Forum Interview
with Walter Dowdle

AIDS (Acquired Immunodeficiency Syndrome)

AIDS is a problem all over the world, and makes front-page news daily. During a meeting of representatives from WHO Collaborating Centres in WHO Headquarters in Geneva on 25 and 26 September 1985, World health forum took the opportunity to interview Dr Walter Dowdle, Director of the Center for Infectious Diseases, Centers for Disease Control, Atlanta, Georgia, USA. He believes that one should take a balanced look at the disease, avoid making any judgments or laying any blame, and take the specific precautions he describes.

Why is there so much publicity about AIDS in the media and why are people so worried?

There are a number of reasons why people are worried, and they vary depending on the country. In the USA, for example, one of the major concerns is that AIDS is the first infectious disease we have had for many years that may be fatal for otherwise healthy people.

Infectious diseases in the developed countries are rarely serious for healthy adults. For those diseases that are potentially more serious, vaccines, antibiotics, or other drugs are effective and available. Infectious diseases nowadays are not usually thought of as life-threatening to those in the prime of life. In addition, AIDS is a new disease. Being new, there is a certain amount of mystery. Where did it come from? Why in the developed countries did it first affect the individuals it did? What is the natural history of infection? What is to happen to all of us over a long period of time? These mysteries breed fear in some people. Our responsibility, as members of the public health and medical communities, is to provide factual information to allay these fears. Publicity by the media is not necessarily negative. It can be extremely useful in providing factual information to the public.

Would you say that AIDS is a life-style disease? What would be the implications of this, and what would be the different ways of prevention?

It is a life-style disease, but only in a general sense. AIDS is first and foremost a sexually transmitted disease. The virus that causes AIDS is most commonly transmitted by sexual activity, either homosexual or heterosexual. Any personal behavior or life-style that increases the opportunity of engaging in sex with someone who may be infected increases the risk of becoming infected. Because the virus that causes AIDS is carried in the bloodstream, it can also be transmitted through contaminated blood. Therefore, cases among intravenous drug abusers may also be attributed to life-style, specifically to the practice of sharing unclean needles.

Infections acquired through blood transfusion or through injection of life-saving clot-

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Walter Dowdle

Walter Reid Dowdle, aged 55, is Director of the Center for Infectious Diseases at the Centers for Disease Control (CDC), Atlanta, Georgia, USA. He is also Associate Professor at the School of Public Health, University of North Carolina, Chapel Hill, a post he has held since 1964. He obtained his M.S. in Bacteriology at the University of Alabama in 1957, and Ph. D. in Microbiology at the University of Maryland in 1960. Since then, he has been at the CDC except for a year as Honorary Fellow at the John Curtin School of Medical Research in Canberra, Australia. Dr Dowdle has, over the years, served on a number of committees, editorial boards and steering groups. He has been a member of the WHO Expert Advisory Panel on Virus Diseases since 1966, and has been active in WHO's Collaborating Centres for Influenza and for Virus Reference and Research at the CDC. He is a world authority on influenza and herpes viruses and Legionella. In the last few years he has been responsible for building up CDC's capability in handling AIDS, and is a world authority on its public health aspects. He is the recipient of the CDC Medal of Excellence (1978), the Presidential Executive Rank Award (1984) and a number of other awards.

Every day in the United States, a few people die of AIDS. We are not told how many are young and how many are old. We are not told how many of these people were killed by AIDS in five or six years. We are not told if five people were killed by AIDS in one year. There are no questions about these facts. There are no questions about the disease itself. There are no questions about the people who suffer from it. All these facts are known, and there are no questions about them.

Somebody has said that the best protection against AIDS is a faithful partner. Would you say that this puts it in a nutshell?

There is no question about it.

How many people with the AIDS virus actually develop the disease in its most severe form?

To answer your question, let me describe a study that has been underway in the USA among nearly 7000 homosexual males since 1978. Of blood samples collected in 1978–80, about 4% were later found to be positive for antibodies to the AIDS virus. By 1984, this percentage had increased to 67%, and in 1985 it is now 73%. That is, 73% of the 7000 men now have evidence of having been infected with the virus. A small group of 31 men who had antibodies in 1978–80 have been followed now for five years; 2 of them have AIDS, another 8 have illnesses related to AIDS, and the remainder have no overt signs of disease at all. Thus, in that small sample of individuals with antibodies for five or more years, about one-third have developed some illness. Or looked at in another way, about two-thirds still have no overt illness.

Thus, the virus can be carried for five years or more with no sign of disease. Of course, we do not know what the outcome will be after 10 or 20 years.

Is there anything that people can do to improve their chances of continued good health? Have you been able to show that life-style changes such as no smoking, no drinking, balanced food, and a better outlook on life have been elements in avoiding the disease manifesting itself among those infected with the virus?

Changes in life-style that would tend to make a person more healthy should be considered regardless of the circumstances. We don't know, however, why some infected people may have AIDS or AIDS-related disease and others are unaffected. We can say with a reasonable degree of certainty that not everyone who is infected will have the fatal form of the disease. This is a consistent biological observation with most infectious diseases. Co-factors undoubtedly play some roles here but determining them also has not been easy.

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Vaccine development

The best way to control a disease is through prevention, and the best way to prevent an infectious disease is through vaccines. Therefore every practical method is being pursued to develop a vaccine against AIDS. Use of the whole virus, either attenuated or inactivated, is being avoided owing to concerns over the use of retrovirus nucleic acid which may cause cellular transformation. The main attempts at vaccine production include: purification of glycoprotein antigens from the viral envelope, synthesis of specific antigens and isolation of viral genomes specific for these antigens, and utilization of DNA recombinant technology to produce appropriate antigens in bacteria or yeast. Another line of research is to incorporate appropriate viral genomes in vector systems such as vaccinia, herpes, or adenoviruses. All these approaches are being used simultaneously in an attempt to achieve an effective vaccine. Many problems are anticipated but the expectations are high.

We are indeed optimistic about achieving a vaccine, but not in the near future. Although we expect to have vaccine candidates within a year or so, actual testing for safety and efficacy may take some time. Our goal is to produce an effective vaccine and/or therapeutic modality by 1990 although every effort is being made to do it sooner.

— Dr George J. Galasso, Associate Director for Extramural Affairs at the National Institutes of Health in Bethesda, Maryland, USA.

You mentioned AIDS-related complex or disease. How does that differ from AIDS?

Within the relatively short period of five years of observation, it has become clear that manifestations of infection with the virus that causes AIDS can cover a wide spectrum indeed. In one study, about 25% of those infected with the virus had clinical signs or symptoms or laboratory evidence of AIDS-related conditions, particularly generalized lymphadenopathy; 6–20% of such individuals developed AIDS during a 2-year follow-up period. Most individuals with AIDS-related conditions have not progressed to the fatal form of the disease. In fact, there have been some reports of remission, at least during the period of the study.

Is AIDS a disease that transmits itself through a one-time sexual relationship or is it a dose-related kind of infection?

The data on AIDS are insufficient to answer this question. From what we know about similar infections, there are occasions when one exposure would be sufficient, depending upon the dose of infectious agent. In other instances, multiple exposures may be required, either because of low dose of the agent or other unknown factors related to virus entry into the bloodstream.

The virus has been reported to have been isolated from tears and saliva, as well as from blood and semen. However, of those individuals who have virus in the bloodstream, far fewer will have virus in saliva. Even when it is present there, the concentration of viruses is much lower. We suspect the same applies to tears. Therefore, if infection is dose-related, as many infections are, the likelihood of acquiring the virus (if it is present) through saliva would be far less than that of acquiring it through blood. We do not consider saliva or tears to be an epidemiologically important source of infection. In fact, there is no evidence that either of these fluids has been the source of transmission of the virus.

Do you think that there is going to be an increase in AIDS?

AIDS will continue to increase, but the rate of increase will differ considerably from country to country, depending on the social customs and sexual practices. The disease has frequently been called a homosexual disease. It is not. It is a sexually transmitted disease which first came to the attention of the world through its appearance among homosexuals in the developed countries. The high number and high mobility of sexual partners made it possible for the disease to spread very rapidly among homosexual men. In other areas of the world, AIDS is a heterosexual disease and to the
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extent that other sexually transmitted diseases are a problem, AIDS may also be a problem.

Would you say that the notion of "innocent" and "guilty" victims is not a correct concept?

The virus cannot be viewed as payment for some wrongdoing, it must be seen for what it is: a biological agent that will take any opportunity to survive and replicate, just like any living thing. Infection is simply the result of providing the right opportunity to the virus at the right time.

What are the actions that society can take in trying to cure this epidemic, if one could call it that? What would be your main advice?

Yes, AIDS can be called an epidemic. There are four basic approaches to the control of AIDS: vaccines, drugs, prevention of blood-borne transmission, and changing of life-styles through information and education. Multiple approaches to vaccines effective against the virus of AIDS are currently under way in several different countries. This is a formidable task. A vaccine has never before been produced for use in humans against a virus of this complexity and of this propensity for destruction of the immune system. Many challenges are yet to be met before we can be certain that an effective vaccine will become available as a tool for the control of AIDS.

Major efforts are also under way to develop an effective drug for AIDS patients or those infected with the virus of AIDS. In theory, the complex nature of the virus works in our favor in the development of drugs. The reverse transcriptase which is unique for a retrovirus offers a primary target for antiviral agents. Although there are a number of drugs that have been shown to be effective against the virus in the laboratory, many of these may prove to be toxic or ineffective when used in humans. Many challenges must also be met before we can be certain that an effective drug will be available. Prevention of blood-borne transmission, however, is already a reality through the exclusion of high-risk donors and the testing of all units of blood for antibodies to the virus of AIDS.

Until vaccines or drugs are available, prevention of AIDS will depend heavily on risk reduction programs based on information/education. In communities where considerable emphasis has been placed on information and education, like some in the USA, the message has been received and understood.

Treatment prospects

The AIDS patient presents a unique problem: the patient has a virus infection that must be eradicated and his immune system needs to be replenished. In addition, the virus genome can be incorporated in the nucleic acid of the host cell, which may make it difficult to rid the patient of the virus. None the less progress is being made.

The approach is twofold—the development of an effective antiviral agent to get rid of the virus and the development of an immune enhancer to replenish the depleted immune cells. Several antiviral drugs such as suramin, HPA23, ribavirin, azidothymidine, interferon, and foscarnet sodium are being studied in the clinic. These agents appear to inhibit viral replication but do not result in a clinical benefit to the patient: as soon as the treatment is stopped the virus returns. Further work on dosage and on developing improved agents is under way. Immune enhancers such as gamma-interferon and interleukin-2 are also under study. Perhaps the effective treatment of AIDS patients will be a combination of the two types of drugs.

The "AIDS-related complex" (ARC) patient may be a better prospect for antiviral agents. The immune cells in these patients are not depleted and if the virus can be eliminated, the immune system may be protected. Research in this area is very active and the prospects for success are excellent. However, it must be emphasized that currently available drugs can be considered only as leads and not as effective therapy.

— Dr George J. Galasso, Associate Director for Extramural Affairs at the National Institute of Health in Bethesda, Maryland, USA.
Evidence is available that many individuals in the high-risk groups have altered their lifestyles consistent with the information that has been made available to them. Information/education materials are available from Australia, in countries in North America, and Europe. But to be effective in other countries, these materials will have to be carefully tailored to meet specific needs.

Health workers and health-related workers are afraid of getting AIDS from patients, and some AIDS patients have been ostracized. What are the risks of health workers catching AIDS from their patients?

Such questions have been asked not only by health workers but by people in many occupations that may involve close contact: hairdressers, manicurists, airline attendants, opticians, and dentists, for example. This category can be expanded to include a vast number of people. However, there is no evidence of transmission either to or from clients in these professions. The one exception is in the hospital setting where there may be needle pricks, cuts, or skin abrasions among health care personnel that could offer the potential of transfer of blood from infected patients. One such confirmed case and a few suspected cases have been reported to date. We would expect others to occur and guidelines for health care personnel and other occupations have been published. For most such individuals there is no greater danger than among persons who have only casual contact with infected persons. And there is no evidence of transmission of the virus through social contact, food, water, or objects.

Do you agree that developing countries should check the spread of AIDS by ensuring that disposable syringes intended for one use only are not re-used?

In those developing countries where epidemiologic studies have been done, heterosexual transmission appears to be the most common route of infection. However, the re-use of nonsterile needles clearly represents a risk and could make a considerable contribution to transmission of infection. Avoiding the re-use of disposable parenteral equipment is an important facet of any infection control program.

All sectors of the press have been giving wide coverage to AIDS. Are you satisfied with the way the media have been dealing with AIDS?

I can speak only from our experience in the USA. Of course, there have been some excesses and some unfortunate statements by the media, but on the whole I think that the press has treated the disease with considerably more accuracy than I have known for some other diseases in the past. The wide circulation weekly news magazines have done a remark-

AIDS in Africa

AIDS is already present in Africa and is spreading. It is not yet a public health problem compared with measles and malaria, which are diseases that mostly attack children. AIDS is a disease of adults in the prime of life and could become a major problem of African public health in the future.

Antibodies to LAV/HTLV-III virus have been found in 3-7% of the population in some towns; the highest frequency is in equatorial Africa, perhaps because of climatic conditions. Many cases of AIDS have already been confirmed, and in some towns the position may be similar to that in the USA. The epidemiological picture is very different, however: women are frequently infected, and the female to male sex ratio of infection varies from 1:1 to 1:1.9. Antibodies have been found in 25-30% of prostitutes; homosexuality is rare, and intravenous drug users are almost unheard of.

In Africa AIDS is a disease related to heterosexual activity. Other possible routes of infection are non-sterile injections, ritual practices, and blood transfusions. Much more epidemiological information is needed. In addition, informing and educating the public are essential, with clear factual explanations to avoid misunderstandings and panic, in order that appropriate preventive measures can be started now.

— Dr Alain Georges, Director of the Pasteur Institute in Bangui, Central African Republic.
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able job in providing useful and correct information without contributing to the hysteria. Publicity in itself is not always bad. It can be an effective way of disseminating useful health messages.

Why are there so few cases of AIDS in certain areas? It seems that very few cases have appeared in Asia and the western Pacific.

It's true, not all countries have an equal number of AIDS cases. Several factors may contribute to this. First, AIDS is still a fairly new disease and the virus spreads slowly. Second, in many countries, we don't know the extent of transmission. Third, AIDS is a sexually transmitted disease. We would expect the number of cases to differ widely in different countries, reflecting the sexual practices of those countries. The prevalence of other sexually transmitted diseases varies widely from one country to another. The fact that some countries may have major AIDS problems and others may have few problems is therefore not surprising. We are back once again to the issue of life-style.

AIDS clearly has implications for the organization of blood transfusion services. What is being done?

A test is now available to detect antibodies to the virus in blood and plasma from donors. This test is now in use in many countries. Studies carried out in the USA have shown this screening process to be effective. There is no doubt that the testing of donors has prevented a considerable number of cases. Patients and physicians in countries with such screening can now consider blood transfusion with increased confidence.

What about false negatives?

False negatives may occur in theory, but in practice should not constitute a significant problem. The current tests in use for screening blood are designed to detect antibodies which occur as a result of infection rather than detection of the virus itself. Antibodies have been shown to appear in the bloodstream between 3 and 6 weeks after infection, a pattern not unlike other viral infections. There have been some reports of a longer time between infection and the appearance of antibody, up to several months, but the average time is thought to be about a month or so. Therefore, in most countries, the blood test is used along with recommendations for self-exclusion: individuals who are in a high-risk group should not donate blood, regardless of the test results.

Will the test mean that no more cases will occur from now on among users of blood and blood products, except those who were contaminated earlier?

We can never say that no more cases will occur. In biology, few statements can be made with 100% confidence. But we think that the number of cases of AIDS likely to occur in the future from blood transfusion will be vanishingly small. In the USA, all the blood banks as well as the manufacturers of blood products are using the screening test. All donors are screened and, in addition, all clotting factor concentrates are heat-treated to further reduce the likelihood of infectivity. Thus, there is a double measure of protection.

Should a person in whom antibody to the virus has been detected be told?

This hinges to a large extent on the probability of the test result being a false positive or a true positive. A false positive that results in discarding of donated blood simply constitutes an error in the name of safety. Unnecessarily alarming the donor on the basis of a false positive test is a much more serious error. However, the medical and public health communities generally agree that a person with a positive test that has been confirmed by other appropriate tests should be informed.

Would you suggest that people in the high-risk groups ask for an examination so that they could take appropriate action in regard to their own health and their responsibility towards a partner?

This is an individual decision. My personal feeling is that there are numerous moral, ethical, and health advantages in knowing whether or not you are positive. Some have argued that there are disadvantages in knowing, because the person concerned may be led to abandon hope or harm others through despair. I cannot agree with that point of view. Most people who are treated responsibly will act responsibly.
Much can be done by persons who know they are positive. He or she certainly can inform others in their immediate circle. Much can be done in their personal lives to prevent transmission to others. Then again, persons who have knowledge of their infection will be aware of the early signs. They can alter their life-style. There are positive steps that can be taken, but most important, they must be told that most of the people with positive test results have not developed life-threatening diseases, some as long as five or more years after infection.

**What about children at school who are positive for the virus?**

Current guidelines in the USA recommend that otherwise healthy children should be allowed to attend school. They do not present any threat of infection to their classmates through usual school activities.

**How have people reacted when told they have a positive test and the possibility of getting AIDS?**

The manner in which that information is imparted to the individual is crucial. The effect of being told that one is a virus carrier can be devastating. Therefore, such persons must be thoroughly informed about the limitations of the test and the possibility of false positives, and told that a positive test result does not inevitably lead to a life-threatening disease.

**What message would you like to give to readers of the Forum?**

We have frequently heard that the number of AIDS cases in the USA will double within a year and that there are anywhere from one-half to one million people infected already. This has been interpreted by some to mean disaster on a large scale. This is not true. As I indicated earlier, there will be different infection patterns in different countries, depending on sexual practices. There will also be different patterns in different communities and in different population groups. In the USA there will not be a doubling each year. The great majority of the population is not at risk of AIDS, in the USA or elsewhere.

**Are you saying that life-style may be one of the most important factors in trying to master this problem, and that people's responsibility for their own health and that of friends is definitely engaged in this disease?**

That is correct. Now that the route of infection through blood and certain blood products can be curtailed, this segment of the population is essentially no longer at risk. The routes of transmission that remain are directly or indirectly related to life-style. We can take steps to adopt healthier life-styles and to decrease risks. We do have a choice.