



## **Childhood Asthma - A Global Problem**

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### **Introduction**

World Health Organization [www.who.int/entity/respiratory/gard/](http://www.who.int/entity/respiratory/gard/) estimates that 300 million people worldwide suffer from asthma, and that 255 000 people died of asthma in 2005. Asthma is the most common chronic disease among children and is under-diagnosed and under-treated, creating a substantial burden to individuals and families, and possibly restricting individuals' activities for a lifetime.

### **Asthma and Allergy in Children**

It is estimated that for 80% of children with asthma, allergy is one of the most relevant risk factors for their disease. [http://www.worldallergy.org/professional/who\\_paa2003.pdf](http://www.worldallergy.org/professional/who_paa2003.pdf)

Atopic children – those who have a tendency to become sensitized and produce IgE antibodies in response to ordinary exposures to allergens (particularly to indoor allergens such as house dust mites or mould) are predisposed to develop allergic symptoms. Atopy is a predisposing genetic risk factor associated with the inception of asthma, according to the Global Initiative of Asthma (GINA). <http://www.ginasthma.com/> Atopic children and those children having previous allergic symptoms are significantly more susceptible to the development of asthma. Early diagnosis of the atopic condition and the allergic nature of eczema, nasal symptoms and wheezing/cough, with accurate identification of the causative allergens and correctly administered pharmacotherapy can help to achieve better asthma control. When diagnosing and treating asthma in children, the allergist will also ask about concurrent allergic symptoms and consider therapy that will alleviate the total burden of allergic disease for the patient. The aim of treatment is for children with asthma to enjoy a normal life, including relief from the socio-psychological effects of chronic disease, and to be able to participate fully in school and recreational activities.

### **Management of Childhood Asthma**

Analysis of the WAO Global Allergy Physician and Patient survey (2006) <http://www3.interscience.wiley.com/cgi-bin/fulltext/118519852/PDFSTART>

identified that physicians who treat children with asthma are not prescribing treatment according to the Global Initiative for Asthma (GINA) guideline recommendations, and a large proportion of children with asthma are not presently receiving an acceptable standard of asthma care. This is of major concern because of the special challenges that must be taken into account in managing asthma in children during the first 5 years of life. These challenges include difficulties with diagnosis, the efficacy and safety of drugs in childhood, and the importance of proper use of inhaler devices. Approaches to these issues vary among populations in the world based on socioeconomic conditions, genetic diversity, and cultural beliefs. Differences in health care access and delivery may make adherence to guidelines difficult, but correct treatment is crucial to the success of asthma control and improvement in quality of life for the patient and family. Patient-and-caregiver education regarding correct inhaler technique and avoidance of asthma triggers is essential to ensure compliance with prescribed medication and optimal treatment outcomes. Recently GINA has launched the *Global Strategy for the Diagnosis and Management of Asthma in Children 5 Years and Younger*. <http://www.ginasthma.com/Guidelineitem.asp>

### **The Global Prevalence of Allergy and Asthma is Increasing**

The US Center for Diseases Control (CDC) data show an increase in pediatric asthma and a continued rise in emergency (ED) visits and hospitalizations in children. In the US, 9.1% of children – 6.7 million individuals - currently have asthma. The amount of school missed by children and work missed by parents of children with asthma is increasing, with associated economic impact. <http://www.cdc.gov/asthma/asthmadata.htm>

The US National Health Interview Survey, 2007 reported 138 Asthma deaths in children under 15 years in 2005. [http://www.cdc.gov/nchs/data/series/sr\\_10/sr10\\_239.pdf](http://www.cdc.gov/nchs/data/series/sr_10/sr10_239.pdf)

A study performed in the United Kingdom looked at the prevalence of asthma, wheezing, eczema and rhinitis between the 1960s and 1990s. The study used the same methodology at two time points during a 25-year span, and the results showed a significant increase in all diseases, attributable to a true change in prevalence.[1] The prevalence of wheezing had risen from 10% to almost double that figure; asthma rose from 4% to 10%; rhinitis, at 3% in the 1960s, rose by almost four times; and eczema more than doubled from the 1960s figure of 5%.

In a population of young Finnish men, asthma rose from 0.29% in 1966 to 1.79% in 1989. The chance of confounding factors in the disease diagnosis is improbable. [2]

In the United Kingdom, an evaluation of prevalence in schoolchildren between 1991 and 2002 showed a significant increase in wheezing in the previous 12 months, in severe speech-limiting episodes and in night waking.[3] Another time trend study also showed a significant increase in physician-diagnosed asthma between 1990 and 2003; the increase was larger in females (from 7.3% to 14.6%) than in males (from 7.8% to 9.4%) across all age groups.[4]

### **Prevalence of Allergy and Asthma in Low- and Medium-Income Countries**

The International Study of Asthma and Allergy in Childhood (ISAAC) has shown that the prevalence of asthma and atopy in children from affluent countries is higher than in low-income countries .[5] The prevalence is variable in different regions and countries in the world.

Ait-Khaled and co-workers described the prevalence of a wide range of atopic disorders throughout Africa. The highest prevalence of current asthma was observed in urban areas with a higher standard of living , but asthma also had a representative prevalence in endemic parasite and tuberculosis zones.[6]

In Latin America the prevalence of asthma and allergic diseases in childhood is similar to that in industrialized countries, although great variability has been found. In a recent survey in Asia, a 16.1% prevalence of wheezing in the previous 12 months was found in rural children from Bangladesh; similar percentages were reported in other developing regions <http://www.isaac.auckland.ac.nz>

Taken all together, the evidence shows the prevalence of asthma is high and is still increasing, mainly in developing countries, although a slightly upward trend has been also shown in high income countries [7].

A European study performed four times between 1992 and 2001 reported a stabilization in the incidence of asthma and hay fever, but found a predominant increase in atopic eczema among girls.[8] The Aberdeen study found the same trend toward stabilization in the incidence of asthma, allergic rhinitis and eczema, until 2004, when the prevalence of eczema was again higher in girls.[9] In contrast, an Italian study showed an increase from 1994 to 2002 in wheezing, allergic rhinitis and atopic eczema in 6- and 7-year-old children, and in allergic rhinitis and atopic eczema in 13- and 14-year-old adolescents.[10]

A global time trend analysis of the prevalence of rhinoconjunctivitis symptoms demonstrated yet again a steady increase that was more evident in lower- and middle-income countries and in older age groups, suggesting that environmental influences in the development of allergy may not be limited to early childhood. [11]

### **Factors related to increase in the prevalence of allergy and rhinitis**

Asthma is a complex multifactorial disease influenced by a strong genetic-environmental interaction. [12] Allergens play a major role in the persistence of asthma symptoms. [13] Climate change, immigration, diet changes and allergen concentrations, both indoor and outdoor, could play a major role. Air pollution, particularly tobacco smoking and second hand smoking (SHS) have a deleterious effect on asthma and rhinitis outcomes. [14] Tobacco smoking, SHS and exposure during pregnancy facilitate allergic sensitization and the appearance of asthma symptoms. [15] Certified allergists are very well trained and experienced in managing asthma in children, including the allergic/immunological aspects of the disease, environmental control, tobacco cessation programs and the management of immunotherapy. [16, 17, 18]

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