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Transition from childhood to adult asthma

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If a child has more than one episode of bronchitis in infancy, parents and doctors are concerned about whether the child will outgrow the disease or develop chronic obstructive airway disease—ie, asthma. In today's *Lancet*, Debra Stern and colleagues[1] report data on the prediction of adult asthma at 22 years of age by evaluation of early-life factors at 6 years of age in the Tucson Children's Respiratory Study, one of the oldest birth-cohort studies. Longitudinal studies analyse time courses in disease development and progression and can find relations between exposure factors and outcome (figure).[2]

Although no real cure for asthma exists, early identification of patients at risk of disease progression could lead to better treatment opportunities and, hopefully, improved outcomes in adulthood. Nevertheless, early intervention has not yet been shown to be beneficial in terms of disease modification, which might be because of the failure to identify appropriate subgroups of responders. Studies during early childhood have not shown a clear benefit of early anti-inflammatory treatment in terms of symptom-free days after the treatment period in preschool children.[3] However, inhaled steroids seem to reduce the accelerated decline in forced expiratory volume in 1 s and airway remodelling in adulthood.[4] A kind of tracking (those who start low, remain low) in terms of lung function seems to exist,[5,6] and children with wheezing disorder before 2 years of age compared with those who started wheezing at school age and girls compared with boys probably have poorer lung function in early adulthood.[7]

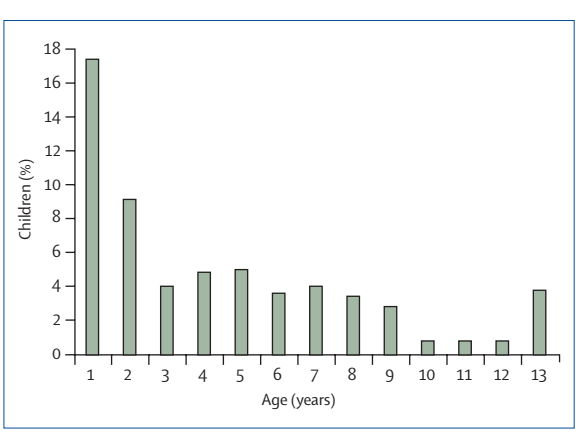

Figure: **Incidence of childhood asthma**
Data are from German MAS study.[2]

Cohort studies have tried to identify different wheezing phenotypes, which were mainly defined by onset and prolongation of symptoms (early onset, late onset, persistent) and presence and absence of atopy.[8,9] One study used latent class analysis, a statistical method developed for the social sciences to identify distinct subsets or classes underlying the observed heterogeneity in a population, to distinguish phenotypes of childhood wheeze and cough.[10] The investigators described five phenotypes: persistent and transient cough, atopic and non-atopic persistent wheeze, and transient viral wheeze. The most common phenotype was atopic wheeze at 8 years of age; however, no prediction for adulthood has been made so far.

In an unselected birth cohort study from New Zealand, 25% of the children had wheezing that persisted from childhood to adulthood or that relapsed after remission.[11] Factors predicting persistence or relapse were sensitisation to house-dust mites, airway hyperresponsiveness, female sex, smoking, and early age at onset. Nevertheless, prediction of outcome seems to be difficult for childhood asthma.

In their new paper, Stern and colleagues try to define phenotypes of asthma with special features early in life, favouring ongoing airway disease later in life on the one hand and characterisation of patients with asthma who developed the disease after puberty on the other. Most cases with current asthma in early adult life already had episodes of wheezing during the first 3 years of life. In 27% of the individuals with asthma at 22 years, asthma was newly diagnosed and most of them were female (71%). Predictive factors for chronic asthma in adulthood were late onset of wheezing (6 years and older), persistent wheeze in early life (before 3 years, and at 6 years and later), sensitisation to the fungus *Alternaria alternata*, and low airway-function and bronchial hyperresponsiveness to cold dry air at 6 years. These findings identify a population at risk of chronic obstructive airway disease in early adulthood, and they already showed a predisposition during preschool years. Whether therapeutic approaches at early preschool age can affect progression of the disease is yet to be established.

Susanne Lau
Department of Paediatric Pneumology and Immunology, Charité University Medicine, 13353 Berlin, Germany
Susanne.lau@charite.de

I declare that I have no conflict of interest.

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Exhaled nitric oxide in guideline-based asthma management

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The importance of good asthma control has been amply documented and new guidelines focus on achievement and maintenance of good asthma control.[1] However, although validated scoring systems have been developed to facilitate asthma control, several studies have found that assessment of asthma control varies markedly between health-care professionals as well as patients.[2] The result is high risk of too little or too much treatment, or both. Therefore the medical community has been hoping for a single, easy-to-measure, and reliable biomarker (such as haemoglobin A_{1c} in diabetes) that could facilitate the assessment of asthma control and help physicians to appropriately increase or decrease treatment. In this respect, exhaled nitric oxide (FE_{NO})—an indirect marker of airway inflammation—has generated much enthusiasm. FE_{NO} is easy to measure, correlates with eosinophilic airway inflammation, and is increased during periods of uncontrolled asthma and reduced during treatment with anti-inflammatory agents.[3-5] However, before a new biomarker is implemented in daily practice, it should be assessed in light of the words of Albert Einstein: "What counts cannot always be measured and what can be measured does not always count."

The measurement of FE_{NO} is relatively easy and has shown promising results, but is not cheap. Therefore the important question is: does addition of FE_{NO} to guideline-recommended clinical assessments and treatment algorithms reduce over-treatment or under-treatment (or both), and does it improve daily asthma control? In today's *Lancet*, Stanley Szefler and colleagues report the findings of a large well-conducted study designed to address these questions.[6] The investigators conclude that adding measurements of FE_{NO} to guideline-recommended asthma management did not provide any important clinical benefit. No differences were found in clinical scores for asthma control or other asthma