

Allergy: Prevalence and identification of focus areas within prevention

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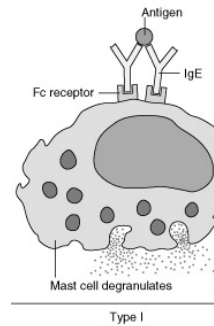
Winter School, 11. November 2008

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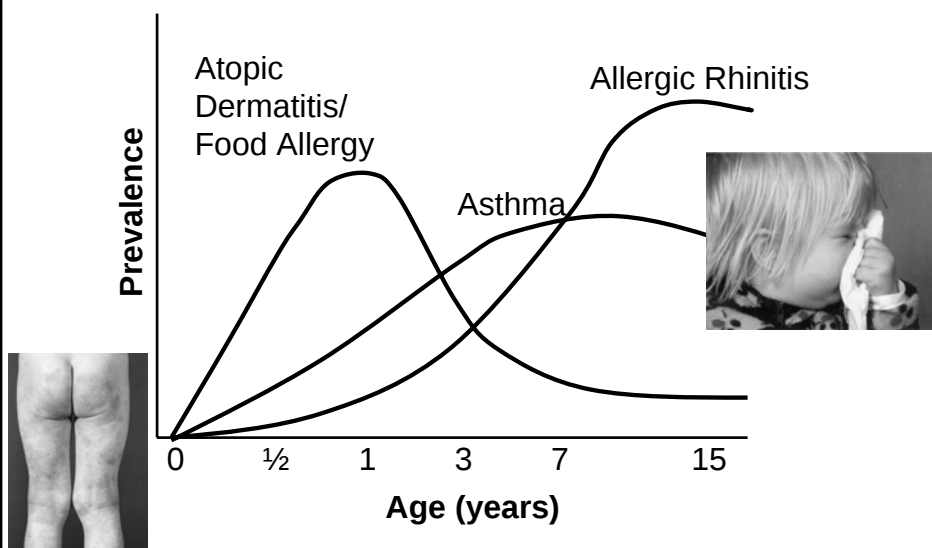
- What are allergies?
- Are the prevalence of allergies increasing?
- Why do we get allergies?

What Are Allergies?

“Situations where hypersensitivity results from heightened (or ‘altered’ reactivity of the immune system in response to external or ‘foreign’ substances”



"The allergic march in childhood"



Allergic rhinitis

Allergic rhinitis is a chronic inflammatory disease of the upper (and lower) airways induced by IgE-mediated allergic reactions against inhalant allergens e.g. from pollen, dust mites, and animals

The Allergic Salute

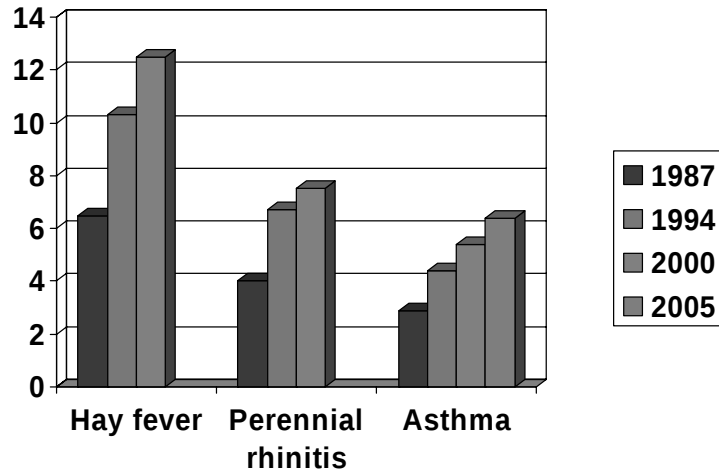


Symptoms of allergic rhinitis

- itchy nose and sneezing
- stuffy and runny nose
- tiredness, headache
- decreased quality of life

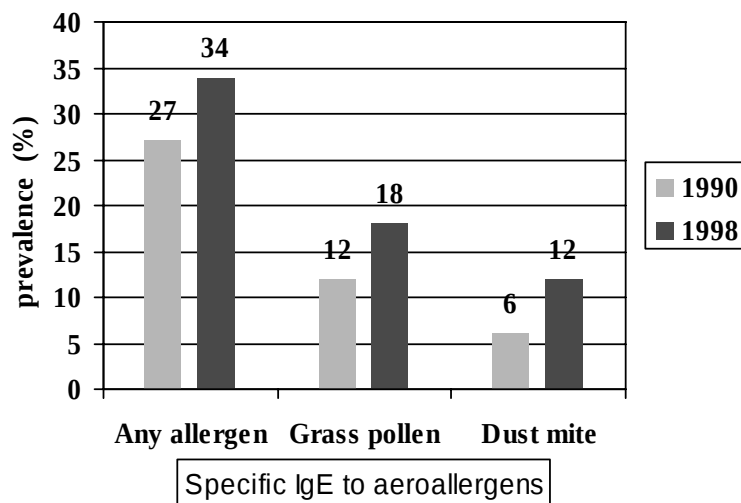
- Are the prevalence of allergies increasing?

Self-reported allergic rhinitis and asthma within last 12 months
in nation-wide representative surveys in Denmark



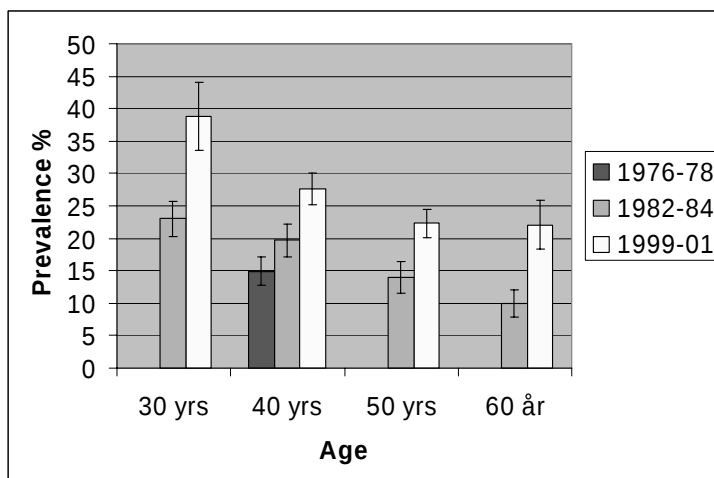
National Institute of Public Health

Trends of allergy (IgE sensitisation)
among 15-41-year-olds in Copenhagen



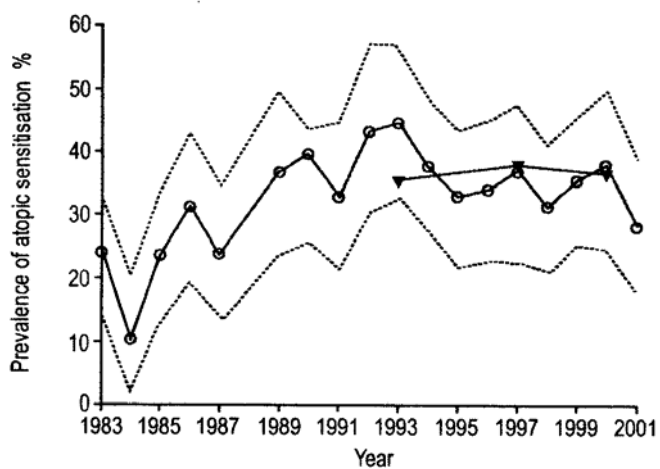
Linneberg, JACI 2000

Prevalence of sensitization to aeroallergens in Copenhagen from 1976 to 2001 (n=7,820)



Linneberg, Clin Exp Allergy 2007

Prevalence (95% CI) of atopy (IgE sensitisation) in 13-14-year-olds in Switzerland between 1983 and 2001

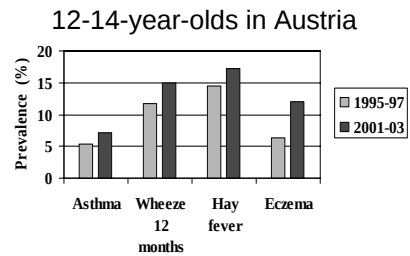


Braun-Fahrlander, Eur Respir J 2004

Trends in European children?

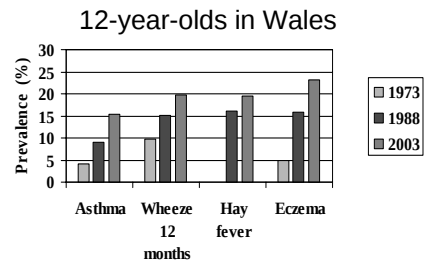
- Continuing increase in Austria from 1995 to 2003

Schernhammer, *Pediatr Allergy Immunol* 2007



- Continuing increase in Wales from 1973 to 2003

Burr, *Thorax* 2006



- Why do we get allergies?

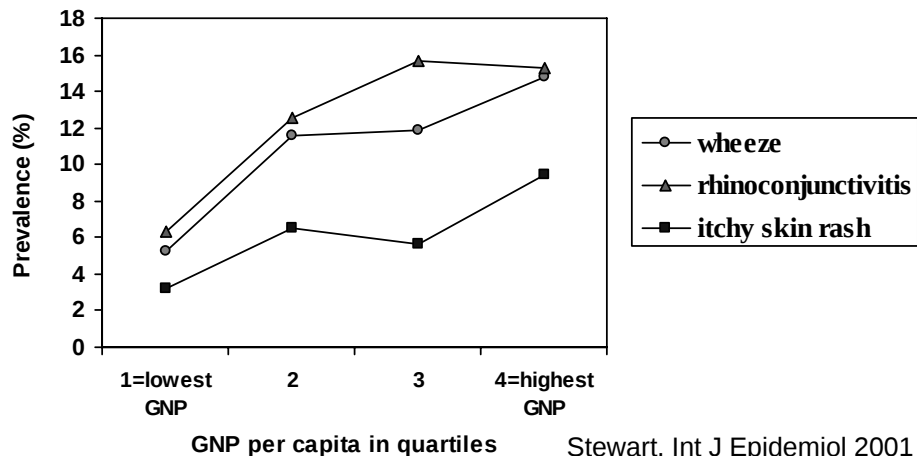
Affluence

- In 1873, Charles Blackley demonstrated that pollen was the causative agent of Hay fever
- He noted that
"hay fever is a rare disorder restricted to the privileged class"



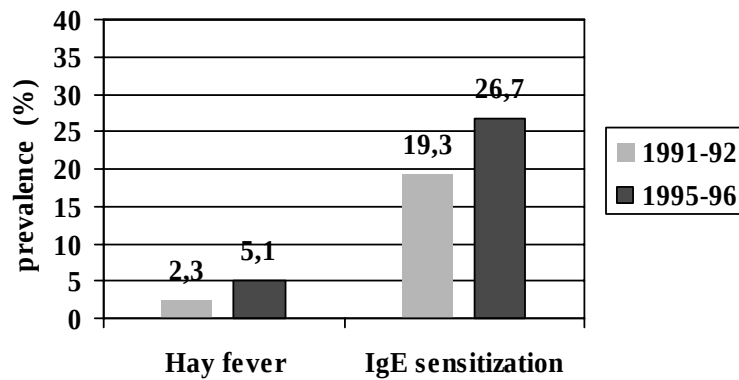
Affluence

Ecological association of symptoms with Gross National Product (GNP) in 13-14-year-olds (ISAAC study)



Westernization

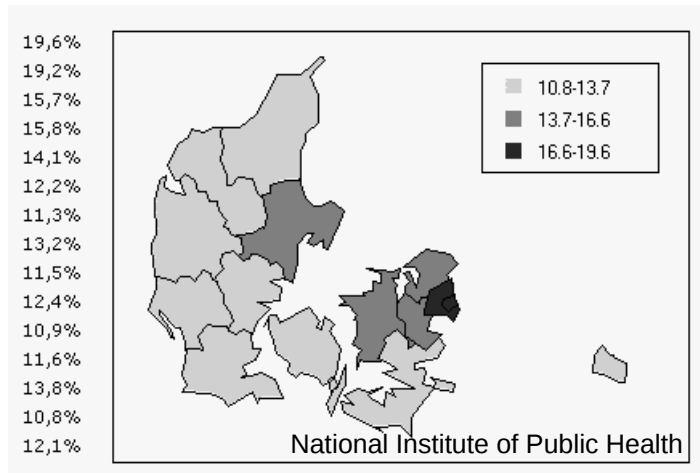
Trends of allergy among schoolchildren in Leipzig (former East Germany) from 1991-92 to 1995-96



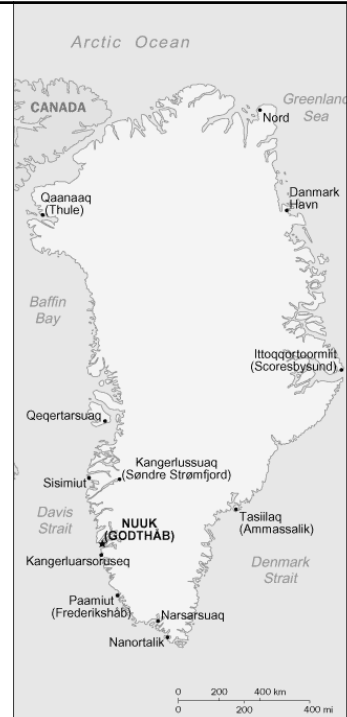
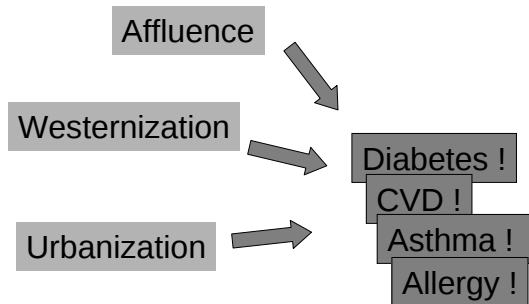
Von Mutius, Lancet 1998

Urbanization

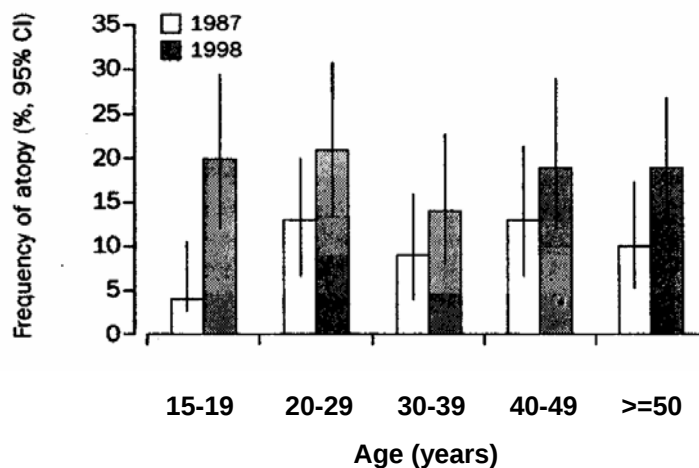
Prevalence of self-reported allergy in Denmark



What happens when a population adopts a westernized, urban, and affluent lifestyle?



Prevalence of allergy (specific IgE in serum) in Greenland between 1987 and 1998



Krause, Lancet 2003

Why is allergy increasing?

Genes

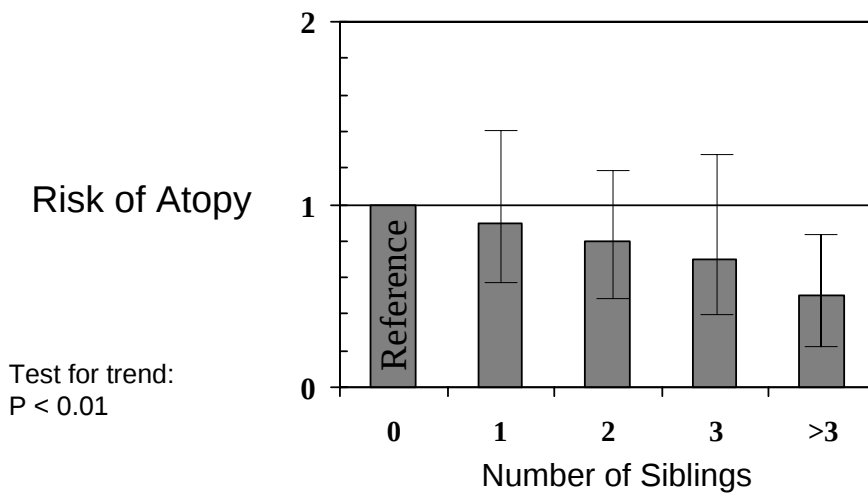


Environment

- Air pollution
- Allergen exposure
- Hygiene hypothesis
- Indoor climate
- .. and more

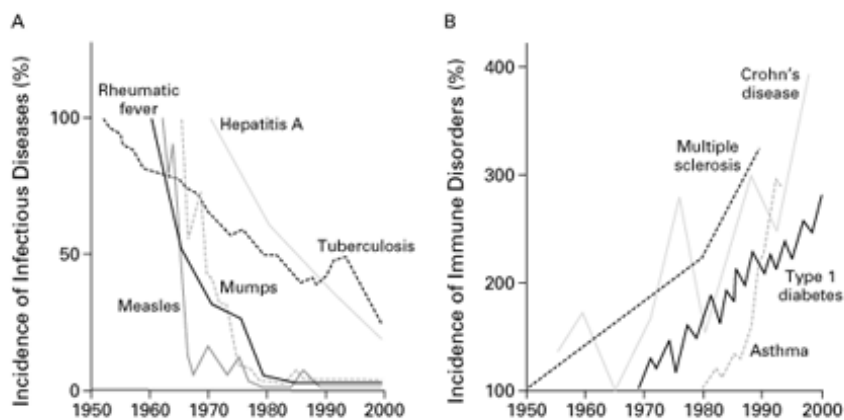


Number of Siblings and risk of allergy: the birth of the Hygiene Hypothesis



Linneberg et al, Clin Exp Allergy 2001

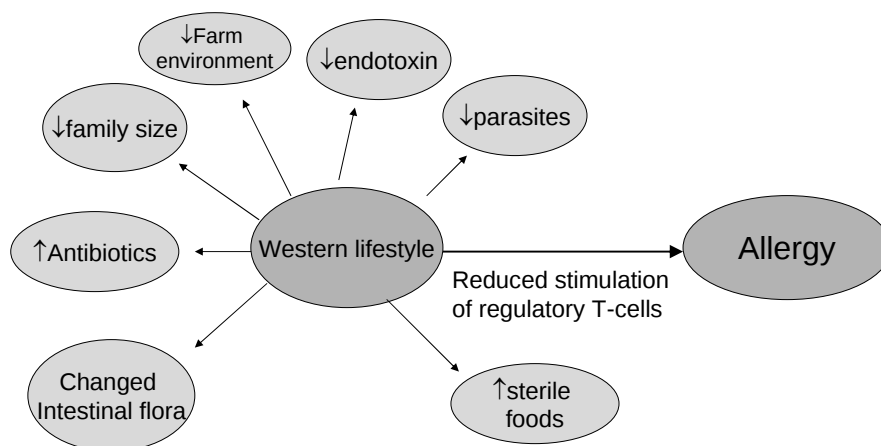
Th1/Th2 deviation or Co-existence of Allergic and Autoimmune diseases



Bach, N Engl J Med 2002

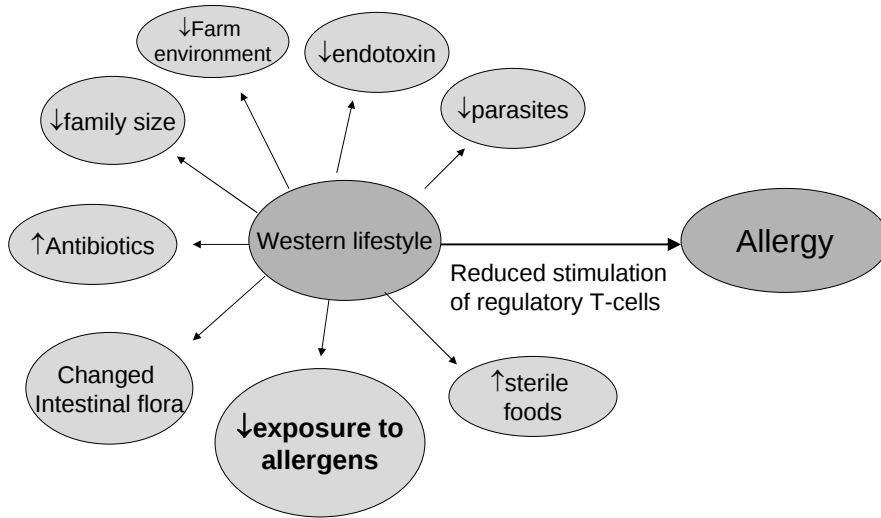
Hygiene Hypothesis

Changes in microenvironment

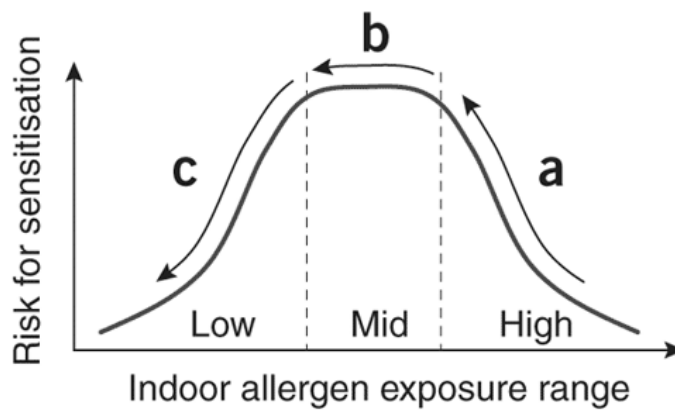


Hygiene Hypothesis

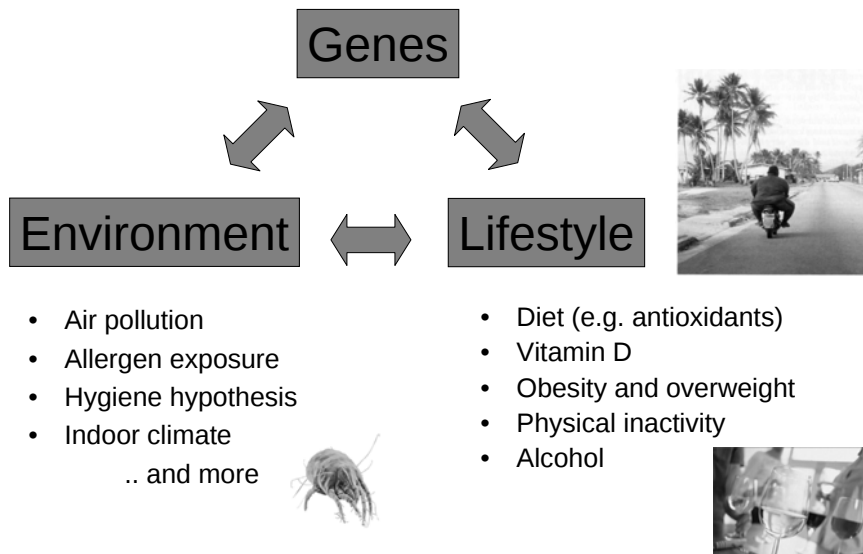
Changes in microenvironment



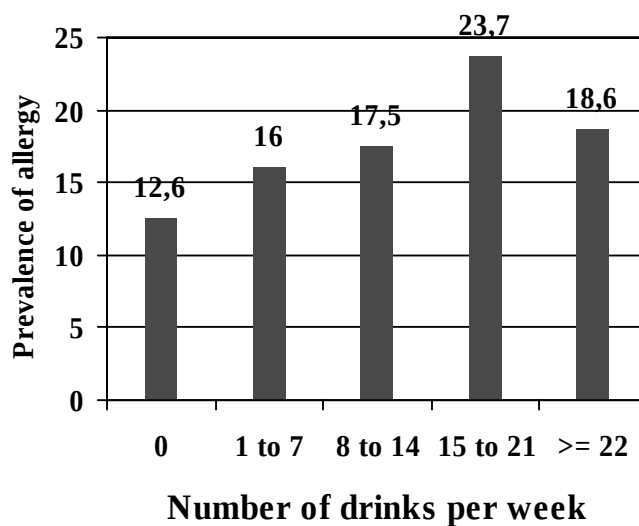
Is the exposure-sensitization curve "bell" shaped?



Why is allergy increasing?



Alcohol consumption and allergy



Allergy = positive Allergy Screen

Linneberg, Clin Exp Allergy 2006

Summary

- Type 1 allergy (atopy) is characterised by a an IgE mediated immune response.
- Atopic diseases include asthma, hay fever, atopic dermatitis etc.
- The prevalence of allergies have increased during the last decades.
- The increase is related to affluence, westernisation and urbanisation.
- Environmental factors resulting in low allergen exposure may be responsible (the hygiene hypothesis).
- Lifestyle factors may also play a role (obesity, alcohol etc.)

- Tak for opmærksomheden!