



Importance of early life events in prevention and control of chronic respiratory disease

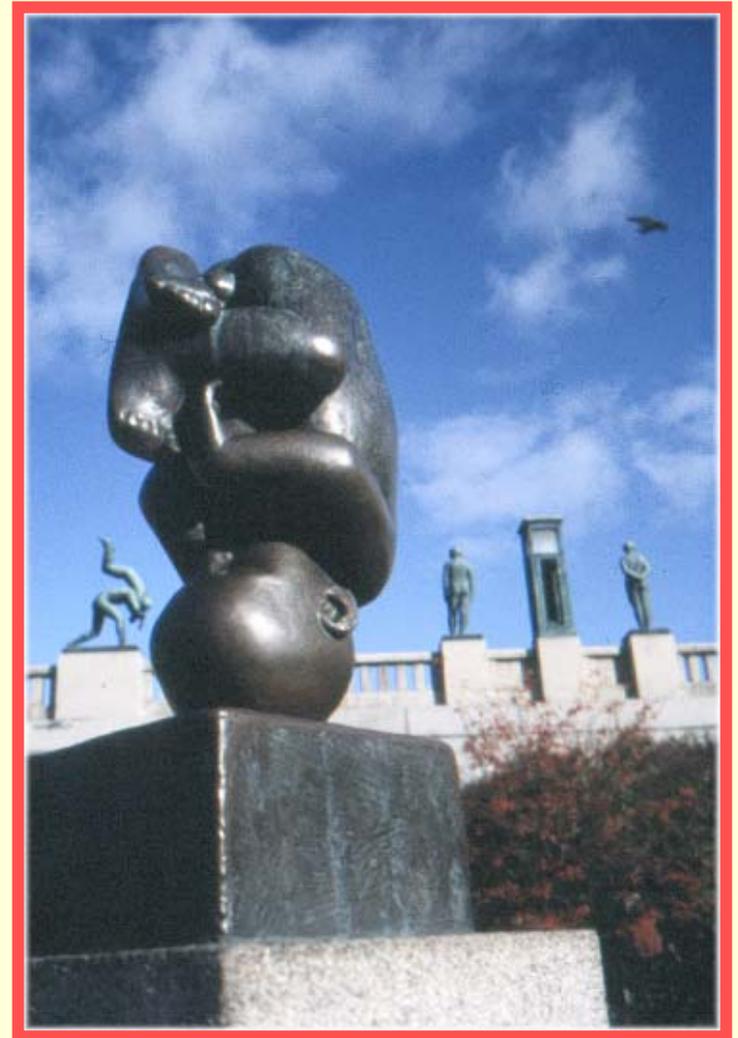
Kai-Håkon Carlsen

GARD

National representative

European Lung Foundation

Chair



Asthma

contributing factors

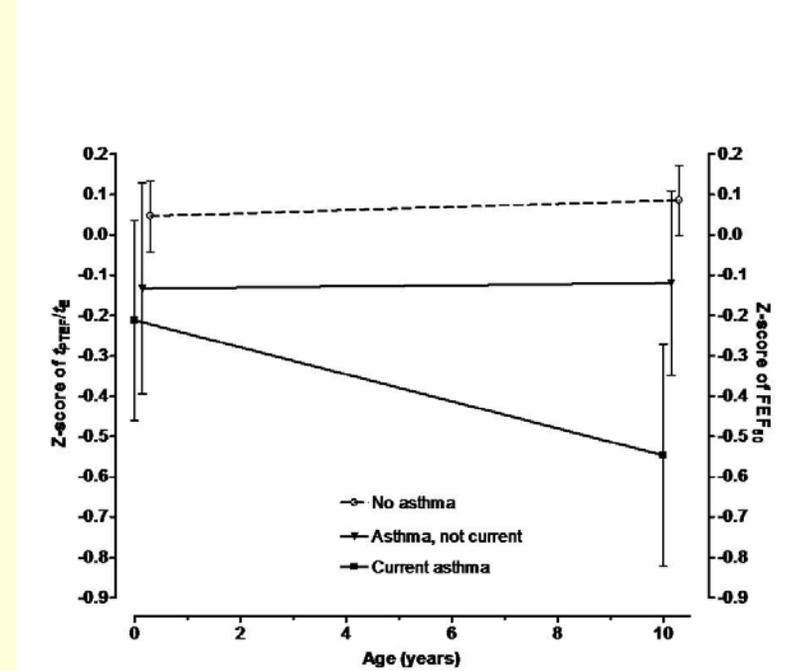
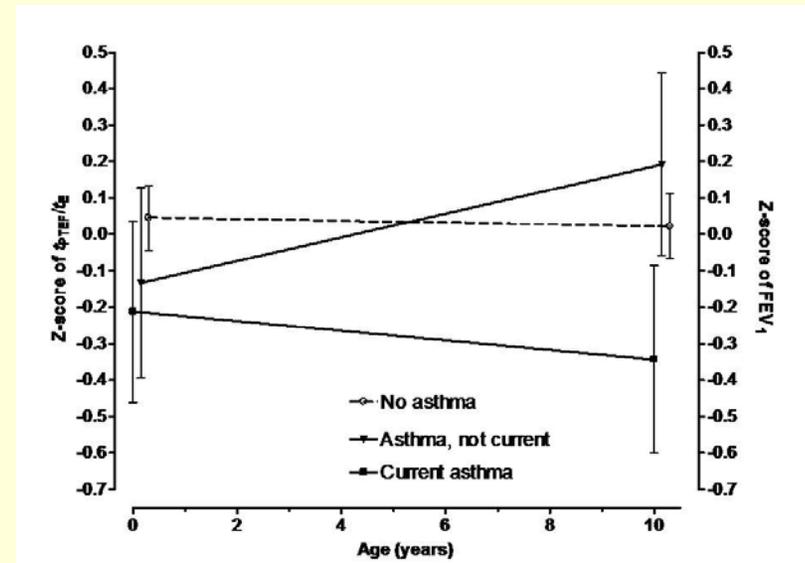
- **Prenatal**
 - Maternal smoking
 - Allergic sensitization ((?))
- **Neonatal**
 - Early exposure
 - Indoor environment - Second hand smoke
- **Infancy**
 - Respiratory virus infections
 - Indoor environment - Second hand smoke
 - Diet
- **Preschool**
 - Allergen exposure – Allergic sensitization
 - Indoor environment (kindergarten) - Second hand smoke - Respiratory virus infection

- **School**
 - Allergen exposure
 - Indoor allergen exposure
 - Physical activity - training, diet
- **Adolescence**
 - Allergy, Physical activity, diet

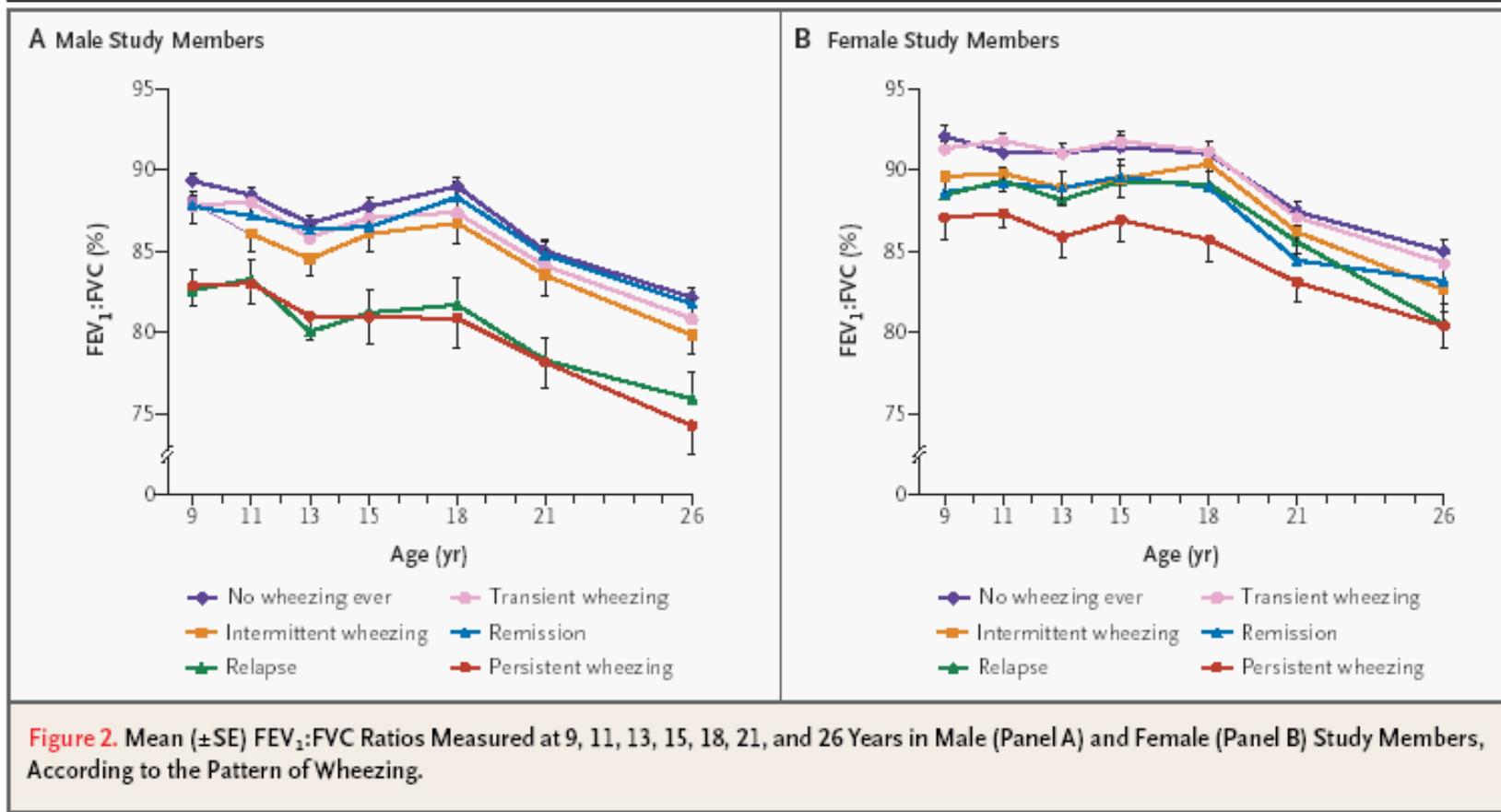
Lung function at birth and 10 years and asthma at 10 years

- Children with current asthma at 10 years of age had lower lung function at ten years, but also lower lung function at birth

Håland G, Lødrup Carlsen KC, Sandvik L, Devulapalli CS, Munthe-Kaas M, Pettersen M, Carlsen KH. Reduced lung function at birth increases risk of asthma at 10 years of age. *N Engl J Med* 2006 Oct 19;355(16):1682-9.

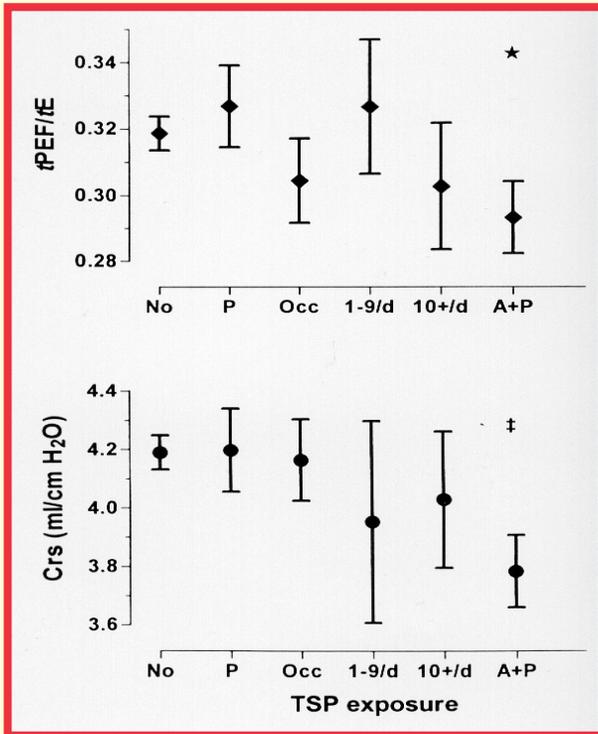


Lung function follows clinical entity





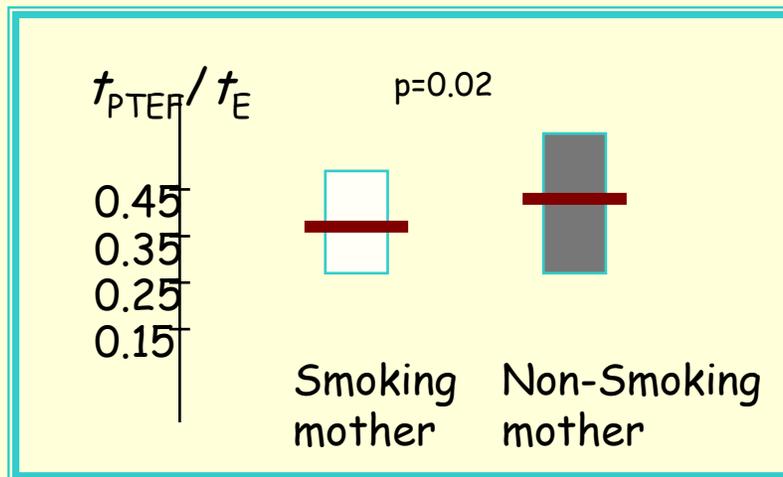
In-utero smoking - effect upon lung function at birth



Maternal smoking:
No= no smoking
P=passive only
Occ= occasionally
1-9 og 10+= no. sig/dag
A+P = active and passive
803 newborn babies



Lødrup Carlsen et al. Eur Resp J 1997



108 premature babies,
mean 33 weeks GA.

*Hoo, et al, 1998,
Am J Respir Crit Care
med*



Smoking in pregnant women, Norway

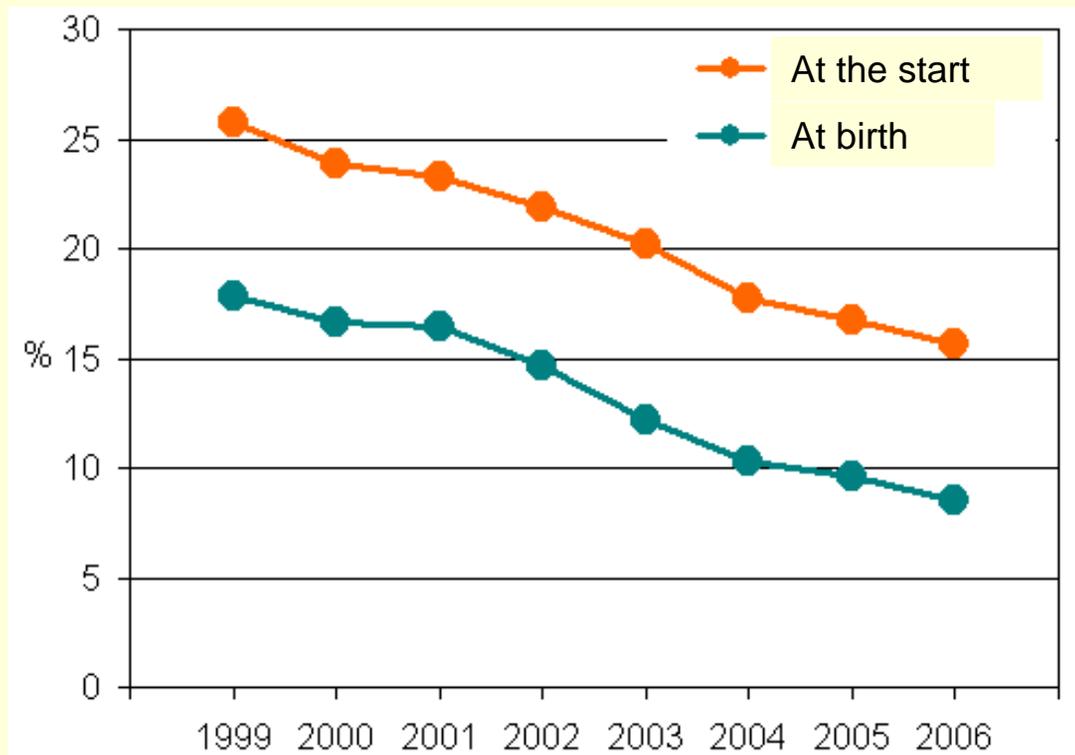


Less pregnant women smoke in Norway

20.07.2007:

16 % at the start of pregnancy
9% at birth

Number of pregnant women smoking, 1999-2006
(Medical birth registry, Norwegian National Institute of Public Health)



Respiratory virus infections and asthma – The role of Respiratory Syncytial Virus



RS virus

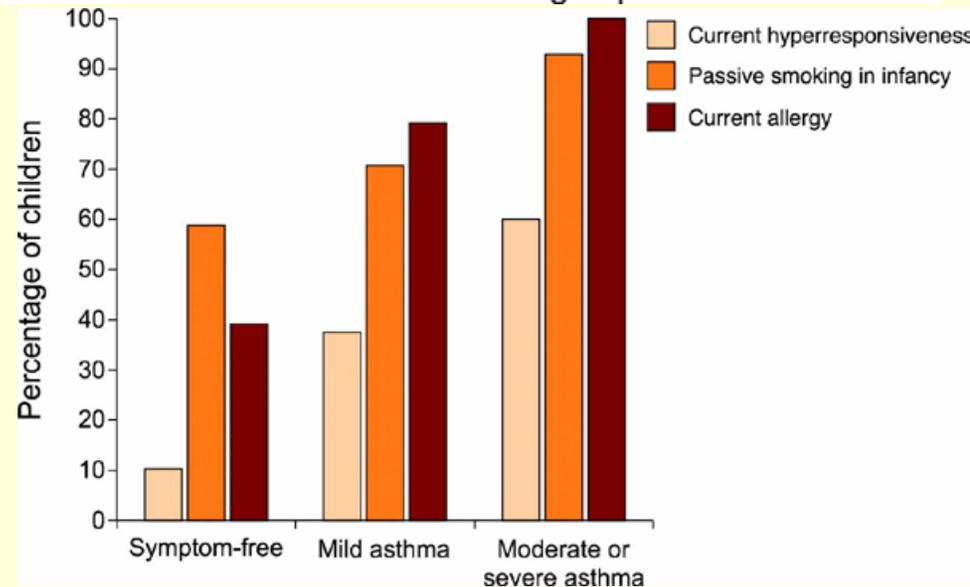
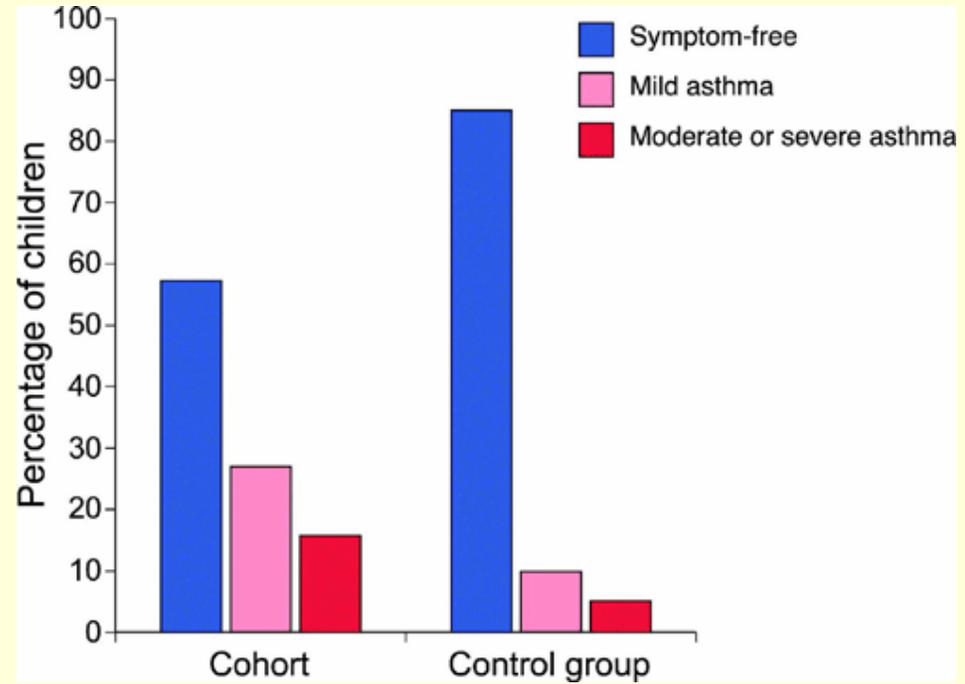
Infect in Med 1999 (6):Suppl.G.

Asthma symptoms in early childhood – what happens then?

Prospective follow-up study at 17-20 years of age:

- 89/101 children hospitalized before 2 years old due to bronchiolitis/wheezing compared to age matched controls
- Questionnaire
- Skin prick test, specific s-IgE, blood eosinophils
- Bronchial hyper-responsiveness (dry, cold air hyperventilation test)
- 43% asthma in index group
15% asthma in control group

- Goksör E, Åmark M, Alm B, Gustafsson PM, Wennergren G. Acta Paediatr 2006; 95, 471–478.





Breastfeeding and allergic disease: a multidisciplinary review of the literature (1966–2001) on the mode of early feeding in infancy and its impact on later atopic manifestations

- **Results:**

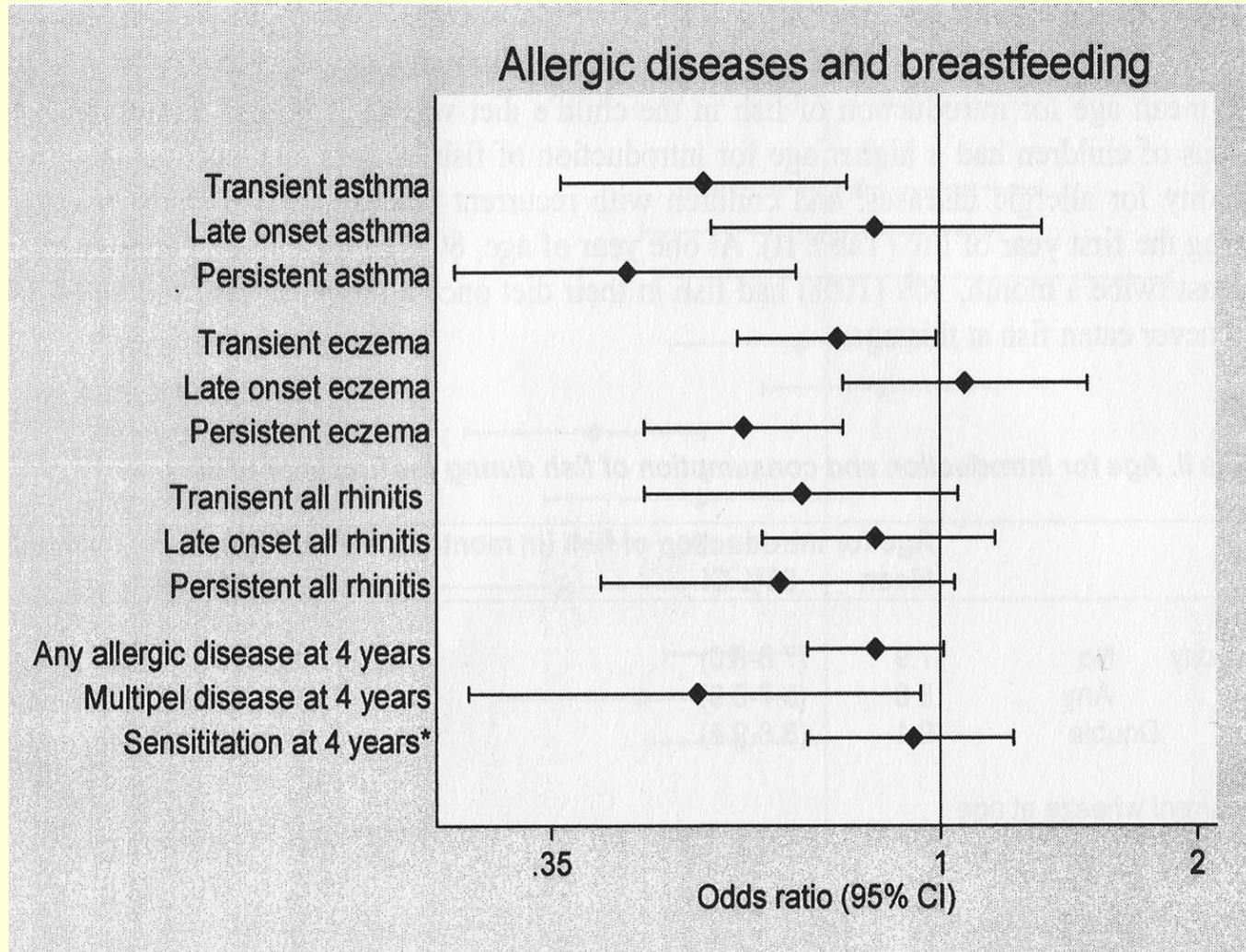
- Of the 132 studies selected, 56 were regarded as conclusive. Several factors contributed to the exclusions. The studies considered conclusive by the review group were categorized according to population and study design.

- **Conclusions:**

- The review group concluded that breastfeeding seems to protect from the development of atopic disease. The effect appears even stronger in children with atopic heredity. If breast milk is unavailable or insufficient, extensively hydrolysed formulas are preferable to unhydrolysed or partially hydrolysed formulas in terms of the risk of some atopic manifestations.

» J. van Odijk1 et al. *Allergy* 2003; 58: 833.

Infant feeding and allergy in children (Bamse study)





Role of Intestinal Flora in development of allergy

- Different gut microflora in allergic children
 - < lactobacillae; different bifidobacteriae in allergic infants
 - > staphylococci and coliforms in non-allergic children
- Probiotics in allergic diseases
 - Preventive effect of Lactobacillus on atopic eczema
 - Antiinflammatory effects of probiotics
- Host-microbe crosstalk in the gut
 - Intestinal inflammation caused by Th1 cytokines upregulates the expression of TLRs in the gut
 - Kalliomäki M, Isolauri E: Curr Opin Allergy Clin Immunol 2003; 3: 15-20.

Respiratory Tract Infections (RTI), later asthma and allergic sensitization

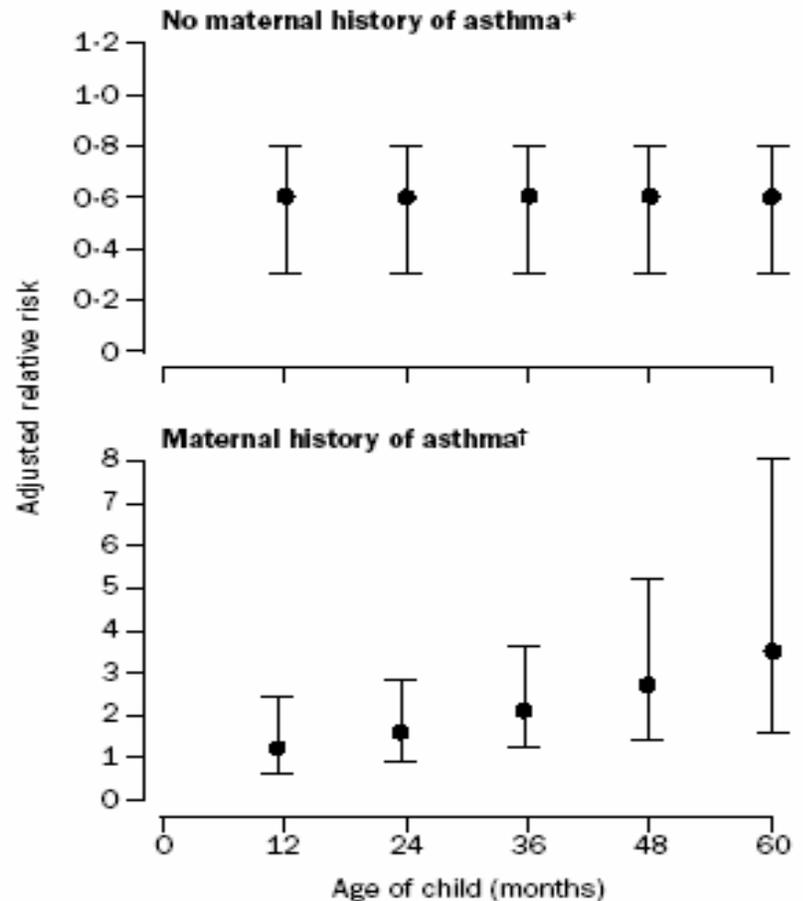
- 4585 schoolchildren in Oslo, Upper Hallingdal and Odda:
 - Otitis media associated with lower allergic sensitization in children with parental atopy (aOR 0.31 (0.12-0.83), but not in children without parental atopy (aOR 0.77 (0.24 – 2.45))
 - Recurrent lower RTI associated with asthma in children without parental atopy (aOR 4.21 (1.68 – 10.57), but not in children with parental atopy (aOR 2.22 (0.85 – 5.63))
 - Njå F et al. Arch Dis Child 2003; 88: 566-9.



Cat exposure and development of wheeze



- 448 children, with at least one parent with a history of atopy, were followed from birth to 5 years. Among children whose mothers had no history of asthma, exposure to a cat or a Fel d 1 concentration of at least 8 g/g at the age of 2–3 months was associated with a reduced risk of wheezing between the ages of 1 and 5 years. However, among children whose mothers did have a history of asthma, such exposures were associated with an increased risk of wheezing at or after the age of 3 years.



Relative risk of wheezing at age 1–5 years among children with or without maternal history of asthma and exposure to a cat at age 2 months compared with children without exposure to a cat at this age

Bars represent 95% CIs. *Relative risks adjusted for sex, household income, day-care attendance in first year of life, recurrent nasal catarrh in first year of life, and number of older siblings. †Relative risks adjusted for sex, household income, having at least one doctor-diagnosed lower respiratory illness in first year of life, and maternal smoking during pregnancy.



”Those who do not make time for exercise will eventually have to make time for illness”

The Earl of Derby, 1863