The Global Burden of Asthma*

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There has been a sharp increase in the global prevalence, morbidity, mortality, and economic burden associated with asthma over the last 40 years, particularly in children. Approximately 300 million people worldwide currently have asthma, and its prevalence increases by 50% every decade. In North America, 10% of the population have asthma. Asthma is underdiagnosed and undertreated, although the use of inhaled corticosteroids has made a positive impact on outcomes. The increasing number of hospital admissions for asthma, which are most pronounced in young children, reflect an increase in severe asthma, poor disease management, and poverty. Worldwide, approximately 180,000 deaths annually are attributable to asthma, although overall mortality rates have fallen since the 1980s. Most asthma deaths occur in those ≥ 45 years old and are largely preventable, frequently being related to inadequate long-term medical care or delays in obtaining medical help during the last attack. The financial burden on patients with asthma in different Western countries ranges from $300 to $1,300 per patient per year, disproportionately affecting those with the most severe disease. There are a number of significant barriers to reducing the burden of asthma, particularly in developing countries, where many patients have limited access to care and essential medications. The Global Initiative for Asthma has outlined a six-point patient management plan to address the effective handling of the increased number of patients in primary care. The plan focuses on patient education, written treatment plans, and ongoing communication and review with patients and their providers.

(CHEST 2006; 130:4S–12S)

Key words: asthma management; economic costs; morbidity; mortality; prevalence; respiratory disease

Abbreviation: GINA = Global Initiative for Asthma

The definition of bronchial asthma has been refined considerably since it was described in 1892 by Sir William Osler[1] as: ". . . a neurotic affection characterized by hyperemia and turgescence of the mucosa of the smaller bronchial tubes and a peculiar exudate of mucin. The attacks may be due to direct irritation of the bronchial mucosa or may be induced reflexly, by irritation of the nasal mucosa, and indirectly, too, by reflex influences from stomach, intestines or genital organs." William Osler was, perhaps, one of the finest physicians in the English-speaking world at the turn of the twentieth century and an expert in the diagnosis of diseases of the cardiovascular and pulmonary systems. Over the years, researchers chiseled away at Osler's definition and, by the mid-twentieth century, asthma was known as ". . . a disease characterized by widespread narrowing of the airways which alters in severity spontane-

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Dr. Braman has no conflict of interest or financial investment that would pertain to the substance of this article. However, he has been a consultant and has been on the speakers bureau of GlaxoSmithKline, Altana Pharma, BI, and Schering Plough Inc.

Manuscript received July 2, 2005; revision accepted March 20, 2006.

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DOI: 10.1378/chest.130.1_suppl.4S

Table 1—*Definition of Asthma

"a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role. The chronic inflammation causes an associated increase in airway hyper-responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness and coughing, particularly at night or in the early morning. These episodes are usually associated with widespread but variable airflow obstruction that is often reversible either spontaneously or with treatment"

*Masoli et al.[4]

ously or in response to specific treatment" (1959)[2] and ". . . characterized by increased responsiveness of the trachea and bronchi to various stimuli" (1962).[3] Today, asthma is defined as a chronic inflammatory disorder of the airways that affects adults and children of all ages (Table 1).[4]

Improvements in asthma care were rapid during the second half of the twentieth century, and 1989 saw the inauguration of the Global Initiative for Asthma (GINA), regarded as the most authoritative road map for asthma care. GINA is a collaboration between the National Heart, Lung, and Blood Institute, the National Institutes for Health, and the World Health Organization in an effort to raise awareness of the increasing prevalence of asthma. The goals of asthma treatment, as laid out in the GINA workshop report, are shown in Table 2.[5] Essentially, the cornerstones of asthma management are an objective assessment, physician/patient partnership, control of environmental influences, and pharmacologic therapy.[5]

Asthma can place considerable limitations on the physical, emotional, social, and professional lives of sufferers, and these may be greater when symptoms are not adequately controlled. Children can become very distressed by their disease, with considerable absences from school and reduced participation in family life. There has been a sharp increase in the global prevalence, morbidity, mortality, and economic burden associated with asthma since the 1960s, particularly in children.[4,6] Although asthma is most common in developed (westernized) countries, it is becoming increasingly common in developing countries, which is most likely related to the increased urbanization of communities. Four recent surveys, Asthma in America,[7] Asthma Insights and Reality in Europe,[8,9] Asthma Insights and Reality in Asia-Pacific,[10] and Asthma Insights and Reality in Japan[11] highlighted the fact that asthma is underdiagnosed and undertreated, with considerable room for improvement in asthma control (Fig 1). Furthermore, there is a considerable communication "gap" between what physicians (providers) do and what their patients actually perceive that they do (Fig 2).[7] For example, 70% of physicians said that they had developed a written action plan for and with their patients, while only 27% of patients claimed that this was actually the case.

Table 2—*Goals of Asthma Treatment

Control chronic and nocturnal symptoms
Maintain normal activity, including exercise
Prevent acute episodes of asthma
Minimize emergency department visits and hospitalizations
Minimal need for reliever medications
Maintain near-normal pulmonary function
Avoid adverse effects of asthma medications

*The GINA workshop report.[5]

Asthma Prevalence Initiatives

Since 1989, GINA has collected asthma prevalence data from various surveys throughout 20 geographic regions, and compiled them to produce the *Global Burden of Asthma* report[4] that was released in February 2004. Survey questionnaires were based on the symptom of "wheeze," which is a key symptom for identification of individuals with asthma. Wheezing occurring at any time over a 12-month period has good specificity and sensitivity for bronchial hyperresponsiveness and a diagnosis of asthma in adults and children. Most of the data were obtained from two key surveys: the International Study of Asthma and Allergies in Childhood[6] (pa-

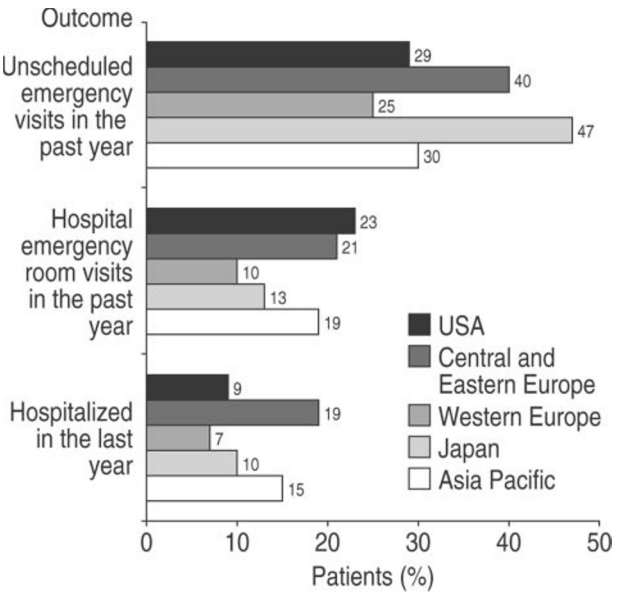

FIGURE 1. Several international surveys[7,9–11] have shown that there is still considerable room for improvement in asthma control.