The Leicester Cohorts

Natural history of preschool wheeze into adolescence:

13-year follow-up of the Leicestershire 1990 cohort

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Introduction

Prevalence of wheeze in preschool children is high and has increased during the past decades (Lancet 2001;357:1821-25). Although initial symptoms can be severe and a burden for families, a large proportion of wheezy children will have only transient symptoms.

For parents and doctors, a means of predicting the likelihood of persistent disease in preschool wheezers would be very valuable.

Aims

In a population-based cohort study, we wanted to:

A) describe prevalence and natural history of wheeze,

B) assess risk factors for persistence from preschool to adolescence.

Methods – Leicestershire cohort

In 1990, a postal questionnaire was sent to the parents of 1650 Caucasian children aged 0 to 5 years, randomly sampled from the population of Leicestershire, UK.

Follow-up surveys were performed in 1998 (8 years later, age 8-13 yrs) and in 2003 (13 years later, age 13-18 yrs).

Survey	1990	1998	2003
N (Response rate)	1422 (86%)	1305 (85%)	1035 (63%)
Any surveys	1561 (95%)		
1990 and 2003	950 (58%)		
All 3 surveys	872 (53%)		

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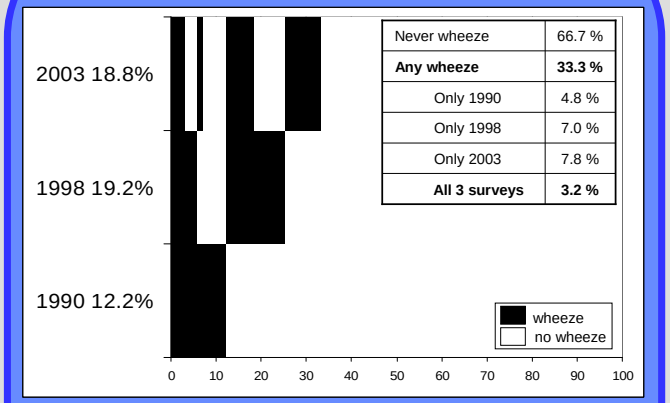
A) Prevalence and natural history of wheeze

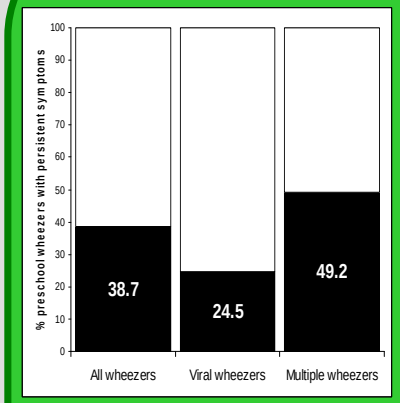


Proportion of wheezers in 1990, 1998 and 2003
in children who replied in all 3 surveys n=872

Horizontally : Prevalence of wheeze (in black) among all repliers.
Vertically : Status of children can be followed through the different surveys.

- **Prevalence of parent-reported current wheeze was** 12% in 1990 (age 0-5 yrs), 19% in 1998 (age 8-13 yrs) and 19% in 2003 (age 13-18 yrs).
- 290 children (33%) reported current wheeze in at least 1 survey.
- **only 3% (28 children) were persistent wheezers** (reported current wheeze in 1990, 1998 and 2003).

B) Risk factors for persistence



- Of the 116 preschool wheezers (who replied in 1990 and 2003), 45 (39%) reported current wheeze 13 years later, 12 of 49 viral wheezers (24%) and 33 of 67 multiple wheezers (49%) (p=0.007).

- In a multivariable logistic regression, we found the following **predictors of persistence of preschool wheeze (1990) into adolescence (2003):**

Exposures in 1990	Odds Ratio	95 CI	p
Wheeze triggered by inhalants	5.94	1.92 – 18.32	0.002
Waking with cough or wheeze	1.93	0.80 – 4.69	0.144
Heating by gas fire	5.36	1.70 – 16.88	0.004
Maternal smoking in pregnancy	2.57	0.93 – 7.00	0.068
Maternal bronchitis	2.74	0.88 – 8.53	0.081
Paternal hayfever	2.16	0.78 – 5.94	0.137

Conclusion – Discussion

- **For one third of unselected children from the community, current wheeze was reported at least once** during childhood.
- However, **only a small minority (3%) had wheeze that persisted over all three surveys.**
- **Persistence was twice as high in multiple than in viral wheezers and predicted mainly by severity at baseline and environmental exposures** (gas heating, smoking in pregnancy).
- These results need to be validated and refined in other (larger) cohort studies.