

*This is a radio interview with Dr. Anthony S. Fauci, director of the National Institute of Allergy and Infectious Diseases and also NIH Coordinator for AIDS Research. The date is mid-1986. The interviewer is Ms. Gerri Blumberg of the NIH Office of the Director, Office of Communications, Audiovisual Broadcast Services.*

Blumberg: From the National Institutes of Health in Bethesda, MD, I'm talking with Dr. Anthony Fauci, Director of the National Institute of Allergy and Infectious Diseases and also NIH Coordinator for AIDS Research. Dr. Fauci, since AIDS was first reported in 1981, a massive research effort has developed to deal with what is now, I believe, over 20,000 reported cases, with a 55 percent mortality rate. Could you tell us first something about the AIDS virus, the HTLV III? Is it similar or different to other viruses that we know, such as herpes?

Fauci: Well, it's very different from any virus that we know that infects man. That's the reason of the novelty and the uniqueness of this particular disease and this particular virus. The virus is called a retrovirus, which means that it does things to propagate itself in a backward way. It's an RNA virus. That means that it cannot replicate itself unless it converts the RNA into what we call DNA. Most cells that replicate themselves go from DNA to RNA. This cell goes from RNA back to DNA by an enzyme called reverse transcriptase. That's the reason why the virus is called a retrovirus, because it goes in a retrograde fashion. Once it makes a DNA copy of itself, it can then do by genetic coding what it takes to replicate itself again. So, it's unique because in man there is only one or two other recognized retroviruses.

Blumberg: Does this virus appear as a latent virus genetically, or does it have to be contracted from somewhere else?

Fauci: No. The virus you get from someone else. The mechanisms of transmissibility--how the virus is spread from one person to another--are fairly well known right now. There is no secret about that, and there will very likely be no surprises about it. The virus can be spread by sexual contact and by blood or blood products that are contaminated with the virus. Now the blood supply, as we know, is essentially safe because we can screen for antibodies for the virus. It's also spread from mother to child.

Blumberg: What are the AIDS antibodies?

Fauci: Well, an antibody is a protein that the body makes when it is confronted with a substance that's a foreign substance, and it's a protein which has the capability of blocking that foreign substance. And it's a protein which has the capability of blocking that foreign substance. A typical example that's very familiar to all of us is if you get exposed to an influenza virus, or to a polio virus, your body responds to it by making antibodies that are very specific against those viruses, so that the

next time you get exposed, or even during that exposure, you can mount what is called a defense against the virus. The AIDS virus, like other viruses, does induce in the body an antibody response. We are not yet clear on just how protective that antibody response is. Apparently it isn't very protective because people who have AIDS also have antibodies. But you can use the antibody to detect people who have been or who are infected. So that if someone tests in their blood as positive for antibody against the AIDS virus, you can then make the conclusion that they have been exposed or infected with the virus.

Blumberg: And will it then follow that that person will ultimately develop AIDS?

Fauci: No, not at all. There are far many more individuals who are infected with the virus than there are individuals who have the full-blown AIDS. I can give you some comparative numbers. For example, right now there are approximately 21,000 cases of full-blown AIDS disease in the United States. There are over 1 million individuals who have been infected with the virus who, if tested, would very likely be antibody-positive. What the percentage of individuals who will ultimately go from an asymptomatic infection--which means that they're infected with the virus but they're not sick--what percentage of those will ultimately go on to develop the full-blown AIDS is uncertain at present, though we do have some inklings about what that percentage will be over a few years. Right now, it's estimated that within a period of three to four years, that approximately 10 to 15 percent of individuals will go from asymptomatic infection to full-blown disease. What we *don't* know is what percentage will get full-blown disease after 10 or 15 or 20 years. That just remains to be seen by following these people for years to come.

Blumberg: You referred to full-blown AIDS. Do you mean that there are different degrees of the disease?

Fauci: Well, I think it's important to look upon it as different consequences of being infected. I told you that there are many more individuals who are infected but who are asymptomatic. We'll say there are between 1 and 2 million people in this country--1-1/2 million we'll say--who are infected with the virus. There are perhaps 100 to 200 thousand individuals who are infected but have some symptoms. They either have what we call malaise: they're very worn out; they're tired; they've lost weight. They may have swollen glands. Or they may have abnormalities of their immune system. That has generally been referred to as the AIDS-related complex, or ARC. Then there are individuals who have what we call the full-blown AIDS. Now AIDS in its full-blown form means that you're infected with the virus and you have one or more of these opportunistic infections or Kaposi's sarcoma, a rare tumor or cancer which is a consequence of the immunosuppressed state that the virus gives you. There are some individuals who

have very mild Kaposi's sarcoma on their skin. They generally are in a much healthier state than individuals who have had multiple, what we call opportunistic infections. So, even within the realm of people who have the full-blown disease, there are varying degrees of severity.

Blumberg: How does the doctor finally pin down the fact that the person has AIDS?

Fauci: Well, AIDS right now is a clinical diagnosis. It is confirmed by a positive antibody test, or by culturing the virus from the cells of the patient involved. But the diagnosis, by definition, is an unexplained opportunistic infection or particular neoplasm, like Kaposi's sarcoma, in an individual who has no other reason for being immunosuppressed, which would lead you to believe that that person would be susceptible to such an infection. So it's really a clinical diagnosis.

Blumberg: You're listening to an interview with Dr. Anthony Fauci, Director of the National Institute of Allergy and Infectious Diseases, who also is the NIH Coordinator for AIDS Research. Dr. Fauci, how is AIDS research going? How is it structured here at NIH?

Fauci: Despite the fact that this is still a terrible problem, the research itself is going very well. We've made very dramatic advances in our understanding of the disease within a very short period of time. Since the disease was first recognized in 1981 in this country, we have had the identification of the cause of AIDS; the virus has been discovered; it has been completely described; and its genetic make-up has been very precisely defined. It's been what we call cloned, or grown in its very purest form. There has been the development of an antibody test whereby we can screen the blood supply. There have been a number of agents which are now in testing to block the replication of the virus that might ultimately potentially be used as therapy. There is no effective therapy at this time, but there's headway being made in that regard. And there's headway being made in the area of vaccine development. Now since we don't have an answer, we don't have a cure, and we don't have a vaccine, so one might think that things are not happening. Yet literally every week or every month there's another very important observation; another important small discovery that adds in a building-block way to our total knowledge of this disease. So the research is going extraordinarily rapidly. The structure of it is that we are looking at various components. Right now, in mid-1986, the emphasis is very clearly on the development of a therapy for the infection as well as for the development of a vaccine.

Blumberg: What are you currently doing for patients?

Fauci: Right now there are a number of clinical trials using these antiviral agents to determine if they're safe, first, and then to see if they're efficacious. So the

patients are being followed and being taken care of here at the NIH and in hospitals throughout the country. But the studies--the research studies that are being done--range from natural history studies, or following the progression of the disease, through clinical trials of antiviral therapy. The vaccine work is still at the stage of trying to develop a vaccine that can be first be used in an animal model. But the antiviral drug protocols are being conducted right now in AIDS patients.

Blumberg: What about bone marrow transplants? Are those effective?

Fauci: So far, nothing has been entirely effective in reversing the profound defect in AIDS. We and others have performed bone marrow transplants between sets of identical twins, one of whom has AIDS and the other of whom is well and is the donor to the recipient twin brother who has the disease. There have been some improvements--modest improvements--in the immune function of the recipient. But it is too early to tell whether this has had a major impact on the course of the disease.

Blumberg: Dr. Fauci, there are so many fears and misconceptions about the transmission of AIDS, could you clarify, again, for us exactly how AIDS is contracted?

Fauci: One gets the virus by sexual transmission; by blood or blood products, either, for example, by sharing a needle in intravenous drug abuse, or by contaminated blood products through transfusions; or one gets it from mother to child. If the mother's infected, she can transmit it transplacentally or in the uterus to the child. The major misconception that I believe is starting to be clarified now, finally, is that the disease and the virus are not transmitted by casual contact. You don't get it from eating in a restaurant with someone or riding on an elevator with someone, or the normal social interaction that takes place in the workplace or in the home or in the school.

Blumberg: Do you have any recommendation for those already diagnosed with AIDS antibodies?

Fauci: Yes. We recommend very strongly that individuals, from the standpoint of their own health, take care of themselves as best they can and avoid re-infection with the virus, or even infection with other types of viruses, such as cytomegalovirus and herpes viruses and other types of viruses that might trigger the full expression of their disease. With regard to your interaction in society, if someone is antibody-positive, they should be careful by taking the precautions that are recommended not only by the Public Health Service but by a variety of other knowledgeable groups, particularly certain of the male homosexual groups: namely the advisability and the necessity of being careful in sexual interactions in protecting your partner, and protecting yourself, avoiding things like the kinds of

sexual activity in which body fluids are exchanged to the point where the virus contained in those fluids might be transmitted to a partner. Also, obviously, to not donate blood or not be in a situation whereby the exchange of body fluids-- either your blood or your semen or your other body fluid--might transmit the virus to someone else. So, it's taking care of yourself and being alert to avoiding the transmissibility of the virus that you have to someone else.

Blumberg: As you noted earlier, things have moved very quickly in the field of research on AIDS. When do you think we could, realistically, expect to see findings that could change the picture?

Fauci: I don't think one can predict right now when you will have an antiviral agent or a vaccine that can change the picture. We can say, for certain, that you're not going to have a vaccine, even if we're successful, for at least several years, just on the basis of how long it takes to test and prove that a vaccine is safe to give and immunogenic as well as effective. With regard to an antiviral therapy, we're in the process of testing several of them again in order to really definitively prove that something is safe and effective. It's going to take some time that you'd have to measure in years. What one can do right now to have an impact on AIDS is something that you can really put into effect immediately, and that is public health measures of avoiding the situations that will spread the disease. The vaccine of today is public health measures and education to avoid the transmissibility from one person to another. That's something that we're already seeing, that in certain areas where people are modifying their behavior, there will very likely be an effect on the spread of the virus.

Blumberg: Thank you very much, Dr. Fauci. You've been listening to an interview with Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, and who also serves as the NIH Coordinator for AIDS Research. From the National Institutes of Health in Bethesda, MD, I'm Gerri Blumberg.

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