



*Arrixaca*

# Rhinitis in children: how important is it?

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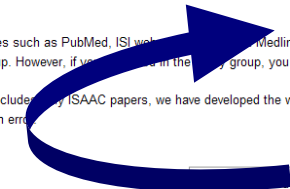
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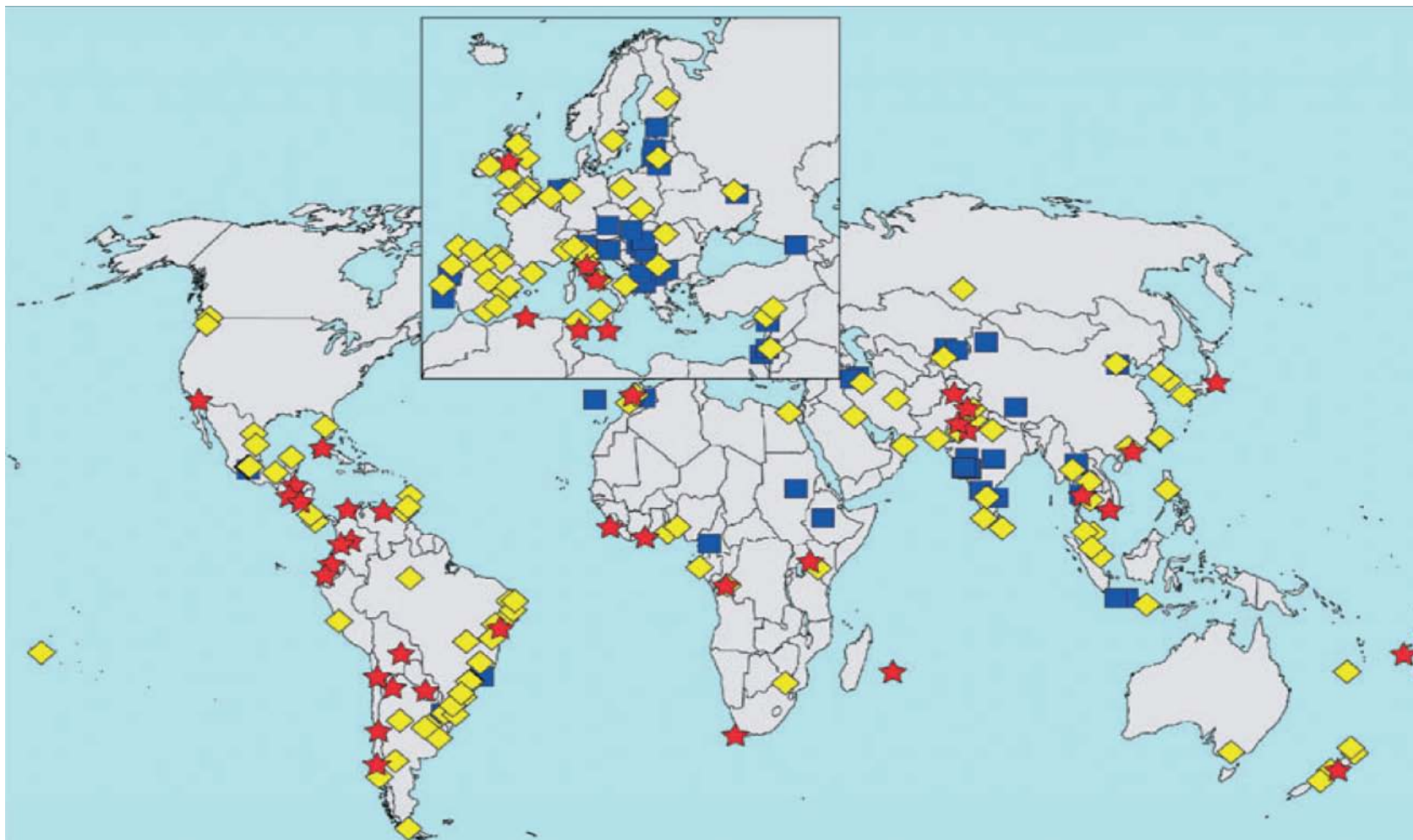
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# How important in terms of prevalence

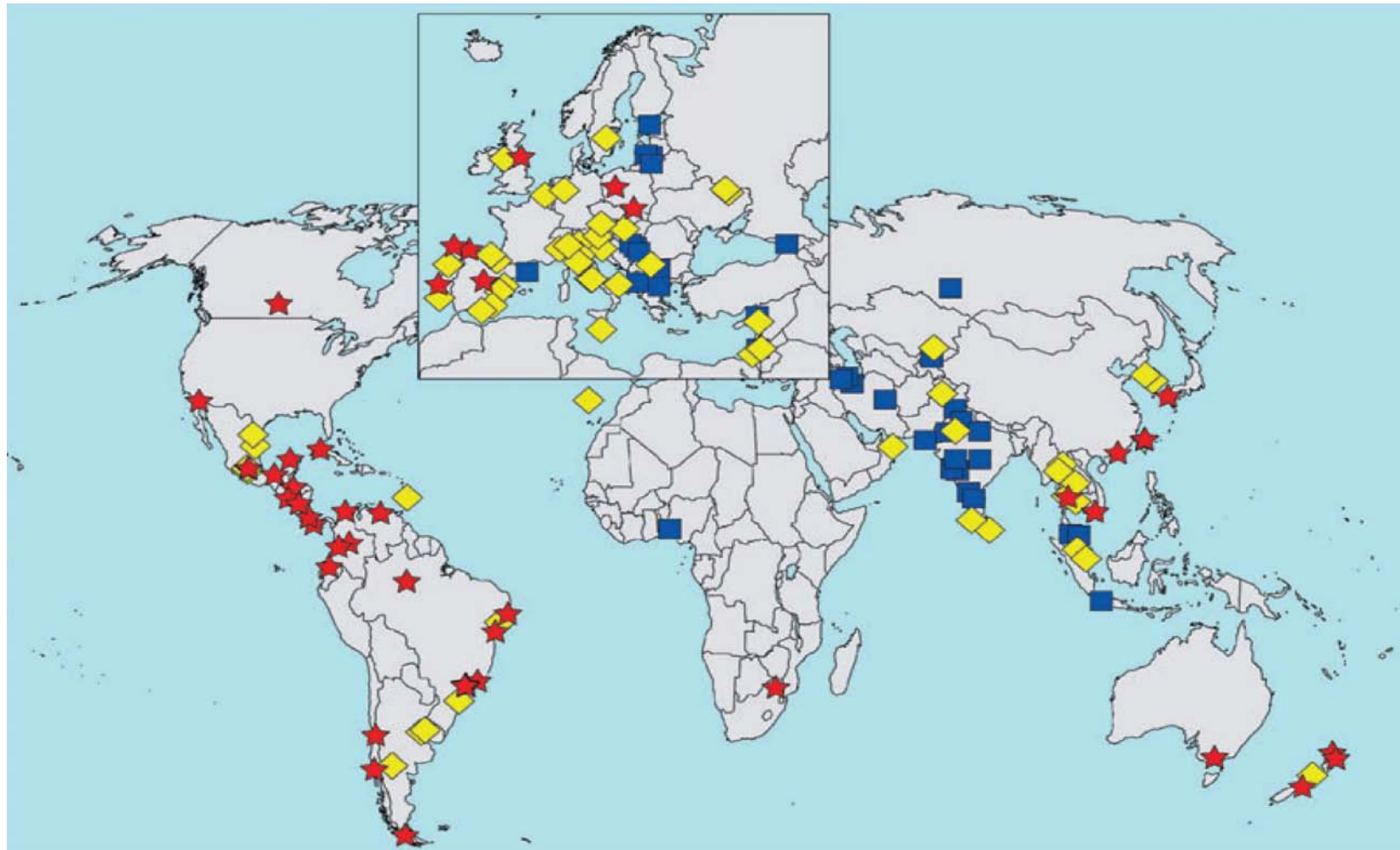
# Rhinoconjunctivitis 13-14 yrs. Phase III



Map of prevalence of current symptoms of rhinoconjunctivitis, 13- to 14-year age group. Symbols indicate prevalence categories of > 20% (red stars), > 10 to < 20% (yellow diamonds) and < 10% (blue squares).



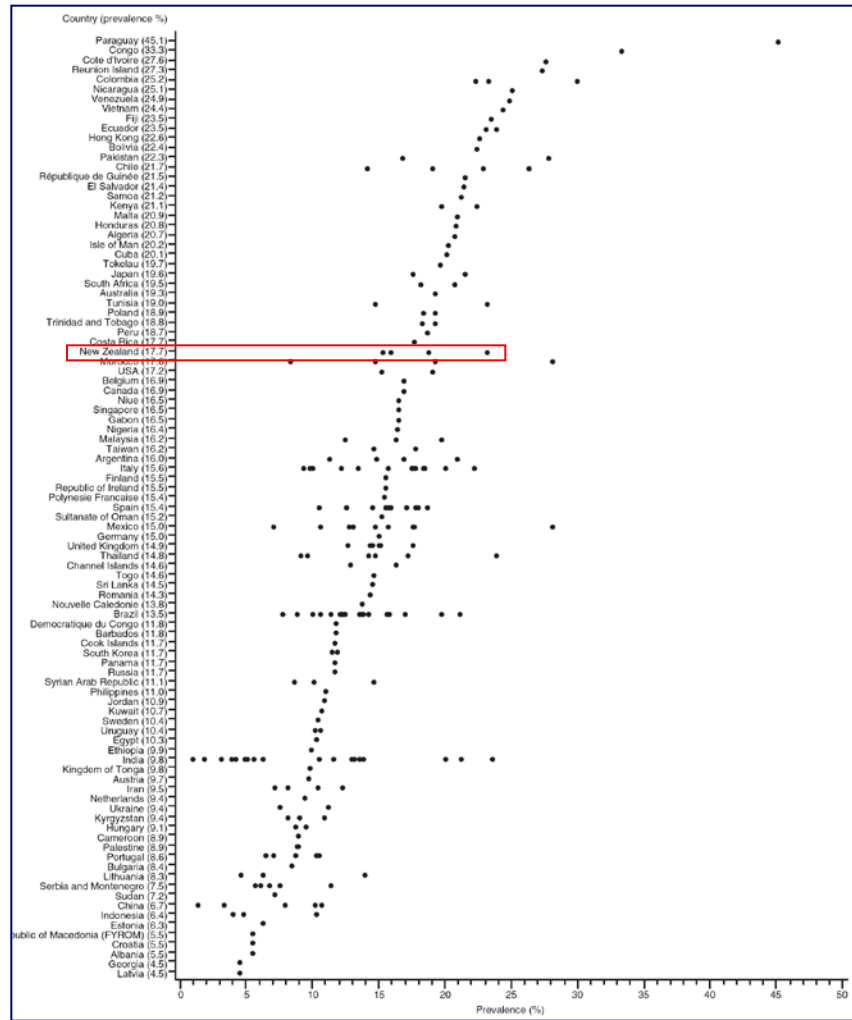
# Rhinoconjunctivitis 6-7 yrs. Phase III



Map of prevalence of current symptoms of rhinoconjunctivitis, 6- to 7-year age group. Symbols indicate prevalence categories of > 10% (red stars), > 5 to < 10% (yellow diamonds) and < 5% (blue squares).



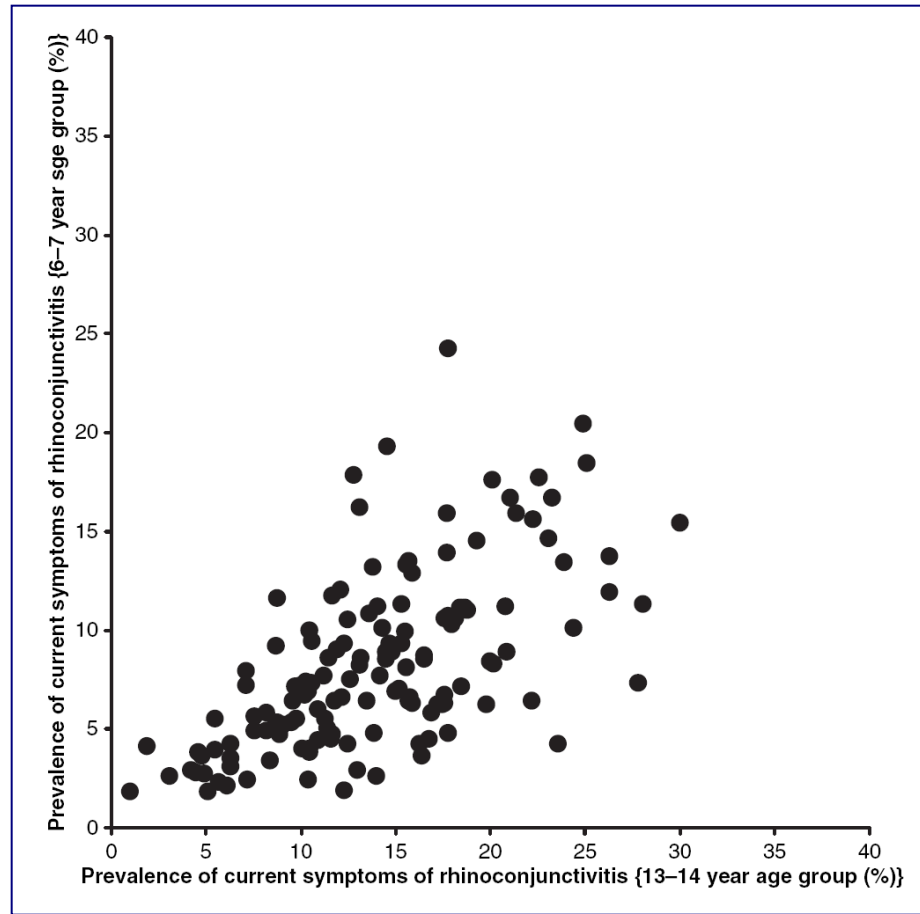
# Where is New Zealand? (13-14 yrs)



# Where is New Zealand? (6-7 yrs)



# Relationship between the two age-groups



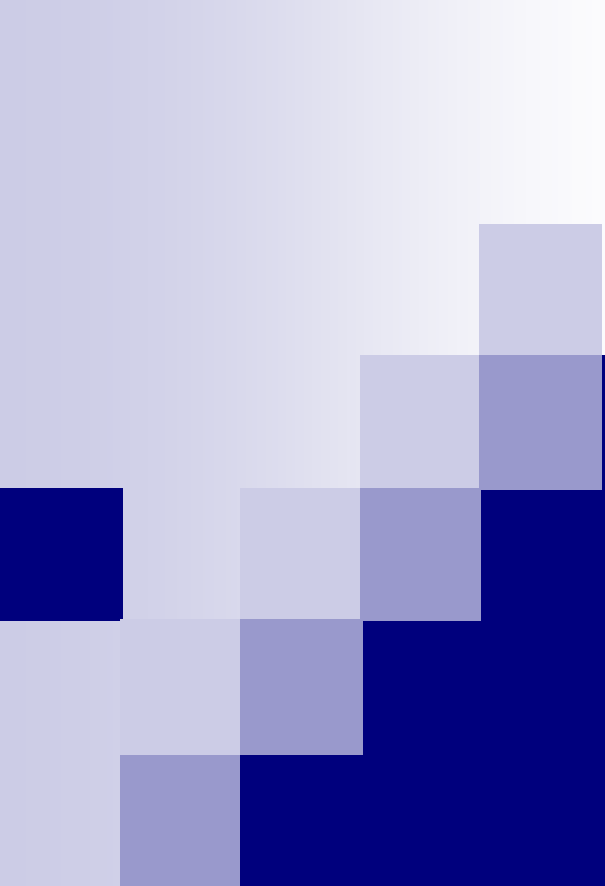
# A summary of world prevalence

Table 3. Prevalence of symptoms of rhinoconjunctivitis by level of gross national income. ISAAC Phase Three World Map centres, rhinitis questionnaire data by country income (World Bank data)

Income category	No. centres	N	Current nose symptoms		Current nose and eye symptoms		Hay fever ever		Current symptoms of rhinoconjunctivitis		Current symptoms of severe rhinoconjunctivitis	
			Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
<b>6- to 7-year age group</b>												
Low income	21	63925	9378	14.7	3326	5.2	8311	13.7	2920	4.6	198	0.3
Middle income	74	191724	44951	23.4	19129	10.0	24922	13.4	17757	9.3	1693	0.9
High income	46	125786	27593	21.9	12393	9.9	14681	12.2	11883	9.4	587	0.5
Unknown income*	3	7376	1161	15.7	381	5.2	384	5.2	368	5.0	52	0.7
<b>13- to 14-year age group</b>												
Low income	33	100262	28229	28.2	15164	15.1	23354	24.0	13662	13.6	1041	1.0
Middle income	126	370495	116990	31.6	60058	16.2	65513	18.3	54009	14.6	4109	1.1
High income	67	188977	64689	34.2	30312	16.0	41342	22.4	28802	15.2	1290	0.7
Unknown income†	6	10508	2642	25.1	1408	13.4	1075	10.3	1393	13.3	122	1.2

\*World bank income data was not available for Niue and Palestine (Ramallah and North Gaza centres).

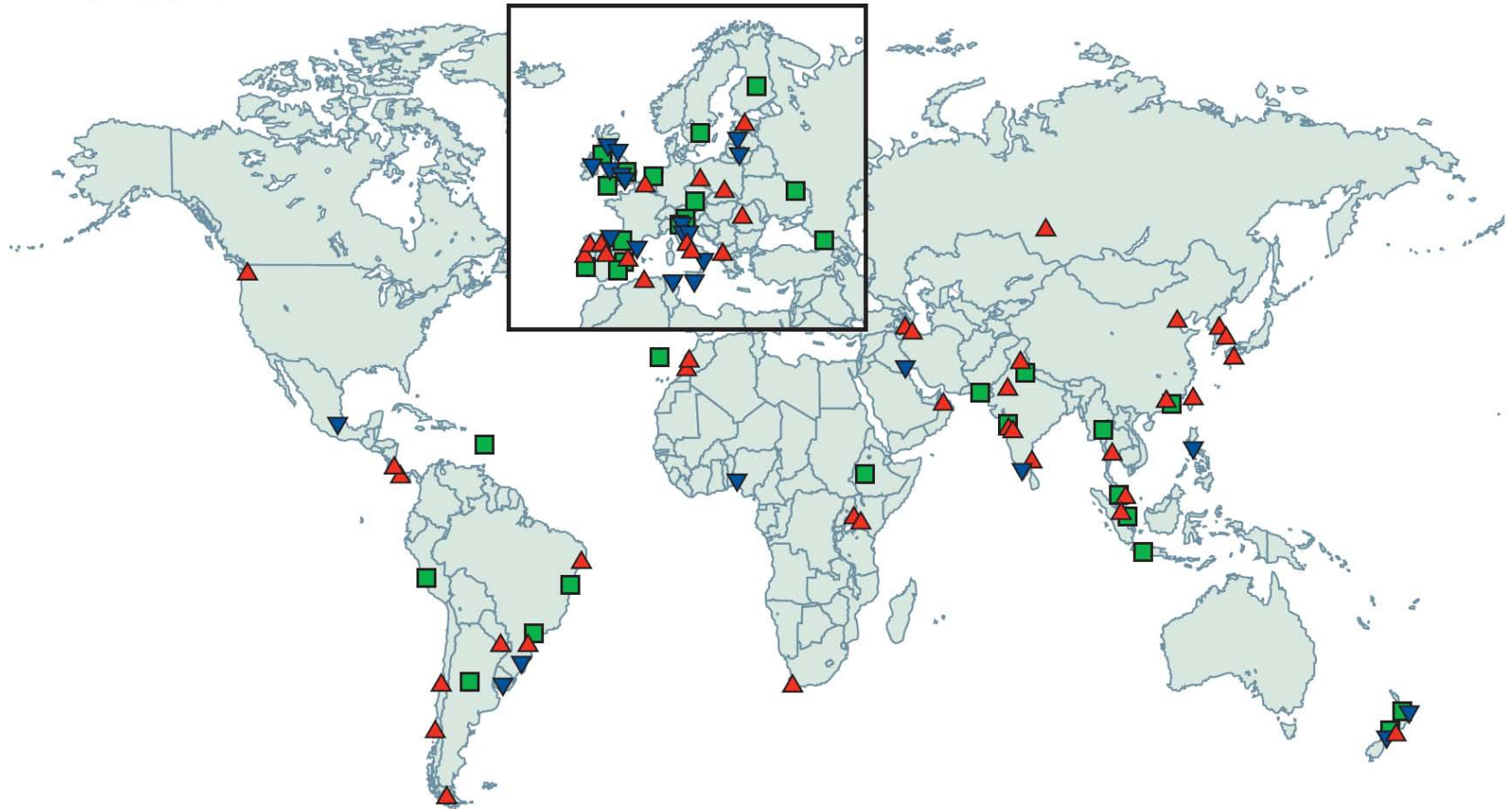
†World bank income data was not available for Cook Islands, Niue, Palestine (Ramallah and North Gaza centres), Réunion Island and Tokelau.



Is it going up or  
down?

# Prevalence change between Phases One and Three

13-14 year age-group



**Figure 3:** World map showing direction of change in prevalence of allergic rhinoconjunctivitis symptoms for 6-7 year age-group and 13-14 year age-group. Each symbol represents a centre. Blue triangle=prevalence reduced by  $\geq 1$  SE per year. Green square=little change ( $< 1$  SE). Red triangle=prevalence increased by  $\geq 1$  SE per year.

# Prevalence change between Phases One and Three

6-7 year age-group

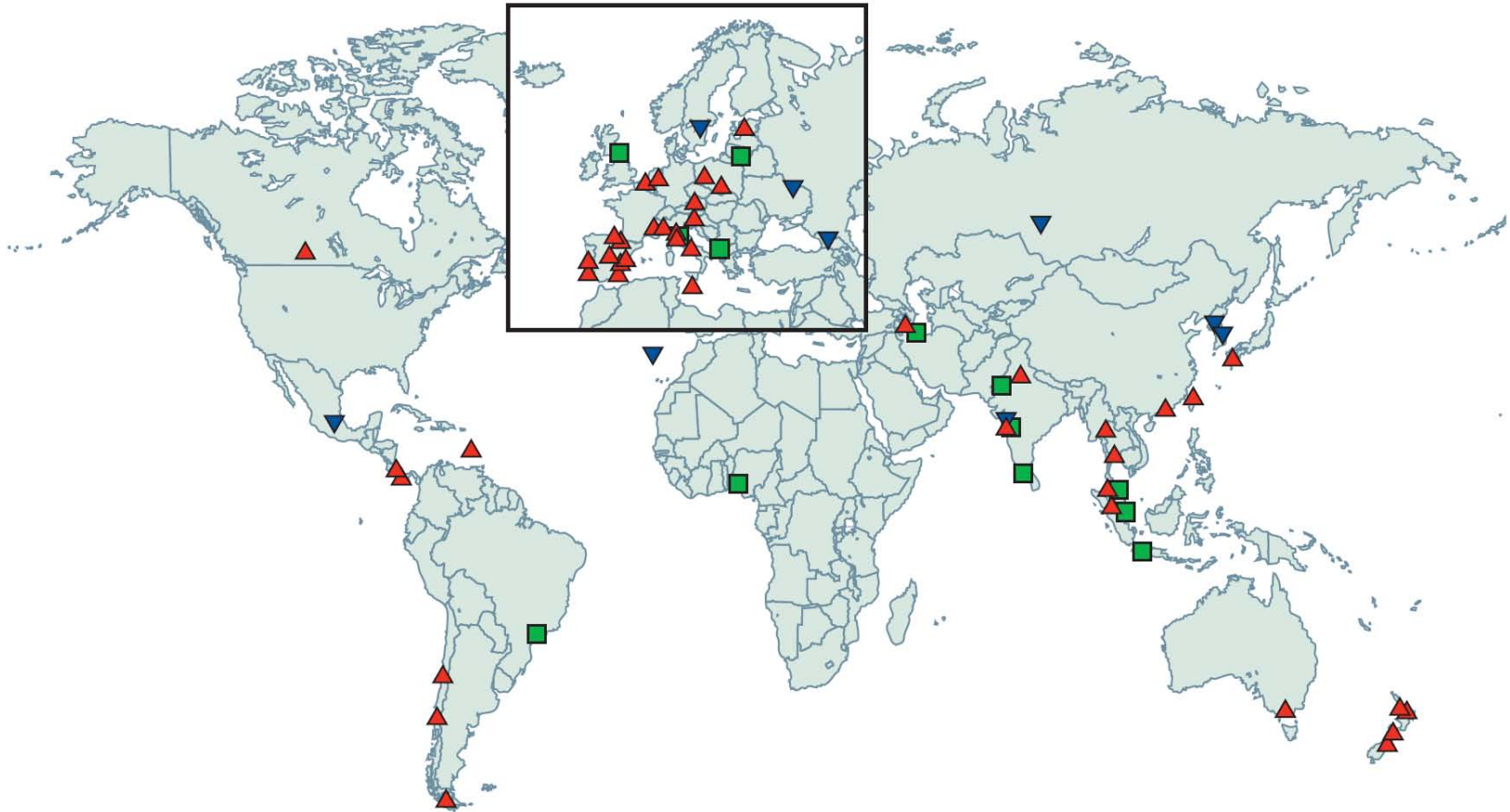
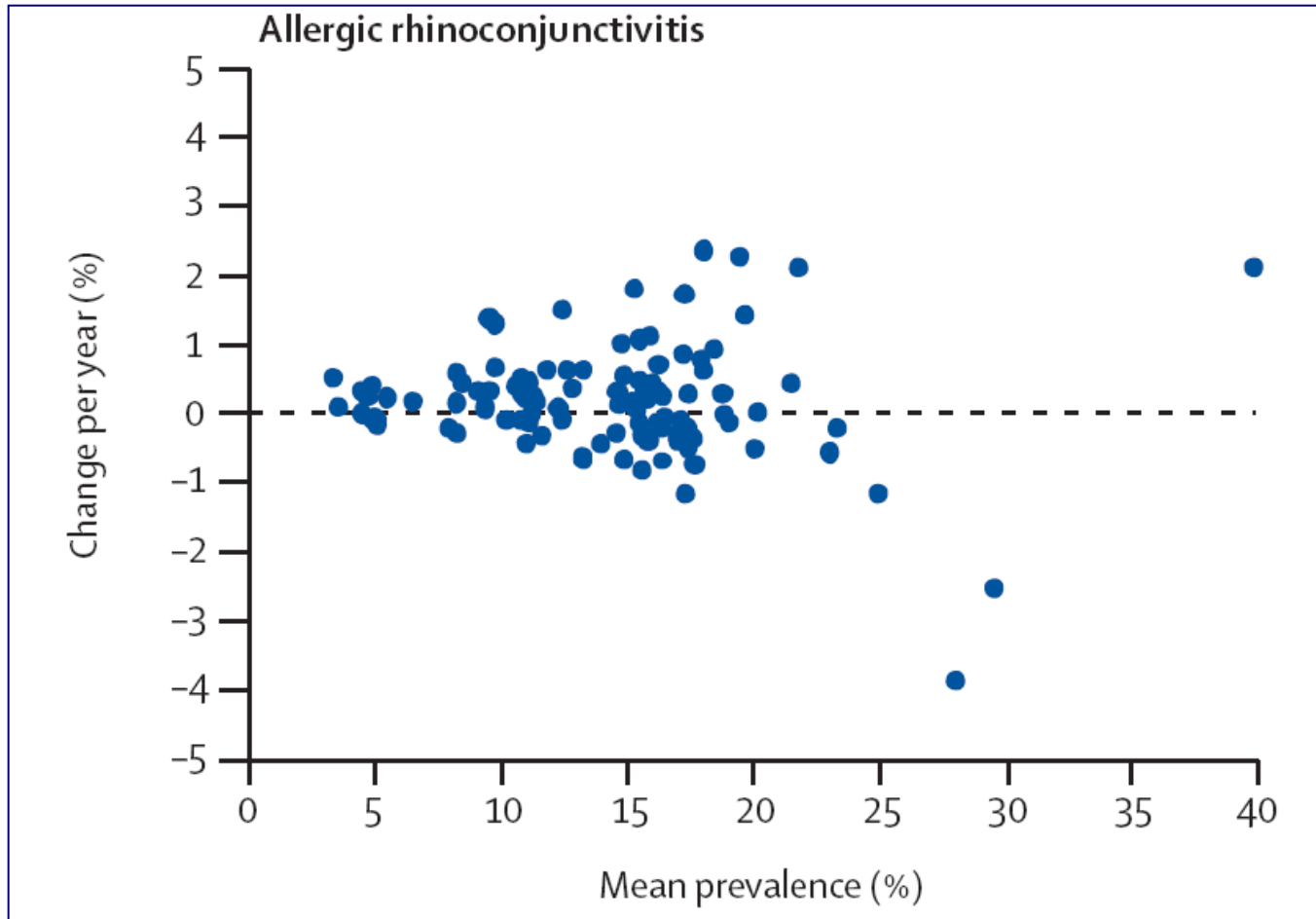


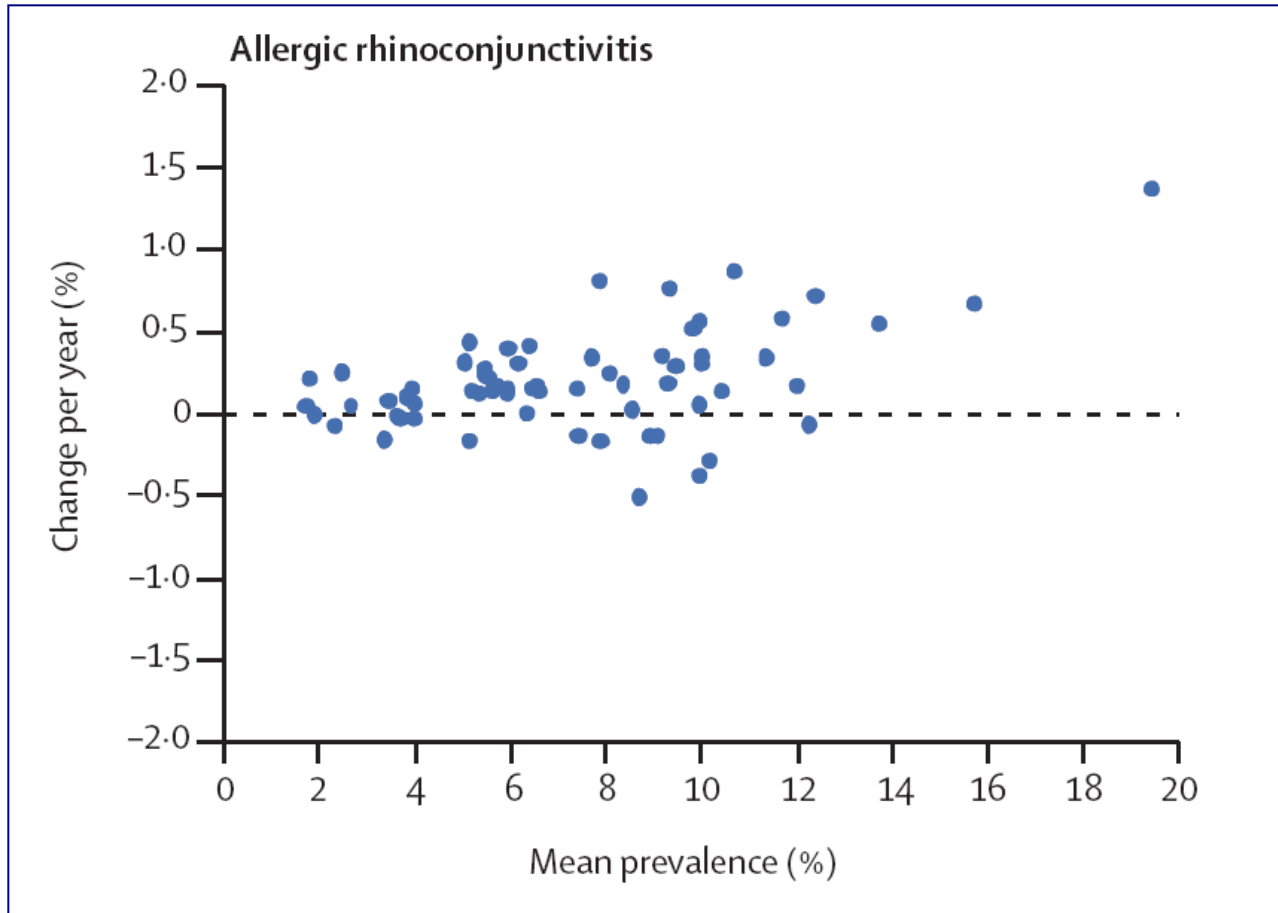
Figure 3: World map showing direction of change in prevalence of allergic rhinoconjunctivitis symptoms for 6-7 year age-group and 13-14 year age-group. Each symbol represents a centre. Blue triangle=prevalence reduced by  $\geq 1$  SE per year. Green square=little change ( $< 1$  SE). Red triangle=prevalence increased by  $\geq 1$  SE per year.



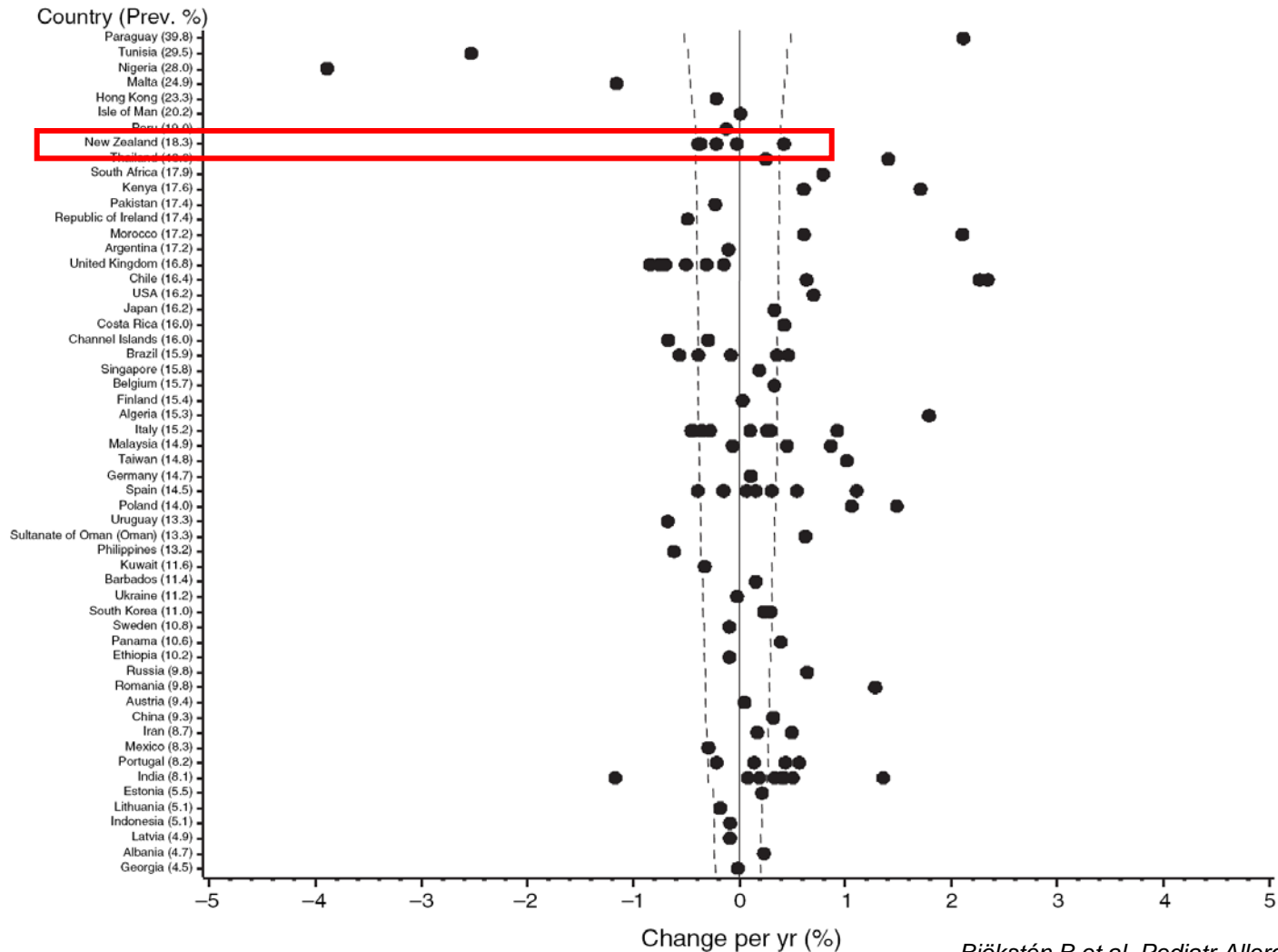
# Prevalence change between Phases One and Three (13-14 yrs.)



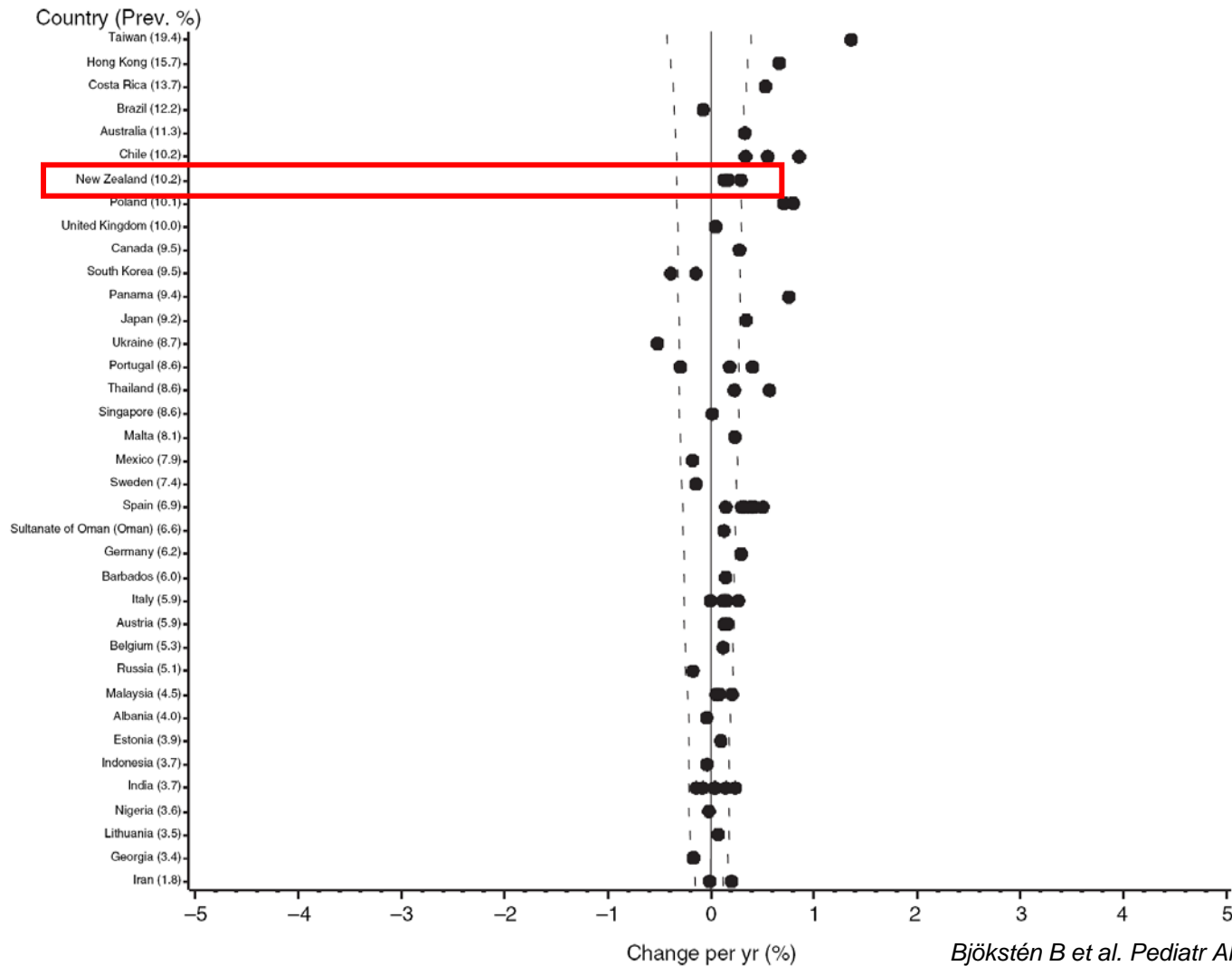
# Prevalence change between Phases One and Three (6-7 yrs.)



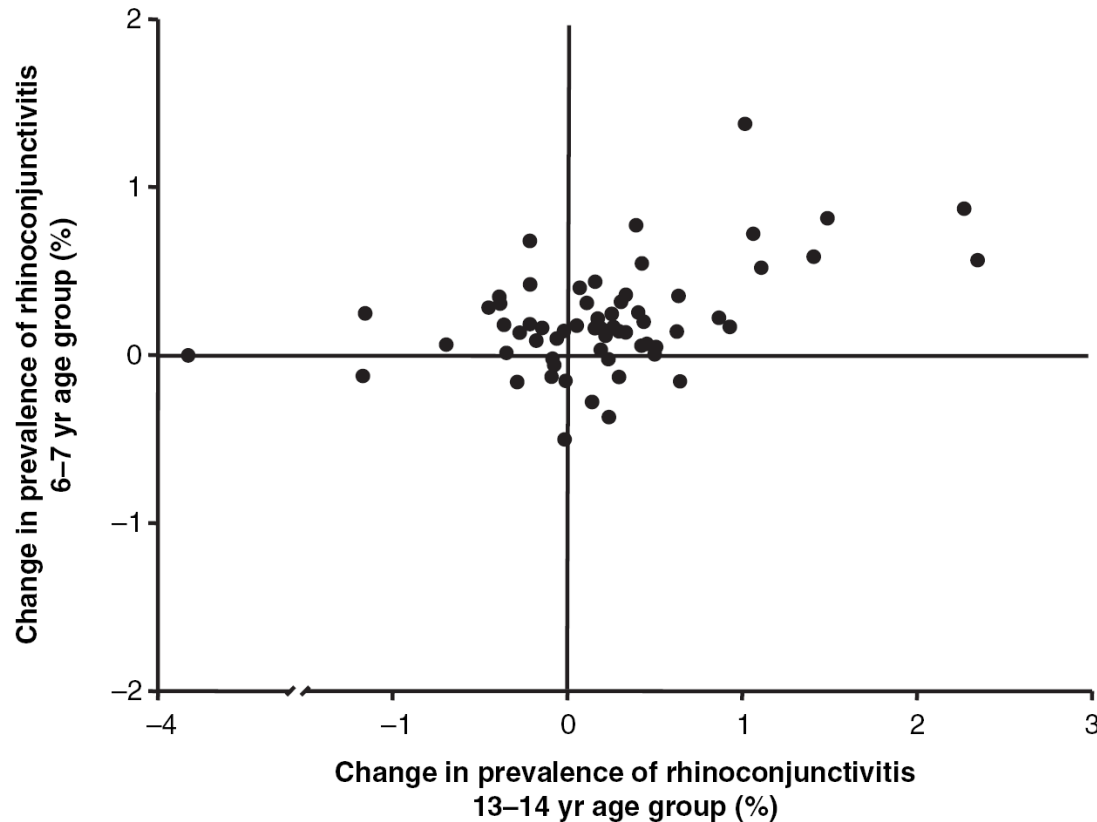
# What happens in New Zealand (13-14 yrs)



# What happens in New Zealand (6-7 yrs)



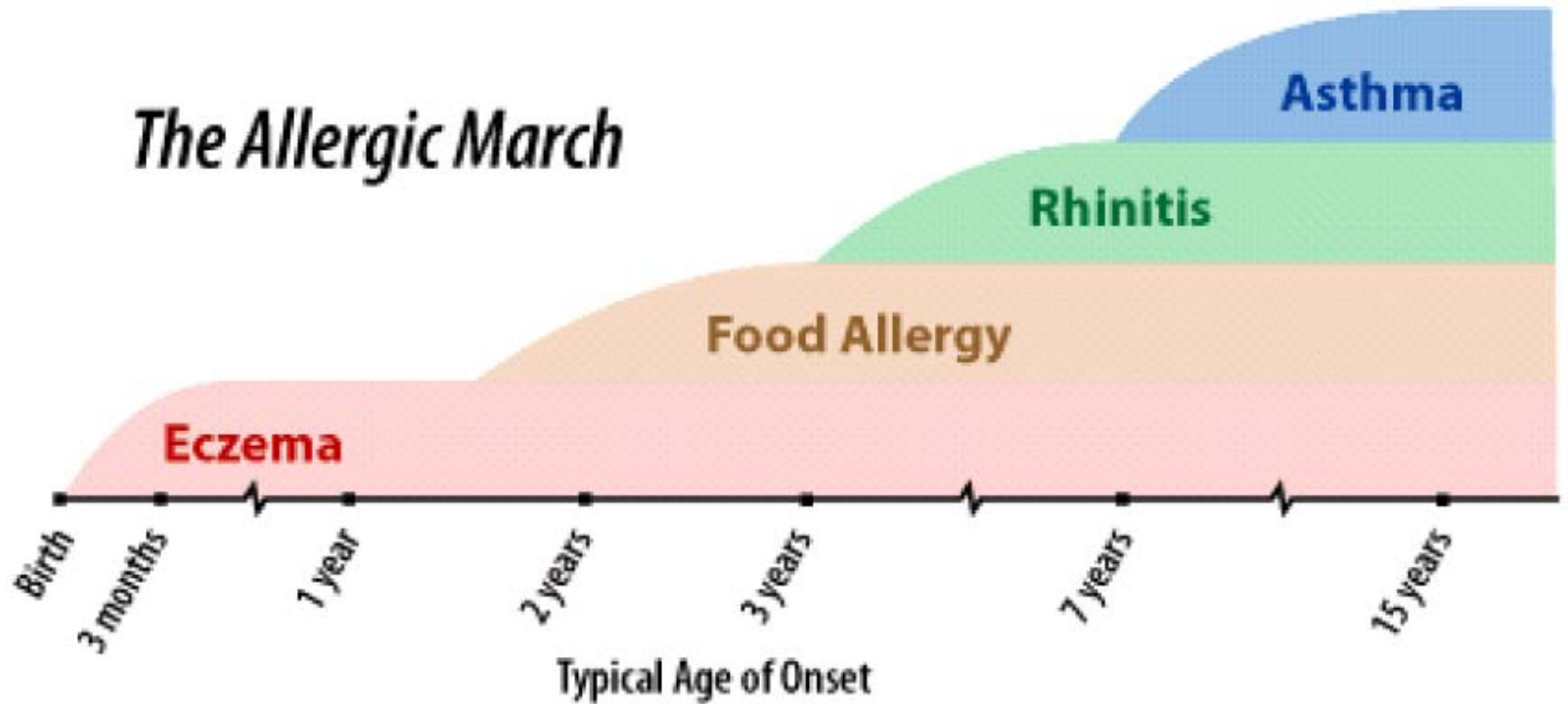
# Prevalence change between Phases One and Three





# How allergic is hay fever?

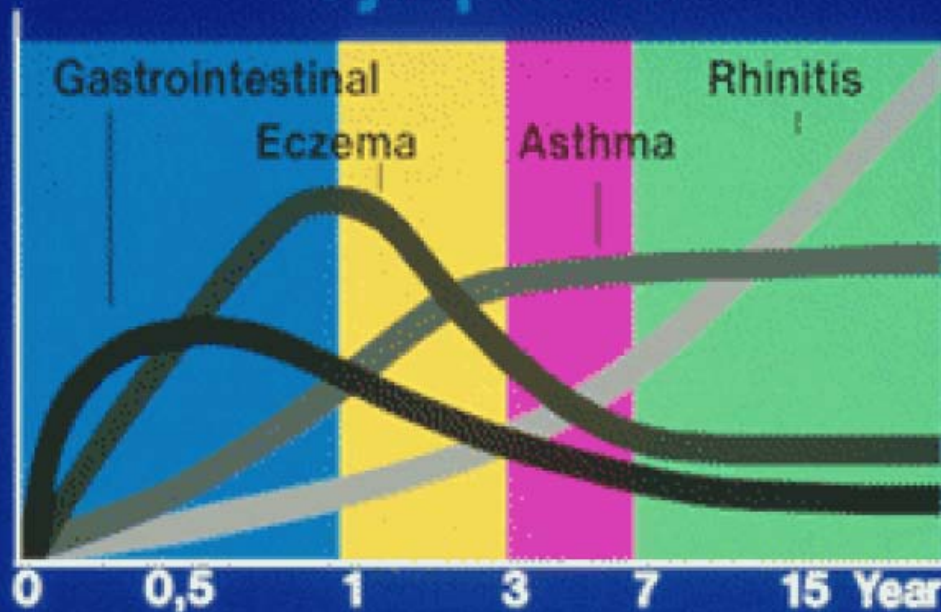
# The Allergic March



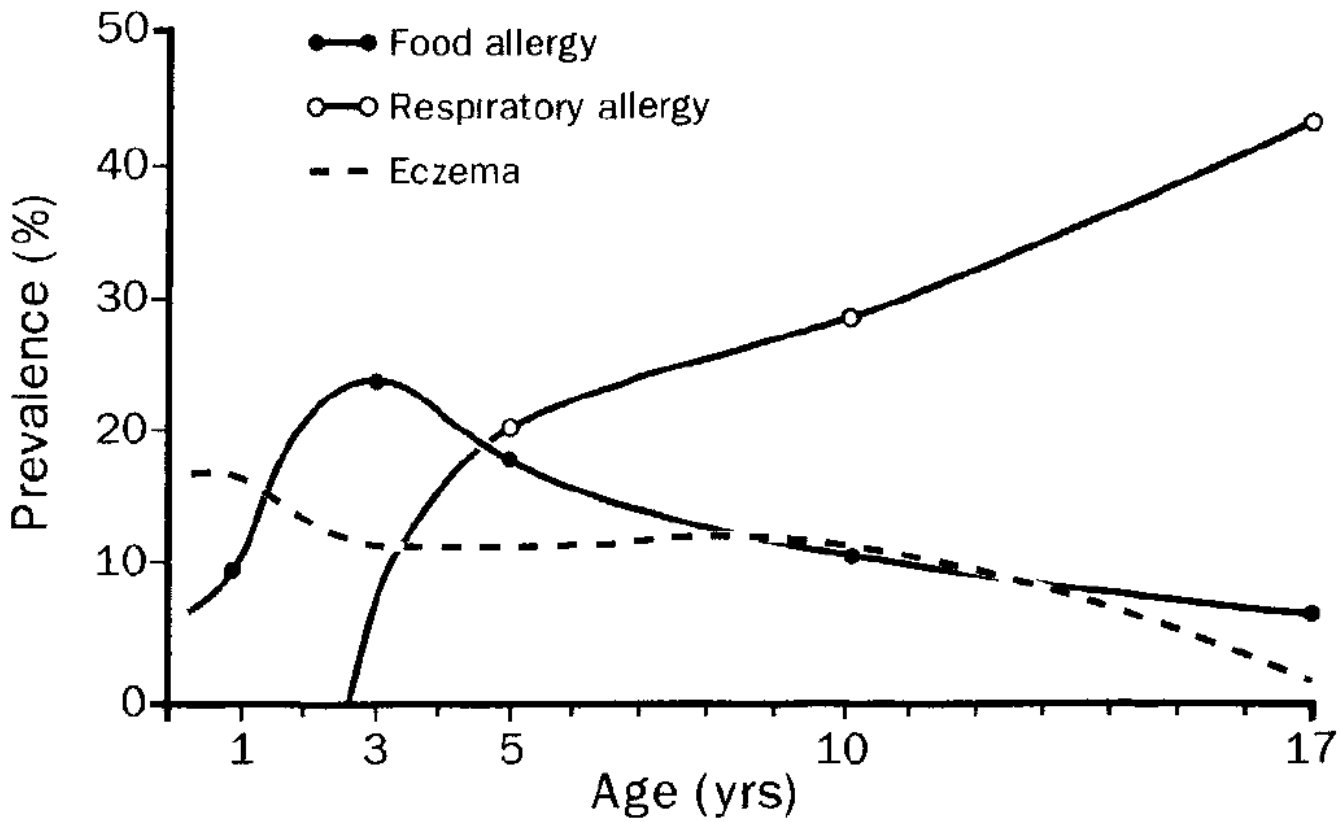
(Diagram courtesy of LEAP Study, Evalina Children's Hospital, London)



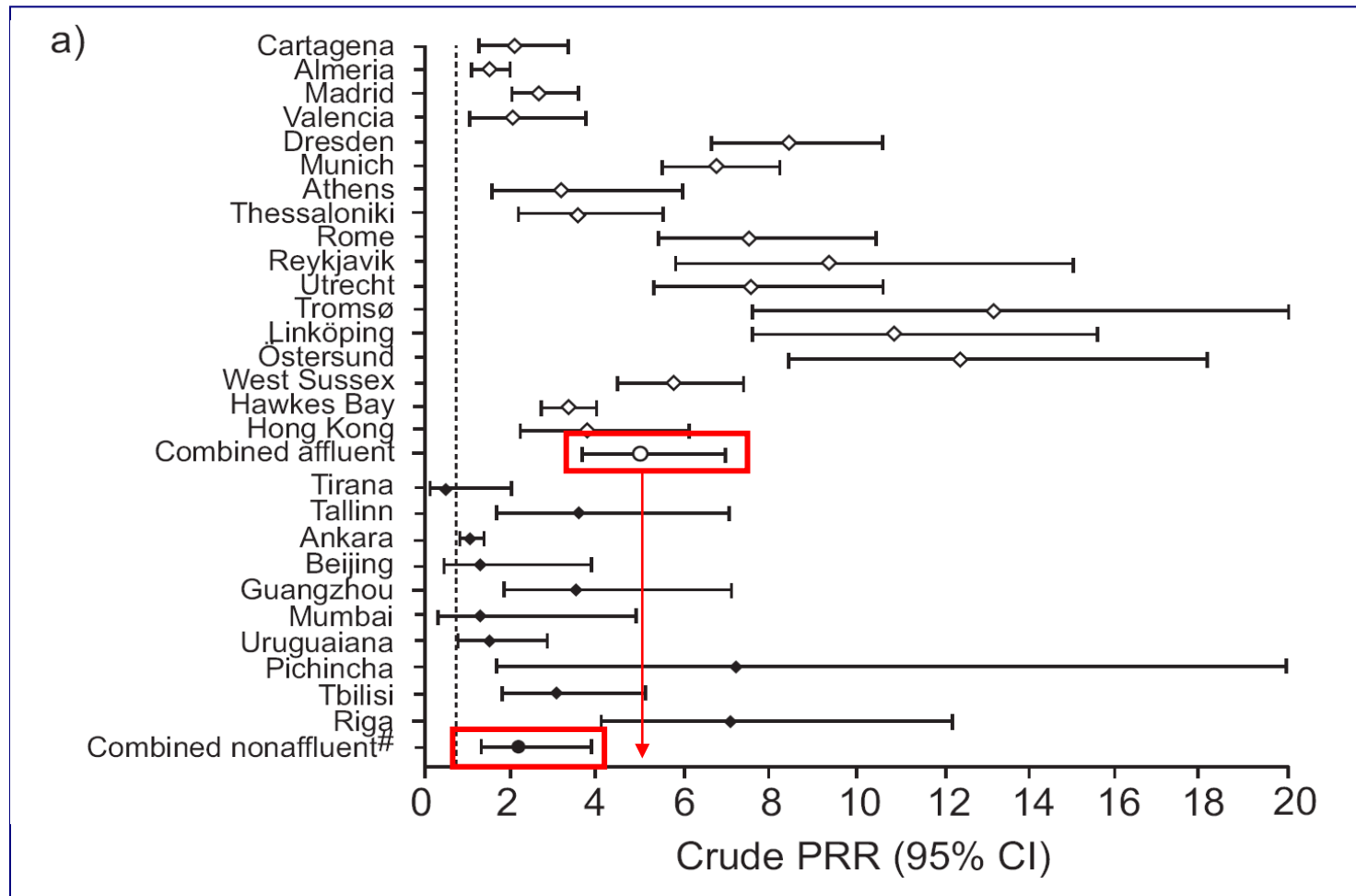
# Symptoms



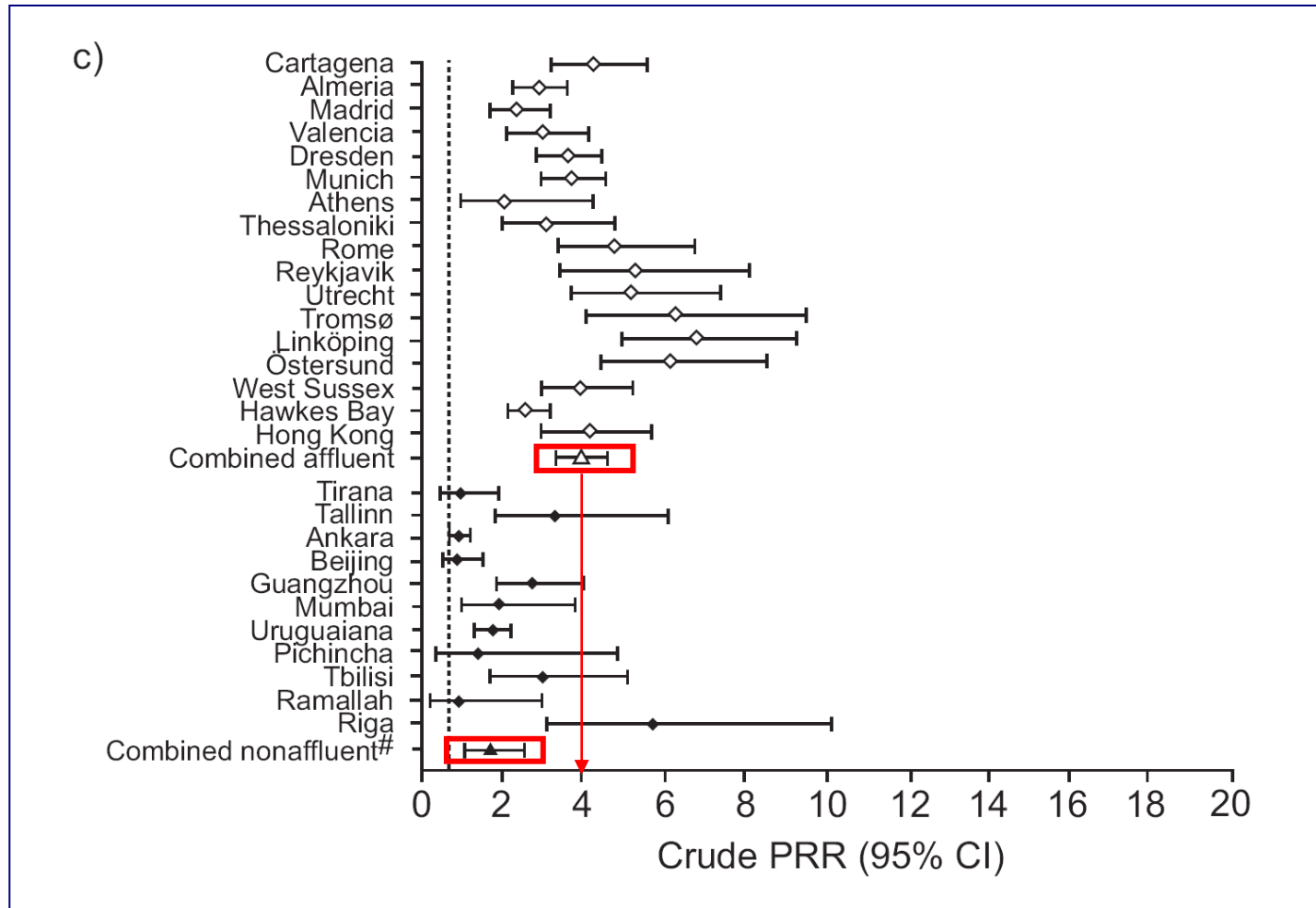
Relative prevalence of symptoms according to age  
(many children exhibit symptoms simultaneously).



# Rhinoconjunctivitis and seasonal allergy

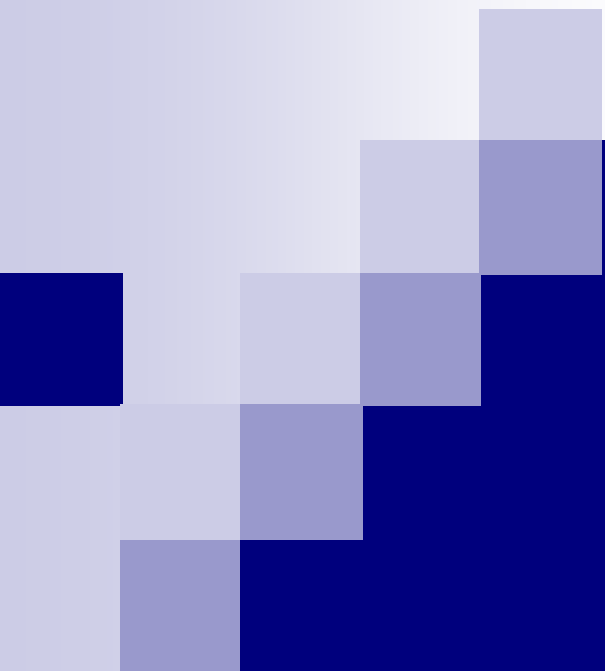


# Rhinoconjunctivitis and perennial allergy



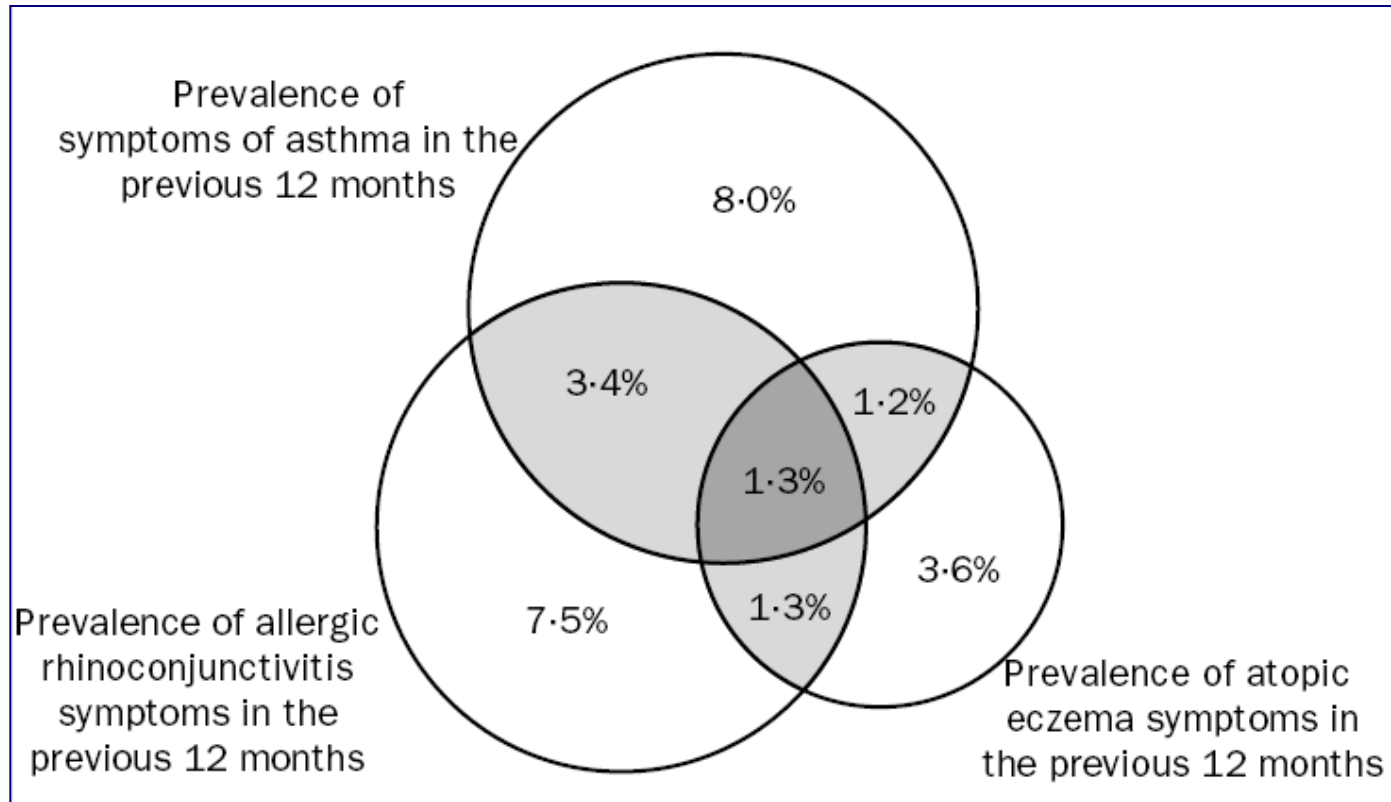
There is  
rhinoconjunctivitis  
outside the  
allergic march!





# United airway disease?

# Overlapping of allergic conditions in Phase One





# United airway disease?

Table 4. Co-morbidity of rhinoconjunctivitis symptoms with symptoms of asthma and/or eczema

Region	N	Symptoms of rhinoconjunctivitis only		Symptoms of asthma and rhinoconjunctivitis		Symptoms of rhinoconjunctivitis and eczema		Symptoms of all 3 conditions		
		Frequency	%	Frequency	%	Frequency	%	Frequency	%	
<b>6- to 7-year age group</b>										
Africa	5876	215	3.7	89	1.5	80	1.4	70	1.2	
Asia-Pacific	60 052	3520	6.2	1117	2.0	884	1.5	494	0.9	
Eastern Mediterranean	40 573	1200	3.0	505	1.2	194	0.5	199	0.5	
Indian Sub-Continent	50 106	1183	2.4	554	1.1	174	0.3	174	0.3	
Latin America	93 851	5425	5.8	3518	3.7	1513	1.6	1484	1.6	
North America	4014	111	2.8	100	2.5	37	0.9	64	1.6	
Northern & Eastern Europe	42 583	1266	3.0	569	1.3	270	0.6	238	0.6	
Oceania	13 888	568	4.1	487	3.5	223	1.6	343	2.5	
Western Europe	77 868	2810	3.6	1508	1.9	765	1.0	663	0.9	
<b>13- to 14-year age group</b>										
Africa	66 334	6385	9.6	2272	3.4	2020	3.0	1266	1.9	
Asia-Pacific	99 688	8581	9.3	2135	2.3	1064	1.1	530	0.6	
Eastern Mediterranean	51 708	4463	8.6	1127	2.2	756	1.5	408	0.8	
Indian Sub-Continent	55 815	4177	7.5	900	1.6	496	0.9	395	0.7	
Latin America	1 65 917	16 038	9.7	7076	4.3	3255	2.0	2369	1.4	
North America	13 994	1269	9.1	653	4.7	219	1.6	213	1.5	
Northern & Eastern Europe	72 092	4056	5.6	1516	2.1	582	0.8	445	0.6	
Oceania	36 385	3321	9.1	1496	4.1	796	2.2	566	1.6	
Western Europe	1 08 309	9169	8.5	3974	3.7	1247	1.2	1229	1.1	

# United airway disease?

Table 3. Multivariate analysis (logistic regression) assessing the associations between the different types of parental history and the organ involved in the child (controlled for all the variables in the table)

	Asthma symptoms in child			Rhinconjunctivitis symptoms in child		
	aOR	95% CI	p	aOR	95% CI	p
Parental history						
Asthma <sup>-</sup> Rhinoconjunctivitis <sup>-</sup>	1	–	–	1	–	–
Asthma <sup>+</sup> Rhinoconjunctivitis <sup>+</sup>	2.48	1.38–4.45	0.002	1.84	1.05–3.21	0.03
Asthma <sup>-</sup> Rhinoconjunctivitis <sup>+</sup>	0.89	0.47–1.67	0.7	1	0.71–1.34	0.7
Asthma <sup>+</sup> Rhinoconjunctivitis <sup>-</sup>	1.89	0.77–4.61	0.003	1.89	0.89–4.04	0.003
Male	0.75	0.46–1.21	0.24	0.75	0.44–1.29	0.09
Birthweight	1.71	0.93–3.14	0.2	1.71	0.94–3.11	0.2
Older siblings	1.09	0.61–1.94	0.7	1.09	0.61–1.94	0.7
Younger siblings	1.39	0.76–2.53	0.1	1.39	0.76–2.53	0.1
Smoker at home	0.97	0.57–1.67	0.8	0.97	0.57–1.67	0.8
Mold stains on household walls	2.30	0.93–5.67	0.07	1.50	0.62–3.67	0.3
Rural area	0.87	0.46–1.61	0.6	0.63	0.35–1.11	0.1
Dog at home during first year of child's life	1.43	0.83–2.47	0.2	1.64	0.99–2.70	0.05
Cat at home during first year of child's life	1.00	0.40–2.50	1.0	0.65	0.27–1.55	0.3



# Treatment?



## The insufferable hay fever sufferer

Jim Schembri

September 5, 2007

These people need help. Fortunately, there are many over-the-counter treatments available in the form of lozenges, antihistamine tablets and anticholinergic sprays. And the remarkable thing about all these excellent treatments is that none of them work.

# Conclusions

- Rhinoconjunctivitis is a frequent condition all over the world
- There is a high variability, both between countries and between centres within countries
- There does not seem to be a clear trend of rhinoconjunctivitis prevalence:
  - It might have flattened in countries with higher prevalence
  - It might have increased in developing countries with rapid economic growth
- The change in prevalence between phases One and Three is parallel in both age groups
- The association between atopy and rhinoconjunctivitis is variable between countries and is lower than expected; the association being stronger in developed countries.
- Comorbidity is not as frequent in children as it seems to be in adults.
- The idea of a united airway disease comes from the clinic, not from the real world, and although many children show both rhinitis and asthma some “target organ heritability” may also play a role.