In 1990, the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (JAMA) observed that death rates from asthma have been increasing in the U.S., Canada, England, France, Denmark and Germany.[1] Other sources report increasing death rates from asthma in Wales and Australia.[2] A new study of 10,526 asthma deaths in California during the period 1960-1989 confirms the U.S. trend.[3]

In the U.S., the increase has been rapid. Asthma death rates increased 31% between 1980 and 1987 (from 1.3 per 100,000 population to 1.7 per 100,000). The biggest increase occurred among children between the ages of 5 and 15.

These averages hide important facts about the people hardest hit. Among African-Americans, the age-adjusted death rate from asthma climbed from 1.9 per 100,000 in 1979 to 2.6 per 100,000 in 1984, a 37% increase in 5 years. Among whites, the age-adjusted increase during the same period was 25% (from 0.8 per 100,000 to 1.0 per 100,000).[4] The asthma death rate is nearly three times as high among African-Americans as among whites, and is worsening more rapidly.

In addition to asthma deaths, the PREVALENCE of asthma has been increasing steadily in the U.S. and elsewhere. According to JAMA, the best information on asthma prevalence comes from the National Health and Nutrition Examination Surveys (NHANES). NHANES data indicate that, among children ages 6 to 11, the prevalence of asthma increased from 4.8% in 1971-74 to 7.6% in 1976-1980, a 58% increase in a short period.

According to a 1988 study, among U.S. children ages 3 to 17, 9.5% (or 5.01 million) had been diagnosed by a physician, at one time or another, as having asthma, and 6.7% (3.54 million) currently have physician-diagnosed asthma. Among those currently having physician-diagnosed asthma, the prevalence of disease is 54% higher among African-American youths compared to all others (9.4% vs. 6.1%).[2]

All told, according to the American Medical Association (AMA), an estimated 9.9 million Americans suffer from asthma.[5] However, this number is flexible, depending upon who is defining the disease. By some estimates the number is as low as 7 million or as high as 20 million. [6] (In children, wheezing is likely to be caused by asthma; however, among adults, there may be several possible causes of wheezing, giving rise to differing estimates of asthma among adults.)

In any case, there is general agreement that asthma is increasing. Various studies have tried to explain away the increase: changes in the way the disease is defined; better diagnosis; better access to hospitals. The AMA says none of these reasons is persuasive; there really is more asthma occurring, and more people are dying of asthma.

No one knows for sure what is causing the increases. Asthma is a disease of the immune system. The immune system is an exceedingly complicated set of organs, tissues, and fluids, which, together, protect the body from outside invaders, such as bacteria and viruses. The immune system also protects against internal threats, such as cells that go haywire and start multiplying uncontrollably (i.e., cancer). In an asthmatic, the immune system overreacts to the presence of an external agent and ends up doing more harm than good. The bronchial tubes (which connect the throat to the lungs) become inflamed, produce excessive mucous, and also may constrict by muscular spasm. As a result, the person feels like he or she is drowning for lack of air, which is in fact the case. It is a nasty, debilitating disease. In inner cities, asthma is the leading cause of hospitalization among children ages 5 to 15.[7]

Although we know asthma is an immune system disease, this does not mean anyone knows much about its causes. The U.S. has been focused on cancer for two decades, spending $25 billion searching unsuccessfully for the holy grail (a cure), largely ignoring prevention.[8] As a result, research on the immune system has lagged behind.

Asthma in industrialized countries may be worsening because (a) there are more strange substances in the environment each passing day because of "better living through chemistry," and the immune system goes berserk responding to them (b) immune systems are knocked out of kilter by something new in the environment and then overreact to common substances like house dust or dog hair. Perhaps both are true.

It seems certain that asthma is triggered by common air pollutants, such as street-level ozone and nitrogen oxides, which are increasing as time passes. Fine particles definitely make asthma worse (see RHWN #373, but also see RHWN #131, #132, #134 and #136).[9] Fine particles are pieces of soot or dust or smoke so small that they bypass the natural pollution traps in our nose and throat. In addition, the presence of fine particles in the air increases the incidence of non-asthma illnesses among asthmatics: chronic cough, bronchitis, and chest ailments increase among asthmatics as the concentration of fine particles increases.[10]

Furthermore, exposure to nitrogen oxides, sulfur oxides, and ozone are associated with increased asthma.[11] This should not be surprising since there is strong evidence that these air pollutants cause an increase in bronchitis, persistent cough, and chest ailments among people who do not suffer from asthma.[12]

On the other hand, there may be something more fundamental at work than mere pollutants irritating hyper-sensitive bronchial tubes. SCIENCE magazine, the voice of the American Association for the Advancement of Science, flatly attributes the asthma increase to damaged immune systems:

"In the 1980s, human immune systems were first faced with the blatant, destructive power of AIDS. Now, in the 1990s, humans--and immunologists--are encountering dramatic increases in yet another disturbing, though far more subtle, problem: Environmental pollutants are having a deleterious effect on immune systems. Indeed, everywhere these days doctors are seeing increasingly severe cases of immune-related diseases," said SCIENCE, specifically mentioning asthma.[13] What hope is there?

Asthma is one of those diseases that offers an opportunity to reassert our commitment to a prevention philosophy. The immune system is about as complicated as the nervous system, though not so well understood. It may take decades or longer before the physiological mechanisms of asthma are clarified. After that, many more decades of research will be needed to pin down which chemicals cause which effects. Interactions between multiple chemicals and immune systems will probably NEVER be understood: the problem is simply too complex for science to solve. In the meantime, asthma grows worse. The most realistic hope for reducing the costs of asthma is to reduce pollution and exotic chemicals in the environment. This means resurrecting a 19th century view of public health: curing most disease is impossible or impossibly expensive whereas prevention is often possible and affordable. Politicians and political appointees today say many of the right words about prevention, but so far this has not translated into deeds.

--Peter Montague


Richard Evans III and others, "National Trends in the Mortality and Mortality of Asthma in the U.S.," CHEST Vol. 91 No. 6 (June 1987) Supplement, pgs. 65S-74S.


Descriptor terms: asthma; morbidity statistics; mortality statistics; us; canada; great britain; denmark; france; germany; australia; wales; ca; children; respiratory disease; african-americans; race and health; american medical association; immune system; air pollution; ozone; nitrogen oxides; sulfur oxides; sulfur dioxide; national health and nutrition examination surveys;