

Grim Projections for AIDS Epidemic

By 1991, some 270,000 people in the United States will have AIDS or will have died from the disease; how many others will be infected is uncertain, partly because the virus is spreading into the general population at an unknown rate

DURING the first 5 years of the AIDS epidemic, approximately 35,000 people in the United States will have developed the disease. Over the next 5 years, the Public Health Service (PHS) estimates that about 235,000 new cases will occur.* Scientists attending a recent planning session on AIDS (acquired immune deficiency syndrome) that led to the PHS report generally agree with these estimates. But what is really uncertain is how many people will become infected with the AIDS virus over the next 5 years and who those people will be, issues the report does not address.

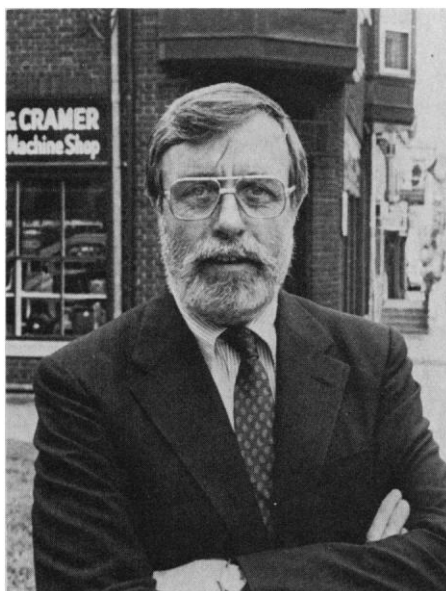
Most of the people who will develop the full disease in the next 5 years are infected with the virus now, a number many participants of the recent meeting at the Coolfont resort in West Virginia,† believe is 1 to 1.5 million. How many of those infected will go on to develop the disease is uncertain, but the PHS report indicates that the conversion rate from being infected with the AIDS virus to having the full disease is between 20% and 30%. However, scientists at Coolfont noted that this rate is difficult to predict and that it varies according to different studies.

These uncertainties also leave open the question of projected medical costs for AIDS, perhaps underestimated by acting assistant secretary for health Donald MacDonald, who puts it at \$8 billion to \$16 billion in the year 1991. MacDonald spoke about the PHS report at a recent press conference in Washington, DC.

Another major question concerns who in the United States is likely to become infected with the AIDS virus during the next 5 years. Mounting evidence indicates that it is no longer appropriate to speak in terms of high-risk groups for AIDS. Rather, "the risk for becoming infected with the AIDS virus is really a behavior," according to Anthony Fauci of the National Institute of Allergy and Infectious Diseases. "The risk for AIDS is having sex with someone who is infected

or being exposed to blood that is infected. The risk is not being a homosexual man or being a member of any group."

Nevertheless, the great majority of Americans infected today are either homosexual men or intravenous drug users, populations that overlap to different degrees in different parts of the country. Because about three-quarters of the people who will develop full AIDS by 1991 are already infected with the virus, most AIDS patients in 5 years will be either homosexual men or intravenous drug users. Still, the projected number of cases of AIDS among heterosexuals is increasing at a slightly higher rate than among those now considered to be at risk for the disease.



Donald MacDonald: *The projected medical costs are "staggering."*

More than 80 physicians and scientists from government and academic laboratories, government health policy-makers and analysts, epidemiologists, a government attorney, and physicians in private practice participated in the recent Coolfont conference. There were no representatives of private industry. Conference participants emphasized that, in order to meet AIDS-related health care demands over the next 5 years, government, academia, and industry must expand existing collaborative research

efforts, but no specific proposals were made. Their deliberations and conclusions provided the basis for the new PHS document.

All of the numerical projections contained in the PHS report were prepared by the Centers for Disease Control (CDC) from a mathematical model based on extrapolations of previous data. Speaking at the Coolfont meeting, James Curran and Meade Morgan of the CDC indicated that their estimates were much more likely to be accurate over the next 2 years than over longer periods of time.

They predict that by the end of this year 35,000 persons will have been diagnosed as having AIDS, with 16,000 new cases in 1986 alone. By 1991, according to the new projections, the cumulative total will reach 201,000 to 311,000, with 74,000 new cases diagnosed in that year alone. Some 18,000 people will have died from AIDS by December of 1986 (9000 of whom will die this year). The number of deaths is projected to rise to 54,000 in 1991, for a cumulative total of 179,000 deaths at the end of the next 5-year period. The number of children with AIDS will probably increase tenfold over the next 5 years, from over 300 today to more than 3000 in 1991.

There is no way to determine accurately how many people will become infected with the AIDS virus over the next 5 years. "Even the current data are soft," notes Morgan. Because of these uncertainties, "I'm personally very uncomfortable with projections of the incidence of infection," says Curran. The recent PHS projections therefore contain no estimate of the number of infected individuals by the year 1991.

Nevertheless, the number of infected people and those sick with AIDS will increase dramatically over the next 5 years, leading MacDonald to characterize the projected medical costs as "staggering." Health care costs for AIDS patients are based upon the number of people with the disease who receive direct medical care and the average medical cost per patient. MacDonald estimates that "in 1991 the medical care of AIDS patients will require between \$8 billion and \$16 billion," figures that do not include home care given by friends or family or lost income due to illness.

*Public Health Service Plan for the Prevention and Control of AIDS and the AIDS Virus."

†Public Health Service conference on "Prevention and Control of AIDS: Planning for 1991," 4 to 6 June 1986, at Coolfont in Berkeley Springs, West Virginia.

"A safe and effective antiviral agent is not likely to be in use for the next several years."

This PHS projection is based on the assumption that the average cost per patient will be about \$46,000, a figure derived largely from health care costs for AIDS patients in the San Francisco area. Some participants at the Coolfont meeting called this estimate unrealistically low because the gay community in San Francisco provides support and home care assistance for AIDS patients, making their average cost much lower than the national average. However, Walter Dowdle, acting AIDS coordinator for PHS, thinks the \$46,000 figure is realistic because "it has been shown to be achievable and we hope that by 1991 there will be better treatments for AIDS."

The AIDS virus is transmitted in three major ways—by sexual contact, through contaminated blood or blood products, and to children born to infected mothers. The virus is present in blood, semen, vaginal secretions, saliva, sweat, tears, and various body tissues including brain and skin. It is most commonly associated with cells, such

as infected T lymphocytes or macrophages, and the role of cell-free transmission of virus is unclear at present.

The predominant method of transmission of the AIDS virus is through sexual contact with someone who is infected, either a man or a woman. At the Coolfont meeting, Thomas Zuck, of the Food and Drug Administration (FDA) said, "We need to tell people what behaviors put them at high risk for the disease." It is not only having multiple sexual partners that puts an individual at risk, it is also having sex with someone who has multiple sexual partners that is risky.

People who become infected with the AIDS virus make antibodies to different parts of the virus, its outer envelope and inner core, for example. Screening a person for viral infection means testing for seropositivity, or having these antibodies in the blood. Researchers think that individuals are probably most contagious early in the course of their infection before they develop the full disease. Thus, most people probably become infected with the AIDS virus by having sex with seemingly healthy partners.

Scientists are working to develop vaccines to prevent infection by the AIDS virus and antiviral drugs to treat persons already infected. The new PHS report indicates that a vaccine will probably not be available for general use in this decade, but that "limited

clinical testing for some [vaccines] could begin within 2 years." The report also indicates that "a safe and effective antiviral agent is not likely to be in use for the next several years."

The PHS report reflects the opinions of Coolfont participants in its approach to health care policy. Both stress the importance of massive educational programs targeted at special populations, including children and teenagers, women, and minority groups, as well as the general population. In addition, AIDS screening and counseling centers should be established throughout the country. Use of these centers would be voluntary and information would be confidential. Anyone found to be infected with the virus would be strongly encouraged to notify his or her sexual contacts and refer them to a center for screening.

At present, state and local health services are largely unequipped to cope with sharply rising numbers of persons infected with the AIDS virus or sick with the full disease. The magnitude of the problem calls for a coordinated response from federal, state, and local agencies; greatly expanded educational and training programs for health care workers; and careful assessment of the appropriate care and costs for care required at various stages of the disease. ■

DEBORAH M. BARNES

Mobile Missile Design Generates Controversy

The Pentagon and Congress are skirmishing over the number of warheads needed for a new strategic missile

AT industrial plants scattered throughout the West, military contractors are hard at work on an unusual new intercontinental ballistic missile. A marvel of high-tech engineering, it will stand only 4 feet across and 15 yards high, yet have the capability to deliver a powerful nuclear warhead with unerring accuracy virtually anywhere in the Soviet Union. To be hauled around the desert on the flatbed of a low, blast-resistant truck, it will be capable of quick launch by remote control.

The Air Force calls it the "Small Missile," eschewing the popular name "Midgetman." During the past 3 years, a number of engi-

neering challenges have been overcome, including the need for powerful new rocket propellants; strong and lightweight motor cases; thin yet highly effective insulation; and advanced materials for the rocket nozzles. Today, its managers assert, the Small Missile is one defense program with no cost growth, no technical snafus, and no delays.

Some of those with their fingers on the military purse strings do not seem impressed, however. Donald Hicks, the Pentagon's under secretary of defense for research and engineering, for example, does not like the Midgetman, and wants it redesigned. He has found some backers in Congress and the White House, and won vigorous sup-

port from the influential contractors who have so far failed to win a piece of the missile's \$50-billion pie.

Hicks's chief complaint about the Midgetman's present design is that it lacks efficiency. At the express instructions of the Congress in 1983, it will carry only a single warhead. Hicks and his supporters want more bang for the buck. They prefer the new ten-warhead MX missile, which Hicks calls "the cheapest way, the lowest cost way that we can produce hard-target killers for our deterrence." If the Midgetman must be purchased, as Congress will probably insist, Hicks wants it to be a bit more like the MX, with at least two and perhaps three nuclear warheads.

His proposal has ignited a furious debate, which can be described as equal parts politics, science, and philosophy. Congressional opponents, including Representative Les Aspin (D-WI) and Senators William Cohen (R-ME) and Albert Gore (D-TE), assert that a redesign will needlessly delay the Midgetman's full-scale development, presently scheduled to begin in fiscal year 1987, and that any postponement may mean certain political death. They also claim that the