minh city.

### Personnel

#### Dr Baich Vaên Cam

Pediatric Hospital 1#  
2 Su Van Hanh St  
District 10  
Vietnam

#### Roles:

- Phase Three Principal Investigator for Ho Chi Minh City

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from the Hong Kong 13-14 centre:

Lau YL, Karlberg J. *Prevalence and risk factors of childhood asthma, rhinitis and eczema in Hong Kong.* J Paediatr Ch Health 1998; 34(1): 47-52.

Leung R, Wong G, Lau J, Ho A, Chan JK, Choy D, Douglass C, Lai CK. *Prevalence of asthma and allergy in Hong Kong schoolchildren an ISAAC study.* Eur Respir J 1997; 10(2): 354-60.

Lee SL, Wong W, Lau YL. *Increasing prevalence of allergic rhinitis but not asthma among children in Hong Kong from 1995 to 2001 (Phase 3 International Study of Asthma and Allergies in Childhood).* Pediatr Allergy Immunol 2004; 15(1): 72-8.

Wong GWK, Leung TF, Ko FWS, Lee KKM, Lam P, Hui DSC, Fok TF, Lai CKW. *Declining asthma prevalence in Hong Kong Chinese schoolchildren.* Clin Exp Allergy 2004; 34(10): 1550-5.

Wong GWK, Hui DSC, Tam CM, Chan HH, Fok TF, Chan-Yeung M, Lai CKW. *Asthma, atopy and tuberculin responses in Chinese schoolchildren in Hong Kong.* Thorax 2001; 56(10): 770-773

## Hong Kong 13-14 Centre

<b>Phase One</b>			
<b>Centre:</b>		Hong Kong 13-14, SAR China ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Christopher Lai	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in Hong Kong	
<b>Phase Two</b>			
<b>Centre:</b>		Hong Kong, SAR China ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Christopher Lai	
<b>Age Groups:</b>	10-11,	<b>Timeframe:</b>	October 1997 to February 1998.
<b>Sampling Frame:</b>		A random sample of schools from the metropolitan area of Hong Kong.	
<b>Phase Three</b>			
<b>Centre:</b>		Hong Kong 13-14, SAR China ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Gary Wong	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	April 2002 to June 2002
<b>Sampling Frame:</b>		13-14yr: All secondary schools in Hong Kong. Phase One and Phase Three Boundaries exactly the same.	

## Personnel

### Dr Christopher Lai

Department of Medicine and Therapeutics  
The Chinese University of Hong Kong  
Room 1403, Takshing House  
20 Des Voeux Road Central  
SAR China



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Asia-Pacific
- National Coordinator for SAR China
- Phase One Principal Investigator for Hong Kong 13-14
- Phase Two Principal Investigator for Hong Kong

### Professor Gary Wong

Department of Paediatrics  
Prince of Wales Hospital  
Shatin, NT  
Hong Kong Special Administrative Region  
China



#### Roles:

- ISAAC Steering Committee
- Phase Three Principal Investigator for Hong Kong 13-14
- Phase Two collaborator for Hong Kong

I got involved in the ISAAC project when I was invited to the steering committee as the regional coordinator of Asia Pacific in the early 90's. At that time, Hong Kong already had some prevalence data on asthma, rhinitis and eczema, although these data were based on studies using different methodologies and included a wide range of subjects - children, adults and hospital patients. This makes comparison between studies from different time points and with other populations from different geographic locations difficult. The ISAAC study has allowed us to make valid comparisons with our counterparts in mainland China. The phase 1 data revealed a striking difference in the prevalence of asthma symptoms – up to a 4-fold difference – between schoolchildren in Hong Kong and those in mainland China. This, together with the demonstration that we have a relatively high asthma prevalence amongst our children, we were able to secure funding from the research grant funding bodies to further our research on asthma epidemiology.

The grants enabled us to conduct the phase 2 study not only in Hong Kong, but also in 2 mainland centres, Beijing and Guangzhou. This study identified certain environmental factors that could account for the difference in asthma prevalence between Hong Kong and its mainland counterparts. The data provided some insights to further research into the aetiology of asthma not only in China, but also in other parts of the world.

Our experience in the previous 2 phases of the study certainly helped us to conduct the phase 3 much more smoothly. We are pleasantly surprised to see the prevalence of asthma symptoms has declined though still not certain what was causing this change.

Regional  
National  
Local

**Hong Kong**  
**13-14**

# The ISAAC Story

During the time of our participation in the project, we have validated the video questionnaire on asthma symptoms<sup>1</sup> and the Chinese translated version of the ISAAC core questions for atopic eczema<sup>2</sup>.

1. Lai CKW, Chan JKW, Chan A, Wong G, Ho A, Choy D, Lau J, Leung R. Comparison of the ISAAC video questionnaire (AVQ3.0) with the ISAAC written questionnaire for estimating asthma associated with bronchial hyperreactivity. *Clin Exp Allergy* 1997, 27: 540-545
2. Chan HH, Pei A, van Krevel C, Wong GWK, Lai CKW. Validation of the Chinese translated version of ISAAC core questions for atopic eczema. *Clin Exp Allergy* 2001, 31: 903-907.

## Hong Kong 6-7 Centre

<b>Phase One</b>			
<b>Centre:</b>		Hong Kong 6-7, SAR China ( Asia-Pacific )	
<b>Principal Investigator:</b> Professor Yu Lung Lau			
<b>Age Groups:</b>	6-7	<b>Timeframe:</b>	March 1995 to May 1995
<b>Sampling Frame:</b>		6-7yr: All schools in Hong Kong.	
<b>Phase Three</b>			
<b>Centre:</b>		Hong Kong 6-7, SAR China ( Asia-Pacific )	
<b>Principal Investigator:</b> Professor Yu Lung Lau			
<b>Age Groups:</b>	6-7	<b>Timeframe:</b>	April 2001 to June 2001
<b>Sampling Frame:</b>		6-7yr: All schools in Hong Kong. Same sampling frame used for both Phase One and Phase Three.	

### Personnel

#### Professor Yu Lung Lau

Department of Paediatrics & Adolescent Medicine  
The University of Hong Kong  
Queen Mary Hospital  
Pokfulam Road  
Sar China

#### Roles:

- Phase One Principal Investigator for Hong Kong 6-7
- Phase Three Principal Investigator for Hong Kong 6-7

## Ibadan Centre

<b>Phase One</b>			
<b>Centre:</b>		Ibadan, Nigeria ( Africa )	
<b>Principal Investigator:</b> Professor Babatunde O Onadeko			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Ibadan, Nigeria ( Africa )	
<b>Principal Investigator:</b> Professor Babatunde O Onadeko			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2001 to June 2002
<b>Sampling Frame:</b>		All schools in Ibadan	

### Personnel

#### Dr Adegoke Falade

U.C.H.,  
Dept of Paediatrics  
University College Hospital (UCH)  
Nigeria

#### Roles:

- Phase Three collaborator for Ibadan

#### Professor Babatunde O Onadeko

P O Box 29279  
Secretariat Post Office  
Nigeria

#### Roles:

- Phase One Principal Investigator for Ibadan
- Phase Three Principal Investigator for Ibadan

## Local Publications

The following publications used ISAAC data from the Ibadan centre:

Falade AG, Olawuyi F, Osinusi K, Onadeko BO. *Prevalence and severity of symptoms of asthma, allergic rhinoconjunctivitis and atopic eczema in secondary school children in Ibadan, Nigeria.* *E Afr Med J* 1998; 75(12): 695-8.

Falade AG, Olawuyi JF, Osinusi K, Onadeko BO. *Prevalence and severity of symptoms of asthma, allergic rhinoconjunctivitis, and atopic eczema in 6- to 7- year-old Nigerian primary school children* *The International study of Asthma and Allergies in Childhood.* *Med Princ Pract* 2004; 13(1): 20-25.

Falade AG, Ige OM, Yusuf BO, Onadeko MO, Onadeko BO. *Trends in the Prevalence and Severity of Symptoms of Asthma, Allergic Rhinoconjunctivitis, and Atopic Eczema.* *J Natl Med Assoc.* 2009;101(5):414-418.

Regional

National

Local

Hong Kong

13-14

Hong Kong

6-7

Ibadan

# The ISAAC Story

## Why was this centre selected for ISAAC?

Ibadan, the capital of Oyo State is located in southwestern Nigeria, 130 km inland from Lagos and is a prominent transit point between the coastal region and the areas to the northern Nigeria. The total area is 1,189.2 sq mi (3,080 km<sup>2</sup>). It is the third most populated city in Nigeria, behind Lagos and Kano. Indeed, its population rose to 2,550,593 according to 2006 Nigeria census results. Ibadan is divided into 11 local government areas (LGAs): 6 are urban and 5 periurban /rural. The possible adverse health effects of dense population and resultant outdoor air pollution due to the urbanisation informed the choice of this centre for the Phase One study.

The ISAAC phase 1 study involved two age groups: children 6 – 7 years old and adolescents 13 – 14 years old. The aims were to describe the prevalence and severity of asthma, allergic rhinitis and eczema in children in Ibadan using the ISAAC protocol and to obtain baseline measures for assessing future trends in the prevalence and severity of these diseases. We did not participate in phase 2 study. In phase 3, the aim of the study was to evaluate the changes in prevalence of symptoms of asthma and allergies by comparing the data from Phase One and Phase Three of the ISAAC surveys.

## Our experience of ISAAC

Phase 1: The study populations were the children 6-7 year olds in primary schools, and the 13-14 year olds in secondary schools in Ibadan. Data was collected from 1,704 children (797 boys and 907 girls; M:F ratio 1:1.14); and 3,058 randomly selected children aged 13-14 years (1,659 females and 1,399 males; M:F ratio 1:1.2). The study demonstrated a high prevalence of atopic conditions among children 6-7 years old (ref. 1) and the 13-14 years old (ref. 2).

Phase 3: This study was a comparison of cross-sectional data from ISAAC written questionnaire surveys carried out from January 1 to May 31, 1995 (phase I) and May 2001 to July 2002 (phase III). Detailed times of collection of data for the phase III being 11 May to 19 June, 2001 and 13 February to 18 June, 2002. These time frames were essentially within the months of January to June; as a result they did not constitute any significant difference in the months of collection of the data. The study populations were the children 6-7 year olds in primary schools, and the 13-14 year olds in secondary schools in Ibadan (ref. 3).

The random sampling methods were identical for the two surveys. Thirty one primary schools, 15 secondary schools (phase I), and 25 primary schools, 23 secondary schools (phase III) were selected in Ibadan. The ages of the children were ascertained from the class registers. Questionnaires were distributed to the children, who took them home for their parents or guardians to complete, then returned them to their teachers (6-7 year olds) or self completed (13-14 year olds) in the class rooms. The prevalence of current wheeze increased non-significantly in the 6-7 year age group (4.8% to 5.5%) and significantly in 13-14 year age group (10.7% to 13.0%) ( $p=0.249$  and  $p=0.005$ , respectively). The 12-month prevalence of allergic rhinoconjunctivitis decreased insignificantly in the 6-7 year age group ( $p=0.833$ ) but decreased significantly in the 13-14 year age group ( $p=0.001$ ). Diagnosis of eczema decreased in both age groups. Whereas, eczema and rhinoconjunctivitis have decreased appreciably in the 13-14 year age group, only rhinoconjunctivitis increased in the 6-7 year age group (ref. 3). The current findings suggest that the "epidemic" of asthma is beginning in Nigeria.

## References.

1. Falade AG, Olawuyi F, Osinusi K, Onadeko BO. (2004). Prevalence and severity of symptoms of asthma, allergic rhino-conjunctivitis and atopic eczema in 6 – 7 year old Nigerian primary school children: the international study of asthma and allergies in childhood (ISAAC). *Medical Principles and Practice* 2004; 13: 20-25.
2. Falade AG, Olawuyi F, Osinusi K, Onadeko BO. Prevalence and severity of symptoms of asthma, allergic rhino-conjunctivitis and atopic eczema in secondary school children in Ibadan, Nigeria. *East African Medical Journal* 1998; 75: 695-698.
3. Falade AG, Ige OM, Yusuf BO, Onadeko MO, Onadeko BO. Trends in the prevalence and severity of symptoms of asthma, allergic rhinoconjunctivitis, and atopic eczema. *Journal of the National Medical Association* 2009; 101:414- 418.

## Acknowledgements

We are grateful to Chief Bode Akindele, Dr . Raymond Zard, management of Glaxo Wellcome, Nigeria for financial support. Our thanks also go to all the children, parents and school staff who helped in the surveys, as well as all our fieldworkers for their hard work throughout the studies.

Regional

National

Local

Ibadan

# The ISAAC Story

Regional

National

Local

Ipoh

Islamabad

Isle of Man

## Ipoh Centre

<b>Phase One</b>			
<b>Centre:</b>		Ipoh, Malaysia ( Asia-Pacific )	
<b>Principal Investigator:</b> Dr Lim Wee Yeong			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:April 1995 to May 1995 6-7yr:May 1995 to May 1995
<b>Sampling Frame:</b>			

### Personnel

#### Dr Lim Wee Yeong

33A, Jalan Sultan Azlan Shah Utara  
31400 Ipoh  
Malaysia

#### Roles:

- Phase One Principal Investigator for Ipoh

## Islamabad Centre

<b>Phase Three</b>			
<b>Centre:</b>		Islamabad, Pakistan ( Eastern Mediterranean )	
<b>Principal Investigator:</b> Dr Mohammad Osman Yusuf			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 2002 to October 2002
<b>Sampling Frame:</b> All schools in urban Islamabad (Capital city) area.			

### Personnel

#### Dr Mohammad Osman Yusuf

The Allergy & Asthma Clinics  
275 Gomal Road  
Sector E-7  
Pakistan

#### Roles:

- Phase Three Principal Investigator for Islamabad

## Isle of Man Centre

<b>Phase One</b>			
<b>Centre:</b>		Isle of Man, Isle Of Man ( Western Europe )	
<b>Principal Investigator:</b> Dr Peter Powell			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b> The Isle of Man.			
<b>Phase Three</b>			
<b>Centre:</b>		Isle of Man, Isle Of Man ( Western Europe )	
<b>Principal Investigator:</b> Dr Andreea Steriu			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2001 to October 2002
<b>Sampling Frame:</b> All schools in the Isle of Man. Same sampling frame used for both Phase One and Phase Three.			

### Personnel

#### Dr Peter Powell

Health Services Division  
Crookall House  
Demesne Road  
Douglas  
United Kingdom

#### Roles:

- Phase One Principal Investigator for Isle of Man

#### Dr Andreea Steriu

Public Health Specialist,  
Information and Research  
Joint Information Unit, Dept of  
Home Affairs  
Homefield, 88 Woodbourne  
Road  
Douglas  
United Kingdom



#### Roles:

- Phase Three Principal Investigator for Isle of Man

## Local Publications

The following publications used ISAAC data from the Isle of Man centre:

Anderson HR, Ruggles R, Strachan DP, Austin JB, Burr M, Jeffs D, Standring P, Steriu A, Goulding R. *Trends in prevalence of symptoms of asthma, hay fever, and eczema in 12-14 year olds in the British Isles, 1995-2002 a questionnaire survey.* BMJ 2004; 328(7447): 1052-3.

Jeffs D, Grainger R, Powell P. *Is childhood allergy more common amongst an island population?* J R Soc Health.2000 Dec;120(4):236-41.

# The ISAAC Story

## Why was this centre selected for ISAAC?

Evidence suggested that the prevalence of respiratory and related disorders increased in the British Isles over the past six decades. The Isle of Man was no exception. Hay fever and allergic symptoms have caught the attention of health professionals, not only in their own right, but also as an indicator of their association with asthma. To address these problems, a major international research project, The International Study of Asthma and Allergies in Childhood (ISAAC), was established in 1991. The Steering Committee is based in New Zealand at the University of Auckland, and a range of countries, including the United Kingdom, began their research in 1995 when Phase One was carried out. The Isle of Man and the Channel Islands, although linked to the UK, carried out their surveys independently, also known as the offshore arm of the British study.

The Isle of Man is a Crown Dependency and lies in the middle of the Irish Sea. It has its own Government and the Parliament, Tynwald, is a Parliament with the longest continuous activity in the world. In 2009 this was established at 130 years. It has a population of about 80,000 inhabitants (last interim Census in 2006) and enjoys a varied economy with financial services and e-commerce, agriculture, fisheries and tourism being the most important economic activities. The Isle of Man is mostly known for the motorbike open road race TT (Tourist Trophee). This is unique in the world and annually visitors travel from all parts of the globe to watch the races and also enjoy festivities. Since 2009 a 'Green' race has been added to the race schedule, allowing for electric motorbikes to compete in the famous circuit race.

The Island's geography is stunning and the countryside is beautiful regardless the weather. Most population (about 50%) lives in the South-East, in the capital town of Douglas and surrounding villages. The highest peak is Snaefell and on a clear day "all surrounding kingdoms can be seen from the top of it: England, Scotland, Northern Ireland, Republic of Ireland, Wales, and the Kingdom of Mann.

## Our Experience of ISAAC

The aim of Phase One in the Isle of Man was to describe the prevalence and severity of asthma and related disorders in 13/14 year-old children. Results were released in 1996 and revealed the distribution and frequency of asthma and related disorders. These rates were very similar to those observed elsewhere in the UK and the Channel Islands at the time. Results were used in service planning and considered a baseline to benchmark against any new surveys. Four out of the six secondary schools took part in this round. In Phase Two of the Study the Island took part with data collection aimed at environmental factors, particularly linked with air quality. Data for the Island on daily air temperature, annual rainfall and the prevalence of chemicals such as Nitrogen Dioxide and Sulphur Dioxide in the air were collected in 1998 specifically for this phase of the Study. The results were again similar to the readings reported in the UK and the Channel Islands, as reported at the time. Such readings were considered a 'baseline' and these would be again considered in the future. It is after all that emerging climate change and other environmental monitoring will be crucial in assisting the Isle of Man government with ensuring clean air for this small country which lays in the middle of the Irish Sea.

ISAAC Phase Three was carried out in October 2001. The main objective was to identify changes that may have occurred in the last six years in the frequency of respiratory and allergic conditions in children, to evaluate any association with air quality and other environmental factors and to assess the present situation. The Study was extended to younger children (6-8 year olds) to enable long-term comparisons to be made. The 6-8 year old survey was unique to the Isle of Man of all areas in the British Isles and results were published separately in the 6-8 year olds report. The Isle of Man study was carried out as an offshore-arm of the UK study and was led by Dr David Jeffs, Director of Public Health in Guernsey. Locally, the Principal Investigator for the Isle of Man obtained LREC approval for the study and used an opt-out consent form. The 6-8 year old study was a selfresponding questionnaire for parents of primary school children. The 13-14 year olds self-responded to the questionnaire. There was no sampling carried out and all children of the right age were targeted to take part: in 34 primary schools and six secondary schools. They all took part with 1,086 (6-8 years) and 1,917 (13-14 years) students. A small team of researchers carried out delivery of questionnaires and return envelopes for parental responses in the 34 primary schools and almost 60% of the 6-8 year old target population and over 80% of the 13-14 year old target population were returned for processing. All forms, over 3,000 were posted to the UK Centre at St George's Hospital Medical School and were processed in standard format along with the other centres in the British Isles. National reports were published and a paper led by Prof. Ross H Anderson and co-authored by all British centres was published in the BMJ in 2004<sup>1</sup>. The Principal Investigator supplemented the study results with other information for this paper, such as hospital admissions and GP visits recorded during the same year the survey took place. The Isle of Man has not used any of the videos in the data collection.

The burden of self reported asthma and related disorders among adolescents has changed for the better in the recent years throughout the British Isles and the Isle of Man is no exception. ISAAC has provided much needed information for policy purposes, for example establishing the need for first aid and inhalers available in all schools. Methodologically the 6-8 year old questionnaire asked parents about the administration of paracetamol to their children and the

Regional

National

Local

Isle of Man



# The ISAAC Story

approach in the Isle of Man was to include in the questionnaires as many as known brand names of this over the counter drug. Pharmacies and supermarkets were approached and the most frequently sold paediatric brands were included in the questionnaire. The Island's data were used in the publication of a paper in the Lancet in 2009<sup>2</sup>.

## Acknowledgements

We gratefully acknowledge the financial support of the Isle of Man Government, Department of Health and Department of Local Government. We gratefully acknowledge the invaluable assistance of the offshore British Coordinator Dr David Jeffs, the UK Coordinators Prof. Ross H Anderson and David Strachan for their continuous support. As the Isle of Man Principal Investigator I am grateful for the invaluable assistance of the database management provided by the St George's Medical Hospital School Team for their help with the timely database setting and a continuous dialogue in assisting with the publication of our reports and indebted to all the children, parents and school staff who participated in the surveys. I wish to thank my fieldwork team for their enthusiasm and motivation throughout Phase Three of the Study.

Dr Andreea Steriu, Isle of Man ISAAC Phase Three Principal Investigator

## References

1. The Anderson, H.R., Ruggles, R., Strachan, D.P., Austin, J.B., Burr, M., Jeffs, D., Standring, P., Steriu, A. And Goulding, R. "Trends in prevalence of symptoms of asthma, hay fever, and eczema in 12-14 year olds in the British Isles, 1995-2002: questionnaire survey". *BMJ* 2004; 328:1052-53.
2. Beasley R, Clayton T, Crane J, von Mutius E, Lai CKW, Montefort S, Stewart A, for the ISAAC Phase Three Study Group. *Association between paracetamol use in infancy and childhood, and risk of asthma, rhinoconjunctivitis, and eczema in children aged 6-7 years: analysis from Phase Three of the ISAAC programme.* *Lancet* 2008; 372(9643): 1039-48.

## Itajaí Centre

Phase Three			
<b>Centre:</b>		Itajaí, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Dr Cláudia dos Santos Dutra Bernhardt	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2001 to February 2003
<b>Sampling Frame:</b>		Some schools in the Itajaí area.	

## Personnel

### Dr Cláudia dos Santos Dutra Bernhardt

UNIVALI (Universidade do Vale do Itajaí)  
R. Floriano Peixoto, 398/402  
Cabeçadas  
Itajaí  
Brasil

#### Roles:

- Phase Three Principal Investigator for Itajaí

Regional  
National  
Local

Isle of Man  
Itajaí

# The ISAAC Story



Indian Centres



Using the video questionnaire in Jaipur, India



A school Assembly hall in Jaipur, India

## Jaipur Centre

Phase Three			
<b>Centre:</b>		Jaipur, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Professor Virendra Singh	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 2001 to October 2001
<b>Sampling Frame:</b>		Randomised sample selected all schools of Jaipur city.	

### Personnel

#### Professor Virendra Singh

Pulmonary Medicine Division  
SMS Medical College  
C-93, Shastri Nagar  
India

#### Roles:

- Phase Three Principal Investigator for Jaipur

Almost a decade back an advertisement was published in the journal of association of physicians of India asking investigators to participate in an international study aimed to assess load of asthma and allergic diseases in childhood. Asthma is a disease which usually starts in early years and symptoms affect the child intermittently. An asthmatic child has to undergo cycles of well again and sick again. These cycles disrupts blissful childhood and the patient bear the twin agony of disease and apprehension of 'sick again' phase. I was interested in asthma research but during those days data of disease burden in India were scanty. Therefore I immediately volunteered to participate in the study. When our center was selected I realized paucity of funds in the study. But Indian Asthma Care Society provided us deficit resources.

We focused on the methodology of the study. ISAAC manual proved very useful in that. It provided stepwise solution of the problems encountered in the task. We contacted school administration and had mixed reactions. Some principals of the schools were very enthusiastic for participation while other's response was cold. The children were curious when questionnaires were distributed to them. Collection of completed questionnaires from parents in 6-7 yrs age group was a difficult task. Our workers had to go to schools many times to get the questionnaires. Video questionnaire in age 13-14 yrs age was quite interesting experience. "I am like that, when sick" - was the usual response to the video. But sometimes children got confused and would say, "I get wheeze and cough but not so severe as shown in video". After completion of the study the task of double entry of data was quite exciting. Our data entry person used to say "Why to waste double time when I am confident of entering data accurately".

At times we faced difficulty but coordination and support from the International Data Center was excellent. Major publications of Phase Three centers are now in print and we are realizing burden of asthma and other allergic diseases. The ISAAC meeting during the ERS provided an opportunity to interact with international colleagues of the study. Interesting publications showing relationship of asthma and allergy with paracetamol, vehicle pollution and environmental tobacco smoke are now known because of ISAAC.

In the end I wish to express my thanks to ISAAC committee and would like to say that the ISAAC undertaking was an exciting and pleasant experience down the memory lane.

## Jalalabat Centre

Phase Three			
<b>Centre:</b>		Jalalabat, Kyrgyzstan ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Professor Shairbek Sulaimanov	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2003 to May 2003
<b>Sampling Frame:</b>		All Kyrgyz, Uzbek and Russian schoolchildren	

### Personnel

#### Professor Shairbek Sulaimanov

Osh State University  
Lenin Street, 331  
715600 Kyrgyzstan  
Kyrgyzstan

#### Roles:

- Phase Three Principal Investigator for Jalalabat

#### Dr Nurlan Toroev

Medical Faculty  
Jalalabat State University (JASU)  
Lenin Street, 57  
Kyrgyzstan

#### Roles:

- Phase Three collaborator for Jalalabat

Regional

National

Local

Jaipur

Jalalabat

# The ISAAC Story

Regional

National

Local

Jersey

Jima

Jodhpur

## Jersey Centre

<b>Phase One</b>			
<b>Centre:</b>		Jersey, Channel Islands ( Western Europe )	
<b>Principal Investigator:</b>		Dr Richard Grainger	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All Jersey.	
<b>Phase Three</b>			
<b>Centre:</b>		Jersey, Channel Islands ( Western Europe )	
<b>Principal Investigator:</b>		Ms Rosie Goulding	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	February 2002 to March 2002
<b>Sampling Frame:</b>		13-14yr: All Secondary schools in Jersey. Same as Phase One.	

### Personnel

#### Jill Birbeck

Jersey

#### Roles:

- Phase One collaborator for Jersey
- Phase Three collaborator for Jersey

#### Ms Rosie Goulding

Policy Principal  
Social Security Department  
Philip Le Feuvre House, PO BOX 55  
La Motte Street, St Helier, JE4 8PE  
United Kingdom

#### Roles:

- Phase Three Principal Investigator for Jersey

#### Dr Richard Grainger

Director of Public Health  
Le Bas Centre  
PO Box 421, St Saviours Road  
St Helier, Jersey  
United Kingdom

#### Roles:

- Phase One Principal Investigator for Jersey

## Jima Centre

<b>Phase One</b>			
<b>Centre:</b>		Jima, Ethiopia ( Africa )	
<b>Principal Investigator:</b>		Professor Berhane Seyoum	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in Jimma	

### Personnel

#### Professor Berhane Seyoum

Department of Internal Medicine  
Faculty of Medicine  
Addis Ababa University  
P O Box 1176  
Ethiopia

#### Roles:

- Phase One Principal Investigator for Jima

## Jodhpur Centre

<b>Phase One</b>			
<b>Centre:</b>		Jodhpur, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr K C Jain	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	December 1994 to March 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Jodhpur, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr K C Jain	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2003 to August 2003
<b>Sampling Frame:</b>		All schools in Jodhpur, the same sampling frame as Phase One.	

### Personnel

#### Dr K C Jain

Pioneer Medical Centre  
Subhash Chowk  
Ratanada  
Jodhpur 342 001  
India

#### Roles:

- Phase One Principal Investigator for Jodhpur
- Phase Three Principal Investigator for Jodhpur

## Local Publications

The following publications used ISAAC data from the Jersey centre:

Anderson HR, Ruggles R, Strachan DP, Austin JB, Burr M, Jeffs D, Standring P, Steriu A, Goulding R. *Trends in prevalence of symptoms of asthma, hay fever, and eczema in 12-14 year olds in the British Isles, 1995-2002 a questionnaire survey.* BMJ 2004; 328(7447): 1052-3.

Jeffs D, Grainger R, Powell P. *Is childhood allergy more common amongst an island population?* J R Soc Health.2000 Dec;120(4):236-41.

## Local Publications

The following publications used ISAAC data from the Jima centre:

Haileamlak A, Lewis SA, Britton J, Venn AJ, Woldemariam D, Hubbard R, Williams HC. *Validation of the International Study of Asthma and Allergies in Children (ISAAC) and U.K. Criteria for atopic eczema in Ethiopian children.* Br J Dermatol 2005; 152(4): 735-41.

# The ISAAC Story

## Karachi Centre

<b>Phase One</b>			
<b>Centre:</b>		Karachi, Pakistan ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Zulfiqar A Bhutta	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in metropolitan Karachi.	
<b>Phase Three</b>			
<b>Centre:</b>		Karachi, Pakistan ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Naseeruddin Mahmood	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2001 to January 2002
<b>Sampling Frame:</b>		Private and Public schools in metropolitan Karachi city limits. Includes some segregated boys and girls schools as in Phase One. The same sampling frame was used for Phase One and Phase Three.	

### Personnel

#### Dr Zulfiqar A Bhutta

The Aga Khan University  
Faculty of Health Sciences  
Stadium Road  
P.O. Box 3500  
Pakistan

#### Roles:

- Phase One Principal Investigator for Karachi
- Phase Three collaborator for Karachi

#### Dr Naseeruddin Mahmood

Department of Paediatrics  
The Aga Khan University  
PO Box 3500  
Stadium Road  
Pakistan

#### Roles:

- National Coordinator for Pakistan
- Phase Three Principal Investigator for Karachi



Regional  
National  
Local

**Karachi**  
**Kaunas**

## Local Publications

The following publications used ISAAC data from the Kaunas centre:

Kudzyte J, Griska E, Bojarskas J. *Time trends in the prevalence of asthma and allergy among 6-7-year-old children. Results from ISAAC phase I and III studies in Kaunas, Lithuania.* Medicina (Kaunas) 2008; 44(12):944-952

## Kaunas Centre

<b>Phase One</b>			
<b>Centre:</b>		Kaunas, Lithuania ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Professor Jurgis Bojarskas	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: October 1995 to February 1996 6-7yr: October 1995 to January 1996
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Kaunas, Lithuania ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Associate Professor Jolanta Kudzyte	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2001 to May 2002
<b>Sampling Frame:</b>		All schools in Kaunas	

### Personnel

#### Professor Jurgis Bojarskas

Kaunas Medical University  
Clinics of Children's Diseases  
Eiveniu 2  
Lithuania



#### Roles:

- Phase One Principal Investigator for Kaunas

#### Associate Professor Jolanta Kudzyte

Clinic of Children's Diseases  
Kaunas Medical University  
Eiveniu str. 2  
Lithuania



#### Roles:

- National Coordinator for Lithuania
- Phase Three Principal Investigator for Kaunas

#### Dr Valdone Miseviciene

Kaunas Medical University  
Clinic of Children's Diseases  
Eiveniu str. 2  
Lithuania

#### Roles:

- Phase Three collaborator for Kaunas

# The ISAAC Story

Regional

National

Local

Kaunas

Kharkiv

## Why our country joined ISAAC

We were late finding out about ongoing ISAAC studies, and so we were late with our Phase One results. Nevertheless, we were very eager to find out about the real situation concerning allergic diseases in Lithuania, especially among children, as being paediatric allergists and pulmonologists we saw the dramatically increasing numbers of allergic children. We selected the three biggest Lithuanian cities (Kaunas, Panevezys, Siauliai) as centres and examined all children from the secondary schools and kindergartens in them. Phase Three results were produced in time, as we already knew about the invitation to take part repeatedly in this survey. We were interested to see the dynamics of the prevalence of allergic diseases, which is why Kaunas centre completed repeat phases of ISAAC.

## Impact of ISAAC in our country

Various lecturers (pediatric and adult) and even Health Ministry representatives quote our ISAAC data, when talking about the spreading of allergies in Lithuania. Then we are sitting proud, with our heads raised, as still there are no data about the prevalence of adult allergies in Lithuania. Some data from our Lithuanian ISAAC results were published in the most popular Lithuanian medical journal 'Medicina'.

## Kharkiv Centre

<b>Phase One</b>			
<b>Centre:</b>		Kharkiv, Ukraine ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Associate Professor Viktor Ognev	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Kharkiv, Ukraine ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Associate Professor Viktor Ognev	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2001 to May 2002
<b>Sampling Frame:</b>		All schools in Kharkiv centre 001 (very big industrial town, ecology polluted).	

## Personnel

### Associate Professor Viktor Ognev

Head, Department of Social Medicine  
Organization and Economics of Public Health  
Kharkov State Medical University  
4 Lenin Avenue  
Ukraine

#### Roles:

- National Coordinator for Ukraine
- Phase One Principal Investigator for Kharkiv
- Phase Three Principal Investigator for Kharkiv

## Kharkiv

Kharkiv is the second largest city in Ukraine; its area is more than 300 km<sup>2</sup>. The city was founded in 1654. The population of the city is over 1.5 million people. In the city there is an international airport increasing a number of flights every year, railway and bus stations. A well-developed network of underground lines and other city transport (trolley buses, trams, buses, and taxis) provide transportation in the city. Kharkiv is a cultural centre. There are 10 theatres, concert halls, a city picture gallery, museums, about 80 libraries, art monuments, temples, a circus, the Chamber Music Hall, disco clubs. Kharkiv is a city of students. It takes one of the leading places in Ukraine in the number of higher educational establishments (31). Today 300,000 students are trained in higher educational establishments, including 11,800 from more than 106 nations of the world. Every year more than 30,000 young specialists graduate from higher educational establishments in Kharkiv. Kharkiv is the leading scientific center of Ukraine. There are 3 Nobel Prize winners from Kharkiv scientific school:

- Semen Abramovich Kuznets - in Economics;
- Ilya Ilyich Mechnikov - in Physiology and Medicine;
- Lev Davydovich Landau- in Physics.

# The ISAAC Story

## Department of social medicine, organization and economic of Public Health service.

History Department of social medicine, organization and economic of Public Health service of Kharkiv National medical university began from 27 of October 1923 and this department was first in Ukraine. Minister of Public Health service of Ukraine M.G. Gurevich was the founder of the Department.

It were 5 Heads of Department during the department's of social medicine, organization and economic of Public Health service work. There are: professor M.G. Gurevich (1923 – 1925), professor S.A. Tomilin (1925 – 1932), professor Z.A. Gurevich (1932 – 1974), professor N.A. Galicheva (1972 – 2002) and professor V.A. Ognev (from 2002 till now). The staff of teachers consist 16 persons. There are 3 professors (V.A. Ognev, N.A. Galicheva, K.M. Sokol), 3 vice professor and teachers. Many disciplines are studied by department. There are: History of medicine, Biostatistic, Public Health, Economy of Public Health. Over the years the department had issued 23 books, 5 textbooks and teaching aids, granted 8 patents. Since 1998, the Department is the national focal points of the international program "ISAAC" on the study of bronchial asthma in children in Ukraine. At the present stage of work the Department has taken part in international grant project "Intas", carrying the theme "Epidemiological study reproductive function of Ukraine's population, which is influenced by biologically persistent organochlorine compounds (dioxins) environment.

## Khartoum Centre

Phase Three			
<b>Centre:</b>		Khartoum, Sudan ( Africa )	
<b>Principal Investigator:</b>		Professor Omer Abdel Aziz Musa	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	January 2003 to April 2003
<b>Sampling Frame:</b>		13-14yr: Some schools in Khartoum state, Sudan	

## Personnel

### Prof Omer Abdel Aziz Musa

Faculty of Medicine  
National Ribat University  
P.O. Box 193  
P.C. 11111  
Sudan

#### Roles:

- Phase Three Principal Investigator for Khartoum

## ISAAC in Sudan

The International Study of Asthma and Allergies in Childhood (ISAAC) in Sudan was the first collaboration work between Dr Asma Elsony (Epi-Lab) and Pro Omer Musa (Ribat uinveristy). The preparation for ISAAC study started in 2002; the questionnaire was translated to Arabic by professional translator and checked, over 3000 copy were printed and Khartoum (the capital) was chosen as a research site.

The data collection took place between February-September 2003, number of student included in the in the study was 3000, their age was 13 to 14 and they were included from 55 school. Data was entered, and analyzed by Epi info 6. The collaboration between the Epi-Lab and Ribat university made it possible to carry the activities; the data was collected through the Ribat university and the data entry and analysis was done in the Epi-Lab; we have to mention here that when the data was submitted to the regional coordinator and analyzed it showed that Sudan had the highest percentage of heavy truck passing nearthe houses. This percentage appeared higher than expected, therefore we checked the questionnaire and we found that heavy truck was translated mistakenly in Arabic to a car. Consequently that question was eliminated from the analysis.

The most especial about the ISAAC in Sudan is that the partnership established between the Epi-Lab and Ribat University in 2002 continued up to date. The Epi-Lab and Ribat university together conducted 7 studies. Two of these studies used the same questionnaire and investigated asthma and allergies in children in rural areas (Atbra and Algardarif). The prevalence of asthma in rural areas is around 5% , a percentage much lower than that in Khartoum state (12.5%), the studies are not published. ISAAC questionnaire was later modified to study the prevalence of asthma in adult communities (five universities students in five sates) and consequently several papers were published in the International Journal of Tuberculosis and Lung Disease.

Regional

National

Local

Kharkiv

Khartoum

# The ISAAC Story

Regional

National

Local

Khon Kaen

Kinshasa

## Khon Kaen Centre

Phase Three			
<b>Centre:</b>		Khon Kaen, Thailand ( Asia-Pacific )	
<b>Principal Investigator:</b>		Associate Professor Jamaree Teeratakulpisarn	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 1998 to May 1999
<b>Sampling Frame:</b>		13-14yr: All school located in the Central District that have a large number of children (>300), easy to access and have both sex. 6-7yr: All schools located in the Central district that have >100 children of target group and easy to access.	

### Personnel

#### Associate Professor Jamaree Teeratakulpisarn

Department of Pediatrics  
Faculty of Medicine  
Khon Kaen University  
Thailand

#### Roles:

- Phase Three Principal Investigator for Khon Kaen

### ISAAC study in Khon Kaen, Thailand

Prof. Pakit Vichyanond, Thailand coordinator, contacted us (Dr.Srivieng Pairojkul and me) to participate in the ISAAC study phase 1. Because of the limitation of funding, we could not conduct the phase one survey and sent our results for publication on time. However, we conducted our first ISAAC survey, using the same questionnaires as the two previous surveys in Thailand, in 1998, which was later added to the Phase Three data. Our first survey showed higher prevalence of asthma (13.6%) than the two centers from Bangkok and Chiangmai. So, we conducted the second survey 5 years later in 2003 for confirming the high prevalence and determining the time trend. Although our results were similar to Chaingmai center that asthma prevalence was not increase within 5 years, but we confirmed the high prevalence of asthma and other allergic diseases of Thailand.

In Thailand, we have very few disease prevalence survey so we cannot predict or estimate how burden of the diseases to our health system. Allergic diseases have been taken into health personnel and public interested issue since the last decade. We thank Prof. Pakit Vichyanond, the ISAAC Committee and all of you who initiated and run these great works.

Jamaree Teeratakulpisarn, MD  
Department of Pediatrics,  
Faculty of Medicine,  
Khon Kaen University, Thailand

## Kinshasa Centre

Phase Three			
<b>Centre:</b>		Kinshasa, Republique Democratique du Congo ( Africa )	
<b>Principal Investigator:</b>		Prof Dr Jean-Marie Kayembe	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	May 2003 to May 2003
<b>Sampling Frame:</b>		13-14yr: Schools that had 13/14 year old pupils.	

### Personnel

#### Prof Dr Jean-Marie Kayembe

Pneumologist, Deputy-Dean  
Faculty of Medicine  
Université de Kinshasa  
Republique Democratique du Congo

#### Roles:

- Phase Three Principal Investigator for Kinshasa

#### Dr Henriette Wembanyama

Bureau National De La Tuberculose  
BP 12706  
Kinshasa Gombe  
Republique Democratique du Congo

#### Roles:

- Phase Three collaborator for Kinshasa

### ISAAC In Kinshasa

Kinshasa, the capital of D R Congo is a big country with almost ten million habitants. The ISAAC Phase Three survey was conducted under the supervision of the Faculty of Medicine (University of Kinshasa) and the Public health school of Kinshasa for statistical analyses.

This was the first survey on allergy in schoolchildren and the selected schools were chosen with the assistance of the ministry of education. Resident students in the last year at the faculty of medicine were included for data collection among schoolchildren and all the parts of the town were concerned. French is the teaching language but we encountered many difficulties due to a poor understanding of some questions which were translated in local languages. Some schools are very far from the centre and access is limited.

## Local Publications

The following publications used ISAAC data from the Khon Kaen centre:

Teeratakulpisarn J, Pairojkul S, Heng S. *Survey of the prevalence of asthma, allergic rhinitis and eczema in schoolchildren from Khon Kaen, Northeast Thailand.* *an ISAAC study.* *International Study of Asthma and Allergies in Childhood.* Asian Pac J Allergy Immunol.2000 Dec;18(4):187-94.

Teeratakulpisarn J, Wiangnon S, Kosalaraksa P, Heng S. *Surveying the prevalence of asthma, allergic rhinitis and eczema in school-children in Khon Kaen, Northeastern Thailand using the ISAAC questionnaire phase III.* Asian Pac J Allergy Immunol.2004 Dec;22(3):175-81.

# The ISAAC Story

Data collected are very helpful and an ongoing study is now conducted by Dr Kapinga to analyze the level of asthma control in adults in Kinshasa. Three workshops have been organized in Kinshasa under the umbrella of pharmaceutical industry (Glaxo Smith Kline) and data from the ISAAC survey were presented.

We are interested in future collaboration at the level of all sub-saharan Africa and a survey on respiratory health will take place in Kinshasa next July  
Prof J M Kayembe

## Kintampo Centre

Phase Two	
<b>Centre:</b>	Kintampo, Ghana ( Africa )
<b>Principal Investigator:</b>	Dr Emmanuel OD Addo-Yobo
<b>Age Groups:</b>	, <b>Timeframe:</b> February 2000 to July 2000.
<b>Sampling Frame:</b>	All schools in the town of Kintampo and surrounding rural villages.

### Personnel

#### Dr Emmanuel OD Addo-Yobo

Department of Child Health  
Komfo Anokye Teaching Hospital (KATH)  
P. O. Box 1934  
Ghana

#### Roles:

- Phase Two Principal Investigator for Kintampo

## Klang Valley Centre

Phase One	
<b>Centre:</b>	Klang Valley, Malaysia ( Asia-Pacific )
<b>Principal Investigator:</b>	Associate Professor Jessie de Bruyne
<b>Age Groups:</b>	13-14, 6-7 <b>Timeframe:</b> 13-14yr:February 1995 to June 1995 6-7yr:February 1995 to April 1995
<b>Sampling Frame:</b>	
Phase Three	
<b>Centre:</b>	Klang Valley, Malaysia ( Asia-Pacific )
<b>Principal Investigator:</b>	Associate Professor Jessie de Bruyne
<b>Age Groups:</b>	13-14, 6-7 <b>Timeframe:</b> June 2001 to September 2001
<b>Sampling Frame:</b>	All schools in Klang Valley, the same sampling frame as Phase One.

### Personnel

#### Associate Professor Jessie de Bruyne

Department of Paediatrics  
Faculty of Medicine  
University of Malaya  
Malaysia

#### Roles:

- National Coordinator for Malaysia
- Phase One Principal Investigator for Klang Valley
- Phase Three Principal Investigator for Klang Valley

Regional  
National  
Local

**Kinshasa**  
**Kintampo**  
**Klang Valley**



# The ISAAC Story

Regional

National

Local

**Kota Bharu**

## Kota Bharu Centre

Phase One			
<b>Centre:</b>		Kota Bharu, Malaysia ( Asia-Pacific )	
<b>Principal Investigator:</b> Associate Professor Ban Seng Quah			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: April 1995 to July 1995 6-7yr: March 1995 to May 1995
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Kota Bharu, Malaysia ( Asia-Pacific )	
<b>Principal Investigator:</b> Associate Professor Ban Seng Quah			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	July 2001 to August 2001
<b>Sampling Frame:</b>		All schools under the Ministry of Education, Malaysia. Same sampling frame used for both Phase One and Phase Three.	

## Personnel

### Dr. Mazidah Abdul Rasid

Department of Paediatrics,  
School of Medical Sciences  
Universiti Sains Malaysia,  
16150 Kubang Kerian,  
Kelantan  
Malaysia



#### Roles:

- Phase Three collaborator for Kota Bharu
- Left Universiti Sains Malaysia in 2006 and is now working at Perdana Specialist Hospital, Jalan Bayam, 15200 Kota Bharu, Kelantan, Malaysia

### Dr. Mohd Hashim Mohd Hassan

Department of Community Medicine  
Universiti Sains Malaysia,  
16150 Kubang Kerian,  
Kelantan  
Malaysia

#### Roles:

- Phase One collaborator for Kota Bharu

### Dr. Ariffin Nasir

Department of Paediatrics, School of Medical Sciences  
Universiti Sains Malaysia,  
16150 Kubang Kerian,  
Kelantan  
Malaysia

#### Roles:

- Phase Three collaborator for Kota Bharu

### Kol. (B) Dr. Wan Pauzi Wan Ibrahim

Department of Paediatrics,  
School of Medical Sciences  
Universiti Sains Malaysia,  
16150 Kubang Kerian,  
Kelantan  
Malaysia



#### Roles:

- Phase Three collaborator for Kota Bharu

### Professor Ban Seng Quah

Department of Paediatrics,  
School of Medical Sciences  
Universiti Sains Malaysia,  
16150 Kubang Kerian,  
Kelantan  
Malaysia



#### Roles:

- Phase One Principal Investigator for Kota Bharu
- Phase Three Principal Investigator for Kota Bharu
- Left Universiti Sains Malaysia in 2010 and is now working at: Melaka-Manipal Medical College, Jalan Batu Hampar, Bukit Baru, 75150 Melaka, Malaysia

### Dr. Abdul Razif Abdul Razak

Department of Community  
Medicine  
Universiti Sains Malaysia,  
16150 Kubang Kerian,  
Kelantan  
Malaysia



#### Roles:

- Phase One collaborator for Kota Bharu
- Left Universiti Sains Malaysia in 1996 and is now working at: Kedah Medical Centre, Pumpang, 05250 Alor Setar, Kedah Darul Aman, Malaysia

## Local Publications

The following publications used ISAAC data from the Kota Bharu centre:

Quah BS, Wan-Pauzi I, Ariffin N, Mazidah AR. *Prevalence of asthma, eczema and allergic rhinitis. Two surveys, 6 years apart, in Kota Bharu, Malaysia.* *Respirology* 2005; 10(2):244-249.

Quah BS, Razak AR, Hassan MH. *Prevalence of asthma, rhinitis and eczema among schoolchildren in Kelantan, Malaysia.* *Acta Paediatr Jpn.* 1997;39(3):329-35

# The ISAAC Story

## Why was this centre selected for ISAAC?

Kota Bharu, situated in the northeastern part of peninsula Malaysia is the state capital of Kelantan. We were invited to participate in ISAAC by the national coordinator Associate Professor Jessie de Bruyne. As there were no studies on the prevalence of asthma and allergic diseases from this region, we were very enthusiastic to be part of ISAAC. It was also an opportunity to compare the prevalence of the asthma, eczema and allergic rhinitis in Kota Bharu with the more affluent and urban population in the west coast of the peninsular. The demographics of this state is also very different from that in the west coast as 95% of the population are ethnic Malays.

## Our experience of ISAAC

In this multiracial country, a major problem was preparing the ISAAC questionnaire in different languages. As the majority of the population in Kota Bharu are Malays, the ISAAC questionnaire was translated to Malay which is also the national language. The translation was successfully done with the help of Dr. Abdul Razif along with the assistance of language teachers from the university. Several meetings were held with the national coordinator to discuss the Malay questionnaire so that a similar questionnaire could be used in all ISAAC centres in Malaysia. We also needed a Mandarin questionnaire to be used for the few Chinese schools in Kota Bharu district. But this was a minor problem as we adopted the Mandarin questionnaire from our colleagues in Singapore.

Permission from the Kelantan State Director of Education was obtained to conduct the surveys in the schools. We did not face any barriers during our visits to the schools and the teachers assisted by arranging a suitable venue for the video questionnaire. Logistically, it was not a difficult survey to carry out as the permission from the State Director of Education ensured that the students and teachers fulfilled our requests. This might explain the high rate of response of our questionnaires. The response rate for the written questionnaires was also surprisingly high which could be a reflection of the interest of parents.

## Acknowledgements

We wish to thank Universiti Sains Malaysia for providing research grants, and also the Ministry of Education, Malaysia, for granting permission to perform both Phase One and Three surveys among school children in Kota Bharu district. We are also indebted to all children, parents and school staff who participated in the surveys.

## Kottayam Centre

<b>Phase One</b>			
<b>Centre:</b>		Kottayam, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr T U Sukumaran	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 1994 to February 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Kottayam, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr T U Sukumaran	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to December 2002
<b>Sampling Frame:</b>		Some schools in Kottayam, the same sampling frame as Phase One.	

## Personnel

### Dr T U Sukumaran

Institute of Child Health  
Medical College Kottayam  
Medical Supt, I.C.H.  
Amalagiri P.O.  
India



#### Roles:

- Phase One Principal Investigator for Kottayam
- Phase Three Principal Investigator for Kottayam

Regional

National

Local

Kota Bharu

Kottayam

# The ISAAC Story

Regional

National

Local

**Krakow  
(1993)**  
**Kraków  
(1995)**  
**Kuopio  
County**

## Krakow (1993) Centre

<b>Phase One</b>			
<b>Centre:</b>		Krakow (1993), Poland ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Associate Professor Grzegorz Lis			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All elementary schools within the boundaries of Krakow centre.	

### Personnel

#### Associate Professor Grzegorz Lis

Department of Pediatrics  
Polish-American Children's Hospital  
ul. Wielicka 265  
Poland

#### Roles:

- National Coordinator for Poland
- Phase One Principal Investigator for Krakow (1993)

## Kraków (1995) Centre

<b>Phase One</b>			
<b>Centre:</b>		Kraków (1995), Poland ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Associate Professor Grzegorz Lis			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:May 1995 to June 1995 6-7yr:September 1995 to September 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Kraków (1995), Poland ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Associate Professor Grzegorz Lis			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2002 to June 2002
<b>Sampling Frame:</b>		13-14yr: All secondary schols with 1 grade (pupils 13/14 yr of age) in Krakow. Same boundaries for both Phases. 6-7yr:All elementary schools with 1 grade (pupils 6-7 yr of age) in Krakow	

### Personnel

#### Associate Professor Grzegorz Lis

Department of Pediatrics  
Polish-American Children's Hospital  
ul. Wielicka 265  
Poland

#### Roles:

- National Coordinator for Poland
- Phase One Principal Investigator for Kraków (1995)
- Phase Three Principal Investigator for Kraków (1995)

## Kuopio County Centre

<b>Phase One</b>			
<b>Centre:</b>		Kuopio County, Finland ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Dr Juha Pekkanen			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in Kuopio County	
<b>Phase Three</b>			
<b>Centre:</b>		Kuopio County, Finland ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Dr Juha Pekkanen			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	November 2001 to January 2002
<b>Sampling Frame:</b>		13-14yr: All secondary schools in former Kuopio county area. Same sampling frame as Phase One.	

### Personnel

#### Mr Matti Korppi

Kuopio University Hospital  
Department of Paediatrics  
Kaartokatu 9  
Finland

#### Roles:

- Phase Three collaborator for Kuopio County

#### Dr Juha Pekkanen

Head, Department of Environmental  
Epidemiology  
National Public Health Institute  
KTL, P.O. Box 95  
Finland

#### Roles:

- National Coordinator for Finland
- Phase One Principal Investigator for Kuopio County
- Phase Three Principal Investigator for Kuopio County

# The ISAAC Story

## Dr Sami Remes

Unit of Environmental Epidemiology  
National Public Health Institute  
PO Box 95  
Finland

### Roles:

- Phase Three collaborator for Kuopio County

## Kutaisi Centre

Phase One			
<b>Centre:</b>		Kutaisi, Georgia ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Nino Khetsuriani	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 1996 to April 1996
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Kutaisi, Georgia ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Maia Gotua	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	December 2003 to December 2003
<b>Sampling Frame:</b>		All schools in Kutaisi, the same sampling frame as Phase One.	

## Personnel

### Dr Tamar Abramidze

Center of Allergy & Immunology  
2/6 Lubliana str.  
Georgia



### Roles:

- Phase Three collaborator for Kutaisi

### Professor Amiran Gamkrelidze

Scientific Adviser of the Center of Allergy and Immunology Programme Coordinator of WHO Country Office in Georgia,  
2/6 Lubliana Str, 0159  
Tbilisi  
Georgia



### Roles:

- Phase Three collaborator for Kutaisi
- Scientific Advisor to Phases Two and Three

### Dr Maia Gotua

Director  
Center of Allergy & Immunology  
2/6 Lubliana str.  
Tbilisi  
Georgia



### Roles:

- National Coordinator for Georgia
- Phase Three Principal Investigator for Kutaisi

### Lali Karsanidze

Tbilisi State Medical University  
2/6 Lubliana Str, 0159  
Georgia

### Roles:

- Phase Three collaborator for Kutaisi

### Dr Nino Khetsuriani

Centers for Disease Control  
Mail Stop A34  
1600 Clifton Rd, NE  
Usa



### Roles:

- Phase One Principal Investigator for Kutaisi

### Maia Kiladze

Center of Allergy & Immunology  
2/6 Lubliana str.  
Georgia

### Roles:

- Phase Three collaborator for Kutaisi



Georgia

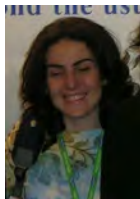
Regional  
National  
Local

**Kuopio  
County  
Kutaisi**

# The ISAAC Story

## Dr Maia Rukahzde

Center of Allergy &  
Immunology  
2/6 Lubliana str.  
Georgia



### Roles:

- Phase Three collaborator for Kutaisi

Regional

National

Local

Kutaisi

## Background

Georgia, which former was one of the Soviet Union countries, gained its independence in 1990 and faced most complicated political situations and hard economic conditions. Despite the mentioned Georgia was always opened to new researches, including epidemiological studies. The ISAAC regional coordinator for Northern and Eastern Europe professor Bengt Bjorksten kindly invited Georgia to participate in ISAAC study in 1994. This participation was defined according to the following key points: the lack of any epidemiological data regarding markers of allergy diseases for that time in Georgia; the interest to confirm the purpose that the prevalence of these diseases in Georgia should be much lower than in country with market economy (as it was revealed in the other less industrialized formerly socialist countries); as well as personal contact with Prof. Gamkrelidze and his team of highly-qualified allergologists at the Tbilisi State Medical University and later staff of Center of Allergy and Immunology.

## Impact of ISAAC

Involvement in a large global research project gave chance of new research, education and obtaining of practical experience to our country. It was extremely important for developing allergy and epidemiology fields in Georgia and learning new approaches of standardized high quality research. Participation in ISAAC expanded our professional contacts and was good opportunity for active exchanging of scientific knowledge with our colleagues in other countries.

## Findings

ISAAC Phase I and as well as ISAAC Phase III were conducted in two cities of Georgia – Tbilisi and Kutaisi, characterized by different geographical and urban peculiarities. The prevalence of symptoms of allergic diseases in Georgia according to the results of ISAAC I survey mostly was less than 5%. The exception was the prevalence of wheezing 12 months among 6-7 yrs. Old children (Kutaisi – 9.3%, Tbilisi -5.4%), which possibly could be less related to allergy and more associated with infections in the younger children. The regional differences (between two study centers) in symptoms were not obvious among 13-14 yrs. Old children. The 12 month prevalence of wheezing and conjunctivitis were slightly higher in Kutaisi than in Tbilisi among the 6-7 yr olds children.

ISAAC Phase II was performed in Tbilisi, in 2001-2002. The prevalence rate of asthma became 9.2%, the prevalence rate of 12 months of itchy rash and flexural dermatitis were 7.6% and 5.9%, respectively, which was higher than the prevalence of eczema symptoms reported in Georgia 6-7 years ago (ISAAC Phase I – 1995-1996). The prevalence of current rhinoconjunctivitis was increased as well (6.3% vs. 4.7%). An interesting finding was that the family history of allergic diseases and damp spots on the wall was the main determinants for all types of allergic symptoms as well as high co-morbidity of allergic diseases.

ISAAC Phase III was conducted in May 2003 – December 2003 in two centers. Unfortunately, Tbilisi center was excluded from the global data analysis. That was caused by very low response rate (46% - 13/14 yrs old group, 56% - 6/7 yrs old group) during the fieldwork period, due to the difficult political situation inside the country (so-called “Rose Revolution” located in Tbilisi). In order to reveal tendency of changes of allergic symptoms prevalence in our country we analyzed both centers. The results of ISAAC phase III study indicate that the epidemiological features of asthma and allergies in Georgia are changing, although the causes are still uncertain. Considerable geographic variation in time trends of prevalence of symptoms of asthma and allergies can be seen in both age groups (6/7 and 13/14 yrs old). The prevalence changes, particularly the increasing pattern, more clearly expressed in Tbilisi than in Kutaisi centre. Among adolescences in Kutaisi center only “current wheezing” increased from 1996 (3,6% (95%CI 3.1-4.1)) to 2003 (5.1% (95%CI 4.3-5.9)), the prevalence of all other allergic diseases decreased or remained without changes. It should be noted, that the prevalence of current wheezing among 6-7 yrs old children, in contrast to other age group, decreased by 2,4% (9,3% (1996) and 6,9% (2003)), the symptoms of current rhino-conjunctivitis slightly decreased and symptoms of flexural dermatitis reduced by 2.8% ( $p < 0.01$ ).

# The ISAAC Story

## References

1. Björkstén B, Dumitrascu D, Foucard T, Khetsuriani N, Khaitov R, Leja M, Lis G, Pekkanen J, Priftanji A, Riiikjäv MA. Prevalence of childhood asthma, rhinitis and eczema in Scandinavia and Eastern Europe. *Eur Respir J*. 1998 Aug; 12(2):432-7.
2. Weinmayr G, Weiland SK, Björkstén B, Brunekreef B, Büchele G, Cookson WO, Garcia-Marcos L, Gotua M, Gratziau C, van Hage M, von Mutius E, Riiikjäv MA, Rzehak P, Stein RT, Strachan DP, Tsanakas J, Wickens K, Wong GW; ISAAC Phase Two Study Group. Atopic sensitization and the international variation of asthma symptom prevalence in children. *Am J Respir Crit Care Med*. 2007 Sep 15; 176(6):565-74. Epub 2007 Jun 15.
3. Abramidze T, Gotua M, Rukhadze M, Gamkrelidze A. Prevalence of asthma and allergies among adolescences in Georgia: comparison between two surveys. *Georgian Med News*. 2007 Mar ;( 144):38-41

## Acknowledgment

We wish to thank Prof. Bengt Bjorksten for a supervision and great support in carrying out of all phases of ISAAC study in Georgia. Many thanks to ISAAC group of University of Ulm under the leadership of Prof. Stephan Weiland and ISAAC group in Auckland for supporting in data entry and analysis. We are also grateful to all the children, parents and school staff who participated in the surveys.

## Kuwait Centre

<b>Phase One</b>			
<b>Centre:</b>		Kuwait, Kuwait ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Jawad A al-Momen	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		Geographic area and specific language	
<b>Phase Three</b>			
<b>Centre:</b>		Kuwait, Kuwait ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Jawad A al-Momen	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	January 2001 to June 2001
<b>Sampling Frame:</b>		13-14yr: The same sampling frame as Phase One.	

## Personnel

### Dr Jawad A al-Momen

Consultant Pediatrician  
Al-Amiri Hospital  
P.O Box 4077  
Al Safat  
Kuwait

#### Roles:

- Phase One Principal Investigator for Kuwait
- Phase Three Principal Investigator for Kuwait

## Kärnten Centre

<b>Phase One</b>			
<b>Centre:</b>		Kärnten, Austria ( Western Europe )	
<b>Principal Investigator:</b>		Associate Professor Gerald Haidinger	
<b>Age Groups:</b>	6-7	<b>Timeframe:</b>	April 1995 to January 1996
<b>Sampling Frame:</b>		6-7yr: All children attending pre-school classes or 1st and 2nd grade elementary school.	
<b>Phase Three</b>			
<b>Centre:</b>		Kärnten, Austria ( Western Europe )	
<b>Principal Investigator:</b>		Associate Professor Gerald Haidinger	
<b>Age Groups:</b>	6-7	<b>Timeframe:</b>	February 2002 to July 2002
<b>Sampling Frame:</b>		6-7yr: All schools in the districts Klagenfurt, Spittal, and St Veit. Exactly the same sampling frame as in Phase One.	

## Personnel

### Associate Professor Gerald Haidinger

Department of Epidemiology  
Centre of Public Health  
Medical University of Vienna  
Borschkegasse 8a, 1090 Vienna  
Austria



#### Roles:

- National Coordinator for Austria
- Phase One Principal Investigator for Kärnten
- Phase Three Principal Investigator for Kärnten

Regional

National

Local

Kutaisi

Kuwait

Kärnten

# The ISAAC Story

Regional

National

Local

La Habana

Lapland

Area

Lattakia

## La Habana Centre

Phase Three			
<b>Centre:</b>		La Habana, Cuba ( Latin America )	
<b>Principal Investigator:</b> Dra Patricia Varona Pérez			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	June 2002 to July 2002
<b>Sampling Frame:</b>		Some schools in Havana City (Urban ).	

### Personnel

#### Dra Patricia Varona Pérez

JGrupo de Epidemiología de la División Epidemiología y Salud Publica de INHEM Instituto Naconal de Higiene Epidemiología y Microbiología (INHEM) Infanta # 1158 e/ Clavel y Llinás Cuba

#### Roles:

- National Coordinator for Cuba
- Phase Three Principal Investigator for La Habana

## Lapland Area Centre

Phase One			
<b>Centre:</b>		Lapland Area, Finland ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Dr Leena Soininen			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools of the municipalities of the southern part of Lapland (Kolari, Pello, Ylitornio, Tornio, Keminmaa, Kemi, Tervola, Simo, Ranua, Posio, Kemijarvi, Salla and City of Rovaniemi together with its rural district)	

### Personnel

#### Dr Leena Soininen

Provincial State Office of Lapland P O Box 8002 Finland

#### Roles:

- Phase One Principal Investigator for Lapland Area

## Lattakia Centre

Phase Three			
<b>Centre:</b>		Lattakia, Syria ( Eastern Mediterranean )	
<b>Principal Investigator:</b> Professor Yousser Mohammad			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 2001 to November 2002
<b>Sampling Frame:</b>		13-14yr: Some schools from the city of Lattakia 6-7yr:Some schools of the wealthy part of the city and others of the lowest socio-economic level.	

### Personnel

#### Professor Yousser Mohammad

Head of Chest Diseases Division Tishreen University PO Box 1479 Syria



#### Roles:

- Phase Three Principal Investigator for Lattakia

#### Dr Fatima Yassine

Tishreen University Syria



#### Roles:

- Phase Three collaborator for Lattakia

## Local Publications

The following publications used ISAAC data from the Lattakia centre:

Mohammad Y, Tabbah K, Mohammad S, Yassine F, Clayton T and Hassan M *International Study of Asthma and Allergies in Childhood phase 3 in the Syrian Arab Republic East Med Health J* 2010; 16(7): 710-716



Lattakia, Syria

# The ISAAC Story

## Why was this centre selected for ISAAC?

ISAAC phase three in Syria, was the first tool of its kind to help understanding the prevalence of asthma in schools. Results followed the national system of informing to all ministries. We had been informed by the newsletter of the IUATLD about the ISAAC phase three survey, we became very excited In Tishreen University to participate. The same in Tartous center. The University Council of Tishreen University approved the participation by ministerial decree.

## Our experience of ISAAC

With Aleppo and Tartous we translated the questionnaire to Arabic, The president of the university wrote to the Director of Education in Lattakia governorate, who accepted the survey in schools. All school directors we glorified to see that their pupils participated to the survey. We did not have barriers, parents were very compliant too, they considered that we are helping their children. We took the occasion to add questions about passive smoking in utero to the Environmental Questionnaire.

In 2005 a national group for Education for asthma and COPD have been decreed by the Tishreen University collaborating with Ministry of Health, to help educate patients on Asthma and COPD. One of our activities was to visit schools and ask on classrooms if any have wheezing episodes or if any family member has it, it was surprising to see the number of positive responders not aware of the link between asthma and wheezing. As ISAAC researchers, we believe these questions could help to carry on early diagnosis campaigns.

We wanted to publish our results in a regional journal, we choose the Eastern Mediterranean health journal, the WHO Journal. We thought that it should inform health ministers and universities of the region about ISAAC, we looked on the Isaac website to learn about publications rules, we understood that we should contact the IIDC, fortunately Dr.Tadd Clayton helped us, it was for us very impressing to be helped by the ISAAC center in New Zealand, University of Auckland. Now we will circulate this article via official channels from the university to health and education authorities in Syria.

ISAAC results are the national reference for our post graduate students thesis

We think that it is worthy to develop a program in schools, screening questionnaire of ISAAC followed by visiting doctor.

## Lima Centre

<b>Phase One</b>			
<b>Centre:</b>		Lima, Peru ( Latin America )	
<b>Principal Investigator:</b>		Dr Pascual Chiarella	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in 1 area (Santiago de Surco, district) chosen from the 52 district in Lima.	
<b>Phase Three</b>			
<b>Centre:</b>		Lima, Peru ( Latin America )	
<b>Principal Investigator:</b>		Dr Pascual Chiarella	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	July 2001 to July 2001
<b>Sampling Frame:</b>		All schools registered in the Educational Supervision Unit of the district of Santiago de Surco in Lima, Perú. The same sampling frame was used for both Phase One and Phase Three.	

## Personnel

### Dr Pascual Chiarella

Universidad Peruana Cayetano Heredia  
Departamento de Pediatría  
Av. La Floresta 175 Dpto 302  
Chacarilla, Surco  
Peru

#### Roles:

- National Coordinator for Peru
- Phase One Principal Investigator for Lima
- Phase Three Principal Investigator for Lima

### Dr Luis Vega-Briceño

Universidad Peruana Cayetano Heredia  
Departamento de Pediatría  
Av. La Floreste 175 Dpto 302  
Peru

#### Roles:

- Phase Three collaborator for Lima

Regional

National

Local

Lattakia

Lima



# The ISAAC Story

Regional

National

Local

Lima

Linköping

## ISAAC Study in Lima, Peru

On September 17, 1993, I received the invitation from Dr Javier Mallol, Regional Coordinator for Latin America, to participate in the ISAAC study as a National Coordinator for Peru. We gladly accepted a few days later, and since that time we have participated in this project; it is quite interesting to see how much time has gone by.

In 1994, we made all the arrangements to run the study in a district of Lima, Santiago de Surco; I must acknowledge the help of Drs. Eduardo Negron, Juanita Aching, Luis Vega, Aldo Navarro, and many other people. We are also thankful for the grant that Dr. Mallol gave us.

The ISAAC Phase I study was run between April and June 1995, and the data for Lima was submitted in the second part of that year. Afterwards we submitted several Phase I publications, including national publications. After Phase I, we performed several smaller studies in Peru using the ISAAC methodology; while the numbers were smaller, we used the same methodology, and the results could provide some data for comparison with ISAAC.

ISAAC Phase III Data was collected in May to July 2001, with the help of Dr. Erick Forno. In both phases we used the written and video questionnaires.

The Lima Centre in Peru is known for its particularly high prevalence of asthma symptoms in 13–14 year-old children, but with mild symptoms. The discussion continues: why do we have such high prevalence of asthmatic patients?

We want to thank Drs Mallol, Tadd Clayton, Innes Asher, Philippa Ellwood, and everyone who works on ISAAC for inviting and helping us all these years.

## Linköping Centre

<b>Phase One</b>			
<b>Centre:</b>		Linköping, Sweden ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Professor N-I Max Kjellman	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	
<b>Sampling Frame:</b>			
<b>Phase Two</b>			
<b>Centre:</b>		Linköping, Sweden ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Lennart Bråbäck	
<b>Age Groups:</b>	10-11,	<b>Timeframe:</b>	January 1997 to April 1997.
<b>Sampling Frame:</b>		A random sample of schools from the urban district of Linköping.	
<b>Phase Three</b>			
<b>Centre:</b>		Linköping, Sweden ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Hartmut Vogt	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to May 2002
<b>Sampling Frame:</b>		All schools in the Linköping Area.	

## Personnel

### Dr Lennart Bråbäck

Sundsvall Hospital  
Mid Sweden Research and Development Centre  
Sweden

#### Roles:

- National Coordinator for Sweden
- Phase Two Principal Investigator for Linköping
- National Coordinator for Sweden Phase Two

### Professor N-I Max Kjellman

Linköping University  
Sweden

#### Roles:

- Phase One Principal Investigator for Linköping
- Phase Two collaborator for Linköping

### Dr Hartmut Vogt

Department of Clinical and Experimental  
Medicine  
Division of Pediatrics  
Faculty of Health Sciences  
Linköping University  
Sweden

#### Roles:

- Phase Three Principal Investigator for Linköping

# The ISAAC Story

Study sites in Sweden were Linköping in phase I, II and III and Östersund in phase II. Linköping in Southern Sweden (latitude 588) is the fifth largest city in Sweden and is currently undergoing expansion with a university and several large sites of industry. At the time of ISAAC Phase II in 1997, the population was 132,089 (24% of whom were below 20 years of age). Östersund is an administrative center in Northern Sweden (latitude 618) with sparsely populated surroundings. In 1997, the total population in Östersund was 59,188 (23 % of whom were below 20 years of age).

As a member of the international steering committee and the regional coordinator in Eastern Europe, professor Bengt Björkstén had an important role as a promoter of the ISAAC studies in Sweden. The ISAAC study phase II was carried out in close cooperation with the study centres in Estonia and the field workers were trained together in skin prick test technique and bronchial hyperreactivity tests.

In phase II, clusters of children were randomly selected in each centre for the study, using schools as sampling units. In Linköping, the survey involved 15 schools and in Östersund all schools were selected due to the lower population. All 10-11 years old children (forms 4 and 5) were invited to participate in skin prick tests and parental questionnaires. Information on anthropometric measures at birth and pre- and perinatal exposures were collected from the medical birth registry. The local mass medias paid a great deal of attention to the study, particularly in Östersund. The participation rates in the questionnaire study were 82% in Linköping and 86% in Östersund. All children with a history of wheeze in the past 12 months as reported in the parental questionnaires and a random sample of non-wheezing children from the original cohorts were invited to a case-control study, which included parental questionnaire, examination for flexural dermatitis and bronchial challenge with hypertonic saline..

The sensitivity of hypertonic saline challenge test to detect asthma ever, current asthma and current atopic asthma was 62, 61 and 83%, and the specificity was 83, 81 and 60%, respectively. Also, the degree of bronchial hyperresponsiveness increased with the number of wheezy episodes. It was concluded that hypertonic saline provocation test is useful as a tool to detect asthma in epidemiological studies in children. Xiao-Mei Mai, a talented researcher, now working in Norway, wrote her thesis using data from ISAAC phase II and Professor Ulrich Wahn, Humboldt University Berlin, was her opponent.

For ISAAC III paediatrician Hartmut Vogt and the study nurses Kicki Helander and Lena Lindell were at all schools in the municipality of Linköping evaluating children for asthma and allergy. When watching different clips of the ISAAC video questionnaire, many of the children first laughed quietly at the children in the film clips but after a while some of them seemed to become aware that this was their own problems that were shown. In almost every school, several children stayed afterwards and discussed their health problems with our research group/staff and talked about the possibilities they had, to get rid of their symptoms. This was really a sudden insight for many of the children (and us). The photo, taken by the local newspaper, shows some children and one of our research nurses.

When comparing the results from ISAAC III with ISAAC I we could, for the first time, see a decrease in the incidence of asthma symptoms in Sweden. The 12-month prevalence of wheezing in Linköping decreased from 11.2% to 9.7% among 13-14 years old children. The prevalence of physician-diagnosed asthma increased between phase I and III from 10.0% to 12.0%.

## Lisbon Centre

<b>Phase One</b>			
<b>Centre:</b>		Lisbon, Portugal ( Western Europe )	
<b>Principal Investigator:</b> Dr José E Rosado Pinto			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:November 1993 to May 1994 6-7yr:April 1995 to October 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Lisbon, Portugal ( Western Europe )	
<b>Principal Investigator:</b> Dr José E Rosado Pinto			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2001 to March 2002
<b>Sampling Frame:</b>		Some schools of the Lisbon Metropolitan area (Lisbon city and neighbouring municipalities. The same area as in Phase One.	

## Personnel

### Ms Manuela Correia

Dept. de Estudos e Planamento da Saúde  
Ministério da Saúde  
Av. Alvares Cabral, 25  
Portugal

### Roles:

- Phase Three collaborator for Lisbon

Regional

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# The ISAAC Story

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Lome

## Dr José E Rosado Pinto

Immunoallergy Department,  
Hospital da Luz,  
Av Lusíadas n. 100,  
1500-650 Lisboa  
Portugal



### Roles:

- National Coordinator for Portugal
- Phase One Principal Investigator for Lisbon
- Phase Three Principal Investigator for Lisbon

## Ms Rita Vasconcelos

Depto. De Matemática  
Universidade de Madeira Campus  
Universitário da Penteada  
Portugal

### Roles:

- Phase Three collaborator for Lisbon

Portugal is one of the oldest countries in the world. It is independent since the XII century and has a population around 10 million inhabitants. Lisbon, the capital, has around 2 million people living near the sea.

The ISAAC project arrived when I attended a paediatric allergology meeting in Upsala (Sweden) 1990. In this meeting some of the specialists were very excited about a new project called ISAAC. In few months I received an invitation from Auckland to organize the Lisbon ISAAC Centre.

As a member of the Allergology Department of the Paediatric Hospital Dona Estefania in Lisbon I started to organize the ISAAC project with the translation into Portuguese of the Phase One document; launched the bureaucratic procedures for the permission from the Education and Health Ministries to pass the questionnaires in the schools, and to get the collaboration of the colleagues of the primary health care sector to link with our hospital team. The hospital Epidemiological and Informatic departments of the Ministry of Health were also contacted in order to support the study. After this preparatory phase we started according to the rules with around 3000 13-14 and 6-7 years school children of different areas of the Lisbon District. The first results arrived in a few months (1991-92). For the first time in Portugal we could gather important data about prevalence and severity of asthma and allergic diseases in children.

Some months later I received a kind invitation from the ISAAC Spanish coordinator, Luis Garcia Marcos, to be present in Madrid to share our ISAAC/Lisbon experience with our Spanish colleagues. It was after this joint meeting that I realized the importance and dimension of ISAAC. Consequently, arriving home, I started to invite colleagues and friends from different regions of the country to be involved in such an important project. The basic structure was prepared, but extra financial support could not be promised. Thus different centres from the country (continental and islands) were involved: Lisboa, Porto, Portimão, Funchal (Madeira Island) in phases I and III, and Alentejo and Azores (island of São Miguel) in phase III. More than 35,000 children, 400 schools, hundreds of doctors, nurses and teachers were involved in the process. The great majority the schools and teams participated in phases I and III. The data analysis of phase III (around 20,000 children) was performed by the Department of Mathematics of Madeira University (head Rita Vasconcelos) with the financial support of GSK. Unfortunately Phase Two was only centralised in Lisbon and using only the questionnaires. In 2000 the regional authorities didn't allow the practice of skin prick tests in public schools and we lost the opportunity to develop more knowledge about asthma and allergic diseases.

During the period between Phase One and Three I had the opportunity to be present in important ISAAC Western Region meetings in Münster (Germany), organised by Ulrich Keil and the unforgettable Stephan Weiland, where the "spirit" of ISAAC was always present. With this "spirit" we organised with ISAAC Spain and Brazil (coordinator Dirceu Solé) several meetings, sharing experiences and data with the national, regional and other ISAAC members.

During these 20 years Portugal ISAAC data have been a reference in our allergology paediatric area. Epidemiological studies, research documents and thesis used ISAAC Portuguese documents and questionnaires.

In the near future we are preparing a paper and a meeting to celebrate the 20 years of ISAAC Portugal in order to remember the Portuguese contribution to one of the most exciting projects developed during the professional activity of many of us.

## Lome Centre

<b>Phase Three</b>			
<b>Centre:</b>		Lome, Togo ( Africa )	
<b>Principal Investigator:</b>		Professor Osseni Tidjani	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	October 2001 to January 2002
<b>Sampling Frame:</b>		13-14yr: All schools in Lome Region	

# The ISAAC Story

## Personnel

### Professor Osseni Tidjani

Service de Pneumologie  
CHU Tokoin  
BP. 7318  
Togo

#### Roles:

Phase Three Principal Investigator for Lome

## Local Publications

The following publications used ISAAC data from the Lucknow centre:

Awasthi S, Kalra E, Roy S, Awasthi S. *Prevalence and risk factors of asthma and wheeze in school-going children in Lucknow, North India.* Indian Pediatr 2004; 41: 1205-10.

## Lucknow Centre

Phase Three			
<b>Centre:</b>		Lucknow, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Professor Shally Awasthi			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	July 2001 to March 2002
<b>Sampling Frame:</b>		All schools in Lucknow Area.	

## Personnel

### Professor Shally Awasthi

Department of Pediatrics  
King George's Medical College  
India

#### Roles:

- Phase Three Principal Investigator for Lucknow

## Ludhiana Centre

Phase Three			
<b>Centre:</b>		Ludhiana, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Professor Jugesh Chhatwal			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 2002 to May 2002
<b>Sampling Frame:</b>		Some schools in Ludhiana City.	

## Personnel

### Professor Jugesh Chhatwal

Department of Pediatrics  
Christian Medical College and Hospital  
Ludhiana-141008  
India

#### Roles:

- Phase Three Principal Investigator for Ludhiana

## Maceió Centre

Phase Three			
<b>Centre:</b>		Maceió, Brasil ( Latin America )	
<b>Principal Investigator:</b> Professor Francisco José Passos			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 2002 to November 2002
<b>Sampling Frame:</b>		All schools in the same health district.	

## Personnel

### Professor Francisco José Passos

Alagoas Federal University  
St. Antônio F. Vasconcelos, 138  
ap.301, Jatiuca  
Brasil

#### Roles:

- Phase Three Principal Investigator for Maceió

## Madras (2) Centre

Phase One			
<b>Centre:</b>		Madras (2), India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Dr Sarela Rajajee			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 1994 to March 1995
<b>Sampling Frame:</b>			

## Personnel

### Dr Sarela Rajajee

The Childs Trust Hospital  
No. 12 A Nageswara Road  
Nungambakrah  
India

#### Roles:

- Phase One Principal Investigator for Madras (2)

Regional

National

Local

Lome

Lucknow

Ludhiana

Maceió

Madras (2)

# The ISAAC Story

Regional

National

Local

Madras (3)

Madrid

## Chennai (3) Centre

<b>Phase One</b>			
<b>Centre:</b>		Madras (3), India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Dr N Somu			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:November 1994 to February 1995 6-7yr:October 1994 to February 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Chennai (3), India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Dr Gururaj Setty			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2001 to November 2002
<b>Sampling Frame:</b>		Schools in Egmore and Purujawalkam areas. The same sampling frame as Phase One.	

## Personnel

### Dr M P Jeyapaul

Department of Pulmonology  
Institute of Child Health & Hospital For  
Children  
35 Kanaka Pillai Street  
Tondiarpet, Mannady  
India

#### Roles:

- Phase Three collaborator for Chennai (3)

### Dr Gururaj Setty

79 Silverbirch Close  
India

#### Roles:

- Phase Three Principal Investigator for Chennai (3)

### Dr N Somu

Department of  
Pulmonology,  
Institute of Child Health & Hospital for Children  
Egmore, Chennai -600 008  
India

- #### Roles:
- Phase One Principal Investigator for Madras (3)
  - Phase Three collaborator for Chennai (3)

Pulmonology,  
Institute of Child Health & Hospital for Children  
Egmore, Chennai -600 008  
India

### Dr D Vijaya Sekaran

110/3,(New No.54), New Street  
Chennai - 600  
India

#### Roles:

- Phase Three collaborator for Chennai (3)

## Madrid Centre

<b>Phase One</b>			
<b>Centre:</b>		Madrid, Spain ( Western Europe )	
<b>Principal Investigator:</b> Dr Gloria García-Hernández			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	
<b>Sampling Frame:</b>			
<b>Phase Two</b>			
<b>Centre:</b>		Madrid, Spain ( Western Europe )	
<b>Principal Investigator:</b> Dr Gloria García-Hernández			
<b>Age Groups:</b>	10-11,	<b>Timeframe:</b>	February 2001 to April 2002.
<b>Sampling Frame:</b>		The 11th health district of Madrid: the catchment area for Hospital Universitario 12 de Octubre.	
<b>Phase Three</b>			
<b>Centre:</b>		Madrid, Spain ( Western Europe )	
<b>Principal Investigator:</b> Dr Gloria García-Hernández			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2002 to November 2002
<b>Sampling Frame:</b>		All schools in 11th Health District of Madrid, Spain, The same sampling frame as Phase One.	



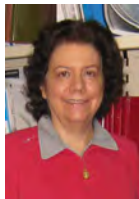
Madrid, Spain

# The ISAAC Story

## Personnel

### Dr Gloria García-Hernández

Division of Paediatric  
Pulmonology and Allergy  
Hospital Universitario 12 de  
Octubre  
Avenida de Cordoba S/N  
Spain



#### Roles:

- Phase One Principal Investigator for Madrid
- Phase Two Principal Investigator for Madrid
- Phase Three Principal Investigator for Madrid

### Carmen Luna-Paredes

Hospital Doce de Octubre  
Madrid  
Spain



#### Roles:

- Phase Three collaborator for Madrid

### Antonio Martínez

Hospital Doce de Octubre  
Madrid  
Spain

#### Roles:

- Phase Three collaborator for Madrid

## ISAAC In Madrid

Although the first meeting for Spanish researchers interested in ISAAC study was hosted in Madrid in 1993, it was not until 1996 that our centre entered the first Phase of this project, a unique opportunity to obtain epidemiological data on asthma and allergies in our paediatric population and the possibility to compare it to that of other regions and countries. Eager encouragement to participate came from our country coordinator, Professor Luis García Marcos, and we felt we could not let pass this ongoing chance.

### Phase One

Madrid was included in Phase One of ISAAC in 1996. Our centre included children of the two age groups. All schools within our sanitary area were invited to participate in the study. Since external funding was not available at the time, we had to count on good will from the members of the team, Dr. García Hernández, Dr Martínez Gimeno and Dr. Carmen Luna who dedicated their time and effort to ensure the study met deadlines. We were very proud of the results that came out of this first study and that helped us know more about the prevalence of asthma and allergies in our setting. An interesting finding was that our prevalence of asthma was higher than that of coastal centres.

### Phase Two

Madrid was one of the four centres to participate in Phase Two of the study in Spain. We chose the 100 wheezers plus 100 non-wheezers option in the bronchial challenge test. Field workers had to be trained in atopic dermatitis evaluation, allergy tests (prick tests), pulmonary function tests and data collection following instructions from ISAAC. Funds obtained from the Spanish government, thanks to efforts by our country coordinator, allowed us to encourage our young collaborators in pursuing best results for the study. We found it was a very time consuming effort but the outcomes paid out for it.

### Phase Three

This time, Madrid obtained individual funds to pursue this Phase of a study that was already well known all around the world. We surveyed almost the same schools that had participated previously in Phase One. After questionnaires were collected we had to send them to Cartagena (our country coordinating centre) so they could be scanned in order to undergo a new processing system that made data analysis faster and easier. Data from this study has allowed us to acknowledge changes in prevalence of asthma and allergies in our paediatric population in Madrid.

Regional

National

Local

Madrid

# The ISAAC Story

Regional

National

Local

Malta

Managua

## Malta Centre

Phase One			
<b>Centre:</b>		Malta, Malta ( Eastern Mediterranean )	
<b>Principal Investigator:</b> Professor Stephen Montefort			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:February 1995 to October 1995 6-7yr:May 1994 to June 1994
<b>Sampling Frame:</b>		13-14yr: All state and private schools in Malta and island of Gozo. 6-7yr:All state schools in Malta and island of Gozo.	
Phase Three			
<b>Centre:</b>		Malta, Malta ( Eastern Mediterranean )	
<b>Principal Investigator:</b> Professor Stephen Montefort			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2001 to June 2002
<b>Sampling Frame:</b>		All schools in Malta and Gozo.	

## Personnel

### Professor Stephen Montefort

Department of Medicine  
University of Malta  
Appt 121 Tas-Sellum  
Residence  
Malta



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Eastern Mediterranean
- National Coordinator for Malta
- Phase One Principal Investigator for Malta
- Phase Three Principal Investigator for Malta

## ISAAC in Malta

This study was a first for our small country where we managed to gather a strong set of data which we could reliably compare to other countries. This was especially significant as the numbers required by ISAAC to be recruited were a good percentage of Maltese children in the chosen age-groups. The results have opened the eyes of the health authorities and the public to the very real problem our country has with childhood allergic conditions. We have managed to publish our findings and this was an added bonus to our medical department. So all in all our experience in ISAAC has certainly been very good. This should encourage us to partake in future similar international studies.

## Findings

Malta seemed to have amongst the highest prevalences of allergic condition in the Mediterranean with the rate of rhinoconjunctivitis in 13 – 14 year olds being third highest in the world in phase 1 of the study. In the younger age group we have noticed that along the years between phase 1 and phase 3 we had a very significant increase in the prevalence of wheezing and rhinitis but not eczema. Thankfully this was also associated with better control and decrease in severity of the conditions studied. In the older age groups the prevalences tended to plateau and in the case of rhinitis and eczema, they actually decreased significantly.

## Managua Centre

Phase Three			
<b>Centre:</b>		Managua, Nicaragua ( Latin America )	
<b>Principal Investigator:</b> Dr José Félix Sánchez			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 2002 to June 2002
<b>Sampling Frame:</b>		Some schools in the 6th Health District of Health Ministry of Nicaragua	

## Personnel

### Martha Garcia

Licensed practical nurse  
Villa Venezuela Health Center  
Managua  
Nicaragua

### Dr Eduardo Parrales, M.D

Health Director of the VI District of Managua  
Managua  
Nicaragua

#### Roles:

- Phase Three collaborator for Managua

#### Roles:

- Phase Three collaborator for Managua
- Ministry of Health director of the area VI. Managua, and ISAAC Phase Three Collaborator



Map of the capital city of Managua. Area of the study circled in black

# The ISAAC Story



Evaluation meeting at the end of the study with the school directors and teachers. From left to right: District 6 Ministry of Education Director, in the middle Eduardo Parrales, M.D. and at the right Jose Felix Sanchez, M.D.

## Dr José Félix Sánchez

Pediatric Pulmonologist, Director of the Department of Medicine and Pulmonology Children's Hospital "Manuel de Jesus Rivera", National Referral Hospital of Pediatrics in Nicaragua District V, Managua, Nicaragua



### Roles:

- National Coordinator for Nicaragua
- Phase Three Principal Investigator for Managua

## Alba Sandoval

Licensed practical nurse Villa Venezuela Health Center Managua Nicaragua

### Roles:

- Phase Three collaborator for Managua

## Why was this centre selected for ISAAC?

I found out about ISAAC phase III by Dr. Manuel Soto Quiros, who was my mentor during my Pulmonology fellowship in Costa Rica. Dr Quiros and Dr. Lars Å Hanson, Department Clinical Immunology, Göteborg University, Sweden, both were involved in the decision that Nicaragua participated in the study. Nicaragua didn't count with prevalence studies of asthma or allergies. Our country could participate in the phase III of ISAAC thanks to their collaboration.

In the survey on Conditions of Life (EMNV'98) it was found that 64.8% of the families in Nicaragua live in situation of poverty, or extreme poverty and that only one out of four homes satisfies its basic necessities. Managua, as the capital of Nicaragua, have the major density population, were the industrial development is settled. However, behind the acute conditions the chronic diseases appear, but in the developing countries they are often not noticed, diagnosed and properly treated. Such diseases may, because of their chronic nature, severely impair growth and development as well as educational capacity in children. They will also affect the whole family in many ways, not least its economy. The hospitalization rates in children with asthma have been increasing in Nicaragua, and we didn't count with studies that that could measure the prevalence of symptoms and severity among our population.

The area of study was District VI of Managua (Ministry of Health), located in the eastern part of Managua (Fig 1). It has an area of 42 sq km. The total population is estimated to 146,050 inhabitants; of those 65,722 are children less than 15 years old.

The VI District of Managua was chosen because this is the city area where most of the poor people live, in "barrios" and settlements. The epidemiological profile shows a high incidence of respiratory diseases and acute diarrheas. There is a higher prevalence of malnutrition and parasitism. The sewer and drainage structures are deficient. There are unsuitable potable water services, with inappropriate liquid waste elimination. Many families do not have drain and waste water installation of the people use latrines. The garbage collection service is deficient. The electricity service is inappropriate. Their health care service is principally provided by the State.

Fig 1. Map of the capital city of Managua. Area of the study circled in black.

## Our experience of ISAAC

The ISAAC core questionnaires were translated into Spanish, according to defined guidelines, including the familiar terminology of the local community, such as "silbido", "lira" referring to wheezing. At first we applied a pilot study for the questionnaires that was reviewed by Dr. Manuel Soto Quirós, Costa Rica National Coordinator for ISAAC. We didn't use the videos mode.

School Principals that participated were very enthusiastic and their collaboration was very important to achieve the study. We had good acceptance from families and children, 95% of questionnaires were sent back complete from parents.

## Impact of ISAAC in our country

Before ISAAC data was insufficient, it was the first study for asthma and allergies in Nicaragua, and it marked the beginning for similar studies in other areas of our country, such as the rural areas. Evenly it initiated the development of health and education strategies for the accurate diagnose and treatment for these diseases.



Teachers and school directors that contributed in the study.



Sports utilities were given to the participating schools for their sports teams. At the left Jose Felix Sanchez, M.D.



Sports utilities were given to the participating schools for their sports teams. At the left Jose Felix Sanchez, M.D.



Dr. Jose Felix Sanchez received a recognition certificate from the authorities of the Nicaragua Ministry of Education for his work in the health and welfare of the school children and the community.



Dr. Jose Felix Sanchez received a recognition certificate from the authorities of the Nicaragua Ministry of Education for his work in the health and welfare of the school children and the community.

Regional

National

Local

**Managua**



# The ISAAC Story

Regional

National

Local

Managua

Manaus

Amazonas

Mantova

Marrakech

## Acknowledgements

This study was conducted with the guidance of Dr. Manuel Soto-Quiros pediatric pulmonologist, from the National Children's Hospital of Costa Rica "Carlos Saenz" and Dr. Lars Å Hanson Department Clinical Immunology, Göteborg University, Sweden. Both were involved in the decision to develop the study, translation of the instrument, pilot study, school selection, monitoring collection of the questionnaires and finally the recording of the information according to the ISAAC protocol for the phase III.

For this study the technical and methodological quality were counted with the financial support of SAREC and VARDAL, both Swedish institutions that support scientific and development in Latin America.

For its realization we had the approval and collaboration of the Ministry of Health of Nicaragua and Ministry of Education of the government of Nicaragua.

Eduardo Parrales, M.D, was the Ministry of Health director of the area VI where we developed the study. He was a very important support to achieve the objectives.

For the collection of the questionnaires, we hired two registered nurses, Lic. Alba Sandoval and Lic. Martha Garcia who made an excellent work in the field.

We appreciate all the support and coordination of the school directors and teachers with the study. As well children and their families, they were very interested in the study and the results.

Click the link to the left to see our photos.

## Manaus Amazonas Centre

Phase Three			
<b>Centre:</b>		Manaus Amazonas, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Dra Maria do Socorro Cardoso	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2002 to November 2002
<b>Sampling Frame:</b>		All schools in Manaus area.	

### Personnel

#### Dra Maria do Socorro Cardoso

Rua Paraiba, 1020 Apt. 401  
Edificio Michellangelo  
Brasil

#### Roles:

- Phase Three Principal Investigator for Manaus Amazonas

## Mantova Centre

Phase Three			
<b>Centre:</b>		Mantova, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Dr Gabriele Giannella	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to March 2002
<b>Sampling Frame:</b>		All schools in the province of Mantova.	

### Personnel

#### Dr Gabriele Giannella

Local Health Unit  
Servizio Medicina Preventiva delle Comunità  
ASL Mantova  
via Trento 6  
Italy

#### Roles:

- Phase Three Principal Investigator for Mantova

## Marrakech Centre

Phase One			
<b>Centre:</b>		Marrakech, Morocco ( Africa )	
<b>Principal Investigator:</b>		Professor Zoubida Bouayad	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All public schools in the Marrakech area.	
Phase Three			
<b>Centre:</b>		Marrakech, Morocco ( Africa )	
<b>Principal Investigator:</b>		Professor Zoubida Bouayad	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	February 2002.
<b>Sampling Frame:</b>		13-14yr: The same sampling frame was used for Phase One and Phase Three.	

# The ISAAC Story

## Personnel

### Professor Zoubida Bouayad

Service des Maladies Respiratoires  
Hôpital 20 Août  
CHU Ibn Rochd  
Morocco

#### Roles:

- National Coordinator for Morocco
- Phase One Principal Investigator for Marrakech
- Phase Three Principal Investigator for Marrakech

## Marseille Centre

Phase One	
<b>Centre:</b>	Marseille, France ( Western Europe )
<b>Principal Investigator:</b>	Professor Denis Charpin
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	Schools were randomly chosen from 8 towns in the Fos L'Etang-de-Berre area.

## Personnel

### Professor Denis Charpin

Service de Pneumologie-  
Allergologie  
Hôpital Nord  
France



#### Roles:

- National Coordinator for France
- Phase One Principal Investigator for Marseille

ISAAC phase 1 in the Marseille center has actually taken place in an industrial setting close to Marseille, called the « Fos l'Etang-de-Berre » area. This is a major industrial complex with petrochemicals facilities. The survey used a standardized ISAAC questionnaire, skin tests to common aero-allergens and, in atopic children, collection of a sample of mattress dust to measure mite-allergen content. At that time, only gaseous air pollutants were considered. 2445 schoolchildren 13 and 14 years old were included in the study. The prevalence of asthma and asthmatic symptoms were related to mean ozone concentrations, whereas there was no consistent association with mean SO<sub>2</sub> and NO<sub>2</sub> mean levels (M. Ramadour et al. Prevalence of asthma and rhinitis in relation to long-term exposure to gaseous air pollutants. Allergy 2000 ; 55 : 1163-1169. In a concurrent study there was no significant association between gaseous air pollutant levels and the atopic score based on skin prick-tests results (D. Charpin et al. Gaseous air pollution and atopy. Clin Exp Allergy 1999 ; 29 : 1474-1480.

## Melbourne Centre

Phase One	
<b>Centre:</b>	Melbourne, Australia ( Oceania )
<b>Principal Investigator:</b>	Professor Colin F Robertson
<b>Age Groups:</b>	13-14, 6-7
<b>Timeframe:</b>	June 1993 to September 1993
<b>Sampling Frame:</b>	
Phase Three	
<b>Centre:</b>	Melbourne, Australia ( Oceania )
<b>Principal Investigator:</b>	Professor Colin F Robertson
<b>Age Groups:</b>	13-14, 6-7
<b>Timeframe:</b>	October 2001 to August 2002
<b>Sampling Frame:</b>	13-14yr: Private Catholic schools within an approximate 20km radius from Central Melbourne. 6-7yr: All schools within an approximate 20km radius.

## Personnel

### Ms Jo Kappers

Department of Respiratory Medicine  
Royal Children's Hospital  
Flemington Road  
Parkville  
Australia

#### Roles:

- Phase One collaborator for Melbourne

### Professor Colin F Robertson

Director, Department of  
Respiratory Medicine  
Royal Children's Hospital  
Flemington Rd (Affiliation is:  
Murdoch Children's Research  
Institute, Melbourne)  
Parkville, VIC 3052  
Australia



#### Roles:

- ISAAC Steering Committee
- National Coordinator for Australia
- Phase One Principal Investigator for Melbourne
- Phase Three Principal Investigator for Melbourne

## Local Publications

The following publications used ISAAC data from the Marseille centre:

Ramadour M, Burel C, Lanteaume A, Vervloet D, Charpin D, Dutau H, Brisse F. *Prevalence of asthma and rhinitis in relation to long-term exposure to gaseous air pollutants* Allergy 2000; 55(12): 1163-1169

## Local Publications

The following publications used ISAAC data from the Melbourne centre:

Robertson CF, Roberts MF, Kappers JH. *Asthma prevalence in Melbourne schoolchildren have we reached the peak?* Med J Aust 2004; 180(6): 273-6.

Riedler J, Reade T, Dalton M, Holst D, Robertson CF. *Hypertonic saline challenge in an epidemiologic survey of asthma in children* Am J Respir Crit Care Med 1994; 150:1632-1639.

Regional

National

Local

Marrakech

Marseille

Melbourne

# The ISAAC Story

Regional

National

Local

Mérida

Metro Manila

## Mérida Centre

Phase Three			
<b>Centre:</b>		Mérida, Mexico ( Latin America )	
<b>Principal Investigator:</b> Dr Manuel Baeza-Bacab			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2002 to February 2003
<b>Sampling Frame:</b>		13-14yr: All schools in Merida Area 6-7yr:All schools in Merida area	

### Personnel

#### Dr Manuel Baeza-Bacab

Facultad de Medicina  
University Autónoma de Yucatán  
Avenida Itzáes No. 498 por calle 59-A  
Centro, Mérida  
Mexico

#### Roles:

- National Coordinator for Mexico
- Phase Three Principal Investigator for Mérida

## Metro Manila Centre

Phase One			
<b>Centre:</b>		Metro Manilla, Philippines ( Asia-Pacific )	
<b>Principal Investigator:</b> Professor Felicidad Cua-Lim			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:October 1994 to November 1994 6-7yr:September 1994 to November 1994
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Metro Manila, Philippines ( Asia-Pacific )	
<b>Principal Investigator:</b> Professor Felicidad Cua-Lim			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	August 2001 to October 2001
<b>Sampling Frame:</b>		All public and private, elementary schools in Manila. The same sampling frame as Phase One.	

### Personnel

#### Professor Felicidad Cua-Lim

University of Santo Tomas  
7 Roosevelt St. Green Hills West  
San Juan  
Philippines

#### Roles:

- National Coordinator for Philippines
- Phase One Principal Investigator for Metro Manilla
- Phase Three Principal Investigator for Metro Manila

#### Dr Manuel F Ferreria

Manila Central University  
MCU Cpd  
Philippines

#### Roles:

- Phase Three collaborator for Metro Manila

#### Dr Rudy Pagcatipunan

University of Santo Tomas  
7 Roosevelt St. GHW  
San Juan  
Philippines

#### Roles:

- Phase One collaborator for Metro Manilla
- Phase Three collaborator for Metro Manila

#### Dr Camilo Roa

Philippine General Hospital  
Taft Ave  
Philippines

#### Roles:

- Phase One collaborator for Metro Manilla
- Phase Three collaborator for Metro Manila

#### Dr Madelaine Sumpaico

Philippines

#### Roles:

- Phase Three collaborator for Metro Manila

# The ISAAC Story

## Why was this centre selected for ISAAC?

Our country was selected to participate in both ISAAC Phase I and Phase III of the study. It started on a meeting in an Asian respiratory disease convention in Tokyo in 1994. Dr Christopher Lai invited Dr Felicidad Cua-Lim, then the President of the National Asthma Movement in the Philippines, to be the National Coordinator and Principal Investigator for the ISAAC study Phase I in the Philippines.

## Our experience of ISAAC

For Phase I Dr Felicidad Cua-Lim assembled her team whose members included Drs Camilo Roa, Jose Pepito Amores, Manuel Fereria, and Madeleine Sumpaico. The questionnaires, with the help of a social scientist Nina Carandang, were translated and back translated to the local dialect – Tagalog. The study was implemented in schools in Metro Manila. Both the data for the 6-7 years old and 13-14 years old were accepted for inclusion in the Lancet publication for the global coverage of the ISAAC study.

In the phase III Dr Cua-Lim was again invited to participate in the study. Dr Rodolfo Pagcatipunan became a member of her team. Aside from the core questionnaires, an environmental questionnaire was included in this phase which was again translated and back translated to the local dialect. Only the 13-14 years old data was accepted by the data center. There were data integrity problems encountered in the 6-7 years old. This was attributed to the initially low number of returned questionnaires or drop-outs. Upon consultation with a statistician, these drop-outs were replaced by another set of responders to attain the desired sample size.

The data generated from the phase I and III studies became the source of prevalence data for asthma and allergy in children in the Philippines. It also triggered the implementation of the National Asthma Prevalence Study, an asthma prevalence study for both adult and children sponsored by the Department of Health of the Philippines.

## Mexicali Valley Centre

Phase Three			
<b>Centre:</b>		Mexicali Valley, Mexico ( Latin America )	
<b>Principal Investigator:</b>		Dr J Valente Merida-Palacio	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2002 to November 2002
<b>Sampling Frame:</b>		All schools in Mexicali	

## Personnel

### Dr Juan Valente Merida-Palacio

Pediatric Allergist  
 Director of the Investigation Center for Allergic and Respiratory Diseases  
 Member of the board of the Ecology and Environment Control Department,  
 Air Quality section, for the city of Mexicali, Baja California, Mexico



#### Roles:

- Phase Three Principal Investigator for Mexicali Valley

Mexicali is a 1 million population city, located in the northwest of Mexico, border with Imperial Valley of California. It is a desert region, near to the Colorado River, surrounded by more than 2 million acres of agricultural land in both sides of the border.

Our city has a severe air pollution problem, mainly by PM<sub>10</sub> and Carbon Monoxide (CO) pollutants, this is due to the mainly for the ground composition (geological material), ashes (anthropological sources, mainly agricultural) and other natural components (silica, aluminum), and the lack of control of the motor engine vehicle emissions. These rates of PM<sub>10</sub> on air accounted for more than 150,000 tons/year. For this reason Mexicali is considerate the most polluted city of Mexico regarding those particles.

Regional

National

Local

Metro Manila

Mexicali Valley

# The ISAAC Story

Regional

National

Local

Mexicali

Valley

Milano

Monterrey

In consequence the morbidity and mortality rates of respiratory diseases are very high, among high risk population, mainly in the pediatric group.

Mexico has several prevalence studies for asthma and allergic rhinitis, but the methodology used is poorly reliable, it was limited to fewer cities, and they were not specific for the pediatric age group. We have not had any prevalence studies for eczema.

On the late 1990's, the ISAAC phase I was done in Cuernavaca city, as an investigation supported by the National Institute of Public Health, and directed by Prof Isabelle Romieu.

In the Mexican Collage of Pediatric Allergy and Immunology, we felt that we needed to open the project to the most cities as possible, to enlarge the information on different regions of our country.

In 2000 we met Dr Javier Mallo, Chairman for Latin America ISAAC project and talked about the possibility to develop in Mexico the ISAAC phase III, he agreed. The total of 9 centers were we divided the country, in Gulf of Mexico are: Cd. Victoria, Monterrey, Villahermosa, and Merida centers, center: Mexico city (3) and Toluca, and Northeast: Mexicali Valley were enrolled and coordinated by the epidemiology section for the MEXICAN COLLAGE OF PEDIATRIC ALLERGY AND IMMUNOLOGY to start the phase III of this project.

The information obtained ISAAC phase III in Mexicali Valley Center, has been incorporated to the official statistical data of our city. Gone to be used to plan strategies intended to control and diminish the severe air pollution of our area, helping to improve the air quality and the quality of life of the general population.

We are hoping to be participating in this great project and contribute to expand the knowledge of the allergic diseases in our pediatric population.

## Milano Centre

Phase One			
<b>Centre:</b>		Milano, Italy ( Western Europe )	
<b>Principal Investigator:</b> Dr Luigi Bisanti			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:November 1994 to January 1995 6-7yr:November 1994 to December 1994
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Milano, Italy ( Western Europe )	
<b>Principal Investigator:</b> Dr Luigi Bisanti			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2002 to June 2002
<b>Sampling Frame:</b>		All schools in the city of Milan (Private schools excluded in Phase One). Sampling frame the same as Phase One.	

## Personnel

### Dr Luigi Bisanti

ASL Città di Milano  
Servizio di Epidemiologia  
Corso Italia, 19  
Italy

### Roles:

- Phase One Principal Investigator for Milano
- Phase Three Principal Investigator for Milano

## Monterrey Centre

Phase Three			
<b>Centre:</b>		Monterrey, Mexico ( Latin America )	
<b>Principal Investigator:</b> Dr Sandra Nora González-Díaz			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2001 to June 2001
<b>Sampling Frame:</b>		13-14yr: Some public schools of the metropolitan area of Monterrey and some public schools of the six cities with most population in the Nuevo Leon state outside the metropolitan area of Monterrey City. 6-7yr:Some public schools of the metropolitan area of Monterrey and some public schools of the seven cities with most population in the Nuevo Leon state outside the metropolitan area of Monterrey City.	

## Local Publications

The following publications used ISAAC data from the Monterrey centre:

González-Díaz SN, Del Río-Navarro BE, Pietropaolo-Cienfuegos DR, Escalante-Domínguez AJ, García-Almaraz RG, Mérida-Palacio V, Berber A *Factors associated with allergic rhinitis in children and adolescents from northern Mexico International Study of Asthma and Allergies in Childhood Phase IIIB Allergy Asthma Proc* 2010; 31(4): 53-62

# The ISAAC Story

## Personnel

### Dr Alfredo Arias Cruz

Servicio de Alergia e Inmunología Clínica  
Facultad de Medicina y Hospital Universitario  
"Dr. José Eleuterio González"  
Universidad Autónoma de Nuevo León  
Ave. Madero y Gonzalitos s/n, Col. Mitras  
Centro  
Mexico

#### Roles:

- Phase Three collaborator for Monterrey

### Dr Sandra Nora González-Díaz

Centro Regiona para la Prevencion y el  
Tratamiento de las Enfermedades Alergica  
Hospital Universitario, NL, Consulta #5,  
"Allergias"  
Calzada Madero y Gonzalitos S/N  
Col. Mitras Centro CP 64460  
Mexico

#### Roles:

- Phase Three Principal Investigator for Monterrey

### Ms Claudia Elizabeth González-Garza

Centro Regional Para la Prevención y el  
Tratamiento - C.R.P.T.E.A  
University Hospital  
Calzada Madero y Gonzalitos  
SN, Col.Mitras Centro, C P. 64460  
Mexico

#### Roles:

- Phase Three collaborator for Monterrey

## Montevideo Centre

<b>Phase One</b>			
<b>Centre:</b>		Montevideo, Uruguay ( Latin America )	
<b>Principal Investigator:</b>		Dra Dolores Holgado	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:September 1994 to August 1995 6-7yr:April 1994 to October 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Montevideo, Uruguay ( Latin America )	
<b>Principal Investigator:</b>		Dra Dolores Holgado	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	July 2002 to November 2002
<b>Sampling Frame:</b>		13-14yr: All schools in Montevideo Area, public and private ones	

## Personnel

### Dra Sylvia Brea

Pneumologist pediatrician.  
Hospital Pereira Rossell  
Uruguay

#### Roles:

- Phase One collaborator for Montevideo
- Phase Three collaborator for Montevideo

### Dra Dolores Holgado

Facultad de Medicina  
Cátedra de Pediatría "B"  
Department of pulmology,  
allergy and immunology  
Pediatrics hospital Pereira  
Rossell  
Uruguay



#### Roles:

- National Coordinator for Uruguay
- Phase One Principal Investigator for Montevideo
- Phase Three Principal Investigator for Montevideo

### Dra. María Julia Saráchaga

Pneumologist pediatrician.  
Hospital Pereira Rossell  
Uruguay

#### Roles:

- Phase One collaborator for Montevideo
- Phase Three collaborator for Montevideo

### Dra Ester Spalter

Pediatrician.  
Hospital Pereira Rossell  
Uruguay

#### Roles:

- Phase One collaborator for Montevideo
- Phase Three collaborator for Montevideo

## ISAAC in Montevideo

All of us know that since the 80's there was an increasing asthma prevalence in many countries worldwide and also in our country, even considering that the several studies done between 1970 and 1990 had a different methodology and differences in the age of the samples. That was an important reason to join ISAAC. We were connected to ISAAC Steering Committee thanks to Dr. Fernando Martinez.

Regional

National

Local

Monterrey

Montevideo

# The ISAAC Story



Regional

National

Local

Montevideo

Montpellier

Moscow

## Phase One

Montevideo was the only centre in Uruguay. It is a very small country with only 3. 000.000 inhabitants of which half of them lives in Montevideo, the capital city. It was impossible to get a sample of 3000 children in some other city. In Montevideo we could accomplish the two groups questionnaires and we also used the videoquestionnaire. It was difficult to succeed in getting the parental questionnaire fulfilled in the 6-7 years group, but we did it.

## Phase three

At the beginning we had planned to participate with the two groups as in Phase One. We began with the 6-7 years group, but the difficulty to obtain the parental questionnaire completed in time, was the reason to abandon this group. We continued with the 13-14 years group including the videoquestionnaire.

Phase Three was carried out with a huge effort of all the collaborators. In 2002 Uruguay suffered an important financial crisis, so we did not had the same financial support than during Phase One. However after so many problems we were proud to have accomplished our task.

In spite the difficulties we had a second centre, with the generous participation of Dra Cristina Lapides as Principal Investigator in the city of Paysandú.

We gratefully acknowledge financial support from Glaxo Wellcome. We are also indebted to all children, parents and school staff who participated in the study and wish to thank our fieldwork team for their effort and enthusiasm throughout each study.

## Montpellier Centre

Phase One			
<b>Centre:</b>		Montpellier, France ( Western Europe )	
<b>Principal Investigator:</b>		Professor Philippe Godard	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools of the 13-14 year age group in the Montpellier Academy.	

### Personnel

#### Professor Philippe Godard

Clinique des Maladies Respiratoires  
Hôpital Arnaud de Villeneuve  
555 route de Ganges  
France

#### Roles:

- Phase One Principal Investigator for Montpellier

## Moscow Centre

Phase One			
<b>Centre:</b>		Moscow, Russia ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Professor Rakhim M Khaitov, Director of the Institute of Immunology	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		21 schools in the following geographical regions of Moscow (including 2 satellites): Center — 2; South - 5; North-West — 6; North — 1; South-East — 3; South-West — 3; East - 1.	

### Personnel

#### V.N. Androsov

Institute of Immunology  
National Research Center  
24-2 Kashirskoye Shosse  
Moscow  
Russia

#### Roles:

- Phase One collaborator for Moscow
- 

#### K.R. Bokelovadze

Institute of Immunology  
National Research Center  
24-2 Kashirskoye Shosse  
Moscow  
Russia

#### Roles:

- Phase One collaborator for Moscow
- 



Institute of Immunology, Moscow



Institute of Immunology, Moscow

# The ISAAC Story



## Local Publications

The following publications used ISAAC data from Moscow:

Khaitov RM, Luss LV, Aripova TU, Lysikova IV, Ilyina NI *Prevalence of bronchial asthma, allergic rhinitis and allergodermatitis symptoms in children by ISAAC criteria.* Allergy, asthma and clinical immunology 1998; 9: 58-69

Lysikova IV. *Prevalence of allergic diseases in children multicentre investigation results in the framework of International Study of Asthma and Allergies in Childhood (ISAAC).* [Russian] Medical sci candidate's thesis on speciality 14.00.36 (Allergology and immunology), Moscow, 1999.

Luss LV, Aripova TU, Ilyina NI, Lysikova IV. *Prevalence of bronchial asthma symptoms (ISAAC programme result).* [Russian] Asthma 2000; 1(1): 52-59

## I.V. Danilycheva

Institute of Immunology  
National Research Center  
24-2 Kashirskoye Shosse  
Moscow  
Russia

### Roles:

- Phase One collaborator for Moscow
- 

## S.M. Erokhina

Institute of Immunology  
National Research Center  
24-2 Kashirskoye Shosse  
Moscow  
Russia

### Roles:

- Phase One collaborator for Moscow
- 

## Professor Rakhim M Khaitov

Director, Institute of Immunology  
National Research Center  
24-2 Kashirskoye Shosse  
Moscow  
Russia



### Roles:

- National Coordinator for Russia
- Phase One Principal Investigator for Moscow

## L.V. Luss

Institute of Immunology  
National Research Center  
24-2 Kashirskoye Shosse  
Moscow  
Russia

### Roles:

- Phase One collaborator for Moscow
- 

## ?B. Smorodina

Institute of Immunology  
National Research Center  
24-2 Kashirskoye Shosse  
Moscow  
Russia

### Roles:

- Phase One collaborator for Moscow
- 

## Dr Olga Zaikina

Institute of Immunology  
National Research Center  
24-2 Kashirskoye Shosse  
Moscow  
Russia



### Roles:

- Phase One collaborator for Moscow
- Coordinator and leading Scientific Researcher

## Why was this centre selected for ISAAC?

The Institute of Immunology, Moscow, has been founded in 1979 and since then up today deals with asthma and allergies, including those in children. The ISAAC methodology immediately interested Russian physicians, pediatricians, allergologists, asthmologists and immunologists. Due to ISAAC Programme, having been developed in the early 1990s to carry out an international epidemiological research on asthma, rhinitis and eczema according to the standardized methodology, we got an opportunity to compare our data with the data obtained in the other countries.

Moscow, the megalopolis with 10 mln population (today, in 2011, already 11.5 mln), was (and still is) an unfavourable area: a lot of transport and various enterprises, traffic exhaust and industrial smog explain the asthma and allergy increase, especially in children. The majority of previous generations of schoolchildren hadn't even know the words «asthma» and «allergy» and others had known it as a disease of their grandparents; but in the early 1990s Russian children were quite aware about asthma and allergy.

Regional  
National  
Local

Moscow



# The ISAAC Story

## Report on Moscow Study on ISAAC Phase 1 (1993/1994)

First we translated the ISAAC questionnaire into Russian. Then a back translation was done, because it was very important to give an exact Russian version. We also compared our Russian version with Baltic Russian version which had been made to investigate Narva town (Estonia) and Riga city (Latvia), the places with predominantly Russian population. There were no significant differences in the Estonian translation from English into Russian in comparison to our version.

Six experienced allergologists from the Institute of Immunology visited schools, distributed the written questionnaires, showed video questionnaire to schoolchildren, explained how to fill forms and collected the filled questionnaires during October, 1993 — the beginning of April, 1994 (out of pollen season). Besides collecting schoolchildren's questionnaires the workers contacted with the teachers and parents of children who had health troubles.

Approximately about 4,000 ISAAC questionnaires (Russian version) were distributed among Moscow schoolchildren of 13–14 years old schoolchildren from randomly chosen 21 schools (including video questionnaire) to be filled. The schools had been chosen in the different geographical regions of Moscow: Center — 2; South — 5; North-West — 6; North — 1; South-East — 3; South-West — 3; East — 1. By the end of March 3411 questionnaires were filled, collected and checked.

The ISAAC study of asthma and allergy in Moscow have showed that a lot of 13–14 year schoolchildren suffer from the breathing problems that interfere with their everyday life. More than 100 children had wheezing/whistling breathing or dry cough (not associated with a cold or lung infection): they had it during or after physical exercise or being woken at night. Tens of children even had severe attacks of wheezing/whistling breathing which limited their speech. More than 30 children already had the diagnosed asthma. In about hundred of cases the so-called mild asthma or preasthma was diagnosed. Some children had sneezing or blocked nose not associated with cold or flu and other nose and eye problems (itching and watering) simultaneously. These problems usually occur in the certain months (pollen season) and are associated with allergy against some pollen. Several children had hay fever. Many children had itchy rash and other skin troubles connected not only with allergy, but also with psoriasis or gastrointestinal troubles. Very few suffered from atopic eczema. Many cases of allergy manifestation were associated with allergy against mites (home dust) and epidermal allergens (pets: cats and dogs). During interviewing the children were also asked them about the medicines they used. The list of used pharmaceuticals was: Becotide, Berotec, Ditec, Ifiral, Intal, Salbutamol, Ventolin, Zaditen, Beconase, Lomusol.

## References (all in Russian)

1. Khaitov R.M., Luss L.V., Aripova T.U., Lysikova I.V., Ilyina N.I. Prevalence of bronchial asthma, allergic rhinitis and allergodermatitis symptoms in children by ISAAC criteria. // Allergy, asthma and clinical immunology. 1998, No 9, p. 58–69 (Rus).
2. Lysikova I.V. Prevalence of allergic diseases in children: multicentre investigation results in the framework of International Study of Asthma and Allergies in Childhood (ISAAC). Medical sci candidate's thesis on speciality 14.00.36 (Allergology and immunology), Moscow, 1999, (Rus).
3. Luss L.V., Aripova T.U., Ilyina N.I., Lysikova I.V. Prevalence of bronchial asthma symptoms (ISAAC programme result) // Asthma. 2000, v. 1, No 1, p. 52–59 (Rus).

## Acknowledgements

We gratefully acknowledge the financial support from Glaxo pharmaceutical company (since 1995 GlaxoWellcome, since 2001 GlaxoSmithKline). We thank the school teachers and children, who participated in the surveys. We also thank the physicians and scientific researchers from the Institute of Immunology, Moscow, who took part in discussing the results.

## Muar Centre

<b>Phase One</b>			
<b>Centre:</b>		Muar, Malaysia ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Kok Wai Chum	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: May 1995 to July 1995 6-7yr: April 1995 to August 1995
<b>Sampling Frame:</b>			

## Personnel

### Dr Kok Wai Chum

Johor Child Specialist Clinic  
No. 15, Jalan Perwira 9  
Taman Ungku Tun Aminah  
Malaysia

### Roles:

- Phase One Principal Investigator for Muar

Regional

National

Local

Moscow

Muar

# The ISAAC Story

## Mumbai (18) Centre

Phase One			
<b>Centre:</b>		Bombay (18), India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Dr Kalyani Raghavan			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:December 1994 to July 1995 6-7yr:December 1994 to March 1995
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Mumbai (18), India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Dr Asha Vijaykumar Pherwani			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to August 2002
<b>Sampling Frame:</b>		All schools in Sion, within the city limits of Mumbai. The same sampling frame as Phase One.	

### Personnel

#### Dr Asha Vijaykumar Pherwani

P.D. Hinduja National Hospital  
303, Samudra Mahal  
Dr Annie Besant Road  
Worli  
India



#### Roles:

- Phase Three Principal Investigator for Mumbai (18)

#### Dr Kalyani Raghavan

India

#### Roles:

- Phase One Principal Investigator for Bombay (18)

## ISAAC in Mumbai

I came to know about the ISAAC study by chance. Right from that time I wanted to be a part of this study, because though I had done research on many topics, they were not multi-centre studies. Therefore I requested Dr Shah from JASLOK Hospital to include me in the study.

The very systemic nature of the study impressed me so much that I passed an on-line examination for Principle Investigators course.

During the study we did find it difficult to access these children because some of the heads of the schools were not very keen on this study. We had to convince them and then could get one class at a time.

Our only regret is we could not follow them or treat them afterwards.

## Mumbai (29) Centre

Phase Three			
<b>Centre:</b>		Mumbai (29), India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Dr Sumant Narayan Mantri			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2001 to October 2001
<b>Sampling Frame:</b>		Schools of the same geographic location within a diameter of 5 kms are chosen for sampling.	

### Personnel

#### Dr Sumant Narayan Mantri

C/- Dr J.R. Shah  
Department of Pulmonary Medicine  
Jaslok Hospital & Research Centre  
15, G. Deshmukh Marg  
India

#### Roles:

- Phase Three Principal Investigator for Mumbai (29)

Regional

National

Local

Mumbai (18)

Mumbai (29)

# The ISAAC Story

Regional

National

Local

Munich

## Munich Centre

<b>Phase Two</b>			
<b>Centre:</b>		Munich, Germany ( Western Europe )	
<b>Principal Investigator:</b>		Professor Erika von Mutius	
<b>Age Groups:</b>	9-11,	<b>Timeframe:</b>	September 1995 to December 1996.
<b>Sampling Frame:</b>		A random sample of school classes in the 9-11-year age-group across Munich.	

## Personnel

### Professor Erika von Mutius

Dr. von Haunersches University  
Children's Hospital  
Ludwig-Maximilians University  
Lindwurmstrasse 4  
Germany



#### Roles:

- ISAAC Steering Committee
- Phase Two Principal Investigator for Munich

## Local Publications

The following publications used ISAAC data from Munich:

von Mutius E, Illi S, Hirsch T, Leupold W, Keil U, Weiland SK. *Frequency of infections and risk of asthma, atopy and airway hyperresponsiveness in children.* Eur Respir J.1999 Jul;14(1):4-11.

Wellie O, Duhme H, Streit U, von Mutius E, Keil U, Weiland SK. *Application of geographical information systems in epidemiological studies exemplified by the ISAAC study in Munich.* Gesundheitswesen.2000 Aug-Sep;62(8-9):423-30.German.

Beimfohr C, Maziak W, von Mutius E, Hense HW, Leupold W, Hirsch T, Keil U, Weiland SK. *The use of anti-asthmatic drugs in children: results of a communitybased survey in Germany.* Pharmacoepidemiol Drug Saf.2001 Jun-Jul;10(4):315-21.

von Ehrenstein OS, Maier EM, Weiland SK, Carr D, Hirsch T, Nicolai T, Roscher AA, von Mutius E. *Alpha1 antitrypsin and the prevalence and severity of asthma.* Arch Dis Child.2004 Mar;89(3):230-1.

Bolte G, Kompauer I, Fobker M, Cullen P, Keil U, Mutius E, Weiland SK. *Fatty acids in serum cholesteryl esters in relation to asthma and lung function in children.* Clin Exp Allergy 2006 Mar;36(3):293-302.

Pinto LA, Steudemann L, Depner M, Klopp N, Illig T, Weiland SK, von Mutius E, Kabesch M. *STAT1 gene variations, IgE regulation and atopy.* Allergy 2007 Dec; 62(12):1456-61.

Büchle G, Rzehak P, Weinmayr G, Keil U, Leupold W, von Mutius E, Weiland SK. *Assessing bronchial responsiveness to hypertonic saline using the stepwise protocol of Phase II of the International Study of Asthma and Allergies in Childhood (ISAAC II).* Pediatr Pulmonol 2007 Feb;42(2):131-40.

Riu E, Dressel H, Windstetter D, Weinmayr G, Weiland S, Vogelberg C, Leupold W, von Mutius E, Nowak D, Radon K. *First months of employment and new onset of rhinitis in adolescents.* Eur Respir J.2007 Sep;30(3):549-55.Epub May 2007.

Schedel M, Pinto LA, Schaub B, Rosenstiel P, Cherkasov D, Cameron L, Klopp N, Illig T, Vogelberg C, Weiland SK, von Mutius E, Lohoff M, Kabesch M. *IRF-1 gene variations influence IgE regulation and atopy.* Am J Respir Crit Care Med.177(6):613-21, 2008 Mar 15.

Cameron L, Depner M, Kormann M, Klopp N, Illig T, von Mutius E, Kabesch M. *Genetic variation in CRTh2 influences development of allergic phenotypes.* Allergy 2009; 64(10): 1478-1485.

Zeilinger S, Pinto LA, Nockher WA, Depner M, Klopp N, Illig T, von Mutius E, Renz H, Kabesch M. *The effect of BDNF gene variants on asthma in German children.* Allergy 2009 Dec; 64(12): 1790-1794

Pinto LA, Depner M, Klopp N, Illig T, Vogelberg C, von Mutius E, Kabesch M. *MMP-9 gene variants increase the risk for non- atopic asthma in children.* Respir Res Feb 2010; 11: 23

# The ISAAC Story

## Münster Centre

<b>Phase One</b>			
<b>Centre:</b>		Münster, Germany ( Western Europe )	
<b>Principal Investigator:</b>		Prof Dr Ulrich Keil	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:August 1994 to January 1995 6-7yr:August 1994 to February 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Münster, Germany ( Western Europe )	
<b>Principal Investigator:</b>		Prof Dr Ulrich Keil	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 1999 to December 1999
<b>Sampling Frame:</b>		Random selection of schools for age groups in basic and in special schools to meet calculated sample size (90% power for 1% difference) in each stratum (school type).	

## Personnel

### Prof Dr Ulrich Keil

Institut für Epidemiologie und Sozialmedizin  
Westfälische  
Universität  
Domagkstrasse 3  
Germany

Wilhelms



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Western Europe
- National Coordinator for Germany
- Phase One Principal Investigator for Münster
- Phase Three Principal Investigator for Münster

See Germany country page for details of the ISAAC study in Münster

## Local Publications

The following publications used ISAAC data from Münster:

Duhme H, Weiland SK, Rudolph P, Wienke A, Kramer A, Keil U. *Asthma and allergies among children in West and East Germany: a comparison between Münster and Greifswald using the ISAAC phase I protocol.* Eur Respir J 1998; 11(4): 840-7.

Duhme H, Weiland SK, Keil U, Kraemer B, Schmid M, Stender M, Chambless L. *The association between self-reported symptoms of asthma and allergic rhinitis and self-reported traffic density on street of residence in adolescents.* Epidemiology 1996; 7(6): 578-82.

ISAAC. *ISAAC Phase II Modules.* Münster, Germany. May 1998.

Maziak W, Behrens T, Brasky TM, Duhme H, Rzehak P, Weiland SK, Keil U. *Are asthma and allergies in children and adolescents increasing? Results from ISAAC phase I and phase III surveys in Munster, Germany.* Allergy 2003; 58(7): 572-9.

Rzehak, P. *[Trends and Risk Factors for Asthma and Allergies in Young Persons in Münster: Methodological Aspects and Results of the ISAAC I and III Studies, 1994/1995 and 1999/2000].* [in German]. Shaker Verlag, Aachen. ISBN 3-8322-3972-3. 2005.

Behrens T, Taeger D, Maziak W, Duhme H, Rzehak P, Weiland SK, Keil U. *Self-reported traffic density and atopic disease in children. Results of the ISAAC Phase III survey in Muenster, Germany.* Pediatr Allergy Immunol 2004; 15(4): 331-9.

Behrens T, Maziak W, Weiland SK, Siebert E, Rzehak P, Keil U. *The use of synthetic bedding in children. Do strategies of change influence associations with asthma?* J Asthma 2005 Apr; 42(3): 203-6.

Regional

National

Local

**Münster**

# The ISAAC Story

Regional

National

Local

Nagpur

Nairobi

Nakorn

Pathom

## Nagpur Centre

Phase Three			
<b>Centre:</b>		Nagpur, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Dr Sundeep Salvi			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 2002 to November 2002
<b>Sampling Frame:</b>		13-14yr: Some schools in Nagpur city 6-7yr: All schools in Nagpur city	

### Personnel

#### Dr Sundeep Salvi

Chest Research Foundation  
Marigold Premises  
Survey No. 15  
Vadgaon Sheri  
India

#### Roles:

- Phase Three Principal Investigator for Nagpur

## Nairobi Centre

Phase One			
<b>Centre:</b>		Nairobi, Kenya ( Africa )	
<b>Principal Investigator:</b> Dr Joseph A Odhiambo			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All Grades 7 and 8 (13-14 year olds) attending primary schools administered by the City Council of Nairobi. About 10% of this age group attend private schools and were excluded from the sampling frame.	
Phase Three			
<b>Centre:</b>		Nairobi, Kenya ( Africa )	
<b>Principal Investigator:</b> Dr Lucy Ng'ang'a			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	February 2001 to March 2001
<b>Sampling Frame:</b>		13-14yr: All Public schools under the jurisdiction of the school Board of the Nairobi City Council. The same sampling frame as Phase One.	

### Personnel

#### Dr Lucy Ng'ang'a

Centres for Disease Control & Prevention (CDC)  
C/O American Embassy  
P.O. Box 9123  
Kenya

#### Roles:

- National Coordinator for Kenya
- Phase Three Principal Investigator for Nairobi

#### Dr Joseph A Odhiambo

Centre for Respiratory Diseases  
Research,  
Kenya Medical Research  
Institute (KEMRI)  
P O Box 606  
00621 Village Market  
Kenya



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Africa
- Phase One Principal Investigator for Nairobi

## Nakorn Pathom Centre

Phase Three			
<b>Centre:</b>		Nakorn Pathom, Thailand ( Asia-Pacific )	
<b>Principal Investigator:</b> Dr Aree Kongpanichkul			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 1996 to February 1996
<b>Sampling Frame:</b>		Schools in Nakorn Pathom Province	

### Personnel

#### Dr Aree Kongpanichkul

Department of Pediatrics  
Nakorn Pathom Hospital  
Thailand

#### Roles:

- Phase Three Principal Investigator for Nakorn Pathom

# The ISAAC Story

## Narva Centre

Phase One	
<b>Centre:</b>	Narva, Estonia ( Northern and Eastern Europe )
<b>Principal Investigator:</b>	Dr Mall-Anne Riikjärv
<b>Age Groups:</b>	13-14
<b>Sampling Frame:</b>	All Russian schools in Narva

### Personnel

#### Dr Triine Annus

Estonian ISAAC Phase 1 - 3  
investigator pediatric allergist  
Tallinn Children's Hospital  
Central Polyclinic  
Ravi 27 10138  
Tallinn  
Estonia



#### Roles:

- Phase One collaborator for Narva

#### Dr Mall-Anne Riikjärv

Clinical Director  
Tallinn Children's Hospital  
Tervise, 28  
Estonia



#### Roles:

- National Coordinator for Estonia
- Phase One Principal Investigator for Narva

## ISAAC in Estonia (East Europa)

Estonia was a socialist country, which regained its independence in 1991. In these days Estonian pediatricians met prof. Bengt Björkstén, who initiated the first epidemiological study of asthma and allergies in Estonian children. He encouraged us also to take part in the international study ISAAC, which we accepted with great enthusiasm. It was especially important for us that prof. Björkstén found the resources for the study, as the economical situation in Estonia in these times was very difficult. The group of field workers was formed from pediatricians, who did the demanding field work in addition to their everyday clinical work. Such a study in schools was rather unusual, but the school staff accepted the study group intervention into the everyday school activities rather calmly. In data processing we were pleased to receive help from an experienced statistician, whose qualified collaboration enabled us to forward high quality data to the ISAAC center.

The positive experience from the ISAAC I encouraged us also to take part in the next phases of ISAAC. The ISAAC II study with its multiple tasks and procedures was rather challenging for our small group of field workers. However, we don't remember any exceptional situations and the schoolchildren were always eager to get the reason to miss their lessons.

Participating in the ISAAC studies was an enriching experience in many ways for Estonian pediatricians. It was the first experience in the international scientific cooperation for us. Using the internationally accepted methods we got reliable data about the epidemiological situation on asthma and allergies in Estonian children. Several papers in international scientific journals and a doctoral thesis were based on the research data. We believe that the data from Estonia, a country in transition from socialism to the market economy, were a valuable addition to the international comparison. Such data gave the reason to the hypothesis that socialism protects from allergies.

We gratefully acknowledge prof. Bengt Björkstén, who opened the door to the International allergy world for us and warranted the financial support for the studies. We also thank the schools and families of the participating children. Our study wouldn't have been possible without enthusiastic team of pediatricians who bore the main burden.

Regional

National

Local

Narva

# The ISAAC Story

Regional

National

Local

Nelson

Netherlands

## Nelson Centre

<b>Phase One</b>			
<b>Centre:</b>		Nelson, New Zealand ( Oceania )	
<b>Principal Investigator:</b> Dr Richard MacKay			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: July 1993 to August 1993 6-7yr: June 1993 to August 1993
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Nelson, New Zealand ( Oceania )	
<b>Principal Investigator:</b> Dr Richard MacKay			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	June 2003 to October 2003
<b>Sampling Frame:</b>		All schools in the Nelson Province. The same sampling frame as Phase One.	

### Personnel

#### Dr Richard MacKay

Chemical Pathologist  
Canterbury Health Laboratories  
PO Box 151  
New Zealand

#### Roles:

- Phase One Principal Investigator for Nelson
- Phase Three Principal Investigator for Nelson

## Netherlands Centre

<b>Phase Three</b>			
<b>Centre:</b>		Netherlands, Netherlands ( Western Europe )	
<b>Principal Investigator:</b> Professor Rutger Engels			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	January 2003 to March 2003
<b>Sampling Frame:</b>		13-14yr: Secondary schools in the four regions in the Netherlands (North/South/West/East).	

### Personnel

#### Professor Rutger Engels

Behavioural science Institute  
Radboud University, Nijmegen  
PO Box 9102  
Netherlands

#### Roles:

- Phase Three Principal Investigator for Netherlands

#### Mr Roy Otten

Institute of Family and Child Care Studies  
University of Nijmegen  
PO Box 9104  
Netherlands

#### Roles:

- National Coordinator for Netherlands
- Phase Three collaborator for Netherlands

## Netherlands (Utrecht) Centre

<b>Phase Two</b>			
<b>Centre:</b>		Netherlands (Utrecht), Netherlands ( Western Europe )	
<b>Principal Investigator:</b> Professor Bert Brunekreef, PhD			
<b>Age Groups:</b>	7-12,	<b>Timeframe:</b>	April 1997 to July 1998.
<b>Sampling Frame:</b>		The provinces of North Holland, South Holland, Utrecht and North Brabant, previously selected for air pollution studies.	

### Personnel

#### Dr Francée Aarts

Dept. Environmental Sciences  
WAU Dept. of Epidemiology  
Environmental & Occupational Health  
Netherlands

#### Roles:

- Phase Two collaborator for Netherlands (Utrecht)

#### Professor Bert Brunekreef

Institute for Risk Assessment  
Sciences  
Universiteit Utrecht  
PO Box 80176  
3508 TD  
Netherlands



#### Roles:

- ISAAC Steering Committee
- Phase Two Principal Investigator for Netherlands (Utrecht)

# The ISAAC Story



## Neuquén Centre

Phase Three			
<b>Centre:</b>		Neuquén, Argentina ( Latin America )	
<b>Principal Investigator:</b>		Professor Gustavo Enrique Zabert	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	August 2002 to November 2002
<b>Sampling Frame:</b>		All schools in Neuquén city area	

### Personnel

#### Professor Gustavo Enrique Zabert

Medicina y Cirugía-Escuela de Medicina-UNComahue  
 Presidente Asociacion Argentina de Medicina Respiratoria  
 Santa Fe 3553 7mo dpto 23  
 Argentina

#### Roles:

- Phase Three Principal Investigator for Neuquén

## New Delhi (7) Centre

Phase One			
<b>Centre:</b>		New Delhi (7), India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr Kamlesh Chopra	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:November 1994 to April 1995 6-7yr:October 1994 to May 1995
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		New Delhi (7), India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Professor S K Sharma	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	August 2001 to February 2002
<b>Sampling Frame:</b>		All schools in the Delhi Area. The sampling frame is the same for both Phase One and Phase Three.	

### Personnel

#### Dr Kamlesh Chopra

Maulana Azad Medical College  
 B2/85 Safdarjung Enclave  
 India

#### Roles:

- Phase One Principal Investigator for New Delhi (7)

#### Professor S K Sharma

Department of Medicine  
 All India Institute of Medical Sciences  
 Ansari Nagar  
 India



#### Roles:

- Phase Three Principal Investigator for New Delhi (7)

## WHY OUR CENTRE WAS CHOSEN

All India Institute of Medical Sciences (AIIMS), New Delhi (India) was established by an Act of Parliament in 1956 as an institution of national importance. Its main objectives were to develop patterns of teaching in undergraduate and postgraduate medical education in all its branches, so as to demonstrate a high standard of medical education to all medical colleges and other allied institutions in India; to bring together in one place educational facilities of the highest order for the training of personnel in all important branches of health activity; and to attain self-sufficiency in postgraduate medical education. AIIMS has state-of-art facilities for teaching, research and patient care. Medical and paramedical courses are taught at AIIMS. The institution awards its own undergraduate, postgraduate and doctorate degrees. Teaching and research are conducted in 50 disciplines. AIIMS plays a leading role in the field of medical research, having more than 1300 research publications by its faculty and researchers in a year. AIIMS also has a College of Nursing, which awards B.Sc (Hons) Nursing and B.Sc Nursing (Post-certificate) degrees. Twenty-five clinical departments, including six superspecialty centres, manage practically all types of disease conditions with support from preclinical and para-clinical departments. AIIMS also runs a 60-bedded hospital at the Comprehensive Rural Health Centre at Ballabgarh in Haryana and provides health cover to about 7.7 lakh people through the Centre for Community Medicine.

The institute has main hospital with total bed strength of 2424 beds along with state-of-art intensive care units. It has 6 centers for superspecialties including Cardiology, Cardio Thoracic surgery, Cardioradiology, Neurology, Neurosurgery, Trauma centre, De-addiction center and state-of-art intensive care monitoring facilities. It has Rotary Cancer Hospital with 200 beds. Each center has approximately 200 beds. AIIMS was the first one to do cardiac transplantation in the country. In addition, it has a cardiac transplantation. In addition it has very successful renal, bone marrow transplantation facilities.

Regional

National

Local

Neuquén

New Delhi (7)

## Local Publications

The following publications used ISAAC data from the New Delhi (7) centre:

Sharma SK, Banga A. Prevalence and risk factors for wheezing in children from rural areas of north India. Allergy Asthma Proc 2007; 28(6): 647-53.



# The ISAAC Story

Regional

National

Local

New Delhi (7)

Division of Pulmonary Medicine has a special place in the Department of Internal Medicine since inception of the Institute. Since beginning it has state-of-art facilities for measurement of pulmonary diffusing capacity with single breath and steady state techniques, estimation of lung volumes with body plethysmography, measurement of acid-base. Over a period of time, state-of-art intensive care unit and sleep laboratories were developed. Division of Pulmonary, Critical care and Sleep Medicine has contributed significantly by performing outstanding research. Special interest of the Division includes bronchial asthma, interstitial lung disease, sarcoidosis, tuberculosis, HIV/TB, obstructive sleep apnea and venous thrombo-embolism. Because of this the Division was chosen for performing ISAAC Phase Three study.

## IMPACT OF ISAAC IN OUR CENTRE

ISAAC Phase Three Study data are known to faculty, residents and medical students at AIIMS, New Delhi. However, attention is being paid to increase their awareness of the findings in teaching ward rounds, outpatient department and chest clinic.

## FINDINGS FOR OUR CENTRE

### Publication from ISAAC Phase Three Data collected in New Delhi

#### Prevalence and risk factors for wheezing in children from rural areas of north India

Surendra K. Sharma, M.D., Ph.D., and Amit Banga, M.D. (*Allergy Asthma Proc* 28:647–653, 2007; doi: 10.2500/aap2007.28.3059)

The purpose of this study was to document the prevalence of asthma-associated symptoms in children residing in rural areas and to determine risk factors for its development. We studied 8470 school children, aged 6–7 years and 13–14 years, from 10 villages on the outskirts of Delhi, India, over a 6-month period. The study was performed using the Hindi translated version of Phase III of the ISAAC questionnaires. All of the questionnaires were self-reported by children and/or parents. Frequent passage of trucks through the street near home (odds ratio [OR]: 95% CI, 1.7 [1.2–2.4]), maternal smoking (OR: 95% CI, 1.5, [1.1–2.1]), paternal smoking (OR: 95% CI, 1.3 [1.0–1.8]), total number of cigarettes smoked by both parents of more than seven per day (OR: 95% CI, 1.9 [1.3–2.7]), paracetamol intake of more than once a month (OR: 95% CI, 1.9 [1.4–2.6]), and current exposure to cats (OR: 95% CI, 1.5 [1.1–1.9]) were independently associated with occurrence of recent wheezing (in the last 12 months), whereas fruit intake of more than twice a week had a protective effect (OR: 95% CI, 0.7 [0.5–0.9]). There is a significant burden of asthma-associated symptoms in children of rural areas of north India. Occurrence of wheezing among children from rural areas of Delhi is determined by a complex interplay of environmental agents that induce allergic sensitization and are proinflammatory and environmental agents that supplement the antioxidant stores.

## Common ISAAC Phase Three Study Publications

1. Worldwide time trends in the prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and eczema in childhood: ISAAC Phases One and Three repeat multicountry cross-sectional surveys. *Lancet* 2006; 368:733–43
2. Worldwide trends in the prevalence of asthma symptoms: phase III of the International Study of Asthma and Allergies in Childhood (ISAAC) Worldwide trends in the prevalence of asthma. *Thorax* 2007;62:757–65; originally published online 15 May 2007; doi:10.1136/thx.2006.070169
3. Association between paracetamol use in infancy and childhood, and risk of asthma, rhinoconjunctivitis, and eczema in children aged 6–7 years: analysis from Phase Three of the ISAAC programme. *Lancet* 2008;372:1039–48 Use of paracetamol in the first year of life and in later childhood, is associated with risk of asthma, rhinoconjunctivitis, and eczema at age 6 to 7 years. We suggest that exposure to paracetamol might be a risk factor for the development of asthma in childhood.
4. Worldwide time trends for symptoms of rhinitis and conjunctivitis: Phase III of the International study of asthma and allergies in childhood. *Pediatr Allergy Immunol* 2008; 19:110–24.
5. Is eczema really on the increase worldwide? *J Allergy Clin Immunol* 2008; 121:947–54.
6. Global map of the prevalence of symptoms rhinoconjunctivitis in children: the international study of asthma and allergies in childhood (ISAAC) phase three. *Allergy* 2009; 64:123–48.
7. Self Reported Truck Traffic on the Street of Residence and Symptoms of Asthma and Allergic Disease: A Global Relationship in ISAAC Phase Three. *Environ Health Perspect* 2009;117:1791–98.
8. Antibiotic use in infancy and risk of symptoms of asthma, hinoconjunctivitis and eczema in 6 to 7 year old children: ISAAC Phase Three. *J Allergy Clin Immunol* 2009;124:982–89.
9. Translation of questions: The International Study of Asthma and Allergies in Childhood (ISAAC) experience. *Int J Tuberc Lung Dis*. September 2009; 13: 1174–82
10. The impact of the method of consent on response rates in the ISAAC time trends study. *Int J Tuberc Lung Dis* 2010; 14:1059–65

# The ISAAC Story

## Neyveli Centre

Phase One			
<b>Centre:</b>		Neyveli, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr G Jayaraj	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:November 1994 to October 1995 6-7yr:October 1994 to October 1995
<b>Sampling Frame:</b>			

### Personnel

#### Dr K Janardhan

N.L.C. Hospital  
Neyveli 607803  
India

#### Roles:

- Phase One collaborator for Neyveli

#### Dr G Jayaraj

General Superintendent/Medical Services  
N.L.C. Hospital  
Neyveli House – First Floor, 135, EVR Preiar  
Road,  
Neyveli 607803  
India

#### Roles:

- Phase One Principal Investigator for Neyveli

## Local Publications

The following publications used ISAAC data from the Nis centre:

Živkovic Z. *Prevalence of childhood asthma, rhinitis and eczema in Belgrade area and Serbia*. Child Pulmonol 2002; 10(1-2): 27-43.

Živanovic S, Jovanovic-Slavkovic M, Mileusnic-Milenovic R, Perovic L, Nikolic S, Stojanovic-Milojkovic L, Kovacevic S, Brankovic S, Conic M. *Prevalence rate of asthma, rhinitis and eczema in children in Nis*. Child Pulmonol 2002; 10(1-2): 45-50.

Khalidi F, Fakhfakh R, Mattoussi N, Ben Ali B, Zouari S, Khemiri M. *Prevalence and severity of asthma, allergic rhinoconjunctivitis and atopic eczema in "Grand Tunis" schoolchildren ISAAC*. Tunis Med.2005 May;83(5):269-73.

Živkovic Z, Vukašinovic Z, Cerovic S, Radulovic S, Živanovic S, Panic E, Hadnadjev M and Adžovic O. *Prevalence of childhood asthma and allergies in Serbia and Montenegro*. World J Pediatr 2010; 6(4): 331-336 epub May



Map of Serbia and Nis

## Nis Centre

Phase Three			
<b>Centre:</b>		Nis, Serbia and Montenegro ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Asst Professor Snezana Zivanovic	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	March 2001 to June 2001
<b>Sampling Frame:</b>		Some schools in Nis	

### Personnel

#### Dr Sofija Brankovic

Health Care Center Nis  
Nis  
Serbia

#### Roles:

- Phase Three collaborator for Nis

#### Dr Marija Conic

Medical School University of Nis  
Nis  
Serbia

#### Roles:

- Phase Three collaborator for Nis

#### Dr Spomenka Kovacevic

Health Care Center Nis  
Nis  
Serbia

#### Roles:

- Phase Three collaborator for Nis

#### Dr Radmila Mileusnic –Milenovic

Childrens University Clinic  
Clinical Centre  
Nis  
Serbia

#### Roles:

- Phase Three collaborator for Nis

#### Dr Snezana Nikolic

Health Care Center Nis  
Nis  
Serbia

#### Roles:

- Phase Three collaborator for Nis

#### Dr Ljiljana Perovic

Childrens University Clinic  
Clinical Centre  
Nis  
Serbia

#### Roles:

- Phase Three collaborator for Nis

#### Dr Mile Z Randjelovic

Bulevar Nemanjica 60/8  
Serbia

#### Roles:

- Phase Three collaborator for Nis

#### Dr Maja Slavkovic-Jovanovic

Childrens University Clinic  
Clinical Centre  
Nis  
Serbia

#### Roles:

- Phase Three collaborator for Nis

#### Dr Ljiljana Stojanovic-Milojkovic

Health Care Center Nis  
Nis  
Serbia

#### Roles:

- Phase Three collaborator for Nis

Regional

National

Local

Neyveli

Nis

# The ISAAC Story

## Asst Professor Snezana Zivanovic

Asst Professor in Pediatrics  
Clinic of Pediatrics  
Clinical Centre of Nis  
Faculty of Medicine University of Nis  
Serbia

### Roles:

- Phase Three Principal Investigator for Nis

ISAAC study in the Centre of Nis enrolled 2209 children in 20 down town schools and 14 schools from suburbs. The investigation started in January 2011 while definite data entry and statistical analyses were finished in August 2002. The complete study was conducted by 8 physicians (Snezana Zivanovic, Ljiljana Perovic, Maja Slavkovic-Jovanovic, Radmila Mileusnic – Milenovic, Snezana Nikolic, Spomenka Kovacevic, Ljiljana-Stojanovic-Milojkovic, Sofija Brankovic and Marija Conic) from Children's Clinic Nis and Health Care Center Nis. Our results were published in the National Journal: Children's Pulmonology (Zivanovic S, Slavkovic-Jovanovic M, Mileusnic-Milenovic R, Perovic Lj, Nikolic S, Stojanovic-Milojkovic LJ, Kovacevic S, Brankovic and Conic Marija. Prevalence rate of Asthma, Rhinitis and Eczema in children in Nis. Children's Pulmonology 2002; 7: 45-50.)

## Niue Island Centre

Phase Three			
<b>Centre:</b>		Niue Island, Niue ( Oceania )	
<b>Principal Investigator:</b>		Ms Moka Magatogia	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2002 to October 2002
<b>Sampling Frame:</b>		Whole Island Study. There is only one High school and one primary school on the island.	

### Personnel

#### Ms Moka Magatogia

Physiotherapist  
Niue Foou Hospital  
Niue

### Roles:

- Phase Three Principal Investigator for Niue Island

## Niue ISAAC Story

Contact was made by Dr Sunia Foliaki in 2002, for Niue to participate in the ISAAC Research. Niue participated in the ISAAC Phase Three, Group B, in October 2002. The survey was coordinated by Mrs. Moka Magatogia, assisted by Miss O'Mega Vai Chapman.

The children were recruited from the two only schools on the island. The 6/7 year olds from Niue Primary School and 13/14 year olds from Niue High School. With English being the second language and fluently spoken and understood by all, there was no need to translate the questionnaire to Niuean. Questionnaires were completed by the parents of 6/7 year olds, and the 13/14 year olds completed their own questionnaires together with the video questionnaire. All Data were collected, coded and transferred to IIDC Auckland, New Zealand.

A second part of the survey was completed in August 2003, again coordinated and assisted by the same people. This was the environment survey. There were some problems with transferring this data and before we were able to successfully transfer the data again Hurricane Heta hit the island. There were again further delays in getting the data transferred. However, all hard copies of our survey were safe and I managed to post all these over because computer access at that time was not possible.

Dr Sunia Foliaki also visited Niue in 2006 and was able to give an update on the ISAAC research to the staff of the Niue Health Department. I would like to thank the ISAAC Research Committee for funding this survey and making it possible for Niue to participate in this International Study.

## North east and Yorkshire Centre

Phase One			
<b>Centre:</b>		North east and Yorkshire, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Professor H Ross Anderson	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in Northeast and Yorkshire counties and all schools from a random selection of 4 metropolitan districts from each of 2 metropolitan counties. Stratified by county\metropolitan district, followed by random sampling of one school from each area.	

Regional

National

Local

Nis

Niue Island

North east  
and  
Yorkshire

# The ISAAC Story

## Personnel

### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
United Kingdom



#### Roles:

- ISAAC Steering Committee
- National Coordinator for United Kingdom
- Phase One Principal Investigator for North east and Yorkshire

### Dr Balvinder Kaur

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

#### Roles:

- Phase One collaborator for North east and Yorkshire

### Dr Jan Poloniecki

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

#### Roles:

- Phase One collaborator for North east and Yorkshire

This centre formed part of a national initiative throughout the United Kingdom, as described on the UK country-level page . Resulting publications are listed on the UK national page.

Ross Anderson, David Strachan, 18 July 2011

## North Gaza Centre

<b>Phase Three</b>			
<b>Centre:</b>		North Gaza, Palestine ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Mr Shaban Mortaja	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2001 to December 2001
<b>Sampling Frame:</b>		All schools in North Gaza District (public schools, UNRWA schools, and the private schools).	

## Personnel

### Mr Shaban Mortaja

Lecturer in Public Health, MPH  
Alquds University –Faculty of Public Health, Gaza Campus  
Tal EL HAWA PRCS Building  
Gaza  
P.O. Box 5314  
Palestine



#### Roles:

- Phase Three Principal Investigator for North Gaza

## Why was this centre selected for ISAAC?

In a personal communication, year 2000, with Professor Ameen Thalji, a researcher in Pediatric's health in the West Bank and Jerusalem, he reported a gradient increase of childhood infections as seen at the emergency rooms and hospitals' clinics in the past 10 years. Thalji and Abdeen agreed that a potential justification could be the increased effect of indoor allergen especially house dusts mites and smoking, and outdoor air pollution by traffic and allergens which were also believed to be the main risk factors for increasing asthma in the Palestinian children (Professor Ameen Thalji and Professor Hani Abdeen, personal communication, 2000). Similarly, a case control study in Gaza Strip at the refugees' camps (1) indicated that house dust mites were probably important allergens in the region and has a major role in asthma trends and its severity among children especially at the coastal areas. Also, kerosene use for heating and cooking was a strong potential risk factor for developing asthma symptoms in those children, in addition to the effect of smoking and house dust mites. Therefore, poverty and humidity in Palestine and especially in Gaza Strip were considered important risk factors for asthma too.

Until year 2000, there was no real work that described the real situation or explored the possible risk factors and determinants of asthma in Palestine. The urban-rural and inland-coastal area differences were not studied in depth. Therefore, we decided at Al Quds University-Palestine in cooperation with KULEven Belgium to initiate several studies in two selected area (West Bank and Gaza Strip) that provide a framework for further etiological research into lifestyle, environmental, genetic and medical care factors affecting asthma prevalence and incidence. Ramallah governorate, the inland area, and Gaza governorate, the coastal area, were chosen for implementing the series of studies that was planned according to ISAAC protocols (phase three and phase 2)

Regional

National

Local

North east  
and  
Yorkshire  
North Gaza

# The ISAAC Story

Regional

National

Local

North Gaza

North

Thames

## ISAAC Phase Three studies:

This phase was done in two governorates: Gaza and Ramallah governorates. After a two-stage stratified systematic sampling, approximately 14,500 schoolchildren, from the first and second grades of elementary school (ages 5 to 8 years) and eighth and ninth school grades (ages 12 to 15 years), were invited to participate in a survey using ISAAC phase III questionnaires and protocols.

The main study results showed that younger children had a higher 12-month wheezing prevalence rate of 9.6% compared to older children (7.2%) and more physician-diagnosed asthma (8.4% and 5.9%, respectively). However, nocturnal cough and exercise-related wheezing were higher in the older age group compared with younger children. Younger children living in North Gaza district showed slightly higher prevalence rates for asthma and asthma symptoms, but older children had higher rates in Ramallah district. After adjustment using logistic regression analysis, male sex, living in inland areas, and younger age were shown to predict 12-month wheezing and physician-diagnosed asthma (2).

## References

1. Mumcuoglu KY, Abed Y, Armenios B, et al. Asthma in Gaza refugee camp children and its relationship with house dust mites. *Ann.Allergy* 1994; **72**: 163-166.
2. El-Sharif NA, Nemery B, Barghuthy F, Mortaja S, Qasrawi R, Abdeen Z. Geographical variations of asthma and asthma symptoms among schoolchildren aged 5 to 8 years and 12 to 15 years in Palestine: the International Study of Asthma and Allergies in Childhood (ISAAC). *Ann Allergy Asthma Immunol.* 2003 Jan;90(1):63-71.

## North Thames Centre

<b>Phase One</b>			
<b>Centre:</b>		North Thames, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Professor H Ross Anderson	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in North Thames and part of London (2 inner districts and 2 outer districts north of River Thames). Stratified by county and 4 randomly sampled London boroughs (2 inner, 2 outer) followed by random sampling of schools in these areas.	
<b>Phase Three</b>			
<b>Centre:</b>		North Thames, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Professor H Ross Anderson	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	January 2002 to March 2002
<b>Sampling Frame:</b>		13-14yr: Same area as ISAAC Phase One: Former North Thames Health Authority area. Schools that participated in ISAAC Phase One were used. If unable to participate, then schools were selected at random from mixed state secondary schools with 100 or more pupils in the same Local Education Authority.	

## Personnel

### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
United Kingdom



#### Roles:

- ISAAC Steering Committee
- National Coordinator for United Kingdom
- Phase One Principal Investigator for North Thames
- Phase Three Principal Investigator for North Thames

### Dr Balvinder Kaur

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

#### Roles:

- Phase One collaborator for North Thames
- Phase Three collaborator for North Thames

### Ms Vivienne Monk

Department of Public Health Sciences  
St George's Hospital Medical School  
Cranmer Terrace  
United Kingdom

#### Roles:

- Phase Three collaborator for North Thames

# The ISAAC Story

## Dr Jan Poloniecki

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

### Roles:

- Phase One collaborator for North Thames

This centre formed part of a national initiative throughout the United Kingdom, as described on the UK country-level page . Resulting publications are listed on the UK national page.

Ross Anderson, David Strachan, 18 July 2011

## North West Centre

Phase One	
<b>Centre:</b>	North West, United Kingdom ( Western Europe )
<b>Principal Investigator:</b>	Professor H Ross Anderson
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	All schools in North West counties and all schools from a random selection of 4 metropolitan districts from each of 2 metropolitan counties. Stratified by county and metropolitan district, followed by a random sample of schools from each county\metropolitan district.

## Personnel

### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
United Kingdom



### Roles:

- ISAAC Steering Committee
- National Coordinator for United Kingdom
- Phase One Principal Investigator for North West

### Dr Balvinder Kaur

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

### Roles:

- Phase One collaborator for North West

### Dr Jan Poloniecki

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

### Roles:

- Phase One collaborator for North West

This centre formed part of a national initiative throughout the United Kingdom, as described on the UK country-level page . Resulting publications are listed on the UK national page.

Ross Anderson, David Strachan, 18 July 2011

## Nouvelle Calédonie Centre

Phase Three	
<b>Centre:</b>	Nouvelle Calédonie, Nouvelle Calédonie ( Oceania )
<b>Principal Investigator:</b>	Dr Isabella Annesi-Maesano
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	June 1998 to September 1998
<b>Sampling Frame:</b>	13-14yr: All schools in Nouvelle Calédonie in order to represent all ethnic groups

## Personnel

### Dr Isabella Annesi-Maesano

EPAR Dept, INSERM, UMR- S 707  
Faculté de Médecine Pierre et Marie Curie  
Site Saint-Antoine  
27 rue Chaligny 75571  
France

### Roles:

- National Coordinator for France
- Phase Three Principal Investigator for Nouvelle Calédonie

### Dr Bernard Granger

Service de Pédiatrie Hospital  
98735 Uturoa  
French Polynesia

### Roles:

- Phase Three collaborator for Nouvelle Calédonie

Regional

National

Local

North  
Thames  
North West  
Nouvelle  
Calédonie

# The ISAAC Story

Regional

National

Local

Nova Iguaçu

## Nova Iguaçu Centre

<b>Phase Three</b>			
<b>Centre:</b>		Nova Iguaçu, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Associate Professor Antônio José Ledo Aves Cunha	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 2002 to September 2002
<b>Sampling Frame:</b>		Some public and private schools in Nova Iguaçu District – State of Rio de Janeiro. We respect the original distribution of district population as according to geographic area and kind of school (2/3 public X 1/3 private).	

## Personnel

### Associate Professor Antônio José Ledo Aves Cunha

IPPMG-UFRJ  
Rua Rodrigo de Brito 46/503  
Brasil

#### Roles:

- Phase Three Principal Investigator for Nova Iguaçu

At the end of his lecture on gene-environment interactions in childhood asthma during the VIII Brazilian Congress of Pediatric Allergy, held in April 2001 in Rio de Janeiro, Professor Fernando Martinez urged the audience: "People are different, the factors are different, seek their own risk factors, regardless of the technology needed for this " (Fernando Martinez, Professor of Pediatrics and Director of the Center for Respiratory Diseases at the University of Arizona, United States, one of the creators of the Tucson Children's Respiratory Study, a major longitudinal study on the natural history of childhood asthma that started in 1980).

In due course a series of events favored the implementation of ISAAC in the municipality of Nova Iguaçu, located at the metropolitan area of Rio de Janeiro City, capital of Rio de Janeiro State, Brazil. The ISAAC project, then in its third phase, was recruiting new participating centres. The scarcity of epidemiological studies of asthma in our state and the prospect of cooperating with a study of this magnitude was crucial to seek ways to facilitate our participation.

At the time, as a Professor of Pediatrics from the Department of Pediatrics of the School of Medicine, located at the Institute of Pediatrics Martagão Gesteira (IPPMG-UFRJ), Federal University of Rio de Janeiro, I invited Dr. Fabio Kuschnir to participate in the study with me. That time Dr. Fabio had already finished his Master Thesis and was a graduate student enrolled in our Doctoral Program.

Thus with the support of Prof. Dirceu Solé, the national coordinator of the ISAAC study in Brazil, the city of Nova Iguaçu was inserted as the single participating ISAAC Phase III center in Rio de Janeiro in October 2001, with me as the principal investigator, and Dr. Fabio Kuschnir as the co-investigator. The study design, determining the completion of data collection in schools, and the sample size required were challenging.

In this context, the School Health Program of the Department of Civil Defense of the State of Rio de Janeiro (PSE), covering about 300 public schools throughout the state of Rio de Janeiro and with Dr. Fabio Kuschnir as one of its coordinator since 2001, became a cornerstone for the implementation of the study. With the support of the General Coordinator of the PSE, we formed a team consisting of four pediatricians trained in allergology, who worked in the PSE program itself, to help conduct the survey.

Data collection was completed in 2002, after four months of hard work. Four additional months were needed for entering data and cleaning the data set. Throughout this period, we maintained contact with the national ISAAC Coordinator and the ISAAC International Data centre, the latter located in Auckland, New Zealand, to help us follow the study protocol and clarify any doubts we had. All these steps were accompanied and supervised by me and Dr. Fabio Kuschnir. Participation in all stages of this project has brought us a huge experience. I refer not only to local knowledge about asthma or planning and conducting an epidemiological study of this size, but also the recognition that teamwork and partnership between different institutions are able to generate scientific knowledge of quality and to overcome technological and financial barriers so frequent in our context.

Among the products generated by this project, including several national and international publications, it is worth mentioning the conclusion of three master's theses and one doctoral dissertation, as well as a local prize to outstanding research projects. In conclusion, we were very fortunate to be able to respond to Prof. Martinez 'call' and we are grateful to the ISAAC family to have provided us with this opportunity.

# The ISAAC Story



## Local Publications

The following publications used ISAAC data from the Novi Sad centre:

Živkovic Z. *Prevalence of childhood asthma, rhinitis and eczema in Belgrade area and Serbia.* Child Pulmonol 2002; 10(1-2): 27-43.

Hadnadjev M. *Frequency of children's asthma, allergic rhinitis and eczema in Novi Sad.* Child Pulmonol 2002; 10(1-2): 51-55.

Živkovic Z, Vukašinovic Z, Cerovic S, Radulovic S, Zivanovic S, Panic E, Hadnadjev M and Adžovic O. *Prevalence of childhood asthma and allergies in Serbia and Montenegro.* World J Pediatr 2010; 6(4): 331-336 epub May



Map of Novi Sad



Novi Sad



Novi Sad Map and photo



Department of school children health care "Njegoševa 32"



Dr Mila Hadnadjev



Dr Mila Hadnadjev

## Novi Sad Centre

Phase Three			
<b>Centre:</b>		Novi Sad, Serbia and Montenegro ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Mila Hadnadjev	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 2002 to April 2002
<b>Sampling Frame:</b>		Some schools in the municipality of Novi Sad.	

### Personnel

#### Ilijevic Aleksandra

Health Center "Novi Sad"  
Children's Health Protection  
Novi Sad  
Serbia



#### Roles:

- Phase Three collaborator for Novi Sad

#### Mirjana Djurdjev

Health Center "Novi Sad"  
Children's Health Protection  
Novi Sad  
Serbia

#### Roles:

- Phase Three collaborator for Novi Sad
- School Professor

#### Jelena Djurdjev

Health Center "Novi Sad"  
Children's Health Protection  
Novi Sad  
Serbia

#### Roles:

- Phase Three collaborator for Novi Sad
- School Professor

#### Vlaovic-Ugljevicanin Dušanka

Health Center "Novi Sad"  
Children's Health Protection  
Novi Sad  
Serbia



#### Roles:

- Phase Three collaborator for Novi Sad

#### Dr Mila Hadnadjev

Health Center "Novi Sad"  
Children's Health Protection  
Novi Sad  
Serbia



#### Roles:

- Phase Three Principal Investigator for Novi Sad

#### Darka Hadnadjev

Health Center "Novi Sad"  
Children's Health Protection  
Novi Sad  
Serbia



#### Roles:

- Phase Three collaborator for Novi Sad

#### Bratic Mirjana

Health Center "Novi Sad"  
Children's Health Protection  
Novi Sad  
Serbia



#### Roles:

- Phase Three collaborator for Novi Sad

#### Jelena Polak-Stefanovic

Health Center "Novi Sad"  
Children's Health Protection  
Novi Sad  
Serbia

#### Roles:

- Phase Three collaborator for Novi Sad
- school pedagogue

Regional  
National  
Local

Novi Sad



# The ISAAC Story



Regional

National

Local

Novi Sad

## Vera Pušić

Health Center "Novi Sad"  
Children's Health Protection  
Novi Sad  
Serbia

### Roles:

- Phase Three collaborator for Novi Sad
- Nurse

## Memedovic Stana

Health Center "Novi Sad"  
Children's Health Protection  
Novi Sad  
Serbia

### Roles:

- Phase Three collaborator for Novi Sad
- Nurse

Vojvodina is a northern province of Serbia, whose capital is Novi Sad (350 000 inhabitants, the second biggest town in Serbia, after Belgrade, the capital of Serbia). Although Vojvodina is the most developed part of Serbia, the number of studies (including Serbia, too) about the prevalence of allergies were rather scarce.

The Health Center "Novi Sad" ([www.dzns.rs](http://www.dzns.rs)) in Novi Sad was founded on September 29, 1967. It has 59 objects, 1533 employed people, provides health care to 350,000 inhabitants and has 11 service units while its services account for 15 million.

I work at the Department of school children health care "Njegoševa 32", at the center of the town, 32 Njegoševa St. Our service unit comprises 21 school departments and 21 small children departments, in which 68 pediatricians work.

At the time I got involved in the ISAAC project for the first time, I had a diploma of the Faculty of Medicine, postgraduate studies, mental hygiene etc., but I passed the exam in pediatric allergology on June 08, 2004. I was a member of Headquarter for Ambrosia destroying, which was the team organized for coordination and monitoring of mowing ambrosia (ragweed) in the city parks of Novi Sad. It consisted of a president and seven members who were multidisciplinary leading experts of Novi Sad. Meetings were held at City Hall and attended by the City Council of the City of Novi Sad Municipal Utilities Authority, the City Administration for Environmental Protection, Public Utility Company "City Park" and professors of Natural Science Faculty and Medicine. Our contribution was a report on the impact of cutting on the prevalence of allergic diseases. We followed morbidity of allergic diseases before and after Ambrosia mowing. It was formed in 2002 by the city mayor who had an allergic disease and when the new mayor was elected in 2005, HQ ceased to exist. Also in this time, I had many local educational lectures, going to many congresses (ERS congress in Belgrade, in organisation of Zorica Živkovic, in Palic) taking part in presentation on ISAAC data at Dedinje Pediatric meeting and I published many scientific papers. Prof. Dr Zorica Živkovic was the main publisher of "Children's Pulmonology", so all principal investigators published their ISAAC data in that journal.

Our ISAAC team was small but a successful one and consisted of pediatricians :

dr Mila Hadnadjev, dr Bratic Mirjana, dr Ilijevic Aleksandra, dr Vlaovic-Ugljevicanin Dušanka, dr Darka Hadnadjev

school pedagogue: Jelena Polak-Stefanovic

nurses: Vera Pušić, Memedovic Stana

two school professors: Mirjana Djurdjev and Jelena Djurdjev.

There are 52 schools in Novi Sad (30 elementary schools and 22 secondary schools). ISAAC questionnaires were very well accepted. We did not have any barriers; parents of the children in the kindergartens were also very cooperative, many of them considered that we were helping their children, but there were also many of them who did not want to admit that their child had diagnosis of asthma. We had shown pictures of eczema and urticaria for better understanding of the meaning of those words by school children.

We appreciated our contacts with Mrs Philippa Ellwood and Mr Tadd Clayton who helped us with their always useful and precious advice, so it was great opportunity to be in contact with ISAAC Center in New Zealand.

ISAAC results of asthma prevalence in our country are the only relevant information because there was no such universal project before ISAAC. Professor doctors of pediatric allergology continue to quote them as the most reliable data. The ISAAC screening questionnaire is unique and the most recognized one in the world, as it has proved itself to be!

# The ISAAC Story



Novosibirsk

## Novosibirsk Centre

<b>Phase One</b>			
<b>Centre:</b>		Novosibirsk, Russia ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Prof Dr Elena G Kondiourina			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Novosibirsk, Russia ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Prof Dr Elena G Kondiourina			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2002 to April 2002
<b>Sampling Frame:</b>		Some schools in each district of Novosibirsk city	

## Personnel

### Prof Dr Elena G Kondiourina

Chief of Pediatric Department  
Novosibirsk State Medical  
Academy  
Krasny Prospect, 52  
Novosibirsk  
Russia



#### Roles:

- Phase One Principal Investigator for Novosibirsk
- Phase Three Principal Investigator for Novosibirsk

## Why was this centre selected for ISAAC?

Novosibirsk is a large industrial, administrative and geographical center of West Siberia. It is the center for highways and railways, it has a river port and international airport. The peculiar feature is its territory (the territory of the city was 483 square kilometers in 1995) and the significant difference in the state of environmental characteristics of different areas. The population of the Novosibirsk city was 1368,5 thousand people including 251,8 children during the survey. Being located in the South-East of the West-Siberian plain, on both banks of the river Ob the city has a continental climate and is characterized by the increased potential for air pollution. The main sources for the air pollution are fuel and energy industry, the industry which produce building materials, black and non-ferrous metal industries, radio-electronic industry, engineering industry, chemical industry, light and food industry, railway and automobile transport.

## Our experience of ISAAC

### Phase One:

7404 pupils from 30 schools in 10 Novosibirsk districts (3695 pupils at the age of 6-7 years old, 3709 pupils at the age of 13-14 years old) have been interviewed with the strict observance of all requirements of ISAAC protocol from January till April 1996.

The specific feature in the study of the bronchial asthma epidemiology in Novosibirsk which was carried out according to the ISAAC program was the linguistic adaptation of a written questionnaire in order to reproduce the original text. For this purpose, the questions have been translated and formulated in Russian and later translated into the English language. They have been compared with the original variant and the necessary corrections have been done. The number of examined first-year pupils in Novosibirsk was larger according to the ISAAC protocol than the number of pupils which our center provided as a result. This is due to the fact that mainly children at the age of 7-8 years old study at school and the prevalence of children at the age of 6 years old is less than 20%.

### Phase Three:

6746 pupils (2868 pupils at the age of 6-7 years old, 3878 pupils at the age of 13-14 years old) have been interviewed in schools of Novosibirsk from January till April 2002.

The study has been carried at the same schools as we have done during the phase one. But, due to the demographic "collapse" which was characterized by the decline of birth, there weren't 3000 pupils at this schools. That is why we included children from other schools.

In comparison with the first stage the prevalence of the symptoms of the bronchial asthma, bronchial spasm of physical exertion, episodes of cough at night among the pupils of Novosibirsk decreased. The indications for the frequent exacerbation, frequent night symptoms remained stable, the diagnostics of bronchial asthma increased.

Regional

National

Local

Novosibirsk

# The ISAAC Story

Regional

National

Local

**Nuku alofa**

## Nuku alofa Centre

Phase Three			
<b>Centre:</b>		Nuku alofa, Tonga ( Oceania )	
<b>Principal Investigator:</b> Dr Sunia Foliaki			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	April 2002 to October 2002
<b>Sampling Frame:</b>		13-14yr: All children attending schools in Tonga	

### Personnel

#### Dr Sunia Foliaki

Director  
Research Unit  
Ministry of Health  
P.O. Box 59  
Kingdom Of Tonga



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Oceania
- Phase Three Principal Investigator for Nuku alofa

## Orissa Centre

Phase One			
<b>Centre:</b>		Orissa, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Dr Pradeep Kumar Kar			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	March 1995 to July 1995
<b>Sampling Frame:</b>			

### Personnel

#### Dr Pradeep Kumar Kar

Consultant pediatrics  
qrs.no.-C/163  
Sector-6  
ROURKELA-769002  
India



#### Roles:

- Phase One Principal Investigator for Orissa



## Background

- Asthma, Allergic rhinitis, Dermatitis in childhood are the common issues of concern in pediatric O.P.D.
- Incidence, aetio-pathogenesis & treatments are often scientifically challenged where as, the rational practice in their management are far from real as on date. Consensus asthma management protocols by Indian Academy of Pediatrics (IAP) are yet to be popularized in the country. Asthma management varies from place to place. It is significantly dependant on the knowledge of the treating pediatrician, socio-economic & geographical accessibility and health seeking behavior of the concerned patient /caretaker.
- So, the issue appeared significant, need-based & challenging.

## Constraints faced

1. Child health status is critical in Orissa ( IMR is 97 per 1000 live births as per the 2002 census report).
2. The existing deficit health facility is geographically & socio-economically inaccessible to the rural poor in Orissa. Prevailing poverty, & illiteracy either delay or neglect the health seeking behavior.
3. The above project was taken up at Purnapani in Sundergarh district & was completed at Bolani in Keonjhar district in Orissa. Both were tribal dominated rural villages where I was working in the respective mines hospital. Patient care, social living, office practices were all in a primitive way.

# The ISAAC Story

## Experiences

Nearly a decade has been passed since I submit my final report. Personal experiences written below are significant to me because they are fresh in my memory till date.

1. Answering to each & every letter, repeated visit to the concerned schools, communication to the students, teachers, parents, data compilation, format etc. & computer typing had consumed a lot of my personal time & money. For about two and a half years I had to cancel all my personal & family commitments.
2. Roads & communications in these areas are so poor that one may not imagine the risk unless & until one experiences it personally. During rainy days the fair weather roads make the movement impossible & risk taking as well. Schools were poorly attended during those days. More frequent visits were made to achieve the assigned 90% target or so. There was a Muslim girl's school run in the owner/principal's personal residence complex, which was the school with lowest number of enrollments.
3. Chinmaya Vidyalaya of Rourkela was the excellent among the lot. The principal & other teachers, the students, parents co-operated in the study in a much organized & disciplined manner. At the end, the entire team was specially thanked on behalf of the ISAAC member group. The senior students enjoyed the video clipping on asthma & asked many questions on the issue, which were answered. A student asked & noted the full form of ISAAC in his class note- book.
4. There was a primary school (for 6 to 7 years age group) near Bolani mines in a remote tribal village, the name I am forgetting now. The village had a few thatched huts, some of them were without any roof top, placed discretely (very low population density, i.e. persons/square k m.). It was a government aided tribal school with provisions of free mid-day-meals for the enrolled students. Teachers of the school accommodate themselves in some of those local huts & were utilising open-air field for their toilet & bath irrespective of their sex. The Government constructed tin-top school building did not have even a single window or door. The night time sheep & cattle-shed was utilized as a class- room by the poor young children. I wish, I could have taken photographs of the dirty class- room floor full of dry cow dung & animal excreta.

## Final out come

My contribution to the entire investigation may be negligible. But personally I was benefited in many ways. The whole credit for this I would like to give to the team who designed the project text. The communication methodology and language advocated were distinct and universally accepted. Comprehensive social health communications, adopted during the event were well appreciated by the students, teachers and parents. This was in addition to the determination of incidence rate of Asthma, Allergic rhinitis etc. among the target groups. Hence, these personal observations should not be considered as the facts meant to dilute the main objectives of ISAAC studies. Subsequent community health communication events were organized with confidence and enthusiasm. Health promotional events were modified from time to time by the rich experience gathered during ISAAC phase -1 study. During the year 1999 & 2000, I was elected twice to the National Executive board (from East Zone) Indian Academy of Pediatrics (IAP). Pulse polio, Breast feeding promotion, Nutrition education, mass child health camp, health awareness building were few (worth mentioning) of such health promotional events. IAP Orissa State branch was energized by forming district branches, and encouraging and participating in various child health activities.

Regional

National

Local

Orissa

# The ISAAC Story

Regional

National

Local

Palermo

Pamplona

## Palermo Centre

<b>Phase Three</b>			
<b>Centre:</b>		Palermo, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Dr Stefania La Grutta	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	February 2002 to May 2002
<b>Sampling Frame:</b>		13-14yr: All schools in the city of Palermo	

### Personnel

#### Dr Stefania La Grutta

University of Palermo  
Professor of Pediatric  
Allergology, School of  
Pediatrics  
Palermo  
Italy



#### Roles:

- Phase Three Principal Investigator for Palermo

Palermo is a metropolitan city in the South of Italy, and no previous epidemiological study about allergies and asthma in children was done to evaluate the prevalence. For this reason we considered very important to join ISAAC through participation in the study SIDRIA-2 (Studio Italiano Disturbi Respiratori Infanzia Ambiente) in 2002, the Italian section of ISAAC study. We thought it was a huge step that would let us have real data about asthma and allergies prevalence in our country and give us the opportunity of comparing our data with the data of other countries involved in this study.

In Phase Three Palermo was the only centre, it is the capital city of Sicily which has a population of about 900,000 inhabitants. In the whole country we are about 5,000,000 inhabitants. In the study 1015 children participated in the 6-7 years group and 1287 in the 13-14 years group. It was very important to have so a great number of participants to have a better idea of the prevalence of asthma and allergies in Sicily.

Pediatricians were aware about the importance of ISAAC and our data by attending national congresses and courses of MCE related with these diseases. They are now more committed with the management of asthma, which is contributing to a better treatment of the patients.

We wish to thank all parents, children and school staff who participated in the surveys and also our fieldworkers team for their enthusiasm and effort throughout the study.

## Pamplona Centre

<b>Phase One</b>			
<b>Centre:</b>		Pamplona, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Professor Francisco Guillén-Grima	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: December 1993 to April 1994 6-7yr: December 1993 to May 1994
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Pamplona, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Professor Francisco Guillén-Grima	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	December 2000 to June 2001
<b>Sampling Frame:</b>		All the schools in Pamplona Metropolitan Area	

### Personnel

#### Professor Francisco Guillén-Grima

Dept Ciencias de la Salud  
UPNA  
Avda. Baranain sn  
Spain

#### Roles:

- Phase One Principal Investigator for Pamplona
- Phase Three Principal Investigator for Pamplona

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from Pamplona:

Fernández Benitez M, Guillén F, Marin B, Pajaron MJ, Brun C, Aguinaga I, Esteban MA, García B, Martínez González MA, Notivol P, Santos MA, Zapata MA. *International study of asthma and allergies in childhood. Results of the first phase of the I.S.A.A. C. project in Pamplona, Spain.* J Investig Allergol Clin Immunol 1996; 6(5): 288-93.

Carvalho N, Fernández-Benitez M, Cascante L, Aguinaga I, Guillén F. *International Study of Asthma and Allergies in Childhood. Results on rhinitis of first phase in Pamplona, Spain.* Allergol Immunopathol (Madr). 2000 Jul-Aug;28(4):207-12.

Ibargoyen-Roteta N, Aguinaga-Ontoso I, Fernández-Benitez M, Marin-Fernández B, Guillén-Grima F, Serrano-Monzo I, Hermoso-de-mendoza J, Brun-Sandiumetge C, Ferrer-Nadal A, Irujo-Andueza A. *Role of the home environment in rhinoconjunctivitis and eczema in schoolchildren in Pamplona, Spain.* J Investig Allergol Clin Immunol 2007; 17(3): 137-44.

Fernandez-Benitez M, Antnon J, Grima FG. *Risk factors associated to the prevalence of asthma in adolescence.* Allergol Immunopathol (Madr). 2007; 35(5):193-196

## Panevezys Centre

Phase Three			
<b>Centre:</b>		Panevezys, Lithuania ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Professor Jurgis Bojarskas	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 1997 to May 1997
<b>Sampling Frame:</b>		All schools in Panevezys centre	

### Personnel

#### Professor Jurgis Bojarskas

Kaunas Medical University  
Clinics of Children's Diseases  
Eiveniu 2  
Lithuania



#### Roles:

- Phase Three Principal Investigator for Panevezys

## Why our country joined ISAAC

We were late finding out about ongoing ISAAC studies, and so we were late with our Phase One results. Nevertheless, we were very eager to find out about the real situation concerning allergic diseases in Lithuania, especially among children, as being paediatric allergists and pulmonologists we saw the dramatically increasing numbers of allergic children. We selected the three biggest Lithuanian cities (Kaunas, Panevezys, Siauliai) as centres and examined all children from the secondary schools and kindergartens in them. Phase Three results were produced in time, as we already knew about the invitation to take part repeatedly in this survey. We were interested to see the dynamics of the prevalence of allergic diseases, which is why Kaunas centre completed repeat phases of ISAAC.

## Impact of ISAAC in our country

Various lecturers (pediatric and adult) and even Health Ministry representatives quote our ISAAC data, when talking about the spreading of allergies in Lithuania. Then we are sitting proud, with our heads raised, as still there are no data about the prevalence of adult allergies in Lithuania. Some data from our Lithuanian ISAAC results were published in the most popular Lithuanian medical journal 'Medicina'.

## Passo Fundo Centre

Phase Three			
<b>Centre:</b>		Passo Fundo, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Dr Arnaldo C Porto Neto	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	June 2002 to December 2002
<b>Sampling Frame:</b>		13-14yr: All schools in Passo Fundo area.	

### Personnel

#### Dr Arnaldo C Porto Neto

Asthma and Allergic Clinic  
Rua Moron 2113  
Brasil

#### Roles:

- Phase Three Principal Investigator for Passo Fundo



Regional

National

Local

Pamplona

Panevezys

Passo Fundo

## Local Publications

The following publications used ISAAC data from the Passo Fundo centre:

Porto Neto AC, D'Agostini Annes R, Wolff NMM, Klein AP, dos Santos FC, Dullius JL, Gressler M, Muller LS, Angonese CF, Menna-Barreto S. *Prevalence and Severity of Asthma, Rhinitis, and Atopic Eczema in 13- to 14-Year-Old Schoolchildren from Southern Brazil.* Allergy Asthma Clin Immunol 2006; 2(1): 3-10

# The ISAAC Story

Regional

National

Local

Paysandú

Perth

## Paysandú Centre

Phase Three			
<b>Centre:</b>		Paysandú, Uruguay ( Latin America )	
<b>Principal Investigator:</b> Dra María Cristina Lapiques			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 2002 to November 2002
<b>Sampling Frame:</b>		Some Schools in Paysandú state	

### Personnel

#### Dra María Cristina Lapiques

Hospital Paysandú  
Ayacucho 1123  
Uruguay

#### Roles:

- Phase Three Principal Investigator for Paysandú

## Perth Centre

Phase One			
<b>Centre:</b>		Perth, Australia ( Oceania )	
<b>Principal Investigator:</b> Professor Louis Landau			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: March 1994 to December 1994 6-7yr: October 1994 to December 1994
<b>Sampling Frame:</b>			

### Personnel

#### Professor Louis Landau

Faculty of Medicine and  
Dentistry  
The University of Western  
Australia  
Queen Elizabeth II Medical  
Centre  
Australia



#### Roles:

- Phase One Principal Investigator for Perth

#### Dr Lyle J Palmer

University Department of Paediatrics  
The University of Western Australia  
GPO Box 855  
Australia

#### Roles:

- Phase One collaborator for Perth

#### Professor Peter Sly

TVW Telethon Institute for Child Health  
Research  
P O Box 855  
Australia

#### Roles:

- Phase One collaborator for Perth

## Perth Centre.

Perth was very pleased to participate in ISAAC. There are a number of internationally recognized experts in asthma and allergy working in Perth, ranging from research in the basic sciences to clinical care and long term cohort studies. It was appreciated that participation in a world wide study of the relationships between asthma/allergy and environmental factors would be complementary and add value to the work being done.

## ISAAC Experience.

Apart from the contribution of data to the world wide analyses and reports, 2 separate studies of the Perth data have been published. One study aimed to investigate the relationship between socio-economic factors and symptoms of asthma and atopy in the 6-7 year old ISAAC cohort in Western Australia. Parental questionnaire responses were obtained in 2,193 children in 34 randomly selected primary schools in the Perth metropolitan area. Children born in Australia had a significantly increased risk of current asthma (OR 2.37, p=0.001). Having a mother born in Australia was the only factor independently associated with an increased risk of current hay fever (OR 1.56, p=0.005). Increasing numbers of people living in the home were significantly associated with a multiplicative decrease in risk of current asthma (OR 0.88, p=0.02) and eczema (OR 0.82, p=0.01). Houses made of fibrocement (OR 2.40, p=0.02) and the presence of mats on less than half the floor area in the main bedroom (relative to wall to wall carpet) were associated with an increased risk of current eczema (OR 3.50, p=0.003). All reported associations were independent of socioeconomic status, age and sex. This study suggested that household and country specific environmental factors are associated with asthma, hay fever and eczema risk in 6-7 year old children, and may have contributed to the increased prevalence of these diseases in Australia.

## Local Publications

The following publications used ISAAC data from the Perth centre:

Palmer LJ, Valinsky L, Pikora T, Zubrick SR, Landau LI. *Environmental factors and asthma and allergy in schoolchildren from Western Australia.* Eur Resp J 1999; 14(6):1351-7.

Palmer LJ, Valinsky L, Pikora T, Landau LI. *Do regular check-ups and preventive drug use reduce asthma severity in school children?* Aust Fam Phys 2004; 33(7): 573-6.

# The ISAAC Story

Another study investigated whether regular check-ups and preventive drug use reduced asthma symptoms in 2,193 primary school children in 34 primary schools aged 6-7 years and 3,650 secondary school children aged 13-14 years in 9 secondary schools, selected at random by cluster sampling. Asthma severity in the past 12 months was measured by the number of attacks of wheezing, visits to a doctor for care of an exacerbation of symptoms, visits to a hospital emergency department and admissions to hospital for wheezing or asthma. Analysis by multivariate ordinal logistic regression indicated that regular general practitioner check ups were associated with reduced asthma severity. Regular use of prophylactic and bronchodilator medications were associated with reduced symptoms. Asthma action plans and peak flow meter usage were associated with reduced hospital admissions. If these associations prove to be causal, then regular GP check-ups are particularly effective in reducing the health consequences of asthma in children.

## References.

Palmer LJ, Valinsky L, Pikora T, Zubrick SR, Landau LI. The association of environmental factors with asthma and allergy in a population based sample of school children from Western Australia. *Eur Resp J* 1999;14:351-7.

Palmer LJ, Valinsky L, Pikora T, Landau LI. Do regular check-ups and preventive drug use reduce asthma severity in school children? *Aust Fam Phys* 2004; 33:573-6.

## Acknowledgements.

National Health and Medical Research Council.

School of Paediatrics and Child Health, The University of Western Australia.

Telethon Institute for child Health Research.

Princess Margaret Hospital for Children, Perth, Western Australia.

Children, parents and school staff who participated in the surveys.

## Pessac Centre

<b>Phase One</b>			
<b>Centre:</b>		Pessac, France ( Western Europe )	
<b>Principal Investigator:</b>		Professor André Taytard	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:December 1993 to June 1994 6-7yr:November 1993 to June 1994
<b>Sampling Frame:</b>			

## Personnel

### Dr Chantal Raheison

Service des Maladies Respiratoires  
Centre Francois Magendie  
CHU de Bordeaux  
5 Avenue Magellan  
France

#### Roles:

- Phase One collaborator for Pessac

### Professor André Taytard

Centre Hospitalier Universitaire de Bordeaux  
Service des Maladies Respiratoires  
Hôpital du Haut Lévêque  
5, avenue de Magellan  
France

#### Roles:

- Phase One Principal Investigator for Pessac

## Pichincha Centre

<b>Phase Two</b>			
<b>Centre:</b>		Pichincha, Ecuador ( Latin America )	
<b>Principal Investigator:</b>		Dr Phillip Cooper	
<b>Age Groups:</b>	7-17,	<b>Timeframe:</b>	May 2001 to January 2002.
<b>Sampling Frame:</b>		Three contiguous rural districts (cantons) within the province of Pichincha.	

## Personnel

### Dr Phillip Cooper

Laboratorio de Investigaciones  
Hospital Pedro Vicente Maldonado  
Casilla 17-14-30  
Ecuador

#### Roles:

- Phase Two Principal Investigator for Pichincha

Regional

National

Local

Perth

Pessac

Pichincha



# The ISAAC Story

Regional

National

Local

Pimpri

Podgorica

Polokwane

## Pimpri Centre

Phase Three			
<b>Centre:</b>		Pimpri, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Dr Sundeep Salvi			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2002 to October 2002
<b>Sampling Frame:</b>		13-14yr: Some schools in Pimpri-Chinchwad city 6-7yr: All schools in Pimpri-Chinchwad city	

### Personnel

#### Dr Sundeep Salvi

Chest Research Foundation  
Marigold Premises  
Survey No. 15  
Vadgaon Sheri  
India

#### Roles:

- Phase Three Principal Investigator for Pimpri

## Podgorica Centre

Phase Three			
<b>Centre:</b>		Podgorica, Serbia and Montenegro ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Dr Omer Adzovic			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2002 to April 2003
<b>Sampling Frame:</b>		Some schools in Podgorica Region.	

### Personnel

#### Dr Omer Adzovic

Chief of Pulmonology Department  
Children's Hospital  
Kruševac bb  
81000 Podgorica  
Montenegro

#### Roles:

- Phase Three Principal Investigator for Podgorica

#### Dr Suzana Radulovic

Pediatrics at Children's Hospital  
Mitra Bakica 138  
Montenegro

#### Roles:

- Phase Three collaborator for Podgorica

## Polokwane Centre

Phase Three			
<b>Centre:</b>		Polokwane, South Africa ( Africa )	
<b>Principal Investigator:</b> Professor Kuku Voyi			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	August 2004 to March 2005
<b>Sampling Frame:</b>		All schools in a radius of 60 kilometers from the Polokwane Central Business District (CBD) in the Limpopo Province of South Africa.	

### Personnel

#### Ms Chantelle Maritz

Department of Environmental and Occupational Health  
School of Health Systems and Public Health  
CSIR Building 22, University of Pretoria  
PO Box 667  
South Africa

#### Roles:

- Phase Three collaborator for Polokwane

#### Professor Kuku Voyi

Head, Department of Environmental and Occupational Health  
School of Health Systems and Public Health  
Faculty of Health Sciences  
University of Pretoria  
South Africa



#### Roles:

- Phase Three Principal Investigator for Polokwane



## Local Publications

The following publications used ISAAC data from the Podgorica centre:

Živkovic Z, Vukašinovic Z, Cerovic S, Radulovic S, Živanovic S, Panic E, Hadnadjev M and Adžovic O. *Prevalence of childhood asthma and allergies in Serbia and Montenegro.* World J Pediatr 2010; 6(4): 331-336 epub May



# The ISAAC Story

## Local Publications

The following publications used ISAAC data from Polokwane:

Wichmann J, Wolvaardt JE, Maritz C, Vuyi KVV. *Household conditions, eczema symptoms and rhinitis symptoms relationship with wheeze and severe wheeze in adolescents living in the Polokwane area, South Africa.* J Asthma 2007; 44(8): 659-66.

Wichmann J, Wolvaardt JE, Maritz C, Vuyi KVV. *Association between children's household living conditions and eczema in the Polokwane area, South Africa.* Health Place.2008 Jun;14(2):323-35.Epub Aug 2007.

Wichmann J, Wolvaardt JE, Maritz C, Vuyi KVV. *Household Conditions, Eczema Symptoms and Rhinitis Symptoms Relationship with Wheeze and Severe Wheeze in Children Living in the Polokwane Area, South Africa.* Matern Child Health J.2009; 13(1):107-118.Epub Jan 2008.

## POLOKWANE ISAAC STUDY CENTRE

A record of decision from an Environmental Impact Assessment (EIA) for the expansion of a Platinum smelter in Polokwane was the driver to get more information about the prevalence of respiratory diseases in the area. The ISAAC toolkit was found to be the most suitable to use. This was to be the second ISAAC centre in South Africa following Cape Town. ISAAC in Auckland was contacted to register the study site and we were promptly accepted and given an identification number. We received videos to accompany the questionnaires.

The education department in the Limpopo Province gave us permission to do the research in the schools. We used the Phase Three questionnaires and attempted to use the video. The questionnaires were translated into North Sotho. We studied the 6-7 year olds and 13-14 year old children. The use of the video questionnaire was abandoned due to the lack of electricity in other parts of the centre. However, this did not interfere with the success of the study.

The results informed the decision of the EIA. In turn the interest in asthma and allergies in childhood increased in researchers and physicians in the province. We believe that the data from Polokwane contributed to the mapping of the disease worldwide. The results were published in a number of journals.

Asthma and childhood allergies are a concern in both the developing and developed world. The results of the ISAAC world map indicate that. We have an intention of mapping asthma and allergies in South Africa, this might take long, but there are two centres that have results already. We indicated interest in ISAAC Phase Five, but this phase is not officially supported and will not go ahead. We are not going to be deterred by this, there is a study in Gauteng Province that is being proposed and the university and the Provincial education department has given permission to proceed. In addition to the Phase Three questionnaire, this study will also use the clinical Phase Two methodology. The video questionnaire will also be used with this population.

The ISAAC questionnaire is a good basic tool to use in assessing allergies in childhood. The flexibility of adding questions depending on the intended results makes it a valuable scientific tool.

## Polynesie Francaise Centre

Phase Three			
<b>Centre:</b>		Polynesie Francaise, French Polynesia ( Oceania )	
<b>Principal Investigator:</b> Dr Isabella Annesi-Maesano			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	February 2000 to February 2000
<b>Sampling Frame:</b>		13-14yr: All schools in Polynésie Française in order to represent all ethnic groups.	

### Personnel

#### Dr Isabella Annesi-Maesano

EPAR Dept, INSERM, UMR- S 707  
Faculté de Médecine Pierre et Marie Curie  
Site Saint-Antoine  
27 rue Chaligny 75571  
France

#### Roles:

- National Coordinator for France
- Phase Three Principal Investigator for Polynesie Francaise

#### Dr Bernard Granger

Service de Pédiatrie Hospital  
98735 Uturoa  
French Polynesia

#### Roles:

- Phase Three collaborator for Polynesie Francaise

## Port-Gentil Centre

Phase Three			
<b>Centre:</b>		Port-Gentil, Gabon ( Africa )	
<b>Principal Investigator:</b> Dr Isabelle Ekoume Hypolite			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	May 2002 to June 2003
<b>Sampling Frame:</b>		13-14yr: All secondary schools and primary schools except one secondary and one primary schools where white children were the most important.	

### Personnel

#### Dr Isabelle Ekoume Hypolite

BP 428  
Gabon

#### Roles:

- National Coordinator for Gabon
- Phase Three Principal Investigator for Port-Gentil

Regional

National

Local

Polokwane

Polynesie

Francaise

Port-Gentil

# The ISAAC Story

Regional

National

Local

Portimao

Porto

Porto Alegre

## Portimao Centre

<b>Phase One</b>			
<b>Centre:</b>		Portimao, Portugal ( Western Europe )	
<b>Principal Investigator:</b> Dr Carlos Nunes			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: May 1994 to June 1994 6-7yr: May 1994 to December 1994
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Portimao, Portugal ( Western Europe )	
<b>Principal Investigator:</b> Dr Carlos Nunes			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2001 to April 2002
<b>Sampling Frame:</b> We have performed all schools in Portimao area (public and private). The same sampling frame as Phase One.			

## Personnel

### Dr Carlos Nunes

Center of Allergy and Immunology of Algarve  
R. Jose Antonio Marques, 3C - 4  
Portugal

### Roles:

- Phase One Principal Investigator for Portimao
- Phase Three Principal Investigator for Portimao

## Porto Centre

<b>Phase One</b>			
<b>Centre:</b>		Porto, Portugal ( Western Europe )	
<b>Principal Investigator:</b> Dr José M Lopes dos Santos			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b> All schools in Oporto and neighbouring municipalities.			
<b>Phase Three</b>			
<b>Centre:</b>		Porto, Portugal ( Western Europe )	
<b>Principal Investigator:</b> Dr José M Lopes dos Santos			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 2002 to July 2002
<b>Sampling Frame:</b> All schools of the Oporto Metropolitan area (Oporto city and neighbouring municipalities). The same sampling frame as for Phase One.			

## Personnel

### Dr José M Lopes dos Santos

Departamento de Pediatria  
Hospital Pedro Hispano  
Rua Dr Eduardo Torres  
4460 Senhora da Hora  
Portugal

### Roles:

- Phase One Principal Investigator for Porto
- Phase Three Principal Investigator for Porto

## Porto Alegre Centre

<b>Phase One</b>			
<b>Centre:</b>		Porto Alegre, Brasil ( Latin America )	
<b>Principal Investigator:</b> Professor Renato Stein			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: June 1994 to December 1994 6-7yr: June 1994 to September 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Porto Alegre, Brasil ( Latin America )	
<b>Principal Investigator:</b> Dr Gilberto B Fischer			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	June 2002 to April 2003
<b>Sampling Frame:</b> 13-14yr: Schools in the Municipal area of Porto Alegre. Same sampling frame as Phase One.			

## Local Publications

The following publications used ISAAC data from the Porto centre:

Solé D, Melo KC, Camelo-Nunes IC, Freitas LS, Britto M, Rosário NA, Jones M, Fischer GB, Naspitz CK. *Changes in the prevalence of asthma and allergic diseases among Brazilian schoolchildren (13-14 years old) comparison between ISAAC Phases One and Three.* J Trop Pediatr. 2007 Feb;53(1):13-21. Epub Sep 2006.

## Local Publications

The following publications used ISAAC data from the Porto Alegre centre:

Solé D, Melo KC, Camelo-Nunes IC, Freitas LS, Britto M, Rosário NA, Jones M, Fischer GB, Naspitz CK. *Changes in the prevalence of asthma and allergic diseases among Brazilian schoolchildren (13-14 years old) comparison between ISAAC Phases One and Three.* J Trop Pediatr. 2007 Feb;53(1):13-21. Epub Sep 2006.

# The ISAAC Story

## Personnel

### Dr Gilberto B Fischer

Fundação Faculdade  
Federal de Ciências Médicas de Porto Alegre  
Rua Coronel Bordini 830/509  
CEP 90440=003  
Brasil

#### Roles:

- Phase Three Principal Investigator for Porto Alegre

### Professor Renato Stein

Pediatric Pulmonary Unit  
Department of Pediatrics  
Pontificia Universidade Catolica RS  
Av Ipiranga, 6690 conj. 420  
Brasil

#### Roles:

- Phase One Principal Investigator for Porto Alegre
- Phase Three collaborator for Porto Alegre

In 2001 I had an invitation to proceed the Phase III of ISAAC study in Porto Alegre. I looked for help in my University (Universidade Federal de Ciências da Saúde of Porto Alegre) in order to get funds to do it. Unfortunately I couldn't get it at that time. So I wrote an advertisement in the walls of the university looking for medical students to help me with that task. Seven of them came for an interview. Five agreed to participate with no payment. So I added a student of psychology to join the group. Some weeks later the group was trained and prepared to start the study. I managed to get free bus tickets for the visits to the schools and we finally started with the study. We included private and public schools in different areas of the city. Unfortunately we reached only 45% of the goal (3000 students 13-14y) by the end of that year. With the holidays period we had to wait until March of 2003 to finish the study. Three of the medical students had to leave it because they started their internship at that year. So we had to train other students. The same group was responsible for typing the data. When we finished the study we presented some basic results to the schools (mainly for those which asked for it in advance). Interestingly the schools directors were surprised with the prevalence (around 20%), which is above the national average. This is our brief story of ISAAC III in Porto Alegre

## Poznan Centre

<b>Phase One</b>			
<b>Centre:</b>		Poznan, Poland ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Associate Professor Anna Brêborowicz	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 1994 to January 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Poznan, Poland ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Associate Professor Anna Brêborowicz	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2002 to October 2002
<b>Sampling Frame:</b>		All school in Poznan and surroundings. The same sampling frame was used for both Phase One and Phase Three.	

## Personnel

### Associate Professor Anna Brêborowicz

Institute of Pediatrics  
University of Medical Sciences  
Str. Szpitalna 27/33  
Poland

#### Roles:

- Phase One Principal Investigator for Poznan
- Phase Three Principal Investigator for Poznan

## Local Publications

The following publications used ISAAC data from Poznan:

Lis G, Brêborowicz A, Swiatly A, Pietrzyk JJ, Alkiewicz J, Moczko J. *Prevalence of allergic diseases in schoolchildren in Krakow and Poznan (based on a standardized ISAAC questionnaire).* [in Polish]. *Pneumonol Alergol Pol.* 1997; 65(9-10): 621-7.

Lis G, Brêborowicz A, Cichocka-Jarosz E, Swiatly A, Glodzik I, Gazurek D, Sobkowiak P, Alkiewicz J, Pietrzyk JJ. *[Increasing prevalence of asthma in school children--ISAAC study (International Study of Asthma and Allergies in Children)].* *Pneumonol Alergol Pol.* 2003;71(7-8):336-43.Polish.

Lis G, Brêborowicz A, Cichocka-Jarosz E, Sobkowiak P, Gazurek D, Swiatly A, Alkiewicz J, Pietrzyk JJ. *[The prevalence of allergic rhinitis and conjunctivitis in school children from Krakow and Poznan--ISAAC study (International Study of Asthma and Allergies in Childhood)].* [Polish]. [English Abstract. *Journal Article.Multicenter Study*]. *Otolaryngol Pol.* 58(6):1103-9, 2004.

Regional

National

Local

Porto Alegre

Poznan

# The ISAAC Story

Regional

National

Local

**Provincial  
Korea  
Pune**

## Provincial Korea Centre

<b>Phase One</b>			
<b>Centre:</b>		Provincial Korea, South Korea ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Sang-II Lee	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:September 1995 to October 1995 6-7yr:September 1995 to December 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Provincial Korea, South Korea ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Ha-Baik Lee	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2000 to December 2000
<b>Sampling Frame:</b>		We obtained a complete school list from the Ministry of Education. We randomly sampled 24 schools in Provincial Korea area. We sampled 150 children from each grade. In Phase 3 study, we finish the study in the same school which had been participated in the Phase One study. Same sampling frame for both Phases, same schools used.	

## Personnel

### Dr. Kangmo Ahn

Department of Pediatrics  
Samsung Medical Center  
Sungkyunkwan University School of Medicine  
50 Irwon-dong, Gangnam-gu, Seoul,  
Korea

#### Roles:

- Phase One collaborator for Provincial Korea

### Dr Soo-Jong Hong

Department of Pediatrics  
Hanyang University College of Medicine  
17 Haengdang-Dong  
Sungdong-Ku  
South Korea

#### Roles:

- Phase Three collaborator for Provincial Korea

### Dr Sang-II Lee

Samsung Medical Center  
Dept. of Pediatrics  
50 Irwon-Dong  
Gangnam-gu  
South Korea

#### Roles:

- Phase One Principal Investigator for Provincial Korea

### Professor Ha-Baik Lee

Department of Pediatrics  
Hanyang University College of Medicine  
17 Haengdang-Dong  
Sungdong-Ku  
South Korea

#### Roles:

- National Coordinator for South Korea
- Phase Three Principal Investigator for Provincial Korea

## Pune Centre

<b>Phase One</b>			
<b>Centre:</b>		Pune, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr Neeta Milind Hanumante	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 1994 to January 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Pune, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr Neeta Milind Hanumante	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	July 2001 to September 2002
<b>Sampling Frame:</b>		All schools in Kothrud area, Pune. The same sampling frame as Phase One.	

## Personnel

### Dr Neeta Milind Hanumante

Ruby Hall Clinic  
8, Avantili Apts  
Happy Colony  
Kothrud  
India

#### Roles:

- Phase One Principal Investigator for Pune
- Phase Three Principal Investigator for Pune

# The ISAAC Story

## Punta Arenas Centre

<b>Phase One</b>			
<b>Centre:</b>		Punta Arenas, Chile ( Latin America )	
<b>Principal Investigator:</b>		Dr Lidia Amarales	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	July 1994 to December 1994
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Punta Arenas, Chile ( Latin America )	
<b>Principal Investigator:</b>		Dr Lidia Amarales	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2001 to December 2001
<b>Sampling Frame:</b>			
All schools in Punta Arenas, the same sampling frame as Phase One.			

### Personnel

#### Dr Lidia Amarales

Children Respiratory Service  
Regional Hospital "Lautaro Navarro"  
Av Colon 1144 Ofic 3  
Chile

#### Roles:

- Phase One Principal Investigator for Punta Arenas
- Phase Three Principal Investigator for Punta Arenas

#### Dr Vanessa Reveco

Av. Bulnes  
01641 Chile

#### Roles:

- Phase Three collaborator for Punta Arenas

## Quito Centre

<b>Phase Three</b>			
<b>Centre:</b>		Quito, Ecuador ( Latin America )	
<b>Principal Investigator:</b>		Dr Sergio Barba	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2003 to July 2003
<b>Sampling Frame:</b>			
All schools in the urban area of Quito, grouped by socio-economic levels.			

### Personnel

#### Dr Sergio Barba

Ecuadorian Allergy and Asthma Association  
260 Vozandes  
AXXIS-Medical centre of. 509  
Ecuador



#### Roles:

- National Coordinator for Ecuador
- Phase Three Principal Investigator for Quito

### WHY QUITO AND ISAAC?



SOCIEDAD ECUATORIANA DE ALERGOLOGÍA  
INMUNOLOGÍA Y CIENCIAS AFINES (SEAICA)

FUNDADA EN 1961 - CASILLA 8884 - QUITO - ECUADOR

Like others places in the world, the study of allergic diseases until the last century were tailored with anarchic protocols and we felt that all were segmental and with many biases, which prevented correlation with other studies performed in other countries.

On behalf of the Ecuadorian Society of Allergy, Immunology and Allied Sciences (SEAICA), Dr. Sergio Barba MD, the President, contacted Javier Mallol MD, Regional Coordinator of ISAAC and through him with the International Program obtained the best support to undertake the ISAAC Three-b study since we had not participated in ISAAC Phase One. The first action was to make an adaptation to Ecuadorian terms the questionnaire implemented in the regional study. Then we made contact with researchers of Mind Marketing, an Institution that had experience with us in other studies of allergies in our country.

Regional  
National  
Local

Punta  
Arenas  
Quito



Quito, Ecuador  
Coordinates: 00.15'00"S  
78.35'00"W 2800 m.  
above sea level  
Population: 1,400,000  
habits



Logo of the Ecuadorian Society of Allergy, Immunology and Allied Sciences (SEAICA)



Map of the city of Quito

# The ISAAC Story

Regional

National

Local

Quito

Rabat

Ramallah

With them, we planned the ISAAC WORK PLAN: we asked the Ministry of Education for the database of the primary and secondary schools of the urban area of the city, then separated the city into three sectors: North, Center and South and with socio-economic information of INEC (National Institute of Statistics and Census) we chose 40 establishments that represented the city demographically. Then we had an interview with rectors, directors and scholar physicians; we trained teachers about the questions of the poll, started the survey and sent the questions to parents of children aged 6-7 years old. With the teen's group, we gathered the students in a classroom and displayed the video. When they answered the questionnaire, with the help of an ISAAC investigator, they completed the second part of the document.

As an initiative of the SEAICA, we donated to the participating schools a First Aid Kit to thank them for their participation in the study.

The survey was finished in about 7 weeks, and then it was analyzed and sent to the ISAAC International Data Centre. Subsequently we made a few clarifications and successfully completed Phase Three-b in Quito, whose local coordinator was appointed as National Coordinator for this research.

It is important to acknowledge the support provided by the ISAAC international Data Centre. I believe that is important to emphasize that we do not receive financial aid from any pharmaceutical group to complete the work. We currently have the desire to make a new study (10 years later), and to be involved in the ISAAC Phase IV.

## Rabat Centre

Phase One			
<b>Centre:</b>		Rabat, Morocco ( Africa )	
<b>Principal Investigator:</b>		Professor Abdelkrim Bennis	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		The study was done in the town of Rabat. Sampling frame: All schools with school years containing the highest proportion of 13-14 years children, excepted those for handicaped children (3 schools).	

### Personnel

#### Professor Abdelkrim Bennis

Résidence du Minaret  
Angle rue Ammane-Yougoslavie (A coté du  
Cinéma Royal)  
Numéro 24  
2 ème étage  
Morocco

#### Roles:

- Phase One Principal Investigator for Rabat

## Ramallah Centre

Phase Two			
<b>Centre:</b>		Ramallah, Palestine ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Nuha El Sharif	
<b>Age Groups:</b>	6-12,	<b>Timeframe:</b>	September 2000.
<b>Sampling Frame:</b>		A two-stage sample of schools from Ramallah district, part of West Bank.	
Phase Three			
<b>Centre:</b>		Ramallah, Palestine ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Nuha El Sharif	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2000 to April 2001
<b>Sampling Frame:</b>		All schools in Ramallah District (public schools, UNRWA schools, and the private schools).	

### Personnel

#### Dr Nuha El Sharif

Associate professor of Medical  
Sciences-Epidemiology  
Alquds University, Faculty of  
Public Health  
Abu Dies Camp PO Box 51915  
Jerusalem  
Palestine



#### Roles:

- National Coordinator for Palestine
- Phase Two Principal Investigator for Ramallah
- Phase Three Principal Investigator for Ramallah

## Local Publications

El-Sharif N, Abdeen Z, Qasrawi R, Moens G, Nemery B. *Asthma prevalence in children living in villages, cities and refugee camps in Palestine.* Eur Respir J 2002; 19(6):1026-34.

El-Sharif N, Abdeen Z, Barghuthy F, Nemery B. *Familial and environmental determinants for wheezing and asthma in a case-control study of school children in Palestine.* Clin Exp Allergy 2003; 33(2): 176-86.

El Sharif N, Douwes J, Hoet PH, Doekes G, Nemery B. *Concentrations of domestic mite and pet allergens and endotoxin in Palestine.* Allergy 2004; 59(6): 623-31.

El-Sharif N, Douwes J, Hoet P, Nemery B. *Childhood asthma and indoor aeroallergens and endotoxin in Palestine a case-control study.* J Asthma 2006; 43(3): 241-7.

# The ISAAC Story

## Professor Benoit Nemery

KULeuven- Occupational,  
Environmental and Insurance  
Medicine  
Afdeling Pneumologie  
O&N I Herestraat 49  
bus 00706-B-3000 Leuven  
Belgium



### Roles:

- Phase Three collaborator for Ramallah
- ISAAC Palestine adviser, Phase three and Phase Two

Regional

National

Local

**Ramallah**

## Why was this centre selected for ISAAC?

In a personal communication, year 2000, with Professor Ameen Thalji, a researcher in Pediatric's health in the West Bank and Jerusalem, he reported a gradient increase of childhood infections as seen at the emergency rooms and hospitals' clinics in the past 10 years. Thalji and Abdeen agreed that a potential justification could be the increased effect of indoor allergen especially house dusts mites and smoking, and outdoor air pollution by traffic and allergens which were also believed to be the main risk factors for increasing asthma in the Palestinian children (Professor Ameen Thalji and Professor Hani Abdeen, personal communication, 2000). Similarly, a case control study in Gaza Strip at the refugees' camps (1) indicated that house dust mites were probably important allergens in the region and has a major role in asthma trends and its severity among children especially at the coastal areas. Also, kerosene use for heating and cooking was a strong potential risk factor for developing asthma symptoms in those children, in addition to the effect of smoking and house dust mites. Therefore, poverty and humidity in Palestine and especially in Gaza Strip were considered important risk factors for asthma too.

Until year 2000, there was no real work that described the real situation or explored the possible risk factors and determinants of asthma in Palestine. The urban-rural and inland-coastal area differences were not studied in depth. Therefore, we decided at Al Quds University-Palestine in cooperation with KULeuven Belgium to initiate several studies in two selected area (West Bank and Gaza Strip) that provide a framework for further etiological research into lifestyle, environmental, genetic and medical care factors affecting asthma prevalence and incidence. Ramallah governorate, the inland area, and Gaza governorate, the coastal area, were chosen for implementing the series of studies that was planned according to ISAAC protocols (phase three and phase 2).

ISAAC studies were used as a research that led to obtaining my own PhD, Nuha El Sharif PhD, from the K.U.Leuven.

## Center findings ISAAC Phase Three studies:

This phase was done in two governorates: Gaza and Ramallah governorates. After a two-stage stratified systematic sampling, approximately 14,500 schoolchildren, from the first and second grades of elementary school (ages 5 to 8 years) and eighth and ninth school grades (ages 12 to 15 years), were invited to participate in a survey using ISAAC phase III questionnaires and protocols.

The main study results showed that younger children had a higher 12-month wheezing prevalence rate of 9.6% compared to older children (7.2%) and more physician-diagnosed asthma (8.4% and 5.9%, respectively). However, nocturnal cough and exerciserelated wheezing were higher in the older age group compared with younger children. Younger children living in North Gaza district showed slightly higher prevalence rates for asthma and asthma symptoms, but older children had higher rates in Ramallah district. After adjustment using logistic regression analysis, male sex, living in inland areas, and younger age were shown to predict 12-month wheezing and physician-diagnosed asthma (2).

## ISAAC phase 2

In the fall of 2000, 3382 schoolchildren aged 6-12 year were surveyed in 12 schools in Ramallah governorate, using ISAAC-phase III, parents-administered translated questionnaire. The crude prevalence rates for "wheezing ever", "wheezing in the previous 12 months", and "physician-diagnosed asthma" were 17.1%, 8.8% and 9.4% respectively, with urban areas having higher prevalence rates than rural areas. Within urban areas, refugee camps had higher prevalence rates than cities. Yet, within the rural areas, the 12 months prevalence was lower in the deprived villages than other residence. Place of residence remained significant for asthma and asthma symptoms, after adjusting for gender, age, and place of birth (3).



# The ISAAC Story

Regional

National

Local

Ramallah

Rarotonga

To investigate the role of familial, early days' exposures, and indoor environmental determinants for asthma in children in Palestine, ISAAC phase 2 protocols were used. From the population of our previous study (3), a group of 273 children with wheeze in the past 12 months (of whom 99 children had physician-diagnosed asthma) were matched with an equal number of non-wheezing controls. This case-control study involved a parental questionnaire; skin prick testing (SPT) with mixed house dust mites, cat and dog dander, mixed grass, mixed trees pollen, *Alternaria*, olives tree, and cockroach extracts, and serum for total and specific IgE for the same 8 allergens (4). Moreover, to evaluate the relationship between wheezing or sensitization and concentrations of mites, cat and dog allergens, and bacterial endotoxin samples were taken from the mattress and floor dust of a 110 children's houses with reported wheezing and without wheezing (5,6).

The results showed that paternal asthma and maternal hay fever significantly tripled the risk for their children to have wheezing. Previous diagnoses of bronchial allergy, bronchitis, pneumonia, or whooping cough, and positive SPT for house dust mites and cockroaches were significantly more likely among wheezing and asthmatic children than controls. Specific IgE levels for house dust mites and cat allergens showed significantly higher risk to report wheezing. Domestic damp spots and visible moulds were reported more for both wheezing and asthmatic children. After adjustment for several environmental and socio-demographic factors using multivariate logistic regression analysis, paternal asthma, maternal hay fever, damp houses, and cockroach allergen positivity proved to be strong predictors for wheezing symptoms (4).

No consistent associations between allergen levels and either wheeze or specific atopic sensitization were found. Furthermore, no clear associations between mattress endotoxin levels and wheeze or atopy were found. Endotoxin in floor dust was inversely associated with atopic sensitization and wheeze, statistically significant only for atopic wheeze. Finally, a non-significant inverse association was observed between living room endotoxin and atopy within the non-wheezing control group (5,6).

The conclusion of phase 2 confirmed that familial "atopic" diseases are significant predictors of childhood asthma. Moreover, indoor environment such as domestic moulds also appears to play a role. Also, results suggest that endotoxin on living room floors might protect against atopic wheeze in the Palestinian children.

## References

1. Mumcuoglu KY, Abed Y, Armenios B, et al. Asthma in Gaza refugee camp children and its relationship with house dust mites. *Ann.Allergy* 1994; **72**: 163-166.
2. El-Sharif NA, Nemery B, Barghuthy F, Mortaja S, Qasrawi R, Abdeen Z. Geographical variations of asthma and asthma symptoms among schoolchildren aged 5 to 8 years and 12 to 15 years in Palestine: the International Study of Asthma and Allergies in Childhood (ISAAC). *Ann Allergy Asthma Immunol.* 2003 Jan;90(1):63-71.
3. El-Sharif N, Abdeen Z, Qasrawi R, Moens G, Nemery B. Asthma prevalence in children living in villages, cities and refugee camps in Palestine. *Eur Respir J.* 2002 Jun;19(6):1026-34.
4. El-Sharif N, Abdeen Z, Barghuthy F, Nemery B. Familial and environmental determinants for wheezing and asthma in a case-control study of school children in Palestine. *Clin Exp Allergy.* 2003 Feb;33(2):176-86.
5. El Sharif N, Douwes J, Hoet PH, Doekes G, Nemery B. Concentrations of domestic mite and pet allergens and endotoxin in Palestine. *Allergy.* 2004 Jun;59(6):623-31.
6. El-Sharif N, Douwes J, Hoet P, Nemery B. Childhood asthma and indoor aeroallergens and endotoxin in Palestine: a case-control study. *J Asthma.* 2006 Apr;43(3):241-7.

## Rarotonga Centre

<b>Phase Three</b>			
<b>Centre:</b>		Rarotonga, Cook Islands ( Oceania )	
<b>Principal Investigator:</b>		Dr Roro Daniel	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	February 2003 to February 2003
<b>Sampling Frame:</b>		13-14yr: All schools in the Cook Islands.	

## Personnel

### Dr Roro Daniel

Health Manager  
Ministry of Health, Cook Islands  
Box 109  
Avarua  
Cook Islands

### Dr Teariki Tamarua

Ministry of Health  
PO Box 109  
Rarotonga  
Cook Island

#### Roles:

- National Coordinator for Cook Islands
- Phase Three Principal Investigator for Rarotonga

#### Roles:

- Phase Three collaborator for Rarotonga

# The ISAAC Story



## Local Publications

The following publications used ISAAC data from the Rasht centre:

Fadaizadeh L, Salek S, Najafizadeh K, Masjedi MR. *Prevalence and Severity of Asthma Symptoms in Students of Tehran and Rasht Phase III ISAAC Study*. *Tanaffos* (2008) 7(3), 31-36

Najafizadeh K, Fadaizadeh L, Salek S. *Prevalence and Severity of Asthmatic Symptoms in Rasht Students A Report from ISAAC Study*. *TANAFOS* 2008; 7(1):40-46.

## Rasht Centre

Phase One			
<b>Centre:</b>		Rasht, Iran ( Eastern Mediterranean )	
<b>Principal Investigator:</b> Dr Mohammed-Reza Masjedi			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 1995 to November 1995
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Rasht, Iran ( Eastern Mediterranean )	
<b>Principal Investigator:</b> Dr Mohammed-Reza Masjedi			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	March 2002 to April 2002
<b>Sampling Frame:</b> All schools in Rasht Urban region, same sampling frame as Phase One.			

## Personnel

### Dr Mohammed-Reza Masjedi

Masih Daneshvary Hospital  
Dorabad  
Shaheed Bahoner Ave  
Darabad  
Iran

#### Roles:

- National Coordinator for Iran
- Phase One Principal Investigator for Rasht
- Phase Three Principal Investigator for Rasht

## Rasta Peth Centre

Phase Three			
<b>Centre:</b>		Rasta Peth, India ( Indian Sub-Continent )	
<b>Principal Investigator:</b> Associate Professor Sheila Bhave			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	July 2001 to October 2002
<b>Sampling Frame:</b> Some schools in Rasta Peth, Pune area - English, and Marathi schools.			

## Personnel

### Associate Professor Sheila Bhave

Department of Pediatrics  
KEM Hospital Research Centre  
Sardar Moodliar Road  
Rasta Peth  
India

#### Roles:

- Phase Three Principal Investigator for Rasta Peth

## Recife Centre

Phase One			
<b>Centre:</b>		Recife, Brasil ( Latin America )	
<b>Principal Investigator:</b> Dr Patricia Gomes M Bezerra			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: November 1994 to December 1995 6-7yr: November 1994 to November 1994
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Recife, Brasil ( Latin America )	
<b>Principal Investigator:</b> Dr Murilo de Britto			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	September 2002 to December 2002
<b>Sampling Frame:</b> 13-14yr: Public and private schools in the metropolitan region of Recife. The same sampling frame as Phase One.			

## Personnel

### Dr Patricia Gomes M Bezerra

Rua Sebastião Malta Arcoverde, 157  
Brasil

#### Roles:

- Phase One Principal Investigator for Recife

### Dr Murilo de Britto

#### Roles:

- Phase Three Principal Investigator for Recife

Coordinator  
IMIP  
Rua dos Coelhos  
300 Boa Vista  
Brasil



Recife

Regional

National

Local

Rasht

Rasta Peth

Recife

# The ISAAC Story

Regional

National

Local

Recife

Rep. Of  
IrelandReunion  
Island

## Recife Centre

Founded in Recife, Brazil in 1960 by Fernando Figueira, the "Instituto de Medicina Integral Prof. Fernando Figueira – IMIP" is philanthropic organization acting in health care, professional health education and research, directed especially to the poor communities of the State of Pernambuco, Northeast Brazil. The IMIP's hospital was the first in Brazil to receive the title "Baby Friendly Hospital", awarded by the World Health Organization / UNICEF / Ministry of Health. The pediatric sector of IMIP performs more than 900 outpatient visits and 30,000 hospitalizations per month. The department of respiratory diseases performs about 400 outpatient visits a month, mostly asthmatics. It is the state referral center for cystic fibrosis and other paediatric pulmonary diseases of greater complexity.

ISAAC Project allowed, in a comparative way with other centers in Brazil and abroad, knowledge of the prevalence of asthma, rhinitis and other allergies in our region. It also allowed the development of research on risk factors, such as the relationship of asthma with poverty. In the population of Recife, consisting of individuals with high racial miscegenation and still high incidence of poverty and social inequality, the prevalence of symptoms of asthma and rhinitis in schoolchildren reach about 20%.

## Republic of Ireland Centre

<b>Phase One</b>			
<b>Centre:</b>		Republic of Ireland, Republic of Ireland ( Western Europe )	
<b>Principal Investigator:</b>		Professor Luke Clancy	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		National survey of Ireland.	
<b>Phase Three</b>			
<b>Centre:</b>		Republic of Ireland, Republic of Ireland ( Western Europe )	
<b>Principal Investigator:</b>		Professor Luke Clancy	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	November 2002 to April 2003
<b>Sampling Frame:</b>		13-14yr: All secondary schools in the Republic of Ireland, excluding special schools (e.g. mentally handicapped)	

## Personnel

### Professor Luke Clancy

Director General,  
Tobacco Free Research Institute,  
Digital Depot  
Dublin  
Republic Of Ireland  
See Republic of Ireland  
Country page



#### Roles:

- Phase One Principal Investigator for Republic of Ireland
- Phase Three Principal Investigator for Republic of Ireland

## Reunion Island Centre

<b>Phase Three</b>			
<b>Centre:</b>		Reunion Island, Reunion Island ( Africa )	
<b>Principal Investigator:</b>		Dr Isabella Annesi-Maesano	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	May 2000 to May 2000
<b>Sampling Frame:</b>		13-14yr: Random sample of state junior high schools. Private junior high schools were not included.	

## Personnel

### Dr Isabella Annesi-Maesano

EPAR Dept, INSERM, UMR- S 707  
Faculté de Médecine Pierre et Marie Curie  
Site Saint-Antoine  
27 rue Chaligny 75571  
France

#### Roles:

- National Coordinator for France
- Phase Three Principal Investigator for Reunion Island

### Dr Bernard Granger

Service de Pédiatrie Hospital  
98735 Uturoa  
French Polynesia

#### Roles:

- Phase Three collaborator for Reunion Island

## Local Publications

The following publications used ISAAC data from Recife:

De Britto MC, Bezerra PG, Ferreira OS, Maranhao IC, Trigueiro GA. *Asthma prevalence in schoolchildren in a city in north-east Brazil.* Ann Trop Paediatr.2000 Jun;20(2):95-100.

Britto MCA, Bezerra P, Giovannino Ciccone M, Brito RCCM, Rego JC, Burity EF, Alves JGB. *Asthma in schoolchildren from Recife, Brazil. Prevalence comparison 1994-95 and 2002.* J Pediatr (Rio J) 2004; 80(5):391-400.

Solé D, Melo KC, Camelo-Nunes IC, Freitas LS, Britto M, Rosário NA, Jones M, Fischer GB, Naspitz CK. *Changes in the prevalence of asthma and allergic diseases among Brazilian schoolchildren (13-14 years old) comparison between ISAAC Phases One and Three.* J Trop Pediatr.2007 Feb;53(1):13-21. Epub Sep 2006.

Franco JM, Gurgel R, Sole D, França VL, Brabin B and the Brazilian Isaac Group. *Socio-environmental conditions and geographical variability of asthma prevalence in Northeast Brazil* Allergol Immunopathol (Madr). 2009; 37(3):116-121

Brito RdCCM, da Silva GAP, Motta MEFA Brito MCA. *The association of rhinoconjunctivitis and asthma symptoms in adolescents* Rev Port Pneumol 2009; 15(4): 613-628

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from the Reykjavik centre:

Clausen M, Kristjánsson S, Haraldsson A, Björkstén B. *High prevalence of allergic diseases and sensitization in a low allergen country.* Acta Paediatr. 2008 Jul 9; 97(9): 1216-1220.

## Reykjavik Centre

Phase Two	
<b>Centre:</b>	Reykjavik, Iceland ( Northern and Eastern Europe )
<b>Principal Investigator:</b>	Dr Michael Clausen
<b>Age Groups:</b>	, <b>Timeframe:</b> May 2000.
<b>Sampling Frame:</b>	All children in the fifth grade year in Reykjavik and the adjacent areas of Kópavogur and Garóbær.

### Personnel

#### Dr Michael Clausen

Landsþítalinn Háskólasjúkrahús  
Department of Paediatrics  
600 Akureyri  
Iceland

#### Roles:

- Phase Two Principal Investigator for Reykjavik

## Riga Centre

Phase One	
<b>Centre:</b>	Riga, Latvia ( Northern and Eastern Europe )
<b>Principal Investigator:</b>	Dr Marcis Leja
<b>Age Groups:</b> 13-14, 6-7	<b>Timeframe:</b> 13-14yr: May 1994 to February 1995 6-7yr: October 1994 to October 1995
<b>Sampling Frame:</b>	
Phase Two	
<b>Centre:</b>	Riga, Latvia ( Northern and Eastern Europe )
<b>Principal Investigator:</b>	Dr Vija Svabe
<b>Age Groups:</b> 10-11 years,	<b>Timeframe:</b> May 1999 to November 1999.
<b>Sampling Frame:</b>	A random sample of 11 Latvian-speaking schools within the capital city.
Phase Three	
<b>Centre:</b>	Riga, Latvia ( Northern and Eastern Europe )
<b>Principal Investigator:</b>	Dr Vija Svabe
<b>Age Groups:</b> 13-14	<b>Timeframe:</b> January 2004 to May 2004
<b>Sampling Frame:</b>	13-14yr: All schools in Riga (Administrative Territory of the City). The same sampling frame as Phase One.

### Personnel

#### Linda Bagrade

Children Clinical University Hospital  
Riga  
Latvia

#### Roles:

- Phase Two collaborator for Riga

#### Guna Casno

Children Clinical University Hospital  
Riga  
Latvia

#### Roles:

- Phase Two collaborator for Riga

#### Dr Marcis Leja

Associate professor at the  
Faculty of Medicine,  
University of Latvia  
Head of the Dept. of Research,  
Riga East University hospital  
Latvia



#### Roles:

- Phase One Principal Investigator for Riga

#### Inga Novikova

Children Clinical University Hospital  
Riga  
Latvia

#### Roles:

- Phase Two collaborator for Riga

#### Dina Sebre

Children Clinical University Hospital  
Riga  
Latvia

#### Roles:

- Phase Two collaborator for Riga
- Phase Three collaborator for Riga

#### Assistant Professor Vija Svabe

Pediatrics Chair, Riga Stradins University  
Paediatrician, pulmonologist, allergologist  
Pulmonology department, Children Clinical  
University Hospital  
Riga  
Latvia

#### Roles:

- Phase Two Principal Investigator for Riga
- Phase Three Principal Investigator for Riga

Regional

National

Local

Reykjavik

Riga

# The ISAAC Story

Regional

National

Local

Riga

In the ninetieths, last century, something happened in Latvia – or maybe in the whole world? We, children pulmonologists and allergologists, noticed that prevalence of asthma in children is increasing. There was new theoretical basis, new asthma clinical criteria and medicine. We ourselves made National Asthma Guidelines, taking example from other countries and begun to teach new allergologists. But we did not organise prevalence studies.

And then arrived professor Bjorksten – with offer to take part in International Study of Asthma and Allergy in Children. **ISAAC Phase One** was performed by Marcis Leja, who organised special institution for that purpose – Human Ecology Institute. From 1994 till 1995 with help of paediatricians in two centres – Riga and Rural Latvia two age groups of children completed questionnaires about asthma and allergies.

## ISAAC PHASE ONE IN LATVIA

Having been involved in number of ecology-related epidemiology projects in our country, we got excited of the ISAAC Project idea as well as the possibility for our country to participate in the project. We have been impressed by the enthusiasm of our later regional co-ordinator Professor Bengt Björkstén and were happy to work with him as well as other ISAAC investigators. Close to half of the population of our country is concentrated in and around its capital – Riga. By considering the potential disease epidemiology differences between urban and rural regions we decided to achieve the maximum goal – to run a centre either in Riga or in the rural part of the country. And we were happy indeed that the set goal was achieved! There are three major issues to be pointed out – the expertise, the epidemiology, and the involvement.

## THE EXPERTISE

For Latvia, having been separated from the western world for many years by the Soviet Union, this was one of the first great opportunities to get involved in a well-designed truly global research project. The design of the study, thorough translation process of the questionnaires to the local language, data entry and many other issues – all this was a great educational process for ourselves to apply this knowledge for further study design by ourselves already following the involvement to ISAAC.

## THE EPIDEMIOLOGY

I recall the provocative statement of our regional co-ordinator Bengt Björkstén that the key to the pathogenesis of allergies is laying in the Baltic region due to rapid changes in the lifestyle being determined by the political situation. Once westernized Baltic States were forced to accept the Soviet lifestyle in the 20-ies of the previous century; and then once more rapid changes to the westernized style of life by 90-ies – this has definitely left an influence. Even though the pathogenesis of allergic and many other diseases have not been finally elucidated until today, there is much truth in this consideration. We do find differences in the prevalence not only in allergic disease, but also other diseases, including inflammatory bowel disease, Barrett's oesophagus, etc.; in addition we observe changing epidemiology of these diseases. And there is much space and need to run well-designed epidemiology studies with these and other diseases – similar to what ISAAC has completed in asthma and allergy.

## THE INVOLVEMENT

Although this was a great chance for Latvia to run ISAAC, the practical issues behind this were completely different. This was the time when the government had cut down the funding for research to close than nothing, and this was requiring huge energy and a little bit of success to get the study completed. We acknowledge our sponsors, in particular, the Riga Commercial Port as well as Latvian Council of Science to get the project on track. Nevertheless this would not have been possible without the active involvement of a group of enthusiastic people, at that time being joined by the ECO club of the former Riga Medical Institute. My special thanks to paediatrician-allergologist Ieva Čerule and our technical manager – Uldis Ziediņš.

Mārcis Leja

National co-ordinator of ISAAC Phase I in Latvia

Associate professor at the Faculty of Medicine, University of Latvia

Head of the Dept. of Research, Riga East University hospital

# The ISAAC Story

## ISAAC PHASE TWO & THREE IN LATVIA

The next stage was, when Marcis Leja decided to become a gastroenterologist and not to continue with ISAAC. Our colleges in Latvian Children Clinical University Hospital trusted me to attend instruction about ISAAC Phase Two in Linköping and further – all organisations.

Professor Bengt Björkstén, regional coordinator of ISAAC for Northern and Eastern Europe, certified me as a national coordinator in Latvia of ISAAC Phase 2 and 3 studies. He told that European Union decided to support the ISAAC studies as a Concerted Action and there will be funds to cover the costs for skin prick reagents and we may borrow the necessary equipment from Linköping University Hospital Pulmonology department that will allow us performing lung function tests with hypertonic saline. That information answered all essential questions and confirmed that it is considered as important to include Riga in this major European and Global collaborative effort.

In **ISAAC Phase Two** we had one centre – Riga, we worked from 1999 till 2001 in 11 schools and collaborators were: Dina Sebre, Guna Casno, Inga Novikova, Linda Bagrade, all – postgraduate students in paediatrics, from Children Clinical University Hospital, Riga, Vienības gatve 45. Parents completed questionnaires, skin was examined, skin prick tests performed and bronchial responsiveness to hypertonic saline examined.

**ISAAC Phase Three** in Latvia (year 2004) was as repetition of Phase One, but not so successful. Only one collaborator helped me – Dina Sebre – now paediatrician – allergologist. She hoped that study could be part of her thesis, but she did not continue. 1354 13 – 14 year olds were involved and 425 6 – 7 year olds (but they were not accepted), so we have results only about adolescents. It is interesting, that prevalence of asthma has a very small increase – in ten years – from 8.3% to 10, 5%. I suppose – maybe it is because of poorly developed industry in Latvia and it is good?

Now we are using GINA Guidelines for asthma diagnosing and treatment. But our most serious problem is “wheezing disorders in preschool children” and my personal (as pulmonologist) – cystic fibrosis.

Vija Svabe

Docent (or assistant professor)

Pediatrics Chair, Riga Stradins University

Dzirciema str 16, Riga, LATVIA

Paediatrician, pulmonologist, allergologist

Pulmonology department, Children Clinical University Hospital

## Rijeka Centre

<b>Phase Three</b>			
<b>Centre:</b>		Rijeka, Croatia ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Kristina Lah Tomulic	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2001 to December 2002
<b>Sampling Frame:</b>		Some schools in Rijeka region	

### Personnel

#### Dr Kristina Lah Tomulic

Clinical Hospital Center Rijeka  
Children Hospital Kantrida  
Istarska 43  
Croatia

#### Roles:

- Phase Three Principal Investigator for Rijeka

Regional

National

Local

Riga

Rijeka

# The ISAAC Story

Regional

National

Local

Roma

## Roma Centre

Phase One			
<b>Centre:</b>		Roma, Italy ( Western Europe )	
<b>Principal Investigator:</b> Dr Francesco Forastiere			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:November 1994 to March 1995 6-7yr:October 1994 to May 1995
<b>Sampling Frame:</b>			
Phase Two			
<b>Centre:</b>		Roma, Italy ( Western Europe )	
<b>Principal Investigator:</b> Dr Francesco Forastiere			
<b>Age Groups:</b>	9-11,	<b>Timeframe:</b>	October 2000 to April 2001.
<b>Sampling Frame:</b> The metropolitan area of Rome (municipalities of Roma and Fiumicino). Same study area as ISAAC Phase One.			
Phase Three			
<b>Centre:</b>		Roma, Italy ( Western Europe )	
<b>Principal Investigator:</b> Dr Francesco Forastiere			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 2002 to May 2002
<b>Sampling Frame:</b> All schools in the city of Rome. The same sampling frame as Phase One.			

## Personnel

### Mr Guisepe Corbo

Servizio di Fisiopatologia Respiratoria  
Università Cattolica del Sacro Cuore  
Largo F. Vito 1  
Italy

#### Roles:

- Phase Two collaborator for Roma

### Dr Francesco Forastiere

Department of Epidemiology  
Rome E Health Authority 00198  
Roma  
Via Santa Costanza 53  
Italy



#### Roles:

- ISAAC Steering Committee
- National Coordinator for Italy
- Phase One Principal Investigator for Roma
- Phase Two Principal Investigator for Roma
- Phase Three Principal Investigator for Roma

### Dr Riccardo Pistelli

Università Cattolica  
Cattolica Sacro Cuore  
Servizio Fisiopatologia Respiratoria  
Complesso Integrato Columbus  
Via Moscati 31  
Italy

#### Roles:

- Phase Two collaborator for Roma

### Dr Giovanni Viegi

Istituto di Fisiologia Clinica  
Consiglio Nazionale delle Ricerche  
Via Trieste, 41  
Italy

#### Roles:

- Phase One collaborator for Roma
- Phase Three collaborator for Roma

See Italy country page for details of ISAAC in Rome

## Rosario Centre

Phase One			
<b>Centre:</b>		Rosario, Argentina ( Latin America )	
<b>Principal Investigator:</b> Dr Natalio Salmun			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	August 1995 to November 1995
<b>Sampling Frame:</b>			

## Personnel

### Dr Ricardo Ensinnck

Allergy Service.  
Hospital de Niños de Rosario  
San Luis 3472.  
Rosario, Prov. De Santa fe  
Argentina

#### Roles:

- Phase One collaborator for Rosario

### Dr. Dario Josviack

Colon 254.  
Rafaela.  
Prov. de Santa Fe  
Argentina

#### Roles:

- Phase One collaborator for Rosario

# The ISAAC Story

## Dr Hugo Neffen

Centro de Alergia e Inmunologia  
Children's Hospital "Orlando Alassia"  
Irigoyen Freyre 2670  
Argentina

### Roles:

- Phase One collaborator for Rosario

## Dr Natalio Salmun

Center of Allergy &  
Immunology  
Billinghurst 2565. 3. A  
Argentina



### Roles:

- Phase One Principal Investigator for Rosario

## Dr. Lorenzo Fernandez Viña

Alvear 116  
San Nicolas.  
Prov. de Buenos Aires  
Argentina

### Roles:

- Phase One collaborator for Rosario

## Rosario City Centre

Phase Three	
<b>Centre:</b>	Rosario City, Argentina ( Latin America )
<b>Principal Investigator:</b>	Prof Dr Carlos D Crisci
<b>Age Groups:</b>	13-14, 6-7
<b>Timeframe:</b>	October 2001 to November 2001
<b>Sampling Frame:</b>	Some schools in Rosario Urban area

### Personnel

#### Prof Dr Carlos D Crisci

Department of Medical Pathology  
School of Medicine  
National University of Rosario  
España 931  
Argentina

### Roles:

- Phase Three Principal Investigator for Rosario City

#### Dr Ricardo Ensinck

Allergy Service.  
Hospital de Niños de Rosario  
San Luis 3472.  
Rosario, Prov. De Santa fe  
Argentina

### Roles:

- Phase Three collaborator for Rosario City

## Rural Kharkiv Centre

Phase Three	
<b>Centre:</b>	Rural Kharkiv, Ukraine ( Northern and Eastern Europe )
<b>Principal Investigator:</b>	Associate Professor Viktor Ognev
<b>Age Groups:</b>	13-14, 6-7
<b>Timeframe:</b>	February 1998 to November 1999
<b>Sampling Frame:</b>	Rural Towns and villages in Kharkov centre 002 - ecology clean districts.

### Personnel

#### Associate Professor Viktor Ognev

Head, Department of Social Medicine  
Organization and Economics of Public Health  
Kharkov State Medical University  
4 Lenin Avenue  
Ukraine

### Roles:

- National Coordinator for Ukraine
- Phase Three Principal Investigator for Rural Kharkiv

See Kharkiv page for details

## Rural Latvia Centre

Phase One	
<b>Centre:</b>	Rural Latvia, Latvia ( Northern and Eastern Europe )
<b>Principal Investigator:</b>	Dr Marcis Leja
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	4 administrative regions (less polluted ) N part of Latvia.

Regional

National

Local

Rosario

Rosario City

Rural

Kharkiv

Rural Latvia



# The ISAAC Story

## Personnel

### Dr Marcis Leja

Associate professor at the Faculty of Medicine, University of Latvia  
Head of the Dept. of Research, Riga East University hospital Latvia



See Riga page for details

#### Roles:

- Phase One Principal Investigator for Rural Latvia

## Rural Santa Maria Centre

Phase Three			
<b>Centre:</b>		Rural Santa Maria, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Professor Dirceu Solé	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	May 2003 to August 2003
<b>Sampling Frame:</b>		13-14yr: All schools in 20 cities from 25 to 100 Km from Santa Maria. The cities had less than 20,000 inhabitants.	

## Personnel

### Dr Vitor Emanuel Cassol

Head of Department of Pediatric Pneumology  
University Hospital of Santa Maria  
Federal University of Santa Maria  
Ceci Leite Costa Street 715  
Brasil

#### Roles:

- Phase Three collaborator for Rural Santa Maria
- Phase Three PI for Santa Maria and Rural Santa Maria Deceased 2008

### Dr Thiago Moraes Rizzato

Luiz Antonio Maffini Street 45/03  
Brasil

#### Roles:

- Phase Three collaborator for Rural Santa Maria

### Professor Dirceu Solé

Professor of Allergy, Clinical Immunology and Rheumatology  
Dept of Pediatrics  
Federal University of São Paulo-Escola Paulista de Medicina  
São Paulo  
Brasil

#### Roles:

- National Coordinator for Brasil
- Phase Three Principal Investigator for Rural Santa Maria

### Dr Stefania Teche

Federal University of São Paulo-Escola Paulista de Medicina  
São Paulo  
Brasil

#### Roles:

- Phase Three collaborator for Rural Santa Maria

When ISAAC phase 1 had begun, in the middle of the 1990's, the standard written questionnaire (WQ) had not yet been validated for Portuguese language (Brazilian culture). After been validated (1,2,3) the ISAAC WQ was used by several investigators, independently to be involved with ISAAC Project.

In phase 1 had participated 7 Brazilian centers including São Paulo (4), five of them had participated in both phases 1 and 3 (5,6). São Paulo is the largest city in Brazil. More than 12 million of people live in São Paulo, so obtain homogeneous sample of schoolchildren as recommended by the ISAAC protocol, was not possible. Therefore, we limited the study to two parts of the city: southern and western. In the southern region lies second airport of Brazil in terms of traffic and in the western region there are several roads with jam traffic. In São Paulo we could analyze the influence of exposure to photochemical pollutants on the prevalence of asthma and allergic diseases (7). In part of the students evaluated we applied the complementary questionnaire and risk factors associated with the expression of asthma and allergic diseases were analyzed (8). The comparison between the prevalence of asthma and allergic diseases obtained in phase 1 and phase 3 showed to be constant (6). Other interesting issue was the genetic background impact on the expression of asthma and atopic diseases. Although we have evaluated schoolchildren with asthma and similar socio-economic level, there were differences according to risk factors for presentation of asthma in children born from exclusively Japanese progeny and native Brazilian children. These data reinforces the idea that asthma in Brazilian children is more than a single disease.

The ISAAC study in Santa Maria (Rio Grande do Sul, Brazil) was performed by Dr Victor E. Cassol and when the data collection was finished, several investigations were carried out. Considering that population of Santa Maria was theoretically homogeneous and with few miscegenation, the prevalence of asthma and allergic diseases was evaluated according to local characteristics like living in urban or rural areas, which allowed a more appropriate comparison of the environment influence on the expression of asthma and allergic diseases. Other interesting study was about the relationship between obesity and prevalence and severity of asthma among adolescents. Both studies were published (9,10,11) in peer reviewed journals and after the decease of Dr Cassol, I assumed the coordination of the centers in Santa Maria.

Regional

National

Local

Rural Latvia

Rural Santa

Maria

# The ISAAC Story

## References

1. Solé D, Vanna AT, Yamada E, Rizzo MC, Naspitz CK. International Study of Asthma and Allergies in Childhood (ISAAC) written questionnaire: validation of the asthma component among Brazilian children. *J Investig Allergol Clin Immunol.* 1998;8(6):376-82.
2. Vanna AT, Yamada E, Arruda LK, Naspitz CK, Solé D. International Study of Asthma and Allergies in Childhood: validation of the rhinitis symptom questionnaire and prevalence of rhinitis in schoolchildren in São Paulo, Brazil. *Pediatr Allergy Immunol.* 2001;12(2):95-101.
3. Yamada E, Vanna AT, Naspitz CK, Solé D. International Study of Asthma and Allergies in Childhood (ISAAC): validation of the written questionnaire (eczema component) and prevalence of atopic eczema among Brazilian children. *J Investig Allergol Clin Immunol.* 2002;12(1):34-41.
4. Solé D, Yamada E, Vana AT, Werneck G, Solano de Freitas L, Sologuren MJ, et al. International Study of Asthma and Allergies in Childhood (ISAAC): prevalence of asthma and asthma-related symptoms among Brazilian schoolchildren. *J Investig Allergol Clin Immunol.* 2001;11(2):123-8.
5. Solé D, Camelo-Nunes IC, Wandalsen GF, Sarinho E, Sarinho S, Britto M, et al. Ecological correlation among prevalence of asthma symptoms, rhinoconjunctivitis and atopic eczema with notifications of tuberculosis and measles in the Brazilian population. *Pediatr Allergy Immunol.* 2005;16(7):582-6.
6. Solé D, Melo KC, Camelo-Nunes IC, Freitas LS, Britto M, Rosário NA, et al. Changes in the prevalence of asthma and allergic diseases among Brazilian schoolchildren (13-14 years old): comparison between ISAAC Phases One and Three. *J Trop Pediatr.* 2007;53(1):13-21.
7. Solé D, Camelo-Nunes IC, Wandalsen GF, Pastorino AC, Jacob CM, Gonzalez C, et al. Prevalence of symptoms of asthma, rhinitis, and atopic eczema in Brazilian adolescents related to exposure to gaseous air pollutants and socioeconomic status. *J Investig Allergol Clin Immunol.* 2007;17(1):6-13.
8. Pastorino AC, Rimazza RD, Leone C, Castro AP, Solé D, Jacob CM. Risk factors for asthma in adolescents in a large urban region of Brazil. *J Asthma.* 2006;43(9):695-700.
9. Cassol VE, Rizzato TM, Teche SP, Basso DF, Hirakata VN, Maldonado M, et al. Prevalence and severity of asthma among adolescents and their relationship with the body mass index. *J Pediatr (Rio J).* 2005;81(4):305-9.
10. Cassol VE, Rizzato TM, Teche SP, Basso DF, Centenaro DF, Maldonado M, et al. - Obesity and its relationship with asthma prevalence and severity in adolescents from southern Brazil. *J Asthma.* 2006;43(1):57-60.
11. Solé D, Cassol VE, Silva AR, Teche SP, Rizzato TM, Bandim LC, et al. - Prevalence of symptoms of asthma, rhinitis, and atopic eczema among adolescents living in urban and rural areas in different regions of Brazil. *Allergol Immunopathol (Madr).* 2007;35(6):248-53.

Regional  
National  
Local

Rural Santa  
Maria  
Salta

## Local Publications

The following publications used ISAAC data from the Salta centre:

Gómez M, Vollmer WM, Caceres ME, Jossen R, Baena-Cagnani CE. *Adolescent smokers are at greater risk for current asthma and rhinitis* *Int J Tuberc Lung Dis* 2009; 13(8):1023-1028



Salta

## Salta Centre

Phase Three			
<b>Centre:</b>		Salta, Argentina ( Latin America )	
<b>Principal Investigator:</b>		Dr Maximiliano Gómez	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	September 2002 to October 2002
<b>Sampling Frame:</b>		13-14yr: ALL SCHOOLS INSIDE THE LIMITS OF SALTA CITY	

## Personnel

### Dra Maria E. Caceres

Hospital San Bernardo,  
Salta,  
Argentina.

#### Roles:

- Phase Three collaborator for Salta
- Sub Investigator

### Dr R. Maximiliano Gómez

Head, Asthma & Allergy  
Section  
Hospital San Bernardo  
Dean Funes 924  
Salta  
Argentina



#### Roles:

- Phase Three Principal Investigator for Salta

### Ms Leonor Guitián

Hospital San Bernardo,  
Salta,  
Argentina.

#### Roles:

- Phase Three collaborator for Salta

# The ISAAC Story

Regional

National

Local

Salta

Salvador

## Ms Josefa Martinez

Hospital San Bernardo,  
Salta,  
Argentina.

### Roles:

- Phase Three collaborator for Salta
- Collaborator in field and logistic.

## Why Salta was chosen ?

Salta is a valley located in the north of Argentina, limiting with Chile and Bolivia, having half a million inhabitants who are Aboriginal and European descendents. Like other developing cities, in a developing country, it was expected that allergic diseases were becoming more frequently recognized, but no reliable data was available. It was the northern site from Argentina that took part in this Phase III ISAAC study.

## Our experience

All people involved in the survey were really enthusiastic, since we had a response rate higher than 95%.

The national coordination by Prof. Carlos E. Baena-Cagnani let the Argentinean centers contributing to the data of Latin America situation in atopic diseases, where the hygiene hypothesis seems to have a marginal effect. References (1 – 2) are interesting to read about that.

Besides, in our place we added to the original questionnaire some questions regarding smoking status, both personal and passive, as we interviewed students of 13-14 years old. This data demonstrate a significant association of smoking with asthma and rhinitis symptoms, reinforcing the harmful effects on them (3).

## Reference

1. Solé D, Mallol J, Wandalsen GF, Aguirre V; Latin American ISAAC Phase 3 Study Group. Prevalence of symptoms of eczema in Latin America: results of the International Study of Asthma and Allergies in Childhood (ISAAC) Phase 3. *J Investig Allergol Clin Immunol*. 2010;20(4):311-23.
2. 7.47 Mallol J, Solé D, Baeza-Bacab M, Aguirre-Camposano V, Soto-Quiros M, Baena-Cagnani C; Latin American ISAAC Group. Regional variation in asthma symptom prevalence in Latin American children. *J Asthma*. 2010 Aug;47(6):644-50.
3. Gómez M, Vollmer WM, Caceres ME, Jossen R, Baena-Cagnani CE. Adolescent smokers are at greater risk for current asthma and rhinitis. *Int J Tuberc Lung Dis*. 2009 Aug; 13(8):1023-28.

## Salvador Centre

<b>Phase One</b>			
<b>Centre:</b>		Salvador, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Associate Professor Leda de Freitas Souza	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in the urban area of Salvador.	
<b>Phase Three</b>			
<b>Centre:</b>		Salvador, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Associate Professor Leda de Freitas Souza	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2001 to September 2002
<b>Sampling Frame:</b>		All schools in the Salvador area.	

## Personnel

### Associate Professor Leda de Freitas Souza

Faculty of Medicine  
Universidade Federal da Bahia  
Rua Alm. Ernesto Mello Jr. 79 (Pituba)  
Salvador 41820-060  
Brasil

### Roles:

- Phase One Principal Investigator for Salvador
- Phase Three Principal Investigator for Salvador

## Local Publications

The following publications used ISAAC data from the Salvador centre:

Solé D, Melo KC, Camelo-Nunes IC, Freitas LS, Britto M, Rosário NA, Jones M, Fischer GB, Naspitz CK. *Changes in the prevalence of asthma and allergic diseases among Brazilian schoolchildren (13-14 years old) comparison between ISAAC Phases One and Three*. *J Trop Pediatr*. 2007 Feb;53(1):13-21. Epub Sep 2006.

Franco JM, Gurgel R, Sole D, França VL, Brabin B and the Brazilian Isaac Group. *Socio-environmental conditions and geographical variability of asthma prevalence in Northeast Brazil* *Allergol Immunopathol (Madr)*. 2009; 37(3):116-121

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from the Salzburg centre:

Eder W, Gamper A, Oberfeld G, Riedler J. *Prevalence and severity of bronchial asthma, allergic rhinitis and atopic dermatitis in Salzburg school children.* [German]. Wien Klin Wochenschr. 1998; 110(19): 669-77.

Riedler J, Gamper A, Eder W, Oberfeld G. *Prevalence of bronchial hyperresponsiveness to 4.5% saline and its relation to asthma and allergy symptoms in Austrian children* Eur Respir J 1998; 11: 355-360

Eder W, A Gamper, G Oberfeld, J Riedler. *Clinical follow-up of an epidemiological study of asthma and allergies in children* [Klinische Nachuntersuchung einer epidemiologischen Studie über Asthma und Allergien im Kindesalter.] (article in German). Wien Klin Wochenschr 1998; 110(19):678-685.

## Salzburg Centre

Phase One			
<b>Centre:</b>		Salzburg, Austria ( Western Europe )	
<b>Principal Investigator:</b>		Dr Josef Riedler	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:March 1995 to April 1995 6-7yr:February 1995 to February 1995
<b>Sampling Frame:</b>			

### Personnel

#### Univ.Prof.Dr. Josef Riedler

Kardinal Schwarzenberg"sches Krankenhaus  
Abteilung für Kinder- und Jugendheilkunde  
Kardinal-Schwarzenberg-Straße 2-6  
A-5620 Schwarzach im Pongau  
Austria



#### Roles:

- Phase One Principal Investigator for Salzburg

## Salzburg Centre

During his research fellowship at the RCH in Melbourne Josef Riedler was intensively involved in the standardisation of airway challenge tests for epidemiological surveys, particularly for ISAAC. Together with Colin Robertson and Sandra Anderson he worked out a field protocol and manual for the 4.5% hypertonic saline challenge test to be used in children and adolescents. This test was then chosen by the ISAAC steering committee for Phase2 investigations all over the world. After his return to Salzburg, Josef Riedler was appointed ISAAC-National coordinator for Austria and performed Phase 1 studies in children 6-7 yr and 13-14 yr.

The prevalence studies in ISAAC-Phase 1 in Salzburg were the first epidemiological studies on asthma and allergies in children in Austria and built a platform for further international collaborative investigations into risk and protective factors for the development of asthma and allergies in children. Until 2004 in Salzburg and since then in Schwarzach, Josef Riedler and his research team have been heavily involved in large studies in the farming population (ALEX-, PARSIFAL-, FORALLVENT-, PASTURE-, EFRAIM-Study).

## Samarkand Centre

Phase One			
<b>Centre:</b>		Samarkand, Uzbekistan ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Professor Tamara Aripova	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All Samarkand schools.	

### Personnel

#### Professor Tamara Aripova

c/- Prof Ruslan M Ruzibakiev  
Institute of Immunology of AcSci Ruz  
74, Y.GULYAMOV Street  
Uzbekistan

#### Roles:

- Phase One Principal Investigator for Samarkand

## San Pedro Sula Centre

Phase Three			
<b>Centre:</b>		San Pedro Sula, Honduras ( Latin America )	
<b>Principal Investigator:</b>		Dr Agustin Bueso-Engelhardt	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	June 2002 to October 2002
<b>Sampling Frame:</b>		Some private and public schools of San Pedro Sula area.	

### Personnel

#### Dr Agustin Bueso-Engelhardt

Centro de Neumología y Alergia Siglo XXI  
Edificio CNA  
Entrada a Col.  
Los Laureles  
Honduras

#### Roles:

- National Coordinator for Honduras
- Phase Three Principal Investigator for San Pedro Sula

Regional

National

Local

Salzburg

Samarkand

San Pedro

Sula

# The ISAAC Story

Regional

National

Local

San Salvador

San

Sebastián

## San Salvador Centre

Phase Three			
<b>Centre:</b>		San Salvador, El Salvador ( Latin America )	
<b>Principal Investigator:</b>		Dr Margarita Figueroa Colorado	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2003 to July 2003
<b>Sampling Frame:</b>		Schools in the San Salvador Geographic area	

### Personnel

#### Dr Margarita Figueroa Colorado

Hospital Nacional San Rafael  
Instituto de Ojos Blvd.  
Tutunichapa N 326  
El Salvador



#### Roles:

- National Coordinator for El Salvador
- Phase Three Principal Investigator for San Salvador

#### Mauricio Flores

Pediatric Allergist  
Hospital Nacional San Rafael  
Instituto de Ojos Blvd.  
El Salvador

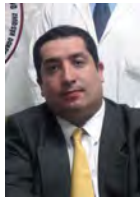


#### Roles:

- Phase Three collaborator for San Salvador

#### William Hoyos

Researcher  
Hospital Nacional San Rafael  
Instituto de Ojos Blvd.  
El Salvador



#### Roles:

- Phase Three collaborator for San Salvador

#### Pablo Salazar

Researcher  
Hospital Nacional San Rafael  
Instituto de Ojos Blvd.  
El Salvador



#### Roles:

- Phase Three collaborator for San Salvador

In September 1994, I knew the ISAAC project and its protocol to determine the incidence of Asthma and Allergy in the world. IN 2001 the ERS Congress in Berlin, Phillippa Ellwood, Innes Asher; Javier Mallol, was presented as Coordinator for Latin America for the ISAAC III.

Since that time it was a challenge for me, develop the study to determine first the Incidence of Asthma and Allergies in my country El Salvador. Start with the planning of the survey, supported by the University Doctor José Matías Delgado, with Dr. Clifton Huang and his group of enthusiastic students who conducted the survey.

Today our group has grown and consolidates. In the picture, in the front: Coordinator: Margarita Figueroa, William Hoyos, Reseacher , behind , Pablo Salazar, Reseacher, Mauricio Flores, Pediatric Allergist.

## San Sebastián Centre

Phase Three			
<b>Centre:</b>		San Sebastián, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Professor Eduardo G Pérez-Yarza	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 2002 to December 2002
<b>Sampling Frame:</b>		All schools in the Donestia County.	

### Personnel

#### Professor Eduardo G Pérez-Yarza

Unidad de Neumología Infantil,  
Servicio de Pediatría  
Hospital Donostia  
Avda Beguiristain s/n. CP:  
20.009  
20014 San Sebastián  
Spain



#### Roles:

- Phase Three Principal Investigator for San Sebastián

# The ISAAC Story

We develop our daily medical attention, medical research and teaching in Division of Respiratory Medicine, Department of Pediatrics in Donostia University Hospital, San Sebastian, Spain. Furthermore, we belong to the School of Medicine, University of the Basque Country (UPV/EHU).

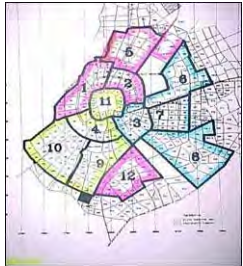
We are very grateful for having the opportunity to take part in ISAAC phase III. To participate actively in this unique worldwide epidemiological research programme has been a fantastic experience for our group. Moreover, it gave us the chance to improve our research abilities. Finally, we had the opportunity to share knowledge and experiences with colleagues from different parts of the world.

Regional  
National  
Local

San  
Sebastián  
Santa Cruz



Santacruz



Santacruz



Santacruz

## Santa Cruz Centre

Phase Three			
<b>Centre:</b>		Santa Cruz, Bolivia ( Latin America )	
<b>Principal Investigator:</b>		Dr Rosario Pinto-Vargas	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	June 2002 to November 2002
<b>Sampling Frame:</b>		13-14yr: Some schools in the 4 - 9 - 10 - 11 Districts in Santa Cruz - Bolivia (See map).	

## Personnel

### Dra. Janet Aguirre

EPIDEMIOLOGA  
OMS-OPS  
Santa Cruz  
Bolivia

#### Roles:

- Phase Three collaborator for Santa Cruz

### Dr. Oscar P. Gómez B.

MEDICINA INTERNA  
UNIVERSIDAD CATOLICA BOLIVIANA  
Santa Cruz  
Bolivia

#### Roles:

- Phase Three collaborator for Santa Cruz

### Ing. Francisco Martínez

JEFE DEPTO. DE SISTEMA –  
UNIVERSIDAD CRISTIANA DE BOLIVIA  
Santa Cruz  
Bolivia

#### Roles:

- Phase Three collaborator for Santa Cruz

### Dr. Roberto Paz C.

NEUMOLOGO  
HOSPITAL UNIVERSITARIO SAN JUAN DE DIOS  
Santa Cruz  
Bolivia

#### Roles:

- Phase Three collaborator for Santa Cruz

### Dr Rosario Pinto-Vargas

Pediatric Pneumology  
C.P.S Hospital  
475 Lagunillas Street  
Bolivia



#### Roles:

- National Coordinator for Bolivia
- Phase Three Principal Investigator for Santa Cruz

### Dr. Juan Poquiviqui

MEDICINA INTERNA  
HOSPITAL OBRERO CNSS  
Santa Cruz  
Bolivia

#### Roles:

- Phase Three collaborator for Santa Cruz

### Dra. Esther Serrate

PEDIATRA  
HOSPITAL UNIVERSITARIO JAPONES  
Santa Cruz  
Bolivia

#### Roles:

- Phase Three collaborator for Santa Cruz

### Dr. Pitias Suárez

PEDIATRA  
HOSPITAL UNIVERSITARIO SANTA CRUZ  
CPS  
Santa Cruz  
Bolivia

#### Roles:

- Phase Three collaborator for Santa Cruz

# The ISAAC Story

Regional  
National  
Local

**Santa Cruz**  
**Santa Maria**

## Santa Cruz

For the first time Bolivia is part of an international study of the magnitude of ISAAC Phase III. It was during the Latin American Congress of Pediatric Pulmonology in Central America, where we received the invitation of Dr. Javier Mallol, International Coordinator of ISAAC Phase III for Latin American, and we gladly accepted the challenge.

Our intention was to have two teams, one team that covers the western Bolivia, La Paz, city over 3500 meters above sea level and eastern Bolivia, Santa Cruz de la Sierra, less than 400 m (asl), geographical areas with different environmental as well as different feeding habits. We got in contact with the Society of Pediatric located in La Paz, the Andean region, to propose a study, but this could not be completed on time.

THE STATE OF BOLIVIA, in central South America. (In red), department of Santa Cruz. Santa Cruz is the largest recipient of migrants from other departments, currently has 1,678,849 inhabitants

The city of **Santa Cruz de la Sierra** is located in the eastern part of Bolivia (17°45', South, 63°14', West) at 416m above sea level. It is part of the province of Andrés Ibáñez and the capital of the department of Santa Cruz' (from Wikipedia:Santa Cruz de la Sierra [http://en.wikipedia.org/wiki/Santa\\_Cruz\\_de\\_la\\_Sierra#Geography](http://en.wikipedia.org/wiki/Santa_Cruz_de_la_Sierra#Geography))

### BOLIVIA SANTA CRUZ

To finalize the project we asked for the cooperation and sponsorship of various institutions and the formation of a multidisciplinary team of professionals who are motivated only by their scientific interest.

Strictly fulfilling the criteria issued by ISAAC in the selection of schools and children from 13 to 14 years, we interviewed 3292 (three thousand two hundred ninety-two) students in 120 schools (one hundred twenty) of the city of Santa Cruz de la Sierra. After adapting the survey in Spanish to the used language and local customs, and completed the legal procedures we initiated the surveys.

- The question that apparently caused the most concern to the students Surveyed was about whether they had ever smoked. Most did not want to answer to the questionnaire until we assured them those responses would not be known either by their teachers nor by their parents.
- Among the key findings of the study was that many students reported having had wheezing without an asthma diagnosis and those who reported having or having had wheezing without an established diagnosis of asthma was about twice of those who were diagnosed.
- The study also showed that there was a significant association between rhinitis and asthma, which also was related to having adult smokers at home.

## AGRADECIMIENTOS:

NUESTRO AGRADECIMIENTO A TODOS LOS COLEGAS QUE DIERON SU TIEMPO INCONDICIONAL PARA LLEVAR A CABO ESTE ESTUDIO, A TODAS LAS INSTITUCIONES QUE TRABAJARON COORDINADAMENTE CON NOSOTROS: COLEGIO MEDICO DEPARTAMENTAL –SANTA CRUZ, UNIVERSIDAD CRISTIANA DE BOLIVIA, SOCIEDAD BOLIVIANA DE PEDIATRIA, SECRETARIA DE EDUCACION–GOBERNACION SANTA CRUZ, A LOS PROFESORES Y ALUMNOS QUE APORTARON CON SUS DATOS, AL PROFESOR JAVIER MALLOL NUESTRO COORDINADOR INTERNACIONAL; EAMON ELLWOOD, PROFESOR INES ASHER STEERING COMMITTEE NUESTROS TUTORES DE AUCKLAND QUE NOS MANTUVIERON SIEMPRE INFORMADOS SOBRE TODOS LOS AVANCES Y PUBLICACIONES DEL ESTUDIO Y A NUESTRO CO AUSPICIADOR LABORATORIO GLAXO.

## Santa Maria Centre

Phase Three			
<b>Centre:</b>		Santa Maria, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Professor Dirceu Solé	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	March 2003 to June 2003
<b>Sampling Frame:</b>		13-14yr: All schools in Santa Maria area.	

## Personnel

### Dr Vitor Emanuel Cassol

Head of Department of Pediatric Pneology  
University Hospital of Santa Maria  
Federal University of Santa Maria  
Ceci Leite Costa Street 715  
Brasil

### Roles:

- Phase Three collaborator for Santa Maria
- Phase Three PI for Santa Maria and Rural Santa Maria Deceased 2008

## Local Publications

The following publications used ISAAC data from the Santa Maria centre:

Cassol VE, Rizzato TM, Teche SP, Basso DF, Hirakata VN, Maldonado M, Colpo E, Solé D. [Prevalence and severity of asthma among adolescents and their relationship with the body mass index]. J Pediatr (Rio J). 2005 Jul-Aug;81(4):305-9.Portuguese.

# The ISAAC Story

## Dr Thiago Moraes Rizzato

Luiz Antonio Maffini Street 45/03  
Brasil

### Roles:

- Phase Three collaborator for Santa Maria

## Professor Dirceu Solé

Professor of Allergy, Clinical Immunology and  
Rheumatology  
Dept of Pediatrics  
Federal University of São Paulo-Escola Paulista  
de Medicina  
São Paulo  
Brasil

### Roles:

- National Coordinator for Brasil
- Phase Three Principal Investigator for Santa Maria

## Dr Stefania Teche

Federal University of São Paulo-Escola Paulista  
de Medicina  
São Paulo  
Brasil

### Roles:

- Phase Three collaborator for Santa Maria

When ISAAC phase 1 had begun, in the middle of the 1990's, the standard written questionnaire (WQ) had not yet been validated for Portuguese language (Brazilian culture). After been validated (1,2,3) the ISAAC WQ was used by several investigators, independently to be involved with ISAAC Project.

In phase 1 had participated 7 Brazilian centers including São Paulo (4), five of them had participated in both phases 1 and 3 (5,6). São Paulo is the largest city in Brazil. More than 12 million of people live in São Paulo, so obtain homogeneous sample of schoolchildren as recommended by the ISAAC protocol, was not possible. Therefore, we limited the study to two parts of the city: southern and western. In the southern region lies second airport of Brazil in terms of traffic and in the western region there are several roads with jam traffic. In São Paulo we could analyze the influence of exposure to photochemical pollutants on the prevalence of asthma and allergic diseases (7). In part of the students evaluated we applied the complementary questionnaire and risk factors associated with the expression of asthma and allergic diseases were analyzed (8). The comparison between the prevalence of asthma and allergic diseases obtained in phase 1 and phase 3 showed to be constant (6). Other interesting issue was the genetic background impact on the expression of asthma and atopic diseases. Although we have evaluated schoolchildren with asthma and similar socio-economic level, there were differences according to risk factors for presentation of asthma in children born from exclusively Japanese progeny and native Brazilian children. These data reinforces the idea that asthma in Brazilian children is more than a single disease.

The ISAAC study in Santa Maria (Rio Grande do Sul, Brazil) was performed by Dr Victor E. Cassol and when the data collection was finished, several investigations were carried out. Considering that population of Santa Maria was theoretically homogeneous and with few miscegenation, the prevalence of asthma and allergic diseases was evaluated according to local characteristics like living in urban or rural areas, which allowed a more appropriate comparison of the environment influence on the expression of asthma and allergic diseases. Other interesting study was about the relationship between obesity and prevalence and severity of asthma among adolescents. Both studies were published (9,10,11) in peer reviewed journals and after the decease of Dr Cassol, I assumed the coordination of the centers in Santa Maria.

Regional

National

Local

**Santa Maria**



# The ISAAC Story

Regional

National

Local

Santa Maria

Santo Andre

## References

1. Solé D, Vanna AT, Yamada E, Rizzo MC, Naspitz CK. International Study of Asthma and Allergies in Childhood (ISAAC) written questionnaire: validation of the asthma component among Brazilian children. *J Investig Allergol Clin Immunol.* 1998;8(6):376-82.
2. Vanna AT, Yamada E, Arruda LK, Naspitz CK, Solé D. International Study of Asthma and Allergies in Childhood: validation of the rhinitis symptom questionnaire and prevalence of rhinitis in schoolchildren in São Paulo, Brazil. *Pediatr Allergy Immunol.* 2001;12(2):95-101.
3. Yamada E, Vanna AT, Naspitz CK, Solé D. International Study of Asthma and Allergies in Childhood (ISAAC): validation of the written questionnaire (eczema component) and prevalence of atopic eczema among Brazilian children. *J Investig Allergol Clin Immunol.* 2002;12(1):34-41.
4. Solé D, Yamada E, Vana AT, Werneck G, Solano de Freitas L, Sologuren MJ, et al. International Study of Asthma and Allergies in Childhood (ISAAC): prevalence of asthma and asthma-related symptoms among Brazilian schoolchildren. *J Investig Allergol Clin Immunol.* 2001;11(2):123-8.
5. Solé D, Camelo-Nunes IC, Wandalsen GF, Sarinho E, Sarinho S, Britto M, et al. Ecological correlation among prevalence of asthma symptoms, rhinoconjunctivitis and atopic eczema with notifications of tuberculosis and measles in the Brazilian population. *Pediatr Allergy Immunol.* 2005;16(7):582-6.
6. Solé D, Melo KC, Camelo-Nunes IC, Freitas LS, Britto M, Rosário NA, et al. Changes in the prevalence of asthma and allergic diseases among Brazilian schoolchildren (13-14 years old): comparison between ISAAC Phases One and Three. *J Trop Pediatr.* 2007;53(1):13-21.
7. Solé D, Camelo-Nunes IC, Wandalsen GF, Pastorino AC, Jacob CM, Gonzalez C, et al. Prevalence of symptoms of asthma, rhinitis, and atopic eczema in Brazilian adolescents related to exposure to gaseous air pollutants and socioeconomic status. *J Investig Allergol Clin Immunol.* 2007;17(1):6-13.
8. Pastorino AC, Rimazza RD, Leone C, Castro AP, Solé D, Jacob CM. Risk factors for asthma in adolescents in a large urban region of Brazil. *J Asthma.* 2006;43(9):695-700.
9. Cassol VE, Rizzato TM, Teche SP, Basso DF, Hirakata VN, Maldonado M, et al. Prevalence and severity of asthma among adolescents and their relationship with the body mass index. *J Pediatr (Rio J).* 2005;81(4):305-9.
10. Cassol VE, Rizzato TM, Teche SP, Basso DF, Centenaro DF, Maldonado M, et al. - Obesity and its relationship with asthma prevalence and severity in adolescents from southern Brazil. *J Asthma.* 2006;43(1):57-60.
11. Solé D, Cassol VE, Silva AR, Teche SP, Rizzato TM, Bandim LC, et al. - Prevalence of symptoms of asthma, rhinitis, and atopic eczema among adolescents living in urban and rural areas in different regions of Brazil. *Allergol Immunopathol (Madr).* 2007;35(6):248-53.

## Santo Andre Centre

Phase Three			
<b>Centre:</b>		Santo Andre, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Associate Professor Neusa Wandalsen	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 2000 to July 2001
<b>Sampling Frame:</b>		13-14yr: All schools in Santo Andre city 6-7yr:All schools in Santo Andre City	

## Personnel

### Associate Professor Neusa Wandalsen

Faculdade de Medicina do ABC  
Department of Paediatrics  
Alameda dos Aicás no. 1053 apto.61  
Brasil

#### Roles:

- Phase Three Principal Investigator for Santo Andre

# The ISAAC Story

## São Paulo Centre

<b>Phase One</b>			
<b>Centre:</b>		São Paulo, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Professor Dirceu Solé	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:June 1995 to September 1995 6-7yr:June 1995 to October 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		São Paulo, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Professor Dirceu Solé	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	August 2001 to November 2002
<b>Sampling Frame:</b>		All schools are in south-centre in São Paulo. The same sampling frame was used for both Phase One and Phase Three.	

## Personnel

### Professor Dirceu Solé

Professor of Allergy, Clinical Immunology and Rheumatology  
Dept of Pediatrics  
Federal University of São Paulo-Escola Paulista de Medicina  
São Paulo  
Brasil

#### Roles:

- National Coordinator for Brasil
- Phase One Principal Investigator for São Paulo
- Phase Three Principal Investigator for São Paulo

## Why was this centre selected for ISAAC?

The city of São Paulo is the largest city in Brazil. Its population exceeds 12 million and it is a large industrial centre with a high level of air pollution. The population of São Paulo brings together people from all over Brazil and the world, so there is a high degree of miscegenation that hinders genetic studies. Considering the dimensions of the city, it would be impossible to comply with the ISAAC protocol with respect to obtaining a representative sample of children and adolescents living in São Paulo. Because of this we decided to study the southern region (Phases One and Three) and the western region of the city (Phase Three). The first one is characterized for hosting the second airport of the country in terms of air traffic, and the second region was defined because it has roads leading to rural areas of São Paulo.

The ISAAC's standardized written questionnaire was translated into Portuguese and validated (Brazilian culture) in São Paulo centre for both age periods and it was possible to verify that if the clinical diagnosis of asthma was used to identify asthmatic patients, the result would be an underdiagnosed disease. The above mentioned validated tool was used for several other epidemiological researches on asthma in children.

On the other hand, in Santa Maria, in addition to reduced levels of air pollution exposure, the city is smaller and there is a low degree of miscegenation that provides an apparently more homogeneous genetic population than the rest of Brazil. Localized in the middle of Rio Grande do Sul, Santa Maria has lower annual mean temperature. Moreover, the availability of people with more homogeneous genetic background allows us to assess the action of environment on the expression of asthma and allergic diseases (urban x rural). These centers were coordinated by Prof Vitor E Cassol until his death in 2008. After this I assumed them.

## Our experience of ISAAC

As a national coordinator I have tried to disseminate the knowledge obtained in those centres and in Brazil trying to publish several papers telling about the main characteristics of asthma and allergic diseases in Brazil.

## Acknowledgements

We gratefully acknowledge to all local coordinators that obtained financial support to participate in Phases One and/or Three. We are also indebted to all the children, parents and school staff who participated in the surveys.

Regional

National

Local

São Paulo

# The ISAAC Story

Regional

National

Local

São Paulo

West

Sarasota

Saskatoon

## São Paulo West Centre

<b>Phase Three</b>			
<b>Centre:</b>		São Paulo West, Brasil ( Latin America )	
<b>Principal Investigator:</b> Dr Antonio Carlos Pastorino			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2002 to September 2002
<b>Sampling Frame:</b>		13-14yr: Some public schools in the West area of São Paulo city. 6-7yr:Some Public schools in the West area of São Paulo city.	

### Personnel

#### Dr Antonio Carlos Pastorino

Rua Capote Valente  
439 cj 11 Jardim America  
Brasil

#### Roles:

- Phase Three Principal Investigator for São Paulo West

## Sarasota Centre

<b>Phase Three</b>			
<b>Centre:</b>		Sarasota, USA ( North America )	
<b>Principal Investigator:</b> Dr Hugh H Windom			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	December 2002 to April 2002
<b>Sampling Frame:</b>		13-14yr: Public schools in Sarasota County	

### Personnel

#### Dr Hugh H Windom

Medical Director  
Asthma and Allergy Research Center  
4040 Sawyer Road  
Usa

#### Roles:

- Phase Three Principal Investigator for Sarasota

## Saskatoon Centre

<b>Phase One</b>			
<b>Centre:</b>		Saskatoon, Canada ( North America )	
<b>Principal Investigator:</b> Dr Brett Taylor			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:January 1994 to March 1994 6-7yr:March 1994 to March 1994
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Saskatoon, Canada ( North America )	
<b>Principal Investigator:</b> Professor Donna Rennie			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2003 to December 2003
<b>Sampling Frame:</b>		All schools in Saskatoon, the same sampling frame as Phase One.	

### Personnel

#### Dr Brian Habbick

University of Saskatchewan  
Saskatoon  
Canada

#### Roles:

- Phase One collaborator for Saskatoon
- Co-Investigator for Phase One

#### Dr Josh Lawson

University of Saskatchewan  
Saskatoon  
Canada

#### Roles:

- Phase Three collaborator for Saskatoon

#### Professor Donna Rennie

College of Nursing/Canadian Centre for health and Safety in Agriculture  
University of Saskatchewan  
Saskatoon  
Canada

#### Roles:

- Phase Three Principal Investigator for Saskatoon
- Phase One collaborator for Saskatoon

#### Dr A Senthilselvan

Department of Community Health and Epidemiology  
University of Saskatchewan  
Saskatoon  
Canada

#### Roles:

- Phase One collaborator for Saskatoon
- Phase Three collaborator for Saskatoon

# The ISAAC Story

## Dr Brett Taylor

Director of Emergency Medicine  
IWK Health Centre  
Saskatoon  
Canada

### Roles:

- Phase One Principal Investigator for Saskatoon

## ISAAC in Saskatoon

Saskatoon participated in the first and third phases of ISAAC. Our involvement in Phase I of ISAAC was an exciting time as we had limited knowledge before this study of what was the prevalence of asthma in Canadian cities and a belief that unless we employed standardized questionnaires in identifying asthma, we would not be able to understand the relative importance of our findings. Under the leadership of Drs. Brian Habbick and Brett Taylor we completed Phase I in 1993. Dr A. Senthilselvan and Donna Rennie were co-investigators. For Phase I we worked closely with Dr. Malcolm Sears and his group from McMasters University. This Canadian collaboration resulted in two publications on the prevalence of asthma, rhinitis and hay fever and assessment of the validity of the video questionnaire with Canadian populations.

Our interest in ISAAC continued with participation in Phase 3 in 2003. Again, working with Dr. Sears from McMaster University, and several other Canadian sites we launched a much wider study of the Canadian prevalence of childhood asthma, rhinitis and eczema. Unfortunately, unlike the 1993 study, response rates in all of the study sites in Phase 3 were low and results from many of the participating Canadian Centres could not be used in ISAAC Phase 3 analyses. However, we have since published on our findings from the Canadian sites and this publication definitely adds to the understanding of the importance of asthma for Canadian children. The research team at the Saskatoon site for Phase 3 included Dr. Rennie as principal investigator and Drs. Josh Lawson, University of Saskatchewan and Dr. A. Senthilselvan, University of Alberta as co-investigators. It has been a pleasure and an honor to be part of the ISAAC team.

Our work continues and many of the researchers who gained research experience through ISAAC teams have continued to work together on other research projects related to childhood asthma.



Regional  
National  
Local

Saskatoon  
Scotland

## Local Publications

The following publications used ISAAC data from the Scotland centre:

Anderson HR, Ruggles R, Strachan DP, Austin JB, Burr M, Jeffs D, Standring P, Steriu A, Goulding R. *Trends in prevalence of symptoms of asthma, hay fever, and eczema in 12-14 year olds in the British Isles, 1995-2002 a questionnaire survey.* BMJ 2004; 328(7447): 1052-3.

## Scotland Centre

<b>Phase One</b>			
<b>Centre:</b>		Scotland, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Professor H Ross Anderson	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in Scotland including Glasgow and Edinburgh, stratified by region and Glasgow and Edinburgh followed by random sampling of schools.	
<b>Phase Three</b>			
<b>Centre:</b>		Scotland, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Dr Jane B Austin	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	January 2002 to March 2002
<b>Sampling Frame:</b>		13-14yr: The same schools were invited as in 1995 so sampling frames not used in 2002. In 1995 Scotland was part of the UK study, i.e. sampling frames for each of the Regions of Scotland plus one each for the Metropolitan areas of Edinburgh and Glasgow. One school selected from each sampling frame. Mixed sex state schools with over 100 pupils in each school year were included in the sampling frames.	

## Personnel

### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
United Kingdom



### Roles:

- ISAAC Steering Committee
- National Coordinator for United Kingdom
- Phase One Principal Investigator for Scotland

### Dr Jane B Austin

Whitehills Health and Community Care Centre  
dd8,3dy  
Station Road  
Forfar  
United Kingdom

### Roles:

- Phase Three Principal Investigator for Scotland
- Phase One collaborator for Scotland

# The ISAAC Story

## Dr Balvinder Kaur

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

### Roles:

- Phase One collaborator for Scotland

## Why was Scotland selected

I was a paediatrician based at that time in Inverness, with an interest in the epidemiology of allergic disease. I was particularly delighted to be invited by Professor Anderson to be a collaborator for Phase I for 13-14 year olds for Scotland, as we were concerned by the high prevalence rates for allergic diseases we had found in our local studies in the Highlands of Scotland in 1992.. It was therefore of interest to study the national Scottish prevalence rates. Subsequently I was the principal investigator for Scotland Phase III. Scotland did not partake in Phase II.

## Our experience of ISAAC

The phase III study was based at the Centre for Rural Health in Inverness. The study was undertaken across mainland Scotland and the islands – the Western Isles, Skye, Orkney and Shetland. We were funded by a grant from by the Chief Scientists Office, Edinburgh. Our team of researchers were based through out Scotland. The schools were very supportive especially in rural areas and participation rates by schools and pupils were good with few changes from the 1995 sampling frame.

The study was completed with a few adventures on the way - adverse weather in March delaying flights to the Islands and the researchers car in Edinburgh going on fire as she returned from a school -thankfully the boot remained intact with all the completed questionnaires.

## References

Austin JB, Russell G, et al The Prevalence of asthma and wheeze in the Highlands of Scotland. Arch Dis Child. 1994; 71:211-16.

## Acknowledgements

We are grateful to the Scottish Office for funding and especially to all the schools and pupils who made the study such a success.

## Seattle Centre

<b>Phase One</b>			
<b>Centre:</b>		Seattle, USA ( North America )	
<b>Principal Investigator:</b>		Professor Gregory J Redding	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All middle schools within the Seattle Public School District	
<b>Phase Three</b>			
<b>Centre:</b>		Seattle, USA ( North America )	
<b>Principal Investigator:</b>		Professor Gregory J Redding	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	June 2003 to June 2003
<b>Sampling Frame:</b>		13-14yr: All middle schools in the Seattle School District. Same sampling frame as Phase One.	

## Personnel

### Professor Gregory J Redding

Seattle Children's Hospital &  
Regional Medical Center  
Pulmonary Division 3D-4  
4800 Sand Point Way NE  
P O Box 5371/ 3D-4  
Usa



### Roles:

- Phase One Principal Investigator for Seattle
- Phase Three Principal Investigator for Seattle

## The ISAAC Experience

The United States joined the ISAAC network of centers late in the process, conducting school-based surveys with 2,330 students and through parental reports of 925 69 year old children in 1995. The former were added in the ISAAC database; the latter group was also asked about indoor allergens and irritants and published separately in 1997.

As part of an initial descriptive study about chronic respiratory symptoms among indigenous arctic populations, we amended the ISAAC survey to include a question on chronic productive cough. The survey among 365 Yupik Eskimo children in middle schools found that 40% had chronic respiratory symptoms, half with asthma and half with chronic productive cough or bronchitis. Asthma prevalences between Native Alaskan and American Indian children in Washington state were then compared using the ISAAC survey.

## Local Publications

The following publications used ISAAC data from the Seattle centre:

Maier WC, Arrighi HM, Morray B, Llewellyn C, Redding GJ. *Indoor risk factors for asthma and wheezing among Seattle school children.* Environ Health Perspec 1997; 105(2):208-14.

Debley JS, Carter ER, Redding GJ. *Prevalence and impact of gastroesophageal reflux in adolescents with asthma a population-based study.* Pediatr Pulmonol 2006 May;41(5):475-81.

Carter E, Debley J, Redding G. *Chronic productive cough in school children prevalence and associations with asthma and environmental tobacco smoke exposure.* Cough 2006, 2:11

Carter E, Debley J, Redding G. *Changes in asthma prevalence and impact on health and function in Seattle middle-school children 1995 versus 2003.* Ann Allergy Asthma Immunol 2005; 94(6):634-639.

Regional

National

Local

Scotland

Seattle

# The ISAAC Story

In a parallel effort, we used the ISAAC survey tool to evaluate the presence of asthma and asthma symptoms among 5495 5-11 year old Vietnamese children in Hanoi and identified environmental features associated with atopic and asthma symptoms.

During Phase III of the ISAAC project, we repeated the Phase I survey among 2,398 middle school children in Seattle but added to the survey questions regarding symptoms associated with gastro-esophageal reflux and also chronic productive cough. We found upon comparison with the Phase I data that diagnoses of asthma became more common but outcomes of asthma, once diagnosed, were no different. We also found that symptoms of gastro-esophageal reflux were more common among children with current asthma symptoms and that the frequency of symptoms of gastro-esophageal reflux correlated with medical care utilization among children with asthma. .

By adding a question regarding chronic productive cough among non-native children in Seattle, we could compare our previous data among Eskimo children to an urban mixed race cohort of the same age. The prevalence of chronic productive cough among Seattle middle school children in 2003 was 3% and was associated with tobacco smoke exposure, gastro-esophageal reflux, and a diagnosis of asthma.

## Lessons Learned.

The information provided by the ISAAC surveys has been invaluable in raising the awareness of the policy makers in Washington about the persistence and impact of asthma among school children. Using additional questions in the survey has allowed up to sample large groups of children to assess the importance of self-reported chronic bronchitis and gastro-esophageal reflux among school children of different cultures in the United States. This has in turn led to additional research about these additional conditions.

## Semarang Centre

<b>Phase Three</b>			
<b>Centre:</b>		Semarang, Indonesia ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Winarto Suprihati	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	September 2001 to May 2002
<b>Sampling Frame:</b>		13-14yr: Some Government and private junior high schools in Semarang district, Central Java.	

### Personnel

#### Dr Allan Darwis

Klinik Alergi & Imunologi  
Prof DR Dr Karnen Baratawidjaja  
Jl. Sisingamangaraja 49/51  
Indonesia

#### Roles:

- Phase Three collaborator for Semarang

#### Dr Winarto Suprihati

ENT Department  
Faculty of Medicine  
Diponegoro University  
Jl Menoreh Utara IV / 5  
Indonesia

#### Roles:

- Phase Three Principal Investigator for Semarang

## Seoul Centre

<b>Phase One</b>			
<b>Centre:</b>		Seoul, South Korea ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Sang-Il Lee	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 1995 to October 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Seoul, South Korea ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Ha-Baik Lee	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2000 to December 2000
<b>Sampling Frame:</b>		We obtained a complete school list from the Ministry of Education. We randomly sampled 10 elementary schools in Seoul area. We sampled 150 children from each grade. In Phase 3 study, we finish the study in the same school which had been participated in the Phase One study. Same sampling frame for both Phases, same schools used.	

Regional

National

Local

Seattle

Semarang

Seoul

# The ISAAC Story

Regional

National

Local

Seoul

Shanghai

Siauliai

## Personnel

### Dr. Kangmo Ahn

Department of Pediatrics  
Samsung Medical Center  
Sungkyunkwan University School of Medicine  
50 Irwon-dong, Gangnam-gu, Seoul,  
Korea

#### Roles:

- Phase One collaborator for Seoul

### Dr Soo-Jong Hong

Department of Pediatrics  
Hanyang University College of Medicine  
17 Haengdang-Dong  
Sungdong-Ku  
South Korea

#### Roles:

- Phase Three collaborator for Seoul

### Dr Sang-Il Lee

Samsung Medical Center  
Dept. of Pediatrics  
50 Irwon-Dong  
Gangnam-gu  
South Korea

#### Roles:

- Phase One Principal Investigator for Seoul

### Professor Ha-Baik Lee

Department of Pediatrics  
Hanyang University College of Medicine  
17 Haengdang-Dong  
Sungdong-Ku  
South Korea

#### Roles:

- National Coordinator for South Korea
- Phase Three Principal Investigator for Seoul

## Shanghai Centre

Phase One	
<b>Centre:</b>	Shanghai, China ( Asia-Pacific )
<b>Principal Investigator:</b>	Dr Mao Bao-Shan
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	All schools in the Zhabei district

## Personnel

### Dr Mao Bao-Shan

The Central Hospital of Zhabei  
District of Shanghai  
619 Zhong Hua Xin Lu  
China

#### Roles:

- Phase One Principal Investigator for Shanghai

## Siauliai Centre

Phase Three	
<b>Centre:</b>	Siauliai, Lithuania ( Northern and Eastern Europe )
<b>Principal Investigator:</b>	Professor Jurgis Bojarskas
<b>Age Groups:</b>	13-14, 6-7
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	All schools in Siauliai Centre

## Personnel

### Professor Jurgis Bojarskas

Kaunas Medical University  
Clinics of Children's Diseases  
Eiveniu 2  
Lithuania



#### Roles:

- Phase Three Principal Investigator for Siauliai

## Why our country joined ISAAC

We were late finding out about ongoing ISAAC studies, and so we were late with our Phase One results. Nevertheless, we were very eager to find out about the real situation concerning allergic diseases in Lithuania, especially among children, as being paediatric allergists and pulmonologists we saw the dramatically increasing numbers of allergic children. We selected the three biggest Lithuanian cities (Kaunas, Panevezys, Siauliai) as centres and examined all children from the secondary schools and kindergartens in them. Phase Three results were produced in time, as we already knew about the invitation to take part repeatedly in this survey. We were interested to see the dynamics of the prevalence of allergic diseases, which is why Kaunas centre completed repeat phases of ISAAC.

# The ISAAC Story

## Impact of ISAAC in our country

Various lecturers (pediatric and adult) and even Health Ministry representatives quote our ISAAC data, when talking about the spreading of allergies in Lithuania. Then we are sitting proud, with our heads raised, as still there are no data about the prevalence of adult allergies in Lithuania. Some data from our Lithuanian ISAAC results were published in the most popular Lithuanian medical journal 'Medicina'.

## Siena Centre

<b>Phase One</b>			
<b>Centre:</b>		Siena, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Ms Elisabetta Renzoni	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		Province	
<b>Phase Three</b>			
<b>Centre:</b>		Siena, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Dr Piersante Sestini	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	February 2002 to November 2002
<b>Sampling Frame:</b>		13-14yr: Schools in the province of Siena.	

## Personnel

### Ms Elisabetta Renzoni

Istituto Malattie Respiratorie  
Università di Siena  
Ospedale Le Scotte  
Viale Bracci, 3  
Italy

#### Roles:

- Phase One Principal Investigator for Siena

### Dr Piersante Sestini

Institute of Respiratory Diseases  
University of Siena  
Viale Bracci 3  
Italy

#### Roles:

- Phase Three Principal Investigator for Siena

## Local Publications

The following publications used ISAAC data from the Singapore centre:

Goh DY, Chew FT, Quek SC, Lee BW. *Prevalence and severity of asthma, rhinitis, and eczema in Singapore schoolchildren.* Arch Dis Child 1996; 74(2): 131-5.

Wang XS, Shek LP, Ma S, Soh SE, Lee BW, Goh DYT. *Time trends of co-existing atopic conditions in Singapore school children prevalence and related factors.* Pediatr Allergy Immunol 2010; 21 (1): e137-e141. E pub 21 Apr 2009.

## Singapore Centre

<b>Phase One</b>			
<b>Centre:</b>		Singapore, Singapore ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Bee-Wah Lee	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:February 1994 to November 1994 6-7yr:February 1994 to May 1994
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Singapore, Singapore ( Asia-Pacific )	
<b>Principal Investigator:</b>		Associate Professor Daniel Yam Thiam Goh	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2001 to November 2001
<b>Sampling Frame:</b>		All schools in Singapore. Same sampling frame as Phase One.	

## Personnel

### Associate Professor Daniel Yam Thiam Goh

The Children's Medical Institute  
National University of Singapore  
National University Hospital  
5 Lower Kent Ridge Road  
Singapore

#### Roles:

- Phase Three Principal Investigator for Singapore

### Professor Bee-Wah Lee

Children's Medical Center  
National University Hospital  
5 Lower Kent Ridge Rd  
Singapore



#### Roles:

- National Coordinator for Singapore
- Phase One Principal Investigator for Singapore

Regional

National

Local

Siauliai

Siena

Singapore



# The ISAAC Story

Regional

National

Local

**Singapore**  
**Skopje**

## The Singapore ISAAC Centre

As Singapore is a small city state, our ISAAC centre was also the national centre.

It provided us with important national epidemiology data on asthma, allergic rhinitis and eczema, which hitherto, was unavailable. The prevalence data has provided us with an important reference point for the planning of educational and awareness programs, medical programs for asthma and allergies in children, as well as scientific studies.

The ISAAC prevalence obtained for Singapore was very similar urban and developed communities in the Asian region, such as Japan and Korea, and were the highest for the Asia Pacific region. For example, the prevalence for Phase one survey on current wheeze for 6-7 years old was 13.3 in Korea, 15.7 in Singapore and 17.4 in Japan.

The team acknowledges the contribution of the many student helpers that contributed to the success of these studies.

## Skopje Centre

Phase Three			
<b>Centre:</b>		Skopje, Republic of Macedonia ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Assoc Prof Emilija Vlaski	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	December 2001 to March 2002
<b>Sampling Frame:</b>		13-14yr: All schools in Skopje area	

## Personnel

### Professor Rozalinda Isjanovska

Professor of Epidemiology  
 Institute of Epidemiology and Biostatistics with  
 Medical Informatics  
 1000 Skopje  
 The Republic of Macedonia (FYROM)

#### Roles:

- Phase Three collaborator for Skopje

### Dr. Milica Kimovska

Department of Pulmonology and Allergology  
 University Children's Clinic  
 Vodnjanska 17, 1000 Skopje  
 The Republic of Macedonia (FYROM)

#### Roles:

- Phase Three collaborator for Skopje

### Associate professor Aco Kostovski

Associate professor of Pediatrics  
 Department of Gastroenterology  
 University Children's Clinic  
 Vodnjanska 17, 1000 Skopje  
 The Republic of Macedonia (FYROM)

#### Roles:

- Phase Three collaborator for Skopje

### Dr Lidija Seckova

Department of Pulmonology and Allergology  
 University Children's Clinic  
 Vodnjanska 17, 1000 Skopje  
 The Republic of Macedonia (FYROM)

#### Roles:

- Phase Three collaborator for Skopje

### Dr Katerina Stavric

Assistant to Professor of Pediatrics  
 Department of Immunology  
 University Children's Clinic  
 Vodnjanska 17, 1000 Skopje  
 The Republic of Macedonia (FYROM)

#### Roles:

- Phase Three collaborator for Skopje

### Assoc Prof Emilija Vlaski

Department of Pulmonology and  
 Allergology  
 University Children's Hospital  
 Vodnjanska 17  
 1000 Skopje  
 Republic of Macedonia



#### Roles:

- National Coordinator for Republic of Macedonia
- Phase Three Principal Investigator for Skopje



Skopje, Macedonia



Skopje, Macedonia

# The ISAAC Story

## WHY WAS SKOPJE SELECTED FOR ISAAC?

The epidemiological data about the prevalence and severity of asthma and allergies in childhood in the Republic of Macedonia (FYROM) before the ISAAC Phase Three was scarce, although seen in the physician practise more frequently in the last decade. As well there was a lack of data about the influence of environmental factors on these diseases. R. Macedonia is a developing country in which some aggravating as well some preventive factors for allergic diseases are highly present. For example, the prevalence of ETS has been demonstrated to be very high. On the other hand, dietary antioxidants intake has been documented to be high as well, which may be explained by the geographical area where our country is situated and its climate.

Skopje was chosen as an investigational centre as a capital of R. Macedonia with almost one third of the inhabitants in our small country (600.000 out of around 2 millions inhabitants) and 55 primary schools with 10934 children 13-14 years old in 2001, which enabled at least 3000 respondents at this age group from randomly selected primary schools to be investigated. Contrary, other towns in R. Macedonia are much smaller with less than 3000 schoolchildren of the same age group. Compared to the rest of the country, in Skopje all proposed environmental risk factors for asthma and rhinitis and eczema, especially air pollution, are mostly present.

## IMPACT OF ISAAC IN SKOPJE

The conduction of ISAAC Phase Three and the report of its data from Skopje have actualized the problem of childhood asthma, rhinoconjunctivitis and eczema as diseases with an increase in R. Macedonia.

Compared to the asthma, rhinoconjunctivitis and eczema prevalence rates worldwide, R. Macedonia i.e. Skopje in 2001/2002 appeared to have a moderately low prevalence of asthma and low prevalence rates of rhinitis and eczema symptoms. The much lower prevalence of ever-diagnosed asthma in contrast to the prevalence rates of current wheeze, current exercise-induced wheeze and dry night cough apart from chest infection suggested under-diagnosis of asthma and/or underreporting of the diagnosis by the young adolescents in our country. In contrast, ever-diagnosed hay fever and eczema seemed to be over-diagnosed and/or over-reported. Some environmental risk factors associated with these diseases were identified in our country.

With intention to get an information about the same problem for the bigger part of the country, another study on local level using the same methodology and the ISAAC Phase Three questionnaires was performed in 2005/2006 in 7 cities in R. Macedonia, including 1000 respondents from each city. Skopje was one of the investigational centres in this study again. The two cross-sectional surveys 4-yr apart in Skopje showed a decrease in asthma symptoms accompanied with an increase in ever-diagnosed asthma, which seems to be a result to the improved awareness, diagnosis and treatment of asthma. However, the partial control i.e. under-treatment of severe asthma in the capital of our country is still present (an increase of severe asthma symptoms).

## Acknowledgments

We would like to thank children for their participation and the principals, psychologists, teachers for their collaboration in the ISAAC Phase Three survey. The Ministry of Education and Science of The Republic of Macedonia provided financial support for the study.

## Sofia Centre

<b>Phase Three</b>			
<b>Centre:</b>		Sofia, Bulgaria ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Todor Popov	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 2002 to December 2002
<b>Sampling Frame:</b>		Randomly selected schools in the district of Sophia	

## Personnel

### Dr Tihomir B Mustakov

Clinical Centre of Allergology  
University Hospital 'Alexandrovskia'  
1, Sv. Georgy Sofiyski' Street  
Sofia 1431  
Bulgaria

#### Roles:

- Phase Three collaborator for Sofia

### Dr Todor Popov

Clinical Centre of Allergology  
SUH 'Alexandrovskia' Medical University  
1, 'Georgy Sofiyski' St.  
Bulgaria

#### Roles:

- National Coordinator for Bulgaria
- Phase Three Principal Investigator for Sofia

Regional

National

Local

Skopje

# The ISAAC Story



Regional

National

Local

Sombor

Sousse

South and

West

## Sombor Centre

Phase Three			
<b>Centre:</b>		Sombor, Serbia and Montenegro ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Dr Eva Panic			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	March 2002 to April 2002
<b>Sampling Frame:</b>		All elementary schools (both urban and rural) in Sombor municipality	

### Personnel

#### Dr Eva Panic

Regional Health Care Centre  
28/1 Kralja Petra I Street  
25 000  
Serbia

#### Roles:

- Phase Three Principal Investigator for Sombor

## Sousse Centre

Phase One			
<b>Centre:</b>		Sousse, Tunisia ( Africa )	
<b>Principal Investigator:</b> Professeur Mohamed Jerry			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in Sousse region teaching in Arabic	
Phase Three			
<b>Centre:</b>		Sousse, Tunisia ( Africa )	
<b>Principal Investigator:</b> Professeur Mohamed Jerry			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	March 2001.
<b>Sampling Frame:</b>		13-14yr: All college schools in Sousse area	

### Personnel

#### Professeur Mohamed Jerry

Service de Pneumo-Allergologie  
Hopital Universitaire F. Hached  
CHU F.Hached  
Tunisia

#### Roles:

- Phase One Principal Investigator for Sousse
- Phase Three Principal Investigator for Sousse

## South and West Centre

Phase One			
<b>Centre:</b>		South and West, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b> Professor H Ross Anderson			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in South and West region. Stratified by county, followed by a random sample of one school from each county.	

### Personnel

#### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
United Kingdom



#### Roles:

- ISAAC Steering Committee
- National Coordinator for United Kingdom
- Phase One Principal Investigator for South and West

#### Dr Balvinder Kaur

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

#### Roles:

- Phase One collaborator for South and West

## Local Publications

The following publications used ISAAC data from the Sombor centre:

Živcovic Z. *Prevalence of childhood asthma, rhinitis and eczema in Belgrade area and Serbia.* Child Pulmonol 2002; 10(1-2): 27-43.

Živkovic Z, Vukašinovic Z, Cerovic S, Radulovic S, Živanovic S, Panic E, Hadnadjev M and Adžovic O. *Prevalence of childhood asthma and allergies in Serbia and Montenegro.* World J Pediatr 2010; 6(4): 331-336 epub May

# The ISAAC Story

## Dr Jan Poloniecki

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

### Roles:

- Phase One collaborator for South and West

This centre formed part of a national initiative throughout the United Kingdom, as described on the UK country-level page . Resulting publications are listed on the UK national page.

Ross Anderson, David Strachan, 18 July 2011

## South Santiago Centre

<b>Phase One</b>			
<b>Centre:</b>		South Santiago, Chile ( Latin America )	
<b>Principal Investigator:</b>		Dra Eliana Cortez	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:May 1995 to September 1995 6-7yr:May 1994 to April 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		South Santiago, Chile ( Latin America )	
<b>Principal Investigator:</b>		Dr Pedro Aguilar	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2001 to November 2001
<b>Sampling Frame:</b>		All schools in San Bernardo area. Same sampling frame as Phase One.	

## Personnel

### Dr Pedro Aguilar

Broncopulmonar Infantil  
Hospital CRS El Pino  
Avda. Los Morros 13560  
San Bernardo  
Chile

### Roles:

- Phase Three Principal Investigator for South Santiago

### Dra Eliana Cortez

Departamento de Medicina Respiratoria  
Infantil Hospital CRS El Pino  
Universidad de Santiago de Chile (USACH)  
Av. Los Morros 13560, San Bernardo  
Chile

### Roles:

- Phase One Principal Investigator for South Santiago

## South Thames Centre

<b>Phase One</b>			
<b>Centre:</b>		South Thames, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Professor H Ross Anderson	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in South Thames region and part of London (2 inner districts and 2 outer districts south of River Thames). Stratified by county or London district followed by random sampling on one school from each area.	
<b>Phase Three</b>			
<b>Centre:</b>		South Thames, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Professor H Ross Anderson	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	January 2002 to April 2002
<b>Sampling Frame:</b>		13-14yr: Same area as ISAAC Phase One: Former South Thames Health Authority area. Schools that participated in ISAAC Phase One were used. If unable to participate, then schools were selected at random from mixed state secondary schools with 100 or more pupils in the same Local Education Authority.	

Regional

National

Local

**South and West**  
**South Santiago**  
**South Thames**

# The ISAAC Story

Regional

National

Local

South

Thames

Sri Lanka

St Augustine

## Personnel

### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
United Kingdom



#### Roles:

- ISAAC Steering Committee
- National Coordinator for United Kingdom
- Phase One Principal Investigator for South Thames
- Phase Three Principal Investigator for South Thames

### Dr Balvinder Kaur

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

#### Roles:

- Phase One collaborator for South Thames
- Phase Three collaborator for South Thames

### Ms Vivienne Monk

Department of Public Health Sciences  
St George's Hospital Medical School  
Cranmer Terrace  
United Kingdom

#### Roles:

- Phase Three collaborator for South Thames

### Dr Jan Poloniecki

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

#### Roles:

- Phase One collaborator for South Thames

This centre formed part of a national initiative throughout the United Kingdom, as described on the UK country-level page . Resulting publications are listed on the UK national page.

Ross Anderson, David Strachan, 18 July 2011

## Sri Lanka Centre

Phase Three			
<b>Centre:</b>		Sri Lanka, Sri Lanka ( Indian Sub-Continent )	
<b>Principal Investigator:</b>		Dr Kirthi D Gunasekera	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2001 to October 2002
<b>Sampling Frame:</b>		Classes of government schools which were randomly selected within geographic area.	

## Personnel

### Dr Kirthi D Gunasekera

Consultant Chest Physician  
Respiratory Disease Control Programme  
Chest Clinic  
Ministry of Health, General Hospital Badulla  
Sri Lanka

#### Roles:

- National Coordinator for Sri Lanka
- Phase Three Principal Investigator for Sri Lanka

## St Augustine Centre

Phase Three			
<b>Centre:</b>		St Augustine, Trinidad and Tobago ( North America )	
<b>Principal Investigator:</b>		Dr Michelle A Monteil	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2002 to December 2002
<b>Sampling Frame:</b>		All secondary schools and all primary schools in Trinidad- not including senior comprehensive schools with pupils of 15 years and over.	

## Personnel

### Dr Michelle A Monteil

Department of Paraclinical Sciences  
Faculty of Medical Sciences, University of the West Indies  
Eric Williams Medical Sciences Complex  
Uriah Butler Highway, Champs Fleur  
Trinidad And Tobago

#### Roles:

- Phase Three Principal Investigator for St Augustine

# The ISAAC Story

## Stockholm/Uppsala Centre

Phase One			
<b>Centre:</b>		Stockholm/Uppsala, Sweden ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Tony Foucard	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	Study dates not supplied
<b>Sampling Frame:</b>			

### Personnel

#### Dr Tony Foucard

Department of Pediatrics  
Uppsala University Children's Hospital  
Sweden

#### Roles:

- Phase One Principal Investigator for Stockholm/Uppsala

## Strasbourg Centre

Phase One			
<b>Centre:</b>		Strasbourg, France ( Western Europe )	
<b>Principal Investigator:</b>		Dr Christine Kopferschmitt-Kubler	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All colleges of a University town (Strasbourg) were chosen.	

### Personnel

#### Dr Christine Kopferschmitt-Kubler

Service de Pneumologie  
Hôpital Lyautey  
CHU Strasbourg  
1 Place des Hôpital  
Norway

#### Roles:

- Phase One Principal Investigator for Strasbourg

#### Professor Elisabeth Quoix

Service de Pneumologie  
Nouvel hôpital civil  
1, Place de l'Hôpital  
BP 426  
France

#### Roles:

- Phase One collaborator for Strasbourg

## Sunderland Centre

Phase One			
<b>Centre:</b>		Sunderland, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Dr Mohammad H Shamssain	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 1995 to July 1996
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Sunderland, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Dr Mohammad H Shamssain	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	October 2000 to February 2003
<b>Sampling Frame:</b>		All schools in Sunderland, Gateshead and New Castle. Washington was included in Phase One, however Washington Town is a part of the City of Sunderland and the exclusion of Washington does not affect the sampling frame.	

### Personnel

#### Dr Mohammad H Shamssain

Dept of Pharmacy, Health and Wellbeing  
University of Sunderland  
Darwin Building 123  
Chester Road  
United Kingdom

#### Roles:

- Phase One Principal Investigator for Sunderland
- Phase Three Principal Investigator for Sunderland

This centre formed part of a national initiative throughout the United Kingdom, as described on the UK country-level page . Resulting publications are listed on the UK national page.

Ross Anderson, David Strachan, 18 July 2011

Regional

National

Local

Stockholm/  
Uppsala  
Strasbourg  
Sunderland

# The ISAAC Story

Regional

National

Local

**Surrey/  
Sussex**

## Surrey/Sussex Centre

<b>Phase One</b>			
<b>Centre:</b>		Surrey/Sussex, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Professor David Strachan	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All state secondary schools in Mid Downs and Surrey and N.E. Hants.	
<b>Phase Two</b>			
<b>Centre:</b>		West Sussex, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Professor David Strachan	
<b>Age Groups:</b>	,	<b>Timeframe:</b>	October 1998 to July 1999.
<b>Sampling Frame:</b>		The north educational division of the administrative county of West Sussex. This area was used for pilot studies in preparation for ISAAC Phase One, and forms part of the area covered by the Surrey & Sussex centre in ISAAC Phase One.	
<b>Phase Three</b>			
<b>Centre:</b>		Surrey/Sussex, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Professor David Strachan	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	March 2002 to July 2002
<b>Sampling Frame:</b>		13-14yr: Same geographical area as in ISAAC Phase One survey. West Sussex, all state secondary schools in North Education District with more than 100 pupils/year: AND: North West Surrey, random selection of mixed state secondary schools with more than 100 pupils/year.	

## Personnel

### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
United Kingdom



#### Roles:

- ISAAC Steering Committee
- National Coordinator for United Kingdom
- Phase One collaborator for Surrey/Sussex

### Pauline Lanridge

Senior registrar in public health medicine  
St Georges University of London  
Cranmer Terrace,  
London SW17 0RE, UK.  
United Kingdom

#### Roles:

- Phase One collaborator for Surrey/Sussex

### Ruth Ruggles

Specialist registrar in public health  
St George's University of London,  
Cranmer Terrace,  
London SW17 0RE,  
United Kingdom

#### Roles:

- Phase One collaborator for Surrey/Sussex

### Professor David Strachan

Professor of Epidemiology  
Division of Community Health Sciences  
St George's, University of London  
Cranmer Terrace, Tooting,  
United Kingdom



#### Roles:

- ISAAC Executive
- ISAAC Steering Committee
- Phase One Principal Investigator for Surrey/Sussex
- Phase Two Principal Investigator for West Sussex
- Phase Three Principal Investigator for Surrey/Sussex

# The ISAAC Story

## Why was this centre selected for ISAAC?

As the ISAAC methodology was being developed in the early 1990s, there was interest from local public health physicians in the possible adverse health effects of air pollution around London Gatwick Airport. The West Sussex area, which includes the airport, was therefore chosen for pilot studies of the ISAAC video [ref 1] and subsequently expanded to include parts of the neighbouring county of Surrey, for the Phase One study.

These areas lie outside the Greater London conurbation and consist of small towns, with a high proportion of commuters, and intervening areas of farmland and forest. Compared to the UK as a whole, and to the whole of south-eastern England, this is a relatively prosperous area.

Our Phase One study was designed specifically to investigate two other methodological issues: firstly, whether the prevalence of symptoms, as obtained by the ISAAC written questionnaire, varied with season of administration of the survey; and secondly, whether the prevalence differed between child responses and parental responses in the same age group.

Our Phase Two studies were restricted to the West Sussex area which had been used for the earlier pilot studies. In Phase Three, the larger Surrey & Sussex area was used, as in Phase One.

## Our experience of ISAAC

*Pilot studies:* The earlier version of the ISAAC video (mainly white ethnic children) was used. It was generally well accepted, but fieldworkers remarked that some children found the scene of severe asthma distressing. This was perhaps to be expected, as the scene depicts a potentially life-threatening asthma attack. This scene was eventually retained in the Phase One video questionnaire (both versions), and has been very widely used.

*Phase One:* As ISAAC Phase One included a separately funded nationwide survey of over 27,500 teenage children in 93 schools across England, Scotland, Wales and outlying islands, which took place over a whole school year, we concentrated the Surrey & Sussex study on addressing the possibility that the prevalence of symptoms might be affected by the season of the survey. Thus, we ensured that a balanced selection of schools from each part of the study area were visited in each of the three school terms (autumn, spring and summer). Only 13-14-year-old children were included, but in a random sample of two-thirds of these children, we also sent questionnaires (based on the ISAAC core questionnaire for 6-7-year-olds) to the parents. This allowed for comparisons between the responses by children and by parents at the level of the individual child, and the population as a whole. By omitting the parental questionnaire from a random one-third of the children, we were able to consider the possibility of response bias among the children whose parents had been mailed.

*Phase Two:* Our Phase Two fieldwork followed the core ISAAC Phase Two protocols, with hypertonic saline challenge, blood sampling and dust collection confined to a stratified sample of wheezers and non-wheezers. However, we also performed a bronchial challenge with exercise using Michael Burr's protocol in all children at the time they attended for skin prick tests and skin examination (several weeks before the hypertonic saline challenge). The exercise and saline challenge results showed a limited degree of correlation at the level of individual children, but both generated a much higher prevalence of bronchial hyperreactivity in West Sussex than in a comparable study carried out by our collaborator Alfred Pritanji in Tirana, Albania. These comparisons, between two centres at the extremes of the worldwide range of wheeze prevalence in Phase One, were published in the Lancet in 2001 [ref2]. During the fieldwork, we were puzzled about the high proportion of West Sussex children who responded with a fall in FEV1 early in saline challenge, and became concerned that there might be a flaw in our survey technique. Francine Aarts, who had recently completed the Phase Two fieldwork in the Netherlands, kindly visited West Sussex during our fieldwork and did not find anything particularly unusual about our methods, but commented that the proportion of responsive children seemed a lot higher than in the Dutch study. Later, we exchanged ultrasonic nebulisers with the Spanish Phase Two centres to check whether there was something unusual about our equipment, but did not find any major differences. When we later compared West Sussex and Tirana using the results of the hypertonic saline challenge, they differed greatly in the prevalence of bronchial hyperreactivity [ref 3]. This similarity of results using two different bronchial challenges offers supporting evidence that there is truly a high prevalence of responsive airways in West Sussex. (Due to the proximity to Gatwick Airport, we sometimes called this the "British Airways" phenomenon.)

*Phase Three:* Originally we had planned to focus Phase Three on the West Sussex schools which had participated in the pilot study of the asthma written and video questionnaires in 1991 [ref 1]. There was initially slow recruitment of schools in West Sussex, so sampling was extended to West Surrey. Both areas correspond to the "Surrey & Sussex" Centre in ISAAC Phase One. Several pupils commented on the question about mother's level of education (in the environmental questionnaire) saying it was "too personal" and some pupils were offended by the question. An extra question was included in the environmental questionnaire (placed at the end after ISAAC questions): *Have you ever smoked a cigarette? Yes / No. If yes, how often do you smoke nowadays? At least once a day on average / less than once a day, but at least once a week / less than once a week / I do not smoke at all nowadays.* This was included because in the nationwide ISAAC UK Phase One, this question had been used and proved to be strongly associated with wheezing in the 13-14-year-olds.

Regional

National

Local

Surrey/  
Sussex



# The ISAAC Story

## References

1. Pearce N, Weiland S, Keil U, Langridge P, Anderson HR, Strachan D, Bauman A, Young L, Gluyas P, Ruffin D, Crane J, Beasley R. Self-reported prevalence of asthma symptoms in children in Australia, England, Germany and New Zealand: an international comparison using the ISAAC written and video questionnaires. *Eur Respir J* 1993;6:1455-1461. PMID: 8112438
2. Priftanji A, Strachan D, Burr M, Sinamati J, Shkurti A, Grabocka E, Kaur B, Fitzpatrick S. Asthma and allergy in Albania and the UK. *Lancet* 2001;358:1426-1427. PMID: 11705492
3. Büchele G, Genuneit J, Weinmayr G, Björkstén B, Gehring U, von Mutius E, Priftanji A, Stein RT, Addo-Yobo EO, Priftis KN, Shah JR, Forastiere F, Svabe V, Crane J, Nystad W, García-Marcos L, Saraçlar Y, El-Sharif N, Strachan DP; ISAAC Phase Two Study Group. International variations in bronchial responsiveness in children: findings from ISAAC Phase Two. *Pediatr Pulmonol* 2010;45:796-806. PMID: 20597079

## Acknowledgements

We gratefully acknowledge financial support from the National Asthma Campaign (Phase One), the SW Thames Regional Research & Development Scheme (Phase Two), and the European Union (Phase Two centralised laboratory analyses). We are also indebted to all the children, parents and school staff who participated in the surveys, and wish to thank our fieldwork teams for their enthusiasm and diligence throughout each study.

## Suva Centre

Phase Three			
<b>Centre:</b>		Suva, Fiji ( Oceania )	
<b>Principal Investigator:</b>		Dr Rosalina Sa'aga-Banuve	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	November 2002 to November 2002
<b>Sampling Frame:</b>		13-14yr: All schools in the Suva Rewa and Tailevu subdivisions.	

## Personnel

### Dr Rosalina Sa'aga-Banuve

APO Health and Nutrition  
UNICEF  
3 & 5 Floors, Fiji Development Bank Building  
360 Victoria Drive  
Fiji

#### Roles:

- Phase Three Principal Investigator for Suva

### Dr Lepani Waqatakirewa

Children's Hospital  
Government Buildings  
PO Box 2223  
Fiji

#### Roles:

- Phase Three collaborator for Suva

## Svábhegy Centre

Phase Three			
<b>Centre:</b>		Svábhegy, Hungary ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Györgyi Zsigmond	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	March 2003 to April 2003
<b>Sampling Frame:</b>		All schools in "Komárom-Esztergom" county, Hungary, except schools in settlements with less than 1000 inhabitants	

## Personnel

### Dr Györgyi Zsigmond

Senior Consultant Pediatrician,  
Pediatric Pulmonologist,  
Svabhegy Institute,  
Budapest,  
Hungary

See the Hungary country page for details



#### Roles:

- National Coordinator for Hungary
- Phase Three Principal Investigator for Svábhegy

Regional

National

Local

Surrey/

Sussex

Suva

Svábhegy

# The ISAAC Story

## Sydney 13-14 Centre

<b>Phase One</b>	
<b>Centre:</b>	Sydney 13-14, Australia ( Oceania )
<b>Principal Investigator:</b>	Professor Adrian Bauman
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	This study comes from a geographic area, being a region in South Western Sydney with a total population of 800,000 residents. The survey covered a random sample of schools within this geographical area. The geographical area is based on a regional health district in NSW, and is one of the larger such health districts.

### Personnel

#### Professor Adrian Bauman

Epidemiology Unit  
Australia

#### Roles:

- Phase One Principal Investigator for Sydney 13-14

## Sydney 6-7 Centre

<b>Phase One</b>	
<b>Centre:</b>	Sydney 6-7, Australia ( Oceania )
<b>Principal Investigator:</b>	Dr Jennifer Peat
<b>Age Groups:</b>	6-7
<b>Timeframe:</b>	April 1993 to June 1993
<b>Sampling Frame:</b>	6-7yr: All state, Catholic and Independent primary schools within a 10km radius of the General Post Office of Sydney, were eligible for inclusion.

### Personnel

#### Dr Jennifer Peat

Clinical Epidemiology Unit  
The Children's Hospital at Westmead  
PO Box 3515  
Australia

#### Roles:

- Phase One Principal Investigator for Sydney 6-7

## Szeged Centre

<b>Phase Three</b>	
<b>Centre:</b>	Szeged, Hungary ( Northern and Eastern Europe )
<b>Principal Investigator:</b>	Dr Zoltán Novák
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	March 2003 to June 2003
<b>Sampling Frame:</b>	13-14yr: All schools in two cities, Szeged and Vasarhely

### Personnel

#### Dr Károly Berényi

Hungary

#### Roles:

- Phase Three collaborator for Szeged

#### Dr Marianne Kovács

Hungary

#### Roles:

- Phase Three collaborator for Szeged

#### Dr Ildikó Kovács

Hungary

#### Roles:

- Phase Three collaborator for Szeged

#### Dr Zoltán Novák

Pediatrician, Pediatric Pulmonologist, Head of Pulmonary Division, President of Hungarian Pediatric Society of Pulmonology  
Department of Pediatrics  
University of Szeged  
Hungary



#### Roles:

- Phase Three Principal Investigator for Szeged

See the Hungary country page for details

Regional

National

Local

Sydney 13-14

Sydney 6-7

Szeged

# The ISAAC Story

Regional  
National  
Local  
**Taipei**

## Taipei Centre

Phase One			
<b>Centre:</b>		Taipei, Taiwan ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Kue-Hsiung Hsieh DECEASED	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:October 1995 to October 1995 6-7yr:October 1994 to November 1994
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Taipei, Taiwan ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Jing-Long Huang	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	December 2001 to January 2002
<b>Sampling Frame:</b>		The study sample included all children within these age groups from a random sample of public schools (cluster sampling, using schools as the sampling unit). Twenty four secondary and 24 Primary schools were randomly chosen in the 12 districts of Taipei city.	

## Personnel

### Professor Kue-Hsiung Hsieh

Director, Chang Gung Children's Hospital  
5, Fu-Hsiang  
Taiwan

#### Roles:

- Phase One Principal Investigator for Taipei

### Dr Jing-Long Huang

Chief, Department of Pediatrics  
Chang Gung Children's Hospital  
5, Fu-Hsin Street  
Kweishan  
Taiwan



#### Roles:

- National Coordinator for Taiwan
- Phase Three Principal Investigator for Taipei

## ISAAC story - Taipei center

It is a pleasure to share with you our experience of ISAAC phase 3 surveys in Taipei Center. Taipei is a rapidly growing city, both in economics and public health. We are very interested in the time trend of prevalence of allergic diseases in Taipei city during its development.

Yan DC, et al. from the Division of Allergy, Asthma, and Rheumatology, Department of Pediatrics, Chang Gung Memorial Hospital and Chang Gung University organized and conducted ISAAC phase III survey between December 1, 2001 and January 31, 2002. Two junior high schools in each of the 12 school districts in Taipei city were randomly chosen to enter the study. Our data showed that the prevalence of asthma, allergic rhinitis, and atopic eczema in the past 12 months during the study period in 13- to 14-year-old children increased by 37%, 51%, and 193%, respectively, when compared to our previous study 7 years ago. It is clear that allergic diseases have become a huge impact and burden on the health system in Taipei.

Dr. Kuo-Wei Yeh and Dr. Jing-Long Huang organized and started a national public asthma education program directing at 5000 school nurses, 1500 daycare center teachers, near 600 public health nurses and 500 pharmacists since 1999. Our goal was to train a group of healthcare professionals who are alert to the symptoms of allergic diseases as well as familiar with the various rescue medication of asthma. They will be able to monitor and provide immediate help for the children in case of emergency. During the past 10 years, the asthma education program team visited more than 100 towns and cities beyond Taipei, including the rural and urban areas of Taiwan and also some outlying islands. Through the ISAAC phase III data, the government also became more concerned about the issue and allocated more resource for it. And Chang Gung Memorial Hospital also gave support and funding for this national and continuing program.

In conclusion, ISAAC phase III survey has given us more information about allergic diseases in Taipei city. With a collaborative work from the government, researchers and healthcare professionals, we will work out a plan not only to understand allergic diseases, but also to help those who need assistance.

## Local Publications

The following publications used ISAAC data from the Taipei centre:

Yan DC, Ou LS, Tsai TL, Wu WF, Huang JL. *Prevalence and severity of symptoms of asthma, rhinitis, and eczema in 13- to 14-year-old children in Taipei, Taiwan.* Ann Allergy Asthma Immunol.2005 Dec;95(6):579-85.



Taipei

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from the Tallinn centre:

Riikj rv MA, Annus T, Br b ck L, Rahu K, Bj rkst n B. *Similar prevalence of respiratory symptoms and atopy in Estonian schoolchildren with changing life style over 4 years.* Eur Respir J 2000; 16(1): 86-90.

Annus T, Riikj rv MA, Rahu K, Bj rkst n B. *Modest increase in seasonal allergic rhinitis and eczema over 8 years among Estonian schoolchildren.* Pediatr Allergy Immunol 2005; 16(4): 315-20.

Annus T, Montgomery SM, Riikj rv MA, Bj rkst n B. *Atopic disorders among Estonian schoolchildren in relation to tuberculin reactivity and the age at BCG vaccination.* Allergy 2004; 59(10): 1068-1073.



A view of Tallinn with a school roof in the left



A school from the beginning of XX century with a modern rebuilding (gymnastics hall and swimming pool)



A school from the 1930-ies in Tallinn in winter (with Estonian and Tallinn flags)



A school from XIX century

## Tallinn Centre

Phase One			
<b>Centre:</b>		Tallinn, Estonia ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Mall-Anne Riikj�rv	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:December 1993 to April 1994 6-7yr:December 1993 to October 1994
<b>Sampling Frame:</b>			
Phase Two			
<b>Centre:</b>		Tallinn, Estonia ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Mall-Anne Riikj�rv	
<b>Age Groups:</b>	10,	<b>Timeframe:</b>	December 1996 to February 1997.
<b>Sampling Frame:</b>		A random sample of Estonian-speaking schools throughout Tallinn.	
Phase Three			
<b>Centre:</b>		Tallinn, Estonia ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Mall-Anne Riikj�rv	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 2001 to April 2002
<b>Sampling Frame:</b>		All Estonian Language schools in Tallinn	

## Personnel

### Dr Triine Annus

Estonian ISAAC Phase 1 - 3 investigator pediatric allergist  
Tallinn Children's Hospital  
Central Polyclinic  
Ravi 27 10138  
Tallinn  
Estonia



#### Roles:

- Phase One collaborator for Tallinn
- Phase Three collaborator for Tallinn

### Dr Mall-Anne Riikj rv

Clinical Director  
Tallinn Children's Hospital  
Tervise, 28  
Estonia



#### Roles:

- National Coordinator for Estonia
- Phase One Principal Investigator for Tallinn
- Phase Two Principal Investigator for Tallinn
- Phase Three Principal Investigator for Tallinn

## ISAAC in Estonia (East Europa)

Estonia was a socialist country, which regained its independence in 1991. In these days Estonian pediatricians met prof. Bengt Bj rksten, who initiated the first epidemiological study of asthma and allergies in Estonian children. He encouraged us also to take part in the international study ISAAC, which we accepted with great enthusiasm. It was especially important for us that prof. Bj rksten found the resources for the study, as the economical situation in Estonia in these times was very difficult. The group of field workers was formed from pediatricians, who did the demanding field work in addition to their everyday clinical work. Such a study in schools was rather unusual, but the school staff accepted the study group intervention into the everyday school activities rather calmly. In data processing we were pleased to receive help from an experienced statistician, whose qualified collaboration enabled us to forward high quality data to the ISAAC center.

The positive experience from the ISAAC I encouraged us also to take part in the next phases of ISAAC. The ISAAC II study with its multiple tasks and procedures was rather challenging for our small group of field workers. However, we don't remember any exceptional situations and the schoolchildren were always eager to get the reason to miss their lessons.

Participating in the ISAAC studies was an enriching experience in many ways for Estonian pediatricians. It was the first experience in the international scientific cooperation for us. Using the internationally accepted methods we got reliable data about the epidemiological situation on asthma and allergies in Estonian children. Several papers in international scientific journals and a doctoral thesis were based on the research data. We believe that the data from Estonia, a country in transition from socialism to the market economy, were a valuable addition to the international comparison. Such data gave the reason to the hypothesis that socialism protects from allergies.

Regional

National

Local

Tallinn

# The ISAAC Story

Regional

National

Local

Tallinn

Taoyuan

We gratefully acknowledge prof. Bengt Björkstén, who opened the door to the International allergy world for us and warranted the financial support for the studies. We also thank the schools and families of the participating children. Our study wouldn't have been possible without enthusiastic team of pediatricians who bore the main burden .

## Taoyuan Centre

Phase Three			
<b>Centre:</b>		Taoyuan, Taiwan ( Asia-Pacific )	
<b>Principal Investigator:</b>		Dr Chun-Chieh Kao	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2002 to June 2002
<b>Sampling Frame:</b>		Some schools in Taoyuan county, Taiwan	

## Personnel

### Dr Chun-Chieh Kao

Department of Pediatrics  
Li-Shin Hospital  
77, Kuang-Tai Road  
Ping-Chen City  
Taiwan

### Roles:

- Phase Three Principal Investigator for Taoyuan

## Why was Taoyuan selected for ISAAC?

In Taiwan, there was limited literature to disclose the prevalence, severity, and seasonal variations of allergic diseases, especially the seasonal variations in a large-scale survey in recent years. The aim of the present study was to use the ISAAC protocol to investigate the prevalence, severity, demographic and seasonal variations of asthma and other allergic diseases in Taiwan in a county sample of school children aged 6-7 years and 13-14 years. Besides, we also wanted to know the prevalence and severity about Taiwanese aborigines in Taoyuan County of Taiwan (Taoyuan Center).

## Our experience of ISAAC

The ISAAC Phase Three parents-administered translated questionnaire for children aged 6 to 7 years, was used for children in the first grade in the elementary school. The same questionnaire, with some changes to fit with ISAAC Phase Three recommended version for children aged 13 to 14 years, was used for children in the eighth grade in the junior high school. The ISAAC standard questionnaire consisted of three main sections, each involving questions relating to the prevalence and severity of wheezing, rhinitis, and eczema respectively. These questionnaires had been validated in previous studies. The questions concentrated mainly on past and current wheezing episodes, frequency of wheezing attacks, sleep disturbance and speech limitation during attacks, acute severe wheezing episodes, exercise-induced wheezing, night-time cough unrelated to respiratory infection and a doctor's diagnosis of asthma. The core questionnaires for rhinitis and eczema followed a similar format. As all the schoolchildren and parents speak Mandarin fluently in Taiwan, they were given to answer a Chinese version of the questionnaire despite a small number of Aborigine in the Taoyuan County of Taiwan. The Chinese version of the questionnaire had been back-translated as a validity check, according to defined guidelines. We opted to add several questions about seasonal variations of asthma to explore the connection with asthma and hospital admissions for asthma.

## Sampling and Data Collection

The studied area was Taoyuan County, northern Taiwan, and grade 1 or grade 8 children were recruited. According to ISAAC protocol, school was the sampling unit and twenty-five schools were stratified cluster selected from 10 districts in Taoyuan County . The eighth-grade children (aged 13-14 years) filled the questionnaires during class hours under the supervision of their class teacher, and first-grade children (aged 6-7 years) took the questionnaires home to have it filled in by their parents or guardian and returned it within a week. For children who missed the school during our visit, a questionnaire was given another day. This study protocol, sampling method, data had submitted to ISAAC and permission was obtained (area code 113003).

A total of 6771 questionnaires were supposed to be collected between May and June of 2002 and 6483 questionnaires were returned with a total response rate of 95.7% (92.7% in the younger age group, and 99.1% in the older children). Excluding 21 due to ineligible age and 275 dueto missing answers in the diagnosed questions on either asthma, rhinitis, or eczema, a total of 6187 school children were included for this study. Our results had been published in the Journal of Pediatric Allergy and Immunology(PAI).

We gratefully acknowledge all members in the work team from Taipei center and Lishin hospital in Taoyuan center. We wish to thank all parents, children and school staff who participated in the surveys and also our fieldworkers team for their enthusiasm and effort throughout each study.

# The ISAAC Story



## Local Publications

The following publications used ISAAC data from the Tartous centre:

Mohammad Y, Tabbah K, Mohammad S, Yassine F, Clayton T and Hassan M *International Study of Asthma and Allergies in Childhood phase 3 in the Syrian Arab Republic* East Med Health J 2010; 16(7): 710-716

## Tartous Centre

Phase Three			
<b>Centre:</b>		Tartous, Syria ( Eastern Mediterranean )	
<b>Principal Investigator:</b> Dr Samira Mohammad			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 2001 to October 2002
<b>Sampling Frame:</b>		Random sampling but the areas were divided into highly polluted around the oil refinery, the power station and the cement factory... etc and low polluted areas in the country and the city.	

### Personnel

#### Dr Samira Mohammad

Head of Paediatrics Department  
PO Box 2500  
Syria

#### Roles:

- National Coordinator for Syria
- Phase Three Principal Investigator for Tartous

## Tashkent Centre

Phase One			
<b>Centre:</b>		Tashkent, Uzbekistan ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Professor Tamara Aripova			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All Tashkent schools.	

### Personnel

#### Professor Tamara Aripova

c/- Prof Ruslan M Ruzibakiev  
Institute of Immunology of AcSci Ruz  
74, Y.GULYAMOV Street  
Uzbekistan

#### Roles:

- Phase One Principal Investigator for Tashkent



Georgia

## Tbilisi Centre

Phase One			
<b>Centre:</b>		Tbilisi, Georgia ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Professor Amiran Gamkrelidze			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 1995 to April 1995
<b>Sampling Frame:</b>			
Phase Two			
<b>Centre:</b>		Tbilisi, Georgia ( Northern and Eastern Europe )	
<b>Principal Investigator:</b> Dr Maia Gotua			
<b>Age Groups:</b>	10-11 years,	<b>Timeframe:</b>	March 2001 to June 2002.
<b>Sampling Frame:</b>		Random sample of schools from five districts (rayons) of the capital city. Same study area as ISAAC Phase One.	

### Personnel

#### Dr Tamar Abramidze

Center of Allergy & Immunology  
2/6 Lubliana str.  
Georgia



#### Roles:

- Phase Two collaborator for Tbilisi

#### Professor Amiran Gamkrelidze

Scientific Adviser of the Center of Allergy and Immunology Programme Coordinator of WHO Country Office in Georgia,  
2/6 Lubliana Str, 0159  
Tbilisi  
Georgia



#### Roles:

- Phase One Principal Investigator for Tbilisi
- Phase Two collaborator for Tbilisi
- Scientific Advisor to Phases Two and Three

Regional

National

Local

Tartous

Tashkent

Tbilisi

# The ISAAC Story

Regional  
National  
Local

Tbilisi

## Dr Maia Gotua

Director  
Center of Allergy &  
Immunology  
2/6 Lubliana str.  
Tbilisi  
Georgia



### Roles:

- National Coordinator for Georgia
- Phase Two Principal Investigator for Tbilisi
- Phase One collaborator for Tbilisi

## Dr Natela Gunia

Tbilisi State Medical University  
2/6 Lubliana Str, 0159  
Georgia

### Roles:

- Phase One collaborator for Tbilisi

## Lali Karsanidze

Tbilisi State Medical University  
2/6 Lubliana Str, 0159  
Georgia

### Roles:

- Phase One collaborator for Tbilisi

## Maia Kiladze

Center of Allergy & Immunology  
2/6 Lubliana str.  
Georgia

### Roles:

- Phase Two collaborator for Tbilisi

## Izo Kvachadze

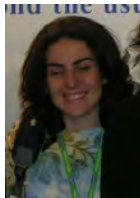
Center of Allergy & Immunology  
2/6 Lubliana str.  
Georgia

### Roles:

- Phase Two collaborator for Tbilisi

## Dr Maia Rukahzde

Center of Allergy &  
Immunology  
2/6 Lubliana str.  
Georgia



### Roles:

- Phase Two collaborator for Tbilisi

## Background

Georgia, which former was one of the Soviet Union countries, gained its independence in 1990 and faced most complicated political situations and hard economic conditions. Despite the mentioned Georgia was always opened to new researches, including epidemiological studies. The ISAAC regional coordinator for Northern and Eastern Europe professor Bengt Bjorksten kindly invited Georgia to participate in ISAAC study in 1994. This participation was defined according to the following key points: the lack of any epidemiological data regarding markers of allergy diseases for that time in Georgia; the interest to confirm the purpose that the prevalence of these diseases in Georgia should be much lower than in country with market economy (as it was revealed in the other less industrialized formerly socialist countries); as well as personal contact with Prof. Gamkrelidze and his team of highly-qualified allergologists at the Tbilisi State Medical University and later staff of Center of Allergy and Immunology.

## Impact of ISAAC

Involvement in a large global research project gave chance of new research, education and obtaining of practical experience to our country. It was extremely important for developing allergy and epidemiology fields in Georgia and learning new approaches of standardized high quality research. Participation in ISAAC expanded our professional contacts and was good opportunity for active exchanging of scientific knowledge with our colleagues in other countries.

## Findings

ISAAC Phase I and as well as ISAAC Phase III were conducted in two cities of Georgia – Tbilisi and Kutaisi, characterized by different geographical and urban peculiarities. The prevalence of symptoms of allergic diseases in Georgia according to the results of ISAAC I survey mostly was less than 5%. The exception was the prevalence of wheezing 12 months among 6-7 yrs. Old children (Kutaisi – 9.3%, Tbilisi -5.4%), which possibly could be less related to allergy and more associated with infections in the younger children. The regional differences (between two study centers) in symptoms were not obvious among 13-14 yrs. Old children. The 12 month prevalence of wheezing and conjunctivitis were slightly higher in Kutaisi than in Tbilisi among the 6-7 yr olds children.

ISAAC Phase II was performed in Tbilisi, in 2001-2002. The prevalence rate of asthma became 9.2%, the prevalence rate of 12 months of itchy rash and flexural dermatitis were 7.6% and 5.9%, respectively, which was higher than the prevalence of eczema symptoms reported in Georgia 6-7 years ago (ISAAC Phase I – 1995-1996). The prevalence of current rhinoconjunctivitis was increased as well (6.3% vs. 4.7%). An interesting finding was that the family history of allergic diseases and damp spots on the wall was the main determinants for all types of allergic symptoms as well as high co-morbidity of allergic diseases.

# The ISAAC Story

ISAAC Phase III was conducted in May 2003 – December 2003 in two centers. Unfortunately, Tbilisi center was excluded from the global data analysis. That was caused by very low response rate (46% - 13/14 yrs old group, 56% - 6/7 yrs old group) during the fieldwork period, due to the difficult political situation inside the country (so-called "Rose Revolution" located in Tbilisi). In order to reveal tendency of changes of allergic symptoms prevalence in our country we analyzed both centers. The results of ISAAC phase III study indicate that the epidemiological features of asthma and allergies in Georgia are changing, although the causes are still uncertain. Considerable geographic variation in time trends of prevalence of symptoms of asthma and allergies can be seen in both age groups (6/7 and 13/14 yrs old). The prevalence changes, particularly the increasing pattern, more clearly expressed in Tbilisi than in Kutaisi centre. Among adolescences in Kutaisi center only "current wheezing" increased from 1996 (3,6% (95%CI 3.1-4.1)) to 2003 (5.1% (95%CI 4.3-5.9)), the prevalence of all other allergic diseases decreased or remained without changes. It should be noted, that the prevalence of current wheezing among 6-7 yrs old children, in contrast to other age group, decreased by 2,4% (9,3% (1996) and 6,9% (2003)), the symptoms of current rhino-conjunctivitis slightly decreased and symptoms of flexural dermatitis reduced by 2.8% ( $p < 0.01$ ).

## References

1. Björkstén B, Dumitrascu D, Foucard T, Khetsuriani N, Khaitov R, Leja M, Lis G, Pekkanen J, Priftanji A, Riiikjäv MA. Prevalence of childhood asthma, rhinitis and eczema in Scandinavia and Eastern Europe. *Eur Respir J*. 1998 Aug; 12(2):432-7.
2. Weinmayr G, Weiland SK, Björkstén B, Brunekreef B, Büchele G, Cookson WO, Garcia-Marcos L, Gotua M, Gratziau C, van Hage M, von Mutius E, Riiikjäv MA, Rzehak P, Stein RT, Strachan DP, Tsanakas J, Wickens K, Wong GW; ISAAC Phase Two Study Group. Atopic sensitization and the international variation of asthma symptom prevalence in children. *Am J Respir Crit Care Med*. 2007 Sep 15; 176(6):565-74. Epub 2007 Jun 15.
3. Abramidze T, Gotua M, Rukhadze M, Gamkrelidze A. Prevalence of asthma and allergies among adolescences in Georgia: comparison between two surveys. *Georgian Med News*. 2007 Mar ;( 144):38-41

## Acknowledgment

We wish to thank Prof. Bengt Bjorksten for a supervision and great support in carrying out of all phases of ISAAC study in Georgia. Many thanks to ISAAC group of University of Ulm under the leadership of Prof. Stephan Weiland and ISAAC group in Auckland for supporting in data entry and analysis. We are also grateful to all the children, parents and school staff who participated in the surveys.

## Tehran Centre

<b>Phase One</b>			
<b>Centre:</b>		Tehran, Iran ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Mohammed-Reza Masjedi	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr:May 1995 to June 1995 6-7yr:May 1995 to September 1995
<b>Sampling Frame:</b>			
<b>Phase Three</b>			
<b>Centre:</b>		Tehran, Iran ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Mohammed-Reza Masjedi	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	March 2001 to June 2001
<b>Sampling Frame:</b>		All schools in Tehran urban region.	

## Personnel

### Dr Mohammed-Reza Masjedi

Masih Daneshvary Hospital  
Dorabad  
Shaheed Bahoner Ave  
Darabad  
Iran

#### Roles:

- National Coordinator for Iran
- Phase One Principal Investigator for Tehran
- Phase Three Principal Investigator for Tehran

Regional

National

Local

Tbilisi

Tehran



# The ISAAC Story



Regional

National

Local

Tehran

Thessaloniki

## Local Publications

The following publications used ISAAC data from Tehran:

Masjedi MR, Fadaizadeh L, Najafizadeh K, Dokouhaki P. *Prevalence and Severity of Asthma Symptoms in Children of Tehran- International Study of Asthma and Allergies in Childhood (ISAAC)*. Iran J Allergy Asthma Immunol.2004 Mar;3(1):25-30.

Masjedi MR, Fadaizadeh L, Najafizadeh K, Dokouhaki P. *Prevalence and Severity of Asthma Symptoms in Children of the Tehran-ISAAC Study* Pediatric Asthma, Allergy and Immunology. Winter 2004, 17(4): 244-250.

Masjedi MR, Fadaizadeh L, Najafizadeh K, Dokouhaki P. *A Study of the Prevalence and Severity of Rhinitis in Children in Tehran: ISAAC Study* Journal of Isfahan Medical School (I.U.M.S) Spring 2005; 23(76):36-41.

Fadaizadeh L, Salek S, Najafizadeh K, Masjedi MR. *Prevalence and Severity of Asthma Symptoms in Students of Tehran and Rasht: Phase III ISAAC Study* Tanaffos (2008) 7(3), 31-36

Fadaizadeh L, Keyvan S, Najafizadeh K, Masjedi MR. *Evaluation of Agreement between Video and Written Questionnaires for Asthma Symptoms Among Children of Tehran: ISAAC Study*. Journal of Shahid Sadoughi University of Medical Sciences and Health Services, summer 2008; 16(2):36-43.

## Thessaloniki Centre

<b>Phase Two</b>			
<b>Centre:</b>		Thessaloniki, Greece ( Western Europe )	
<b>Principal Investigator:</b>		Associate Professor John Tsanakas	
<b>Age Groups:</b>	10-11,	<b>Timeframe:</b>	September 2001 to November 2001.
<b>Sampling Frame:</b>		A sample of 40 schools selected in random order from the city centre and suburbs.	
<b>Phase Three</b>			
<b>Centre:</b>		Thessaloniki, Greece ( Western Europe )	
<b>Principal Investigator:</b>		Associate Professor John Tsanakas	
<b>Age Groups:</b>	6-7	<b>Timeframe:</b>	November 2000 to February 2001
<b>Sampling Frame:</b>		13-14yr: Some schools in Thessaloniki	

## Personnel

### Associate Professor John Tsanakas

Paediatric Respiratory Unit  
3rd Department of Paediatrics  
Hippokraton General Hospital  
49 Kostantinoupoleos Street  
Greece

#### Roles:

- Phase Two Principal Investigator for Thessaloniki
- Phase Three Principal Investigator for Thessaloniki

There were several epidemiological studies about paediatric asthma in Greece since 1978; they had different methodology regarding questionnaires and the age of the samples. In the different asthma prevalence studies that had been done between 1970 and 1990, even taking into account that they had different methodology, we could see that there was a concerning increase in asthma prevalence. For this reason we considered it very important to join ISAAC.

Dr Christine Gratziou, our National Co-ordinator in ISAAC study, was the liaison person who organized participation of Greece in ISAAC phase One study in 1994. In phase One Greece participated in ISAAC study with one centre, collecting data from two big cities: Athens and Thessaloniki. At that time I was in charge of the Paediatric Pulmonology Unit of Aristotle University of Thessaloniki. Dr Gratziou suggested me to participate in the next phases of ISAAC (II and III). So I undertook the role of Principal Investigator in Thessaloniki Center for phase Two and Three. In Phase Two and Three a second centre was added 1510 children from 36 schools participated in the 6-7 years group and. It was very important to have a second centre within an area far from the capital, to have a better idea of the prevalence of asthma and allergies in Greece.

Since Greece has participated in ISAAC, we think that there has been a growing concern about asthma in the physician community. Paediatricians now recognize asthma symptoms more easily and treat asthma more effectively. Besides, participating in ISAAC has given us the opportunity to compare our data with the data of other countries involved in this study, as well as to estimate the change of asthma prevalence in Greece over time.

We would like to thank all parents, children and school staff who participated in the surveys and also our fieldworkers team for their enthusiasm and effort throughout each study.

## Local Publications

The following publications used ISAAC data from the Thessaloniki centre:

Papadopoulou A, Hatziaorou E, Matziou VN, Grigoropoulou DD, Panagiotakos DB, Tsanakas JN, Gratziou C, Priftis KN. *Comparison in asthma and allergy prevalence in the two major cities in Greece the ISAAC phase II survey* Allergol Immunopathol(Madr).201 1; epub ahead of print

# The ISAAC Story

## Tibet Centre

<b>Phase Three</b>			
<b>Centre:</b>		Tibet, China ( Asia-Pacific )	
<b>Principal Investigator:</b>		Assistant Professor Osamu Kunii	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	September 2001 to December 2001
<b>Sampling Frame:</b>		13-14yr: All public middle schools (junior high schools) in Lhasa city, Tibet, China.	

### Personnel

#### Assistant Professor Osamu Kunii

Department of International Community Health  
Graduate School of Medicine  
University of Tokyo  
7-3-1 Hongo, Bunkyo-ku  
Japan

#### Roles:

- Phase Three Principal Investigator for Tibet

## Tiranë Centre

<b>Phase One</b>			
<b>Centre:</b>		Tiranë, Albania ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Professor Alfred Priftanji	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 1995 to February 1996
<b>Sampling Frame:</b>			
<b>Phase Two</b>			
<b>Centre:</b>		Tiranë, Albania ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Professor Alfred Priftanji	
<b>Age Groups:</b>	10-11 y. old,	<b>Timeframe:</b>	February 1999 to April 1999.
<b>Sampling Frame:</b>		Ten schools randomly selected from the city of Tirana. Same study area as ISAAC Phase One.	
<b>Phase Three</b>			
<b>Centre:</b>		Tiranë, Albania ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Professor Alfred Priftanji	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2001 to April 2001
<b>Sampling Frame:</b>		All schools in the city of Tirana. The same sampling frame was used for Phases One and Three.	

### Personnel

#### Professor Alfred Priftanji

Faculty of Medicine, University of Tirana  
Head, Department of Allergology and Clinical Immunology  
University Hospital Center "Mother Theresa"  
Tiranë  
Albania

#### Roles:

- National Coordinator for Albania
- Phase One Principal Investigator for Tiranë
- Phase Two Principal Investigator for Tiranë
- Phase Three Principal Investigator for Tiranë

## Why we were chosen for the ISAAC study

Albania is a small European country with approximately 3 million people. Until 1990 we were under an extremely closed communist regime. Later on, we understood that the Albanian population, as an isolated community, with a very simple lifestyle, different from "western" lifestyle, was an ideal sample for the Strachan Hygiene Hypothesis.

In 1992, Dr. Jane Layzell, a collaborator of Dr. Michael Burr in the ECRHS in Cardiff, came to Albania as part of "Feed the Children" programme. She proposed that I apply for epidemiological surveys of asthma & allergies in Tirana. In 1994 I received an EU grant and started the ECRHS in Albania, so called Albanian Respiratory Health Survey (ARHS). Dr. Michael Burr was appointed as a coordinator. Our center took part actively in this study and we got the first prevalence ever for adult asthma in Albania and in Balkan areas.

Regional

National

Local

Tibet

Tiranë

# The ISAAC Story

At the same period, with the recommendation of Dr. Michael Burr and Dr. Jane Layzell, we applied and were accepted in the ISAAC Phase One Study. The prevalence of asthma & allergies were the lowest in Europe and it was postulated that our population was not exposed to the risk factors present in the western countries. After that we were part of ISAAC family and participated in all phases of ISAAC.

The factors associated with asthma & allergy in Albania were therefore of particular interest. Prof. Alfred Priftanji and his team were supported in all other ISAAC Phases by ISAAC Steering Committee members like Prof. Stefan Weiland, Prof. David Strachan, Prof. Bengt Björkstén, Dr. Michael Burr, Prof. Erika Von Mutius, etc. The Albanian team worked meticulously and hard in order to be an active, reliable partner in this study. So, for the first time in Albania & Balkan we achieved a plausible data base for the prevalence, the risk factors of the asthma & allergic diseases in children and we had the opportunity to compare these data with the other centers worldwide.

Albania took part also in ISAAC phases Two and Three. Outstanding work was done from the teams of each phase and the primary investigator on fulfilling the work and persuading the children and the parents in order to take part in the study. The data we received from ISAAC surveys helped us to raise the awareness of the medical community, health policy makers for asthma & allergies as a growing problem.

We are very proud that Albania, a small country, thanks to all our work was able to participate in equal terms in this enormous study. We had the opportunity to work with eminent names in this field and we are grateful for to all the scientists that supported our involvement.

Now, in September 2011, with financial support from GlaxoSmithKline we will repeat the protocol of ISAAC phase One and partially phase Two in Tirana. In these 16 years the Albanian people have adopted the western lifestyle, so have been exposed to the same risk factors as in all other parts of Europe. We are really enthusiastic for this study because we are very curious to see the trend of asthma and allergic diseases and also evaluate the role of risk factors after 16 years.

## Our acknowledgement goes to the team of ISAAC-Albania:

Primary Investigator: Prof. Alfred Priftanji.

Doctors: Anila Shkurti, Juventila Sinemati, Edi Grabocka, Anxhela Gurakuqi, Sokol Agolli, Kastriot Shytaj, Mira Ziçishti, Xhilda Raço.

Nurses: Frasete Kasemi, Loreta Laho.

Secretary: Margarita Doci

## Tobago Centre

<b>Phase Three</b>			
<b>Centre:</b>		Tobago, Trinidad and Tobago ( North America )	
<b>Principal Investigator:</b>		Dr Michelle A Monteil	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 2002 to November 2002
<b>Sampling Frame:</b>		All schools in Tobago	

### Personnel

#### Dr Michelle A Monteil

Department of Paraclinical Sciences  
Faculty of Medical Sciences, University of the West Indies

Eric Williams Medical Sciences Complex  
Uriah Butler Highway, Champs Fleur  
Trinidad And Tobago

#### Roles:

- Phase Three Principal Investigator for Tobago

## Tochigi Centre

<b>Phase Three</b>			
<b>Centre:</b>		Tochigi, Japan ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Makino Sohei	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	September 1995 to March 1996
<b>Sampling Frame:</b>		13-14yr: All schools in Utsunomiya city and Tochigi city in Tochigi prefecture.	

### Personnel

#### Professor Makino Sohei

Dept of Pulmonary Medicine & Clinical Immunology  
Dokkyo University School of Medicine  
Mibu  
Japan

#### Roles:

- Phase Three Principal Investigator for Tochigi

#### Dr Kumiya Sugiyama

Department of Medicine and Clinical Immunology  
Dokkyo University School of Medicine  
Mibu  
Japan

#### Roles:

- Phase Three collaborator for Tochigi

## Local Publications

The following publications used ISAAC data from the Tochigi centre:

Sugiyama S, Sugiyama T, Toda M, Yukawa T, Makino S, Fukuda T. *Prevalence of asthma, rhinitis and eczema among 13-14-year-old schoolchildren in Tochigi, Japan.* Allergol Int 2000; 49(3): 205-211.

Sugiyama T, Sugiyama K, Toda M, Yukawa T, Makino S, Fukuda T. *Risk factors for asthma and allergic diseases among 13-14-year-old schoolchildren in Japan.* Allergol Int 2002; 51(2): 139-150.

Regional

National

Local

Tiranë

Tobago

Tochigi

# The ISAAC Story



Tokelau



Tokelau



Tokelau

Fakaofu island -  
Tokelau average island

## Tokelau Centre

Phase Three			
<b>Centre:</b>		Tokelau, Tokelau ( Oceania )	
<b>Principal Investigator:</b>		Dr Tekie Iosefa	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	June 2003 to June 2003
<b>Sampling Frame:</b>		13-14yr: All schools in Tokelau	

### Personnel

#### Dr Tekie Iosefa

Chief Health Advisor  
Ministry of Health  
Tokelau

#### Roles:

- National Coordinator for Tokelau
- Phase Three Principal Investigator for Tokelau

## Toluca Centre

Phase Three			
<b>Centre:</b>		Toluca, Mexico ( Latin America )	
<b>Principal Investigator:</b>		Dr Francisco J Linares-Zapién	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	September 2002 to October 2002
<b>Sampling Frame:</b>		All public schools in Toluca area	

### Personnel

#### Dr Francisco J Linares-Zapién

Facultad de Medicina  
Universidad Autónoma del Estado de México  
Hidalgo Poniente 1052, Interior "D"  
Colonia San Bernardino  
Mexico

#### Roles:

- Phase Three Principal Investigator for Toluca

## Tong Zhou Centre

Phase Three			
<b>Centre:</b>		Tong Zhou, China ( Asia-Pacific )	
<b>Principal Investigator:</b>		Professor Yu-Zhi Chen	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	November 2001 to January 2002
<b>Sampling Frame:</b>		13-14yr: Some schools in Tongzhou	

### Personnel

#### Professor Yu-Zhi Chen

Capital Institute of Pediatrics  
No 2 Ya Bao Road  
Beijing  
China



#### Roles:

- National Coordinator for China
- Phase Three Principal Investigator for Tong Zhou

## ISAAC in China

China is a very large country, and there were several studies about asthma prevalence in 1990 and also in 2000. A nationwide and randomized survey on the prevalence of childhood asthma in 2000, compared with the same study in 1990, covered 31 provinces and 43 cities, including a population of 437873 children aged 0-14 years. The results show us that there was a concerning increase in asthma prevalence. But they had a different methodology than ISAAC Study. For this reason we considered it very important to join ISAAC. We thought joining the ISAAC study would let us get data about asthma and allergies prevalence in different cities in China and give us the opportunity of comparing our data with the data of other countries involved in this study. With ISAAC we also expected to achieve a better understanding and treatment of our patients.

When we knew that an international study about asthma and allergies was being prepared. We were very enthusiastic about including 5 cities of mainland China in that study in 1994 ISAAC Phase One. The 5 cities were Beijing, Shanghai, Guangzhou, Chongqing and Urumqi, and we worked very hard do the study.

In ISAAC Phase Two study, as the study was more difficult than Phase One, and only needed a few centres to take part in it, we chose 2 centres, Beijing and Guangzhou, to join the Phase Two study. Especially, our team did a lot of difficult work in the study. For example, in the dust collection work, you could imagine how hard it was to go to 200 children's home when the pupils were dismissed from school, and to get the dust from those children's bed, floor, etc.

Regional

National

Local

Tokelau

Toluca

Tong Zhou

# The ISAAC Story

Regional

National

Local

Tong Zhou

Torino

Trent

In Phase Three China, a new centre, Tongzhou (Beijing rural) was added to the study in the 13-14 years group. Tongzhou is an area about 50km away from the Beijing urban city that included children from farmland. It was very important to have the centre within the study, so we could compare the result of Tongzhou with Beijing urban city, and to have a better understanding of the prevalence and mechanism of asthma and allergic diseases. And finally, we found that the wheezing and allergic diseases prevalence were much lower in rural Beijing students than in urban Beijing students, and also the prevalence of positive allergy of SPT was much lower in rural Beijing students than in urban Beijing students.

Overall, in 12 years of ISAAC Study from Phase I to Phase III, about 90,000 Chinese children joined the study, and 25,000 Beijing children joined the study.

And more, for the I-III ISAAC Study, we got the award of "Science and Technology Advancement Prize" awarded by the Beijing Municipal Government in 2006, and received 20000 RMB prize.

## Torino Centre

Phase One			
<b>Centre:</b>		Torino, Italy ( Western Europe )	
<b>Principal Investigator:</b> Dr Giovannino Ciccone			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 1994 to December 1994
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Torino, Italy ( Western Europe )	
<b>Principal Investigator:</b> Dr Giovannino Ciccone			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 2002 to April 2002
<b>Sampling Frame:</b>		All schools in the city of Turin (the same sampling frame for Phase One).	

### Personnel

#### Dr Giovannino Ciccone

Epidemiologia dei Tumori  
S. Giovanni Battista Hospital  
CPO Piemonte  
Via Santena, 7  
Italy

#### Roles:

- Phase One Principal Investigator for Torino
- Phase Three Principal Investigator for Torino

## Trent Centre

Phase One			
<b>Centre:</b>		Trent, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b> Professor H Ross Anderson			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in North West region and all schools from a random selection of 4 metropolitan districts from the metropolitan county. Stratified by county/metropolitan district, followed by random sampling of one school from each area.	

### Personnel

#### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
United Kingdom



#### Roles:

- ISAAC Steering Committee
- National Coordinator for United Kingdom
- Phase One Principal Investigator for Trent

#### Dr Balvinder Kaur

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

#### Roles:

- Phase One collaborator for Trent

#### Dr Jan Poloniecki

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

#### Roles:

- Phase One collaborator for Trent

This centre formed part of a national initiative throughout the United Kingdom, as described on the UK country-level page . Resulting publications are listed on the UK national page.

# The ISAAC Story

## Trento Centre

<b>Phase One</b>			
<b>Centre:</b>		Trento, Italy ( Western Europe )	
<b>Principal Investigator:</b> Dr Silvano Piffer			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		Province	
<b>Phase Three</b>			
<b>Centre:</b>		Trento, Italy ( Western Europe )	
<b>Principal Investigator:</b> Dr Silvano Piffer			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	February 2002 to March 2002
<b>Sampling Frame:</b>		All schools in Trento Province (the same as Phase One).	

## Personnel

### Mr Antonio Chistofolini

Servizio Medicina del Lavoro  
Somial 1  
Via Brennero, 286/6  
Italy

#### Roles:

- Phase Three collaborator for Trento

### Dr Silvano Piffer

Epidemiologist, Osservatorio  
Epidemiologico  
Azienda Provinciale per I  
Servizi Sanitari  
Centro per i Servizi Sanitari  
Viale Verona, 38123 Trento  
Italy



#### Roles:

- Phase One Principal Investigator for Trento
- Phase Three Principal Investigator for Trento

## Trentino Province Coordinator ISAAC II (Sidria 1) e ISAAC III (Sidria 2)

Trentino province (north Italy) was a partner of Italian network of ISAAC Phase One and Three. The name of the Italian network was SIDRIA 1 and SIDRIA 2 (Studi Italiani sui Disturbi Respiratori nell'Infanzia e l'Ambiente). SIDRIA 1 took place in 1995-96 and in Trentino province exclusively involved all boys/girls attending the third year of 2° primary school (13-14 year). SIDRIA 2 took place in 2001-2002 and in Trentino (as in other Italian SIDRIA/ISAAC centers) involved a sample of 6-7 years boys/girls and a sample of 13-14 years boys/girls.

Trentino province is a highly mountainous area, where People do not think there are some problems with asthma and allergies. The studies about allergies and asthma prevalence in the general population (adult and/or childhood) were so very scarce.

In SIDRIA 1 (1995-96) We studied 4426 subjects 13-14 years old. Not considering the publications of national data on Italian and international medical journals as SIDRIA Group, we locally spread the data, to general population and healthcare professionals, starting from 1997. A great interest has been raised especially by pediatricians and pneumologist who arranged for the first time data on asthma and allergy at the population level. The data of SIDRIA 1 were also used and presented during a refresher course for pediatrician held in Trento in 1998-99.

In SIDRIA 2 (2001-02) We studied a sample of 2.359 subjects 6-7 years old and a sample of 1362 subjects 13-14 years old. Not considering the publications of national data on Italian and international medical journals as SIDRIA Group (second Phase), we locally spread the data, to general population and healthcare professionals, starting from 2003. Locally the data of SIDRIA 2 were used jointly with Trento University (Mathematics Institute) for doing spatial evaluation in association or not with the distribution of environmental pollutants. A great interest has been raised especially by hygienist so that the data were also used for exploring the association to specified point source pollution. The data of SIDRIA 2 were also used and presented during a local refresher course for hygienist held in Trento, by the Local Health Authority, in 2004-2005.

Finally SIDRIA 1 and SIDRIA 2 represented a unique opportunity for Department of Epidemiology of Trento to explore and increase the knowledge about the theme of the epidemiology of asthma and allergies in childhood.



Map of Trento



Map of Trento



Map of Italy



Dolomite mountains, Trento, Italy



Dolomite mountains, Trento, Italy

Regional  
National  
Local

Trento

# The ISAAC Story

Regional

National

Local

Trento

Tromsø

Turku and

Pori County

Urban Cote d

Ivoire

## SOME GEOGRAPHIC CHARACTERISTICS OF TRENTO PROVINCE

- Total resident population: 520,000 (12.31.2009)
- Provincie surface: 6,206,88 SqKm
- Total Municipalities: 223
- The province in highly mountainous
- Habitats and nature reserve: about 30% total surface
- Forests: about 50% d total surface
- Unproductive area: 16 %
- Urbanized area: 3.27%

Dolomites (right) are the mountains for which the Province of Trento is well known in the world

## Tromsø Centre

Phase Two			
<b>Centre:</b>		Tromsø, Norway ( Western Europe )	
<b>Principal Investigator:</b>		Dr Wenche Nystad	
<b>Age Groups:</b>	9-11,	<b>Timeframe:</b>	March 2000 to June 2000.
<b>Sampling Frame:</b>		All schools in the counties of Troms and Finnmark.	

### Personnel

#### Dr Wenche Nystad

Section of Epidemiology  
Department of Health & Society  
National Institute of Public Health  
P O Box 4404, Torshov  
Norway

#### Roles:

- Phase Two Principal Investigator for Tromsø

## Turku and Pori County Centre

Phase One			
<b>Centre:</b>		Turku and Pori County, Finland ( Northern and Eastern Europe )	
<b>Principal Investigator:</b>		Dr Turku Antti Koivikko	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in Turku and Pori County	

### Personnel

#### Dr Turku Antti Koivikko

Department of Paediatrics  
Turku University Hospital  
Kiinanmyllynkatu 4-7  
Finland

#### Roles:

- Phase One Principal Investigator for Turku and Pori County

## Urban Cote d Ivoire Centre

Phase Three			
<b>Centre:</b>		Urban Cote d Ivoire, Cote d'Ivoire ( Africa )	
<b>Principal Investigator:</b>		Dr Bernard Ngoran Koffi	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	May 2001 to June 2001
<b>Sampling Frame:</b>		13-14yr: All children in the schools except white children	

### Personnel

#### Dr Bernard Ngoran Koffi

27 BP 340  
Côte D'Ivoire

#### Roles:

- National Coordinator for Côte D'Ivoire
- Phase Three Principal Investigator for Urban Cote d Ivoire

# The ISAAC Story

## Urfahr-Umgebung Centre

Phase One			
<b>Centre:</b>		Urfahr-Umgebung, Austria ( Western Europe )	
<b>Principal Investigator:</b> Associate Professor Gerald Haidinger			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: November 1995 to February 1996 6-7yr: May 1995 to May 1995
<b>Sampling Frame:</b>		13-14yr: All children attending the 3rd and 4th grade of secondary school. 6-7yr: All children attending pre-school classes or 1st and 2nd grade elementary school.	
Phase Three			
<b>Centre:</b>		Urfahr-Umgebung, Austria ( Western Europe )	
<b>Principal Investigator:</b> Associate Professor Gerald Haidinger			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	January 2003 to March 2003
<b>Sampling Frame:</b>		All schools in the district Urfahr-Umgebung	

### Personnel

#### Associate Professor Gerald Haidinger

Department of Epidemiology  
Centre of Public Health  
Medical University of Vienna  
Borschkegasse 8a, 1090 Vienna  
Austria



#### Roles:

- National Coordinator for Austria
- Phase One Principal Investigator for Urfahr-Umgebung
- Phase Three Principal Investigator for Urfahr-Umgebung



Regional  
National  
Local

Urfahr-  
Umgebung  
Uruguaiiana  
Valdivia

## Local Publications

The following publications used ISAAC data from the Uruguaiiana centre:

da Silva ER, Sly PD, de Pereira MU, Pinto LA, Jones MH, Pitrez PM, Stein RT. *Intestinal helminth infestation is associated with increased bronchial responsiveness in children.* *Pediatr Pulmonol* 2008; 43(7):662-665.

## Uruguaiiana Centre

Phase Two			
<b>Centre:</b>		Uruguaiiana, Brasil ( Latin America )	
<b>Principal Investigator:</b> Professor Renato Stein			
<b>Age Groups:</b>	, ,	<b>Timeframe:</b>	March 2003 to March 2004.
<b>Sampling Frame:</b>		A randomly chosen sample of children enrolled in the fourth and fifth middle-school levels of the public system of a small town, Uruguaiiana, in the extreme south of Brazil.	

### Personnel

#### Professor Renato Stein

Pediatric Pulmonary Unit  
Department of Pediatrics  
Pontificia Universidade Catolica RS  
Av Ipiranga, 6690 conj. 420  
Brasil

#### Roles:

- Phase Two Principal Investigator for Uruguaiiana

## Valdivia Centre

Phase One			
<b>Centre:</b>		Valdivia, Chile ( Latin America )	
<b>Principal Investigator:</b> Dr Mario A Calvo			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: April 1994 to May 1995 6-7yr: April 1994 to July 1995
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Valdivia, Chile ( Latin America )	
<b>Principal Investigator:</b> Dr Mario A Calvo			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	June 2001 to April 2002
<b>Sampling Frame:</b>		All schools inside urban valdivia (Phase One included three cities, Valdivia, Osorno, Puetto Montt). "I think that our data correspond to phase III. Though our data in 1994 included three cities (Valdivia, Osorno and Puerto Montt) these three cities are geographically in the same area, share the same kind of climate and genetically the same type of population. In that opportunity results were similar when contrasting one city with the other showing no difference among them. Therefore according to my knowledge I consider that they should be analyzed as Phase III	



# The ISAAC Story

## Personnel

### Pamela Arellano

Nurse  
Chile

#### Roles:

- Phase One collaborator for Valdivia
- Phase Three collaborator for Valdivia

### Dr Mario A Calvo

Professor of Pediatrics  
Instituto de Pediatría  
Facultad de Medicina  
Universidad Austral de Chile  
Chile



#### Roles:

- Phase One Principal Investigator for Valdivia
- Phase Three Principal Investigator for Valdivia

### Maria Ines Guarda

Secretary  
Chile

#### Roles:

- Phase One collaborator for Valdivia
- Phase Three collaborator for Valdivia

### Dr Adriana Kyling

Chile

#### Roles:

- Phase One collaborator for Valdivia
- Phase Three collaborator for Valdivia

### Francisco Marin

statistician  
Chile

#### Roles:

- Phase One collaborator for Valdivia
- Phase Three collaborator for Valdivia

### Dr Maria Ines Sanhueza

Chile

#### Roles:

- Phase One collaborator for Valdivia
- Phase Three collaborator for Valdivia

### Dr Alexis Strickler

Chile

#### Roles:

- Phase One collaborator for Valdivia
- Phase Three collaborator for Valdivia

The city of Valdivia is located 850 Km south of Santiago, the capital of Chile. We learned about the ISAAC project Phase I, from Javier Mallol, MD, Project Coordinator in Chile who contacted and motivated us to get involved in the project. It was quite appealing for us to participate in a study using the same methodology and a validated questionnaire, to assess and to confirm the data the daily practice was providing us: the high frequency of the allergic diseases and their impact in the quality of life of those who suffered them. We quickly understood the importance of this Project and together with Nurse Pamela Arellano, planned the work. In that period, the population of Valdivia was about 140,000 inhabitants without centralized information on the number of students attending school and on the number of students with the required age to be included in the Project (6-7 years and 13-14 years).

The only way to obtain the required data was to visit every school, and then we thought that we would not have the minimum number of patients required in each age group (3,000 each). Therefore, we contacted colleagues in neighboring cities of Valdivia with similar population group regarding ethnic, cultural and economical characteristics. In Osorno Adriana Kyling, MD and Maria Ines Sanhueza, MD and in Puerto Montt, Alexis Strickler, MD, actively participated in the project.

Our enthusiasm and the excellent support and collaboration of the colleagues who directed and direct the Project allowed us to succeed. The collaboration of teachers, parents and students who participated in the project was fundamental to carry out the interviews to the parents attending to the class meetings and to the students within their school schedules.

The incorporation of the collected data into the program was possible due to the orientation provided by Francisco Marin, statistician and to the work of Maria Ines Guarda, secretary.

The study in phase III, carried out 8 years later, encountered a different reality in our city. There was centralized information about the number of students and their age group that allowed us to plan the work in Valdivia, exclusively. Phase III was carried out the same as the previous Phase I and with the same group of professionals. The very good collaboration of the participants in phase I was similar in this phase of the project, thus facilitating the adequate accomplishment of the project's goals.

Data obtained in this very important study was made available to the authorities and it has influenced positively in the planning of different sanitary policies. The investigators participating in the project feel that we have acquired great training on planning and carrying out research works.

The research team participating in the ISAAC project wishes to thank to all of those who have led it and that allowed us to participate in it.

Regional

National

Local

Valdivia

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from the Valencia centre:

Morales Suárez-Varela MM, González AL, Martínez Selva MI. *Socioeconomic risk factors in the prevalence of asthma and other atopic diseases in children 6 to 7 years old in Valencia Spain.* Eur J Epidemiol 1999; 15(1): 35-40.

García-Marcos L, Ruiz TR, García-Hernández G, Morales Suárez-Varela MM, Valverde-Molina J, Sánchez-Solis M. *Asthma and rhinoconjunctivitis comorbidity United airway disease or inherited target organs?* Pediatr Allergy Immunol 2010; 21 (1): e142-e148. E pub 7 Apr 2009.

Morales Suárez-Varela MM, García-Marcos AL, González DC, et al. *Prevalence of atopic eczema and nutritional factors in 6-7 year old children.* [article in spanish]. Aten Primaria 2007; 39(7):355-360.

Arnedo-Pena A, García-Marcos L, Fernández-Espinar JF, Bercedo-Sanz A, Aguinaga-Ontoso I, González-Díaz C, Carvajal-Urueña I, Busquet-Monge R, Suárez-Varela MM, de Andoín NG, Batlles-Garrido J, Blanco-Quirós A, López-Silvarrey Varela A, García-Hernández G. *Sunny hours and variations in the prevalence of asthma in schoolchildren according to the International Study of Asthma and Allergies (ISAAC) Phase III in Spain* Int J Biometeorol 2011; 55(3): 423-434

## Valencia Centre

<b>Phase One</b>			
<b>Centre:</b>		Valencia, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Professor Maria M. Morales-Suárez-Varela	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	June 1994 to December 1994
<b>Sampling Frame:</b>			
<b>Phase Two</b>			
<b>Centre:</b>		Valencia, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Professor Maria M. Morales-Suárez-Varela	
<b>Age Groups:</b>	10-11 years,	<b>Timeframe:</b>	December 2000 to December 2001.
<b>Sampling Frame:</b>			
A geographic sampling frame was based on the Valencia city district.			
<b>Phase Three</b>			
<b>Centre:</b>		Valencia, Spain ( Western Europe )	
<b>Principal Investigator:</b>		Professor Maria M. Morales-Suárez-Varela	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	June 2002 to December 2002
<b>Sampling Frame:</b>			
All schools in Valencian City area. Same Sampling frame used in Phase One.			

## Personnel

### Professor Maria M. Morales Suárez-Varela

Professor of Epidemiology and Public Health  
Unit of Public Health, Hygiene, and Environmental care  
Department of Preventive Medicine,  
University of Valencia,  
Spain



#### Roles:

- Phase One Principal Investigator for Valencia
- Phase Two Principal Investigator for Valencia
- Phase Three Principal Investigator for Valencia

## Why was this centre selected for ISAAC?

The International Study of Asthma and Allergies in Childhood (ISAAC) (ISAAC Group 1998) revealed substantial regional and seasonal variations in the frequency of atopic diseases. A potential role of climatic conditions in the aetiology of atopic diseases has long been suspected. Some studies on the effects of climate have investigated the association of variations in climate or meteorological conditions with the occurrence or severity of symptoms of atopic diseases (Charpin et al. 1988, 1991; Vocks et al. 2001; Weiland et al. 2004). In Spain, there are three climatic regions (Atlantic, Mediterranean and Continental) and a homogeneous population. Valencia is a Mediterranean region, which can be compared with the different climatic areas of Spain with the standardised methodology of ISAAC.

## Our experience of ISAAC

In the study area (Valencia), there were 286 schools for schoolchildren aged 6-7 and 13-14 years. Of the 286 schools, 98 participated in the ISAAC study.

## References

1. ISAAC (1998) The International Study of Asthma and Allergies in Childhood (ISAAC). Steering Committee. Worldwide variation in prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and atopic eczema: ISAAC. Lancet 1998 351: 1225-1232.
2. Charpin D, Kleisbauer J, Lanteaume A (1988) Asthma and allergy to house dust mites in populations living in high altitudes. Chest 93: 758-761
3. Charpin D, Birnbaum J, Haddi E (1991) Altitude and allergy to house dust mites. Am Rev Respir Dis 143: 983-986
4. Vocks E, Busch R, Frohlich C, Borelli S, Mayer H, Ring J (2001) Influence of weather and climate on subjective symptom intensity in atopic eczema. Int J Biometeorol 45: 27-33
5. Weiland SK, Hüsing A, Strachan DP, Rzehak P, Pearce N (2004) Climate and the prevalence of symptoms of asthma, allergic rhinitis, and atopic eczema in children. Occup Environ Med 61: 609-615

## Acknowledgements

We wish to thank the Spanish Ministry of Health and Consumer Affairs, the International Luis Vives Rotary Foundation (Valencia), the General Public Health Office of the Regional Valencian Government and all the parents who kindly participated and gave us some of their time.

Regional  
National  
Local

**Valencia**

# The ISAAC Story



Regional

National

Local

Valladolid

Vancouver

Verona

Villahermosa

## Valladolid Centre

Phase One			
<b>Centre:</b>		Valladolid, Spain ( Western Europe )	
<b>Principal Investigator:</b> Professor Alfredo Blanco-Quirós			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		Random selection of schools according the urban and country childhood population of Valladolid	
Phase Three			
<b>Centre:</b>		Valladolid, Spain ( Western Europe )	
<b>Principal Investigator:</b> Professor Alfredo Blanco-Quirós			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	January 2002 to November 2002
<b>Sampling Frame:</b>		13-14yr: All schools in Valladolid region (Spain)	

### Personnel

#### Professor Alfredo Blanco-Quirós

Departamento de Pediatría  
Facultad de Medicina  
Ramón y Cajal, 7.  
Spain

#### Roles:

- Phase One Principal Investigator for Valladolid
- Phase Three Principal Investigator for Valladolid

## Vancouver Centre

Phase Three			
<b>Centre:</b>		Vancouver, Canada ( North America )	
<b>Principal Investigator:</b> Professor Alex Ferguson			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	May 2003 to June 2003
<b>Sampling Frame:</b>		13-14yr: All schools in Vancouver area	

### Personnel

#### Professor Alex Ferguson

Department of Pediatrics  
University of British Columbia  
Canada

#### Roles:

- Phase Three Principal Investigator for Vancouver

## Verona Centre

Phase One			
<b>Centre:</b>		Verona, Italy ( Western Europe )	
<b>Principal Investigator:</b> Professor Attilio Boner			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	13-14yr: March 1994 to March 1994 6-7yr: March 1994 to April 1994
<b>Sampling Frame:</b>			

### Personnel

#### Professor Attilio Boner

Clinica Pediatrica  
Università di Verona  
Policlinico Borgo Roma  
Via delle Menegone  
Italy

#### Roles:

- Phase One Principal Investigator for Verona

## Villahermosa Centre

Phase Three			
<b>Centre:</b>		Villahermosa, Mexico ( Latin America )	
<b>Principal Investigator:</b> Dr Sergio Romero-Tapia			
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	June 2002 to June 2003
<b>Sampling Frame:</b>		13-14yr: Some schools are public and private, in Villahermosa, Tabasco. México. 6-7yr: All schools in Villahermosa Area.	

## Local Publications

The following publications used ISAAC data from the Valladolid centre:

Arnedo-Pena A, García-Marcos L, Fernández-Espinar JF, Bercedo-Sanz A, Aguinaga-Ontoso I, González-Díaz C, Carvajal-Uruña I, Busquet-Monge R, Suárez-Varela MM, de Andoín NG, Batlles-Garrido J, Blanco-Quirós A, López-Silvarrey Varela A, García-Hernández G *Sunny hours and variations in the prevalence of asthma in schoolchildren according to the International Study of Asthma and Allergies (ISAAC) Phase III in Spain* Int J Biometeorol 2011; 55(3): 423-434

## Local Publications

The following publications used ISAAC data from the Vancouver centre:

Wang H-Y, Pizzichini MMM, Becker AB, Duncan JM, Ferguson AC, Greene JM, Rennie DC, Senthilselvan A, Taylor BW, Sears MR. *Disparate geographic prevalences of asthma, allergic rhinoconjunctivitis and atopic eczema among adolescents in five Canadian cities.* Pediatr Allergy Immunol 2010; 21(5): 867-877.

## Local Publications

The following publications used ISAAC data from the Verona centre:

Peroni DG, Piacentini GL, Zizzo MG, Boner AI. *Prevalence of asthma and respiratory symptoms in childhood in an urban area of north-east Italy.* Monaldi Arch Chest Dis. 1998 Apr;53(2):134-7.

# The ISAAC Story

## Personnel

### Dr Sergio Romero-Tapia

Hospital del Niño "Dr. Rodolfo Nieto Padrón"  
Avenida Gregoria Mendez Magaña No. 2832  
Col. Tamulte  
CP 86,100 Villahermosa  
Mexico

#### Roles:

- Phase Three Principal Investigator for Villahermosa

## Viterbo Centre

Phase One			
<b>Centre:</b>		Viterbo, Italy ( Western Europe )	
<b>Principal Investigator:</b>		Mr Guiseppe Corbo	
<b>Age Groups:</b>	6-7	<b>Timeframe:</b>	November 1994 to December 1994
<b>Sampling Frame:</b>		6-7yr: Local Health Authority	

## Personnel

### Mr Guiseppe Corbo

Servizio di Fisiopatologia Respiratoria  
Università Cattolica del Sacro Cuore  
Largo F. Vito 1  
Italy

#### Roles:

- Phase One Principal Investigator for Viterbo

## Vitória da Conquista Centre

Phase Three			
<b>Centre:</b>		Vitória da Conquista, Brasil ( Latin America )	
<b>Principal Investigator:</b>		Associate Professor Leda de Freitas Souza	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	May 2002 to August 2002
<b>Sampling Frame:</b>		All schools in Vitória da Conquista area	

## Personnel

### Associate Professor Leda de Freitas Souza

Faculty of Medicine  
Universidade Federal da Bahia  
Rua Alm. Ernesto Mello Jr. 79 (Pituba)  
Salvador 41820-060  
Brasil

#### Roles:

- Phase Three Principal Investigator for Vitória da Conquista

## Local Publications

The following publications used ISAAC data from the Wales centre:

Anderson HR, Ruggles R, Strachan DP, Austin JB, Burr M, Jeffs D, Standring P, Steriu A, Goulding R. *Trends in prevalence of symptoms of asthma, hay fever, and eczema in 12-14 year olds in the British Isles, 1995-2002 a questionnaire survey.* BMJ 2004; 328(7447): 1052-3.

## Wales Centre

Phase One			
<b>Centre:</b>		Wales, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Professor H Ross Anderson	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		All schools in Wales, stratified by county.	
Phase Three			
<b>Centre:</b>		Wales, United Kingdom ( Western Europe )	
<b>Principal Investigator:</b>		Dr Michael Burr	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	February 2002 to March 2002
<b>Sampling Frame:</b>		13-14yr: Comprehensive schools in Wales. Same schools chosen and 5 of the original schools agreed, 3 refused, so 3 more schools randomly selected.	

## Personnel

### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
United Kingdom



#### Roles:

- ISAAC Steering Committee
- National Coordinator for United Kingdom
- Phase One Principal Investigator for Wales

### Dr Michael Burr

Department of Primary Care & Public Health  
Cardiff University Neuadd Meirionnydd  
Heath Park  
United Kingdom

#### Roles:

- Phase Three Principal Investigator for Wales

Regional

National

Local

Villahermosa

Viterbo

Vitória da

Conquista

Wales

# The ISAAC Story

Regional

National

Local

Wales

## Dr Balvinder Kaur

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

### Roles:

- Phase One collaborator for Wales

## Dr Jan Poloniecki

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

### Roles:

- Phase One collaborator for Wales

## Why this centre was chosen

In ISAAC Phase 1, Wales was included as part of the United Kingdom centre, whereas in Phase 3 it functioned as a distinct centre. The age group (13-14 years), the sampling frame, the method of selecting schools (one comprehensive school from each education authority area in Wales) and the survey procedure were the same on both occasions, so the findings are comparable, and reflect the situation across the whole of Wales rather than in one area.

Wales was selected as a centre partly because it is a distinct part of the UK, with its own cultural traditions, and partly because several other epidemiological studies of asthma have been conducted here, including repeat surveys of asthma in schoolchildren and the European Community Respiratory Health Survey in young adults.

## Our experience of ISAAC

There is a widespread belief in Wales that asthma is particularly common and severe here. This belief was advantageous to us, in that most of the schools were interested and co-operative in the survey, as addressing a topic that the staff saw as important.

We also used the opportunity to conduct a subsidiary survey on children with symptoms of eczema. The ISAAC questionnaire that we used contained a supplementary questionnaire for children who had experienced an itchy rash or eczema in the last 12 months. This presented a list of 19 factors for which there is some evidence of favourable or unfavourable effects on eczema, and the children were asked to indicate whether each factor made the rash better, if it made it worse, if had no effect, or if they did not know its effects. They were also asked to report any other factors that they thought might influence the rash. So far as we know, this is the first population-based survey of children's perceptions of exacerbating and relieving factors in eczema, as distinct from studies in special groups such as hospital patients. It therefore provides information about the whole range of the disease.

## Findings for this centre

Contrary to the local belief, the prevalence of wheeze in Wales is not markedly different from that reported from other parts of the UK, although it is in relation to many other parts of the world. There are also no gross disparities in the indices of severity between Wales and South-east England or Scotland.

Comparison with Phase 1 data showed that the 12-month prevalence of wheeze fell from 33.6% in 1995 to 27.5% in 2002, although lifetime prevalence of reported asthma rose from 21.8% to 27.1%. Another repeat survey of schoolchildren in the Cardiff area showed that wheeze in the past 12 months rose from 15.2% in 1988 to 19.7% in 2003, and "wheeze ever" from 22.3% to 28.0%. Thus, while both studies show a rise in lifetime prevalence, there is some apparent conflict as to whether the 12-month prevalence of asthma has recently been increasing or decreasing. Possible explanations might involve the following considerations:

- The prevalence of asthma symptoms may have peaked in the mid-1990s.
- Year-on-year fluctuations in the prevalence of wheeze, due to differences in the incidence of virus infections or bad weather, could falsely suggest a temporal trend when surveys in two different years are compared.
- Children in the Cardiff survey were younger (aged 11-12 years) than those in the ISAAC survey; perhaps teenagers are tending to grow out of asthma symptoms earlier.

The supplementary questionnaire about factors that children believe aggravate or alleviate eczema was answered by 90% (225 out of 250) of those who reported eczema symptoms. Sweating from exercise, fabrics (especially wool) and hot weather were the exacerbating factors most often identified (by about 40% of responders in each case), while steroid creams, moisturizers/makeup and medicines/tablets were the three principal relievers. Only 5% of responders believed that symptoms were aggravated by certain foods or drinks, which is somewhat surprising, given the widespread belief that food allergy is an important component of atopic eczema.

Although these findings do not demonstrate the extent to which various factors actually influence eczema, they suggest their relative importance, particularly as perceived by affected children.

# The ISAAC Story

## Local Publications

The following publications used ISAAC data from the Wellington centre:

Wickens KL, Crane J, Kemp TJ, Lewis SJ, D'Souza WJ, Sawyer GM, Stone ML, Tohill SJ, Kennedy JC, Slater TM, Pearce NE. *Family Size, Infections, and Asthma Prevalence in New Zealand Children*. *Epidemiology* 1999;10:699-705.

Ellison-Loschmann L, Gray M, Cheng S, Pearce N. *Follow-up study of asthma severity in Maori adolescents*. *Aust Epidemiol* September 2008; 15(2): 4-10.

## Wellington Centre

Phase One			
<b>Centre:</b>		Wellington, New Zealand ( Oceania )	
<b>Principal Investigator:</b>		Professor Julian Crane	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	November 1992 to August 1993
<b>Sampling Frame:</b>			
Phase Three			
<b>Centre:</b>		Wellington, New Zealand ( Oceania )	
<b>Principal Investigator:</b>		Professor Neil Pearce	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	March 2001 to March 2002
<b>Sampling Frame:</b>		All schools in the Wellington City, Porirua City and Lower Hutt City Areas. The same sampling frame was used for both Phase One and Phase Three.	

## Personnel

### Soo Cheng

Centre for Public Health Research  
Massey University - Wellington Campus  
New Zealand

#### Roles:

- Phase Three collaborator for Wellington

### Professor Julian Crane

Wellington Asthma Research Group  
Wellington School of Medicine,  
University of Otago Wellington  
P O Box 7343  
Wellington South  
New Zealand



#### Roles:

- ISAAC Steering Committee
- Phase One Principal Investigator for Wellington

### Dr Wendyl D'Souza

23 John St  
Clifton Hill  
Australia

#### Roles:

- Phase One collaborator for Wellington

### Dr Lis Ellison-Loschmann

Centre for Public Health Research  
Massey University - Wellington Campus  
Private Bag 756  
New Zealand



#### Roles:

- Phase Three collaborator for Wellington

### Dr Sunia Foliaki

Director  
Research Unit  
Ministry of Health  
P.O. Box 59  
Kingdom Of Tonga



#### Roles:

- ISAAC Steering Committee
- Regional Coordinator for Oceania
- Phase Three collaborator for Wellington

### Pip Hall

Centre for Public Health Research  
Massey University - Wellington Campus  
New Zealand

#### Roles:

- Phase Three collaborator for Wellington

### Ben Harding

Centre for Public Health Research  
Massey University - Wellington Campus  
New Zealand

#### Roles:

- Phase Three collaborator for Wellington

### Nyk Huntington

Centre for Public Health Research  
Massey University - Wellington Campus  
New Zealand

#### Roles:

- Phase Three collaborator for Wellington

### Clare Macdonald

Centre for Public Health Research  
Massey University - Wellington Campus  
New Zealand

#### Roles:

- Phase Three collaborator for Wellington

Regional

National

Local

Wellington

# The ISAAC Story

Regional  
National  
Local

Wellington  
West Algiers

## Professor Neil Pearce

Centre for Public Health  
Research  
Massey University - Wellington  
Campus  
Private Bag 756  
Courier Address: 102 Adelaide  
Rd  
New Zealand



### Roles:

- ISAAC Executive
- ISAAC Steering Committee
- Phase Three Principal Investigator for Wellington

## Phase Three

The Massey University Centre for Public Health Research was created in 2000. It was headed by Professor Neil Pearce (ISAAC Executive and Steering Committee member) and accordingly it was decided that CPHR would conduct the Phase III survey in Wellington. Lis Ellison Loschmann included the ISAAC Phase III findings in her PhD on asthma in Maori - the first PhD in epidemiology (anywhere in the world) to be completed by an indigenous health researcher.

## Phase One

The staff of the Wellington Asthma Research Group were involved in the development of ISAAC even before it was ISAAC! Initially we were developing the video asthma questionnaire for use in various surveys and were invited to the initial meeting in Bochum which was the pre-birthplace of ISAAC in order to primarily talk about the video questionnaire's use.

We were involved in piloting the video questionnaire in schools prior to undertaking the ISAAC study piloting both the written questionnaire versions together with the video questionnaire and then looking at the ability of both to predict airway hyper responsiveness as a marker of asthma. We had a number of staff working on the Wellington data centre in particular, Dr Wendy D'Souza who ran the Wellington component of the study in the field and he together with two or three other staff visited the schools and organised both the parental completion for the 6-7-year-olds and the video and written components of the 13-14-year-olds. In many ways we had an additional interest and enthusiasm for the study in its early stages because of the novel questionnaire we were developing and because of our early commitment to the whole idea of undertaking international comparisons using simple tools. We had already run the ECRHS study in three centres in New Zealand, and further studies of children made a lot of sense.

One issue that I do recall either in the very early days of the ISAAC fieldwork or in a pre-testing phase where we were showing the video and comparing it with the written we came back from one school having completed the questionnaires and shown the video only to find an urgent message to be in touch with our local hospital Ethics Committee chairperson. It turned out that we had one particular school in Wellington where we had shown the video questionnaire to a group of children that included two children from a particularly strict religious sect who did not routinely use television or watch films in any form and the parents were upset that we had done this. This is something we had not contemplated during the development of the study although it did lead us to ask whether there were any children in future surveys whose parents did not allow them to watch television or see video images and these children had to be excluded – there were very few but it was the first time I had realised that there could be ethical issues showing a video questionnaire. In the end the issue was resolved and the parents understanding of our intentions.

Dr D'Souza who undertook these studies went on to use this data for his PhD, the initial study thus being an extremely useful contribution to his academic development as well as our involvement in the ISAAC project.

Julian Crane  
Wellington Asthma Research Group  
Wellington

## Wilaya of Algiers Centre

<b>Phase One</b>			
<b>Centre:</b>		West Algiers, Algeria ( Africa )	
<b>Principal Investigator:</b>		professor Badia Benhabylès	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		A random sample of all middle schools in Wilaya of Algiers.	
<b>Phase Three</b>			
<b>Centre:</b>		Wilaya of Algiers, Algeria ( Africa )	
<b>Principal Investigator:</b>		Professor Badia Benhabylès	
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	April 2002 to May 2002
<b>Sampling Frame:</b>		13-14yr: A random sample of middle schools in Algiers Department. The sampling frame is exactly the same as the sampling frame in Phase One.	

# The ISAAC Story

## Personnel

### Professor Badia Benhabylès

Professeur en Epidémiologie  
CHU Mustapha  
Semep  
CHU Mustapha, place du 1<sup>er</sup> mai  
Algeria

On the proposal of Mrs. Professor Ait Khaled, I was involved with my team to ISAAC Phase Three. It was a great adventure team. After obtaining the permission of those responsible for education and health, I had an interview with the director of each school. They all showed great interest in the study and collaborated in programming. I attended school health physicians in the Wilaya of Algiers. Many of them participated in the study with my team. Teachers were also a contribution especially for the discipline in the classroom. To avoid problems we asked all students in each class covered by the study. They all answered the questions as if it were a game. I am happy to have participated in the study whose results serve as reference for the prevalence of asthma in children in Algéria.

#### Roles:

- Phase One Principal Investigator for West Algiers
- Phase Three Principal Investigator for Wilaya of Algiers

## West Marne Centre

Phase One	
<b>Centre:</b>	West Marne, France ( Western Europe )
<b>Principal Investigator:</b>	Dr Isabella Annesi-Maesano
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	The region of West Marne as academically and administratively defined.

## Personnel

### Dr Isabella Annesi-Maesano

EPAR Dept, INSERM, UMR- S 707  
Faculté de Médecine Pierre et Marie Curie  
Site Saint-Antoine  
27 rue Chaligny 75571  
France

#### Roles:

- National Coordinator for France
- Phase One Principal Investigator for West Marne

## West Midlands Centre

Phase One	
<b>Centre:</b>	West Midlands, United Kingdom ( Western Europe )
<b>Principal Investigator:</b>	Professor H Ross Anderson
<b>Age Groups:</b>	13-14
<b>Timeframe:</b>	
<b>Sampling Frame:</b>	All schools in West Midland counties and all schools from a random selection of 4 metropolitan districts from the metropolitan county. Stratified by each county\district followed by a random sample of one school from each one.

## Personnel

### Professor H Ross Anderson

Division of Community Health Sciences  
St George's, University of London and MRC Centre for Environment and Health  
Cranmer Terrace  
Tooting  
United Kingdom



#### Roles:

- ISAAC Steering Committee
- National Coordinator for United Kingdom
- Phase One Principal Investigator for West Midlands

### Dr Balvinder Kaur

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

#### Roles:

- Phase One collaborator for West Midlands

### Dr Jan Poloniecki

Department of Public Health Sciences  
St Georges Hospital Medical School  
Cranmer Terrace  
Tooting  
United Kingdom

#### Roles:

- Phase One collaborator for West Midlands

This centre formed part of a national initiative throughout the United Kingdom, as described on the UK country-level page . Resulting publications are listed on the UK national page.

Ross Anderson, David Strachan, 18 July 2011

Regional

National

Local

West Algiers

West Marne

West

Midlands



# The ISAAC Story

Regional

National

Local

Wulumuqi

Wulumuqi(9)

Yaounde

## Wulumuqi Centre

<b>Phase One</b>			
<b>Centre:</b>		Wulumuqi, China ( Asia-Pacific )	
<b>Principal Investigator:</b> Professor Man-Lin Xiao			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	
<b>Sampling Frame:</b>		Fifteen schools were selected by random from all the junior middle school in Xin-Shi district. In these fifteen schools, all of the students of the first and second grade were our subjects.	

### Personnel

#### Professor Man-Lin Xiao

Department of Paediatrics  
The First Affiliated Hospital  
Xinjiang Medical College  
Li Yu Shan Road No. 1  
China

#### Roles:

- Phase One Principal Investigator for Wulumuqi

## Wulumuqi(9) Centre

<b>Phase Three</b>			
<b>Centre:</b>		Wulumuqi(9), China ( Asia-Pacific )	
<b>Principal Investigator:</b> Dr Qiao Li Pan			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	November 2001 to December 2001
<b>Sampling Frame:</b>		13-14yr: Some schools in the Wulumuqi, Xingiang, China district.	

### Personnel

#### Dr Qiao Li Pan

Xinjiang Children's Hospital  
91 Jiankang Road  
Wulumuqi  
China

#### Roles:

- Phase Three Principal Investigator for Wulumuqi(9)

## Yaounde Centre

<b>Phase Three</b>			
<b>Centre:</b>		Yaounde, Cameroon ( Africa )	
<b>Principal Investigator:</b> Professor Christopher Kuaban			
<b>Age Groups:</b>	13-14	<b>Timeframe:</b>	May 2003 to May 2003
<b>Sampling Frame:</b>		13-14yr: All secondary and high schools in the Bafoussam Municipality	

### Personnel

#### Professor Christopher Kuaban

Faculty of Medicine  
University of Yaounde  
Centre Pasteur DU  
B.P. 4021  
Cameroon

#### Roles:

- National Coordinator for Cameroon
- Phase Three Principal Investigator for Yaounde

## ISAAC in Yaounde, Cameroon

Cameroon is a small central African country with a population presently estimated at 20 million inhabitants. Asthma is not an uncommon disease in the country but before the ISAAC adventure only a limited number of hospital based studies had been carried out in the country. Consequently, the magnitude of asthma and allergies in Cameroon is not known. When we therefore heard about it, we thought it was an opportunity that would let us have real data about the prevalence of these diseases in our country.

We learnt about ISAAC Phase Three through Professor Nadia Ait-Khaled, the regional coordinator for francophone African countries and without hesitation decided we would participate in the venture. Our regional coordinator then asked us to register with the ISAAC steering committee in New Zealand. This was immediately done. She also asked us to help in the translation of the core questionnaire as well as the environmental questionnaire from English to French given that in Cameroon we speak and write the two languages. We willingly did the translation. But our hopes were dashed as we were told after this that we had to look for funding ourselves for the survey. Thanks to Dr Juergen Noeske, a colleague with whom I have worked for several years, we were able to obtain funding from the German Development Cooperation (GTZ, presently GIZ).

# The ISAAC Story

We designed our survey to be carried out in the West Region of Cameroon because in the previous years we had conducted several prevalence and operational studies there particularly in the field of tuberculosis. In this region we chose Bafoussam, the regional capital city and the third largest town of Cameroon in terms of population as our study site. All the 13-14 year old children in the 12 high schools found in the Bafoussam municipality were to be studied. We finally conducted the survey in May 2003, recruiting 2083 children out of a total of 3291 registered in these schools. Our data base was later on sent to the steering committee in New Zealand where after several correspondences checking on some inconsistencies in our data base, our data was finally validated.

Thanks to ISAAC and the publications that followed, we now have real data on the prevalence of asthma and allergies for our country. These findings have permitted us to compare our situation in this domain to that of other countries that participated in the ISAAC study. These results have also been communicated to our Ministry of Public Health and have led to asthma being packaged alongside other non communicable diseases as a major public health problem. Finally, the results of the study have given us baseline information for future interventions in the field of asthma and allergies.

## Acknowledgements

We wish to thank immensely the education administrative authorities of the West Region of Cameroon as well as teachers and children who made it possible through their cooperation for us to realize this survey. We gratefully acknowledge financial support given us for this survey by the German Development Cooperation (GIZ). We wish to thank immensely the team of our fieldworkers for all they worked to make the survey a success.

## Zanjan Centre

<b>Phase Three</b>			
<b>Centre:</b>		Zanjan, Iran ( Eastern Mediterranean )	
<b>Principal Investigator:</b>		Dr Mohammed-Reza Masjedi	
<b>Age Groups:</b>	13-14, 6-7	<b>Timeframe:</b>	April 1996 to June 1996
<b>Sampling Frame:</b>		All schools in Zanjan city were included in the sampling frame	

## Personnel

### Dr Mohammed-Reza Masjedi

Masih Daneshvary Hospital  
Dorabad  
Shaheed Bahoner Ave  
Darabad  
Iran

#### Roles:

- National Coordinator for Iran
- Phase Three Principal Investigator for Zanjan

Regional

National

Local

Yaounde

Zanjan