Asthma

The Epidemic Has Ended, or Has It?

All truths are easy to understand once they are discovered; the point is to discover them.

Galileo Galilei (1564–1642)

Asthma, a chronic inflammatory lung condition with acute episodes of bronchoconstriction and exacerbation, is associated with considerable patient morbidity, a diminution of productivity, and an increase in health-care utilization. Throughout the 1980s and 1990s, there was a clear perception that asthma prevalence was increasing. This perceived trend prompted concern about a possible “asthma epidemic.” Worldwide efforts to promote awareness about asthma diagnosis, prevention, and treatment followed the publication of these concerns. In the United States, the Healthy People 2010 initiative has clearly targeted improving asthma care, awareness, and education as key objectives.

In this issue of CHEST (see page 1993), Vargas et al report on asthma trends in Mexico from 1991 to 2001, analyzing health claims data from a nationwide database representing approximately one third of the Mexican population. Asthma incidence (ie, newly diagnosed asthma cases determined by first-time family physician visits), emergency department visits for asthma, and hospital discharges with asthma listed as a primary diagnosis steadily increased from 1991 to 1995. This increment was followed by a plateau (from 1995 to 1997) and a subsequent decline (from 1997 to 2001). It appears that in Mexico, at least for a third of the population with health insurance, there is an early trend toward decreased health-care utilization by asthmatic patients. This may, in part, be due to a decrease in the incidence of asthma in this population. Can the same be said about the incidence of asthma in the United States and other countries? Are we continuing to observe a worldwide increase in asthma incidence or has the asthma epidemic truly stabilized, and perhaps even decreased? Moreover, are we even using the proper tools to detect any changes in the trend? The answers to these questions are conflicting, in part due to the lack of uniformity in definitions and the nature of epidemiologic survey tools used to monitor asthma trends.

The principal source of data for the estimation of asthma prevalence in the United States is the National Health Interview Survey (NHIS), a multipurpose health survey conducted by the National Center for Health Statistics, Centers for Disease Control and Prevention, to study the health of the civilian, noninstitutionalized, household population of the United States. The NHIS undergoes periodic revision, to reflect the changing nature of the population and to improve sampling techniques, with the last major revision having been done in 1997. The revised questionnaire evaluates both the lifetime and attack prevalence of asthma. Respondents or their proxies are asked whether they ever have received a diagnosis of asthma by a health professional in their lifetime and, if so, whether they had experienced an asthma attack or episode in the preceding 12 months. In 2001, an additional question pertaining to “current asthma” prevalence was added to the survey. Those with a “yes” response to “being diagnosed with asthma in their lifetime” also were asked whether they still had asthma. This question is similar to the one asked in the 1982 to 1996 NHIS survey, except the current questionnaire measures the respondent’s recall of physician-diagnosed asthma, not self-reported asthma symptoms.

Due to survey revisions, the responses on questionnaires from 1997 onward are not directly comparable to those given prior to 1997. Thus, during the time period examined by Vargas et al, we do not have a continuous estimate of asthma prevalence trends in the United States and cannot draw any comparisons to data reported from Mexico. Furthermore, unlike the asthma incidence estimates reported for the Mexican population, none of the national survey tools employed in the United States measure asthma incidence. Another distinction that precludes a comparison between existing asthma trends for the United States and the current study in CHEST is the heterogeneity of the Hispanic population in the United States. The 1998 to 2001 lifetime asthma prevalence rates for Hispanic Americans, while increasing, were lower than those of non-Hispanic whites and blacks. Within Hispanic sub-
groups, there are interesting differences, with Puerto Ricans having higher asthma rates, morbidity rates, and mortality rates than other Hispanic groups, including Mexicans. This may be due to differences in lung function and responsiveness to bronchodilators, in addition to environmental variations.

Despite our inability to compare trends between the two countries, the question remains, "Is the asthma epidemic over in the United States?" The even more difficult question to ask and answer is "What of the asthma epidemic worldwide?" Reports regarding asthma prevalence and incidence in various countries, drawn from a wide range of age, ethnic, and racial backgrounds, are conflicting. While some parts of the world (eg, Rome, Italy; Saskatchewan, Canada; and Melbourne, Australia) have reported a decrease in asthma incidence, especially in children, other areas (eg, Saudi Arabia; South Australia; and Patras, Greece) continue to notice an increasing trend in asthma prevalence and health-care utilization. Due to differences in case definitions, survey techniques, periods of study, and population characteristics, none of these studies are easily comparable. At present, there seems to be no clear indication that the worldwide asthma epidemic is ending.

To discover the answer in the United States, we must examine trends reported for "lifetime asthma" and "attack rate" prevalence from 1997 to June 2003. The final results are not yet completely available for 2002 and 2003. In addition, sufficient time has not passed since the 2001 addition to the NHIS to comment on "current asthma prevalence" trends. Between 1997 and 1999, the lifetime asthma prevalence rate decreased by approximately 6% (96.6 per 1,000 persons in 1997 to 90.9 per 1,000 persons in 1999) but increased again by 25% by 2001 (113.4 per 1,000 persons in 2001). As with lifetime asthma prevalence, the asthma attack rate decreased by 7.4% from 1997 to 1999 (41.8 per 1,000 population in 1997 to 38.6 per 1,000 population in 1999) but then increased significantly by 10% (42.6 per 1,000 population) in 2002. Results for the first half of 2003 indicate an asthma attack rate of 40.1 per 1,000 population. Interestingly, despite a recent increase in lifetime asthma prevalence, estimates from the National Hospital Discharge Survey suggest a decline in the number of hospital discharges for asthma from 1988 to 2000. Similarly, mortality rates declined over the same time period.

In summary, during the 1980s and early 1990s asthma prevalence trended upward in the United States followed by a brief, but nonsustained, decline from 1997 to 1999. The 2001 NHIS data suggest that there has been a net increase in lifetime asthma prevalence in the United States since 1997. Thus, any conclusions about the end of the asthma epidemic in the United States are premature. And unlike Galileo's statement, in the case of asthma there remains much speculation about the reasons for this continued increase in prevalence. Regardless of cause, there is no doubt that asthma remains a significant health-care problem. In absolute numbers, asthma has been diagnosed in millions of people in the United States and worldwide, and many continue to experience considerable morbidity and mortality. Continued surveillance of asthma prevalence, morbidity, and mortality worldwide is necessary to guide the implementation of asthma risk reduction programs, to judiciously direct the use of limited health-care resources, and to gauge the effectiveness of existing management programs.

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REFERENCES
10 Burney P. The changing prevalence of asthma? Thorax 2002; 57(suppl):I136–I139