PRESIDENTIAL COMMISSION ON THE HUMAN IMMUNODEFICIENCY VIRUS EPIDEMIC

HEARING ON INCIDENCE AND PREVALENCE

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COMMISSION MEMBERS PRESENT:

ADMIRAL JAMES D. WATKINS (RETIRED), CHAIRMAN

JOHN J. CREEDON

THERESA L. CRENSHAW, M.D.

RICHARD M. DeVOS

KRISTINE M. GEBBIE, R.N., M.N.

BURTON JAMES LEE III, M.D.

BENY J. PRIMM, M.D.

PENNY PULLEN

CORY SERVAAS, M.D.

WILLIAM B. WALSH, M.D.

POLLY L. GAULT, EXECUTIVE DIRECTOR

I-N-D-E-X

P-R-O-C-E-E-D-I-N-G-S

[9:04 a.m.]

OPENING

MS. GAULT: Good morning. Ladies and gentleman, members of the President's Commission, my name is Polly Gault. I serve as the designated federal official. And, in that capacity, it is my privilege to declare this meeting open. Chairman Watkins.

WELCOME

ADMIRAL WATKINS: Good morning. I am pleased to again have this opportunity to welcome my fellow Commissioners, our panelists, and the audience to the second day of a two day meeting of the Presidential Commission on the HIV epidemic. Yesterday we were privileged to receive some very important and thoughtful insights from a variety of experts who shared with us their views on incidence and prevalence of HIV infection in the United States, the focus of these two days of hearings. As I noted at the beginning of those proceedings, the Commission is committed to moving ahead in addressing several issues we feel demand early consideration.

In our preliminary report that was submitted to the President on December 2, we indicated that the incidence and prevalence of HIV infection is one of our first priorities. Two of our Commissioners, Mr. Richard DeVos and Mr. John Creedon, have taken a leadership role in putting together these panels to enable us to gain a better understanding of many of the factors related to the spread of the disease.

Yesterday we heard testimony on the staging of the disease and the quality of the epidemiological data collected at various stages, as well as a cross section of perspectives from the public health community. Today we hope to further focus our deliberations and gain some additional knowledge about the behavior and risk factors of individuals who have become infected with HIV, and ways in which positive intervention might alter the course of the infection in those at risk.

We also intend to carefully examine the mathematical methodologies and tools designed to provide accurate projections of epidemiological data. We established some effective operating procedures at yesterday's sessions that we will follow today, and I feel it would be appropriate to continue in that manner. Without objection from any of the Commissioners, I will now turn over the Chair to Mr. John Creedon, who will act as Chairman for today's hearings. Mr. Creedon?

MR. CREEDON: Thank you, Mr. Chairman. Yesterday and today we are trying to determine the answer to a number of fairly basic questions, the first of which is how many people have the virus now. There have been different estimates made about that, there have been different tests that have been undertaken, there are some that have been planned. But one of the key questions for baseline purposes in trying to determine where we stand is how many people have the virus now. In that regard, one of the questions is how reliable are the tests that are administered to determine whether or not the virus is present. We received testimony yesterday that suggested a very high degree of reliability of the tests if they are properly administered, and if the laboratory is a good laboratory. I thought that the testimony yesterday was quite good on that subject.

With respect to how many people have the virus, I thought there were different conclusions that could be drawn. If you look solely to the tests that have been administered by the military, which involves a certain of group of people -- people who apply to the military, or people who are already in the military -- that particular group suggests a fairly low incidence of the virus.

If you look at other groups, especially the high risk groups, the homosexual groups or the IV drug user group, a much higher percentage of those groups. One of the difficulties is how do you get a representative group and test that representative group. If you have any suggestions or comments with respect to that subject, we would very much appreciate it. Another question that we looked at, and are trying to get the answer to is after someone incurs the virus, how long does it take before there is some manifestation of the disease that requires medical treatment.

With respect to that question, Dr. Curran from CDC had some charts which show a fairly good factual basis for concluding that something on the area of 30 percent of the people have gotten some manifestation of the disease in a specified period of time; but that going beyond the data that they now have, they don't know what percentage will get the virus.It could go straight up, as the line has been going up, or it could start to flatten. Again, if you have any judgment or estimate on those subjects, I think it would be very helpful. We are interested in knowing more about the vulnerable groups, the high risk groups. What are the characteristics of those groups that result in their being vulnerable? What is your judgment as to whether the disease is likely to spread to the heterosexual community, other than those who are involved with the IV drug users, and so forth?

One of the questions we were particularly interested in yesterday was do we need, as a Presidential Commission, to

recommend studies other than those that are presently planned. We had a group of doctors yesterday who said that if you could do a country-wide study, that would be a good way of determining the incidence of the disease; but they recognize that there were obstacles in doing such a study, in that people might not cooperate unless they were assured of anonymity, et cetera, et cetera.

Any views that you have on that subject would also be appropriate, and especially your views on the reliability of the data that we have as a basis for our trying to determine and make recommendations to the President. I think we recognize that this is a very complicated area; that, to a certain extent, it is fluid. It may be changing from month to month or year to year; that there are conflicts of opinion on what the situation is.

We had testimony from Dr. Langmuir yesterday, who used to be the Chief Epidemiologist at CDC. He is retired, and has done extensive studies over many years -- 50 years -- on the question of epidemiology. It is his judgment that, instead of the line going up as it has been going up, that it is going to flatten and curve.

These are the kinds of differences of opinion that we are faced with at this juncture. We would appreciate any light that you can shed on them. Our first witness this morning is Dr. Sheldon Landesman, from the State University of New York's Health Science Center. Dr. Landesman?

PRESENTATION BY DR. SHELDON LANDESMAN

DR. LANDESMAN: Thank you. It is a pleasure to be here. I hope the information that I convey here will be of some use to the committee. Specifically I did not have my prepared testimony directly related to some of the questions that you had, but please feel free to ask about them as I go through it.

My background is that of an infectious disease person in the area of epidemiology, working in a large, inner city hospital in New York City, which has on the average of 50 to 60 AIDS patients in house at any one time. We deal with drug addicts, sexual partners of drug addicts, women who are infected, children who are infected; and largely the problems of the AIDS epidemic in the urban, inner city poor.

What I had planned to talk about here was the issue of heterosexual transmission of HIV. My purpose is to try to paint a somewhat different picture of the issue of heterosexual transmission, and clarify some of the concepts and the terms and the magnitude of this problem. Because in part much of the confusion has to do with the terminology that is used around this issue. I have about seven or eight points, and a few brief

recommendations to make on it. Let me start, then, with point number one, which is the concept of the spread of HIV through different phases of the disease, or different phases of spread. We can conceive of the human immunodeficiency virus as being spread in three separate phases: primary, secondary, and tertiary.

In phase one, we have the introduction and spread of the virus into Gay men and intravenous drug users. This is the primary phase of spread with Gay men and drug users -- and here I mean intravenous drug users, past or current -- constituting the primarily infected populations. The secondary phase of spread is spread from the infected drug users and bisexual men into their non-drug using female partners. This secondary phase is characterized by heterosexual spread of the virus from a population of infected men to their non-drug using female partners.

Although female-to-male spread of HIV will also occur in this phase, it is less likely to do so, simply because the reservoir of infection is largely male. The tertiary phase, or "spread out of the risk groups," occurs when there are a sufficient number of non-drug using infected females to infect or feed the virus back to non- drug using heterosexual males. These men can obviously, then, infect more women and then the process could become self-sustaining, which is a question that has occupied many people.

Confusion arises because of the inadvertent blurring together of the secondary heterosexual phase of spread with the tertiary phase of the epidemic. What the population at large, and many governmental or public officials mean when they refer to heterosexual transmission of HIV, is spread of the virus out of the risk groups, or the tertiary phase of spread. Currently there is little hard evidence to indicate that tertiary spread of HIV is occurring. However, the secondary stage of heterosexual transmission, spread from drug users -- and, to a lesser extent -- bisexual men into their non-drug using female partners is occurring in certain areas of the country in certain populations at a significant rate.

Point number two. There already exists in the United States a large pool of infected heterosexual persons, and these people will also be a source of spread to other heterosexual persons. Cases of AIDS and HIV infection are classified by risk group: Gay men, drug users, et cetera. This classification identifies how persons have acquired the virus. If we look at these risk groups carefully, we see that approximately 25 percent of all persons in risk groups are themselves heterosexual, the single largest group being current or former drug users. The point that I wish to make here is that when we look at persons with HIV infection, we must not only look at how they acquire the

virus, but also how they spread the virus. The potential for heterosexual transmission is minimized by focusing on the mechanism by which drug users acquire their infection: generally, the sharing of infected or contaminated needles. We must remember that most drug users are male, are heterosexual, and can thus spread the virus two ways: through heterosexual contact, and by the sharing of needles.

The recent CDC report to the Domestic Policy Council, done in conjunction with the National Institute of Drug Abuse, estimates that there are 900,000 to 1.4 million infected persons. At least 25 percent of these persons are heterosexual. Thus, the pool of infected persons who are heterosexual and capable of spreading the virus heterosexually ranges from 225,000 to 350,000 people. This is a large number of persons. The majority of these infected persons, again, are drug addicts and male. Their partners are generally non-drug using females. Thus, the infected male addict will be the principal vector or principal source for the spread of HIV into non-drug using heterosexual females.

We are thus currently faced with a large reservoir, equal or exceeding a quarter of a million heterosexual individuals, who are chronically infected with this virus. The impact of this population on future generations of women and children is just starting to be felt.

Point three. Current estimates are that somewhere between 30,000 and 115,000 persons have already been infected through heterosexual spread. A natural consequence of the large reservoir of infected men is the infection of women who live in close sexual proximity to these men, and who interact sexually with them. This brings us to the problem of HIV infection in women and children. In our own hospital, Kings County Hospital in Brooklyn, New York, two percent -- or one in 50 -- of all women who give birth are infected. Approximately half of these women are infected via heterosexual activity, the remainder being drug users themselves.

At other hospitals in New York City, the rate is even higher. At Grady Hospital in Atlanta, Georgia, more than one percent of the women who deliver are infected. In a recent study in Massachusetts, the rate of infection among women who recently delivered range from one in 1,000 in the rural areas to nearly one in 100 in the inner city areas. In San Juan, Puerto Rico, 1.7 percent of the women coming in for prenatal care were infected. In Alameda County, California, 0.5 percent of women tested positive. Other studies of a revealing nature include a nearly one percent rate of positivity in a Baltimore family planning clinic, and a .7 percent rate of positivity in a prenatal clinic in Jacksonville, Florida.

These numbers represent a mixed population of women, some of whom are infected via drugs, some of whom were sex partners of infected men. Infected drug using women will, over time, comprise a decreasing proportion of the total number of infected women, while the number of women infected through heterosexual transmission will gradually and inexorably increase as a consequence of the sexual activity of the large reservoir of infected men.

Estimates derived from the CDC document indicate that the number of persons infected through heterosexual contact is already significant. These estimates are in the range of at least 30,000 to 115,000 persons. This number thus represents the current extent of the secondary phase of HIV spread, and defines the current magnitude of the heterosexual transmission problem.

Point four. The terminology that we use to classify people with HIV infection masks the potential for heterosexual transmission or perception of heterosexual transmission.

The existence of more than a quarter of a million infected heterosexual persons, and 30,000 to 115,000 persons infected through heterosexual contact is partially hidden by the terminology we use to describe the epidemic. For example, it is often stated that HIV disease is not spreading outside of the risk groups. While this statement is technically correct, it contains a certain element of circular reasoning. Specifically, persons who are heterosexually active with another risk group member -- such as a bisexual man or a drug user -- and who then acquire the disease, are themselves defined as being in a risk group. Thus, partners of drug users, female sex partners of bisexual men, et cetera, constitute a risk group.

Our terminology then hides the concept of heterosexual transmission. By classifying sex partners of bisexual men or drug users as a risk group, we count these cases that occur in this manner, state that these persons are in a risk group, and then assure ourselves that the disease is still staying within our self-defined risk groups. This may calm the population but, in fact, does little to slow the spread of heterosexual transmission of the virus.

Point five. The consequences of heterosexual transmission of HIV will fall most heavily on the poor. The majority of the drug using population reside in the inner city areas. This population is largely composed of Black and Hispanic persons. Thus, the problem with heterosexual transmission of HIV is largely -- but not exclusively -- a problem of the urban minority populations. Inner city urban minority women who live in close social and sexual contact with infected male drug users are especially at risk for acquiring the disease.

Infection in this population is a terrifying addition to the equally depressing, already existing conditions of poverty, unemployment, unemployment discrimination, and drug abuse. The threat to this population is large. As noted earlier, 30,000 to 115,000 persons are estimated to have been infected through heterosexual transmission -- the largest number clearly being people of color. The rates of seropositivity in pregnant women quoted earlier give stark evidence to this fact. Most of the studies cited earlier are from inner city populations composed almost exclusively of people of color. Blacks and Hispanics clearly represent a disproportionate number of AIDS cases. Excluding homosexual men, the likelihood of acquiring AIDS if you are Black is 12 to 13 times that of a White person, while 80 percent of all the children born with AIDS come from minority populations.

Point six. Heterosexually transmitted HIV is a disease of the family. Preeminently among diseases, HIV infection within the heterosexual community is a family affair. The usual scenario is that of an ailing or dead infected male drug user who has infected his non-drug using wife or girl friend. The wife or girl friend may have already given birth to an infected child, or may give birth to one in the future. Often the infected women is already clinically ill, and usually has two to three young children at home.

Thus, we are faced with a seriously ill male, largely unable to care for himself, an infected or ill partner with young children at home who -- if the children are lucky -- might be free of HIV infection, but still suffer the serious effects of having ill or absent parents. All of this occurs within an environment and social circumstance of poverty, general poor health, inadequate housing, a fragile family structure, and the near-total absence of significant resources or support systems.

It cannot be emphasized too strongly that HIV in this context destroys families. The children caught in this situation lose on two counts. Either they are born infected. Approximately one-third to two-thirds of children born to infected mothers will themselves become infected, or the infected parents will become ill, and the children often end up in foster care institutions as boarder babies in hospitals or some other secondary home setting.

Added to all the above is the misery and the pain associated with being an HIV-infected child. The Coolfont report published in 1986 estimated that there would be 3000 cases of pediatric AIDS in 1991. Since there are three to four HIV-infected infants for every case of AIDS in children, we can anticipate 10,000 children who have acquired the disease through perinatal transmission. The problem of perinatal or pediatric AIDS, already severe, will only grow with time. The reservoir of

infected heterosexual males and the fact that 1 to 3 percent of pregnant women in many inner city locations are currently infected tells us that pediatric and perinatally acquired HIV disease will be an enormous problem in the upcoming decade.

Point Seven: Reaching the communities most affected by heterosexual transmission will not be easy. Care, tact, boldness, and a sense of urgency must imbue our attempts to do so. The minority communities are justifiably concerned about their being labeled and stigmatized as another risk group. They fear that any campaign directed towards HIV counseling and testing could turn into a eugenics program with forced sterilization or coerced abortion. Both of these fears have a strong basis in reality. The discrimination and stigmatization surrounding populations at risk for HIV disease is well known.

Less well known but well documented is the history of forced sterilization imposed upon minority populations in earlier years in this country. Further, these communities are concerned that campaigns directed towards condom use or sexual abstinence, which are designed to slow transmission, represent subtle and not so subtle campaigns of racial genocide or denials of procreative rights.

In approaching the problem of heterosexual transmission of HIV infection in the ghetto areas of our country, understanding and boldness will be required by all concerned. The political elites and governmental authorities who allocate money and set policy for this problem must understand that the black and Hispanic populations will approach any governmental solution with caution, if not outright hostility and suspicion. Patience will be required. The social and political leaders of these communities must not underestimate the threat that HIV poses to their constituencies, nor must they shy away from meeting their responsibility.

Once the level of HIV infection in females reaches a significant, but as yet undefined level, tertiary spread of the virus can occur. We already have 1 to 3 percent of females of childbearing age being infected in certain cities. If the level continues to rise, the consequences are dire. If HIV infection progresses any further in these areas, the issue of altering sexual behavior or use of condoms will not become one of racial genocide; rather it will become one of racial survival.

Briefly, I would just like to make three or four very brief recommendations based upon some of this information. One on the provision of care: Additional resources must be targeted toward the treatment of drug users. This must be our first priority. We can never hope to stop the heterosexual spread of HIV until we've slowed transmission among and by drug users. Other speakers on other panels will more directly address drug

users in greater detail, but I cannot stress the importance of that issue around the issue of heterosexual transmission. I can't stress it too much. One point to remember within the context of resource allocation for drug users is that they are not popular persons in this country or in our society. Nonetheless, we treat and care for them because our societal ethic demands that we care for all of our citizens. Further, it is critical to understand that we must provide resources for the drug users, if for no other reason than our own narrow self-interest as we attempt to stop heterosexual transmission of HIV.

Point Two: Regional comprehensive care programs for women and children infected with HIV should be created. These programs would have the following purposes: One, to educate the women at risk. Two, to provide a linkage between the community-based support groups, and I stress we must generate more community- based support groups -- provide a linkage between the community groups and the hospital-based programs, thereby lessening the fragmentation of health care that is so common in the inner city areas. Three, such programs would help to stabilize the fragile family structure which is under severe stress when HIV disease enters the population. And four would be an attempt to decrease the number of homeless infants or boarder babies and children born to HIV- infected mothers, which will become a problem of increasing severity. The only way to do this is to develop an integrated comprehensive care, multidisciplinary program around the issue of women and children.

Briefly on the point of education, culturally appropriate educational programs should be targeted to the female populations at highest risk of HIV disease, including the widespread availability of voluntary HIV counseling and testing. Such programs must be accompanied by additional support services. You cannot tell a young woman she is pregnant and infected and then just have her leave your office.

Campaigns advocating increased condom use are useful, but a broader approach is needed, especially in the inner city areas. Women must be made aware of the high risk attendant to sexual activity, particularly with a person who is a current or former addict. A message of sexual selectivity must be incorporated into educational programs. The recent debate on condom promotion versus promoting abstinence is a false issue. It is possible to steer a middle course.

Four, educational campaigns and grants should be subject to critical analysis as to their effect and impact. Exhortation, history tells us, rarely changes behavior. Behavioral scientists, including anthropologists and sociologists, should be drawn into the creation and evaluation of educational programs. We must learn if a message sent is a

message received, and if received, if it's acted on. And five, which is an area which I must admit I have some of my own interest in, is that more information is clearly needed about the issues of heterosexual transmission, its incidence, prevalence, causative factors, behavioral and biological, and finally prevention. Additional behavioral, biological, and epidemiological research in this area should be done.

As an example, the studies now planned on the seroprevalence of HIV infection in women should be continued. The currently planned national study for HIV infection of new mothers, done by testing a drop of blood taken from their newborn infants, uses a relatively unbiased method to give a fairly good picture of HIV infection in women of childbearing age. This type of study would be very useful for public health management and HIV surveillance in the heterosexual population. Thank you for the opportunity. I'll be glad to answer any questions.

MR. CREEDON: Thank you, Dr. Landesman. That certainly is a clear and sobering and somewhat depressing report. From what you indicate, it seems to be clear that there is heterosexual transmission from infected males to non- infected females, and especially in the IV drug user situation. There have been articles written and which have come to the attention of some of the Commission members at least which suggest -- and this goes back to your very early point about how do you classify groups -- that transmission heterosexually is much more difficult than transmission homosexually, because of the physical characteristics of the differences between those forms of intercourse. And I don't know if you have a view on that, but certainly from the standpoint of the Commission and trying to evaluate the likely size of the group that society is going to have to contend with between now and the year 2000, one of the questions is whether the disease is likely to spread outside of the partners of the IV drug user and into the heterosexual community generally. And I wonder if you have any view on that subject?

DR. LANDESMAN: Two points here. One, the issue of whether HIV is spread more readily through anal/genital sex rather than vaginal intercourse, I think by and large is a false issue. If there is a difference in the rate of transmission between anal/genital and vaginal intercourse, it is probably not one that is orders of magnitude difference. We're not talking about something that is 100 times more efficient or 1000 times more efficient one way or the other. If one would say that the risk of anal/genital intercourse, just to take some theoretical numbers is 1 in 100, and the risk of transmission through vaginal intercourse is 1 in 200, from a public health point of view, that largely doesn't make a significant difference in terms of where we are going.

Overall, the partner studies have indicated that the long-term sexual partners of HIV-infected persons, the long- term heterosexual partners of HIV-infected persons, run roughly a 20 to 40 percent chance of getting infected from their infected partner. Those numbers probably will not reach a greater degree of clarity over time, given the variables that we have. But we do have to remember that it is heterosexually transmitted. Whether it's one in 200 or one in 250 is largely irrelevant.

Concerning the issue of the spread of the virus outside of the risk groups, the point I tried to make was that I think we to some extent delude ourselves if we keep talking about the issue of risk groups, that ultimately everybody who is infected sexually will, if you were to try and study them carefully, be in a risk group, because obviously their partner will have had to have been infected. And seeing that we define sexual activity with an infected partner as putting you in a risk group, every person who would then get infected would have had to have sexual activity with an infected partner.

It is probably true that the majority of heterosexual transmission at this point in time will stay within this secondary phase of transmission, from drug-using persons or bisexual men into their sexual partners. We will not get to the level of tertiary transmission or outside of that until we build up a sufficient reservoir of people who are infected through this secondary method of transmission.

So I think the purpose and the goal in terms of preventive efforts at this point in time is to try to slow down heterosexual transmission from what are now called the primary risk group people into their non-drug-using partners. That would be the preventive strategy at this point in time, because it is only when there is a sufficient reservoir of infected women who are, let's say, non-drug-users, who then start to feed it back to non-drug-using men, that the process could then become a tertiary or self-sustaining process.

I don't think we have good data on that at the present time. I don't see anything which indicates that is occurring at a significant rate at this time, although my great concern is for the urban inner city populations where you are building up a large reservoir of infected women, and even if the rate of transmission from females to males is relatively low, once the reservoir of infected --

MR. CREEDON: Is that the fact, in your opinion?

DR. LANDESMAN: Well, again, I don't think we're talking about orders of magnitude difference here. It is probably true that receptive intercourse, receptive intercourse in males and receptive intercourse in ordinary, everyday

heterosexual vaginal intercourse, receptive intercourse is probably a more efficient means of transmitting the virus. But we're not talking about orders of magnitude difference here.

Would I sleep with an infected female? No. Is it safer than sleeping with an infected male? Marginally. Again, I think we are ending up splitting hairs around the issues of the efficiency of transfer because we're not dealing with orders of magnitude difference.

It's clear that the virus can be spread bisexually. It's clear that it is a sexually transmitted disease. And the critical question, seeing as we're dealing with tens of thousands of infected people, is whether we are going to ever develop a large enough reservoir of infected females largely to then start to feed it back into non-drug-using men.

In places like New York City, especially in certain areas of the city, that's a concern that could happen, as it is in other areas of the country. I think our goal from a preventive strategy is to try to limit or curb the number of women who become infected from their partners, because that's the way to prevent heterosexual transmission from, quote, breaking out into the general population, unquote.

MR. CREEDON: Dr. Landesman, one of the points you made was that you thought there should be further research and study, specifically in the area of heterosexuals. Is that being done adequately? Do you think plans are afoot now to do that, or do you have any specific recommendations as to exactly what we might recommend in that area?

DR. LANDESMAN: Well, there are a variety of initiatives now going on by the Public Health Service. I'm not privy to all of them, but I know that there are a significant number of studies.

MR. CREEDON: This is Dr. Axelrod or nationwide?

DR. LANDESMAN: No, no. This is NIH. In other words, studies on the issue. I think clearly where more information is needed are two separate areas. One is going to be in the area of education. I mean, we really know -- I mean, none of the really sophisticated educational methodologies or processes have been applied to the issue of education in HIV disease, particularly in dealing with the populations most affected. There's very little that I have seen that's been built into educational programs which evaluate how effective they are, and it seems to me that all of the research has to have a sort of serve-or-follow-up mechanism of you do it, you evaluate it, and then you adjust what you do to make it more efficient. And I think that has to be a critical part. We have to learn as we educate. We obviously

can't wait, but every educational program that's done should contain an evaluation segment in them, so we can learn something from it and then fine tune it.

The second thing, which actually was pointed up by a recent conference, I think, in Colorado, the Kinsey conference that just concluded, was that we know little, if anything, about the sexuality of the groups that are most at risk for heterosexual transmission. I mean, the CDC document to the Domestic Policy Council, the sexual study most commonly cited was the Kinsey Report of 40 years ago, and that's basically all we have.

We know little about the sexuality of white, middle-class teenagers and adolescents and young adults. We know nothing about the sexual culture and mores of the inner city populations. I mean, literally -- literally zero about that population. And if we're going to design effective campaigns around the issue of sexuality in that population, we'd better learn something about that population as fast as we can.

MR. CREEDON: Do you have any sense about the bisexual problem, how big that is?

DR. LANDESMAN: I have no real hard data on it. I think Professor Wiley may have more information on that than I do. That's not an area that I can say anything on.

MR. CREEDON: Other questions? Yes?

DR. PRIMM: Dr. Landesman, I want to particularly commend you for certainly pointing out that community-based organizations certainly need strengthening and to play a greater role and for pointing out the fact that in heterosexual spread, this is a family disease. I've talked about that, and I think it is so very important. And the emphasis that you put on expanding services certainly for the intravenous drug-using population, I think that's commendable, and I strongly support what you have said.

The other thing, my question is, it's been reported in the literature that the effectiveness of transmission of the virus is secondary to the pathogenesis of the virus itself, the ambivalence of the virus, for example, and that in females the virus has not been present that long as to become so virulent that the effectiveness of transmission is there as it is from, say, male to male or male to female. I would like for you to comment on that, if you would.

DR. LANDESMAN: I'm not aware of anything which suggests that the residence of the virus in females or the duration of the residence of the virus in females somehow affects

their ability over time to transmit it to males. The evidence from Africa and Haiti do not seem to suggest that that's the case at all. So my answer is, I'm not aware if that, in fact, would be a true.

DR. PRIMM: Have you heard that? Have you heard that before?

DR. LANDESMAN: I've heard something similar to that. One point in general is, there are many discussions that go on around the issue of whether anal intercourse is more efficient than vaginal intercourse, whether females can transmit it more or less efficiently to men than men transmit it to women.

The point I wish to make is, I think many of those questions are by and large minor in nature. I think there is a sufficient amount of data to indicate that we're not dealing with major orders of magnitude differences in these things, and that those should not be the principal questions that we should ask, but we should focus more, we should accept this as a sexually transmitted disease bidirectionally and focus more on issues of prevention of the epidemic.

MR. CREEDON: Dr. Crenshaw?

DR. CRENSHAW: I want to first compliment you on your thoughtful, clear, and exceedingly concise reflection of the facts. I think I've rarely heard them so well expressed.

DR. LANDESMAN: Thank you.

DR. CRENSHAW: I want to ask you a very rudimentary question that's exceedingly frustrating to me. And put aside for a moment all the complex mathematical models that are being dealt with that I have some difficulty following.

You indicated that 225,000 to 350,000 incidents of infection already in the heterosexual population, and CDC puts those figures lower. And my point and my question is, even if they were a fraction of CDC's and your consensus, given the fact that a mere five years ago, we had 183 cases in the homosexual community, and today we have such a magnitude there that in major cities, the very gay community is endangered. My question is why in this day and age are we even raising the question: Is this a threat in the heterosexual community? It seems to me that common sense, not mathematical manipulations, tell us loud and clear that it is definitely one. It already is one, and it's not a question that it's going to be one. So tell me, if you can, because I can't answer this question, why we are raising the question at this late day and age?

DR. LANDESMAN: Two points. What I said in the testimony was that there appear to be at least a quarter of a million persons who are infected who are heterosexual and thus capable of spreading the virus heterosexually. I think the CDC probably agrees with that, with that number. That's HIV infection, not cases of heterosexual spread. As to why we are debating the issue, that's more of a political and societal and communications question than it is, I think, a scientific one. But I can give you the benefits of my thoughts as I sit in Brooklyn. And that is that the issue of heterosexual transmission is a very politically laden topic, and many thoughtful people on this issue have attempted to walk a very thin and careful line, which is an attempt to develop concern in the public without developing panic in the public, and that's a very difficult line to walk. On one hand, you want to generate both preventive measures, concern, and development of an allocation of resources. On the other hand, there is fear that you can cause panic with widespread discrimination and isolation of the people infected.

So it becomes a very delicate political and communications problem of how you tell the public there is a problem, how the problem is, in fact, really not one epidemic, but a variety of sub-epidemics in different areas, without panicking them, and it is a very difficult problem to deal with. It's perhaps the most single difficult one, and much of our difficulty in concepts comes out of people going back and forth between those two things, urgency and we have to do something on one side versus fear of arousing inappropriate action on the other side.

DR. CRENSHAW: I think those points are well taken, and the follow-up question that you've obviously already given a lot of reflection to this is, given the danger of not facing reality due to all of these obstacles along the way and sensitive points, do you have any recommendations on how to get beyond this combination of denial systems and political maneuverings so that we can confront reality more effectively and more efficiently without engendering the panic and the negative consequences that people fear?

DR. LANDESMAN: Now we're getting into philosophy. My sense of how to deal with the debate in terms of its public nature is that we have to try to stop separating out the infected from the uninfected, and that is what much of the terminology of the risk groups has done. It has placed in the minds of the public the concept that they are they, the risk groups, the infected, versus us, the noninfected. What happens is that when the general public or "the general populace" thinks they are at risk, then they are going to go to their state and federal government and demand severe and what they would think would be rapid solutions to protect themselves, which may

involve coercive state powers. That's the wrong way to deal with this epidemic from a psychological point of view. I think in terms of psychology or how we talk to the public at large, we have to change our frame of reference and put this as a societal problem where all of us are in it together. All of us have to be willing to give up a little bit in order to protect the group as a whole.

As an example of how the terminology ought to be changed, is the question, which I oftentimes hear in the State of New York asked by news media of a public official, is the epidemic spreading to the general population? The officials say with the best of intentions because they don't want to frighten the population, they say no, it's not spreading to the general population. It's still within the risk groups.

I would say that both the question and the answer are incorrect. The question is incorrect because the persons infected are part of the general population. Unless the person answering the question points that out, the concept that the public takes away from that question is, well, there's me in the general population uninfected, and there's them over there who may give us the disease. It fosters that divisiveness, that separation in our society rather than bringing us together as a societal group.

Then when the public official says, no, it's still in the risk group, again with the best of intentions because we don't want to frighten people into coercive and severe actions, that calms the public for the moment and lets them think they're safe, but seeing as the biology of the virus has its own imperatives, it has news reports and scientific reports come out showing some evidence of heterosexual spread or spread to the general public, the public, having heard once that they are safe and now hearing that they are not, lose faith in their public officials and tend to demand increasingly severe or radical actions from them.

So our job in part is really one of communication, of making this for the public at large to see this as a societal problem and that we're really all in this boat together, and that it isn't a matter of AIDS being in the general population. With 1.4 million, 900,000 to 1.4 million people infected, AIDS already is in the general population. Because it's not our neighbor, our sexual partner or the person down the street doesn't mean it's not in the general population.

DR. CRENSHAW: Thank you for your point. I have noticed that the AIDS virus is a very democratic virus, and I think the sooner we start treating it that way, the better we'll be able to contend with it.

MR. CREEDON: Dr. Walsh.

DR. WALSH: I think, Dr. Landesman, the points that you make are well taken. The thing that I wondered about was what we have seen in this disease, as you have outlined, it went first from a homosexual disease to a minority disease and, of course, I think it eventually will go to what is referred as the middle class white population. We're reading about and getting increasing reports now of the middle class white population of the senior high school level, college freshmen and so on levels. Is there any significant data yet collected from that group as to how much of an impact this is making now in that group?

DR. LANDESMAN: I'm not aware of any significant reliable body of data around HIV disease in adolescents or young college students. Others maybe, but I haven't seen any good data in that area. My own sense is that the impact of this virus, while present in, so to speak, the white middle class population, will never be as large and as serious a problem as it will be in other populations in the inner cities.

I think a point that I really wish to repeat is that the focus of the preventive measures should not be in order to prevent its spread into the white middle class population. The fact that it already infects large numbers of persons who happen to be either poor, minority, depressed or disadvantaged persons is reason enough, given the numbers of people we already have and the enormous scope of the problem to drive our efforts.

I think in addressing the public, the problem must not always be put as one of we're going to protect that sort of middle class populace. I think we have to change our conception and our society more than one of just -- this may be an impossible idea -- but more than just one of protecting ourselves. But our society is threatened by this thing as well, and our next door neighbor or the guy a couple blocks away is threatened, and that's reason enough to put forth the resources. But in answer to your question specifically, I know of no reliable data in that population. I would think that we need an enormous amount of it, especially around the issue of adolescent homosexuality, because the other group that we now have to look at is the issue of young men entering the gay lifestyle and how we can prevent them from reproducing the epidemic that occured in 25 to 44 year aged gay men. That's where preventive measures have to be focused, especially in the younger age groups.

DR. WALSH: I don't disagree with the need for degrees of concentration on certain populations, but I'm thinking in terms of one of the things with which we are grappling is this so-called political or societal problem of saying it's their disease. I just have the feeling that one of the reasons we're not getting the objectives that you would like to get is that so

much of the middle class white population thinks they are above the threat. I just think we may be surprised. If one is to believe what we read, when you read of two, three and four seropositive students in a relatively small class of middle class whites, I think that there is something below the iceberg that would be of benefit to increasing the efforts towards the so-called high risk population. I share completely your sentiment that there is no such thing, to my mind, in AIDS as a high risk population. It should be a general thing.

Now, I have one other question, and that is this. Do you have any comparable data available to you on heterosexual spread in Western Europe primarily because of their much closer relationships to their minority populations which come significantly from Africa where it is a generally heterosexual disease?

DR. LANDESMAN: I have no hard data on numbers. I know that in areas of the Netherlands and Amsterdam, there's great concern about it around the issues of drug users. In fact, there are large numbers of drug users in several major European countries who are infected, but I haven't got any hard data. I don't know of data that really exists. There are probably ongoing studies around the issue of heterosexual transmission in those countries.

DR. WALSH: Do you have any adequate explanation or knowledge of why, for example, in Sweden, which has been generally accepted as a pretty liberal nation sexually, why the instance of sexually transmitted disease in general is so much lower there than, say, in Amsterdam and so on and in the rest of Western Europe? Because they must be doing something in their education process that we are not doing, and I think we could learn a great deal from them. Do you have any idea on that?

DR. LANDESMAN: No, I'm not aware of the public health programs in Sweden around the issue of prevention of transmissible diseases.

MR. CREEDON: Dr. SerVaas.

DR. SERVAAS: I want to repeat the compliments from the other panel members about your good report. I have a question. If a woman is infected on Saturday night, can she give AIDS to a different sex partner the following night? I am asked this question, and I would like your opinion on that.

DR. LANDESMAN: If she's infected on Saturday night, can she give it to somebody on Sunday night? Actually, we don't know the answer to that question. The issue of how infective a person is during different phases of the disease is one that really is still being explored. Can she give it to somebody six

months later? Probably yes. Can she actually give it to somebody the next night? I really don't know the answer to that question because it may take time for the virus to become part of her cells and multiply enough. But if you ask me the next night, I honestly don't know. I would probably actually doubt it. I mean, do you ask the same question if somebody gets syphilis on Sunday can they give it to somebody on Monday morning. My suspicion would be simply because there is a biological time lag there that's required for multiplication in the person that's infected before they become infectious to others. One day to the next, no, but one month to the next or six months later, it may be yes.

DR. SERVAAS: CDC was telling us if someone comes to you and wants to be tested and they think they had an exposure this week, you tell them to wait three months. This is what CDC said. Then we would probably be sure the antibodies would be up. How long do you tell people to wait when they think they've had an exposure before they are tested?

DR. LANDESMAN: Generally what we do if somebody comes to us and says they've had an exposure and want to be tested is that we offer to test them right then and there first to document that they are negative at that point in time. It also serves a psychological purpose of thinking that at least something is being done rather than just sending them out and waiting. Most of ours come around the issue of needle sticks rather than sexual transmission, and then we tell them to come back at three and six months to have a repeat test.

MR. CREEDON: Dr. Gebbie.

MS. GEBBIE: I want to go back to a couple of things you said about the data early on. If I heard you correctly, one of the useful things that might be done about the data which are now coming into state and local and federal public health agencies would be to categorize two different ways. In addition to our current categorization which shows how a person became infected, to routinely categorize and publish by the method by which that person could spread the disease to others; that would be a healthy conceptualization to look at how this disease is spread. Is that accurate?

DR. LANDESMAN: Yes. I think the concept of how large the heterosexual infected pool is is an important piece of information that we should have and will give us a concept at least of our starting point for heterosexual transmission. I think one or two people from the CDC may have actually started to do that, but the critical issue around heterosexual transmission is how large is the pool of people capable of transmitting the virus. Up until now, that hasn't been counted.

MS. GEBBIE: The other question is part of what we're looking at here is what numbers can we use to base our recommendations and predictions on. I gathered from your presentation that you are basically comfortable using the current CDC estimates for numbers of people infected. If not, could you clarify it?

DR. LANDESMAN: I am comfortable with the basic CDC numbers. I would certainly grant you that they probably are not perfect, but within the ranges that they have quoted, I am perfectly comfortable with them. One thing I think we have sometimes lost sight of in this epidemic as to whether the number is 1.4 million, 900,000 or even 700,000, which is below the number that the CDC cited, by any stretch of the imagination it's an extraordinarily large number considering the other responses we've had to other public health problems in this country, whether it be toxic shock, Legionnaire's disease, lime arthritis or half a dozen others. We're dealing with hundreds of thousands to millions already with this thing, and it's reached an order of magnitude beyond which we haven't had from any other infectious disease that I can remember. In fact, it probably exceeds virtually all the other major reportable diseases by CDC already.

MR. CREEDON: Mr. DeVos.

MR. DeVOS: No questions.

MR. CREEDON: Ms. Pullen.

MS. PULLEN: In your paper that is in the Journal of the American Medical Association of November 20th, you mentioned the relevance of the prevalence rate in the hospital where you did your tests as compared to the incidence of perinatally contracted herpes and neural tube defects. Would you discuss that for a moment to put that into our record, please?

DR. LANDESMAN: The point we made in the paper where we documented a 2 percent rate of positivity among women who delivered or 1 in 50 was that, compared to other diseases which are perinatally transmitted or other diseases which we offer to test women for, this disease probably in our population constitutes cumulatively the single biggest problem that these women face; certainly several orders of magnitude more common than the issue of herpes transmission, than the issue of neural tube defects, than the issue of congenital rubella, than the issue of congenital toxoplasmosis. So as a comparative health problem, that was the purpose in there, that in the populations that we serve, perinatal transmitted disease or the risk to the fetus is probably cumulatively a greater risk than almost any other perinatal infectious disease that these women are at risk for their fetuses.

MS. PULLEN: These other diseases are routinely offered for testing?

DR. LANDESMAN: Routinely offered, yes, ma'am.

MS. PULLEN: The tests are routinely offered. Thank you.

MR. CREEDON: Chairman Watkins.

ADMIRAL WATKINS: I had a little different view of what you said about the CDC information that is now packaged in certain ways, particularly be the heterosexual base, the pool that you talked about. Are you saying that the way the data is now presented gives a false sense of security about this so-called spread into the heterosexual community? If so, how would you change the architecture of the epidemiological data, or how would you seek information that would give you the kind of feeling or give the American people the kind of feeling that we are clear on this subject of heterosexual spead?

DR. LANDESMAN: The data as it is listed, my point was not so much as to how the data was listed but how we then interpret it. The point I wished to make was that the problem is the terminology of risk groups, which is a useful terminology for a variety of reasons. But then we have to expand that terminology as we discuss the issue, because what you hear is a discussion of nobody getting the disease beyond the risk groups. But then we have defined as being a risk group a person who is sexually active with an infected person. If you start with the assumption that the only way you can get the disease sexually is by being sexually active with an infected person, then everybody who acquires the disease sexually must be in a risk group.

Now, that was the example I gave of the circular reasoning, and I don't wish in any way to criticize the CDC for classifying people in risk groups. My concern is the issue of how we then use the information to say that persons are not in risk groups. Eventually everybody who acquires it sexually, if we do enough investigation, will have been found to have been in a risk group of some sort. At the present time, it's a matter of interpretation of that data and how we tell the population about it. My concern is, again, as much a societal concern as an epidemiological one. When we go and we keep telling the members of the public not to worry, it's still in the risk groups, it continues to foster this them versus us, this risk group versus nonrisk group mentality and makes it infinitely more difficult to deal with the problem on a broader societal level. We are telling people it's not their problem by telling them it's --

ADMIRAL WATKINS: I get the point, Dr. Landesman -- and I agree with you 100 percent. What I'm trying to say is sometimes the bureaucratic packaging of information flow in itself can be modulated to give us a better feeling along the lines you suggest. So while technically you can understand it and you can begin to translate from the data to something more logical, it's very difficult for others unless you package it that way to begin with. So I'm just saying, do you have a recommended change in the architecture of the epidemiological report that we could make a recommendation to CDC saying we think it's very important you present this in this way in your data so that we avoid the very thing that you're proposing here, which I think is commendable. So I'm trying to get you to say if you want to go after the pool that you talked about -- you say you don't have enough knowledge about that pool and we should be more sensitive to that, then maybe there's a way to focus surveys. They're going into 30 major metropolitan areas here in the very near future to collect survey data.

Are their surveys going to ask the right questions and give you the data? Is there another way of packaging it so that it could improve the perception in the nation that this is what I would call in the Navy an all-hands evolution.

DR. LANDESMAN: I guess two points. One is, as suggested by Ms. Gebbie and as alluded to earlier, the idea of starting to talk about the number of persons who are heterosexual and infected, I think, will give a different view of the problem in terms of its scope. When we say that there are a quarter million or more persons in the country who are capable of spreading the virus heterosexually, yes, they do have certain demographic characteristics, and that changes the nature of the perception of the problem.

That would be one suggestion to make. Whether suggestions could be made around the classifying of data as to secondary and tertiary spread, I think some steps are already being initiated along those lines in terms of persons who are classified as having no identified risk. The people who are classified as having no identified risk, if appropriately and intensively interviewed and if after the interview they still are listed as having no identified risk, the presumption there is that they were infected through what I called earlier tertiary spread or transmission from an infected person whom they were not aware was infected. How we're going to expand or change that terminology beyond what I've already said, I don't yet have an answer to. Again, it's part of this delicate problem of trying to develop real statistics and real concern and urgency without panicking the public into severe action.

ADMIRAL WATKINS: I think you've opened up a new issue, to the Commission in general terms today and I think it has been very valuable, extremely illuminating. I'm just trying to follow up and get very specific about it. Because if we're trying to change perceptions and get more realistic without generating panic, the question is, is the data base adequately aggregated today in that area, and can that data be obtained by packaging it in different ways to enhance the national and global view of this disease in a more realistic way. If you have a recommendation, we would like to receive it on the Commission.

DR. LANDESMAN: I can't give you a specific one at this point beyond what I've said. If there's any other information, I'll be glad to try to communicate it if I can think of it.

ADMIRAL WATKINS: Only one more point. You talked about obstacles to achieving several recommendations in other areas that we're not focusing on today. I don't want to ask any questions in those areas, but I'd like you to come back and tell us in the areas of care, of education and any specific suggestions about community-based organizations and health care organizations, how could they better work together.

We would like to receive information, what you're really talking about on those issues so we can better prepare for the follow-on hearings in those areas. Care hearings, for example, are coming up in January. So in New York in particular, it would be very valuable for us to know what obstacles you see among the poor, among the affected individuals in the area of care, the continuityfrom hospital to nonhospital care. What are the obstacles, bureaucratic obstacles if you will? We can't open the residences because we don't have enough fire exits. That is an issue probably within the local law, but perhaps those kinds of things would also be very valuable to us, and obviously you have some feelings in that area. It would be helpful if you would give us what you see are the obstacles to getting on with those programs that you feel are so necessary, either in the education or care field.

DR. LANDESMAN: I can actually tell you, I allude to many, many obstacles, but one of the actually real live obstacles among many which we came face to face with a couple weeks ago as an example was a bureaucratic one which really was simply part of the mechanism of government. We had down at our medical center people from five different state agencies around the issue of setting up a comprehensive care center for infected women and children. People from the Mental Health Department, from the Department of Health, from the AIDS Institute, from the social service agencies, from child and adolescent medicine.

As we put together a package to show them how we would do such a program which combined community and hospital- based

services, it was clear that even if they had wanted to help us, and they did -- they were very supportive -- the bureaucratic mechanisms cut across different state agencies, and it's so difficult to try to bring all the state agencies and all the polices and procedures and laws that are already in effect on line to create an integrated program that, in fact, is very, very, very difficult to do so. I think Dr. Joseph can probably tell you more about that in terms of trying to coordinate care in New York City across a variety of city agencies as well. It's genuinely a difficult problem, even with the best of intentions and the most intensive pull.

ADMIRAL WATKINS: Would you be willing to give us a follow-up report from your perspective on these areas that you talked about outside the prevalence discussion this morning?

DR. LANDESMAN: Yes, sir.

ADMIRAL WATKINS: Thank you.

MR. CREEDON: Our next witness is Dr. Stephen Joseph, who is the Commissioner of Health from the City of New York. We heard yesterday from Dr. Axelrod, who is the Commissioner for the State of New York, as Dr. Joseph is for the city itself.

PRESENTATION BY DR. STEPHEN JOSEPH

DR. JOSEPH: Thank you, Mr. Creedon and members of the Commission. I certainly appreciate this opportunity to testify before the Commission. I'll discuss the prevalence and prevention of the disease with an emphasis on the growing list of associated policy issues. I presented you some background material a few days ago, and what I'd like to draw out of that is that we are once again, as we seem to be about every six months, at a critical juncture in the epidemic. I think it's important to remember that because of the biology of the virus, the public policy decisions we make today determine the state of the epidemic and its impact on the nation five, seven and even ten years from now.

The flip side of that coin is, of course, that any delay today in appropriate public policy actions means that we will suffer increasingly from the effects of that inaction throughout the next decade and not just in the next year. Of all the charges before you, perhaps none is more important than your ability to stimulate the courageous, farsighted, comprehensive national strategy that we must have and that we currently do not have. Nowhere in North America is the tragedy of AIDS more starkly felt than in my city. We have well over 12,000 people who have been diagnosed now with CDC-defined AIDS. That's 27 percent of the national total, and we are up past 6,700 deaths. To put that in perspective, when I became commissioner a

little over a year and a half ago, we had something like 6,000 diagnosed cases of AIDS in the city, between 6,000 and 7,000.

We have as many as 100,000 additional people suffering from AIDS-related illness not classified as the reportable syndrome AIDS. In New York City today, AIDS is the current leading cause of death among all men age 25 to 44, and I think very ominously for the future, it is now the leading cause of death among all women age 25 to 34 in New York City. We believe we have about 400,000 infected people in New York City, including some 250,000 gay and bisexual men and 50 to 60 percent of the city's estimated 200,000 IV drug users. Over the past three years in New York City, we have strong reason to believe that the number of deaths among IV drug abusers due to AIDS-related illness that did not meet the strict CDC definition of AIDS is actually more than 150 percent higher than we had previously counted in our surveillance.

MR. CREEDON: Dr. Joseph, where does the 400,000 figure come from?

DR. JOSEPH: The 400,000 figure is derived from our samples within gay and bisexual men, samples within IV drug users extrapolated to that population and our estimates of the infected sex partners of those groups plus other smaller groups such as hemophiliacs, et cetera. I'd be happy in the discussion period, I have current results of about six sero surveys, seroprevalence surveys, that we just have coming off the line in different groups that I think will shed some light on the first question you asked at the beginning of the hearing.

MR. CREEDON: I think that's an extremely important number, because if you have 400,000 in the City of New York alone, then --

DR. JOSEPH: Mr. Creedon, I can assure you. We may not have 400,001. We have somewhere between 300,000 and 500,000 infected people in New York City. I know that as surely as I know anything else I say this morning.

MR. CREEDON: Thank you.

DR. JOSEPH: Again, as Dr. Landesman mentioned, the exact number is almost irrelevant. That order of magnitude is a certainty in the City of New York. The important point that I'm trying to make at this juncture is, however, that what we have found in just recent weeks is that there has been a significant undercounting of the impact of this virus on IV drug users in the city because of the way the definitions have been set up; appropriate, but the way they've been set up. We probably have undercounted severe disease and death among IV drug users by as much as 150 percent. If we recalculate from that basis rather

than the former basis, what actually happens in New York City is that the future that Dr. Landesman talked about is the present and has been the past for some time, in that we have more severe illness and death among IV drug users from this virus than we have among gay and bisexual men from this virus.

The percentages that we talked about previously, about 55 percent or so of disease and death among gay and bisexual men and 30-some odd percent among IV drug users, we now think need to be flipped over, and about 55 percent of all the disease and death so far is really among IV drug users and a lesser percent among gay and bisexual men.

MR. CREEDON: Excuse me. Dr. Landesman, you're not leaving, I hope, are you?

DR. LANDESMAN: No.

[Laughter.]

MR. CREEDON: You're welcome to sit right up there where you were before.

DR. JOSEPH: Against that background, there are four central points that I'd like to make about the epidemic in New York City. First, the numbers of people involved and the costs associated with the epidemic are going to continue to increase for the foreseeable future. By the end of 1991, our best current estimates -- and, again, I'm quite certain of these projections within orders of magnitude, Mr. Creedon -- Our best current estimates project that over 60,000 people will have developed full-blown AIDS in New York City, and 40,000 of them will be dead.

To put that in perspective, we will diagnose more new cases of AIDS in New York City in the year 1991 than have been diagnosed in New York City from the beginning of the epidemic through the end of 1986. Now, those projections include the broad CDC definition that I'm sure you've heard about yesterday, but they do not include the undercounting of IV drug abuser disease and death that I spoke of a few moments ago.

Second, IV drug abuse is the main route of HIV infection among addicts, women and children through needle sharing, sexual intercourse, or from infected mother to child. We have had over 1,300 cases of AIDS in women in New York City. Eighty percent of them have been IV drug abusers or their sex partners. We've had over 240 cases of AIDS in children in New York City. Most of them were infected by their mothers, 80 percent of whom were IV drug abusers or their sex partners. Young women represent 40 percent of the 36 cases of AIDS among teenagers -- You asked that question a few moments ago --

compared with only 11 percent of cases in all age range. Half of those young women with AIDS were either IV drug users themselves or their sex partners were IV drug users.

HIV infection in heterosexuals is primarily linked to IV drug users or, to a much lesser degree, bisexual men. We have little current evidence for secondary or tertiary spread among heterosexuals. I'm using those terms somewhat differently than Dr. Landesman did. He would say tertiary spread for what I've said there. Currently, we have little evidence of that spread; however, the large existing pool of infected people in New York City increases the probability of HIV spread through heterosexual sex, particularly for sex partners of IV drug users who are mostly women and mostly minority women. I'll give you the results of those studies a bit later.

MR. CREEDON: Do you have any judgment, Dr. Joseph, on why there is not this tertiary spread or secondary spread?

DR. JOSEPH: Yes, I do. Well, let me give it to you now. I believe that what this epidemic really is best viewed as is a series of telescoping phases. They are not separate phases. They are not distinct. They are telescoping. At the very early part of the epidemic, most infection and transmission was concentrated in gay and bisexual men, but that telescoped very early with transmission and infection among and to IV drug users. Somewhat later, the next overlapping phase was the phase that we really are in now, and that is the phase of the transmission of virus from IV drug users, mostly men, and bisexual men. We think they're about 4 to 1, IV drug users, bisexual men, in terms of those who have infected their heterosexual partners. That's the phase of the epidemic we're in currently.

We're just beginning to see the tip of what may be the fourth stage of the epidemic, fourth phase of the epidemic, which is an increasing number of what Dr. Landesman referred to as tertiary spread; that is, heterosexual transmission from people who are not themselves IV drug users or bisexual men on to other heterosexual partners. Now, I think most of us believe, most of us in the public health business, believe that that fourth overlapping phase will not be the kind of explosive outbreak that was predicted in the media six to nine months ago, but we also know that we are going to see steady growth in absolute numbers in that phase, and I think most of us believe -- again, as Dr. Landesman said very well a few moments ago -- that fourth stage, if you will, of the epidemic, will be heavily concentrated in particular population groups, in particular geographic areas. What happens after that in what someone will sit here a couple of years from now and talk about as a fifth stage I think is much more conjecture. I'll come back to this.

MR. CREEDON: You're not suggesting that this Commission is going to still be here five years from now?

DR. JOSEPH: Well, I don't know.

[Laughter.]

DR. JOSEPH: I'll come back later, if you will, in response to your questions and talk about why I think that's so from the seroprevalence data that we have coming in from the City.

MR. CREEDON: Thank you.

DR. JOSEPH: My third point, because IV drug users concentrated in areas of poverty, AIDs is hitting the city's minorities, both men and women, especially hard. Thirty percent of our AIDS cases in New York City have been among blacks, 24 percent among Hispanics. Eighty-six percent of male IV drug users with AIDS, 91 percent of mothers of children with AIDS have been black or Hispanic. Of the men with AIDS in New York City whose risk is sex with other men, 34 percent are black or Hispanic. Those previous three points converge in my fourth point. The key to the future of the epidemic is the IV drug connection. Future projections turn on the spread of infection among those most at risk through IV drug abuse; addicts themselves, women who are their sex partners, children and all those folded into a perspective of minority group status.

Breaking the link between those groups and IV drug use is the most critical imperative. Although AIDS in New York City presents problems of a magnitude not seen elsewhere in the country, AIDS elsewhere undoubtedly shows a somewhat different face, particularly in less densely populated areas of current low prevalence. Every city and state across the country will struggle with issues we've already faced for several years as AIDS spreads across the country from high prevalence areas.

What, therefore, must a national prevention and treatment program consist of? Simply put, we need resources for understanding the causes and patterns of infection, controlling the spread of HIV and providing those sick from the disease with appropriate levels of medical and mental health care and social services support. On any day this month in New York City, over 1,300 people with AIDS or AIDS-related illness occupy New York City hospital beds, including about 450 of them in municipal hospitals. The number of people hospitalized in the city is expected to reach 2,500 beds per day by 1991.

Growing numbers of infected asymptomatic people will need emotional support, clinical monitoring and possibly hopefully preventive treatment as new therapies become available.

People will undergo enormous stress as thousands of AIDS deaths wreak havoc on families and communities. The city will need to provide home care services for three or four times the 216 persons who receive such services in 1987; for three times the number of homeless persons with AIDS as were served in 1987; we'll have a need for housing-related services such as supported living, scattered site housing, SRO hotel housing and rent support.

In the unlikely event of a development of a vaccine or effective treatment in the near future, resource demands will still intensify, of course, as you know, as the numbers of people with AIDS grow. In New York City in Fiscal '88, spending for all AIDS programs will be over $389 million, of which approximately $100 million is city funds. This is up from $278 million, $74 million of which is city tax levy, in just the last Fiscal Year 1987. We've been fortunate in the city to have the vigorous support of Mayor Koch for our program initiatives, but analogous leadership has been sadly lacking at the federal level, where much of the future funding must originate if New York is to build effective prevention programs and meet service needs.

A significant federal commitment is too long overdue. Your recommendations for an effective comprehensive AIDS program must include the following. First, we need nothing less than a bold and effective national prevention strategy. It must be directed at slowing the spread of the virus among heterosexuals as well as reducing the toll among homosexual men and IV drug users and their sex partners and children. Implementing a national prevention strategy is already within our reach. It includes only three major elements: One, a massive national public health education program which would consist of an outer shell of explicit information to the general public and an inner shell of targeted education for people practicing high risk behavior. Explicit culturally relevant education is the most effective way to reduce AIDS transmission. We must not be deluded into believing that simply moralizing about values can replace a frank approach to the uncomfortable issue surrounding AIDS such as the urgent need for age appropriate and effective sex and drug education in schools.

The second element of a national prevention strategy is the rapid expansion of voluntary, confidential risk reduction counseling and HIV antibody testing into every public and private clinical facility, including physicians' offices, outpatient departments, sexually transmitted disease clinics, family planning and abortion clinics and anonymous test sites. I believe these are now proven to help increase people's awareness of their risk and encourage them to change their behavior.

Finally and perhaps most importantly, we must have major efforts to curtail AIDS transmission via the IV drug user.

The national war on drugs is so far an abysmal failure. There will be no slowing the spread of the AIDS virus or preventing its seepage among heterosexuals without a meaningful war on drugs. Efforts must range from interdiction at the international level to law enforcement at all levels to more education programs, increased and liberalized methadone maintenance, and rapid and massive detoxification programs, plus, in my view, the availability of clean needle exchange. Mayor Koch will speak about these issues in greater detail when he testifies before the Commission next week. Without a vigorous comprehensive national prevention program, in my view, within the next 18 to 24 months, we will fall behind in the epidemic among heterosexuals as we have fallen behind with gay men and IV drug users. Seizing the opportunity now would save large numbers of lives and substantially reduce the enormous burdens and costs of the epidemic well into the next decade. We need increased resources for clinical care and research that do not come from other projects. The absurd example is the administration's proposal to transfer funds from sexually transmitted disease projects into AIDS projects.

Thirdly, and this is very important, we need federal legislation to protect against unauthorized or inappropriate disclosures of confidential health records. This confidentiality protection must also protect the physician's ethical and professional duty to warn a patient's known contacts of the substantial risk of infection when the patient refuses to do so without deterring counseling and testing for those who seek these services. Both the Medicare individual reimbursement cap for home care and the 80/20 rule for hospice care are inadequate to meet the needs of AIDS patients and do need to be changed through legislation.

Finally, a national AIDS program demands a moonshot approach to federal resource commitment guided by aggressive, articulate and visible leadership from the highest levels of federal government. Except for Surgeon General Koop, that leadership has been lacking. The result has crippled control of AIDS in this country. The federal administration has continually abrogated its responsibility to take effective AIDs prevention action. What it has done is to either run counter to the best advice of the nation's public health authorities or has been divisive and diversionary, the sum and substance of the efforts only skirmishes that divert our attention from where the real battle against AIDS must be fought.

Congressional adoption of three shortsighted counterproductive amendments to federal legislation proposed by Senator Jesse Helms exemplifies such wrong directiveness. I provided for you a document that the mayor and I provided to all the Senators yesterday commenting on 14 further amendments that the Senator is about to offer to the continuing resolution.

Senator Helms' amendment to the Health and Human Services appropriation bill prohibiting the use of CDC funds for "education, information or prevention materials and activities that promote or encourage, directly or indirectly, homosexual sexual activities" was an ill-conceived and deplorable example of exactly what we do not need in this time of plague.

The Senate, unfortunately, overwhelmingly adopted this amendment. Though the House directed its members in the House-Senate conference to accept the Helms provisions, final conference agreement is pending, and we hope that will go the other way. The battle to slow the transmission of AIDS infection will be won only through a frank and unified approach to the uncomfortable issues surrounding the disease, not through confusing vigorous, aggressive leadership and programming with a coercive or punitive stance. Such quick fix solutions as Senator Helms' amendments would neither efficiently use resources nor involve people in our prevention programs.

Clearly, AIDS is forcing us to choose who and what we wish to be as a society; whether we opt for the mean spiritedness that burns down our own houses or the resolute spirit that builds them up in times of adversity. Let me close my remarks with this final observation. In my conversations with public health officials from other countries, I have been struck by the almost uniform perception among them that the United States has done virtually nothing to institute a national effort against AIDS.

Despite protestations to the contrary and despite the best efforts of the CDC and the NIH in their respective fields, the truth is that there is no national AIDS effort. From the administration, we have gotten only waffling, wavering and failure of nerve. What we desperately need today are leadership, vision and courage. Your Commission must seize the opportunity to incorporate these into a national AIDS program that saves lives and relieves suffering. Our time to do this is running out. I'd be happy to answer your questions.

MR. CREEDON: Thank you, Dr. Joseph. Dr. Lee.

DR. LEE: I defer.

MR. CREEDON: Penny.

MS. PULLEN: No.

MR. CREEDON: Ms. Gebbie.

MS. GEBBIE: I will give you a couple of questions and then ask you to lump your answer together. You indicated you have some current data on your seroprevalence surveys in New

York. I think we would appreciate hearing at least a brief summary of those and perhaps seeing them in writing at some later point.

Second, related, a major thrust of these two days is to identify which numbers about current infection in the United States provide the best base for our calculations, predictions, and policies. Given what you know about New York City, how comfortable are you with this Commission using something like CDC's calculations? If not those, where do we look? What magnitudes of error do they include? Is the family of surveys they are proposing the right direction to round out those numbers? If not, what different things should we do?

DR. JOSEPH: Let me give you some current seroprevalence material that we have. Many of these are preliminary, but I think we're fairly confident of the direction they point. First, we're about finished with the major seroprevalence survey in reproductive age women that you heard is beginning in other places. The numbers that come in from, I believe, its 48 sites we're sampling around the city, hospitals and outpatient departments, the percentage of reproductive age women infected in New York City is in the range that Dr. Landesman mentioned. We believe it will turn out on final count in New York City somewhere between 1.5 and 2 percent.

I would say as an example of why orders of magnitude are not at issue, our 400,000 that you questioned about earlier was based on an estimate two years ago that 3 percent of women would be found positive. Now we're finding somewhere between 1.5 and 2 percent currently positive. That may change that order of magnitude -- that may change that estimate of people infected from 400,000 down to 350,000 or 450,000 down to 400,000, but it really makes no difference. So we're looking currently in the city at about 1.5 percent of all reproductive age females are infected. We have a most disturbing study that has looked at the prevalence of HIV seropositivity in patients coming into one of our sexually transmitted disease clinics. Again, you can quarrel about the methodology of the selectivity of the population, but we found that in persons who are visiting this clinic, this is a minority poverty community, the rate of current positivity in people coming to the sexually transmitted disease clinic is 7 percent, 8 percent males and 6 percent females.

If you look only at those people who have genital ulcer disease -- and I believe, Dr. Walsh, that that's the key of the dilemma of the African pattern and the North American pattern. If you look at people who come in with genital ulcer disease to that STD clinic, 20 percent of them are currently seropositive in the City of New York, 21 percent of males and 19 percent of females. We began just about two months ago doing HIV antibody testing in our prisons in New York City,in New York City jails.

We do that on a voluntary, medically confidential basis as an adjunct of counseling. We have only very small numbers so far, but of the very small numbers that we have so far of people who have volunteered for and gone through that testing, half have been seropositive.

I think if you look at those numbers and the populations that we know in the city of people who practice high risk behavior, we can be very, very confident that the order of magnitude of numbers that we are using, which are really right in tandem with the CDC numbers though developed by different methods, are an accurate order of magnitude estimation. I see no reason for this Commission to doubt that range that has been given by the CDC or the projections that follow from it.

Let me say one last thing about that. Remember that when we're counting cases of AIDS, we're looking at a snapshot in time of something that happened five years ago. As I'm sure most witnesses before the Commission have stressed, what we desperately need is a snapshot in current time that can only come from the kind of seroprevalence infection studies that I've just cited preliminary results from.

My answer to your question, Admiral Watkins, is that one of the most important things that could be done by the CDC now is to design and put in place a series of what they call sentinel surveys. I think the 30 metropolitan areas are both a vision of current time and a way to have sentinel outposts to tell us what is happening before it gets actually down upon us.

I think that in a wide variety of demographic and economic and racial and ethnic and geographic settings, having sentinel outpost surveys is going to be very important, because there are twists and turns of the epidemic that we really cannot predict. Behind the confidence of the numbers that Sheldon Landesman and I give you this morning lies some uncertainty about that fourth overlapping phase and certainly about the fifth phase of the epidemic. I think if we have some pickets out to let us know what's happening as early as possible, that will be more important than arguing currently about the exact details of the numbers themselves. I think that answers your question.

MS. GEBBIE: Thank you very much.

MR. CREEDON: Dr. SerVaas.

DR. SERVAAS: I wonder. You mentioned your school, teaching AIDS in school. Would you be able to send to the Commission the materials? You must have done a lot of work and are way ahead of the rest of us on how to teach AIDS in school. Do you have that?

DR. JOSEPH: I hope, as Dr. Axelrod mentioned yesterday, the New York State Board of Regents mandated a curriculum. We have a curriculum in the schools in New York City. I'd be happy to send you all the material we have, which is a videotape as well as a printed curriculum. I would underscore the point, I think the bottom line is that this has got to be explicit, direct, frank discussion at an age appropriate level, and what is appropriate in the first grade is not what's appropriate in the fifth grade. My answer to Dr. Walsh's previous question around STDs in Scandinavia, my view is because they do have frank, explicit repeated sex and family life education and access to comprehensive health services, including family planning and contraceptive services for teenagers and education beginning in the earliest grades of school. That is probably the single most important factor in their STD epidemiology and their teenage pregnancy epidemiology as well.

DR. WALSH: They've had it for years.

DR. JOSEPH: Yes.

DR. SERVAAS: My other question, Dr. Joseph, is when you tested in your sexually transmitted disease clinics, how successful were you in counseling these women? Are they told then that they are positive? Are you able to keep them from getting pregnant?

DR. JOSEPH: These are men and women. Our position in New York is that it is critical to maintain the voluntary nature of testing. It's critical to maintain this information medically confidential; that the general statutes of medical confidentiality do not suffice in that area, and that's why I think in addition to the legislation we hope to put through the state this year, we need federal model statutes.

I think there's a direct analogy to the 1964 Civil Rights Act and its impact on individual legislation in the states and our need for confidentiality protection and the duty to warn protections at the federal level that can be modeled to the states. So that in our anonymous test sites, we have four now -- it will be five this year, city funded, four state funded -- in our sexually transmitted disease clinics, in the hospitals and physicians' offices where testing is growing but still not aggressively pursued enough, the bottom line principles are voluntariness in testing, confidentiality of that information, and testing not seen as an end in itself. Testing is no end in itself. Testing must been as an adjunct to a counseling and educational process that motivates behavior.

DR. SERVAAS: But my question was how do you counsel them after you've tested them in this sexual disease clinic? Do you have sufficient physicians to do this?

DR. JOSEPH: Well, no public official will ever come anywhere and sit down and say we have sufficient physicians or resources. We're all desperately behind in this epidemic. I gave you the figures of what we're spending in New York City, $389 million in this fiscal year and $100 million of that city tax levy. Our requests for resources both on preventive and the curative and social services side is going to go up enormously in the next year. The city has given us what we asked for, but it presents an enormous strain on the city. As perhaps a more direct answer to your question, I think the single greatest constraint currently -- well, there are two great constraints to the rapid spread of voluntary confidential testing, not only in New York City but elsewhere.

One is the confidentiality clarification and protections that I mentioned. The other is the availability of trained and competent counselors to make the counseling and testing program work. This is particularly acute in the voluntary sector. I think we don't have enough; we need to do more. We are doing more. But I think in the public sectors in many of the high prevalence areas, we've gotten off and running with counseling and testing. But the voluntaries lag far behind. While I think that the counseling process has to be a routine part of all clinical encounters, I believe it's true that in the hospitals and in the clinics you're going to have to have the availability of trained counselors both to oversee and to train others and to be a technical backup for many other people doing counseling. That just does not exist in this country. If it doesn't exist in New York City, you can imagine what the state availability of trained counselors is elsewhere in the country. That's a second critical constraint to the rapid expansion of testing.

MR. CREEDON: Dr. Walsh.

DR. WALSH: Steve, I wanted first to comment on the vaginal ulcer business in Africa. You are aware that Ken Warren and his colleagues at the Rockefeller Foundation are now mounting a major study to verify that as the possible cause. I don't know whether the Commission is aware of that, but they are doing that to see if that really has a role.

DR. JOSEPH: Let me just break in on that for a moment to say that, you know, these things are all tied together. We have an epidemic in New York City and elsewhere in the country of a rising incidence of syphilis, which is a genital ulcer disease. We have tremendous problems with chancroid in New York City and elsewhere in the country, which is a genital ulcer

disease. We've all forgotten about herpes since AIDS, but there is plenty of genital ulcer --

DR. WALSH: That's why I was going to ask why he's doing it in Africa. Why doesn't he do it in New York?

DR. JOSEPH: We will compare our results --

DR. WALSH: I don't know if the study has started. You might ask Ken. You know him, I'm sure. The question I wanted to get clear is in the confidentiality area, you made a statement that this must also protect the physician's ethical and professional duty to warn a patient's known contacts.

DR. JOSEPH: That is correct.

DR. WALSH: In other words, I think I understand clearly that you feel that the physician, even without permission from the patient, should be permitted to do some contact tracing. Is that correct?

DR. JOSEPH: I will explain that and then explain to you what we do do.

DR. WALSH: Yes, because I know that's a controversial area.

DR. JOSEPH: I believe that the physician or the public health authority when acting as a physician, for example, in our STD clinics, does have an ethical and professional duty to warn. Now, the first step in that process is --

DR. PRIMM: What did you say, Doctor?

DR. JOSEPH: To warn the sex and drug partners at significant risk of a person who's infected with HIV. Now, the first step in that process has got to be to urge the index individual, the individual who's before that physician, to fulfill their responsibility, which is the real responsibility, to perform that duty and to warn their sex and drug partners. What we do in New York is if that individual says they want help in the process, we say to them, fine. Bring your partner, and we'll sit down with you and help you in that process.

If the individual says that they recognize that responsibility but they cannot do it themselves for whatever reason -- they're embarrassed, they're afraid or whatever -- we will perform that function for the individual. We will go out and do what I call contact notification. I make that semantic difference between contact notification and contract tracing to underline the very important point that this is a voluntary consensual process. You cannot drag the names of sex or drug

contacts out of people in a coercive way, but if the person, recognizing their responsibility to have their contacts informed, wants the public health authority to do that, I think we have an obligation to do it, as I think the individual physician --

DR. WALSH: Steve, is your concept -- because this has bearing on a position or recommendation we may have to make on existing legislation on the Hill, is your concept, however, that if a physician happens to know the contact, say the individual is married and the patient still does not give permission, is it your concept that the public health requirement is such that that physician has an obligation to make the contact anyway?

DR. JOSEPH: I believe that if the physician cannot be assured that that information is transmitted to someone in substantial risk, that physician has an obligation to inform that person.

DR. WALSH: Will that require legislation in New York?

DR. JOSEPH: No, it will not require legislation. What we need is actually the other side of it in New York in a bill that we hope to get up there in the next week or so. What we need is a double-barrelled bill that protects confidentiality on the one hand and on the other hand provides protection to the physician and others in those circumstances where there is an appropriate need to disclose or warn.

DR. WALSH: Would you and the mayor, for example, be willing to advocate that at the national level? Because some of the existing legislation on the Hill fines the physician if he does it without permission, even if it's a wife, and also does worse than that if he does it a second time. To me, it didn't seem like a realistic thing for legislation, but would you all be willing to, with the experience you've had in New York, to suggest modification?

DR. JOSEPH: We will do that and will advocate on the legislation, and I will be happy to furnish to the Commission as soon as our bill is agreed upon and ironed out within the city administration, which should be in the next week or so, to furnish you a copy of the bill so that you can see in detail what we're talking about.

MR. CREEDON: Dr. Primm.

DR. WALSH: Steve, one other question. I know with your longstanding history and experience in the breast milk controversy years ago, has New York done any studies on transmission by breast milk?

DR. JOSEPH: No --

DR. WALSH: Because I'm not satisfied with what we're seeing internationally.

DR. JOSEPH: No. To the best of my knowledge, there are no U.S.-based studies on the issue. At the Surgeon General's conference on AIDS in families in Philadelphia last spring -- that monograph is out -- there was a recommendation in terms of women at risk or women who think they are at risk being tested voluntarily again, and a seropositive woman not breastfeeding. Again, there's a real difficulty in applying that recommendation to the third world setting where breastfeeding is really a life and death issue in many circumstances.

MR. CREEDON: Dr. Primm.

DR. PRIMM: Dr. Joseph, you spoke about explicit culturally relevant educational material, and I need not tell you about the controversy that surrounds the gay men's health crisis and the explicit material that they had. So I'd like you to talk to us a bit about what you feel is explicit. That's question one.

The second area of concern to me, and you and I have discussed this previously, is the increased and liberalized methadone maintenance treatment in New York and how do you see that? What constitutes a more liberalized methadone maintenance treatment program in New York and the ability of cities other than New York, for example, to set up such treatment programs with the controversy that you know surrounds methadone maintenance as a modality of treatment for intravenous drug use?

Then my last question would be explain what you really mean by your availability of clean needle exchange program and, if you would, include other narcotic implements that are used by intravenous drug users and talk about them in relationship to the transmission of the virus.

DR. JOSEPH: On your first question about explicit material, AIDS is about sex and about drugs, and there's nothing you can say about sex or drugs that will not be conflictual or offensive to someone. So you have to start from that basis.

The second point is particularly in the world we live in, particularly in the urban areas where people are bombarded with media, particularly electronic media, information and exhortations to this or that, our sensibilities and sensitivities are dulled. The messages do not get through. We have felt that in view of those two things that all our modalities, whether it's our videotape mass media commercials -- I'd be happy to furnish you with those -- or our street level materials or our packaging and inserts into the million condoms we distributed last year in

the Department of Health, from the Department of Health, have got to be directly focused on the issues with language that is understandable to the people that will use that information. There's no easy answer to that, and I'm thinking of two incidents. Let me describe two incidents that will give you a sense. Early on, about a year and a half ago almost, we had a brochure ready to go out that talked about protection of women from heterosexually transmitted HIV infection. We had a long debate over whether in the brochure that we were going to produce with the New York City logo on it we should use the word "semen" or "cum". There were some who would object to the use of either word, but how could we possibly convey what we were trying to convey without that kind of explicit wording? There was a debate over whether street vernacular or common usage or medical terminology could be effective and understandable and uncontroversial enough to allow us to do it at the same time.

The second anecdote, when we produced our condom packaging for distribution of condoms, the issue came up -- again, this is something that Koop, I think, has spoken very well about -- about people not knowing how to use condoms. Most people, including many people who use condoms, don't know how to use condoms in the sense that would protect against disease transmission. So we decided that we needed to have some instructions about condom use in the package. We then took note of the fact that many of the people to whom this material would be aimed do not have a great command of reading skills. So the issue was how can you package instructions in a restricted space. We decided to use pictorial display.

We then got into the issue, well how graphic should our pictures be? Should we have a photograph of someone rolling a condom down over a penis? Should we have a line drawing of that? Should we have something that is not quite so graphic or less graphic or whatever? Those issues become terribly important. Again, it goes back to something that Sheldon talked about, and there's no easy answer to them. You can't make general rules that apply except, I believe, the general rule that in each product the audience that it is aimed at, the product has to be understandable and credible to that audience. So in New York City, we have to have our messages in Spanish as well as English. We have to have our messages at a reading level that's understandable to the largest number of people in New York City, and we have to use words and phrases and pictorial descriptions of things that people understand and can relate to.

On your second issue, in the issue of reduction of IV transmission, as with everything else with AIDS there is no single channel, single bullet solution to the problem. In everything we do about AIDS, whether in the prevention or the clinical side, you have got to make use of the widest range of imperfect solutions that you can apply. On the drug use side, we

have got to do everything beginning with exhorting people not to shoot up, to telling people if they must shoot up use a clean set of works, to telling people if they are going to use a set of works that may not be clean here is how you clean it, and that has to be graphic and descriptive and in the vernacular, in my view, in order to see if the data will prove out that the availability of clean works will reduce transmission.

There's no data on that from the United States. There's a lot of opinion and prejudice both ways, but there's no data from the United States as to whether the availability of sterile needles and syringes without prescription would have a positive effect on transmission of many diseases. New York State is one of only 12 states in the United States that prohibit possession of equipment, injection equipment, without prescription. I'll come back to that in a moment. You need to then move over to all the educational issues around drug abuse, and then you need to move into as wide a mode of treatment as we can possibly move. Now, that has to include drugfree. It also has to include methadone maintenance because there is no way that we could develop in the time that we have left the number of drugfree slots -- that's a terrible word; it's the one we use in the business -- the number of drugfree spaces for patients that would be required.

We have, as you know very well, somewhere between 200,000 and 250,000 people in New York City who use IV drugs. Those range all the way from the shooting gallery person to the weekend chipper. We have 35,000 of those 200,000 people in current treatment. If you just do the numbers to get ahead of this virus, we have got to get somewhere on the order of magnitude of 25,000 to 50,000 people into drug treatment in the next two years. The only way you can do that, in my view, is through a rapid expansion of methadone maintenance treatment programs. That has to be done, on the one hand, by developing new programs rapidly, and I hope we'll have something to say about that in the next week or so, and it also has to be done by liberalizing some of the restrictions and requirements around a staff to client ratio, around many of those things that constrain the numbers of people in treatment.

Does that entail risks? Yes, it does. Is this a matter of balancing imperfect alternatives as it is in everything in the epidemic? Of course it does. Is methadone an unvarnished good? Of course it is not. But is it one of our only effective weapons for beginning to rapidly slow transmission among IV drug users and their sex partners? I believe it is, and so we have to shave away many things that in other times, in normal times, we would be reluctant to shave away.

DR. PRIMM: My concern about that recommendation is that it comes along with a warning of prudence and caution, particularly when we're talking about deliberalization of some of the regulations and methadone maintenance treatment programs.

I see some of that happening now in New York with liberalization, and when you talk about testing for the virus and counseling, it's just an adjunct to counseling, well certainly methadone is just an adjunct to counseling. Methadone is not the be-all and end-all. It's an adjunct to counseling, very frankly.

When we begin to liberalize the numbers on the other side, we defeat the program and make it less effective and particularly with certain populations. You know where I'm talking about, in Harlem and in Brooklyn where I run drug treatment programs. We need a lower patient/counselor ratio; in other words, something around 25 to 1 rather than 50 to 1 that is recommended now.

I think if we get into that ballgame, we're going to see a deterioration of methadone maintenance treatment programs. For certain individuals who are motivated, et cetera, who have jobs and whatnot, yes. They can have a high patient/counselor ratio, but others, they cannot. That's the point I need to make. I'm very in favor of your recommendation, but with it other kinds of recommendations.

The one, Steve, on needle exchange, I had hoped you would talk about other narcotic implements other than just the needle and the syringe, because I feel very strongly that the cooker and, indeed, the little piece of cotton that is often used over and over again is just as bad as the syringe itself. You and I know that this is common in New York, and it's a whole ritualistic kind of process. Addicts do things differently geographically, but generally pretty much so they use the cooker and they use a little piece of cotton, et cetera, and they share it. That, too, also means sharing the virus.

MR. CREEDON: We are beginning to run into some timing problems and specifically Dr. Landesman has to leave by 11:30. Dr. Landesman, would you come up to the table? I know Mr. DeVos wants to make a comment and we will get back to you, if we may.

DR. PRIMM: Mr. Chairman, I just think both the testimonies are so very important to the Commission. I am willing to forego my lunch. I think it is so important.

MR. CREEDON: The problem is that Dr. Landesman has to leave by 11:30. He has an appointment on the Hill at 11:55. I would like to give the Commission an opportunity to question him further before he leaves, and then we will come back to Dr. Joseph and Dr. Wiley.

MR. DeVOS: My comment to Dr. Joseph is one of respect for the work you have done in your report. I admire you and I can understand I think your frustration if the rest of the nation and the Senate doesn't come along with you as fast as you would like to have them. I think, however, to include in this report those attacks is a little less dignified than I like to see. I just want to go on the record of saying hey, we aren't just automatically accepting that because we accept all the rest of your report which is so well done. I don't want to get into a debate on that. I just wanted to make the comment.

MR. CREEDON: Dr. Crenshaw, do you have a question for Dr. Landesman?

DR. CRENSHAW: Yes. I am curious to know, on your condom packaging, if you dealt with any qualifications on efficacy or --

DR. JOSEPH: No; we did not.

DR. CRENSHAW: Nothing like the Surgeon General's warning?

DR. JOSEPH: No, we did not. In a way, one of the comments I would have made to Dr. Primm is in AIDS, we cannot afford to let the best be the enemy of the good. We can't afford because we lack 100 percent in the up side of methadone regulations or in the inadequacies of total protection with condom use, we cannot let that paralyze us from using what we have the best way we can use it.

DR. CRENSHAW: I was thinking more of cautions that I think aren't optional, such as their being recommended with spermicides, oil based spermicides can dissolve latex. The comments, do not use vaseline or saliva for lubricant. Advice of this sort which I think is critical to the effort to use them, to delay infection.

DR. JOSEPH: All our condoms are latex.

MR. CREEDON: I would like to get questions for Dr. Landesman if we may. One of the interesting things about this Commission is that I keep learning new words. I had never heard of a weekend chipper before. It is fascinating how different terms come up.

DR. JOSEPH: How about a Wall Street noontime user?

MR. CREEDON: I'm getting educated. I have a few questions, Dr. Landesman, which really I would like to address to the group as a whole. Dr. Wiley, please come up as well. One

of the comments made yesterday and was made again this morning is this question of the need for greater coordination between the state and the local and the Federal Government, and how important that is in terms of getting the job done on a national basis. Dr. Joseph, I think you have commented somewhat on that and Mr. DeVos has commented on your comment.

DR. JOSEPH: And I won't comment, I promise.

MR. CREEDON: I would appreciate, Dr. Landesman, getting your view about that subject and Dr. Wiley and Dr. Joseph as well. We are talking in part here about certain high risk groups, the homosexual community and the IV drug user community. I would like to understand whether it is your opinion that those groups are growing or diminishing or stable. I guess to some extent, that involves a question, especially with the IV drug users, how many new people are coming into that group and how do we stop that from happening, if we can.

The third question really related in part to expressing my surprise, I guess, at the 400,000 number that you mentioned, Dr. Joseph, as the incidence. One of our witnesses yesterday was Dr. Redfield from Reed Hospital and the Defense Department has done quite a few studies, both with people applying for positions in the military and also with respect to people who are in the military. The incidence of the virus among that group suggests a relatively lower level of prevalence. Let me just explain what I mean. Some people have said, that group is not a representative group and therefore, the incidence, Dr. Curran said, has got to be at least two or three times higher than the 300,000 to 400,000 that study would suggest. At least that is my impression.

I guess in looking at that group and trying to decide whether that group is a representative group, I think Dr. Primm would certainly agree it is not a representative group because first of all, there is a requirement of a high school education; secondly, it is probably a group that is different than the IV drug user group, where the prevalence is much higher. On the other hand, it may not be a representative group on the other side in that many people who would not apply to the military may not have as high a prevalence rate. I would ask, Dr. Landesman, before you go, if you would comment on those three questions, if you can.

DR. LANDESMAN: I think the first one was the question of the organization and integration of different services. Two points. One is that I think the very nature of the bureaucratic structure, not to use that as a pejorative term, just the way we organize our services in different departments at the different city, state and Federal level, to some extent, they are similar in all ways; Departments of Health, Social Services, Family Services, et cetera.

To some extent, conspirers against effective, organized care of patients with HIV disease or preventive measures, simply because this disease, as I noted earlier, cuts across those bureaucratic lines, especially around the issue of AIDS and families, because the natural structure of the bureaucratic process works against us in trying to organize these things, it then becomes imperative at each level to develop a highly integrated leadership which can in fact cut across the normal bureaucratic lines, such that coordinated action can be taken. That comes again to the issue of leadership and willing to go beyond what is the normal process of how you get things done, developing mechanisms for housing for patients is very difficult. Developing mechanisms for services for women, you have to go to one department. For services for drug users, you have to go to another department.

Somebody at the top of each one of these levels has to say, listen, we are going to throw all the old rules away, we are going to start again with one integrated program and we are going to draw from the others. That really comes down to an issue of leadership at the city, state, and Federal level, and somewhere along the way, we are going to have to do that if we are going to be able to effectively deal with the problem.

The point is the natural bureaucratic structures that we have impede the development of effective integrated programs and therefore, at all levels of government, we are going to have to develop mechanisms to break down those natural bureaucratic structures. Your second question was?

MR. CREEDON: The size of the groups.

DR. LANDESMAN: The military data as I remember it, the overall prevalence there was .15 percent overall, age adjusted, .14 percent. I think that number and the numbers Dr. Joseph quoted about New York City are entirely consistent with one another. In New York City, I believe the overall rate from the military data was 1.5 percent, in New York City as a whole, of all those who volunteered for the military were found to be positive. By and large, people who volunteer for the military -- let me back track. The military service selects against people who are likely to be infected, such that persons, because being gay is illegal in the military, as is drug use, and especially gay men are reluctant to be identified as being positive while in the military, obviously persons who are gay often times select against going into the military for that reason, besides the fact that the military says they should not be there.

The numbers that we get in the military are of necessity a group that would represent a much smaller proportion of those persons who are infected. The numbers that were quoted

from the City are not inconsistent with the military data, if we have 1.5 to 2 percent of all those who enter the military and that includes people who reportedly have no risk factor at all, that's a very significant number. You must also remember that the military data includes farm boys from Iowa who have never been 50 miles beyond their home. Obviously, we have a very low prevalence group volunteering for the military as well as a high prevalence group from the inner city areas.

I don't think you can transpose the military data into a national figure. I think one of the things that sometimes we stumble on is the concept of one national figure of how many people are infected. As mentioned earlier, the AIDS epidemic is really a variety of sub-epidemics or multiple pockets of disease in different areas of the country. No one sample in any one place is truly representative of what is going on in another place. It is only applicable generally to the population that is similar in demographic characteristics to the population that is tested.

I think we get into a lot of confusion by saying that a study done on a certain population in one area of the country is directly applicable to a different population in another area of the country. You have to look at comparable types of populations in comparable areas before you can get a sense as to what the numbers are. You can't generalize the local epidemiological studies throughout the entire population of the country. Otherwise, we will be sitting here with conflicting data from now until the year 2000.

THE COURT: What about whether the groups are growing or not growing?

DR. LANDESMAN: As far as I know, homosexuality is homosexuality and will probably not change now or in the foreseeable future. The issue of whether homosexual persons will behave in a manner that will slow the rate of transmission in that group of persons is a separate question. All the evidence we have indicates that may be the case. In terms of a national prevention strategy around that issue, I think again as I said earlier, focusing on the young or emerging homosexual, the one entering that lifestyle in terms of risk reduction and prevention of infection, is where I would place the dollars around the issue of gay men. The population of 25 to 44 in gay men either are infected or know how not to get infected but aren't going to listen. In some ways, the question is resolved there one way or another.

It is the young people who are coming up now that one must really focus on so that you decrease the total pool of infected persons. That's the goal, to decrease the total pool of infected persons in that population. In terms of heroin users or

IV drug users, I'm not a drug expert and don't purport to be one. My sense is that the total number of persons who are using heroin, the rate of new people coming into that pool, has decreased somewhat from the time in the 1960's and early 1970's when the heroin epidemic really took off. The secondary issue that is now coming up, and I think Dr. Joseph can speak to it more, is the issue of cocaine use, which is often times intermixed with heroin, which is the new thing that has to be faced and which may be a significant add on problem to the epidemic in the future.

MR. CREEDON: Are there any other questions of Dr. Landesman?

DR. LEE: I have been doing some calculations on your numbers of heterosexually infected people. You say 30,000 to 115,000 persons are infected with the virus, heterosexuals. To try to get a handle on this for middle America here, suppose we picked a figure of 70,000. Are 80 percent of those minorities?

DR. LANDESMAN: Yes, I would probably say 75 to 80. I stress that is what we call in the trade a guesstimate. I would think your number wouldn't be off by any more than ten percent.

DR. LEE: We are left with 14,000. Of the 14,000, how many get into the drug area? 80 percent?

DR. LANDESMAN: Those who aren't minorities?

DR. LEE: Of the 14,000 heterosexually infected whites left, are 80 percent of them drug related?

DR. LANDESMAN: I don't think we have a lot of data. There is one study I'm aware of that has been done in Staten Island in New York City of a white middle class population on Staten Island, where they looked at cases of AIDS, cases of HIV infection and their sexual partners. In that study, these women who were all white and not minority populations, the average income in the families was about $27,000; the average education was high school plus one year. I don't have the exact figures in my head, but I think about 30 percent of them were infected. These were sex partners of middle class, working middle class drug addicts. I have focused on the issue in the minority communities. We should also realize that drug addiction exists outside of those communities as well.

DR. LEE: What I am getting at here is as you look at what percentage of prostitutes, what percentage of drug related, you come down in the white, and a figure I have heard quoted

before, in the white, non-drug abusing female population in the United States of America, the incidence may be as low as 1 in 100,000. Are you people at the table today completely discounting Langmuir's stuff? Is the plateau a fiction?

DR. JOSEPH: Yes. Alex Langmuir, is a man who we have great affection for as well as respect, anybody in the business does. I have particular respect for him for a number of reasons. I think he is off base on this. There is absolutely no single indicator that I know of that would give any indication that we are at or coming to a plateau that will tail off in the next few years.

I think Alex, and absolutely no disrespect to him, he is a giant in the field, Alex is looking at models that do not apply to this epidemic. This is the first epidemic that we have any knowledge of that depends exclusively on voluntary human behavior to start it, to move it, and to stop it. The models that he is projecting, I think, do not apply. In the last year, 1987, the numbers of cases in New York City increased by 30 percent. The numbers of deaths in New York City increased by 38 percent. That is a snapshot of five years ago. I watch the hospital numbers each month in New York City, each month we move up about 25 to 50 hospital beds a day. There is absolutely nothing in any of the data that I see that would lead one -- all of us want the good news. There is not any good news. We better be aware of that.

MR. CREEDON: Dr. Landesman?

DR. LANDESMAN: I think it is important that you not look at the numbers in the aggregate when you are deciding as to whether the problem is getting better or worse. In some areas, it may be getting better while in other areas, it may be getting worse. In the gay community, as I have said, the issue is now going to be the emerging adolescent and young gay person. Presumably at this point in time, the rate of infection in that population, the younger age gay men, is considerably lower than it is in the ones 25 to 44. It may well be that the overall reservoir of infection in that population will go down. That should be good news but it shouldn't lead us to think that therefore the epidemic is in a sense getting better because there is another population which is being fed by the drug using, current or former drug users, in terms of heterosexual spread, which currently and in the foreseeable future will be getting worse. There are different elements of the problem. It is somewhat like silly putty. You push in one place and you pull in another. Each one will demand different preventive measures.

I think our goal is to try and keep HIV disease out of the emerging homosexual population on the one hand, while at the same time recognizing that we do have an issue of this

heterosexual spread and try to work on that problem at the same time. I would caution against the concept, the overall general terminology of it is either getting worse or getting better. It doesn't lead us to really concrete action.

MR. CREEDON: Thank you very much, Dr. Landesman. A number of the Commissioners have additional questions which we would like to be able to submit to you, if we may. I hope we have prepared you for your testimony on the Hill now.

DR. LANDESMAN: Thank you.

MR. CREEDON: Can we come back to Dr. Primm's questions and resume there, please.

DR. PRIMM: I just have one thing to say and that is we see a lot of intravenous drug use among physicians. Maybe not as much now as we did in the past. I'm sure they probably use clean needles. Is there any anecdotal experience or any experience anywhere that could give us some idea about that population that could be extrapolated to this population we are talking about?

DR. JOSEPH: I know of none. Let me combine my answer to your question with some of the questions just posed. There is some data that in New York City the heroin population is aging. The person who knows more about this than anybody in the world is Don Des Jarlais of the State Substance Abuse Service. His estimates are the average age of heroin addicts in New York is now up in the 30's. We don't really know how many young people are coming onstream. We know we have about 100,000 uninfected drug users in the City, IV drug users in the City. Don's figures, which again, there is no reason to doubt, show we are currently converting those uninfected to infected at about 8 percent per year. That's the kind of figure that gives urgency to doing absolutely everything we can to stem that channel.

I would caution you, however, from thinking that the only problem of substance abuse that relates to HIV transmission is needle transmission. In New York City, with the explosive epidemic of crack, hundreds of thousands of people, largely young people, in this viciously addictive, devastatingly destructive wild fire type of substance abuse, it is very common for young women in the crack houses to sell themselves for their next vial of crack when they run out of five and ten dollar bills. The people they are having sex with in the crack houses are people who on the other days are shooting heroin or are infected otherwise.

I just can't say enough times that the AIDS, the HIV infection problem will not be stemmed until we deal with the primary problem of substance abuse and that goes far beyond just the issue, as important as it is, of people sticking needles into

their arm with the blood of other people in the syringes. I think we have to do everything along the way. That is why I think the needle exchange makes sense.

MR. CREEDON: If the Commissioners are agreeable, I would like to now move onto Dr. Wiley, and then we can come back and ask questions. I hope you will stay, Dr. Joseph. Dr. Wiley?

PRESENTATION BY DR. JAMES WILEY

DR. WILEY: In the interest of time, I'm not going to read what I distributed to you but, rather, paraphrase it and stop to allow you to ask some questions. My testimony really deals with the question of in what sense are heterosexuals a risk group, and to answer that I think that we can consider an introduction of the virus into heterosexuals as having, perhaps, three long-term -- one of three long-term consequences.

The first might be that the epidemic would remain what I would call a passive one; that is to say, the source of infection into heterosexuals consists of people who are infected in other ways, through sharing needles, through transfusions of contaminated blood products and from homosexual exposures. That's the one case, and we seem to be in a phase where you could argue that, at least at present, the epidemic is primarily a passive one. A second outcome would be a passive epidemic plus a certain number of cases of heterosexual transmission from people who were themselves infected heterosexually. I think that's been referred to as secondary or tertiary transmission here today.

The third and, really, more frightening prospect is the idea of a self-sustaining heterosexual epidemic; that is, one that does not require continued contributions from the primary risk groups. So what I really want to talk about is what is the evidence for or against this outcome in the long run? It's clearly not one we're seeing immediately -- and can we trust that evidence to give us a reliable guide to how to think about this? It seems to me that the one kind of evidence is the present distribution of cases. If you look at AIDS cases and you remove those that are of foreign born and who presumably acquire the infection elsewhere, then you find about 2 percent of the U.S.-born cases are presently classified as instances of heterosexual transmission. The bulk of these are classified as people who acquired the infection from somebody in a primary risk group.

There are troubling numbers of undetermined source that are about the same in magnitude as those classified as heterosexual, and we sure would like to know a bit more about them. But in any case, the rather small percentage of total cases sometimes encourages the thought that a self-sustaining

heterosexual epidemic is not likely either as a description of current affairs or in the future. Another observation that seems to encourage that same inference is the comparison between, for example, the epidemic in gay and bisexual men in the United States and the epidemic among African heterosexuals in certain areas and what we think to be true about American heterosexuals.

In the former two cases, we believe now that a good bit of the reason for those epidemics were very high rates of sexual contact; that is, that those epidemics were, in fact, driven by sexual contact. I know that that was certainly a very early inference from looking at the epidemic among gay men. The early inference from the African observations was more frightening until it was realized that in most cases you could attribute the African epidemic to a combination of very high rates of sexual contact and certain co-factors, such as the ones that have been mentioned here already, perhaps other sexually transmitted diseases that help AIDS get established in a population. Through those comparisons, sometimes people infer that heterosexuals really aren't at much of a risk because, after all, American heterosexuals aren't like American gay men or they aren't like African heterosexuals.

A third piece of evidence really comes from some studies that I've been involved with in Berkeley on transmission efficiency of HIV from man to woman and, to some extent, from woman to man. Those studies so far have suggested a rather low rate per contact; that is, per sexual contact, in this case per unprotected vaginal/penile intercourse between an infected man and an initially uninfected woman, the risk seems to be fairly low. That, too, the notion has been that the notion that that is maybe 1 in 1,000 has encouraged people to think that, well, that's not high enough to get a self-sustaining heterosexual epidemic.

Then finally, some of the seroprevalence estimates that have been talked about today among army recruits, marriage license applicants, STD clinic attendees and so on, suggest that at least in the nation as a whole seroprevalence outside the main risk groups doesn't seem to be too high, and that's again another indication that we are currently in more or less of a passive epidemic and that we don't have a self-sustaining one going. Now, what are the weaknesses of that argument or, another way of saying this, could we be wrong? Can we really rule out the possibility of a self-sustaining heterosexual epidemic? I think at the present time, partly because of the complexity of the disease itself -- it has, after all, over the last five years surprised us occasionally and usually on the down side -- because of that and because certain information is very hard to get, and maybe we're a little bit late in getting it, I think the answer is no, we can't rule out a self- sustaining heterosexual epidemic.

To that extent, I think the three of us really are saying the same thing. In the long run, it certainly could happen. Now, let me go over what I think the weaknesses are, because it does suggest a strategy for reducing some of the uncertainty later on. First of all, the present distribution of cases is not a very good index of what the number of infections is. You will, by the end of these hearings, hear this three or four or five or a dozen times and more expertly stated than I can, especially when the modelers come this afternoon. In any case, what one can say is that there's no simple rule of thumb that allows you to convert cases into infections in any risk group. What we know is that that number tends to change, and as the epidemic rolls along in that group, if the group manages to stop seroconverting, the ratio of infections to cases goes down.

MR. CREEDON: Cases of people with the virus?

DR. WILEY: Infections are people with the virus. Cases are people with AIDS. So it's very hard to project. What I'm saying is it's hard to project from AIDS cases to AIDS infections, and our best data by far are on AIDS cases rather than AIDS infection. What we do know is that in the early stages of epidemic growth, the ratio of infections to cases can be in the hundreds, 300, 400. Certainly it was among gay men in 1981, '82. It can be very high. Now, given the long latency period for this disease, the bottom line is that a small number of cases can hide a large number of infections, and that's the first caveat that I wanted to make on the available evidence for heterosexual spread. It could be concealed.

Secondly, the comparisons between the sexual behavior of heterosexuals and those of gay men and African heterosexuals do suggest that we won't have a really rapidly escalating prevalence of infection in those groups. They don't suggest by any means that the level of sexual contact among heterosexuals that have, let's say, a partner or more, one or two partners at least, is low enough to be below the threshold for epidemic level transmission in the United States. We just don't know that. So while it's true that you can take a little comfort from the comparisons between the African situation and the gay situation and American heterosexuals in terms of the possibilities for explosive growth, there is nothing in that comparison so far that suggests you can't have slow, steady growth to perhaps 2, 3, 4 percent in some areas without the contribution of the primary risk groups; that is to say, without a real self-sustaining growth, not one that requires direct contact with those groups that we now regard as high risk.

Okay, a third point has to do with my own findings. I find myself criticizing my own findings here. The 1 in 1,000 figure is an average. It has been widely interpreted as

indicating that it is alright; that is to say that it is so low risk that a few casual encounters don't matter much. Well, the problem with that argument is that the average conceals variability in the ability to acquire the virus as well as to transmit it. Now, I have to disagree with my colleagues here about orders of magnitude and transmission efficiency. I think there are orders of magnitude. I think some people are much more efficiently spreading this disease than others; that there are exactly -- there are people that we could call superspreaders, and we found a few of them in our work. Now, these people like the much-celebrated case of the Belgian man who came back from Africa to reside in Belgium and infected a large number of his female partners who were in a relatively small number of contacts suggests that as well. The factors that generate greater potential susceptibility or infectiousness are just now beginning to get studied well enough to make these magnitude estimates, but I would say from the data that I've seen from Africa and that I've analyzed from Africa in comparison with what you observe in the United States that you can get as much as a ten-fold difference in increase in infectiousness or perhaps susceptibility under any of the three circumstances.

One, if the index case, the person infected, is in late stage disease; there's a great deal of interest now in testing hypotheses that people become more infectious over time, that they don't stay at one level of infectiousness; or at least they might have an early period of infectiousness before the antibody production and then late in the disease when antibody production goes down for as yet unaccounted reasons, they become much more infective. Another case would be what has been already cited. Genital ulcers seem to both facilitate transmission, susceptibility to infection and possibly also infectiousness. Anal intercourse is another factor that could possibly produce a ten-fold increase. So I think actually there is about an order of magnitude difference between unprotected heterosexual contact and unprotected receptive anal intercourse, for example. So I think there is that difference, and it certainly did contribute to the epidemic among gay men.

On the other hand, the question is not really what the average infectivity is, but it is what are the numbers of highly infectious people and are they likely to change over time as the current cohort of infected people from all risk groups ages in its disease. So that what we're not dealing with here is a stationary state that we can count on. Will that happen, and what are the sexual practices at least among the heterosexually infected people who happen to be very highly infectious?

MR. CREEDON: What evidence is there, specific evidence, about the virulence getting stronger as the length of the disease --

DR. WILEY: Well, there are two sources. One's direct, and the other's indirect. The direct evidence, I'm not as familiar with it as the indirect. The direct would consist of following culturing virus out of the peripheral blood and semen of infected men over time and then watching how much virus you get.

MR. CREEDON: Has that been done?

DR. WILEY: That has been done. There are certain estimates of it, but as I understand, the laboratory procedures for culturing semen, for example, are not altogether reliable. But there is a pattern -- in the few studies that have been done, of early shedding and late shedding just prior or after having been diagnosed. Now, the indirect evidence comes from looking at the rate of male/female transmission in AIDS where the male is an AIDS case versus where the male is an asymptomatic but infected person. Those are my studies, and they indicate that, indeed, AIDS cases are more efficient transmitters than asymptomatic people. I'm really citing a reanalysis of some data that Dr. Fischel published, and it's one of the few studies which look at the sexual behavior of people after they've been diagnosed with AIDS and the seroconversions in their partners. It is interesting to note that in her study, after diagnosis the average number of sexual contacts per week was somewhere between two and three, and not by far the majority of them were unprotected. So people do continue to have sex certainly with permanent partners after an AIDS diagnosis. We found some similar findings among gay men in San Francisco, too.

DR. PRIMM: Dr. Wiley, have you done hematological studies on those people who continue to have intercourse and have shown antigen at the time?

DR. WILEY: No. I don't. Somebody might, but I don't. So that's a third caveat, that the low apparent rate of transmission from male to female and the even lower apparent rate from female to male may hide very important variations in infectiousness and susceptibility that we need to know about not only in terms of the adequacy of our warnings to people but also because the population dynamics of infection depends critically on how that average is composed. Then finally, the seroprevalence estimates that I talked about before, they really are seroprevalence estimates based on quite unrepresentative populations. For that reason, a number of us have worried that they may be misleading us, so that we are not taking perhaps as much comfort from the low rates as we would like. The conclusion I draw from this is that we really don't know the risks we face with respect to the possibility of a self-sustaining heterosexual epidemic. Our best current knowledge doesn't allow us to reject that possibility, and we would certainly like to be able to reject it. That's why many of us have advocated more direct

measurements of seroprevalence in the population, some of which have been talked about, the CDC sentinel studies, various seroprevalence studies that are being proposed or started around the country. I'm involved in two of them, basically heterosexual populations in San Francisco.

We are finding, in fact, at least in San Francisco if not in Peoria, that you can do that kind of study; that, indeed, the feasibility question is not entirely settled, but it looks good from our point of view. The early results look like we can get sufficient cooperation; that we're not getting so much self-selection, as you might imagine; that people who could be seropositive are not avoiding our study like that plague; and that we are able to get them to give blood in the home with those who are trained to do interviewing. Now, that may not hold outside of San Francisco, as my CDC colleagues here often remind me, but it is possible to do such studies, and they should be done in those areas where we already have epidemic AIDS, and they should be done among heterosexuals.

But I think that at long last we're starting to see it get done or at least get planned. Those of us who wanted to do this three years ago were laughed right out of the study sessions, so to speak. Nobody wanted to talk to us about that. They thought we simply wouldn't find any infection out there among heterosexuals, so why do the study. I think it would have been wise, looking backward anyway, for us to have set up sentinel studies in those days even if we weren't going to find anything, because once you've done one of these studies, you realize it takes you a couple of years to get going. You can't just throw money at it. You have to throw people at it, and they need to be trained.

So it takes a while to gear up to do these things, and the things being planned now probably won't be implemented for another year, which delays the time that we can pin down how much infection has occurred another year. Now, you mentioned something about what sort of data would you like to see. Well, certainly with respect to case reporting, we would like to see what can be done with the undetermined source cases that CDC is reporting, and it may be that there isn't anything that can be done; that is, they just simply don't have the data. But if any more work will yield good results, it ought to be done.

One specific thing I think needs to be looked at very carefully, and that's whether it's possible to actually count the number of what I think Dr. Landesman called tertiary cases; that is, one key index for the outcome that I've been discussing, a self-sustaining epidemic, will be an increasing number of people who acquired HIV infection heterosexually from people who were themselves heterosexually infected. Now, there will be, I think, some difficulties in classifying cases in this way, but it's of

really critical importance in case reporting to know whether that number is increasing. The other thing is to look for such individuals in the case tracing of heterosexual cases and in the seroprevalence studies as far as they can be done in connection with interviews to find out how many people who are HIV seropositive in these surveys, in fact, have no other risk factor except that they've had heterosexual contact with people who are not likely to be drug users or male bisexuals.

MR. CREEDON: Are the studies that are now being done trying to develop that information or not?

DR. WILEY: I think they are. I mean, certainly the ones that we're fielding in San Francisco are directly designed to do that.

MR. CREEDON: Questions of Dr. Wiley?

DR. LEE: Dr. Wiley, I tend to agree with you myself and not with Dr. Landesman. I learned as a doctor there's an enormous difference between a vagina and a rectum. For the sake of the Commission members who are not doctors, I might point out that the French take their medicine in the rectum because you get such high blood levels so fast. You get better absorption in the rectum than you practically do by swallowing it by mouth. So anything that's injected into the rectum immediately gets into the bloodstream. What's injected into the vagina is -- the whole mechanism there is geared towards rejection. So what do you think about this business of 1 to 100,000, first of all, 1 to 100,000 white nondrug abusing females being HIV positive, number one?

Number two, I wonder from Dr. Joseph and from San Francisco why there hasn't been more or why I don't see more about discouraging prostitution when up to 75 percent of these streetwalkers are positive?

DR. WILEY: I'm not sure to what extent the first thing you mentioned, the question of anal intercourse versus vaginal intercourse, is going to decide the question of how many people, how many white American women are infected. I think those are two different issues. I do agree, and at least my data suggests, that the anal intercourse is a more efficient mode of transmission, but I do want to caution against saying that, because that is so, that heterosexuals don't have a problem. To me, it just doesn't follow.

DR. LEE: But there is a magnitude of difference, a big magnitude of difference.

DR. WILEY: But the other thing that made a difference in gay men was also a very high rate of sexual contact in the

years before anybody knew about AIDS, before there was any real warning. So it's some combination of transmission efficiency and fairly high rates of contact that would produce that.

MR. CREEDON: But you did say the order of magnitude is very different.

DR. WILEY: It is 1 in 100 versus 1 in 1,000. Now, that is one order of magnitude difference mathematically. Whether that difference will protect the heterosexual population from eventual self-sustaining epidemic is a whole other question. As I said, since infectiousness might be changing, maybe we're looking at numbers later on that are more like the numbers that gay men were facing in the '80s as far as transmission efficiency is concerned.

DR. LEE: I would like Steve to address this, too.

DR. CRENSHAW: Before we leave this point, Burt, could I make a comment on vaginas that I think is very interesting.

DR. LEE: Certainly. I didn't know where that voice was coming from.

[Laughter.]

DR. CRENSHAW: I think there's a really big misperception about vaginas in general and their absorbency. There are studies on aspirin; there are studies on other drugs indicating that vaginas absorb them into our general bloodstream and our system as efficiently and even more efficiently than the rectum, number one.

Number two, the artificial insemination cases that are very well documented in Australia where four women, separate women, inseminated with the same sperm in a clinical setting, one exposure, no thrusting, no blood drawing, all became infected with the AIDS virus. So even though when you calculate probabilities as you have, you can say 1 in 1,000, you can do that for pregnancy, too, if you take into consideration menopausal women and infertile women and come up with a similar number. But when we get right down to it in and in view of the macrophages in the vagina and the macrophages in the rectum, I think we're going to find out that this is, as Dr. Landesman said, ultimately splitting hairs. Even you're saying the order of magnitude, if this is true, may not have a meaningful bearing on modes of transmission and efficiency.

DR. WILEY: Certainly it has something to do with it, but we're not dealing in different worlds here. The other thing that we know from some of the recent studies of prostitutes in Nairobi are that oral contraception seems to increase the

susceptibility to infection by at least an order of magnitude, maybe as much as 20 or 30 times. So with certain co-factors, you can produce a vagina that has the same absorption capacity as an anus does.

DR. CRENSHAW: The problem with that study is that they are not comparing it to what effect that oral contraceptives might have on a rectum, because you can't compare the apples and the oranges of the male, so it may be -- and this is the point I'm trying to make -- it is not determined. It is not established, and it may be old news that there is a discrepancy between anal intercourse and vaginal intercourse and efficiency. That's an open question that you need to look at.

DR. LEE: Could you also address the bisexuality issue.

DR. JOSEPH: Yes. I was going to that. I think there are two other factors besides your anatomical illustration that are important here. One, we know virtually nothing about bisexuality in the sense of how many bisexual men, who are infected, have sex with women in terms of the potential of that transmission. I think the further we go in the thing -- you may have some cross-country data on this -- that the more we are finding out that another important channel is the infection of the heterosexual woman by a bisexual man, who does not identify himself certainly overtly and maybe even consciously as a gay or bisexual man.

And the second thing, which may be even more important than that, is that we know very little about the frequency of anal intercourse among heterosexuals, and we should not make the assumption that receptive anal intercourse is a risk factor only for men infected by other men, but it clearly is a risk factor as well for a number of women infected by infected men. I would guess that on this hairsplitting business, I would wonder if Dr. Wiley wouldn't agree with me that we certainly are going to have a self-sustaining epidemic. The only issue is, is it going to be a large and increasing epidemic in both growth and absolute terms, or will we end up in this fifth stage of -- fifth overlapping stage of the AIDS story with small pockets that don't have enormous epidemiologic importance?

DR. WILEY: Well, I think the way I'm using the word "epidemic" is to describe uncontrolled growth; that is, we certainly will have cases, tertiary cases. The question is, will each tertiary case produce one further fourth order case, at least one? And that's what we're talking about here. It's not so much that we won't see -- I think there's a Persian poem that talks about the soup of the soup of the soup of the soup - - it's not that we won't see these chains of transmission produce a fourth and fifth and sixth order level. The question is, is each level going to be weaker than the preceding one? Is each number,

set of numbers, going to be smaller than the primary? Is the secondary going to be smaller than the primary, the tertiary smaller than the secondary, and so on? Or do we have a case, once the virus finds its way around the population, it's going to run into some super- spreaders, some sexual networks that are particularly conducive to generating HIV transmission, and all of a sudden explode on us in a -- it's not going to explode at 50 percent prevalence in a few years, but I would say a 5 percent prevalence in certain areas qualifies as a, you know, detonation at least.

And so that's our real question about the question of self-sustaining, not will we get these long chains of infection, but will we get them in such a way that each case produces more than one additional one? And that's when we start getting into exponential growth.

DR. LEE: You didn't mention the prostitute problem.

DR. WILEY: Oh, the question of -- what was your question?

DR. LEE: Well, I never see anything about the prostitute problem, yet in 60 Minutes they mentioned that 75 percent of the African prostitutes are positive. Joyce Wallace in New York says the streetwalkers are a third, and the call girls are 1 percent. But this is a very, very dangerous -- and God knows what the male prostitutes are -- a very dangerous population.

DR. WILEY: I think Dr. Joseph can probably speak to that more effectively than I can. But I know in the West, there hasn't been so much seropositivity among prostitutes as we thought there would be. And I don't think that's true in the East. So I think I'll defer to him.

DR. JOSEPH: There have been a number of studies now in this country, as well as the studies done in Africa, looking at seroprevalence in prostitutes, and we know two things.

First of all, unfortunately when people talk about prostitutes, they automatically think they are talking about female prostitutes with male customers, and I want to come back to that. But with female prostitutes, we know that infection rates in this country are high. They range from about 15 percent to about 60 percent in various studies.

But the second and most important thing is that virtually -- well, the vast majority of infected prostitutes in all those studies are either themselves IV drug users, or they have a steady sex partner who is an IV drug user. The second thing is that those studies that have looked for ongoing

contact, transmission from female prostitutes to male customers, have found to date very low levels of transmission. There is virtually no data that I know of that looks at male prostitutes who have male customers or commercial sex in which the vendor is a male and the customer is a female. And certainly you would have to hypothesize that in an urban area such as New York, where there are large, significant numbers of male prostitutes or transvestite prostitutes, that the risk of transmission in those situations is very, very high. But I think all the studies done so far on female prostitutes with male customers have shown very, very low risks of transmission.

DR. LEE: Doesn't that back up Dr. Wiley's hypothesis?

DR. JOSEPH: That what?

DR. LEE: Well, that vaginal transmission is more difficult.

DR. JOSEPH: Well, I personally believe that there are physiologic differences that make it much more efficient for a male to transmit to a female than vice-versa, but that there are many things that can alter that balance, and I think that's what he's saying. It seems quite clear that genital ulcers of either sex are one. Other infections may be another; stage of the disease may be another, et cetera. And I would draw cold comfort from that degree of difference of efficiency, particularly when we have the African and Haitian experience that can show us that it can happen otherwise.

I think we'll always have a differential between efficiency -- between the two directions of transmission. But I think basically what Sheldon said is correct, that differential will not stop onward transmission, and the question really is, at what level will we have that onward transmission.

MR. CREEDON: I'd like to just indicate for the Commissioners a proposal as to how we might proceed. We're thinking we will have lunch brought right down here, and we can have lunch while we're continuing to be educated. We will take a five-minute break when our discussions with Dr. Joseph and Dr. Wiley are finished. And then that should give us enough time for the next panel before moving on to the last panel at 1:15. So why don't we continue now for a few minutes and ask whatever remaining questions we have of Dr. Joseph and Dr. Wiley? Penny, do you have a question?

MS. PULLEN: No.

MR. CREEDON: Rich?

MR. DeVOS: No.

MR. CREEDON: Ms. Gebbie?

MS. GEBBIE: I have a question for Dr. Wiley. If I've understood what you said so far, you've been fairly clear that despite some research that says the heterosexual concern may not be as large as it's made out to be, you don't think that is convincing evidence that we should just turn our back and walk away from it. I see, then, two options for this panel in our continued deliberations. One is to conclude that we don't know enough about it. We should say it's an interesting problem. Let us not make any policy recommendations in that area other than to say, let's research it along the lines that Dr. Wiley and others have outlined, but sort of walk away from it for now until the studies are in. The other option or an other option is to say, clearly studies are needed, but the best public health judgment is to take the idea that it's real and growing and make policy as if that's true, and then adjust downward later if, in fact, the studies shows that was in error. Which of those would you recommend?

DR. WILEY: Well, I think the second, mainly because dealing with the existing forms of heterosexual transmission gets you involved in certain kinds of educational work anyhow. And some of that really applies to the general population of heterosexuals as well. And so it seems to me just prudent to go ahead and extend certainly educational efforts into the wider community, and it may be that we will look back on it in a decade and say, well, look, it really wasn't all that necessary.

But I think the dynamics of HIV transmission in this population are sufficiently subtle that it may be awhile before we can really pin down what the risks are, and I see no downside risk in continuing to alert the general population that this is a possibility, so long as the alert does not contain stigmatizing messages of the we/they sort. So I think the second alternative is what I would be in favor of.

MR. CREEDON: Dr. Walsh?

DR. WALSH: I'd like to get out of the genitalia.

[Laughter.]

And get into something more practical at this point, and that is, Steve, you made some comments which I think are germane and interesting in your testimony, that we need some advice on. The appearance that there is substantial funding for AIDS or adequate funding for AIDS is out there; it appears that way. Nevertheless, you cited just one example of where money was being taken from the section for sexually transmitted diseases and so on and shifted over. Every Administration, as you know,

is subject to the advice and guidance of career bureaucrats who tell them how to allocate funds wisely, and we get back into what the Chairman has so often mentioned about the fragmentation of that advice that is being received by laypeople in high places. I wonder if you and Dr. Wiley both would like to comment on a couple of things in this area for our benefit. Number one, we hear a great deal about counseling and education, which none of us disagree with, and you have made the point, Dr. Wiley, that it takes people, not money. That's only half true, because it takes money to train people. So you need money for training counselors, and I don't care what group you're dealing with.

Secondly, I am concerned with the budget reductions that we're facing anyway, that maximum utilization must be made of what funding is made available for AIDS, and minimum damage must be done. For example, on the drug rehab program, if money is being taken away from that and theoretically put into AIDS, and then has to be channeled into drugs, you know, we're only kidding the public. And I wonder if you felt that you could, if not here, advise at some time, if you were in a position to influence where the available funding would go, be it Medicaid funding or anything else, how you would attack the priorities to the greatest benefit of the public, because I think this Commission is not going to be considered expert in rectal or anal intercourse or vaginal intercourse. We're going to be considered expert on many more of these more general things, which are vitally important to win this war, and you're in the front line in New York. You are having problems with apportioning money in your own state and getting it in your own state. We can benefit greatly from that experience, and I wondered if you'd like to comment on that.

DR. JOSEPH: Let me tell you about some experience, Bill, that I think bears upon that. I serve as the Coordinator of the Interagency Group in New York City that has primary activities with AIDS, and that includes not only the Health Department, but Health in Hospitals, the Board of Education, the Corrections Department, et cetera, et cetera, about eight agencies. Now for me, as the Health Commissioner, HIV infection is the number one item on my plate. Everything else either relates to it or comes second to it. But to my colleague, the Chancellor of the Board of Education, though he sees the importance of the AIDS issue, AIDS is not and never will be and never can be the number one issue on his agenda. And for my colleague who runs the Human Resources Administration and Social Services and Welfare Department, with all the problems that he has, although he sees the important -- so the kind of, the kind of coordinated Nirvana that Sheldon describes just isn't going to happen. Nobody is going to get a blank check. Not everybody in the government is going to say, "This is the number one priority among all priorities."

I think what would do more than anything else in the Federal Government to deal with that problem -- how I wrestle with those problems in New York is another issue -- but I think it would do more than anything else at the federal level to deal with those analogous problems, is to have an Executive Coordinator of AIDS activities. You can't put it in one place. It can't be in Health and Human Services; it can't be in NIDA; it can't be here or there, and you can't take all the AIDS out of everything and put it in one new Department of AIDS, because AIDS is so embedded in everybody's problems and everybody's programs.

So you need some coordinating authority. But a coordinating authority that is in name only or has a sort of policy judgmental advisory is not going to get the muster cut. I think you have to have someone with a small body of staff that has some direct executive leverage, and somebody has to decide how tight that is or how heavy that is, but have some direct executive leverage on the various agencies, specifically those with regard to drugs and specifically those with regard to health, but there are many other agencies such as the Department of Education, et cetera. It has to be an executive appointment.

DR. WALSH: I'm not getting at whether we have to convince somebody that this is the number one priority. From the standpoint of this Commission, AIDS is the number one priority. What I'm interested in is, can anyone advise us if there is $800 million or a billion dollars --

DR. JOSEPH: Where the money is to go?

DR. WALSH: What are the list of priorities in the war against AIDS that we should be addressing? We know the drug issue is a great one. We know education is a great one.

DR. JOSEPH: I gave you the three in my list.

DR. WALSH: How can we do it?

DR. JOSEPH: On the prevention side, I think the three stand right out at you, and they all have to be done. It's the education; it's the voluntary counseling and testing; and it's the specific activities with regards to drugs. On the clinical and services side, there's just going to be an awful lot of money rolled into that, no matter what anyone wishes, and I think the concentration in terms of new funds needs to be on the prevention side. I'm really not the person to talk about where the research dollars ought to go in biomedicine, but in prevention, it's education, testing in an appropriate context, and a serious primary effort to deal with the substance abuse problem.

DR. WALSH: With the reduction of the federal share of Medicaid and the increase in Medicaid funding going to care of AIDS patients, we are going to and are already running into special interest groups who benefit from Medicaid, like the elderly and the others. What is the answer to those groups?

DR. JOSEPH: AIDS only magnifies weaknesses in our health and social services system that we already have. On any given day in New York, we have about 60 patients who are medically ready to leave hospital, who have AIDS or ARC, but can't because they have nowhere to go. But we have 1200 patients, old people with strokes, broken hips, et cetera, who are ready to leave hospital but can't because they have nowhere to go. And AIDS will be the thing, in my view, that eventually puts this country into a system of universal health insurance that we probably should have been in several decades ago. I don't think there's any choice about it. That's just going to happen. The demands for funding those clinical services and brokering them out across all the needs are going to be irresistible.

MR. CREEDON: I would like to turn it over to our Chairman, but I don't want anybody to feel slighted at this point. Cory, you had a question?

DR. SERVAAS: Well, I have a question for Dr. Wiley, if it's all right, if there's time. Dr. Wiley, I'm interested in the prevention and the spread of AIDS, and I'm curious about the JAMA report where it was reported that more women, by Dr. Bruce Volker from a foundation in California -- and I don't know if you know him -- but he reported more women were vulnerable for anal sex than all the homosexual community together who practice anal sex. Do we have any studies, and do studies show how much difference there is in this, whether we're guessing or whether we know, and do these women have the same increased incidence of rectal hemorrhoids and all the things that the homosexuals have? Do they have more hepatitis and syphilis and all those things than women who don't practice anal sex?

DR. WILEY: Well, I think there is some, oh, anecdotal evidence that anal intercourse as a heterosexual practice increased over the last 30 years and became more common, but never quite as common as it has been in recent years among gay men. I think that you don't observe, as far as I know, the so-called gay bowel syndrome in women who practice anal intercourse. There may be some additional problems that people experience because of it, but I think that in gay men what seemed to be an increasing frequency of anal intercourse over the late '60s and '70s became associated with a whole syndrome of conditions, because there were epidemics preceding AIDS, six or seven of them, many of which were facilitated by anal intercourse. I'm thinking of shigella and shigellosis and

giardiasis and amoebic infections and hepatitis B and hepatitis A and so on. So, you know, I think those consequences of anal intercourse among heterosexuals haven't yet been seen, so far as I know, but I am not an expert in the treatment of sexually transmitted diseases, so I don't know what people are seeing in the clinics.

DR. SERVAAS: In your opinion, should we be alerting women to avoid --

DR. WILEY: Oh, to avoid anal intercourse? I think perhaps not any more than we alert them to avoid vaginal intercourse under certain conditions, and that if they're going to have intercourse at all with people they don't know, I think -- again, I suggest the rule of prudence. Use a condom and practice safe sex.

So I don't think you could single out anal intercourse as a particular risk among heterosexuals and create a special program of saying, "Don't do that." I think it's really part of the whole package of safe sex among heterosexuals. It's not an enormously common practice, but it does happen.

MR. CREEDON: Chairman Watkins?

ADMIRAL WATKINS: Two specific questions of both of you. I'd like to have each one of you address the answer to it. We're supposed to be here today on incidence and prevalence database, what we might do better in future surveys that are now contemplated. You talked about the family of surveys. We really have to focus on that issue. That is the purpose of this one. We're going to ask perhaps even both you back again, if you'd be willing to come back. None of us own big stock in Pan American or the Eastern Shuttle, and so we're going to ask you to come back, because we're going to be unfortunately having to take on these issues sequentially. We're trying to take on incidence and prevalence. Next week is going to be focused on drug abuse. Care in mid- January. Discrimination is going to come up. Education is a major hearing underway. We're trying to prepare for those hearings. So I don't want to get too far afield. I want to get back to the incidence and prevalence issue right now. We talked this morning a little bit -- in fact, I think it's been very educational on these tertiary case numbers to fix the heterosexual risk pool. What does that mean in terms of epidemiological database that you would like to see in the CDC reports, for example?

Is there a display that is better than we have now to predict what we might want to fill up in an area that's voided now? Is there a breakout that you would see, as the surveys that are coming up, just approved by the Domestic Policy Council and the White House? Are there new ways to approach it? Should the

data in the survey itself contain other information? After all, if we're going to go out and get this information, let's get the information that you're concerned about. So can you recommend to us perhaps a new display, Dr. Joseph, in the CDC data that you might provide us that would be a catalyst to move in a new direction? Let me expand that even further. Is the gray zone of ARC, where we've just expanded to AIDS versus ARC, is that really a temporary aberration on the statistical database, and is there even merit to displaying it a different way, so that HIV infection becomes our greatest concern? If we're talking about education and that sort of thing, we seem right now to feel comfortable that if you're not talking about AIDS, you forget about the HIV infection. I mean, generally that's the feeling you get, and there's a great deal of confusion when you're talking about AIDS as opposed to asymptomatic infection.

So is there another approach now, or are we going to be locked into the bureaucratic techniques that we now have, and we're just going to regurgitate data that is not going to be that satisfying, either in projecting the perceptions in the American public of where the real focus should be, or in getting the right data to try to pin down some of your concerns, the people who work in the field and research in this area, that might improve our understanding as this thing begins to unfold? And isn't now the time, before we survey, to make sure we've wrung that out and are satisfied? Would you take that one question on?

DR. JOSEPH: I can give one comment and five series of data-collection alternatives. The comment is, your point is very well taken about being misled by looking at AIDS or even AIDS and ARC. The incredible thing about the reversal that we've undergone in New York, looking at deaths in IV drug users who were never categorized as AIDS or ARC is that it has shown us a very different epidemiology than we have assumed for several years was the epidemiology. It has shown us that the burden of significant disease and death among IV drug users is greater than that among gay men. So your point is very well taken.

The five points around data collection and interpretation. I would once again say -- we've all said it -- that basically I think the projections that you are working with currently, the CDC range of estimates, I think are an adequate range of estimates to work from, certainly at this point in the epidemic. I wouldn't beat that to death looking to either refine those numbers or looking for the outliers, either higher or lower. In terms of work that needs desperately to be done epidemiologically, the sentinel survey approach that you've heard from all of us is very important. It's important geographically; it's important in terms of demographic groups. I think we need more surveys in particular population groups. I don't mean that in any way as a code word for racial and ethnic groups. I mean teenagers. I mean women in the reproductive age

range. I mean older people. I think we need to pick certain population groups and use them as sentinels as well as geographic sentinels. Again, that all must be done on a voluntary basis.

The next piece of evidence we need is that we need to be trying to find a way to classify and project what Sheldon Landesman refers to as tertiary cases. We need to have the CDC project those people who are cases at this point, or those people who are infected, as we get our survey data in whose only risk was sexual exposure to a person who was infected, but who was not in one of what used to be called the primary risk groups. And finally, what we badly need -- and it goes back to my first point -- we need studies that will teach us more about the natural history of infection as it relates to disease. We are still dealing -- it hasn't come up this morning -- we are still dealing with this very muddy concept of perhaps within five years 30 percent of people with full-blown AIDS and another 30 percent with ARC and who knows at seven years. We need to refine our understanding of what the relationship is between infection and disease as we go out in time. And there really is not much that is continually projected in that regard. CDC could do more there.

MR. CREEDON: We had data from Dr. Curran on that yesterday, but I mean, where he left us was, it was unclear where it was going.

DR. JOSEPH: But even though it's unclear, we need to keep projecting it.

ADMIRAL WATKINS: So as not to be redundant, Dr. Wiley, would you just add any comments on top of that.

DR. WILEY: I basically agree with what Dr. Joseph said. Just two comments. There is no simple way to improve the routine data presentation which you referred to. The data that comes to CDC comes from a variety of sources, and it doesn't include, for example, the counts on the number of ARC patients that have been discovered in various medical contexts all over the country. And there's no way that that's going to happen. It would be really important for us to know those things, but I don't think it's going to happen very soon, because we don't have reporting of ARCs.

ADMIRAL WATKINS: But in New York, they don't use ARC, I understand. That's not a helpful and useful classification to them in the actual clinical work that they're doing. It's people ill that have the virus. Now is there a new technique that should be used in the CDC reporting procedure that would make us understand that a little better, or is ARC clear enough to everybody? Doesn't it send a signal that somehow we have separated AIDS from HIV infection?

DR. WILEY: They don't get reports of people who don't meet their existing criteria for case definition. They don't even get them.

ADMIRAL WATKINS: Let's go back to case definition then. Is there a new definition that we should apply that would give us a better understanding among the American people of what this is all about?

DR. JOSEPH: May I jump back in for just a second?

DR. WILEY: Yes, go ahead.

DR. JOSEPH: What we need to know are the numbers of people who are infected but asymptomatic, the numbers of people who have any sort of symptoms from their infection, the number of people who have CDC defined AIDS and the relationship over time between those three groups. That is what needs to be projected.

DR. WILEY: Yes, but you can't construct that from the sort of thing that CDC gets and although they could say to health departments, "Give us that," the health departments couldn't give it to them either because the cases come in by diagnosis. Usually, there is some sort of operation or biopsy proven this or that that leads somebody to believe that this is an AIDS case.

ADMIRAL WATKINS: So I take it you are making a recommendation to the Commission that we do nothing to make recommendations on changes to the sero prevalence data base presentations?

DR. WILEY: No, not that, that it is not going to be easy to recommend anything that is useful and feasible at the level of case reporting except perhaps for reporting cases of tertiary cases among heterosexuals. I think that would be something that could be done.

MR. CREEDON: Why wouldn't it be feasible to ask the departments of health that report to CDC any case where medical treatment is required and is related to the fact that the person has the virus?

DR. WILEY: If you knew the person had the virus.

MR. CREEDON: Well, if you don't know he has the virus, isn't every case that is reported, isn't it established that the person has the virus?

DR. WILEY: Every AIDS diagnosis. This tends to be people pretty far along in disease. They are very sick and they had to come to doctors. People with ARCs can go for two or

three or four years without ever seeing a doctor depending upon their condition.

MR. CREEDON: Then, of course, those cannot be reported.

DR. WILEY: That's right. So you miss the great bulk of HIV infections that have produced symptoms and there isn't any way to recover them in the normal reporting mechanism.

DR. CRENSHAW: Yes, but there could be.

MR. CREEDON: Could we require reporting of people who have the virus and who have appeared for medical treatment related to the virus? You don't have to call it ARC or anything else.

DR. CRENSHAW: You don't diagnose ARC unless you have an infection.

DR. JOSEPH: The concept of ARC as was mentioned a moment ago is the person who has HIV infection and tuberculosis and no other symptoms, is that a case of ARC or not. Those are the people, that IV drug user who died of tuberculosis or endocarditis never had an HIV test and when you go back and look at his chart, that is how we turned up these 2,500 people, you find out that this was an adult male who had Thrush so you make the reasonable presumption then that he was HIV infected.

Most of those people we never see. We can't pull them out. We have to estimate them by Sentinel surveys and other sampling techniques and try to get a better fix on this relationship between asymptomatic infected, all other symptoms and illnesses with HIV infection and the CDC-defined cases.

ADMIRAL WATKINS: But your "ill with AIDS" really in a way has been an attempt to come out of the ARC dilemma. It sounds like to me that your "ill with AIDS" is still a valuable piece of information irrespective of the fact whether tuberculosis is solely AIDS driven.

DR. JOSEPH: Terribly.

ADMIRAL WATKINS: It seems to me that kind of data would be very valuable in the whole staging of the from infection to fully symptomatic AIDS.

DR. WILEY: Many ARC patients are treated as ordinary patients with particular complaints and their sero status is not known at the time of treatment. They may know it and not wish it to be in their medical record.

ADMIRAL WATKINS: I understand that but then it is not reported. But when you do know it, then it seems to me that it in itself becomes a very valuable tool in understanding the staging of the disease. Anyway, I think you have answered my first question.

DR. LEE: Mr. Chairman, are you asking would they recommend that all HIV positivity be reported to the CDC which is not now done?

ADMIRAL WATKINS: I am asking them for any recommendation they would make for us, for the Commission, to make a representation to Health and Human Services and Centers for Disease Control and others perhaps, to the President, through the President, on changes that you would like to see inserted into the means of obtaining this information and that would better fill the voids of understanding that we now have. We need to start leading to that now rather than wait until two or three years of studies and find out that we just wasted three years when we could have gotten data that we desperately needed so why not get it now even though we are not sure what to do with it.

DR. JOSEPH: We will write up those four that I mentioned and send them to you in short order.

ADMIRAL WATKINS: We would like to have that. Secondly, I think, to close out this because we really have to move on is, you are going to be, both of you, involved to a certain extent, you, Dr. Joseph, perhaps more, in conducting the 30 standard metro statistical area surveys in the family of surveys now underway and being prepared.

Is the data that we are going out to get sufficiently surrounded by those surveys; are you satisfied that we are not losing an opportunity here in a number of areas, that is, just the survey information getting; should it be enhanced? Should we make recommendations to CDC to enhance that information, to grab hold of it and if you are going to go out and get this, let's get some additional data along the lines we just talked about perhaps to put it into our data base and most importantly, can you recommend the elimination of certain obstacles that will be in the way of achieving the full potential value of those surveys in the nation.

If, in fact, we are going to be rejected by some of the people in the high risk behavior areas as the statistical survey gets conducted, then is there a way to prepare the path from the President to the state governors and to others in the health profession business to maximize the value of those surveys? If we just let the people who are in the business do their normal thing, they will do the best job possible but have we done all we can as national leaders to ensure receptivity, to

ensure anonymity is given maximum credibility so that the people will come forward. Can you give us your concept of a strategy that would enhance the value of those surveys? This would be very valuable because that is something we can do right away and make recommendations if we could get a cohesive strategy to say, "This is the way we think, Mr. President, you should precede these surveys nationally and that they should flow then through the governors, the highest level of leadership to the mayors right down into the population in order to maximize it" and get the television programs and so forth building the credibility of the system with the American people to enhance their value of the survey.

DR. JOSEPH: We will send you some specific technical comments on that point.

ADMIRAL WATKINS: Do you think that is important?

DR. JOSEPH: I do think it is an important thing. Remember, of course, that it is we who will do the surveys. The CDC will send us a Texas Ranger or two but it is going to be the local health departments who will be doing the surveys.

ADMIRAL WATKINS: But won't you be frustrated by the turn downs and your inability to get the very best data that you would like to get? Wouldn't it be better to optimize that before we start the survey?

DR. JOSEPH: I think that point is well taken and we will send back some ideas both about the fostering and advocacy that is necessary to make the surveys run as well as possible and any particular technical points we have.

ADMIRAL WATKINS: And proof of anonymity so that credibility is really going to be there. Can we enhance that credibility in the high risk group or is it an impossible situation?

DR. JOSEPH: If I may, Mr. Chairman, and I said I wouldn't come back at Mr. DeVos' remark and those who know me in the panel know that I mean no personal disrespect but I call them as I see them, if I may, in New York our problems with anonymity are not around the way we conduct our program in New York; our problems with anonymity occur when Congressional or Administration officials launch trial balloons which seem to threaten the protection of anonymity and confidentiality. For us at the local level, that has an enormous impact. That is why I went to such great pains to comment on Mr. Helms' amendment. They will do more to threaten the ability to carry out those anonymous surveys in New York than anything that we will do in New York in the way we carry them out. That is a very important issue.

DR. WILEY: I agree. I think all of us who have been in the survey business and have dealt with problems of refusal to participate on other studies shudder to think of the problems that we would have on doing AIDS studies and so geared up for it in different ways and one of those different ways was to mobilize community support for surveys that required people to give blood and talk about their sex lives and to do a lot more of that than we had ever done in past surveys.

ADMIRAL WATKINS: May I ask Dr. Wiley who is in the survey business to coordinate with Dr. Joseph on your input on this particular issue to us. I think it would be very helpful since you are here, you are the witnesses today, both of you are experts in this area and have been at the grass roots. We need to have that and I think that is something that we would want to do right away. I don't know exactly where they stand in the execution of that program but I don't believe it is too late yet if we move expeditiously.

Thank you very much for coming today. It has been extremely helpful and we would like to again keep our dialogue open. The questions that many of our panelists were unable to ask this morning, we will send you and would ask that you try to get back within a couple of weeks of receipt of those to give us your best insights for the record and for our recommendations to the President in February on this particular issue of incidence and prevalence.

MR. CREEDON: Thank you very much, Dr. Joseph and Dr. Wiley. We are going to take a break for about ten minutes. Lunch will be served up here during that time and we will reconvene in ten minutes at which time I would hope Mr. Edwards, Dr. Delgado and Mr. Levi would all be up here and ready to testify.

[Whereupon, a luncheon recess was taken at 12:35 o'clock p.m., to reconvene at 12:55 o'clock p.m.]

AFTERNOON SESSION

[12:55 p.m.]

MR. CREEDON: Our next panel is intended to give us the perspective of some community based organizations and our first witness is Mr. Don Edwards of the National Minority AIDS Council. Mr. Edwards.

PANEL 4 - COMMUNITY BASED ORGANIZATIONS PERSPECTIVE
PRESENTATION BY MR. DON EDWARDS

MR. EDWARDS: Thank you, sir. Good afternoon, Mr. Chairman and Commission members, my name is Don Edwards. I am the Executive Director of the National Minority AIDS Council. NMAC is an organization dedicated to working with and through national minority leadership organizations, minority businesses, local minority community-based AIDS projects and national and local health agencies in assisting to prevent the spread of HIV and helping minority communities to better care for minority persons already infected.

I am very pleased to be here to offer testimony as part of these hearings which have been looking at data collection and related issues. Persons perceived as advocates like myself are often excluded when the focus is on the more technical aspects of scientific phenomena.

But I am very happy to be here because it is very important to practice advocacy in this area as well. I come as a novice epidemiologist who was the first person in the U.S. to look at the CDC's Public Access Data Set to describe the epidemiology of AIDS among Black persons born in the U.S. Thus, I want to assure you that with my distinguished co-panelists, I am quite interested in the numbers as regards the HIV epidemic.

I spoke with a number of individuals in the Black community in preparation for this presentation. I would like for you to know that in the last 60 days, there has been a quantum leap forward on the part of leading minority clinical researchers and health practitioners. Just last week, for instance, the National Institutes on Drug Abuse followed a technical review meeting hosted by your fellow Commissioner Dr. Beny Primm. He and his colleagues at Addiction Research and Treatment Corporation in Brooklyn brought together minority scientists, health providers, and community activists from across the nation to discuss issues relevant to the subjects on which you are taking a look at today. In two prior meetings across the country, one sponsored by the Detroit chapter of the National Medical Association and again by the Provident Medical Society, the Brooklyn NMA affiliate, critical attention was again devoted to these issues.

I would like to just raise some of the questions that I got back as feedback from the folks I talked to around the country. First of all the question that seems to come up most often is, is it as bad as they say it is for the Black community and this seems to be a question essentially of is the news really something we can lend credibility to. As you know, the reality is that it is. As of November 23, 1987, 47,022 cases of AIDS have been reported to the CDC and of that number, 11,746 were Black. This number represents 25 percent of adults and adolescents over the age of 13. The rest are 373 and these cases are in children under the age of 13.

I guess what I really want to say about this information, you can look through my testimony, is that the response that I have gotten around the AIDS surveillance program from the Centers for Disease Control is one of essential support and commendation for the efforts that they have taken to ensure that the nation has a regular update of this data.

Yet there are some concerns and I would like to share some of them with you. First of all, a number of persons raised the issue that it may be needed to institute systematic standardized surveillance and reporting of cases in the top 25 high prevalent cities. These cities coincidentally also have significant percentages of Black populations.

The point is not to describe one national epidemic and leave it at that because it seems for some folks who are on the street level that there may be, in fact, a number of regional or local epidemics occurring which, in fact, look very different from one other. Additionally, considerable dissatisfaction seems to be existing regarding the lack of standardization and the quality of surveillance coming out of states and municipalities. For instance, 40 percent of the cases in Alabama are Black, but hardly anyone in Alabama or out of Alabama knows this.

Black activists are also nearly unanimous in their desire to have national and state geographic data aggregated by race, data on gender aggregated by race and especially AIDS cases by risk factor combinations aggregated by race. There has also been a concern that it might be useful in separating for purposes of following cases and developing programs to see cases in the homosexual/bisexual category separated since it has been reported that there seems to be a higher percentage of Black males who are practicing male-to- male sex who do not identify themselves as homosexuals in the Black community.

This aggregation of data might be useful to have on a monthly or bimonthly basis but it is crucially needed to confirm or deny anecdotal community information. The question is if this responsibility falls to the states, the CDC should provide the

standard for the collection and reporting of this information thus ensuring its standardization and generalizability. There are legitimate issues regarding breach of confidentiality in cutting data this fine but I believe safeguards can be in place.

The main point that I bring is that surveillance needs to reflect a greater sensitivity to race and ethnicity as a highly significant variable. My second point, did AIDS become a health problem for Blacks only recently? If yes, how did it happen so quickly and if no, why didn't we know about it sooner? I have to tell you that as more information is disseminated many people at the community level feel it is going to become clear that the scientific awareness of the disproportionate impact of the HIV epidemic on Blacks and other minorities was evident long before the publication of the report entitled, "Acquired Immunodeficiency Syndrome Among Blacks and Hispanics - United States." published by the CDC on October 24, 1986.

There is concern among Black AIDS activists that as more Black persons learn about the early evidence of the disproportionate impact dating back to at least 1983, that there may develop a credibility gap as to whether any other data is being held back. The suspicion and anger potentially engendered may detract scarce resources from education and direct services at a point where progress is just beginning to be made. The issue around this question is not simply mere curiosity. At the heart is again the question of credibility of the current message about the impact of AIDS in the Black community and of the messenger.

The fact is that there was available information had it been interpreted in a more informed manner as early as 1981 which might have led to Blacks understanding that there was a higher impact than initially understood. Had this information been disseminated, we might have had the kind of report that came out in 1986 much earlier. Another issue, why does it seem that all the bad news on AIDS is about Black people? Are all the studies just another way to blame Blacks for AIDS? I think you know as well as I do that numbers paint pictures. For Blacks, the picture has been consistently suspect and in the case of the Haitian community, in particular, particularly ugly.

In the minds of Black persons, the Haitians were essentially blamed for bringing AIDS to the United States. Initial reports on AIDS in Black Africa seemed more interested in pointing out how the governments of these countries were standing in the way of scientific progress, of help for their citizens, and of an explanation of where AIDS started.

Lastly, in the U.S. data has been looked upon and used to fuel perceptions that it is the Black drug addict who is spreading AIDS across the country and that because of them, AIDS

is going to infect heterosexuals and kill hundreds of unsuspecting women and innocent babies. I think one of the things that we should keep in consideration is that the Black person on the street looks at perceptions much more from the perception they have of their place in the society and we must be careful that any research that is conducted, any data that is gathered, does not poison an atmosphere by relying on essentially stereotypical, insensitive and uninformed processing of experience and of data.

I hope that by now the fundamental importance of sensitivity to culture and tradition is an accepted and integral aspect of our research and will no longer contribute to the erection of tedious and divisive barriers. Researchers also need to keep in mind some points. First of all, the U.S. Black community is not a monolith. In the U.S., Black identity includes early and recent immigrants from Caribbean nations who may speak a number of different languages, native languages as well as those of their former colonizers.

The Black community consists of separate ethnic communities joined into one multi-ethnic community by African ancestry, common cultural values, cross-cultural marriage, and a common experience of racism and racial pride. There is also a psychology at work in the Black community that we need to understand that one of the key aspects of that psychology is to function in the role of self- preservation. Many people are recognizing what appears to be a kind of denial already aggravated by the stigmatization associated around AIDS in the Black community that has produced a "See no Evil-Hear no Evil-Say no Evil" process that resists education related to AIDS.

Disrespect of this psychological process only serves to reaffirm its need to exist. It would be particularly ironic that in that case of AIDS if this psychology did not lead to self-preservation but to death. Another question, is the impact on Blacks really so disproportionate? There is considerable disagreement on this question. From a scientific standpoint, a number of Black researchers have pointed out that using general population figures for denominator data drives the proportion up.

Epidemiologically, it would make more sense to use either the percentage of Blacks in the urban center, or in the metropolitan SMSA as the denominator. On the East Coast in particular, given the high percentage of Blacks in these cities, the ratio would probably begin to approach one to one. Others hold that the two to one ratio is correct considering the projected spread of the epidemic into the heartland of the U.S., and the higher degree of undercount that is suspected for Black cases. Is there a genetic link which explains the high incidence of AIDS infection among Blacks? You should understand this line of investigation waves a red flag in particular for the

Black community. Rightly or wrongly, anytime genetics is mentioned, it raises the specter of ever- recurring racist attempts to explain the lives of Black people with an update on archaic pseudo-scientific social biological theory.

There is legitimate research to be followed on the high incidence of HTLV-1, for instance, in some parts of Africa which are contiguous with the presence of HIV, as well as in the presence of HTLV-1 in Caribbean nations and that should be given appropriate attention. But the Black community is particularly sensitive to anything that remotely suggests something innate to being a Black person increases one's risk for infection.

With Whites, it seems only gay men get AIDS. With Blacks, men, women and children get AIDS. Why? Though this epidemic is six years old, you should remember that it was only 13 months ago that the CDC published their initial report on AIDS Among Blacks and Hispanics. Thus, it is still difficult for many in the Black community to accept that data and information even though it delivers a clear and unmistakable message and that message is that AIDS is not a gay white man's disease.

But for the most part, where it appears that so much has been determined about the sexual practices, the degree of behavioral change, the percentage of population, et cetera, for gay men, Blacks have been mostly left with a lot of interesting but unanswered questions. Where are the longitudinal studies exclusively for Blacks or at least oversampled for Blacks? Where are the case control studies linking cases and controls to ascertain independent or multiple variables? For the category homosexual/bisexual male, where do most Black men fall?

For homosexual/IV drug user/ which category contributes the greatest to risk? If there is one area in which there is almost complete unanimity, it is that the degree of scientific investigation absolutely contradicts the declaration that a crisis really exists. In addition to the potential "genetic" factor that some have raised, there are two other more legitimate avenues for exploration and research. One is that the racial distribution of AIDS cases does in fact reflect the racial distribution of populations that are affected in the high prevalence areas. A second factor suggested that has gotten very little attention is that economic and cultural factors in this country also may account for the observed differences in incidence.

Both of these lines of investigation lie dormant. Perhaps in one of them lies key information which can help to save lives in the Black community as well as bolster the efforts that this country is engaged in with tremendous credibility. The question, however, I want to end on and that has been raised in the community is, "Do people in this country really want to know

about the conditions of Black health?" "After they know, will they spend money that will make a change." "If they start with AIDS, will they really use what they know to make a difference?"

Commissioners, this is a mere sampling of the questions which I was asked to share with you by key individuals in the Black community. I would like to particularly acknowledge Dr. Wayne Greaves, Chief of Infectious Diseases at Howard University Hospital, who was to my knowledge the first Black physician and epidemiologist to raise some of these hard questions around the country.

I want to call your attention in particular to an article I included at the back of my testimony entitled, "AIDS Update: No Longer Gay White Man's Disease" dated November 25, 1983 which to my knowledge was one of the earliest news articles mentioning the impact of AIDS in racial and ethnic communities and I also want to draw your attention to a subsequent article talking about Dr. Greaves' own research in 1985.

Additionally, I have submitted documents that give you some information about the epidemiology and some aspects of AIDS as related to the Asian American community and the Native American community which I hope you will look at and include in your deliberations. Thank you very much.

MR. CREEDON: Thank you, Mr. Edwards.

DR. CRENSHAW: One of the things I found as a continuing source of confusion and frustration in the epidemic is experts in America looking at things that are going on in Africa, such as years ago when it appeared to be heterosexual in Africa, but we hadn't accepted it in America yet as a heterosexually transmitted disease. The constant answer I heard was "Africans are different." Somehow not saying but implying they are not quite like other human beings.

I think we can learn so much from what is going on in Africa and yet there seems to be a real barrier in America to accepting that and extrapolating that and generalizing it to other populations, even though there may be various other factors that play a part. Can you comment on that and share any of your thoughts?

MR. EDWARDS: I think that the black community, and this is who I feel most comfortable speaking about, in terms of what educators have run into, has been very suspect of how the whole African issue was raised initially, and that has really focused on what a number of people perceived as essentially a very superficial kind of determination that again the African people, the black people of the African continent were at fault. They were at fault because potentially they may have eaten the

green monkey -- I don't even want to elucidate all the kinds of ridiculous notions that came up, as to how this animal virus, what we suspect to be an animal virus got into the human host.

I think there is a tremendous amount to be learned from the experience in Africa, but I have to tell you, AIDS in most people in the black community's perception has simply brought to the attention of the world pre-existing health conditions in Africa that escaped the attention of the world prior to AIDS.

I don't think we can superimpose on that perception that had it not been for AIDS, the health conditions of Africa would essentially still be ignored. I think there is a credibility gap in terms of what is driving the interest. Is the interest simply a solution and once you find a solution, you are going to extract your information, your resources, pull out and leave Africa to fend for itself, and I can tell you from an anecdotal basis, this is something I think the black community is very concerned about and waiting to see how it is going to play.

I think from a scientific standpoint, there are a lot of studies that need to be done in cooperation with African countries. If this can be done in such a way that is sensitive to the national agendas that support the development of the health sectors of that country, I think America as well and in particular the black community of this country will see that the approach to what is being done on the African continent bespeaks the sensitivity that could represent the way things could be done, for instance, in this country. Black people pay a lot of attention to what happens to black people around the world. I think recognition and sensitivity to this can go a long way in this country and in Africa as well.

MR. CREEDON: Dr. Primm?

DR. PRIMM: Mr. Edwards, you talk about whether the impact on blacks really is as bad as they say. Is it really so disproportionate. You go onto talk about a one to one ratio, two to one ratio. Could you explain that for me? I don't see how numbers can really lie. Are you doubting the reports of CDC? Are you doubting the reports of the New York City Medical Examiner's Office? Are you doubting the reports of the National Funeral Directors Association, which is a black funeral directors association? What are you trying to get at there, if you would explain that.

MR. EDWARDS: Certainly, sir. The way this issue was raised and perhaps I have done it a disservice, is not so much that doubt is raised as to there is clearly a significant problem facing the black community in this country. The question is not so much whether it is two to one or one to one. The question is what is the usefulness of how you look at the

problem. If the problem is described as a total population problem, then you need to have that linked to an input of services and resources that are going to approach it as a total population problem. Some people have said this is a very useful way of looking at it and it may in fact drive funding. It may in fact drive, if you look at the classic formula around the prevalence, the prevalence determines the allocation of resources and services. Yet, many people in the community have raised that in previous and still outstanding health problems facing the black community, that this formula has not been followed.

The question of whether it is two to one or one to one is raised as a question for usefulness. If it is one to one, it may be more useful in relieving some of the stress and some of the stigmatization that black people perceive around the question of AIDS which makes them more open to AIDS information. I think in many ways people really don't care how many, whether it is 25 percent, 30 percent, we recognize that as another health problem in the black community, we are over represented. The question is what is it going to get us?

DR. PRIMM: I understand that. What I would like to deal with as much as we can is that we do know blacks are disproportionately represented in those who have been diagnosed thus far to have full blown AIDS. When I am looking at things like this, I am wondering whether it is that we don't believe that. I think that is a fact. I think we have to base all of our decisions on those facts. The other thing that I would like to talk about is that you spoke about AIDS being a window of opportunity to do something about the health problems of blacks in Africa. Indeed, that is so. In this country, I think it is just as apparent as it is in Africa. If you look at Harlem, Washington, D.C., the services, they are poor quality health care services, not only are they poor quality and inaccessible, they are dehumanizing. I can go on and on. I think it is a window of opportunity for this Commission to look very closely at the rates and incidence of tuberculosis in certain communities, certainly to look at subacute bacterial endocarditis and glomerulonephritis, et cetera, all of those different diseases that plague intravenous drug users and inner city dwellers, and come up with some recommendations around those issues as well. When you talk about Africa, I think we have to talk about home also. I think that is really important.

MR. EDWARDS: I could not agree with you more, Dr. Primm. I think that the perception that was created around the country unfortunately with the dissemination of the Secretary of Health and Human Services' report on black and minority health, helped raise some sensitivity and awareness of the fact that there are 56,000 excess deaths in the black community alone, simply related to the big six diseases. AIDS was not even part of that consideration in that report. What we see in this

country is both a crisis in the black community related to the health of that community raised by AIDS, but in fact, Dr. Primm has identified that within that crisis, there is tremendous opportunity. If we look at teenage pregnancy, substance abuse, sexually transmitted diseases, AIDS not only gives us an opportunity to make a fundamental injection of resources and to change people's consciousness and awareness about those issues, but it may in fact allow us to break what has been a kind of policy deadlock regarding the link between looking at these health problems in black and other minority communities as it relates to different financing mechanisms and other health care financing issues in this country.

The black community has been burdened for some time by a number of epidemics. We really should take advantage of the kinds of technologies in education and behavioral change that we are developing around AIDS and apply them as well to other behavioral problems that lead to health problems in the black community.

DR. PRIMM: I think the National Minority AIDS Council has a very unique opportunity. I would like to ask my Chairman to ask the Council, wouldn't it be good if you provided us with a whole laundry list of things that we could recommend that would help straighten out some of these very problems that you cite. You have a board now that is constituted. You have an office here in Washington. I think it is a very unique opportunity to contact say the National Medical Association, some of the other black organizations, the National Urban Coalition, the National Urban League, which are very interested in this problem, and get their recommendations and give us a laundry list of things that those organizations and you feel ought to be done. That perhaps could be coordinated out of your office.

MR. CREEDON: I would like to move onto Dr. Delgado, if we may, and ask Mr. Edwards if he would remain so we can address questions to the group as a whole. Dr. Delgado?

PRESENTATION BY DR. JANE DELGADO
NATIONAL COALITION OF HISPANIC HEALTH AND
HUMAN SERVICES ORGANIZATIONS

DR. DELGADO: Good afternoon. I enjoy being the luncheon speaker. I am the President and Chief Executive Officer of COSSMHO, which is the National Coalition of Hispanic Health and Human Services Organizations. We have been in existence for about 14 years. I have been President and Chief Executive Officer for two and a half years.

The organization has 507 members. Our members are community based organizations, people in positions of power in health institutions and community health centers, faculty and

many researchers. We have about a $2 million budget; 80 percent of that goes out to the local level. One of our major activities is research. Before I start talking more about Hispanics, I just want to get us all on the same understanding about Hispanics. First of all, most Hispanics, nearly 75 percent, are second generation. That is an important fact to remember. Second, over 75 percent of Hispanics speak English. Most Hispanics feel more comfortable in Spanish. They speak English but feel more comfortable in Spanish. That is why when we talk about things, we say translation is important, but you have to understand what you are translating, why and who developed those materials.

The next thing is people who speak Spanish speak a common Spanish with regionalism and colloquialisms which makes some differences when we are talking about things like body parts, where slang may be very important and may differ by state or region. The other thing is that unlike the non-Hispanic white community, we are not as diverse, we are mainly Mexican/Americans, Cubans and Puerto Ricans, Central and Latin Americans, while non-Hispanic whites can come from all over Europe. The paper that I provided to you is very important. It was called "AIDS, the Impact on Hispanics in Selected States." We did this paper because one of the major problems we had are the data which are available on Hispanics. Besides my role with COSSMHO, I'm on the National Advisory Committee on Health and Vital Statistics and was also one of the people who helped pull together the Black and Minority Health Task Force Report. You will never see a Hispanic talking about the number of excess deaths because we don't have that information. In fact, the best data we have on anything is on AIDS. What we have nationally, we have found real problems with. It just clumped everything together.

We decided to go back to selected states and get information as to the categories of transmission. What we were hearing from CDC was AIDS and Hispanics is IV drug abuse. We heard it and we were parroting it, too. When we went back to our data, we found some very interesting things. One of the things we found was if you look at IV drug abuse for the States of New Jersey, New York and Puerto Rico, it is very important, but it is not so important in Florida, Illinois, and Texas. In fact, in those states, homosexual/bisexual male transmission is much more important. That means that our community based organizations needed to know that. They needed to know who they should work with, what organizations they needed to work with and reach out to in order to get information out to the community.

It took us a long time to get this paper together. California is missing. The reason California is missing is because they would not provide us with information on Hispanics. We tried very hard to get information. We just got news from

Colorado that they will be providing us a run. If you understand what is going on at the community level, they need to know as much information as to whom in their community are at risk and under what categories of transmission.

ADMIRAL WATKINS: Excuse me, Dr. Delgado. Are you saying California has the information and wouldn't provide it or they don't get the data at all?

DR. DELGADO: They must get some data because they give it to CDC. However, they would not provide it to us. It took months to get it from the other states. I think part of it is because when you get information, information creates power to ask for resources, which is what Don was talking about. If you don't provide the information and you don't know what the incidence or the transmission categories are, you don't have the tools you need to get the resources.

If you look at this, you get some real interesting differences by state. We also have information on Puerto Rico. You will find this paper useful. We are finding it useful. We have disseminated this to all our members and every place that we can. We think that one of the most important things that we can be doing now on AIDS at the local level are things in the area of public education, treatment and services. When I got to COSSMHO in 1985, I started to approach CDC about doing something in AIDS, and they knew about the problem in AIDS and Hispanics. They may not have published a paper until 1986, but they knew in advance. The numbers of blacks and Hispanics have been consistent, 14 and 25 percent, from the very beginning of the AIDS epidemic.

One of the concerns we have is that people will make forays into the Hispanic community and say they are doing something in terms of AIDS education, treatment and services, without working with the existing institutions that are there. This is a major concern for us because we want people to work together. We want institutions to come in and work with us but we also want the institutions who are there to be part of the AIDS network, which is for example, one of our major activities in AIDS, that we have a newsletter that goes out to all our memberships on some AIDS update.

The idea that we worked in AIDS was very unpopular in the beginning. They didn't know why in earth I had picked this as a topic to work on. The community was not at a level of information. One of our first steps was to get a booth at the National Hispanic Media Association, and give out pamphlets to all the media on AIDS so they would learn. We got a lot of negative feedback from that. We also got much more positive feedback, that people didn't know this was a problem.

As we do more in the AIDS area, we want to make sure that we learn from the models of health promotion, disease prevention, outside in the community which have been useful for Hispanics. I think this is very important. Some of the models for non-Hispanic whites will not be as successful with Hispanics. Our communities don't have the resources. They don't have the networks. They also may not have the access to health care that we would like.

I am sorry to say I didn't bring another paper that we brought which was called "AIDS and the Financing of Care in the Hispanic Community." This was an important one to us. I heard you talking about Medicaid before. I was chuckling. One of the problems we have with Medicaid is close to two-thirds of the monies from Medicaid goes toward long term care, even as it was a program intended for poor mothers and children. Keeping that in mind, as our population has changed and gotten older, Medicaid has been something which has been more to deal with elderly problems.

When you look at Hispanic participation in something like Medicaid, you see it is relatively low. For example, Hispanics are second only to blacks to the extent of poverty in the population, yet they are five times more likely not to be covered by Medicaid. The reasons? If you live in Texas, it is very hard to qualify for Medicaid. Many Hispanics live in Texas. It is difficult. We have to look at the financing of health care for Hispanics once they have AIDS. I have a lot of things to share with you and I am trying to hit everything. I'm sorry I am jumping around so much.

The other thing which is important is the idea of getting our member organizations to work with some of the gay service organizations. This sounds like it should be an easy thing since we are all fighting the same disease. In fact, in my community, what we are fighting is also a lot of denial about sexual activities. Working through that, you can't do everything at the same time so we always talk about high risk behavior. We don't talk about high risk groups. We just say that we as Hispanics have to know about high risk behavior, what we should and should not do.

I think it is important to keep in mind also as you think of your recommendations, three very important things. I hear a lot of talk about coordination, coordination within HHS, coordination within HHS and other agencies. Coordination at the Federal level often means people sit around a table, everybody says what they are doing, and that's coordination.

To me, that's not coordination. Coordination means we all sit around together and we parcel out the pieces of what is going to be done and we are informed. It is more like a

continuum of care concept. That's not the kind of coordination we have now in AIDS, at the national level, and consequently it filters down to the local level.

The second concern is the idea of gatekeepers. Who will be the gatekeeper for AIDS education, AIDS treatment, AIDS services? If they are the same people who have always been gatekeepers, Hispanics have not benefitted from health care in America to the extent they should as contributors to society. That's another issue.

The third, which is very important, I always hear, well, Hispanics are Catholic and they don't want to do anything with AIDS. If you ever go to El Paso, Texas, cross the border to Juarez. Juarez has AIDS education going on at a level that El Paso will not get to for a long time. The reason is in Mexico, family planning and talking about family planning and the paraphernalia associated with family planning, has been an ongoing discussion. For Hispanics living in America, we are also a product of the national policies which sometimes make this very difficult. I think those are the broad things that are important to keep in mind when you are trying to think of programs that impact on Hispanics, please remember Hispanics are 14 percent of those persons with AIDS. We have data. We aren't getting any resources. We would really like your support. Thank you.

MR. CREEDON: Thank you very much, Dr. Delgado. You know, the main thrust of our meetings yesterday and today is this question of incidence and prevalence of AIDS. I wonder if you have focused on whether the CDC reports adequately deal with the AIDS in the Hispanic community? If not, have you tried to get CDC to adequately deal with it?

DR. DELGADO: One of the reasons it took us a long time to get this report together was because we went to CDC and asked them to give us data on AIDS in Hispanics by state, and they said they could not do that. So because they could not do that, we had to go to different state agencies.

MR. CREEDON: Are they trying to do it now?

DR. DELGADO: Not that I know of. I mean, they said, well, it's confidentiality issues, that's why we can't give it to you. I was like, confidentiality? I did not understand it. There was obviously a gap there, and I don't think the gap was on my end.

MR. CREEDON: Do you think the gap is being closed now, or is it still a problem?

DR. DELGADO: It's still a problem. I think part of it is, you know, for Hispanics, we have never had any good data. This is the first time. The fact that we have good data and nothing is happening is quite disconcerting, to say the least.

I think one of the problems that Don mentioned which for us is very important also is to have that breakout between gay and bisexual to understand what's going on, because we also have a lot of denial in our population. For example, in El Paso -- and I speak a lot about El Paso because we were very active in getting the Hispanic community to take ownership of the AIDS problem. The local gay community talks about -- the local Hispanic gay group does not talk about being gay but about men who have sex with men. To me, that's a different type of communication than a community that takes ownership of their sexuality.

So how we deal with each of our communities is very different, and, for certain, a Hispanic who's in one part of Texas will be very different than a Hispanic in San Francisco or one in New York or Hartford, so we would really go for tailoring the message. CDC has not been very good at providing us with specific information.

MR. CREEDON: I think it would be helpful if you would write to us and tell us in light of the way CDC now reports how you would like to see their reports changed, so that we would have a very specific recommendation as to how it could be more helpful to you.

DR. DELGADO: I will do that. I will also add that on this national advisory committee which is the advisory to the Department of Health and Human Services, that is one of the things that was also discussed, and I will look back on my notes and see what we said in the national meeting, too.

MR. CREEDON: Thank you very much. Any other questions?

DR. LEE: Straighten me out on the figures here. Are the black and the Hispanic rates higher than the white rates, three times the white rates as in your paper.

DR. DELGADO: Well, it depends what subgroup you're looking at. For Hispanics, there are 7.9 percent Hispanics in the population, but 14 percent of the AIDS patients are Hispanic.

DR. LEE: You say in your paper that it's three times the rate in Hispanics and blacks as it is in white. Is that accurate?

DR. DELGADO: That's cumulative, yes, and that's looking at cumulative incidence.

DR. LEE: And that's the way it is?

DR. DELGADO: Right.

DR. LEE: Now, what do you say -- how do you add up in the states that don't have a lot of drug addiction like Texas, Florida? That's not what we found in Florida. According to you, you don't have much drug addiction in those two.

DR. DELGADO: Right, but if you look at --

DR. LEE: Why is there so much more homosexuality than in the black and Hispanic? Do you have an explanation for that?

DR. DELGADO: Well, let me go back. First of all, to be considered gay or bisexual, you only have to have one contact with a male. Second of all, I think people's sexuality is not something -- and sexual choice is a very difficult question to answer, and I'm not in a position to talk about that, and I think it's very --

DR. LEE: I guess I didn't mean to say why. What I meant to say is, is there an increased incidence, then, in those states of bisexuality and homosexuality minorities versus the whites?

DR. DELGADO: It would be hard to say. It would be hard to say. We're talking about transmission categories, and I think what you would find in those states, also, they do have less use of IV drug use in those states than you do in a state like New York or New Jersey. So there are other variables which compound this thing. It's just a two-way analysis.

DR. LEE: Dr. Edwards, do you have any comments on that? My analysis of the numbers is probably wrong somewhere, because I don't see an explanation for it.

MR. EDWARDS: I'm not sure I'm even understanding your question, Dr. Lee.

DR. LEE: Well, if there are three times as many people with AIDS proportionately in black and Hispanic populations as there are in the whites and in some of these areas you have very little -- some of these states are reporting very little drug addiction, to me that means an increased incidence proportionately of homosexuality or bisexuality in the minority communities. I'm not -- medically, I'm not aware that's the case. I'm not sure I understand --

MR. EDWARDS: I think I understand what you are asking -- what do you get from looking at cumulative incidence data? I think what we're getting is that when you look at the country, the cases per million in the black and Latino communities are three times the cases per million in the white community. What happens is that kind of population-based data really washes out a lot of the kind of focus data I think you're asking questions about. What would be more useful in looking at the kind of incidence per transmission category that I think you're raising on a state level would be the kind of questions that Jane has raised that we aren't getting that data from the states. We really need to look at the percentage of Latinos or blacks or whatever in the state and then use that as a denominator data for the kind of -- for what we're looking at in terms of IV drug users and gay people and other transmission categories. That is going to vary by state.

I think one of the questions that Jane has also raised, however, is that prior to AIDS, this kind of data was not being kept. One of the things we found in New York City where you probably have more intravenous drug users than anywhere else, that we're still dealing with estimates of population.

We have no real data, and if we don't have it in New York, you can imagine what is missing for the rest of the country. That is the kind of issue that we're really looking at, that we can't find -- the initial paper that was printed, I think Ann Hardy from the CDC did it two or three years ago, we have no good denominator data in looking at the number of black and Latino men coming out of New York City to project an incidence rate model for New York City. This is a problem we're facing all over the country.

MR. CREEDON: We're running about a half hour late, and if the Commissioners are agreeable, I would like to ask Dr. Levi or Mr. Levi to talk now, and then we can come back and ask questions of the entire panel.

PRESENTATION BY MR. JEFF LEVI

MR. LEVI: I want to thank the Commission and its staff for this opportunity to testify this morning. As you know, the National Gay & Lesbian Task Force is the nation's oldest and largest gay and lesbian advocacy organization. Since the beginning of the AIDS crisis, we have sought a committed, compassionate public health response to the epidemic from all levels of government and all levels of society. Before addressing the subject at hand, I wish to briefly comment on your interim report recently submitted to the President.

While you reached no conclusion, the report praises the work of the gay and lesbian community in providing services and

education at a community level is an appropriate and important recognition by a body appointed by the President. Indeed, the work of the gay community is deserving of direct presidential recognition, something that has been sadly lacking. But because you have not reached your conclusions yet, I offer this word of caution. Simply because the gay community has done such a tremendous job in addressing unmet needs in the AIDS crisis, it does not in any way mean that the job is done in the gay community or that the task can be continued without government support, federal, state or local.

The federal government has been particularly negligent in supporting prevention programs and services for those affected by AIDS. It has been afraid, I believe, to work with those most engaged in this effort because those most involved are gay. The lesbian and gay community's efforts are not a substitute for the government taking responsibility for a public health problem, a public health problem that affects all Americans and should concern all Americans. The gay community cannot bear on its own indefinitely that which is the entire society's burden.

Over the last two days, you have heard a good deal about numbers: the number of people who are or might be infected with HIV; and the number of people who have and who might go on to develop AIDS or ARC. There has been a good deal of speculation in the press about whether the Public Health Service has over- or underestimated the number of people infected. I do not claim to be an epidemiologist. I will not attempt to enter this dispute. I would urge you, however, to view your role as less one of playing arbiter among the epidemiologists and more one of depoliticizing this debate and focusing on its real implications.

Why does it matter if there are 600,000 people infected or 1.5 million? Why does it matter if HIV infection is moving quickly or slowly into the heterosexual population? We do not have to have to precise projections to know that AIDS is a serious public health problem that requires attention in a number of areas. I would like to make several general points with regard to seroprevalence data.

First, you must be careful about the use of numbers. Inflated numbers can be used as a scare tactic. Interpreting numbers as unexpectedly low can be used to denigrate the seriousness of this epidemic, justifying less public attention and resulting in less public funding to cope with this crisis. Quite frankly, this is what many of us fear is the genesis of the current debate over seroprevalence.

Second, we must avoid painting constituencies or risk groups with a broad brush. The level of infection in any group will vary according to the overall level of infection in the

geographical area. Behavior changes in the gay community, for example, vary greatly, depending in part on the level of prevention activity and the level of infection in the community. In other words, variance can be related to the degree to which we have educated persons about their risk and the degree to which, given the incidence of disease, people perceive themselves to be at risk.

Third, we must remember that we are dealing with very soft data. The seroprevalence studies that can give us hard data have only begun. All of the estimates put forward by the various epidemiologists are educated guesses at best. It will take some time until we have a good baseline data regarding infection levels, and it will take even longer to determine trends in infection rates. It bears restating that the gay community has always supported the seroprevalence studies under way. Indeed, gay volunteers have formed the data base for much of what we are talking about today.

Fourth, seroprevalence data tells us who was infected in the past, not who is engaging in behavior that places them at risk today. Our emphasis, therefore, should not be on risk groups but on risky behavior. Thus, while a majority of people infected may indeed be gay or bisexual men and IV drug users, we do not know, we do not have hard data on where the infections are occurring today, but we do know who is engaging in behavior that could place them at greater risk for HIV infection. This country is experiencing an epidemic of sexually transmitted diseases among heterosexuals. More than 14 million Americans contract a sexually transmitted disease every year. Those rates are skyrocketing nationally among heterosexuals while declining among homosexuals, though this may vary by community.

If these people are contracting STDs, then they are engaging in sexual activity that places them at risk to AIDS. This is disturbing in and of itself. It is made more so by the fact that there is increasing evidence that STDs may be a co-factor in development of HIV infection.

One final concern about the emphasis on seroprevalence data. There is a danger in focusing too much on the disease model, of identifying the number of people infected and seeing that as the universe of people affected by this problem. Such an approach only addresses one side of the equation, that which needs to be done after infection has occurred; namely, treating, caring for and hopefully curing those who are infected.

It ignores the other side of the equation. How can we prevent people millions of people whom we know to be engaging in risky behavior irrespective of their so-called risk group, how can we prevent them from becoming infected in the first place? Our obligation in this crisis is two-fold. We must care for and

plan for the needs of those who are infected; and we must work with greater urgency towards effective treatments and a cure. But our obligation is also to make sure that the majority of Americans who are uninfected, including the overwhelming majority of gay men in this country, that they have the tools to remain uninfected. The seroprevalence studies under way will give us interesting data; but as your interim report indicated, we are coping with a crisis that requires immediate attention by the policymakers in our government.

I would, therefore, urge you to base your work on the ranges that have been offered to you by the Public Health Service. No matter which numbers we use, the next administration will face hundreds of thousands of cases of AIDS. This Commission must address the needs of these people and how the existing health system will need to adapt to this new burden. We must guarantee quality care to all persons with AIDS or HIV infection. To do that, we must successfully answer a number of questions. Will we be able to assure that access to quality care will not be dependent on our ability to pay? Financing care of those with AIDS poses some of the most complex challenges to our health care system. How do we help the health care delivery system from private hospitals to public hospitals prepare for and more evenly distribute the added burden of AIDS so the quality of care offered those with other diseases is not diminished?

I think some of the most compelling stories have come from the public hospitals, who are overwhelmed by AIDS and yet are also the primary care facility for millions and millions of poor Americans. How do we solve or reduce the discrepancy in the quality of care offered the person with AIDS in San Francisco as opposed to Tulsa or the discrepancy between the gay white man in New York and the black IV drug user in the same city? This question is especially compelling as the demographics and geography of AIDS changes.

Everyone seems to be putting in their plug for a study that CDC could do. One of the studies that I wish the CDC would do and have actually asked them to do and have been told it would be too difficult is to do a comparison of life expectancy between diagnosis and death by geography, by all the various risk groups, as well as by race or ethnicity.

I think that will tell us a lot about some of the delivery of care issues we have. I travel a lot, and one of the most compelling things that I hear is particularly in the lower incidence communities where there are physicians who are desperately trying to care for people with AIDS as best they can, saying I just don't have the same resources that a person with AIDS would have or a physician treating a person with AIDS would have in another city like San Francisco or New York; that I don't have access to the latest treatments, I don't have access to the

latest equipment or diagnostics; I don't have access sometimes to the same kinds of drugs that I could offer my patients.

That is compounded in lower incidence cities with health care facilities that are not terribly eager to care for people with AIDS. Finally, are we providing -- or almost finally, are we providing enough funds to research better ways to manage the disease in addition to finding a vaccine and a cure for the underlying infection? Finally, are we using the projections to assure that the public sector is assuming its responsibilities rather than continuing to rely on an already overburdened voluntary sector? These are frightening issues to confront at the current level of infection, but we must take steps to assure that the number of people infected stays constant rather than increases.

We must return the focus of our educational efforts to prevention, prevention that helps people change their behavior, that helps the 14 million Americans contracting sexually transmitted diseases each year change their behavior, that helps both heterosexuals and homosexuals and that helps IV drug users as well. So I end where I began, with an appreciation for the praise of the work of the gay community contained in your interim report and with the hope that you will use the lessons of the gay community's pain and experience to encourage the public sector to take responsibility for this crisis and to support those methods that have been proven successful in our community, most particularly in the area of prevention, prevention that relies on education and counseling, not testing and punishment, prevention that is frank, explicit, affirming and nonjudgmental. That kind of prevention saves lives.

I might add that it also has to occur in the context of nondiscrimination. People will not come forward to be tested or counseled or participate in education programs if they fear that that participation might cost them their jobs, their insurance, custody of their children or their homes. Finally and most importantly, we must not allow our discussion of numbers to make impersonal what is a very personal crisis for millions of Americans. This disease affects people, not risk groups of others different from you or me. It's not some abstract dots on a curve but human beings, members of our families. The urgency of your task, given the scope of this epidemic, cannot be overemphasized. The gay and lesbian community urges you and the nation needs you to act forcefully and courageously to bring about a speedier, compassionate response to AIDS by the federal government. Thank you.

MR. CREEDON: Thank you, Mr. Levi. Certainly that 14 million number that you mentioned is a very sobering number and one we should definitely pay attention to. You said you had asked the CDC to amend its reports to include some data?

MR. LEVI: It was not to amend their reports but to take the data they collect, and it is all on computer down there, and to do a comparison. It doesn't even have to be a national comparison.

MR. CREEDON: Not a regular report?

MR. LEVI: It could be a snapshot.

MR. CREEDON: Do you have correspondence?

MR. LEVI: I must confess it was telephone conversations so I don't have correspondence. I would be happy to write to the Commission and explain what I had in mind.

MR. CREEDON: I think that would be helpful. One of the issues that certainly concerns us is the exact issue you mentioned, and that is what is the timeframe from the time someone contracts the virus until various stages. While we had some testimony on that yesterday from CDC, I don't think we have a really good fix on it and maybe they can't give us a very good fix on it.

MR. LEVI: The only study I've seen is the New York study where they were able to show that people with different opportunistic infections lived longer, people who are IV drug users live the shortest period of time. I think that is one piece of the puzzle. What I am looking at in some respects is related to access to care, and that is a secondary issue. In fact, I'm not sure the New York study answers all those questions either. Is the IV drug user living a shorter period of time because the disease is more variant in his case or is it because that person isn't getting access to the right kind of care.

MR. CREEDON: That is exactly what we are interested in, in knowing what are the care needs going to be, given a certain incidence of the virus and so forth, and appreciating your comment that we are not just dealing with numbers, we are dealing with human beings.

DR. DELGADO: When you have the care needs, I think CDC just wants to count who is out there while the HRSA wants to have more information on the care needs. HRSA is looking at care needs and CDC is counting. You don't have the cross fertilization you need.

MR. CREEDON: Maybe we can encourage some of that cross fertilization. We would appreciate recommendations as to how, what CDC is doing can be made more effective. Any further questions of Mr. Levi or of the panel?

MS. GEBBIE: I think all of you have mentioned additional studies. We were just talking about one that Jeff Levi was asking for. I for one would appreciate in written form either the outline or the subject matter of any additional studies that each of you think would be most pertinent in understanding this epidemic, either generally or in regard to the specific groups you are most familiar with and who you represent.

What I also heard were points about attitude, concerns that groups were being inappropriately blamed or inappropriately targeted and the data might be manipulated to make certain points or to ignore certain points. Can any one of you or each one of you identify easily the thing or things that this Commission could do to start attacking that attitudinal problem, that might relieve some of the attitudinal barriers so that we could get on with the more factual discussions? Is that something you could put in a capsule for us?

DR. DELGADO: I think the major thing is focus on high risk behavior. If you would do that, talk about high risk behavior in terms of AIDS prevention, that would go a long way. That would be my comments in a capsule.

MS. GEBBIE: Instead of groups?

DR. DELGADO: Yes.

MR. LEVI: If I could pick one thing that is disturbing perhaps is the publication of CDC's surveillance statistics. There is a hierarchy of groups. It is homosexual and bisexual. It is intravenous drug user and it is heterosexual and other. I'm not sure we know necessarily which is the predominant mode of transmission and it works in such a way that if you are homosexual and an IV drug user, you are put in the homosexual category. While CDC does provide breakdowns later on in their reports of how people overlap, I'm not sure we know which is necessarily the more efficient route and what it tends to do is create some confusion as to exactly what is going on out there.

DR. CRENSHAW: Dr. Delgado, in relation to the obstacles you have been confronting, getting information out of CDC, I would like you not to feel like a minority. As a Commission member, I have run into many similar experiences. It has been six months and with relatively simple requests put in both words and in writing, I have gotten not a single response. I brought this up to Polly and Polly indicated that the Commission staff is having the same problem.

I am going to call on the Admiral, although we have put this in writing and it has been a month since those questions were submitted and there is no response, that with the urgency of this issue and the AIDS epidemic, we need somehow to draw on your

expertise in removing obstacles, to eliminate the problems in getting quick access to information, not just for Commission members, but for special interest groups that desperately need that information, as long as it is not classified and not associated with names or identifiers.

ADMIRAL WATKINS: I will bring it out of the woodwork and we will take a look at it.

MR. LEVI: You never know what is classified. The size of the fuel tank in the President's limousine is classified.

DR. CRENSHAW: That wasn't a letter to you, Admiral. That was a letter Polly submitted to CDC on behalf of the Commission.

DR. PRIMM: I wanted to ask Mr. Edwards about the funding of the National Minority AIDS Council. Do you have adequate funds to function? It comes to my attention that your office functions on very meager funds, that you have made requests that have not been honored. You are the only national organization dealing with this that represents all minorities.

MR. EDWARDS: Dr. Primm, I think you have been one of the people who have been advocates for NMAC. No, we don't have that kind of support and funding.

DR. PRIMM: What is your support at the moment?

MR. EDWARDS: Our support comes from community based organizations. In fiscal year 1988, the expectation of working with the information campaigns in the Centers for Disease Control and we have in fact submitted requests for support in the private sector as well as other sectors of HHS.

We think that the recognition of the kind of work we are doing along side Jane and the National Urban Coalition, Dorothy Height, organizations across the country, it is being recognized as key and important. We don't claim the center stage. We claim simply to try to network and bring more people together. I would be more than happy in response to your initial request to submit that kind of laundry list to the Commission. We would appreciate any support and recommendations of sources of support. I think that right now people across this country, black, Latino, Asian, Native Americans, are very much interested. You have their attention. AIDS has gotten their attention. We are all looking to see if we are going to be allowed to in fact use what we have gained and put it into some kind of action. Your support would really be very helpful. In answer to your question about what level of support we have right now, we are volunteer.

ADMIRAL WATKINS: Is there a need to find a menu of co-factors that link with the epidemiological data? You were talking about that, Mr. Edwards. I think Dr. Delgado referred to it. Isn't there a better way? As long as we are getting the information, isn't there a better way to link it to the other kinds of analogues that might give us a better handle on the broader issues, environmental impact and so forth, on these matters?

It seems to me that can be defined and it need not necessarily come from the Federal level, in the same degree it might be at the local level, which should vary by region, by city and so forth. It seems to me that here is an area of public/private relationships between community based organizations like yourselves, and local health officials, such as Dr. Joseph from New York, that could work out a regime when presenting local epidemiological data, to relate to some of those co-factors which are very significant, where you can begin to make an impact on the current ratios. It could also impact one poverty ratios, health delivery ratios, and a lot of other things.

Is it not possible, in any area you want to pick, as an example of what might be done at the same time, to begin to do the research on what is really driving those kinds of ratios that are out of line with the demographic data.

DR. DELGADO: When we did the Black and Minority Health Task Force report, and I was the Secretary's person on that Committee and served on the Steering Committee, one of the things which was important is we had all this data and we knew what was happening and what the problems were but nothing happened after that. Very little happened. An Office of Minority Health was established to try to get some funding to local community based organizations. There is a good handle on that. Although we can wait to get more information, we have enough information now to get going on things. I think that is the problem we have. Given what we know, we haven't moved as effectively. I think that is what Jeff was talking about also. There are facts we know. We do have some numbers. We have to move on. My own organization has since 1985 only $200,000 to do any AIDS work. Most of our work has been on a volunteer basis also. The funding isn't there. Yesterday I was at the Ford Foundation talking about AIDS and what they should be doing. In fact, I was hoping one of the big private, public areas of cooperation would be with the foundations. As you know, with the stock market situation, foundations have their monies in stocks. That will affect those foundations which want to have an impact on new areas, if they haven't done anything on AIDS. I think there are a lot of things going on and we are looking to the Federal Government to pick up on that.

MR. LEVI: Just as a follow-up, I think it is also important to note that this is the first time the Ford Foundation is considering getting into the AIDS issue. The traditional health foundation money that is out there has only begun to look to enter the AIDS area. Here we are six and seven years into the epidemic. I think that has a lot to do with the stigmatization that is associated with this disease and one hopes this Commission can help overcome.

DR. DELGADO: There is a report by Michael Seltzer which details everything the foundations are doing for AIDS, which might be an important piece for the Commissioners to look at.

ADMIRAL WATKINS: I was impressed by the 1985 report of HHS on black and other minority health projections. It was an inspiration to me in the whole field of American youth and health. Those reports gather dust. If you don't present data on a routine basis that does some linking, it seems to me that you waste opportunities for the visual continuing identification of those things that impact, particularly where the linkages are so direct. I am just saying isn't there an opportunity here to keep this more dynamic and exposed than the one time reports that were excellent but --

DR. DELGADO: That report was very special for two reasons. First, as a result, an office was set up. There are nine staff people there. There is legislation to get that office funded to do AIDS work. Additionally, I think they have 13 states that have started black and minority health task forces to actually implement those findings at the state level. The very design of that report was actually to implement, but it is very hard. Unfortunately, most of the key people in the Department who worked on that report are gone now.

ADMIRAL WATKINS: This is one of my problems with it. It comes and goes. We had legislation in 1979 to establish an Office of Health Education in the Department of Education. It was never funded. Now it is coming up again. What I am saying is just because it is there, it doesn't mean it doesn't need a jab and some impetus.

DR. DELGADO: It needs a jab.

ADMIRAL WATKINS: If you could make a recommendation along with the others, along those lines, it may be we will want to review where that is. It seems to me that may be a embryo of an opportunity here with the additional AIDS impetus to move that more aggressively, which is a broader issue, but very germane to what we are talking about.

DR. DELGADO: Senator Specter has a bill to that effect that all of us have been working on.

DR. PRIMM: Mr. Chairman, I want to add onto that. That office is not appreciated at all as it should be. First of all, the amount of monies allocated to take care of the health problems of minorities in this country was something like $3 million for blacks, hispanics.

ADMIRAL WATKINS: This is why I am raising this.

DR. PRIMM: It is an opportunity.

ADMIRAL WATKINS: There is an opportunity here now to move that much more aggressively. An earlier witness, Dr. Landesman, from New York, made a recommendation that there has to be greater coordination between community based organizations and the formal health care organizations. I don't want to take too much more time now because we are running behind. We would also like to hear maybe from the three of you, and maybe you can do this through the Leadership Coalition on AIDS or some other context, where you would give us what you would recommend there, specifically. Give us a template, a concept, of what you might see in a variety of regional areas, that might cut across a spectrum of needs out there, that would set up such a cooperative effort without heavy bureaucracy, that might achieve some things. This would help us at the national level as we grope with what legacy we would like to see the President leave in terms of the institutional process changes that might be necessary to keep this in the forefront of thinking. One last question. Do local health officials reach out to your community based organization to help with the database, with the epidemiology? Do you see a willingness and excitement on their part to get with you and to coordinate?

MR. EDWARDS: I would like to talk about that, Admiral. I think that is a mixed bag. We see a lot of work that needs to be done in that area. I think there frankly is a kind of institutional jealousy that we see operating, when you look at community based organizations, advocating for specific kinds of funding and having the track record to show that they are doing things that public health departments have not been able to accomplish, either because of lack of funding in their own metropolitan areas or because of lack of interest. We have seen in some metropolitan areas, more of that kind of cooperation, but across the country, in the southern part of the country and the heartland of America, we still have considerable gulfs to bridge between community based organizations.

ADMIRAL WATKINS: Would you give us some recommendations where you see the best in the country, for example, is there something going on in the State of Colorado,

anywhere, where you feel it might be a model in a variety of areas in the country where you think there is exemplary work between community based and local health officials, and even at the state level. We have seen some of that in some counties, where local leadership is so strong that it has pulled it together. The question is do you have any examples of where it is run right?

MR. EDWARDS: I would say there are a few, in places like San Francisco, which I think is still providing considerable leadership, even in its outreach and support for minority community based activities. Washington, D.C. is an outstanding example. I think we would really have to stretch, however. We see the beginnings of that kind of support in Chicago, Atlanta. I am not aware of a lot of other cities, at least speaking for the communities I am in touch with.

DR. DELGADO: For the Hispanic communities, I would say it would be very hard, as I don't want to repeat, but it is important, Hispanics have not been traditionally part of the usual health care system so they have not benefitted from that. I believe about one year ago, the black and hispanic community in Los Angeles sued the county health department for lack of services with respect to AIDS. There are some problems but we will look for some good models.

MR. LEVI: I think there is another problem and I'm not quite sure how one addresses it except I think there has to be almost a Federal mandate for this to happen. The communities where the linkage between community based groups, whether they are black, Hispanic or gay, where they are needed most, they are sometimes least likely to occur because of the political climate. There are very conservative states where a health department may consider it political suicide to be giving money to a community based organization that is in some way gay identified, yet it is the only organization in that jurisdiction that is doing the prevention work and providing the services that people with AIDS or people with risk for AIDS need.

One of the ways we have been able to work around that has been the fact that there has been Federal money given to the states to pass onto community based organizations. One of the concerns that I have is that the Administration is now considering blocking that money. In other words, the money that goes to a state for community based prevention or surveillance or a vast array of services that are provided that right now are delineated and divided, will just go as a block to the state for the state to make a decision as it wishes. My concern with that approach is that in states like California and New York where the gay community is fairly organized, where the AIDS community is fairly organized, that money will probably be divided as it ought to be divided. My fear is that in more conservative communities,

there will be a tremendous hesitancy to put the money where we will get the most bang for the buck.

MR. CREEDON: I think we should close it out. We are running about an hour late. Thank you very much. We look forward to receiving the additional information that you agreed to supply. Our next and final panel is a group of four experts on statistical and mathematical modeling. What I would like to suggest, if the Commissioners are willing, is that we ask each of the panelists to make his presentation in serial order and perhaps commenting on the comments of the prior panelists and then we will reserve our questions until all four of the panelists have made their presentations. Maybe all four could come up. Mr. Michael Cowell, who is from UNUM Life Insurance Company. Dr. Victor DeGruttola from Harvard University, Department of Biostatistics. Mr. Anthony Pascal, RAND Corporation, and Mr. Anthony Robertson, from Research Testing and Development Corporation. Our first witness will be Mr. Michael Cowell from UNUM Life Insurance Company. He is not here. We will move to our second panelist, if we may, Dr. Victor DeGruttola from Harvard University. Dr. DeGruttola?

PANEL 5 - STATISTICIANS/MATHEMATICAL MODELING
PRESENTATION BY DR. VICTOR DeGRUTTOLA
HARVARD UNIVERSITY, DEPARTMENT OF BIOSTATISTICS.

DR. DeGRUTTOLA: I'm going to speak a little bit about the uses and the limitations of mathematical modeling in trying to estimate prevalence of HIV infection in the United States. As I'm sure everyone realizes, there are a number of different ways of estimating prevalence. One is to try to estimate the number of people who are at risk from different kinds of behaviors and then take samples from those groups, estimate prevalence within those samples, and then apply it to the total size of the population.

The problem, of course, is that we don't know what the sizes of those populations at risk are, and we don't know how to sample from them. There are other approaches that make use of mathematical models to try to estimate what the prevalence of infection is, knowing something about the incidence of AIDS in the United States from surveillance data and something about the latency between the infection and the onset of AIDS.

A very simple example of this that probably most people are aware of is when people try to estimate the ratio of the prevalence of infection to incidence of AIDS for certain well-studied groups. Probably most people have heard the ratio of 30 to 1 or 50 to 1 cases of HIV infection to cases of AIDS that have been used as a sort of back-of-envelope estimate of the number of cases of infection in the United States.

What I'm going to do is just show how that idea can be made a little bit more sophisticated using some simple mathematics to try to get a better sense of what the ratio of the prevalence of infection to the incidence of AIDS is. Of course, if you knew that ratio, if you knew it was 10 to 1, for example, simply by looking at the number of cases of AIDS, you would have a good estimate of the prevalence of infection. In this modeling exercise, there are basically three different distributions that we have to worry about. The first one is the distribution of times of HIV infection or simply the curve of infection.

The second one is the distribution of times between infection and onset of disease, and we know that that time can either be very short or within a year for a very small proportion of people, or it can be quite long. There's a whole range. Finally, the third distribution we need to worry about is the distribution of times of AIDS cases, and, in fact, for people who like mathematical symbols, you can express the distribution of incidence of AIDS as what's called a convolution of the other two distributions, but I won't get into the technical details of that. I'll simply mention that it is possible mathematically to work backwards from the incidence of AIDS to the prevalence of infection, if you know something about the distribution of the latency periods.

The latency period can be estimated with reasonable accuracy from one well-studied population in San Francisco. It's a population of men who were enrolled to study hepatitis vaccine, and because bloods were stored starting in the late 1970s, there is a fairly long period of follow-up of about seven years. And from those data, people have estimated that the risk of AIDS after seven years is about 30 percent. But you can estimate the whole distribution up to seven years. Beyond that, you have to extend it using some mathematical extrapolation technique.

But although the distribution of the latency period, the time between infection and AIDS, is relatively well characterized, the distribution of times of HIV infection is not. The basic issue might be, for example, was the rate of infection of HIV fairly constant since the start of the epidemic, or did it increase at a much more rapid rate, say closer to an exponential rate, like a chain reaction. And we really can't say. But it would be very useful to know that, because if we had a better sense of how the infection grew, we could have a much better sense of what the prevalence of infection was right now.

On this graph, what I show are three different curves for the times of HIV infection. All of these curves match, when combined with information on the latency distribution, match the observed data on incidence of AIDS equally well. In other words, each of these curves is equally possible if you take a latency

distribution which was typical of the group in San Francisco and you look at incidence of AIDS. But you can see that what they would tell you about the current estimate of infection is radically different. If you believed that the rate of HIV infection increased very rapidly over the past seven years, something close to an exponential increase early on, like a chain- reaction type of increase, you would get a prevalence that was very high, over two million.

If on the other hand you believed that the rate of HIV infection grew at a fairly constant rate -- in other words, there was a fairly constant rate of people getting infected each year -- you would expect to see a much lower prevalence of infection. Basically if you look at these three different curves, one of them has a linear rate, a constant rate of growth of infection. One is close to the exponential early on; it shoots up rapidly. And the third one is sort of in between. You can see that you can estimate, depending on which curve you believed, you could estimate anything from about 400,000 to over two million people currently infected.

So if you also were interested in the ratio of the prevalence of HIV infection to the incidence of AIDS -- in other words, you wanted to have some ratio to multiply times the incidence of AIDS to estimate prevalence of infection -- that ratio, depending upon which of these three curves you believed, could be anything from 12 to 1 to about 70 to 1. What that means is that you can't expect simply to have someone come up with a ratio that is useful for all groups and for all different points in time, but if you think you know something about the dynamics by which the infection was spread, you might be able to do fairly well.

Simply by looking at incidence of AIDS and the latency period, we can't reject any of these three curves. But we do have other information that might tend to indicate that this curve of very rapid increase, particularly in the last couple years, is not valid. And the reason is, if you look at cohorts of men who are at risk through homosexual behavior, the rates of infection, instead of this dramatic increase from '84 to 1987, appear to have declined. Of course, the problem with interpreting those data is they only apply to cohorts that have been enrolled in studies and presumably are well-motivated to participate in the study, and they may not be typical of all men who are at risk for homosexual activity. The other major problem, of course, is that we know very little about young people, about adolescents. We don't know anything about incidence of AIDS from that group, because in general it takes a long time before they develop AIDS, and so we wouldn't expect to see it until they were in their mid to late twenties, or not to see very much of it. And the other thing is that adolescents are not enrolled in cohort studies.

There is some information from Army recruit data suggesting that adolescents in the late teen years are getting infected at rates that are increasing over time, not increasing as rapidly as this exponential increase, but nonetheless at a fairly high rate. So the bottom line is what can -- how can we use additional information to try and get a better estimate of prevalence besides just saying that somewhere -- probably somewhere between a half million and two million. One thing you can do is look at a well-studied population like the gay community in San Francisco. The number of cases of AIDS in San Francisco is about 4100 -- it's a little over four thousand -- I should say cases reported to the CDC [sic].

We can get some evidence -- some estimate of what the prevalence of infection is in the city of San Francisco for two reasons. One is demographic studies have been done to estimate what is the size of the population of men who have homosexual behavior, and that estimate was about 60,000. Of course, it's going to be a rough estimate, but you know it's definitely below 100,000 and certainly more than 20 or 30,000. So roughly 60,000.

There's also a population-based study, survey, of infection in San Francisco that indicated that about half of men who reported having homosexual contact were infected. So that you have a fairly good estimate of the prevalence of infection in San Francisco as 30,000, and the number of cases of AIDS is about 4000. That leads you to a ratio of prevalence of infection to incidence of AIDS at 7.5, which is lower than anything we saw on the curve before. The reason for that is that the epidemic is much more, in a sense, mature in San Francisco. It started earlier. It appears to have started there earlier than anywhere in the United States, but New York City, and because the infection started earlier on, the ratio is lower. The ratio of prevalence of infection to incidence of AIDS decreases over time, because the risk of AIDS increases.

Now even though San Francisco is not going to be typical of all cities in the United States -- in fact, it's quite different -- still it tends to indicate that unless the epidemic process were radically different in other cities of the United States, you would not expect to see a ratio that was ten times greater in other cities. Ratios of 70 to 1, the kinds of ratios we would have to see in order to get a prevalence of HIV infection over two million, rates of 70 to 1 just don't seem to be very plausible. So what can we say? Well, the prevalence of HIV infection from homosexual contact in the United States is, I think, likely to be less than a ratio of 20 prevalence to incidence times the number of cases of AIDS from homosexual contact are probably less than a half million. Now although the other slides had some technical justification, this is more subjective. It's impossible to estimate precisely that ratio,

unless you knew a lot more about the dynamics of the epidemic than we do at this time and a lot more about how different cities vary. But since we do know that it's unlikely that the rate of growth of infection was exponential in the past three years, exponentially increasing - - if anything, it seems to be decreasing -- and since we know that ratio in San Francisco is probably about 7.5, 20 seems to me to be a reasonable upper bound for what the ratio could be, and that leads to an estimate of HIV infection from homosexual contact of less than a half million.

I should point out, another caveat is that since we know very little about what is happening with young people, the men who are enrolled in these studies that show decreasing rates of infection are usually older, they're not adolescents, we can't say anything with any precision, and that's why I emphasize this is a guess; it's not a formal estimate.

Now what about the remainder of the epidemic? Homosexual contact appears to account for about two-thirds of the cases of AIDS in the United States roughly. If we thought that the ratio of people infected to cases of AIDS was the same for people infected through homosexual contact as for other kinds of contact, then we would be done. We would say, well, just add a half to this, and it would be about three-quarters of a million.

The problem is that those other epidemics may be very different. The remainder of the epidemic partly refers to people infected through transfusion or through contaminated blood factor, and those rates have dropped off sharply since 1985. On the other hand, it's not clear what's going on with IV drug users, if the rates are still continuing to increase rapidly. We also don't know much about the heterosexual epidemic. The spread which appears mostly now to be from IV drug users to heterosexuals, mostly women, has not been well characterized, and we really -- it would be very difficult for us to estimate what a ratio of prevalence of infection to incidence of AIDS is for women infected through heterosexual contact.

But still they probably constitute even now a relatively small proportion, let's say less than 10 percent of all the people infected. So that I would guess once again that the ratio of prevalence of infection to incidence of AIDS for the remainder of the epidemic is probably less than 40. That would lead me to guess that prevalence of infection due to causes other than homosexual contact is also probably less than half a million. So my guess would be that the total prevalence is less than a million in the United States. It could be considerably less than that, depending on what behaviors have been for IV drug users and their heterosexual partners in the past three years, or it could be more than that if there has been a lot of spread that we have not had an opportunity to see yet among young IV drug users and their heterosexual contacts. And that's one reason

that I think it would be very appropriate to try to start doing studies to estimate what are the rates of infection for adolescents and young adults in urban areas.

Finally, if we want to get some idea of where the epidemic -- first of all, what is the prevalence right now of infection due to heterosexual contact, one of the largest unknowns, and what can we expect from the future, I did a very simple modeling exercise, mostly for the purpose of finding out what would we need to know before we could say anything definitive about the heterosexual epidemic. There are too many unknowns right now. And for this exercise I just chose numbers pretty much out of my head, chose numbers that there were about 10 million heterosexually active individuals in major cities who had at least some possibility of contacts, either direct or indirect, with IV drug users and about 250,000 IV drug users in major cities. So I had 10 million heterosexuals and 250,000 IV drug users mixing pretty much randomly in urban areas.

This is much too simple to describe a population as complex as the United States. The reason I did this, I emphasize again, is just to get a sense of what we would need to know before we could say anything definitive about the heterosexual epidemic. Features that I included in the model were differences in efficiency of transmission male-to-female and female-to-male, allowed for the fact that the latency between infection and AIDS, you have to consider a whole distribution, not a fixed time, that there's a high proportion of heterosexuals infected by people with other risk factors, and also that there may be delays in infectivity. People may not become infectious right away. And what I showed even from this very simple model was that it would be impossible to say whether or not a self-sustaining heterosexual epidemic could occur in the United States as of now. You simply can't give a definitive answer, yes and no, even if you did pin down the sizes of the populations, which of course we don't have, and the way that they mixed.

A typical kind of outcome of these models -- and I should say that there's a huge range of possibilities that are all consistent with the available data, so I just selected this as simply being representative -- it allows -- what these models allow you to do is, within this exercise, to plot what the prevalence of infection would be for IV drug users and for individuals infected through heterosexual contact. The solid line in this top curve is for IV drug users, the dotted line for heterosexuals, and the top curve here refers to men. What this particular modeling exercised showed -- and I think it would be typical of any model that you would fit right now -- is that for men in the United States right now, there is a much higher prevalence resulting from IV drug use than from heterosexual contact. Even if you think that heterosexual contact was efficient enough, so that the epidemic could be propagated, the

proportion of men infected through heterosexual contact might be quite trivial. But for women, that's not true. The bottom curve here refers to women, the solid line once again IV drug users, the dotted line heterosexual women who don't use IV drugs. At this point in time, according to this model, you would get roughly equal numbers of women infected through IV drug use and heterosexual contact, even though your incidence of AIDS is greater for women infected through IV drug use, the heterosexual epidemic having occurred more recently. But as time goes on, there is the potential for considerably more spread.

And I would emphasize once again that this is just a modeling exercise designed to give some sense of what are plausible ranges for what could happen in the future and to give us a stronger sense of what we need to know before we can say anything more definitive. And one thing that grew out of that exercise was to show that we need much more precise information about infectivity, particularly a delay between infection and infectivity.

We know that there have been many people infected through IV drug use, even going back to the 1980s, and we've seen relatively few cases of AIDS attributed to heterosexual contact. There are about 500 among American-born heterosexuals who are believed to be infected through heterosexual contact, maybe a bit higher right now. But the big question is, is the reason for that that heterosexual contact is relatively inefficient, or is it because there's a long delay between the time at which an IV drug users gets infected and the time in which he or she becomes infectious through sexual contact? And before we know much more about that, there's no possibility of saying anything definitive about the potential for heterosexual spread.

Had we a better sense of heterosexual spread right now, I think we could pin down our prevalence figures much better, because we would be able to say that we didn't believe that heterosexual spread was going to be contributing a great deal to the epidemic, either now or in the future, we could be much more precise about the rest of the epidemic. With that as uncertain as it is right now, it makes it much more difficult to estimate prevalence. Thank you.

MR. CREEDON: Thank you very much, Dr. DeGruttola. I understand that Mr. Cowell is here now.

[Pause.]

Welcome, Mr. Cowell. You are free to proceed whenever you are ready.

PRESENTATION BY MR. MICHAEL J. COWELL

MR. COWELL: I apologize for getting here late. I was wandering around this building for about 15 minutes, looking for an entrance, and then they sent me over to the other side of C Street, and I wandered around over there for about ten minutes.

MR. CREEDON: The actuaries from Metropolitan had the same problem.

MR. COWELL: The problem is we follow directions.

[Laughter.]

MR. COWELL: When you're spending your whole year figuring out numbers in this epidemic, it's a wonder you even can see straight, let alone find Washington, D.C. Mr. Chairman, as you know I'm Michael Cowell. I'm Vice President and Corporate Actuary of UNUM Life Insurance Company in Portland, Maine. I'm on the AIDS Task Forces of both the Society of Actuaries and the American Council of Life Insurance, and I'm the co-author of the report that you have before you or will have once they get distributed, AIDS, HIV Mortality and Life Insurance. This is a report that I co-authored with Walter Hoskins at the request of the Society of Actuaries and the insurance industry to get an estimate of the impact of the epidemic for the insurance industry in general. In order to do this, of course, we had to study the impact of the spread in the general population, and we followed some of the same methodologies that I'm sure you've been hearing about over the last couple of days. I won't go into all of the basics about the nature of the epidemic because I'm sure you've heard those several times over.

From an insurance company perspective -- and this may be not directly related to what you are concerned about this afternoon but it points to the reason that we had to study this in the detail that we did -- studying the mortality of any new underwriting class when you are dealing with impairments, and we viewed HIV infection as another kind of impairment, the normal process, as you know, is to underwrite enough cases to follow your claims experience and to see how it compares to your standard mortality or morbidity. However, it is unlikely that any life or health insurance underwriter would accept insurance applicants with the HIV virus level on full clinical AIDS, so the insurance industry realizes that it's not likely to have or even to want to have the opportunity to study this disease in its classical mode.

Life insurance companies are seeing death claims on business that's been underwritten for many years, long before any of us even knew about AIDS, on people who suspected they had the virus and others who probably knew nothing about it. As you

know, we know something about the disease in the general population; obviously, not as much as we'd like, but we certainly know a lot about the deaths, and we know something about the number of AIDS cases and far too little, as the previous speaker was obviously indicating, about the population that was infected.

Mr. Hoskins and I more or less backed into this problem. We do recognize here that the disease that we are addressing, the title of our report notwithstanding, is really HIV infection. AIDS is simply the penultimate stage. Of course, once the disease has progressed to full clinical AIDS, life expectancy is similar to that of terminal or cancer patients.

The first slide here shows the survival of a cohort of patients from the time the disease is diagnosed as full clinical AIDS. This is based on the over 45,000 AIDS cases reported to CDC by mid-November. I understand that number is now close to 46,000, of which almost 26,000 have died. What I've shown on here on the red line is the actual CDC data by six months survival cohort, and the green line is our mortality model, which is based on 45 percent mortality for the first two years, 35 percent in the third year, and 25 percent annually thereafter.

From onset of diagnosis as full clinical AIDS, this produces a complete life expectancy of about 26 months. Fewer than 10 percent of full clinical AIDS patients survive five years, and at the time we collected our data there were no reports of any survivors beyond nine years. So much, then, for the end stage of the disease. We then step back to what I call the middle stage of our report, which is a study of the progress of the infection from initial seroconversion through the various stages to full clinical AIDS.

We relied on two reports, both of which I'm sure you are very familiar with. The report about a year ago from the Center for Internal Medicine of the University of Frankfurt in West Germany analyzed the progression of this disease through its more serious stages to AIDS and death, and it provided a particularly valuable link that had been previously missing from the literature. The Frankfurt study used the Walter Reed staging method that was developed right here in Washington, D.C. at the Walter Reed Army Institute showing the progression from initial otherwise apparently healthy seropositivity through each of the four subsequent stages to AIDS and then death.

The heart of our study that Walter Hoskins and I developed, really, I guess what set it off from most of the other studies that have been done in the insurance industry was we constructed a simple Markov chain model which combined the results of the progression from the Frankfurt study with the mortality just discussed from the CDC data. We developed a model that simulates the progression of the newly-infected HIV

cohort through successive stages to AIDS and death. This is a visualization of that model. The initial cohort shown at sero years in turquoise or aqua is a group of 100 or 100 percent of the cohort that's HIV positive, otherwise asymptomatic, and it shows how that population would progress through seven and a half years based largely on San Francisco City Clinic and West German data, and then we projected that 15 years. We actually went all the way to 25 years, but I don't place too much credence on the numbers beyond 10 to 12 years, maybe 15 years. I'll get back in a moment on the reliability of these data.

The implications, the life insurance which, of course, was the principal purpose of our study, was extra mortality from AIDS produces a life expectancy of about 11 years for a 35 year old HIV infected cohort of males. We compared this to, or perhaps I should more properly say contrasted this with, the 43 year life expectancy for a healthy male the same age.

We concluded that infection with the virus had the mortality equivalent of moving somebody 40 years along the mortality scale, and in terms that you, Mr. Chairman, would understand from your life insurance background, you'd have to increase standard mortality more than 5,000 percent to produce the same reduction in life expectancy. I don't like to describe AIDS mortality in standard experience because, as I will subsequently demonstrate, the mortality patterns bear no resemblance to those in which most companies write insurance business.

Now, we didn't rely solely on the West German study. There were two supporting studies, one by the National Cancer Institute, again right here in D.C., developed by Dr. Goedert, and I believe Dr. Goedert has addressed many of these conferences. This showed a three-year incidence of AIDS in four populations in the United States and one in Denmark of about 725 people.

The third study, of course, is the famous CDC San Francisco City Clinic study conducted by Dr. Volberding and going back all the way to 1978 on the 6,700 male homosexual cohorts from that volunteer group. It was from that that we developed estimates of the progression from initial HIV infection otherwise asymptomatic through the various stages to full clinical AIDS. I have shown here, New York City is in the dark red, the CDC in orange, the Danish yellow, the D.C. study is -- I guess the D.C. and New York City colors are sort of comparable. The New York City one is the first line that goes up to a little over 30 percent in three years. That was the Manhattan homosexual group.

Now, the Frankfurt study, so labeled, is the model that we developed from the Frankfurt data by chaining together successive periods of three-year progression rates. The

progression patterns admittedly are not identical. They were based on different clinical approaches, nonuniformity, a diversity of subjects on two different continents, three different countries. However, we felt the results were fairly consistent. When we moved the axes over a little bit to allow maybe for some delays in reporting, I think we're able to demonstrate that the progression rates were remarkably similar. The latest data, of course, from the San Francisco City Clinic is that approximately 45 percent of the initial cohort that has been under study nine years and has now progressed to full clinical AIDS.

This progression from HIV infection produces estimates of survival that were certainly reliable for insurance purposes. They predict the patent mortality of a cohort of HIV infected subjects with reasonable certainty. This information is helpful for insurance companies for determining the financial consequences of not screening out a group of HIV infecteds when they apply for insurance.

We readily concluded that anybody that was HIV infected, that tested HIV positive with two ELISAs and a Western blot, which we believe is 99.99, almost .999, percent certain of infection was simply not acceptable as individually insurable risks. So much, then, for the middle stage, the progression.

The next quest, of course, was to determine the extent of the disease in the general and insured populations which causes the principal purpose of your Commission's investigation. I included this slide. It's simply to show the difficulty of the problem with only 26,000 deaths and about 18,000 alive with AIDS. We are seeing, I describe this as, not even the tip of the iceberg. It's barely the tip of the tip. An unknown number with ARC, an even less well-defined group with lymphadenopathy syndrome and on down the earliest stages and a big question mark. I use the Coolfont estimate of 1 million to 1.5 million because I believe it's reasonable, but I'm going to get into more detail in describing how we analyze that number a little bit further. We don't know the extent of the infection in the existing population and even less about that in the insured population. Again, we're trying to measure this iceberg by citing just that small tip that's peering above the water. The San Francisco City Clinic studies are the only published data that we have that show trends in the specific population over most of the period since HIV entered the population. So what Mr. Hoskins did at this point was sort of run a model in reverse. In other words, we said, given the CDC's number of reported AIDs cases and deaths, and assuming the progression along the curves described earlier, what would the number of new infections in each of 1986, '85, '84, '83 and going on back to the mid-'70s have had to have been in order to support this number of AIDS cases and emerging deaths.

We were closely able to replicate the AIDS cases and deaths if we assumed that HIV entered the male homosexual and IV drug abusing populations about 1975. It could have been '76, '77 or '78. It really didn't matter an awful lot which year we chose, but sometime in the mid- to late '70s, and that it progressed along your classical logistic curve.

You probably are familiar with the latest report from this department, the Centers for Disease Control in Atlanta, the November 30 report. They describe three kinds of curve. They describe the exponential, the logistic and the log logistic, and then they have various adjustments of those. We chose the simple logistic curve. We did suppress it slightly, and that is the reason that you will see the green model.

Now, the effect of suppressing it slightly gives you a higher earlier but a lower later spread of the model. It was this -- for any of the mathematically minded, I'll be glad to give them the parameters of this curve. By assuming that the disease had progressed along this curve so that by early 1987 it had infected on the average approximately 27 percent of the high risk groups, we recognize that it was much, much higher in the most promiscuous male homosexual and probably very much lower in some of the other groups, but on the average about 27 percent.

That the progression from HIV infection to full clinical AIDS followed the CDC San Francisco study and the mortality of AIDS patients follows the rate calculated from the CDC data, we developed a single model but a number of runs of that model. If you will open your report to the centerfold in the appendix, you will see the numbers that we came up with which we believe to be a reasonable representation. The numbers show total HIV infection somewhere toward the end of '86 of about 670,000 and towards the end of '87 of about 920,000.

Now, you will also note in our report that we included only the highest risk groups. We did not include hemophiliacs. We did not include heterosexual IV drug abusing females, and we did not include heterosexual males. The reasons that we didn't were not that we didn't think there were some in these groups that were infected but, rather, the hemophiliacs we would not have included for insurance purposes most likely anyway.

We didn't think there was any likelihood that we had any significant cohort of IV drug abusing prostitutes in our insured population. We simply didn't know the numbers of the heterosexuals. But we were seeing significant numbers of deaths in the insured population, specifically in 1986 in which there were 8,140 reported AIDS deaths, AIDS deaths reported to the CDC as of mid-year. That number has gone up slightly since then because of reclassification, but essentially just over 8,000. Of that, approximately 3,000, slightly less than 3,000 for

individual policies and slightly more than 3,000 for group policies were covered by life insurance. Now there are also odd data on the number that were covered by disability and health insurance, but the numbers there are much more difficult to classify because of the disease. Once an AIDS victim is reported as dead, there is very little question about the classification, whereas during the progress of disease for disability and health insurance, the classification isn't nearly so precise, so that numbers are more difficult to measure.

Nevertheless, it was quite clear that the insurance industry had paid out approximately 1 percent of its life insurance claims in 1986 to people who were reported to have died from AIDS. That did not include any who had died from other causes, other infections, other opportunistic infections related to HIV. We believe in the future that those numbers will also be available and that we will get a better estimate of the total financial impact of HIV as opposed to just AIDS. The next chart shows the total AIDS cases in our model in the CDC with the projection from the Coolfont study. As you see, we are essentially tracking the CDC numbers through 1991. This shows the total AIDS deaths from our model and the various low, mid and high numbers in the Coolfont study and the further projection.

We went way out on a limb to the year 2000 in order to be able to estimate the impact on the life insurance industry for the end of the century. Of course, again, I would have to say that we are using epidemiological models that are sort of based on classic epidemics, and what we're looking at here is an epidemic that is certainly far from classical, with its long latency period, and hence we have to be very careful in assuming that any of our numbers are that reliable. However, because we're all more or less coming in at the same order of magnitude, I conclude that either we were all right or we were all very wrong.

I tend to think that we're all fairly close to the number, but I said in the report that the number of HIV infecteds is about 1 million as of mid-year this year, and I find some difficulty in getting that number much below -- the low is three-quarters of a million or much above about a million and a quarter. But I would not be willing to stake my actuarial credentials on giving it any greater precision than saying it's in the order of magnitude of 10 to the 6th power.

ADMIRAL WATKINS: Mr. Cowell, do you have any feeling for any of your curves about its sensitivity to the latency data?

MR. COWELL: Yes.

ADMIRAL WATKINS: Because we just went from 4.5 to 8 years nominally. The question is suppose we go to 12? Then how

significant is the fluctuation against those kinds of latency steps? Have you got any curves that show you the kind of flexibility you have?

MR. COWELL: Yes. I don't have them with me here, sir, but we have modeled -- we have run our models at different sensitivity at different levels. You will find, for example, if you have -- do you have a copy of the report in front of you?

ADMIRAL WATKINS: Yes, I do.

MR. COWELL: If you will turn, for example, to page -- the first part of the report. The report is in two parts. If you will turn to the first part of the report to chart 4, which is on page 14, you will see the progression. Do you have chart 4, sir?

ADMIRAL WATKINS: Yes.

MR. COWELL: You will see the progression under the five assumptions I describe plus also mathematical formulation referred to as Weibull, which is, for the epidemiologist, a very simply log logistic progression which tends to have a somewhat slower progression earlier and a higher progression later.

We believe that this reasonably reproduces what I call the envelope or the family of curves of progression. What we did which may make sense only to somebody in an insurance environment, and I'm sure Mr. Creedon will understand this, we translated this into the dollar impact on the life insurance industry. That is, if the faster progression shown here by Frankfurt were to be used, it would mean that in insuring an individual for $1,000, the present value of extra AIDS claims would be about $545. If we used the slowest curve, listed here as Weibull, the present value of additional claims discounted at 6 percent would be $479. In other words, the financial impact projected out into futurity or through the end of the normal mortality of any of these cohorts was relatively insensitive to fairly significant shifts in the progression.

Now, our progression assumes a mean progression from infection to AIDS of nine years, with a standard deviation of 3.5. That seems reasonably consistent with the San Francisco City Clinic data of 45 percent progressing to full clinical AIDS after nine years. It suggests that 50 percent after 10 years might not be an unreasonable estimate.

ADMIRAL WATKINS: Does that also take into account the fact that the latency period is extended even further, that you have a pool of infected individuals that have more potential to infect others during that same period of time?

MR. COWELL: That is correct, sir, and that is something that we explicitly recognized. We did not explicitly model for insurance purposes in this report. Recognize that this was simply the first report. The work of the Society of Actuaries and the ACLI task forces that I mentioned earlier are ongoing. By late March/early April or late April of 1988, we will have carried our modeling one step -- well, several steps further to include better estimates of the progression within subgroups of the population, and we hope by then to be able to get a better measure on the impact on the industry not only on life insurance but some of the other lines of business, taking into account this phenomenon that you're describing. That is, with the slower latency period, longer latency period, you will have a larger pool to infect.

Now, the only qualification I'll make to the point that I only implicitly recognize this is maybe if I show you the next slide, the following slide which shows our estimates of the numbers of infected, this is what I come up with. By the way, you see this is just U.S. males because we totally ignored the number of females because it is, we believe, to be so small, probably fewer than 100,000, and we concentrated on age groups 20 to 59 which, of course, is where the primary insurance impact is. Here is our million, and I intentionally had that come out at one million even, mostly because I didn't want to have any numbers beyond the first digit take on an aura of precision that I don't believe they really deserve. So I guess I somewhat reluctantly broke it down into groups of homosexuals and bisexuals a little over three- quarters of a million, and IV drug abusers just under a quarter of a million, both of which numbers I've heard even after getting into the room late here this afternoon.

My estimate is that there are fewer than 100,000 females infected. The point of all this by way of saying that even though we were -- even if we were to assume a longer latency period and my mean of nine/standard deviation of 3.5 would suggest that two-thirds of the time -- it will maybe be as long as 12.5 years, so it will be between 8.5 and 12.5 years -- even within that range, since the disease is presently believed to be concentrated primarily among high risk groups of male homosexuals and male bisexuals and male IV drug abusers, I would not expect -- and I'm going to be interested to see what our models show, but I would not expect that even modest variations from that latency period would have a significant effect in the early years.

I say this because evidence that we are picking up in our task forces, from listening to epidemiologists and medical specialists, that the diseases spread is still largely confined to these groups and that the principal spread into the heterosexual community is most likely to be the single channel of heterosexual males visiting IV drug abusing female prostitutes,

that that is still a fairly narrow channel and that even substantial variations in the latency period probably for the next several years won't significantly affect those numbers, probably won't make significant -- at least significant from our standpoint in the insurance industry -- impact until probably into the early part of the 21st century.

I did not attempt to model this beyond the year 2000. I thought I had sort of gone out on a limb going out 13 years, but I feel reasonably comfortable with my estimates. Sorry if that was a long explanation, but that sort of gives you an idea of our thinking. That pretty much concludes my prepared remarks. The rest of the numbers are largely for insurance consumption only, and I'll be glad to answer them, but we did conclude from all of this that the epidemic will likely have about a $30 billion impact on the insurance industry through the end of the century. It will be larger or smaller, depending upon the estimates that we have made.

Assuming that the number of HIV infecteds does peak out at somewhere in the 2 million range by the late 1990s and doesn't go any further and that there is no significant spread into the heterosexual population, I concluded in our report, and I realize this is not maybe of direct interest to this Commission, but the impact on the insurance industry is probably of interest to Mr. Creedon, would be serious but still probably manageable, provided, of course, we have the option of testing people for the virus.

MR. CREEDON: That's the life insurance industry.

MR. COWELL: That's the life insurance industry.

MR. CREEDON: That does not include the health insurance.

MR. COWELL: That's correct, sir. It does not include the impact of health insurance. Preliminary evidence is that health insurance claims, both medical and disability income, are probably running about seven to eight-tenths of one percent of total claims. Of course, if that number, one percent for life insurance and, say, seven to eight-tenths of a percent for health insurance, are true in 1986, were true in 1986 when the overall mortality from AIDS in the United States was 8,000, then we think it not unlikely that those numbers will increase approximately by an order of magnitude to maybe 7 and 8 percent for health insurance and maybe 10 percent or slightly higher for life insurance by the mid to late 1990s, at which time we project -- we concur in the CDC projections that the total deaths will probably be running somewhere in the 50,000, 60,000, 70,000 range per year.

So we see approximately a ten-fold increase or an increase in the order of one magnitude in the impact on the insurance industry before the end of the century, assuming, of course, no major breakout into the heterosexual population.

MR. CREEDON: While you were wandering around the building, Mr. Cowell, I mentioned to the other participants that we would like to hear from each of them and then we would ask questions of the whole panel. So I would like now to ask Mr. Pascal to speak. Thank you very much.

MR. COWELL: Thank you.

PRESENTATION BY MR. ANTHONY PASCAL

MR. PASCAL: Thank you very much for inviting me here. I'm going to have to leave at 4:00 for a plane back to the West Coast, and so I hope I'll be around for questions, if there are any, but I can't promise to be. I'm the author of a report that we did at RAND for the Health Care Financing Administration on the cost of AIDS to the Medicaid system. I suspect the reason I was asked to come here and testify today is because of the case load estimates I had to make for that report, although the report concentrated strictly on the economics of the epidemic and not the epidemiology. I am not an epidemiologist or a public health expert. I'm an economist. Neither am I a model builder.

MR. CREEDON: We won't hold that against you.

MR. PASCAL: There is an epidemiological modeling effort going on at RAND under David Kanouse and Scott Cardell, and they were coming up with estimates which I can't quote. The report will be published early next year. But they look considerably larger than the CDC numbers. Since I had to have a case load estimate and couldn't use the RAND numbers, I started looking into the underlying construction of the CDC numbers. As you all know by now, they're based on incidence curves only; that is, it's kind of a top down approach based on what we see in terms of AIDS incidence.

We know that those are highly sensitive to reporting biases; to changes in reporting biases over time; to delays in reports, which are getting worse instead of better. Although these might be good numbers for the short run, HCFA was interested in a five-year projection into the mid-'90s, so I needed to find an alternative to make a bound. I took the CDC numbers as my low side estimates but was interested in bounding on the high side. I did something very simple, which was to take the CDC prevalence number of 1.5 million and the IOM estimate at that time -- now remember, this is the high side, the worse case -- of 50 percent conversion to full-blown AIDS over a five-year period and came up with a 750,000 cumulative at that point.

That seemed quite high, and so I finally settled on an intermediate number to do my main line estimates. It turns out that the 400,000 figure I used of AIDS cases by the early '90s is not so much different than you'd get if you added the 20 percent underreporting factor to the CDC numbers and then added a 30 percent factor again for the new AIDS definition which, as you know, includes wasting and dementia to the original definition.

I have a handout here by Kanouse and Company which explains the reasons that they are doing this dynamic modeling which takes into account the transmission modes, behaviors and the natural history of the virus and alternative combinations of assumptions about those items. We know clearly, of course, that behaviors are changing in the various risk group communities. We know that we're finding out much more about the natural history of the virus, particularly the latency period that was brought up. As Dr. DeGruttola said, we have to also take into account the relationship between infection and the degree of infectiousness. So all of these are built into the RAND study. I think it's going to be out for peer review probably to some of these people at this table within a few weeks, and then they expect to submit it to a journal early in January. I think the turnaround will be quite fast.

MR. CREEDON: Can that be submitted -- do you think it could be submitted to us at the time it's submitted for peer review?

MR. PASCAL: I will check. I couldn't answer for them, but I will check on that. In the meantime, I wanted to mention about the CDC numbers. I have just come from a two-day meeting sponsored by the Council of Professional Associations on Federal Statistics in which CDC people were grilled very extensively by public health and epidemiological people, health economists and the whole community about the numbers they produce. There tended to be a high level of dissatisfaction expressed, particularly with the disaggregations that CDC feels they are able to provide. I'm talking particularly here about geographic disaggregations, although as people at the earlier session mentioned, the ethnic and racial breakdowns are also a problem.

CDC's position is that they can only be as informative as the least responsive state from whom they collect the data wants them to be. I think that's a very, very conservative position on their part, and I'm wondering why and whether they really need to stick with such a position, why we can't get numbers from them, for example, even if we're not going to be told how many cases there are in Greenville, South Carolina, why we can't be told how many cases there are in SMSAs between 100,000 and 200,000 in the South Atlantic region.

The CDC position now is not to provide data at even that level. Clearly, they're following their public responsibility; that is, in terms of disclosure and confidentiality and not putting people at risk of being identified. But to take the standard of the most restrictive of the states rather than trying to convince the states to be less restrictive on the one hand or to publish what they can for other states seems to me something that needs to be looked at quite carefully.

There are other problems, I think, in coordinating CDC data presentations with presentations of other federal agencies whose data we have to combine with the CDC. They classify cities into different regions of the country than the Census Bureau does. For example, there are other situations of a similar kind that make difficult the use of data by people studying the AIDS epidemic either in terms of projecting seroprevalence or projecting case loads or trying to estimate costs.

Finally, I might say that from what I heard in the past two days at the COPAFS conference that there are cases, it seems to me fairly clearly, where a state limits the access to data not so much because they are afraid of disclosure or of identifying persons with AIDS but because they're afraid of the effect on the tourist industry or they're afraid of the effect on the real estate market in particular communities. I think that needs to be looked into very carefully as well. I'll stop there. Thank you.

MR. CREEDON: Mr. Robertson.

PRESENTATION BY MR. ANTHONY ROBERTSON

MR. ROBERTSON: Mr. Chairman, thank you for inviting me. I'll be very brief. I'd like to say, first of all, that I think I agree with everyone else sitting at this table, that essentially modeling efforts all lead to equally plausible results, and we have a great lack of data. My main thrust is to ask you to recommend that we collect data in a more expeditious and efficient way. However, the data we do have can tell us something, and I'd like to go through a few aspects of that. This, of course, is a very strange disease. I think in any other situation, it would be axiomatic if we were going to try to control the spread of a disease that we need who is infected, who isn't, and can inform them and try to hold the spread of infection in that way. But not only do we need that kind of information for slowing the epidemic, we also need it to know -- to be able to plan for the insurance industry, for the health care industry and so on, and we need to know how effective our actual interventions have been. From all these aspects of the epidemic, we are woefully lacking in data. We really have no normative data now that will allow us to say what effect, let's

say, behavioral changes, education and so on will have in the future. Now, as many people must have emphasized to you, we are largely dependent at the moment on the reporting of the terminal -- the preterminal stage of a new disease. That's very dangerous. HIV infection is what we should be concentrating on, and I think the history from other countries, particularly central Africa, tells us how dangerous it is to count things by the last stages of a disease, particularly a new disease.

Another danger which is purely theoretical at the moment but for which we have some evidence is that this is a very rapidly evolving virus. Now, this doesn't mean that it's going to find new modes of transmission, for example, but it does mean that it will vary in infectiousness and virulence. Now, these variations may not be important, but we know from the molecular virulty of this virus and its near relatives that they're occurring rapidly. Again, this means that we need much better data right now so that we can compare the virus as it is now, its infectious and virulence and latency, with the virus that it becomes, because this is the first stage in a new epidemic in the human species, we think.

It's typical of new viral diseases that they evolve very rapidly in the new host and that one really can't depict the intermediate and long-term parts of such an epidemic. We've seen this before, perhaps not in people but in animal diseases that are spread from species to species. So this is something to bear in mind, and it emphasizes the importance of keeping really good data now. What do the current data show? I think they show that, except for the earliest infected populations, which are the male homosexuals in San Francisco, drug addicts in New York, that the rate of growth of new cases is still exponential. This probably reflects an exponential growth in infection five to ten years ago. Of course, in some populations that have been well studied, the infection saturated a few years ago. This hasn't happened in the largest part of the population. Prevalences are very low, and we really again have no data on which to base projections. It's dangerous to --

MR. CREEDON: The exponential growth is in what area specifically?

MR. ROBERTSON: At the beginning of an epidemic, typically one sees exponential growth and then a saturation, and that's certainly happened. That saturation has occurred in some populations. But in the general population, we're at a very early stage, and we lack information about growth of this epidemic at early stages.

MR. CREEDON: Are you saying that you have seen data that suggests that there is now an exponential growth in other than the homosexual and IV drug users' communities?

MR. ROBERTSON: No. I'm saying we don't have the data, but I'm saying that we do see -- well, let's take the heterosexual risk group as an example. This is the CDC heterosexual contact group. This is a very narrowly defined group. It doesn't include people born overseas, for example, which distort the pace of the epidemic. If we look at that group, its growth rate, its doubling time is approximately nine months at the moment, but it's at a very early stage in the epidemic. If we plot out the cumulative incidence for that risk group in terms of AIDS cases diagnosed, I think it's now 1,050. Two years ago it was about 250. If we look at the curve and slide it along the time axis until it lines up with the homosexual curve, it's about 4.5 years later. What I'm really trying to emphasize is that we're very early in that epidemic, and it's very dangerous to make assumptions about the prevalence of infection from the current prevalence of AIDS cases because the growth rate of those curves is essentially the same for all the populations we're looking at.

The time is the biggest co-factor when we compare these populations, so we mustn't confuse infectiousness or transmissibility with current prevalence of AIDS cases. I'm sure you've heard this before. We do have some limited data on new infections and, again, it's very dangerous to jump to conclusions from them. As I'm sure you know, the Army data can be used to argue that the disease has essentially stopped but, in fact, they don't show that. They show a continuing new incidence in specific cohorts, in specific age groups. This new incidence is certainly an underestimate of what is happening in the population at large, but it's very useful in the sense that it gives us some data to compare from year to year. We know from the sentinel hospital survey that in low risk populations from low risk parts of the country that there is a current incidence. We don't really know what it is, but it's fractions of a percent, up to about one percent in the midwest. I think that's quite a high number, in fact, given the nature of these populations. Unfortunately, the data are woefully inadequate. We only have samples from about 4,000 blood tests now, so any number one quotes has large uncertainties, large statistical uncertainties associated with it.

I say this not to say that these are poor data but to emphasize that we should be collecting sentinel data of this sort with much greater efficiency and with a much greater sense of urgency. This is relatively cheap to do and is very significant in its value to us. Another kind of data which is easy to collect, although it has certain ethical problems, but which, again, is very cheap is the data from newborns. I think you know that studies of newborns in Massachusetts show an incidence of infection in their mothers which ranges from a couple of percent down to a fraction of a percent, depending on the location of the

hospital. Again, that information is cheap and easy to collect, and I would recommend that it be collected from as many locations as possible, as quickly as possible. It's much easier to do than a random survey over several years, and it's very informative. It will show us quickly whether there really is new incidence or not and how prevalence of infection is changing is a better substitute for the general population.

I'd like to give an example, too, of the danger of looking from month to month at the reported numbers. We have very little information about reporting efficiency in different groups. One would assume, for example, that it's fairly high amongst hemophiliacs. We think that about 10,000 hemophiliacs were infected, and the current CDC data show that about 450 have now been diagnosed with AIDS; in other words, 4 to 5 percent of that group, which would give a ratio of 20 to 25 to 1 for that part of the epidemic for a group of people which was infected fairly rapidly between 1981 and 1984 and isn't, we think, being infected now. Such a saturated group, and there we have probably a fairly accurate ratio of infection to AIDS cases.

We have that kind of ratio for other groups, but we really don't have it for the latest risk groups, such as the heterosexual one, although that is clearly a much smaller group at the moment. If we look at the cases reported for homosexual men, for heterosexuals, men and women, and so on, and look at the growth rates in new cases amongst the various risk groups, there's really not much we can say about transmissibility or any other factor in those groups. They're all growing at probably the same rate, given their different total size. If we placed them along the time axis of the epidemic, they're all roughly similar at the moment. So the information, really, about efficiency of transmission isn't there. The only place it can come from is from properly conducted prospective cohort studies, some of which are being done now. There's a great urgency to enroll more heterosexuals and particularly young people in these cohort studies.

I think it's very important to do that correctly, too, so that we see the early stages of the parts of the epidemic that we've so far missed. We know the epidemic is there. We just don't know its size, and I think it's very important to get those data, both to know the problem we face and to know what impact any actions we may take have on it. There are surprises that we might get. I think we've had some in this epidemic so far. We need very good data on transmissibility -- we haven't got it yet -- by each root of transmission. We need data on the virus that's required for infection. We've got that in a limited way, but it's still too limited. A lot of money, I think, should be put into epidemiological studies of this sort. We cannot afford to wait for a cure or a vaccine.

We need to follow other sexually transmitted diseases for two reasons. First of all, while they must be co-factors of the development of AIDS, they're certainly markers for behavior that could lead to AIDS. In this context, it's very interesting that two of the classical sexually transmitted diseases, chancroid and syphilis, have shown dramatic increases in those parts of the country where the AIDS virus has been endemic longest. Now, there could be many explanations for that. More people might be going to STD clinics. They might be more nervous. There might be a real increase in these diseases, and the data tend to suggest that.

The increase might be because there's a community of immunosuppressed people who are now more infectious, although the actual diseases, syphilis and chancroid, are being seen in the heterosexual groups rather than the homosexual in these new infected. But it's very important to keep data about all STDs and about their relationship to HIV infection and to gather those as quickly as possible so that we don't have nasty surprises. If we really are seeing epidemics of new STDs amongst the heterosexual population, these could have a great impact not only on the spread of AIDS or of HIV but on the total medical costs that we face.

We've already seen an increase in TB in AIDS endemic areas, and I think it is vital to keep good data for other diseases, particularly STDs both as markers of AIDS to come and of signs of the effect of having a large part of the population immunosuppressed. I think I'd like to stop there. I just recommend that we really do need to spend more time and thought on the epidemiologics.

MR. CREEDON: I would like to ask a number of general questions and perhaps Mr. Pascal could react, for instance, first since you have to leave at four o'clock. We had one witness yesterday, Mr. Langmuir, who at one point was the chief epidemiologist for CDC. He is retired now and he is, I guess, about 80 years old but he is quite active and he gets the CDC's statistics regularly and has been plotting them and applying Farr's Law to the data.

He has constructed a curve that goes something like that and I guess one of the questions is, are each of you familiar with his work and what do you think are the implications of it for us? I mean, is it completely off base or is something like that happening or going to happen? Would it make a difference if you regarded this not as one epidemic but as a series of sub-epidemics and then applied his curve to the sub-epidemics? Do you have a reaction to that?

MR. PASCAL: I think I am the least relevant to comment on that.

MR. ROBERTSON: It certainly is important to treat it as a series of sub-epidemics and this is because not only because it is but because the nature of the disease with its long latencies, very long latencies, which may be different from group to group, there is no evidence for this yet, except perhaps from old and young people, but because of the latencies involved we do have very separate patterns of disease in the different groups so that there are separate epidemics and eventually they will follow separate time courses. As I mentioned, as other people have mentioned, we have seen a saturation in some aspects of the homosexual epidemic so it is not useful to think of the epidemic as one whole for some purposes. So, yes, I would agree.

MR. CREEDON: Yes, Dr. DeGruttola.

DR. DeGRUTTOLA: I have seen a presentation of that model and as I understand it, what he was doing was taking a curve with a particular shape, I think it was a log normal curve, and fitting it to data and saying that because this model fit relatively well to data it would predict the future of the epidemic. I really think that, in fact, there is a huge range of models that would fit. There is so much uncertainty in the data and there are so many different kinds of models that fit that you can't really believe any one. You have to attempt to fit several different models and see if the data can distinguish among them and in point of fact, it can't as I tried to demonstrate in my talk.

Even the ability to discriminate between a sigmoidal shape curve, something that started out exponential and then flattened out and something that was flat all along, it is not possible to do. The other thing is that model did not take explicit account of the latency period which we now believe has a mean, at least for the one well-studied population, of eight or nine or ten years and for other populations it is unknown; no reason to believe it is considerable shorter than that, possibly longer if they have fewer co-factors. So for both of those reasons, I really think that you can't accept that model as giving you very precise information about the future but I think what you do have to do is try fitting a variety of different models, both models that are simply extending the incidence curve which is what the CDC does as well as models that attempt to distinguish between the curves of infection with HIV and the distribution of latencies between infection and AIDS.

I think if you do that, most of those models are going to be predicting much worse outcomes than the one predicted by Dr. Langmuir's model although I must say that I think projection beyond 1991 and 1992 at this point is extremely difficult because of lack of precise information. I think we should attempt to do it but I think that our uncertainty grows as time goes on.

MR. CREEDON: Do you want to add to that, Mr. Cowell?

MR. COWELL: Let Mr. Pascal, if he is in a hurry, go.

MR. PASCAL: No, it is not my area so I will defer.

MR. ROBERTSON: I would just like to interpolate an example I meant to mention which is that we are totally dependent on a belief that, for example, reporting efficiency hasn't changed. We have really no independent estimates of that. We don't know how good reporting is in various groups. We are also very dependent on how we define the disease. Now clearly, one has to have a very clear definition and the CDC is absolutely right to have one for reporting purposes. That may not be relevant to total cost, however.

If you look at the effect of the new CDC definition, the rate of reporting in the last ten weeks has gone up exactly 40 percent. Now that probably is a transient but we don't actually know what that means. We don't know if these are people who would eventually have been reported or whether they are a new group or whether the relaxation of criteria for diagnosis is just broadening the epidemic. But again, if we tried to model from that which gives us at the moment a doubling time of 12 months rather than 16 a few months ago, well, the process is clearly fraught with danger.

MR. PASCAL: We certainly know from this recent study of the New York City Health death certificates for the IV drug users that even in a place with a very sophisticated public health service with probably among the best reporting in the country, there can be enormous underestimates of AIDS incidence.

MR. ROBERTSON: The real question is, is that changing.

MR. PASCAL: Is it changing over time, right.

MR. CREEDON: One of the key questions it seems to me that we have to consider as a Commission is whether the data that CDC is publishing is reliable data. In other words, is it in a range that it is reasonable for the Commission to accept. Obviously, the process that is followed here leaves a lot to be desired and Mr. Pascal, you said that there was a lot of criticism at the meeting in the last two days and I wonder if you would each comment on that. In other words, is the Commission safe or acting reasonably or prudently in relying on the range that CDC is coming up with or do you have specific recommendations as to other things that we should do or consider. Why don't you start, Mr. Pascal, because you were subject to all the criticisms over there.

MR. PASCAL: My problem is not so much with the reliability of the data as the level of aggregation at which it is published.

MR. CREEDON: What does that mean exactly?

MR. PASCAL: The detail that you get in terms of geography, in terms of risk group, in terms of transmission mode and so forth. It think that more could be done with some pressure on the states perhaps or even with some more courage on the part of CDC to present data at the levels of disaggregation that are needed to do the studies.

ADMIRAL WATKINS: I think it is very important, Mr. Pascal, you have really opened Pandora's box with me on your commnts from that group. I need to know what the name of it is.

MR. PASCAL: I have a program here.

ADMIRAL WATKINS: Is there a report from them yet or is there one in preparation?

MR. PASCAL: It is a group made up of professional associations such as public health associations, economics associations and so forth that use federal assistance.

ADMIRAL WATKINS: Do they have a small executive staff with an executive director?

MR. PASCAL: Yes.

ADMIRAL WATKINS: Who is that?

MR. PASCAL: Kathryn Wallman. I can give you the address.

MR. CREEDON: Coincidentally, they were having two days of hearings yesterday and today.

MR. PASCAL: Yes.

MR. CREEDON: Same time as we were.

ADMIRAL WATKINS: I think it is extremely important that we be able to liaison with that executive director, get a summary of the meeting because we hear these things from grass roots as we move around and yet we haven't had any definitive presentation to us of what a large group of people who have to use that data and see it feel about it. It seems to me that it would be extremely valuable for the Commission for us to get that presentation or certainly to get any sort of paper that comes out perhaps with the presentation later on.

MR. PASCAL: There were no formal papers presented. They were panel discussions led by moderators but I think Kathryn Wallman who was the organizer of the meeting could provide you with a good bit of what you need and there is also an excellent participants list of people who were there to voice their concerns.

ADMIRAL WATKINS: We have had other presentations today on the need for disaggregation from minority groups, Hispanic, Black, co-factors, many other things that may not normally fall within the epidemiological data base, but with a new disease like this, it becomes extremely important not to throw away information at the same time we are getting other data. Certainly we need to focus on the HIV infection and not just talk about the things that would normally be talked about in a morbidity and mortality report but rather expand our vision for AIDS get the perceptions out there that the HIV infection rate is something that we need to focus on a great deal more. We keep seeing reports coming out on deaths and morbidity which somewhat disguises the rather significant HIV infection number, even though it is presented somewhere else in the report at a million to a million and a half. Do you see what I am saying?

MR. PASCAL: Yes.

ADMIRAL WATKINS: So I think your input to us, and the input of that particular group could be very valuable to the Commission.

MR. CREEDON: Do the other participants want to comment on their view as to the reliability of the CDC statistics as to the degree of infection? Is it reliable? If it is not reliable, is it unreliable in an order of magnitude that is significant for us? Both Mr. Cowell and Dr. DeGruttola seem to come in at around a million or somewhere between 750,000 and a 1,250,000 which is in the same ballpark. Would you comment on that, please?

DR. DeGRUTTOLA: I think that there are a number of different issues here. First is reporting of incidence of AIDS itself and as we know, that is an extremely problematic thing and there has been evidence of considerable underreporting in New York. There is evidence of considerable variation regionally in delays in reporting. But I think that those kinds of problems are inevitable and I think compensation can be made for them. I have seen some good analyses done particularly by Jeff Harris at M.I.T. on reporting delays and how data can be used, the data that are available, to adjust for reporting delays and get a much more precise estimate of incidence of AIDS itself. So I think that although we know there are reliability problems with the reporting of AIDS, I think they are probably inevitable and

those data are still highly useful. I think the problem with aggregation is one of release of information to people. I worked with Professor Steve Lagakos on a problem of estimating the average latency period. We know how important that is from transfusion related data. We believed several years ago that there was a problem with the analytical approach that people at CDC had taken but were not able to get the actual data.

In fact, we had to wait until an article was published and then make use of the published data which was not precise enough for the purposes that we needed so there is a separate problem in release of data. The third problem is in projections and both for estimates of prevalence of infection right now and for projections of AIDS into the future that isn't simply a question of reporting or releasing the information. It is a question of coming up with some kind of model and being able to justify it. I think that the approaches that have been taken both to extend the incidence curve into the future is one approach that has to be looked at as long as there are sufficient caveats that there may be important effects that are not now distinguishable from time trends in incidence of AIDS but could be crucial later on. For example, saturation of certain populations like homosexually active men might be very hard to observe in incidence of AIDS up until now but may be very important in the future. So long as it is presented with the right caveats of the limitations of the model, then I think that those models are fine.

I think that what people who are interested in this kind of data have to do is to encourage that there are many other modeling approaches that are taken both by CDC and outside CDC and that means making data, precise enough data, available to different modeling groups so that we can see the full range of possibilities. In terms of estimating prevalence of infection right now, I think the approach that was taken at Coolfont to try to estimate the size of the populations at risk and the prevalence of infection in those populations, I think that actually the data are just not there to give reasonable answers.

It happens that their estimates lie fairly close to the ones that both I and Mr. Cowell came up with but I really think that we have only a very crude idea of how many men are at risk through homosexual contact and also what the prevalence is among such men because it is going to be very, very different in San Francisco than it is in the Midwest and it depends on ranges of behavior and so on. So I am less confident of those, not the figures themselves which may be okay but the method.

MR. CREEDON: Dr. Joseph who is the Commissioner of Health in New York City was a witness this morning and he said that they have done some work and we don't know exactly how they did it but he thinks that there are 400,000 people in the City of

New York who have the virus right now, in one city, 400,000 people. Now what does that do to the nationwide figures if he is correct in his judgment?

DR. DeGRUTTOLA: I would think that that would be a very hard number to defend. I don't know the method that he used but my estimate for New York City would be lower than that.

MR. CREEDON: Do you have an estimate?

DR. DeGRUTTOLA: I don't have an estimate for New York City itself but I could say that there have been about 15,000 cases in New York City, less than that. If you had over 400,000 people infected, that would mean that you would have to have a ratio of about 30 to one, 30 cases of infection to incidence of AIDS. That would seem to be quite high in a city in which several sub-populations of homosexually active men have already been saturated.

In other words, to get to ratios that high what you need is a lot of recent infection and unless there was a lot of evidence of a lot of recent infection in young IV drug users and their heterosexual partners, I think it would be tough to get up to that figure and I am afraid people are developing those ratios from data that were observed several years ago when there were fewer cases of AIDS and consequently, a higher ratio of prevalence of infection to incidence of AIDS and applying them currently and I think they are getting inflated estimates.

MR. CREEDON: One of the things we found in the last couple of days is that a good deal of the important data that is available now stems from a study of the homosexuals in California which was started because of Hepatitis B concern at that time and I wonder how many studies of that type are currently underway or whether you would have recommendations that we try now to encourage such studies to be undertaken in various places around the country on an ongoing basis and especially perhaps with younger people, people who are teenagers now or groups of that kind who ten years from now would be giving us this same kind of data that we got from the San Francisco study. I wonder if you would comment on that as to what is available now and what your reaction would be to other things that might be done?

DR. DeGRUTTOLA: I think there are a number of studies in place right now to estimate risk of AIDS after infection. There is the cohort in San Francisco but there are also four other studies of mostly homosexually active men, 1,000 at each center, which means that there is a considerable effort to looking at natural history of AIDS.

MR. CREEDON: But don't we have to do to it for other than homosexual men?

DR. DeGRUTTOLA: Right. I think that there are fewer studies in IV drug users although there are some but it is a much more difficult population to get at. There are also studies in hemophiliacs and there are ways of looking at that for transfusion-related AIDS. I think that the second part of your question, what about young people, I think that is the area where we really know the least and there are two issues. One is, what is the rate at which they are getting infected? That is something that we clearly need to study much more and the other is what will be their risk of AIDS after infection. But I think that the most important piece of information that is lacking is what is the rate at which young people are becoming infected.

MR. PASCAL: I am sorry I have to depart.

MR. CREEDON: Thank you very much, Mr. Pascal.

MR. PASCAL: I will leave the information of the group with Ms. Knox.

MR. CREEDON: Thank you.

ADMIRAL WATKINS: Thank you very much, Mr. Pascal.

MR. COWELL: Maybe, Mr. Creedon, I could address Admiral Watkins' question generally, the reliability of the CDC data. I have come to rely heavily on the CDC data. I have come to regard them as probably the most reliable in the aggregate. I will get into the question of disaggregation in a minute. But I might depart slightly from Dr. DeGruttola's point. I think it is very well to look back two years or a year and a half and say that the Coolfont numbers were really not well-based but I think considering the limited amount of data the CDC had in Coolfont a year and a half ago, I am amazed how closely they predicted the overall, what I would call shape of the epidemic. Admittedly, they may have been a little bit high on their estimates at that time.

I totally agree with Dr. DeGruttola on the point of not trying to impute more precision to these numbers than the data that we have warrants and I so state that in page four of our report, that while we recognize the ultimate goal of our study, at least, was to attain credible numbers at this stage of our analysis and I would say that that is as true now in December as it was in the middle of the year or when we started, we place more importance on validating the reasonableness of the processes than on the absolute numbers they generate.

Now having said that, of course, everybody wants to know what your numbers are and as I pointed out, we did in our study take the epidemic on a logistic or a lightly damped

logistic curve that I will demonstrate in a moment in a picture and link that through a fairly simply mathematical model to the progression rates from San Francisco which are by the way and there may be some other studies going on but the San Francisco City Clinic CDC data are the longest longitudinal studies which showed, for example, that in the highest risk group, male homosexuals in the San Francisco study, four percent of the unfrozen blood samples were seropositive in 1978 and approximately 75 percent of that same cohort were infected in 1986. So that gives you some idea of the progression in a high risk group.

The Frankfurt data are probably the most reliable. The 1986 study gave a three-year progression and Frankfurt has just published the five-year progression and those data are currently being analyzed by the Society of Actuaries group studying this and that information will be published in April. Now as to the absolute numbers, if, for example, 400,000 HIV infections in New York City is reasonable, then based on a very crude grossing up because New York City has about 28 percent of the total AIDS cases in deaths to date, that would gross up to 1.4 million in the United States.

It is a little on the high side of the average but again, I will only say that the number is ten to the sixth power which means that it could be anywhere from half a million up to maybe two million and I would still say that it is a reasonable number. Again, having said that I went out on a limb and published my numbers that I believe to be reliable for insurance purposes because they are largely male homosexuals. There is very little heterosexual, well, there is some heterosexual, we couldn't measure it but there is certainly minimal IV drug abuse in those numbers, IV drug numbers in there, and if I were pinned down to a tighter range somewhat reluctantly I would come up as of about now, late 1987, with approximately a million, somewhere between 900,000 and 1.1 million in the three highest risk groups and another 125,000 in the three lowest risk groups, well, no, one high risk group would be the female prostitutes and then the others would be the heterosexuals and the hemophiliacs number which probably combined, less than 50,000.

So I would produce a number somewhere between a million and 1.2 million if I had to, if I were really forced to come in with a tighter range but I am reluctant to do that because I keep saying on the other hand I don't want to give this estimate an aura of precision that I think it doesn't deserve. I really don't think from the standpoint of your Commission, whether the number is 900,000 or whether it is 1.2 million it really makes a whole lot of difference because if it is 900,000 now, it will be 1.2 million a few years down the road and whatever we are doing now that might affect those numbers, we will have to do in the future. So I think to say that it is a million or thereabouts is

probably as much precision as anyone ought to try to give this. I think that to the extent we go beyond that and I read a lot of studies which is probably why my eyesight is so bad that I can't find the front door of this place --

[Laughter.]

MR. COWELL: Maybe to redeem myself, I have tried to draw this picture and it is supposed to be the one maybe not worth a thousand words but maybe four or five hundred.

MR. CREEDON: You will have to take the microphone, Mr. Cowell.

MR. COWELL: Don't worry about the chart. I will explain that. It is only for those in the group that are mathematically oriented but I think it gets to this question of aggregation and disaggregation.

ADMIRAL WATKINS: There will be a quiz for the Commissioners on this slide.

MR. COWELL: No, I won't give any exams. I was general chair of the Society of Actuaries Education and Exam committee for a couple of years so I know all about taking actuarial exams and giving them and I promise that there will be no quiz on this. This first chart here shows in red a very steep progression that might be thought of as typical of an extremely high risk group that fills up very quickly such as, let's say, the highest risk, San Francisco or the highest risk IV drug group. Now this is, let's say, a less steep. They are both logistic curves and it is just a matter, this is a generalized equation and just to explain this, what this means is that if "P" is the population that is ultimately infected, then this is one of the factors that we don't quite know. This is the population infected.

This is the population uninfected and you sort of get a sense of what the rate of change of the disease over an infinitesimal fraction of time is proportional to this percent infected and the percent non-infected as the disease passes from this group to this group and over a period of time you solve for this and you come out with a differential equation or you can do it in continuous Calculus and trust me, the numbers have been all tested out and the actuaries all agree with my formulation.

MR. CREEDON: I am going to re-explain this after he gets finished.

[Laughter.]

MR. COWELL: The population infected at any given time is the reciprocal of "1" plus "E" to the minus "a-t." Well, you

can see very readily even if you don't understand much about mathematics that if I just simply depressed this "1" which is not a very large number, I get "1" over "E" to the minus "a-t" which is "E" to the "a-t" which is your exponential curve. That is the reason that during an early stage of the disease, the logistic curve and the exponential are virtually one in the same thing so whether people talk about logistic curves or damped logistic or exponentials or damped exponentials, they are really all talking about the same sort of thing.

The point I think that Mr. Robertson was making and upon which I totally agree is when you are down on this end of the curve, it looks very flat and you may indeed be on the beginning of what is going to become an exponential curve but let's suppose that this is the highest risk group and this is a relatively low risk group, it may take you many, many, many more years because your "a" value is a lot lower, that is, the infectivity is a lot lower for this to turn into a classic "S-shaped" curve. What we are seeing and the very oversimplified model you see in our report shows really an aggregation of hundreds and hundreds of sub-groups, some very steep like the San Francisco City Clinic that went from four to 75 percent in eight years and others like the heterosexual population that will go from 0.0001 to 0.0002 in many years and you put all these together and you get this aggregation which is what the CDC is giving us.

So that may explain some of the problems and maybe explain what seemed to be a lot of different explanations really when they are put under the microscope are really essentially all the same explanation given by different groups of people. I still, in summary, feel that the CDC data are as reliable as you are going to get.

MR. CREEDON: One of the questions that we were considering during these meetings is whether we should suggest other studies to produce data other than the data that the CDC is presently gathering so that we would have better data. Now I think what you are saying is that knowing what we know now, the CDC estimates are probably as good as you can get but one of the questions we have is should we try to suggest that other data be gathered, whether it would be a nationwide test for the virus or whatever.

MR. COWELL: While I have the microphone still, I will turn it over to Dr. DeGruttola in a moment, I would say clearly the answer, Mr. Creedon, to your question is clearly "yes." In the prologue in the forward of our study, I went back a little bit in history. In 1662 a gentleman by the name of John Graunt constructed the first English life tables from the crude records of births and deaths that he found in Paris churches. These were the only data then available. When his work was reviewed at its

tercentenary in 1962 Lilienfeld, a modern epidemiologist, observed that Graunt did not wait for better statistics. He did what he could with what was available to him and by so doing, he also produced a much stronger case for supplying better data and I believe that that is probably the best that we can do, by doing the best we can with the statistics that we have make a stronger case for better data. So certainly, I would say, "yes." Any effort that you and your Commission can bring to bear to supply better data will be greatly welcomed, I think, in every community of public health groups and epidemiologists, doctors and certainly actuaries in if not across North America and the entire world.

MR. CREEDON: We would appreciate receiving specific recommendations from the three of you if you would as to what better data we might suggest be gathered. Yes, Dr. DeGruttola.

DR. DeGRUTTOLA: When you ask the question, are you referring only to the CDC because I think actually one of the most important studies that should be done right now is of female-to-male transmission.

MR. CREEDON: No, we are not referring only to CDC. We are referring to just data generally that would be helpful in trying to determine what is going to happen to this disease and how we have to get ready for it.

DR. DeGRUTTOLA: If I were to prioritize, I would say one of the most important pieces of information that we don't have is on the nature of the infectivity and the efficiency of infection through heterosexual transmission. Why that is important is that if there are long delays between infection and the onset of infectivity, then you would expect a long period of time for spread from let's say IV drug users to their heterosexual partners and then a long period of time before you get the next generation which would explain why heterosexual transmission has not been observed very generally but only very near where there are IV drug users.

I think that those kinds of studies can be done now. One of the best sources of such information would be on heterosexual partners of hemophiliacs because hemophiliacs often have stored blood so that the times of infection for them can be estimated which means that the time from infection of the hemophiliac to let's say infection of the spouse can be measured.

The opportunity to do those studies could be lost as time goes on because hemophiliacs are fortunately no longer being infected. So the early part of the tail would be permanently lost unless it is done now. Dr. James Goedert whose work has been referred to is currently doing such a study but the sample size is too small. There is not a large national study in place

and I think that there should be. Secondly, I think studying female-to-male transmission is extremely important. As I am sure the Commission has heard, there is a very great range of opinion right now. You can hear everything from the fact that a self-sustaining heterosexual epidemic is already underway to the fact that it is impossible. I think that the real answer is that we just don't know enough about female-to-male. We know that male-to-female is efficient enough to produce a high number of cases. What we don't know is whether the reverse transmission is efficient enough for there to be general spread.

Although that would make very little difference in what we have observed right now, we would observe the same thing right now whether it was possible to have a lot of heterosexual transmission in the future or not, it is going to make a great deal of difference for the future. One thing about interpreting the incidence of AIDS among heterosexuals right now, although the incidence is growing rapidly, in fact, among American-born women growing more rapidly than it is in other age groups, that doesn't necessarily imply that there will be a self-sustaining heterosexual epidemic because if you compare it to homosexual men, the homosexual epidemic was clearly self-sustaining. Men infected other people in the same way that they became infected, through homosexual contact.

That is not true of the heterosexual epidemic. Most of the cases observed right now are from IV drug users to women. So it doesn't really tell you whether that is going to, in fact, be not a total dead end but whether the epidemic will keep propagating from that point or not and once again, knowing more about infectivity would be really crucial. I think another very important piece of information that we don't have is what is happening among young people and that point has come out several times but I think the kind of data that could be collected are let's say from Sentinel high schools providing, of course, that there was anonymity and protection because obviously you don't want to stigmatize teenagers but provided that it could be done without any fear of identification of individuals, I think getting information from high schools as well as from neonatal studies or studies of newborns would provide very important sources of information.

MR. CREEDON: Do you want to add to that, Mr. Robertson?

MR. ROBERTSON: Yes. All those studies should be done and they should be done as rapidly as possible. One other example, of course, is to do more work on transmission between spouses after infection by transfusion. There is a fairly large data base there. We don't know how many people were infected but it is 20,000 to 30,000, something like that. That would provide very valuable information. That should be done now in both

directions. The data so far are not inconsistent and I can't be any less mealy-mouth than that, are not inconsistent with transmission from man-to-woman and woman-to-man being roughly of the same efficiency. We just don't have enough data to know, but I think it is important to remember that this would be a rather unusual sexually transmitted disease if there was a great difference. We might expect a range of two to one or something like that, but it would be unusual if it was ten to one. There aren't other sexually transmitted diseases like that. So the sort of baseline expectation would be that they were rather similar.

MR. CREEDON: We had testimony from Dr. Wiley this morning that suggested it was a ten-to-one difference.

MR. ROBERTSON: I find that very hard to believe and the data, I don't think, are consistent with that but the numbers are too sparse.

MR. CREEDON: Yes.

MR. ROBERTSON: It is ten-to-one in terms of total numbers right now, yes, but that is confusing time with risk.

MR. CREEDON: No, I think he was talking in terms of the likelihood of transmission.

DR. DeGRUTTOLA: I believe that is correct because I have seen his presentation as well and I think that those are the preliminary estimates. The problem is as Mr. Robertson pointed out, that the numbers are very small there particularly for the female-to-male transmission. It is based on a study, I think, of 12 male partners of infected women and another small study in Miami. I would like to second Mr. Robertson's point that the most important population studied for this question would be male partners of women infected through transfusion because since it is removed in general from the IV drug using community, you have a much better chance of identifying how people were infected and of getting rates and the numbers are there if you could find a way to do the study.

MR. ROBERTSON: And we have the time of infection much more precisely, too.

MS. PULLEN: Mr. Robertson, are you acquainted with the CDC's plan that they have recently filed for doing a Family of Surveys and then potentially a national seroprevalence study?

MR. ROBERTSON: Yes, I am.

MS. PULLEN: Could you comment, please, on whether you think that the plan that they have filed is appropriate in the way they are preparing to go about this and also the time line on it, whether you believe that it could be done in a shorter period of time or whether it needs a longer period of time?

MR. ROBERTSON: Yes. In talking about the Family of Surveys as a whole, there are many individual studies in there which I think are very valuable that wouldn't be very expensive like the neonatal one and the Sentinel Hospitals one which should be done and I think should be expedited. The national random survey on the time scale which is in the CDC report, I think is too slow and not very valuable.

MS. PULLEN: Do you think the time on that could be enhanced?

MR. ROBERTSON: Yes. It is a question of money.

MS. PULLEN: Do you think it is impossible to do it?

MR. ROBERTSON: It is possible to do it. There are very great difficulties. There is no question about that of getting a good sample. If it is done, it should be repeated. It shouldn't just be done once so that we can get both prevalence and incidence data and if that were done, then even if it weren't a perfect sample, at least we would be able to see change from year to year or whatever the sampling period was.

MS. PULLEN: In your contacts with the CDC, did you provide any input in the design of that?

MR. ROBERTSON: I have discussed these issues with them and by the way, I would like to say that on the matter of supplying data, I have always found them very helpful.

MS. PULLEN: Maybe we should call you for the information.

[Laughter.]

MR. ROBERTSON: Perhaps. Yes, I have discussed the sampling, the national random sample with people at the CDC and have had many arguments. My impression is that they really don't want to do it but that is an impression. It is not a statement of fact and that they see the difficulties rather than the information it would give. On the other hand, they are right in the sense that other samples from their family of surveys if done rapidly and repeatedly would provide valuable information with less disruption. But a true random sample would be really nice to have. I know everybody at this table would like it and without that, we will be guessing.

MS. PULLEN: Thank you.

MR. CREEDON: Dr. Crenshaw.

DR. CRENSHAW: I have two questions and one is for Dr. DeGruttola. I would really appreciate if you would elaborate on a couple of statements you made in your paper in 1986 that I found valuable but took me quite a while to understand and I want to be sure I understand them correctly. At the beginning of an epidemic a high odds ratio associated with any given behavior implies only that the disease may be more efficiently transmitted through that behavior than others. As the epidemic progresses, however, and virtually all of those in the category of highest risk have become infected, then less efficient means of transmission begin to account for an increasingly large proportion of the total number of cases.

Consider the case in which investigators at an early phase of the epidemic find an odds ratio or risk ratio of approximately ten to one, oddly enough, if the organism is persistent, eventually every member of the lower risk group could develop the disease. Then you have a statement that follows, "On the other hand, if a chronic infectious carrier's state characterizes the disease, it will be subject to transmission even by infrequent contacts and inefficient practices." If you elaborate on this, it might help clarify some of the issues about the focus on spread through vaginal intercourse, anal intercourse and various others you may wish to identify.

DR. DeGRUTTOLA: The only point that I was making there was that if early on in an epidemic you did a case control study and observed an odds ratio and found that the odds of having been infected through some means were much higher than through some other means, whatever they were, it wouldn't necessarily mean that the less efficient means was going to be unimportant throughout the entire course of the epidemic.

I think that is fairly well accepted right now. It may be true that an inefficient, relatively inefficient means like female-to-male transmission or heterosexual contact or whatever never will account for a lot of cases. I didn't mean to imply that inefficient means would ultimately be very important.

I just meant to imply that you couldn't infer from a case control study early on whether or not they would become important simply by saying that you had an odds ratio early in the epidemic of ten-to-one. I think it is intuitively obvious that as people who are practicing very risky behaviors tend to become saturated, the less risky behaviors can become more important as time goes on.

I should point out that although it is easy enough to make a statement like that, when you get down to actually trying to predict what proportion of people will become infected by a different means and what the future incidence will be, it is complicated by the fact that you have people entering and leaving pools or starting certain practices and ending them. So it is hard to be much more specific than that.

DR. CRENSHAW: Aren't you also saying that inefficient practices repeated frequently accumulate and become a rather significant mode?

DR. DeGRUTTOLA: They could very well even though one might hear about risks of vaginal intercourse being less than one in a hundred or less than one in two hundred obviously. If the risk really is constant over time, they can become significant. So it is related to the question of infectivity which we still don't know. If people are really only infectious during short periods of time, then a very inefficient means of transmission might not become very important because the effective number of contacts would be small. On the other hand, if people were infectious over long periods of time through sexual contact, let's say, then an inefficient means could become very important. So what it means is that it is not enough to say this mode of transmission is inefficient, let's forget about it. You have to say that we need to be very precise about how efficient it is which means large studies and we need to be very precise about what is the nature of infectivity before we conclude that a given form of contact is or is not safe.

DR. CRENSHAW: Thank you. My other question is open to anyone who would like to answer it but I found it interesting that two days apart, November 13th and November 15th, two different major papers reported the following headlines: "AIDS up 50 percent in Eight Months Agency Says" and this comes out of the World Health Organization where they upped their statistics to revise them upwards from 100,000 to 150,000 people world wide and two days later, "White House AIDS figures will show overestimates Slow Down Sources Say." So within two days of each other, the United States downgraded their estimates and the World Health Organization upgraded their estimates. Can you help me reconcile this or are you as lost as I am?

MR. ROBERTSON: I am sure the world wide estimate is very low, is too low.

DR. CRENSHAW: I would agree.

MR. ROBERTSON: I would say that the estimates in this country and in some European countries, Australia and so on, are relatively good. They are not going to be out by a factor of

more than two, let's say. In Central Africa or in Egypt or in China, we really have no idea. We know that in some countries, the disease is very prevalent. Many countries didn't report the disease at all to the WHO two years ago even though they had delegates giving talks about it at international meetings. So we know that there is going to be a continuing dramatic increase in cases that were there all the time but are only just now being reported.

It is very unlikely that the number of cases in any African country is less than the number of cases here using Central Africa, the AIDS Belt. But again, no individual country, I think, reports more than 2,000 or 3,000 yet.

MR. CREEDON: In response to Dr. Crenshaw's question, having studied mortality of a lot of things, not just AIDS, thank goodness, over most of my professional lifetime, I would make the observation that the reliability of data from a country is almost directly proportional to its literacy rate. That is, the more highly literate the population, the more reliable are any kind of mortality data, so that the only highly reliable data are those coming from North American, northwestern Europe or I guess you could say the western industrialized world as we know it, and that would be true of any kind of data, AIDS or any other kind of mortality or morbidity. So I totally concur in Mr. Robertson's observation that any estimates based on other than what we call the western world where data are freely exchanged and are not considered a state secret or part of the national pride should be taken very, very cautiously. Now, as to estimates within in the United States, and there has been over the last two months a very wide range of numbers that have been thrown around, again, I would revert to the most solid being those coming from the CDC.

MR. ROBERTSON: I've actually read the way in which the White House estimate was prepared, and whatever the truth of the actual number, the assumptions on which it was based, the two most important ones were that the Army data showed no increase, no new incidence. I think nobody here agrees with that. The second assumption was that, given that the Army data showed no new incidence, the infection stopped two years ago. So whatever the value of the actual figure, it might by coincidence be right. I don't think the method of estimation was useful at all.

DR. CRENSHAW: Thank you for clarifying that.

MR. COWELL: Just to put my number in, I think it's got to be at least a million, and I'm higher than these two gentlemen, but, really, I don't think it's more than 3 million. I think it's more like 1.5 to 2.5 million. We really don't know.

DR. PRIMM: The population sampled by the Army or by the military, the population is a cream population. It would seem to me that it should be going down in that population rather than even to remain stable.

MR. ROBERTSON: Indeed, there's evidence of self-deferral, but the part of the Army population in which the incidence or the apparent prevalence went down was the better educated white older male potential recruit who, clearly, is self-deferring and no doubt tests himself before he goes.

DR. CRENSHAW: Mr. Robertson, it was explained to me that what appears like a decrease is actually an increase because it's like a college. If you keep saying that your rates of gonorrhea in your entering freshmen are somewhat decreased, then it's assumed that these people are actually lower in numbers rather than a new population that you're measuring. I'm not making myself very clear. I hope you know what I'm getting at. Can you make it clear so that --

MR. ROBERTSON: Yes. I'll give you a few examples, and Dr. DeGruttola, I'm sure, will, too. Let's take the blood banks. Now, when we first started -- when the blood banks were first tested, I can't remember the actual numbers but something like 4 or 5 per 10,000 was the apparent prevalence in that population of people. Well, people who donate blood in general do it many times. They are repeat donors. So as testing was done, two things happened. First of all, people who might think that they were at risk for being infected finally got tested and were informed if they were and undoubtedly deferred, and their friends and colleagues would have deferred.

The group that was infected was excluded very rapidly, so the numbers which we're getting now, though smaller, don't imply that the prevalence in that population of blood donors has decreased at all. All they're doing is giving you a filtered measurement of the current incidence in that group of people. We don't really know whether it's a monthly incidence, an annual incidence or what, but we do know that it shows increasing infection, even though it appears to show a decrease in total prevalence, the total number. The Army data is rather like that. There are many forces which tend to diminish the actual raw numbers coming in. Yet, if you sought the Army data, for example, by age cohort, you find that there is a new incidence. In fact, it's quite rapid, quite a rapid growth in some age groups. But, again, that's probably a poorer --

DR. CRENSHAW: Can you be specific?

MR. ROBERTSON: Well, if you look at people who are 20 this year and who were 19 last year and compare them with the people who were 19 last year, you'll find there's a higher

infection rate amongst the 20 year olds this year who would have been from the same group as the 19 year olds who applied last year. The same is found in people actually in the Army who were tested and found to be negative but then have been retested because they had some medical problem or were going overseas. Again, there's a current incidence amongst those people, even though if you take the recruit data as a whole, it appears that the prevalence is constant.

MR. CREEDON: Dr. Lee.

DR. LEE: I want to commend this panel. It's really an extraordinary hour or two we've had from you. All your curves, as far as I can understand them, show a plateau. They are plateauing; yet, the numbers we very commonly are exposed to sort of continue to exponentially rise. I mean, it just sort of goes like this (indicating). Now, from just life experience, one would think it's not going to do this, that something is going to happen. Now, all of your curves plateau. Do you think this disease is going to plateau? Do you -- why are Mr. Cowell's numbers continuing to go up when your curve was plateauing like that? I'd like to hear from anyone on that.

MR. ROBERTSON: His numbers are going up because they are the integration and the sum of every year. So even if the curve plateaus eventually, he's still adding up each annual component to get his total.

MR. CREEDON: Cumulative; he has a cumulative.

MR. ROBERTSON: Yes.

DR. LEE: So you were all plateauing?

MR. ROBERTSON: Well, we know that the curve will plateau at 250 million at the very worst.

[Laughter.]

DR. LEE: But those curves have already plateaued.

MR. ROBERTSON: The question is where will it plateau, of course. Any epidemic must plateau. There are various very important issues. For an epidemic to be sustained, each person infected must in his lifetime infect somebody else. We know that's theoretically possible for various risk groups with the HIV epidemic, and it's certainly possible for some heterosexual risk groups. It's clearly impossible unless the virus finds new modes of transmission for the monogamous couple who aren't infected now. But somewhere in between we will plateau, and none of the models we have can really tell us. We know in Africa it's going to be quite high just from raw data.

MR. CREEDON: Any other questions from the panel?

MR. ROBERTSON: That was in the vernacular, too.

MR. CREEDON: Mr. Chairman?

DR. DeGRUTTOLA: I would second that. I think you can go even stronger and say that by modeling, you can show that you cannot know from current data when and at what level it will plateau. The fact that the doubling time is increasing, that it is plateauing, is a feature of any infectious disease epidemic. The only way you would see an epidemic where that didn't happen is if it kept moving from a lower risk to higher risk groups; in other words, if it kept moving from less promiscuous to more promiscuous individuals. But clearly, that can't go on for a very long period of time. So the fact that it's slowing down doesn't really give you very much information about when and at what level.

One point I would like to reiterate is that in my estimate of prevalence, my range would go from -- basing it on information that's available, it would go from half a million to 2 million or even above 2 million. I don't think that we can be more precise than that. If I'm asked for my own subjective opinion based on a lot of sources of information that we've talked about today which are not precise enough to give an estimate that I think is absolute, but my own subjective opinion is that it's probably around a million or slightly below a million, but I would not rule out higher numbers, and I would say that it depends on much more study of the dynamics of the epidemic.

DR. PRIMM: I just want to ask one question just for my own edification. That is, you mentioned you would study the newborn. What would that yield be for you? Because I can't see it.

DR. DeGRUTTOLA: What information would it give you?

DR. PRIMM: Yes.

DR. DeGRUTTOLA: Well, it would give you information about prevalence of infection of women at childbearing age. That could be very useful for finding out, first of all, to try and estimate the age in which they became infected. Now, you only know -- you don't know the age at which they became infected. You simply know an age at which they are infected; but by some kind of modeling procedures you may be able to work back to estimate the age at which they're becoming infected. It would also give you some sense of what the prevalence is for a group right now for which prevalence is very difficult to estimate

because the latency is long and we haven't seen many cases of AIDS yet and we wouldn't expect to see many cases of AIDS yet among those women. So it would give you much more precise information; in a sense, a kind of leading indicator, to borrow a term from economics, on where the epidemic is headed.

DR. PRIMM: We get the same information just from testing the mother, though.

DR. DeGRUTTOLA: You could get it from testing the mother as well. The reason that people talk about doing neonates is that there's already neonatal screening for PKU and in Massachusetts, for example, the bloods are already being collected. The added expense for doing the study was really very, very small.

DR. PRIMM: Thank you.

MR. COWELL: I have drawn another picture, and this one isn't nearly as complicated as the last. The question was asked about a change in the prevalence of HIV antibody in military recruits. Now, I'll hold up this chart. This is from the CDC data, and I have simply reproduced this on a little larger scale. Here is the actual pattern of the incidence among new military recruits. This is the percentage testing HIV positive for the last -- since they've been testing HIV positives. This is on a very large sample. It's a total of over a million, about 1,075,000. This is the aggregate prevalence rate. You can say, well, it's declined, but the decline is somewhat slight. You can see it jumps up and down every month. These are monthly intervals, so there is some decline. The lower level is the rate among whites, and the rate among blacks and Hispanics is somewhat higher. They show the same parallel trends. While we're on the subject of military recruits, if your panel, ladies and gentlemen, has not already heard from Dr. Robert Redfield of the Walter Reed Army Institute --

DR. PRIMM: We did, yes.

MR. COWELL: You have, fine. I would say that we had Dr. Redfield at our Society of Actuaries Panel in Montreal, and I will say now what I said then. I thought in one-half hour he gave us more information on the impact of this disease in speaking as a doctor who was on the ward. He was telling us, I think, with a lot more conviction than most of us had heard in 18 months. Of course, you then are familiar with his thesis of the spread is a function of the promiscuity of the group. Getting back to the question Dr. Lee raised about where these curves will plateau out, again I have to echo everything that's been said here. We really don't know, but the model that is demonstrated in our report suggests that -- again, I don't have a time frame on here, but if this is the late '70s when the epidemic entered

the population and this, let's say, is around today, somewhere here, that somewhere between there on into the future, that curve will flatten out.

Now, if the epidemic stops spreading today, if everybody with the disease stopped doing what it was they were doing to spread it, then the thing would flatten out at about a million, and I won't try to give it any more precision than that. Our particular model shows it growing. This obviously is not to scale, but the charts in our report are to scale. It suggest that it might peak out at around 2.5 million sometime around the late '90s. So even I predict an eventual peaking out on the assumption that there is not a massive spread into the heterosexual population. I think the numbers that we have seen to date and I think that we're all in concurrence with why we feel or why I feel this is so. Out of my estimate of about a million, somewhere between half and three-quarters of those are from the highest risk group, the male homosexual/bisexual population, and the highest of the high risk group, the highly promiscuous male homosexual population numbers at most 2.5 million. Yet, that has generated maybe 500,000 or 1 million or one-half of the total number of HIV infections.

Contrast that to the population 50 times its size, the heterosexual population of 140 million adults that probably have, at most, 50,000 to 100,000. So you have a population that is 1/50th the size of the adult heterosexual population, that has probably generated 10 times as many cases. In other words, the incidence is 500 times in the highest risk groups what it is in the heterosexual population. That tells you the kind of problem that our society would be faced with if public education and public health measures to stop the spread of this disease were not being taken.

I guess I have some difficulty in discussions where -- and I speak as an actuary who loves precision in numbers, but from my perspective and I'm speaking now not as an actuary but as a concerned citizen, it's difficult for me to understand why our public response to this would be vastly different if the number were 2 million than if it were 1 million. In either event, there is a sufficiently large pool of infected there to create problems for all of us at every level of society.

MR. CREEDON: Thank you, Mr. Cowell.

ADMIRAL WATKINS: Let me close out the questioning just with one observation. We've heard a great deal about mathematical modeling and bloodletting to obtain really good seroprevalence data, the latter having some difficulties in getting true data across the country for a variety of reasons. We've heard very little about any imaginative efforts to look at analogues, a family of surrogate studies, for example, analyses

that seems to me might be an interim approach to try to do some validation of data. We had experience in the military, significant experience, where initially rejected behavioral analyses came in on drug abuse, only to find out they were accurate within a few percentile points of the urinalysis data we received.

It just seems to me that while we're going through the trauma of dealing with confidentiality and discrimination and other things that may be a bar to openness on the part of certain individuals in any kind of a seroprevalence survey that's run, that there ought to be other kinds of approaches taken. For example, we heard presentations here on the direct correlation in rectal gonorrhea with the homosexual high risk group and AIDS-related activities in the San Francisco area. Does that pertain elsewhere, and is that a possible surrogate? Is there an approach that we could take on a behavioral analysis, for example, relative to the military proclivity to come in that would give us some kind of a factor that says we're going to weed out those that will not apply for the military for the variety of reasons and run a behavioral anonymous survey in metropolitan New York or other large areas where we have good data on the proclivity of people to come in and their HIV infection rate.

It seems to me those kind of things should also be ongoing in an integrated way and continue the validation of your modeling while we're waiting to solve some other very serious problems that we have in getting on with the kind of hard data that would make all of you happy, as you mentioned on the panel today. So what is the opinion of you analysts about doing some alternative family of surrogate surveys that may get you closer?

MR. ROBERTSON: We certainly want to do surrogate surveys for sexually transmitted diseases, but the example you gave, the rectal gonorrhea one, shows how dangerous it can be, and I'll explain that. Gonorrhea is a disease which can be cured chemically, and it has a very short infectious period, a matter of days. So as far as passage goes, it's more like a cold than like AIDS. In other words, if somebody with gonorrhea wants to avoid infecting somebody else, he only has to keep apart for a couple of weeks and be cured.

ADMIRAL WATKINS: I'm not talking about the disease. I'm talking about the correlation of the rate decline, the incidence rate on --

MR. ROBERTSON: I haven't finished my answer. Therefore, if you use the rate of gonorrhea as a surrogate for behaviors that might give you AIDS, you'll be misled. While that rate of infection was declining drastically in the city clinic cohort for gonorrhea, the rate of new AIDS infection was going up equally fast because of the time courses, the two diseases being

so different. But, yes, in general, I think the more surrogates that one could find, the better, but we don't really have enough information yet to know what they are.

ADMIRAL WATKINS: How about behavioral surveys? Why are they so inaccurate or why aren't they being used more aggressively?

DR. DeGRUTTOLA: I think that's a good question. I think that we need much more information. Clearly, if you want to do any kind of modeling, we need much more information about standard sexual practice. The kind of logistic formulations that Mr. Cowell presented are very appropriate in certain kinds of settings, but they're not appropriate for all settings. I think that we'd all be in agreement, we need much more information in order to get more precision on those curves, what the shape of those curves should be. I think that it's difficult to do such surveys. The one place where they have been done is San Francisco, where there's a population-based survey under way which is collecting information about behavior as well as infection with HIV and other viruses. The problem is that San Francisco isn't generalizable to the rest of the country, and it's harder to do those surveys in other places.

ADMIRAL WATKINS: Do you mean they have tried and failed?

MR. ROBERTSON: I don't know --

ADMIRAL WATKINS: We haven't had any presentations to that.

MR. ROBERTSON: No. I believe the only population-based survey where they asked information about sexual activity is in San Francisco. It's the only one to my knowledge.

ADMIRAL WATKINS: Is that good, or would you like to see more; and if so, how do you inspire those? What do we have to do as a commission to inspire those, and are they technically useful to the analysts to try to find a better bridge between modeling and reality?

DR. DeGRUTTOLA: They would be very useful. Clearly, what is limiting all of us is not knowing what the sizes of these populations are. If we did know the size of the IV drug using and the homosexually active population and something about how they mix, we could do much better in our modeling than we've done today.

ADMIRAL WATKINS: What recommendation would you make to the Commission?

DR. DeGRUTTOLA: There would be two. One is that the information provided by demographers, which is only on single men, marital rates and in-migration and out-migration, can be very useful. It was useful in San Francisco to get that one estimate of the size of the homosexually active population and useful to show why the ratio of prevalence into incidence must be much lower than had otherwise been thought. So demographic analysis can provide us with important information cheaply. Now, the more expensive way is to take that information and use it to develop population-based surveys to ask questions about sexual behavior. I think that's going to be crucial if we're ever going to do much better in terms of precision of modeling, and I think it would be a great recommendation to come from the Commission, just recognizing that they are very difficult surveys to do. For a variety of reasons, I think it's hard to find people who have the competence and the willingness to do them.

DR. CRENSHAW: Could I underscore a point? I am totally in favor of behavioral tracks. I think this is where we're lacking the most information of all, and we need to do effective research there. But it is exceedingly labor intensive and cost intensive, and there isn't the manpower. Fewer than 10 percent of physicians, according to surveys, can even take a sexual history, much less a competent one. Nonphysicians have even lower aptitudes and abilities. So before you could even do that, you'd have to train a large manpower, personpower, womanpower to take an adequate sexual history. It's delicate; it's complicated. It can be done. We don't have the resources in place. We should get them.

MR. COWELL: For specific recommendations, Admiral Watkins, I would just endorse what has been said and would just extend it to say that I think we do have agencies that are in place whose responsibility it is to do what you're asking; namely, the CDC. The National Academy of Sciences, which is just a few blocks from here, their institute of medicine did a study that they published last year confronting AIDS. That described the magnitude of these at-risk groups, the size of them, and that was the one that we used for our report.

The University of Frankfurt in West Germany is continuing to develop studies of progression rates from HIV infection to AIDS under very carefully controlled clinical conditions. My recommendation would be to assemble representatives from each of these groups together and have an organization that was able to do on a massive scale what we in the Society of Actuaries and the American Council of Life Insurance are trying to do in a sort of microcosmic sense, looking at only the insured population, to do this on a massive North American scale or U.S. scale and to put together a model that reflects all of these things, including transmission factors from groups so that it would, indeed, be a model that people

could identify with as not being just a bunch of theory but, really, that reasonably closely represented reality.

As I say, we are attempting to do this to our model. By the end of April, we will have another iteration, if you will, of our model, and we've got a lot of people working on it in the United States and Canada. I'm reasonably confident that the work of the Society of Actuaries and the ACLI is going to produce as believable a model in 1988 as will exist. I just encourage people who are already working in this area seriously to continue their efforts.

ADMIRAL WATKINS: Thank you, Mr. Cowell. Before we close here, I want to make sure the panelists are aware that we would like to keep the dialogue open with every panelist that has come before this Commission. There will be additional questions. We've had some already prepared by the Commissioners today to get back to you expeditiously. We're asking the Commissioners here today to please get their additional questions in for any of the last two days of panelists' presentations not later than next Wednesday. We do not want to keep stumbling over ourselves as we move to the next important hearing on drug abuse and want to move these questions expeditiously to the panel members. So please get them in by next Wednesday. We will include them as they are written to each of the panelists, either all of you or singulary as the Commissioners so desire. If you would be willing to get back within a couple of weeks to us, it would be very helpful in this area. So as we close this hearing today, I'd like to take a few minutes to make some brief remarks about what I feel has been an extremely beneficial exercise to date by this Commission.

We've moved very quickly in a relatively short period of time to establish our agenda and then to lay out the groundwork for accomplishing our task. These particular two days of hearings provided us with a substantial amount of information on an issue we have all agreed is one of our near-term priorities: determining the incidence and prevalence of the HIV infection in the U.S. population. While to some that may not be important, to us, we must have it to carry out our task to the President, which requires a lot of projections on health care, delivery projections, budgeting and so forth.

So it is germane, and we must at least establish a baseline that is clear when we move in with our final report in June and, hopefully are moving in a direction to sharpen the baseline of data at that same time. A meaningful and properly integrated response to this epidemic cannot be mounted if we do not have this solid baseline. It's incumbent upon us to search out all of our national resources, experts in all the fields relating to epidemiology, and find out what obstacles stand in the way of our ability to state with considerable accuracy how

many of our own citizens are currently infected with this disease and how many we can expect to be infected in the future. It's my feeling that we have made some headway, and this was enhanced by these two days of hearings. The testimony that we've heard here has been from a diverse and respected group of witnesses and has hopefully provoked some new thoughts and insight into this very important issue. We'll be following up with more specific questions, as I mentioned, and we hope to have the opportunity to meet further with some of you. We must find a solution to the problem. We know that there are no easy answers to many of the challenges that confront us, but we have already committed ourselves to providing our President with the best answers available. This is our charge, and I believe we've taken a giant step forward to this end.

Next week, we'll be continuing to move ahead with our agenda and under the leadership of Commissioner Dr. Primm we will be holding hearings on the multitude of issues related to IV drug abuse. We have a very impressive group of witnesses coming before this Commission at that time. So I want to thank you for your commitment and support. Your presentations have been extremely professional and informative today. You're a very impressive set of witnesses, and we've learned a great deal. Thank you for coming. With that, I will adjourn the Commission for this set of hearings and will look forward to next week's hearings. Thank you very much.

[Whereupon, at 4:40 p.m., the hearing in the above entitled matter adjourned.]

APPENDIX

THE CLINICAL SPECTRUM OF INFECTION WITH THE HUMAN IMMUNODEFICIENCY VIRUS: FROM ASYMPTOMATIC INFECTION TO THE DEVELOPMENT OF AIDS

Statement of

Anthony S. Fauci, M.D.
Director
National Institute of Allergy and Infectious Diseases
National Institutes of Health

and

AIDS Research Coordinator
National Institutes of Health

presented before

THE PRESIDENTIAL COMMISSION ON THE
HUMAN IMMUNODEFICIENCY VIRUS EPIDEMIC

December 10, 1987

The common denominator of infection with the human immunodeficiency virus (HIV) is the destruction of the body's specific defense mechanisms, namely, the immune system. The immune system is responsible for protecting the body against microbial invaders as well as the development of certain types of neoplasms. When the immune system is compromised for whatever reason, depending on the extent of the immune defect, the body is susceptible to serious illness caused by microorganisms which would not usually be able to gain a foothold in the body. However, because of the weakened state of the body's defenses, these microorganisms seize the opportunity to invade; hence, they are referred to as "opportunistic" infections. The same holds true for the development of unusual or opportunistic neoplasms which are usually kept in check by an intact immune system. The immune defect that is ultimately caused by HIV infection is so profound that opportunistic infections and neoplasms occur readily and repeatedly, constituting the condition known as the acquired immunodeficiency syndrome (AIDS).

HIV enters the body either as cell-free or cell-associated virus and binds specifically to cells in the body expressing the CD4 molecule, which is the cellular receptor for the virus. This molecule is heavily expressed on human T4 lymphocytes which comprise the helper/inducer subset of cells responsible for the induction of most, if not all, of the functions of the human immune system. If there is one cell type which is critical to the effective orchestration of the entire immune system, it is the T4 lymphocyte. Its selective destruction can thus explain the global nature of the immune defect which occurs with HIV infection. Other cells, such as

those of the monocyte/macrophage lineage and certain cells of the central nervous system, may also express variable amounts of the CD4 molecule and thus may be susceptible to infection with HIV.

Upon entering the body, the virus can exist either in a latent form or in a form which is actively replicative. Scientists are beginning to delineate the mechanisms whereby a cell that is latently infected with HIV and appears normal can be induced to actively produce virus and ultimately be destroyed. This process may take place gradually or in intermittent spurts over a prolonged period of time which may explain how a person can be infected with HIV for years before the virus destroys enough of the CD4-positive lymphocytes to result in clinically significant immunosuppression and disease.

It is important to appreciate and distinguish the differences among the various phases of HIV infection. The first phase is asymptomatic infection in which virus is present in the body but the host has no symptoms. The virus can be transmitted from one individual to another during this asymptomatic phase as well as when the person has symptoms and/or disease. The second phase is the phase of infection in which the individual shows some signs and symptoms but does not meet the empiric criteria for the diagnosis of AIDS that have been established by the Centers for Disease Control (CDC). This type of symptomatic infection with HIV is generally referred to as the AIDS-Related Complex (ARC) and may be manifested as fever, weight loss, diarrhea, fatigue, night sweats, lymphadenopathy, and/or variable degrees of immunologic abnormalities. Finally, those individuals

meeting the CDC criteria for the diagnosis of AIDS comprise the third category of infection with HIV -- full blown AIDS.

As of early December, 1987, approximately 47,000 people in the United States have been diagnosed with AIDS. The analogy of an iceberg is often used to explain the spectrum of infection with HIV with the tip of the iceberg representing the 47,000 people who have now developed full-blown AIDS. In addition, approximately 150,000 people are symptomatically infected -- have ARC or persistent generalized lymphadenopathy. Finally, between 1 and 1.5 million infected individuals are completely asymptomatic. At this time, we know that approximately 20 - 30% of individuals who are infected and asymptomatic will develop full-blown AIDS within five years. Whether this pattern will continue in a linear fashion or whether it will plateau is currently unclear. In other words, it is uncertain whether or not after twenty, thirty, or forty years, virtually everyone who is infected with HIV will develop full-blown AIDS if effective treatment is not developed. On the other hand, the relative proportion of infected people who develop full-blown AIDS may level off over a period of time. Recent evidence from the Walter Reed Army Medical Center indicates that if the immunologic parameters of HIV-infected individuals are followed over time, 80 - 90% will demonstrate some level of deterioration of immunological function over a few years. This suggests that the vast majority of infected individuals will be adversely affected by the virus over time.

A more recent CDC classification scheme for HIV infection divides the infection into four major groups. Group I, acute infection, encompasses

those individuals who, shortly following infection with HIV, develop an acute viral-like illness. Most often, this illness resolves spontaneously followed by the appearance of antibodies to the virus. These individuals may then remain asymptomatic for years or may ultimately go on to develop symptoms. Group II includes individuals who are infected with the virus but show no symptoms of disease. Group III, persistent generalized lymphadenopathy, includes relatively asymptomatic persons who carry the virus but manifest generalized lymphadenopathy, which persists. Finally, Group IV is given the categorization of "Other Diseases." This group is divided into several subgroups. The first subgroup (A) is constitutional disease, which is also known as ARC. Subgroup B denotes the presence of neurologic disease in the absence of either secondary infection or neoplasm. This category was only recently added when it was determined that HIV could directly infect the nervous system. Subgroup C is full-blown AIDS with secondary opportunistic infection. Subgroup D is AIDS with secondary cancers such as Kaposi's sarcoma or B-cell lymphoma. Finally, subgroup E includes other conditions not classifiable above that may be attributed to HIV infection or that may be indicative of a defect in cell-mediated immunity.

There are three major components of full-blown AIDS: opportunistic infections, unusual neoplasms, and central nervous system disease. The most common of the opportunistic infectious agents is Pneumocystis carinii, which causes pneumonia. However, unusual microorganisms such as Mycobacterium avium-intracellulare, Cryptococcus neoformans, disseminated Cytomegalovirus, Toxoplasma gondii, and others are also important causes of serious

infections in full-blown AIDS. The mean survival time for an individual presenting with the first episode of an opportunistic infection is between 30 - 40 weeks.

The next important category of full-blown AIDS is unusual neoplasms. The most common of these is Kaposi's sarcoma. The immunologic function of individuals with AIDS manifested by Kaposi's sarcoma is not nearly as severely impaired as that of individuals who develop opportunistic infections. This underlies the fact that the survival for individuals who develop Kaposi's sarcoma is usually longer than those who present with opportunistic infection, and may be as long as a few years.

The final major category of AIDS is infection of the human brain with HIV which results in conditions from asymptomatic infection to subtle cognitive and psychiatric abnormalities, frank dementia, meningoencephalitis, and localized or diffuse neurologic abnormalities. It is estimated that greater than 30% of individuals with AIDS will develop clinically significant central nervous system disease directly related to infection with the virus. In addition, it has now been well established that virus can be isolated from the cerebrospinal fluid of greater than 50% of infected individuals, even among those who are asymptomatic.

A recent report from New York City established the survival rate in AIDS at approximately 49% one year following diagnosis and approximately 15% five years following diagnosis. Clearly, individuals who present with Kaposi's sarcoma alone have a more favorable survival rate than individuals

who present with opportunistic infection. As of November 23, 1987, the cumulative case fatality rate was 57%. However, this includes individuals who have been only very recently diagnosed with AIDS. Examining the total number of individuals diagnosed with AIDS since 1981, between 80 - 90% of those diagnosed in 1981 and 1982 have died.

Thus, the clinical spectrum of AIDS ranges from an asymptomatic to a symptomatic state to a state of full-blown AIDS. Understanding the mechanisms responsible for the progression from a latently infected state to one of active viral production and ultimate immunosuppression will have major implications in the design of treatment strategies for the virus itself as well as for the reconstitution of the immune response.

TESTIMONY OF DONALD P. FRANCIS, M.D., D.Sc.
DECEMBER 10, 1987

First, I would like to thank you for allowing me to testify before this important committee.

Second, I want to make it clear that what testimony I give here is my own opinion and does not necessarily represent the opinions of the Centers for Disease Control or the California Department of Health Services.

And last, I would like to express my admiration of the committee for its Interim Report. The recognition of the need for more societal commitment was refreshing. But, the statement, "that too much time has elapsed and too many people have become afflicted while questions remain unanswered." was spectacular. And the "call for collective dedication" was magnificent.

Since I am sure that many in the next two days testimony will fill in many of the details of AIDS prevention, including prevalence and incidence estimating, I, as a young but well bruised veteran of serious epidemics, would like, if I may, give some insights of a broader nature.

The overall gist of what I will say is that: 1) we know a great deal about HIV, its transmission, and how to prevent it; 2) we in public health want to and should move ahead with a scientifically designed aggressive prevention program; 3) there are some obstacles that are inhibiting that movement; and 4) most of these obstacles are readily removable.

First, let me outline what we know:

1. HIV is a very virulent virus, perhaps the most dangerous virus of man.
2. It has a long and silent incubation period during which time infected persons remain infectious.
3. It is transmitted exclusively through sexual intercourse (both heterosexual and homosexual), through sharing of blood (especially between intravenous drug users), and from infected mothers to their infants.

The combination of high virulence, long, silent incubation period, and sexual transmission make this a virus of major concern for those of us having experience with these situations.

Indeed evidence to date indicates that the virus has already extensively invaded the United States and, regardless of what estimate one takes, we have a major tragedy on our hands.

The good news is that we as a society and as individuals in the society have it in our power to stop the transmission of HIV today. Preliminary evidence from both the homosexual male

community and the intravenous drug using community suggest strongly that well designed intervention programs can effectively reduce the transmission of HIV and, as a result, the rates of AIDS.

Given this information a broad consensus has been reached in the pubic health sector and reports from the Surgeon General, the National Academy of Science, the Association of State Health Officers and the Conference of State and Territorial Epidemiologists have all agreed on the approach to be taken.

Yet, despite this major problem and the consensus on what needs to be done there is, at best, only a skeleton of an AIDS prevention program in the field.

Why is this? I see several obstacles to fielding a successful AIDS prevention program:

The first is the perception that no one really cares. Using your own words, it appears that instead of having a solid prevention program based on modern science, we have ~~the lack of~~ a fragmented program ~~based on~~ sometimes confused with prejudice and fear.

Second is the confusion centering around the question of whether AIDS prevention should be a police action of the government against the people or a cooperative endeavor of the people with their government.

The consequences of these obstacles have been absence of necessary resources and effective leadership, slow delivery of ~~even~~ basic prevention, and an absence of the usual positive American can-do spirit.

We can, and should, rebuild that spirit, use modern science to generate policy, supply the resources and quickly mount an aggressive program.

We, in the public health sector can do that. We want to. I am confident that given the spirit, the leadership, and the resources we could launch a AIDS prevention program which could severely inhibit the further extension of this virus into the American public.

It is now six and a half years since the discovery of AIDS. It is time to act maturely, ignore all of the peripheral distractions, and mount an effective AIDS prevention program.

REPORT TO THE PRESIDENTIAL COMMISSION ON THE HUMAN IMMUNODEFICIENCY VIRUS EPIDEMIC

PREPARED BY: STEVEN L. SIVAK, M.D. and GARY P. WORMSER, M.D.
DEPARTMENT OF MEDICINE,
SECTION OF GENERAL INTERNAL MEDICINE
and
DIVISION OF INFECTIOUS DISEASES
NEW YORK MEDICAL COLLEGE
VALHALLA, N. Y. 10595

Since widespread testing for human immunodeficiency virus (HIV) infection is not performed in large groups of Americans at different risk for HIV infection and since those cohorts which have been tested may not accurately represent the groups to which they belong, it is impossible to determine precise figures for the prevalence of HIV infection in the United States. This matter is compounded by the fact that HIV infection, except in the form of the Acquired Immunodeficiency Syndrome (AIDS) is not a reportable condition. Furthermore, obtaining exact figures as to the total population of risk group members is difficult. Determination of prevalence must therefore at this time be considered an estimate based upon inferences from potentially biased data.

Using the numbers of the known cases of AIDS based upon surveillance data collected by the Centers for Disease Control (CDC) as well as reported data regarding prevalence of HIV infection in several risk groups, we believe that one can estimate the prevalence of HIV infection in the general U.S. population as well as in identified subgroups.

The critical assumption in our calculations is that the ratio of the number of living patients with AIDS to the number of individuals infected with HIV is constant within different subgroups. We believe that this assumption is reasonable and has been used by others [1]. Since the epidemic of HIV infection in this country is probably in a dynamic state, we chose to use the ratio employing the number of currently living patients as opposed to the total number of patients with AIDS since this may give a more accurate cross section approximation of information relevant at a particular point in time. In 1985 we demonstrated, using the best available information regarding the prevalence of HIV infection in two well studied groups as well as the surveillance data from the CDC, that for every intravenous drug abuser (IVDA) or hemophiliac alive with AIDS at that time there were approximately 300 IVDA and 300 hemophiliacs, respectively infected with the virus. We applied the 1:300 ratio to each of the then identified risk groups and obtained a total estimate of approximately 1.5 million Americans infected with HIV of which about 64,000

individuals were at no known risk (see table). Using census data for adults in the United States and subtracting approximate numbers of known high risk group members we estimated a prevalence of HIV infection for U.S. adults at no known risk to be 45/100,000. At the same time, the United States Red Cross reported that the prevalence of HIV infection among blood donors at presumably no known risk for HIV infection was 38/100,000. We felt that since the ratios of those alive with AIDS to those infected in two well studied groups were similar and that an estimated U.S. adult prevalence of those at no known risk was similar to that actually seen, that our assumptions and data were reasonably accurate. These results were reported in November 1985 [2].

Other estimates for that same period of time of the prevalence of HIV infection range from 500,000 to greater than 2,000,000 [1,3]. We recently re-examined the data in a similar fashion. We again determined the estimated prevalence of infection in high risk groups where data was available in an attempt to obtain the current ratio of those alive with AIDS to those infected. It is clear that this figure is subject to change due to many potential factors. As those at high risk modify their risky behavior, the prevalence of infection in that risk group is likely to change. As more infected individuals develop AIDS and insofar as the survival may be different now than it was in the past, this aspect of the ratio may change as well. In

one well studied cohort of homosexual men the reported ratio of those with AIDS to those infected changed from 1:825 to 1:28 over a four year period [1]. Another study revealed in 1985 that the ratio of those with AIDS to those infected with the virus was 1:30 [4]. This group of homosexual men attended a sexually transmitted disease clinic and may not have been representative of all homosexual men because of a potential bias towards individuals with early manifestations of AIDS.

At this time we chose to determine the ratio in question in well studied populations of New York City. Here reasonably accurate figures for prevalence of HIV infection exist and estimates of the total numbers of members of high risk populations are available.

It is estimated that in New York City there are up to 700,000 homosexual men of whom approximately fifty per cent or 350,000 are infected with HIV [5,6]. We obtained data from the New York City Department of Health AIDS Surveillance Update of 10/28/87, which reports the cummulative cases of AIDS in N.Y.C. by risk group. According to this report 43% of all patients with AIDS since the epidemic began remain alive. Because survival data for each risk group was not available at the time of this report, we assumed that this figure applies to all risk groups. Since there are an estimated 3,021 homosexual men in New York City alive with

AIDS then it follows that for every homosexual man in New York City alive with AIDS there are approximately 115 homosexual men in New York City infected with HIV. It is also estimated that there are approximately 200,000 IVDA in New York City of which an estimated sixty-five per cent or 130,000 are infected with HIV [7,8]. It is further estimated that there are approximately 1,531 New York City IVDA alive with AIDS and hence, for each New York City IVDA alive with AIDS, there are approximately eighty-five New York City IVDA infected with HIV.

If then an average ratio of 1:100 of those alive with AIDS to those infected is applied to all risk groups, one may obtain a current estimation of the prevalence of infection.

Although we have assumed for the purpose of calculation that the ratio is the same for all groups, this obviously need not be the case. For example, the ratio for those who receive blood or blood products is probably lower since heat treatment of factors along with screening of donated blood has resulted in a decline in HIV infection. In fact our calculation of the ratio in hemophiliacs is 1:57. The ratio of those at no known risk or heterosexual partners of high risk group members may be higher since the epidemic of HIV infection in these groups is probably not as "old" as in other risk groups. The ratio appears to tend to decline as the epidemic ages since there would be more cases of AIDS.

prolonged survival of these individuals and hopefully a decrease in incidence of infection.

If one applies the ratio to N.Y.C. cases of AIDS at no known risk one can estimate the prevalence of HIV infection in this group. Since there are approximately 34 N.Y.C. adults at no known risk for HIV infection with Aids based upon data from the N.Y.C. Depatment of Health, we estimate that 3400 New Yorkers are infected. The U.S. census reports that there are 5,306,172 adults living in N.Y.C. By subtracting estimated numbers of high risk group members one can estimate that there are approximately 4,161,172 New York City adults at no known risk for HIV infection. This translates to a prevalence of 80/100,000. The actual prevalence of HIV infection in blood donors in N.Y.C. is 90/100,000 [9]. The similarity here appears to support the accuracy of our calculations and assumptions.

If the ratio of 1:100 of those alive with AIDS to those infected with HIV is applied to the U.S. population then the new approximation for adults infected in the United States is then somewhat less than 2,000,000 (see table). This represents an overall increase of eleven per cent from the data reported in 1985 and is probably consistent with the reported incidence of HIV infection in high risk group members of two to twenty per cent of the remaining uninfected population per year [10,11]. There also appears to be approximately 25,000 children infected with this virus if the ratio holds true in this group (see table).

In summary then, the ratio of cases of AIDS to those infected with HIV appears to have changed from 1:300 to 1:100 from 1985 to 1987. It does appear, however, to remain relatively constant in two high risk groups in which reasonably accurate figures concerning the prevalence of HIV infection and the total population exists. The total number of Americans infected is estimated to be just less than 2,000,000 and has increased by eleven per cent since 1985. More accurate estimations of the prevalence of infection could be made if more data concerning HIV infection in other groups was available. This perhaps, could be accomplished through the reporting to local public health departments individuals who are infected with HIV in addition to those who have developed AIDS. We recognize, however, that this is a controversial issue and must include protection for the rights of those infected. If such safeguards are not enacted, high risk individuals and others may refrain from being tested thus potentially increasing the risk of transmission to others. Aggressive attempts to educate the American public about HIV infection would be an effective means to decrease the incidence and prevalence of this infection.

Table

ESTIMATED NUMBER OF INFECTED INDIVIDUALS WITH HIV INFECTION IN THE UNITED STATES

	NO. LIVING WITH AIDS [3]		ESTIMATED NO. WITH HIV INFECTION	
GROUP	July 1985	Nov.1987	July 1985	Nov.1987
[1] Homosexual or Bisexual Men	4,485	14,671	1,345,000	1,467,100
IVDA	923	3,074	270,000	307,400
Hemophiliacs	31	196	8,970	*11,974
[2] Heterosexual Contacts of Persons at High Risk	187	785	56,100	78,500
Recipients of Blood Products	69	319	20,700	31,900
Persons at No Known Risk	214	568	64,200	56,200
TOTAL ADULTS	3,909	19,613	1,765,470	1,953,674
PEDIATRIC CASES		250		25,000
				1,978,674

1 Includes Homosexual IVDA
2 Includes individuals from countries where heterosexual transmission is common
3 CDC AIDS surveillance data 7/22/85, 11/16/87
*Based on a ratio of 1:57 (see text)

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HOW COMMON IS HTLV-III INFECTION IN THE UNITED STATES?

To the Editor: Fairly precise figures for the number of cases of the acquired immunodeficiency syndrome (AIDS) in the United States are based on surveillance data gathered by the Centers for Disease Control. Since the presence of antibodies to human T-cell lymphotrophic virus Type III (HTLV-III) is itself not a reportable condition, and since little information is available on testing for HTLV-III antibody in the general population, the number of residents of this country who have been infected with the virus is unknown. We suggest that the prevalence of this infection in the general U.S. population as well as in identified subgroups may be estimated on the basis of existing data. The critical assumption in our calculations is that the ratio of the number of living patients with AIDS to the number of patients with HTLV-III is constant within different patient groups. To test this assumption we compared the number of living patients with AIDS with the estimated number of patients with HTLV-III in two well-studied populations — intravenous-drug abusers and hemophiliacs.

The total estimate of hemophiliacs in this country[1] is 14,467, of whom at least 62 per cent, or 8970, may be assumed to be infected with HTLV-III according to Western blot electrophoresis.[2] It is known that there are 31 living hemophiliacs with AIDS (Centers for Disease Control, AIDS surveillance, July 22, 1985). Therefore, for every living hemophiliac with AIDS, there are approximately 289 hemophiliacs with HTLV-III. Similarly, the total number of intravenous-drug abusers infected with HTLV-III in this country may be estimated to be 36 per cent[3] of 750,000,[1] or 270,000. Since there are 923 living intravenous-drug abusers with AIDS, it follows that for every intravenous-drug abuser with AIDS there are 293 abusers with antibodies to HTLV-III. A recent study revealed that this ratio was smaller in a group of homosexual men — 1:30.[4] However, this group was selected on the basis of attendance at a clinic for sexually transmitted diseases and voluntary participation in the study, and may not be representative of all homosexual men.

If the ratio of living patients with AIDS to those with HTLV-III is approximately 1:300, then the total number of U.S. residents who are infected with HTLV-III can be estimated to be 1,765,470 (Table 1). This figure includes 64,200 persons who do not belong to any identified risk group. Using currently available population data, one can estimate that in the U.S. adult population at no known risk for AIDS, the prevalence of HTLV-III infection is 45 per 100,000.

A recent report from the American Red Cross[5] indicates that the actual prevalence of HTLV-III infection, calculated by screening more than 1 million units of donated blood in the general U.S. population is 38 per 100,000. We believe that the similarity of the calculated and actual prevalence figures supports the accuracy of our assumptions and calculations.

Steven L. Sivar, M.D.
Gary P. Wormser, M.D.
New York Medical College
Valhalla, NY 10595

DRAFT RRR

TESTIMONY PROVIDED BY ROBERT R. REDFIELD MD

PRESIDENTIAL COMMISSION ON THE HUMAN IMMUNODEFICIENCY VIRUS EPIDEMIC DECEMBER 10 1987

I appreciate this opportunity to share my perspectives of the AIDS epidemic with this committee. The views presented here are my own and do not purport to reflect the position of the Depaartment of the Army or the Department of Defense.

My perspective on the AIDS epidemic is the product of the opportunity that I have had to practice medicine in the military in the early years of the AIDS epidemic. As a physician, scientist and military medical officer concerned with public health, I have been placed in a unique position to intregrate these disciplines to comprehend the magnitude of the problem that the AIDS virus is causing and will continue to cause our Nation.

First recognized in 1981, AIDS was a new and mysterious syndrome. Yet today, AIDS is no longer a mystery. It is an infectious disease caused by a retrovirus, HIV.
Within 3 years, science had identified the etiology, defined the methods of transmission, and developed accurate diagnotic tests of the AIDS virus infection. Yet despite these advances, the AIDS epidemic has escalated from a medical curiosity, to an isolated public health problem, to to what in my opinion, is a worldwide crisis of potential

catastrophic proportion requiring an urgent coordinated response. And yet the magnitude of the problem remains a subject of controversy; definable yet undefined, resolvable yet unresolved.

WHY? Unfortunately the original case definition of AIDS identified only the late clinical stages of the disease, and thereby severely underrepresented the magnitude of the epidemic from the beginning. The clinical spectrum of HIV infection ranges from an acute retroviral syndrome, to chronic lymphadenopathy, to subclinical T cell deficiency and finally to systemic T cell deficiency (opportunistic infection defined AIDS). This spectrum of disease can be reduced to 6 stages of infection which each advancing stage representing a more severe stage immunological dysfunction. Although early studies reported progression rates of asymptomatic seropositive individuals to AIDS of only 5-10%, the natural history of the AIDS virus has been clarified. Today multiple cohort studies demonstrate progression rates to AIDS in excess of 30%. Our own cohort study demonstrates greater than 75% of patients followed for greater than 18 months has demonstrated progressive immunological disease as accessed by the Walter Reed Staging Scheme. For example among patients evaluated for greater than 18 months, 10% of WR2 developed AIDS (WR6); WR3, 29% AIDS; WR4, 71% AIDS; and WR5 100% developed AIDS (WR6). When followed for 18-42 months 5% of WR2 died; WR3,14% died; WR4 57%, died; WR5, 87% died; and WR6, 100% died. My conclusion from the available

data is that, in the absence of a scientific solution, HIV infection is a progressive infectious disease (in a majority and possibly all individuals) characterized by progressive immunological dysfunction requiring 5-10 years (or more) from time of infection to result in death.

Initially, our understanding of the epidemiology of AIDS was also incomplete, contributing to the underestimation of the problem. Today scientific investigations have unequivocally documented the following modes of transmission: efficient bidirectional sexual transmission (male to male, male to female and female to male); parenteral transmission (blood and blood products, and sharing of drug paraphernalia) and perinatal transmission. SEXUAL TRANSMISSION IS, AND WILL REMAIN, THE MAJOR MODE OF HIV TRANSMISSION. It is critically important to recognize that the sexual transmission of HIV is not dependent on a specific risk behavior. For HIV transmission to occur from one human being to another, all that is required is that one human is infected and one human being is not and they communicate by a method efficient in the transmission of HIV. HIV is a virus which does not discrimate by age, sex, race, ethnic group, social status, sexual preference, or risk behavior. If sexual, parenteral of perinatal contact with the virus occurs an individual is at risk for infection. THIS IS THE MESSAGE WE MUST COMMUNICATE!! Despite continued scientific understanding of the methods of transmission some still continue to focus on AIDS as a high risk group disease.

This is re-enforced by the continuation of hierarchical categorization of AIDS cases by risk groups. Certainly we all recognize that homosexuality does not cause AIDS; and heterosexuality does not protect one from HIV infection. RELIANCE ON RISK BEHAVIOR IS SUBOPTIMAL. KNOWLEDGE OF INFECTION STATUS IS CRUCIAL. Today, there is only one common risk group for HIV infection, that is a human being who has been sexually, parenterally or perinatally exposed to HIV.

Despite knowledge some still underestimate the ultimate importance of heterosexual transmission of HIV. These individuals speculate that HIV will be unique among STD's, rather then assume that the Laws of Nature be as described until definitively proven otherwise. Worldwide heterosexual transmission is the major mode of transmission. Some individuals hope that the United States will be unique. Unfortunately, in the absence of a scientific solution over the next decade, heterosexual transmission will become the major mode of transmission is the United States. We have an opportunity to challenge this deadly virus, but we must recognize our common enemy for what it is, a deadly sexually transmitted disease.

Today's AIDS cases represent an historical account of the magnitude of this epidemic in the late 1970's; yet fails to define our problem today. If one continues to focus on AIDS

as the magnitude of our problem, we will recognize the magnitude of today's problem in 1997.

Likewise, we now appreciate that the epidemiology of AIDS in 1987 merely provides a historical perspective of HIV human to human transmission nearly a decade ago; yet fails to inform us about the epidemiology of viral transmission today.

If we mount our National response to meet the challenge of AIDS in 1987, we are doomed to failure, because the magnitude of our response is a decade out of synch.

It is critical that we change our focus from AIDS and the problem in the late 1970's towards the virus and the problem now in 1987. Let us embrace the scienctific advance of 1981-1984. Rather than relying on end stage clinical criteria, we must focus on the VIRUS. Serological testing for HIV gives us that opportunity to define today's problem-TODAY, rather then debate the issue (i.e. what is the magnitude of HIV infection in America today and what will it be next year). I believe we should define it today and redefine it again next year. The logic that elects to confront a problem undefined when definable, should not be embraced by our society.

WHAT do we know about the extent of HIV infection today?

Serological studies of the prevalence of HIV infection have been almost exclusively confined to traditional "high risk" groups.

One exception is the American Red Cross blood screening data which demonstrates a rate of 1-4 per 10,000. The limitation of all these studies is that none reflects the current status of HIV infection among the general population of sexually active young people.

It is with pride as a military physician, that I reflect on the approach that the leadership of the Department of Defense has executed in response to the AIDS epidemic. HIV infection has been confronted by the military as the important medical, public health and military problem that it is. The DOD policy has been guided by science coupled with important medical and public health issues. It is also with pride as a military researcher, that I reflect on the foresight exhibited by the leadership of the Department of Defense in developing a system to collect HIV screening data which enables DOD to provide critically needed information to our Nation as to the extent of the AIDS virus infection in our Nation's young sexually active people.

One DOD screening program providing valuable data is the civilian applicant screening program. All civilian applicants for the Armed Forces must undergo a medical examination with includes along with other medical testing, screening for the AIDS virus as part of the medical

evaluation for fittness for military service. It should be noted that test results are available within 24 hours for those negative by screening ELISA tests, and within 72 hours for those requiring a confirmatory Western Blot. This time schedule was met independent of where the sample was drawn throughout the United States. Some have critized that testing for HIV is extremely expensive. It should be noted in rebuttal that the DOD testing program, including confirmatory testing, costs less than $5.00 per individual tested. Some speculate that serological testing in low prevalence population would generate an a prohibitive number of false postive results; in rebuttal (as reported by COL Donald Burke in his recent congressional testimony) the scientifically documented false positive occurrence following the DOD HIV testing algorithm was less than 1 per 100,000 individuals tested. In addition, it should be noted that the DOD has provided test linked education to over 4 million individuals to date, without precipitating a social crisis. Large scale timely accurate inexpensive HIV screening can be done; it is being done every day by both the American Red Cross and the Department of Defense.

Between October 1985 and September 1987 over 1,250,000 civilian applicants for military service were tested for presence of antibody to HIV. The overall prevalence of HIV infection was 1.5 per 1000 (data provided by MAJ John Brundage and COL Donald Burke WRAIR). To put this in the

proper prespective, one should recall that in 1975 less than 1 per 1000 homosexual males in San Francisco were infected with the AIDS virus, today over 500/1000 had become infected. In light of the demonstrated efficient sexual transmission of HIV, the fact that 1.5/1000 of American youths desiring to serve their country in the Armed Forces are already infected with this deadly sexually transmitted disease is a tragedy.

The prevalence for males was 1.6/1000 and among females 0.7/1000, for a male female ratio of 2.4 to 1. This ratio is in sharp contrast to the male to female ratio of 13 to 1 of reported AIDS cases.

HIV prevalence increased almost linearly with age:
age 17, 0.16/1000; age 18, 0.22/1000; age 19, 0.60/1000;
age 20, 0.98/1000; age 21, 1.42/1000; age 22, 2.17/1000;
age 23, 2.45/1000; age 24, 3.25/1000;
and age 25, 3.36/1000.

Grouped by age prevalence rose from 0.5/1000 for 17-20 years olds, to 2.4/1000 for 21-25 year olds, to 4.4/1000 for 26-30 years olds, and 3.8/1000 for applicants over the age of 30.

It is of interest that among 17-20 year olds, the male to female ratio was 1.6 to 1 (0.5/1000 for males and 0.3/1000 for females).

Prevalence rates also varied by geographic locale (18 month data). For example, New York State had a prevalence of

4.2/1000, Maryland 3.7/1000, New Jersy 3.3/1000, Delaware 2.3/1000, California 2.1/1000, Florida 2.0/1000, and Texas 1.8/1000.

In addition, the metropolitan areas of New York City, Newark, San Francisco and Washinton DC all included counties with prevalence rates of greater than 1%. In both male and female applicants with a male to female ratio of approaching 1 to 1. For example, in Manhattan the male and female prevalence was 2.0% and 1.7% respectively. In metropolitan areas such as NYC, gender and race were no longer predictors of HIV infection. The major predictive factor for HIV infection was age. Individuals 18-21 had prevalence rate of 3.0/1000 for males and 3.8/1000 for female; for applicants 22-25 the rate was 1.3% (13/1000) for males and 1.4% (14/1000) for females; and for individuals 26 or older, the rate was 3.4% (34/1000) for males and 1.3% (13/1000) for females.

Analysis of overall temporal trends of military applicants by birth year cohorts (MAJ Brundage WRAIR), unfortunately documents a substantial increases in HIV infection among civilian applicants from birth year cohorts between 1962 and 1969. For example male applicants between the age of 18 and 25 had a 30% greater likelyhood of HIV infection between over a one year period. This was true for both white and black applicants. Estimated doubling times of the HIV epidemic in this population was less than 3 years.

These data demonstrate that a substantial proportion of the America's youth are already infected with the AIDS virus and capable of unknowingly transmitting this deadly virus to others.

Another source of information to provide a glimspe of the extend of HIV in a population is the result of the US ARMY HIV program. The preliminary analysis provided by MAJ Patrick Kelly, WRAIR demonstrated the overall prevalence of HIV infection in the US ARmy for males is approximately 2 per 1000 and for females nearly 1 per 1000 (0.9/1000). Again age is an important variable with prevalence rates ranging from 0.4/1000 for individuals under 20 years of age, to 1.6/1000 for 20-24 year olds, 2.7/1000 for 25-29 year olds, 3.0/1000 for 30-34 year olds, and 1.9/1000 for soldiers over 34 year of age. Analysis by race/ethnic group demonstrated prevalence rates of 1.1/1000 for caucasians, 2.6/1000 for Blacks, and 2.5/1000 for hispanics. Bivariant analysis by race and sex demonstrated that prevalence rate ranged from 0.4/1000 for caucasian females, to 4.7/1000 for BLack males. Notable however is that the prevalence of HIV infection black and hispanic females (1.6/1000) is greater than that of white males (1.1/1000). Also of interest in the fact that in 1983 and 1984 as a physician at WRAMC, approximately one half of the patients that I cared for with symptomatic retrovirus infection were married men and women. I was forced to confront the grim reality then of the impact that HIV infection will have on the American family.

Although many critics challenged our findings of heterosexual transmission of HIV, few acknowledged the uniqueness of WRAMC patients in 1984 with HIV infection (ie 50% married, over 20% females ect). As a result of the HIV program, it should come as no susprise that over 40% of the soldiers infected with HIV are married.

The philosophy behind the HIV program simply put is that knowledge of HIV infection is better than ignorance of HIV infection. Each member in the US ARMY is provided several important opportunities. The opportunity if infected with HIV to recieve medical care based on all the medical knowlegde available in 1987. The opportunity to face the future without blinders. The opportunity to no longer unknowingly transmit this deadly virus to another human being. The opportunity to be informed if they have been exposed to this virus. The HIV screening programs were responsible for providing this knowledge to the individual soldier over 90% of the time. Less than 3% of total HIV infection were established as a result of voluntary self referral and less than 5% were established because of a clinical evaluation. Therefore greater than 90% of all HIV infected individuals in the US Army, only became aware of their HIV infection as a consequence of one of the military's screening programs.

The DOD has a firm grasp on the extent of HIV in the DOD. The US ARMY also has in place procedures, not only to insure

earlier accurate diagnosis of HIV infection in its members, but also to define the dynamics of infection in the ARMY over time. Guess work will not be required. Preliminary analysis of direct measurements of the incidence of HIV infection in the US Army, (a population provided tested linked education) is in excess of 0.5/1000 (data provided by MAJ John McNeil, WRAIR). I believe that the data provided by the US military provides America with its best guess. However because of selection biases, it should be recognized that the military data in likely to underestimate the HIV infection rates in the " general population " of young sexual active Americans.

BUT WHAT IS THE MAGNITUDE OF HIV IN YOUNG AMERICANS THROUGHOUT THE US TODAY? WHAT WILL IT BE NEXT YEAR? WHAT WILL BE THE CHANGE? IS OUR CURRENT POLICY EFFECTIVE? HOW WILL WE KNOW? WHAT SHOULD WE DO?

Never before in the history of the human race, has a society been given the opportunity to have the scientific knowledge at its disposal, at a time of the emergence of a new infectious agent. We have been given a rare and treasure opportunity. It is our responsibility not to waste it. In the year 2000, neither you nor I will be held accountable for whether or not an AIDS vaccine is developed or curative therapy discovered; these scientific advancements will occur with time, maybe in 10 years maybe sooner, or maybe later. No one knows. However, we will be

accountable to the American of the twenty-first century (our children and thiers), for our utilization and implementation of the knowledge available to us in 1987.

No matter how excellent the alibias for why we do not have a firm grasp on the magnitude of HIV infection in 1987 in our Nation, we can obtain this critical information. I believe this to be crucial. We must define the extent of HIV infection. If we continue to mount our National response to meet the challenge of AIDS in 1987, based on the cases of AIDS in 1985 we our doomed to failure. National policy should be based on the knowledge of HIV infection in our Nation today; and not limited to quesses, models or opinions. We must ensure that we don't loss the war just because we underestimated the enemy; or because having committed the necessary resourses, applied them to the wrong Front. The only way I know to ensure the generations of the twenty-first century (my children, our children) and beyond, that we confronted this virus to the best of our ability is to first be sure we accurately define the problem. This is the only way we can optimize our National response, providing all the resources needed, where thier needed, when their needed. This virus will steal the lives of more young Americans over the next decade, than those who gave thier lifes to defend our Country in the past 4 wars. We can hope for an early scientific breakthrough, otherwise, unfortunately, the AIDS epidemic of the late 1990's has already occurred. However the AIDS epidemic of the twenty-first century is

preventable. We have at our disposal all the tools necessary to eliminate ignorant transmission of this deady virus. Yet, to date, we have failed to take charge and accept our resposnsibility to challenge this virus with the vigor, courage, and committment that has made our Nation so great. We need only to use our knowledge, to recognize our compassion, to exploit our ingenuity, to demonstrate our courage , and persevere. Then (to paraphase Theodore Roosevelt) at best we will know the triumph of high achievement measured in the reduction of human suffering, or at worst with failure, know we failed while daring greatly. It is important that we all recognize the problem for the crisis it is; so we can begin to develop the solution for a better tomorrow. Define the problem, remove the uncertainty. Let's change the debate from "Is thier a problem? Where? How great?, to, now that we know the extent of the problem " What can we do?".

In closing, it is my opinion that the AIDS virus is no longer an isolated pulbic health problem. It has escalated to a National problem capable of affecting all governmental departments and altering our society and the World as we know it today. MORE AMERICANS WILL DIE OVER THE NEXT 10 YEARS FROM THIS VIRUS THAN LOSS THEIR LIVES IN THE LAST 4 WARS. WE SHOULD ASK OURSELVES- BEYOND THE LOSSES WILL BE EVEN GREATER. WHAT IS AN APPROPRIATE RESPONSE TO THE REALITY OF SUCH A PREVENTABLE LOSS OF AMERICAN LIFE? We must recognize it as such now despite the fact that the

ultimate impact of today's problem will not be upon us for 5-10 years. The difficulty, as I see it, is that some Americans can not foresee the grim reality of the next decade. They will only understand when forced to confront human suffering in the flesh. We must provide them the vision of the future, so that we have the necessary resolve to respond fully as a Nation now.

No matter now excellent the alibias, we know enough now to limit the impact that this virus will have on us, our children and our Nation. THE EPIDEMIC OF THE TWENTY-FIRST CENTURY IS PREVENTABLE. Yet we have been slow to take charge and accept our responsibly to challenge this virus with the vigor and committment that has made our Nation so great. Public health is a responsiblity of governement. Cooperation to maintain the public health is the responsibity of each of the citizens of that government. In any infectious disease knowledge of the infection is paramount in its control. I would hope that soon every sexually active citizen would have the same opportunities provided the members of the Armed Forces. Vigorous leadership, coupled with accurate education and classical public health measures will limit the spread of this deadly virus in our Nation. But first, we must, as a Nation, define and recognize this AIDS virus as the national crisis that it is. Then we must have the courage to develop an effective national policy and the resolution to mobilize the resources necessary to combat and defeat our common enemy, this

virus. THE EPIDEMIC OF THE TWENTY-FIRST CENTURY CAN BE PREVENTED. WE CAN DO IT.

Thank you for the opportunity to both share this information with you and to express my opinion.

PREPARED STATEMENT TO THE PRESIDENTIAL COMMISSION ON AIDS

Richard L. Vogt, M.D., F.A.C.E.
State Epidemiologist
Vermont State Health Department
Clinical Associate Professor
Departments of Family Practice
and Medicine
University of Vermont
College of Medicine

Dec. 10, 1987

Aids Virus Testing

I have been asked to provide you information about the accuracy of HIV antibody testing in both high and low prevalence populations. As has been discussed, there are two testing procedures used to attempt to identify persons infected with the AIDS virus. The first procedure is the ELISA test which measures human immunodeficiency virus antibody levels in serum. The ELISA test was originally designed to be as "sensitive" as possible, to pick up all those persons who may have antibodies to the virus so that they could be removed from the blood donor pool. As a result, this test creates a significant pool of individuals who may not have the antibody, but test positive, anyway. Therefore, it is recommended that the blood sample be re-analyzed with the ELISA technique to determine if the sample is repeatedly positive. If a sample is repeatedly positive, through two analyses, the level of suspicion is raised that this may be a positive test.

If the blood sample is repeatedly positive on ELISA, the blood sample is subjected to another test, the Western blot method. This is a very laborious and costly procedure which identifies specific particles of the HIV antibody in a person's blood as shown in the next slide (SLIDE 1). Each band shows a reaction to the antibodies to the specific

components of the HIV virus. Researchers currently feel that positive tests to both ELISA and Western blot should be considered as probable laboratory evidence for infection with the virus. However, as we shall shortly see, the accuracy of that determination depends on who is tested. If the test is considered positive by the testing laboratory, persons submitting the sample would be notified of a positive test result and the person is counseled on the likelihood for exposure to the virus.

Accuracy of the HIV Tests

All laboratory tests need to be evaluated for their accuracy and are usually measured against a comparison called a "gold" standard. When the ELISA tests were originally licensed, they were evaluated against patients who had AIDS and evaluated against the Western blot test. Most determinations about accuracy of HIV antibody tests are made by comparing ELISA with Western blot procedures. Test comparisons with the recovery of the virus, the true evidence of infection, are technically difficult and usually do not enter into the discussion about test accuracy.

One of the dilemmas that confuses all discussions about HIV test accuracy concerns the disagreement within the scientific community about what constitutes a positive Western blot test. The next slide (SLIDE 2) shows the differing criteria

for test positivity by different scientific groups using this test around the country. Laboratories also use different preparations for conducting their Western blot procedures. It is no wonder that there has been a great deal of discussion about the accuracy of HIV antibody testing when we have disagreement over the criteria for a positive Western blot test.

Most statements about accuracy of laboratory tests are made in terms of two determinations: sensitivity and specificity as shown in the next slide (SLIDE 3). The "gold" standard is listed at the top of the 2 X 2 square and the test result is listed on the left hand side. The published sensitivities (C/A+C or the chance of correctly identifying a positive test in those who have AIDS) and the specificities (D/B+D or the chance of correctly identifying a negative test in those who do not have AIDS) of the ELISA test look fairly good. The range of published ELISA sensitivities is 93.4% to 100% and the range of specificities ranges from 99.2% to 99.8%. There were similar agreements when comparing the ELISA test with the Western blot analysis.

When considering whether a medical test is meaningful in high or low prevalence populations, you need to turn to two different measures of accuracy as depicted in the next slide (SLIDE 4). The comparison cells are the same as those used for sensitivity and specificity determinations, but different

equations are used to determine a more important measure: predictive values. Predictive values answer the following questions: What is the chance that a person with a positive test is truly infected with the virus (A/A+B on the slide)? Likewise, what is the chance that a person with a negative test is truly free from the virus (D/C+D on the slide)? These are very important questions to be answered when a patient wants to know the meaning of his test result. Whereas sensitivities and specificities remain relatively constant with both low and high prevalence populations, predictive values are widely different depending on the characteristics of the population screened.

This stands to reason, because if you screen a population that has no chance of being infected or afflicted with a disease, all of the positives generated from a test will be false positives, since no laboratory test or series of tests are perfectly accurate. For example, you could test 1000 men to see if they are pregnant. The laboratory test will identify a few that will be test-positive, even though there is no possibility that the positive results will be accurate. In this situation, we would refrain from testing an inappropriate population (men), so we would fail to generate erroneous information.

We need to consider the test accuracy with the combined procedures of both the ELISA and Western blot tests.

Sequential testing will tend to further limit the number of false-positive tests but will not eliminate them. The number of false-positve tests for both ELISA and Western blot tests will still escalate when you screen populations without much infection. This is an exaggeration of testing errors that occurs with any laboratory test or sequence of tests which tends to be magnified in populations that are sparingly infected.

The next slide (SLIDE 5) helps to describe the value of the combined ELISA and Western blot analyses when they are used to screen different groups. The likelihood of combined correctly positive tests is depicted on the vertical axis. The horizontal axis is the estimated infection rate in different populations. Populations with a greater likelihood of infection will tend to be further to the right on the horizontal axis. Two assumptions for the sensitivities and specificities of the two tests are given in the legend. The exact values do not have that much importance. The curves that they generate help demonstrate the principle that the value of combined positive test results will deteriorate if they are used to screen low-risk populations, such as those seeking marriage licenses or routinely seeking medical care.

Looking at this situation in another way by using data in an article published by Meyer in the New England Journal of Medicine, the overall best estimate of the false-positive

rate for the combined tests: first ELISA, second ELISA and confirmatory Western blot test is estimated to be 1 per 20,000 samples in that article. The article also states that the seroprevalence of a low prevalence population (such as female blood donors) is approximately 1 per 20,000. That means that for every 20,000 tests run, there will be a total of one false positive test and one true positive test. Therefore, half of all positive tests will be inaccurate when one screens this population. That is, the positive predictive values of the test is 50%.

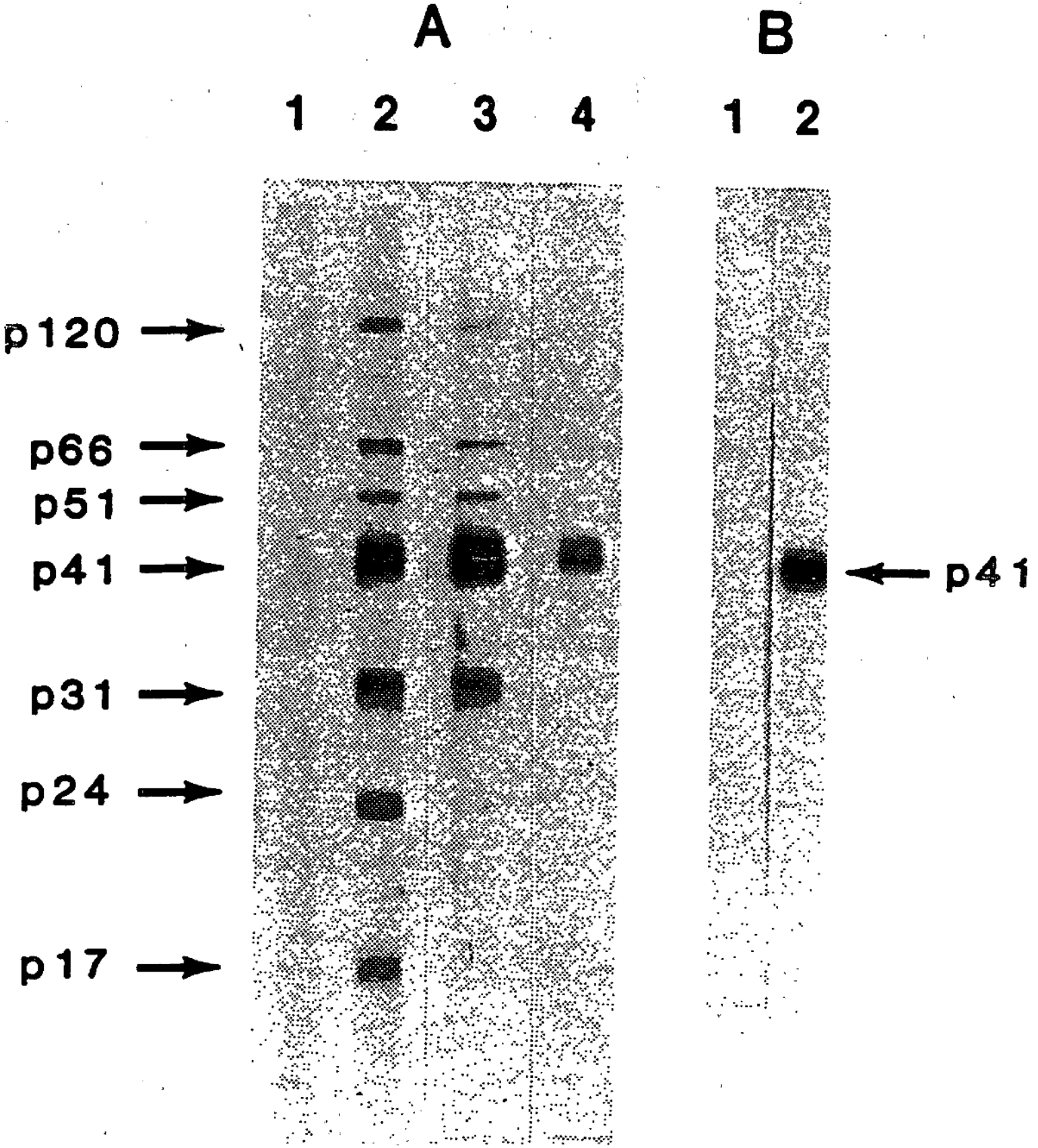
Sequential testing presents another dilemma that often fails to be addressed when HIV testing is discussed. Persons may be ELISA test positive but Western blot test negative. It is difficult to sort out whether the patient is infected and the result is frequently considered "indeterminate". The likelihood of an "indeterminate" result increases dramatically when populations who are unlikely to be infected are screened. Using strict criteria for Western blot positivity has the appeal of minimizing the number of false positive results. However, this will increase the number of "indeterminate" test results, as well.

One can see that one runs the real risk of generating inaccurate seroprevalence data when low-risk populations are screened. Even more importantly, one also runs the risk of labelling someone positive who is not really positive if

widespread screening of low risk populations are undertaken.

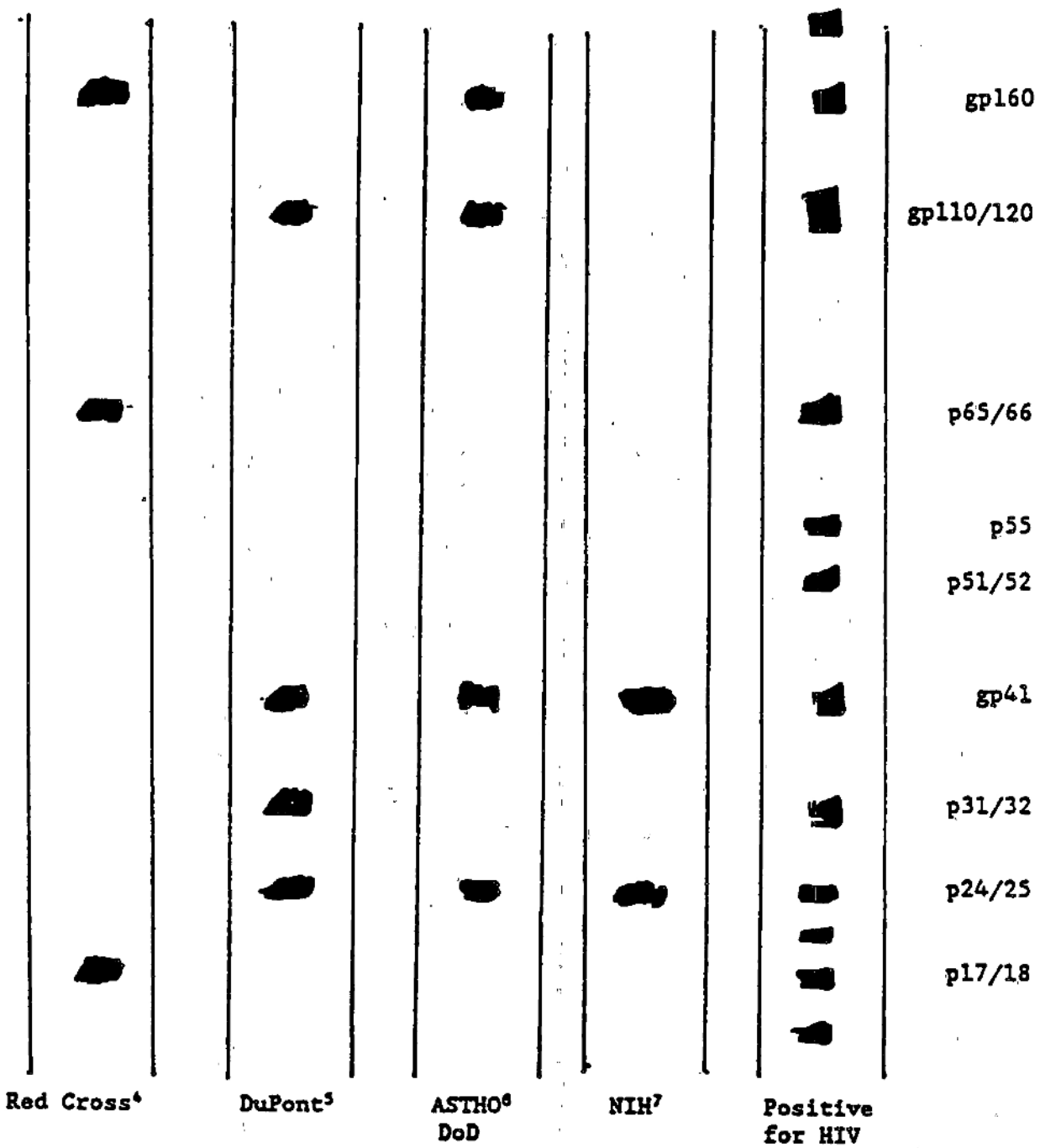
The tests, as developed, are extremely useful when used to screen appropriate populations, most notably those persons who are engaging in high-risk behaviors such as intravenous drug users and persons who are having unprotected sex with multiple different sexual partners. But the tests can and will fail when applied to incorrect populations. Tests have to be close to 100% sensitive and 100% specific to be applicable for all groups. The ELISA and Western blot tests are not that accurate for universal applicability.

SLIDE 1



SLIDE 2

Western Blot: Differing Criteria For A Positive Test



1 Only one possible combination is shown.

2 Presence of either one, plus p24/25 and p31/32, is positive.

3 Presence of any two is interpreted as positive; gp110/120 and gp160 count as one.

4 Positive is either p17/18, p24/25, or p55, plus gp41, gp110/120, or gp160, plus p31/32, p51/52, or p65/66.

5 Positive is p24/25, p31/32, and either gp41 or gp110/120.

6 Positive is any two of p24/25, gp41, and gp110/120-gp160.

7 Positive is p24/25 plus gp41.

SLIDE 3

	INFECTION	NO INFECTION
TEST POSITIVE	A="TRUE POSITIVE"	B="FALSE POSITIVE"
TEST NEGATIVE	C="FALSE NEGATIVE"	D="TRUE NEGATIVE"

SENSITIVITY = PROBABILITY THAT THE TEST WILL BE POSITIVE WHEN INFECTION IS PRESENT = A/(A+C)

SPECIFICITY = PROBABILITY THAT THE TEST WILL BE NEGATIVE WHEN INFECTION IS NOT PRESENT = D/(B+D)

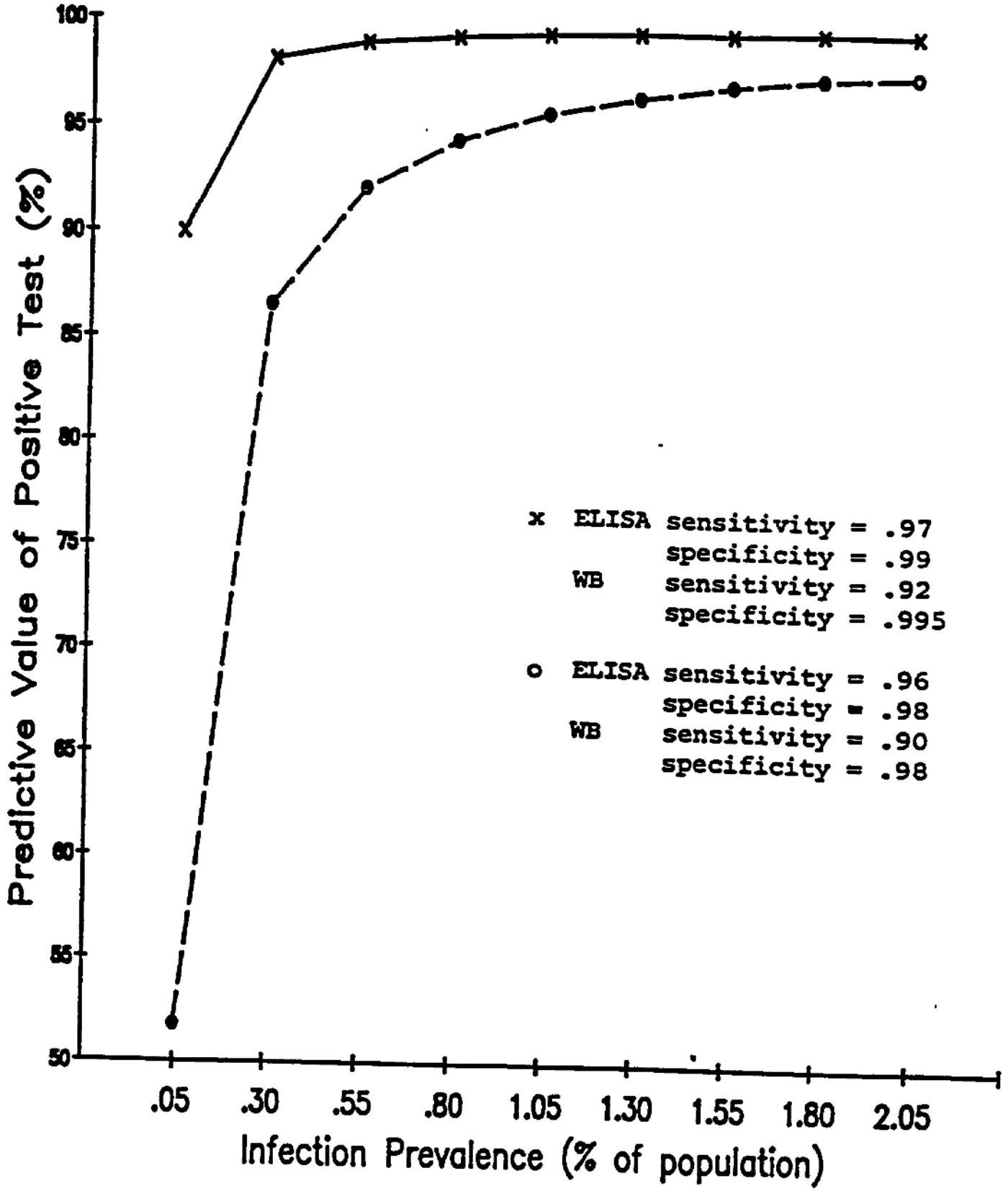
SLIDE 4

	INFECTION	NO INFECTION
TEST POSITIVE	A="TRUE POSITIVE"	B="FALSE POSITIVE"
TEST NEGATIVE	C="FALSE NEGATIVE"	D="TRUE NEGATIVE"

PREDICTIVE VALUE POSITIVE = PROBABILITY THAT A PERSON WITH A POSITIVE TEST TRULY IS INFECTED = A/(A+B)

PREDICTIVE VALUE NEGATIVE = PROBABILITY THAT A PERSON WITH A NEGATIVE TEST TRULY IS NON-INFECTED = D/(C+D)

Figure 1. Predictive Value of Combined Positive ELISA and Western Blot Using Different Estimates of Sensitivity and Specificity



November 23, 1987

Farr's Law Applied to AIDS Projections

by

Alexander D. Langmuir [1]

Prepared for a panel on the Epidemiology of AIDS at hearings of the Presidential Commission on the Human Immunodeficiency Virus Epidemic, Washington, DC, December 10, 1987.

Based on a paper submitted to the New England Journal of Medicine by Dennis J. Bregman and Alexander D. Langmuir.

1. Epidemiologist, retired, Chilmark, MA 02535

The current AIDS epidemic presents a major challenge to theoretical epidemiologists to find a rational basis for projecting the future incidence of disease. Purely empirical approaches cannot be expected to provide as relevant a projection as one based on epidemiologic inference. The epidemic theory of AIDS must have a biological basis supported by epidemiologic precedent. In October 1985, one of us proposed that Farr's Law of Epidemic Curve be invoked (1). In this paper we extend this concept by applying it to the most recently available data. Our analysis indicates that the homo/bisexual male and IV drug abuser epidemics will crest in 1988 and then decline progressively through 1995.

FARR'S LAW

In 1840 in his second annual report as secretary to the Registrar General of England and Wales, William Farr observed that epidemics tended to rise and fall. This was not a particularly profound statement, but he went on to suggest that the curve followed a reproducible mathematical function. As Brownlee pointed out some 70 years later Farr did not seem to be conversant with Gaussian statistics, but his proposed method of fitting a curve to the smallpox data in 1840 was essentially a normal curve (2). In its simplest form Farr's Law of the Epidemic Curve may be stated "epidemics rise and fall in a normal curve."

Farr did not pursue these ideas further, at least not in his extant writings, until 1865, when a severe epizootic of cattle

plague struck in England. The epizootic began in late summer and increased alarmingly to a total of approximately 50,000 cases during a four week period at the beginning of the year 1866. On February 16, 1867 Farr wrote to the Daily News of London as follows; (2)

"Sir,

The following passage occurs in the report of Mr. Lowe's last speech in the House of Commons;

'If we do not get the disease under by the middle of April, prepare yourself for a calamity beyond all calculations. You have seen the thing in its infancy. Wait, and you will see the averages, which have been thousands, grow to tens of thousands, for there is no reason why the same terrible law of increase which has prevailed hitherto should not prevail henceforth.'

No one can express a proposition more clearly than Mr. Lowe; but the clearness of a proposition is no evidence of its truth. And in the present instances I hope to be able to convince Mr. Lowe himself that the proposition which he has propounded is founded on a misconception..."

Farr then proceeded to show that the figures in successive four week periods did not continue on the principle of doubling but rather that the rate of increase was progressively declining:

"Thus the increase in the first interval was at the rate of 96.07 percent; in the second interval it was 79.81 percent; and in the third or last interval under observation it was only 39.47 percent. Now here is a complicated law of decrease in these rates; and the 'terrible law' is such that - if it is any law at all -

the number of attacks in the next four weeks will be less."

Farr predicted an early crest for the epizootic followed by a rapid decline. His published prediction was amazingly close to the actual course of the epizootic.

There is a certain resonance in the public statement of a high ranking member of parliament commenting on the cattle plague with those of some high ranking officials in Washington and elsewhere commenting on the current AIDS epidemic. Wade Hampton Frost during the 1930s is reported to have commented that Farr's published statement on the cattle plague was the 'most courageous' prediction ever made by a responsible public health official (3). It deserves respect today.

THE AIDS EPIDEMIC

The data we present here are derived solely from the official reports of the CDC AIDS Program released on October 5, 1987. Table 1 shows the semiannual incidence of AIDs cases in the United States from 1982 to 1986 by transmission category and date of diagnosis. These data have been corrected for the estimated number of diagnosed cases not yet reported to the CDC AIDS Program. The data for the first five transmission categories are graphed on a semilogarithmic scale in figure 1.

For 1982 and 1983 all of the curves show a steep linear increase reflecting the well known logarithmic or geometric rise in

incidence. By 1984 the curves begin to veer off to the right. This tendency increases in 1985 and 1986. This is merely a graphic presentation of the long recognized and fully publicized increase known as the doubling time used to describe the early stages of the epidemic (4,5). It is indeed reminiscent of Farr's observations on the cattle plague.

Extending the curves backward in time and downward to an arbitrary epidemic threshold of less than ten cases per year it is clear that the epidemic among homosexuals began in the late 1970s; that among the IV drug abusers appears to have started in 1979; and those among the transfusion recipients and hemophiliacs clearly later, in 1981 or possibly not until 1982.

The data for heterosexual and unknown transmission categories are deemed too insufficient to warrant projecting their curves. We note that these transmission categories have consistently produced about 7 percent of all AIDS cases. No evidence suggests their trends differ markedly from the total.

In table 2 we have consolidated the data for homosexuals and IV drug abusers into one group comprising about 90 percent of the AIDS cases and tabulated the data on an annual basis. The column of first-ratios is calculated by dividing each annual total by the total of the preceding year. It reflects the annual rate of increase. This declines from 187 percent in 1983 to 49 percent in 1986. The second column of ratios reflect the acceleration in the

rates of increase. In this instance the acceleration is negative, the second ratio being less than unity.

Actually these second order ratios are quite stable, particularly those for 1985 and 1986 which are nearly identical. Taking the mean of these two ratios, namely .8490, and assuming it to remain constant we have fitted a normal curve to the data by simple arithmetic as shown.

These projections are shown in figure 2. The fitted curve characterizing the homo/bisexual and IV drug abusers crests in mid 1988 and declines symmetrically thereafter. The total cases for these combined transmission categories to 1995 is 113,588. Inasmuch as these comprise 90 percent of the total cases, and this percentage has not changed appreciably over time one can arrive at a rough but reasonable estimate for total cases of AIDS in the United States to be reported by 1995 somewhat less than 130,000.

We do not believe it would be productive to calculate confidence limits for this very simplified analysis of an intrinsically complex situation. To do so would imply a greater degree of confidence in the precision of our data than is justified. Perhaps it would be more prudent for us to state that our projection for total cases falls short of the projection accepted by the National Academy of Science Commission on AIDS of 270,000 cases by the end of 1991 (6,7). The basic conclusion of our study is that using elementary mathematical concepts and a hypothesis

with biological basis (8) supported by epidemiological precedent the data suggest that the AIDS epidemic will crest soon and then decline.

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8. Brownlee J. On the Curve of the Epidemic. British Medical Journal, May 8, 1915.

TABLE 1

Semiannual Incidence of AIDS in the United States
from 1982 to 1986 by year of diagnosis and transmission category*

Year and half	year	Homosexual Bisexual	IV-Drug Abuser	Both	Transfusion	Hemophiliac	Heterosexual†	Unknown	Total
1982	1st	223	56	23	1	2	34	14	353
	2nd	399	109	71	7	4	33	20	643
1983	1st	754	216	117	13	8	66	33	1207
	2nd	982	296	160	27	4	65	46	1580
1984	1st	1618	410	214	40	24	96	72	2474
	2nd	2118	553	300	49	25	120	75	3240
1985	1st	2982	755	343	103	34	153	91	4461
	2nd	3735	951	378	106	68	193	154	5585
1986	1st	4570	1142	528	183	60	278	190	6951
	2nd	5496	1263	610	202	82	315	259	8227
Total		22877	5751	2744	731	311	1353	954	34721
Percent		65.9	16.6	7.9	2.1	0.9	3.9	2.7	100.0

* Figures corrected for delayed reporting due to the lag from date of diagnosis to date the report is received by the CDC. The corrections were made specific for each transmission category and month of diagnosis

† Heterosexual category consists of contacts of AIDS infected persons plus those exposed overseas.

Figure 1
Semiannual Incidence of AIDS in the USA
by Year of Diagnosis 1982 - 1986

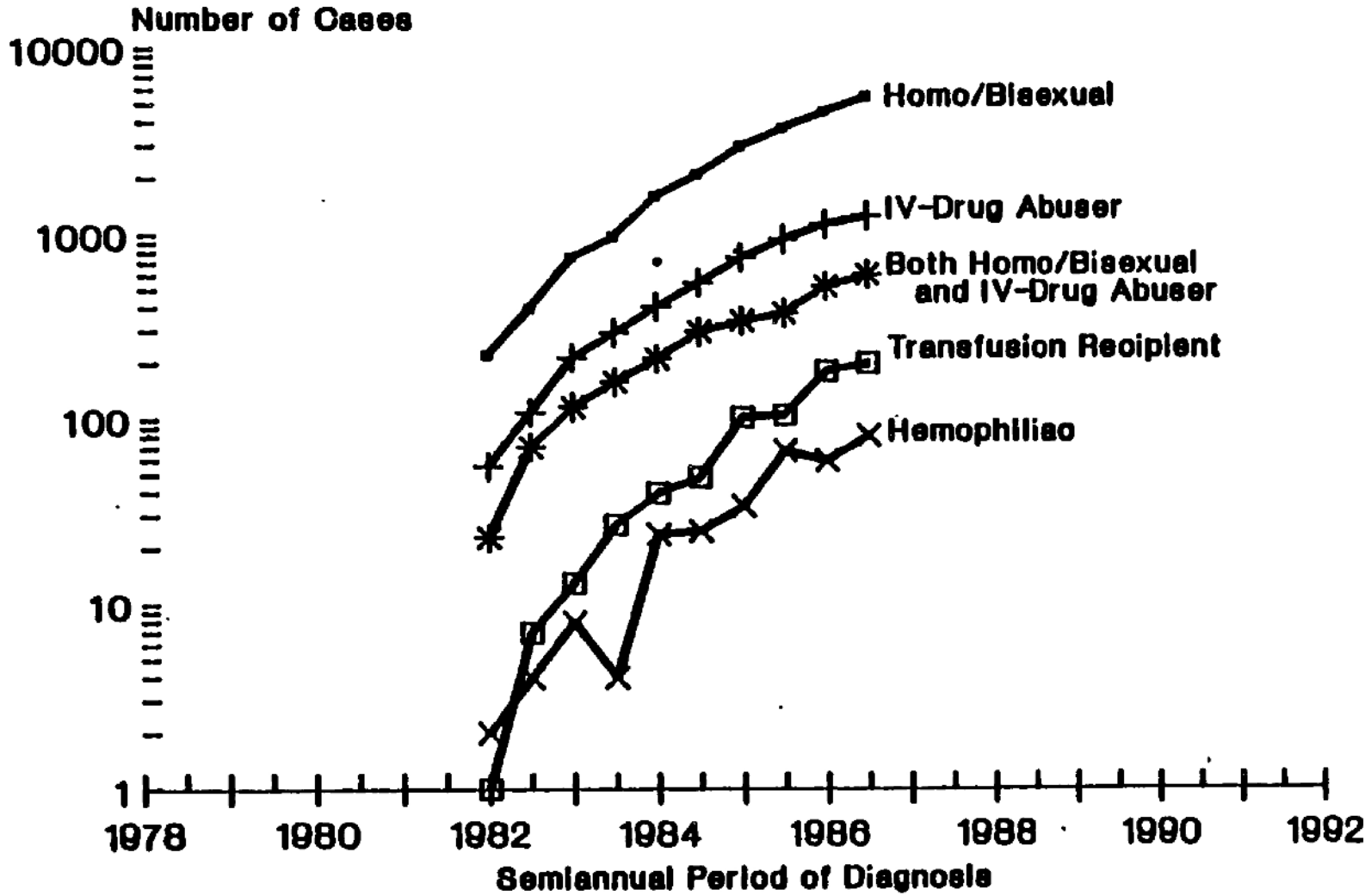

Table 2

Annual incidence of AIDS in the United States among homosexual/bisexual and IV drug abuser cases combined by date of diagnosis, 1982 to 1986 with projections to 1995.*

Year	Number of Cases	First Ratio	Second Ratio
1982	881		
1983	2525	2.8661	
1984	5213	2.0646	0.7203
1985	9144	1.7541	0.8496
1986	13609	1.4883	0.8485
1987	(17197)	(1.2636)	(0.8490)
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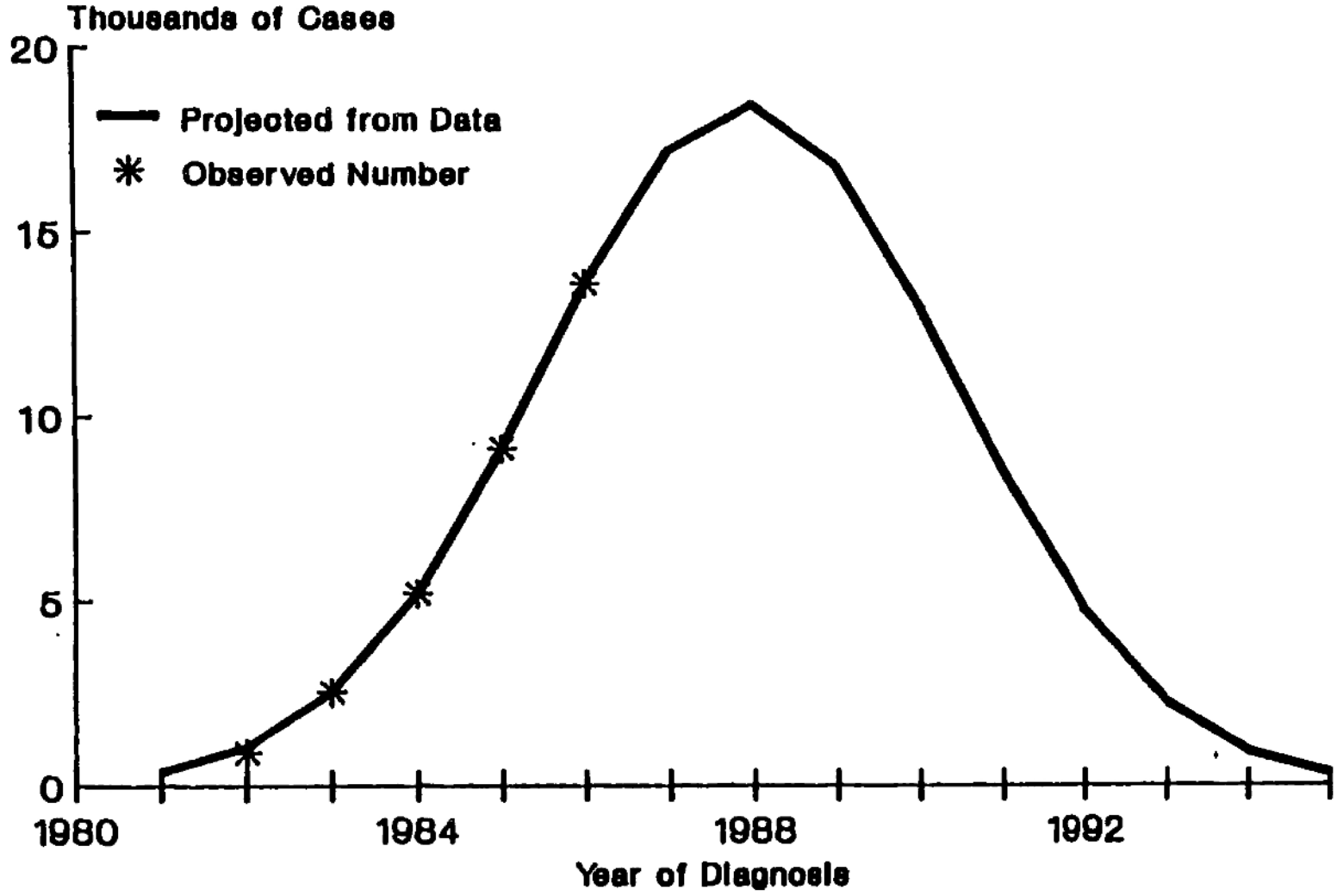
1992	(4759)	(0.5575)	(0.8490)
1993	(2253)	(0.4734)	(0.8490)
1994	(979)	(0.4019)	(0.8490)
1995	(340)	(0.3413)	(0.8490)

* Projections, shown in parenthesis, for 1987 and later are based on the assumption of a constant second ratio in 1985 and 1986

Figure 2
AIDS in the USA
Homo/bisexual and IV Drug Abuser Cases
by Year of Diagnosis 1982-1986 with Projections to 1995



Corrected for delayed reports

AIDS Projections are too High

Prepared for presentation by Alexander D. Langmuir at the Hearing on Incidence and Prevalence, of the Presidential Commission on the Immunodeficiency Virus Epidemic, in Washington, DC, Thursday, December 10, 1987

I deeply appreciate the honor of being invited from an active retirement on Martha's Vineyard to testify along with my colleagues on this panel. They are now on the firing line in this serious epidemic crisis. I once was there too when chief epidemiologist at the CDC. They have my warm sympathy and best wishes.

My long held view, which is now becoming widely known is that the projections of the incidence of AIDS in the USA are too high. I presume this is the reason I have been invited to testify. I am happy to do so.

The active practice of epidemiology has been my professional career for 50 years. During this time I have become increasingly intrigued with Epidemic Theory, namely the effort to divine the laws governing the occurrence and course of epidemics and to express these in mathematical terms. Progress in this field over a century and a half has been disappointingly slow. The factors involved are too complex varied and intangible, the measurements are too imprecise to be amenable to mathematical expression even with the aid of modern computers.

Back in 1840, however, a great epidemiologist named William Farr in London made an observation that in a very general way had stood the test of time. He noted that epidemic small pox seemed to follow an orderly path. He fitted a curve to his data which we now recognize to be a normal curve, the simple "cocked-hat" curve that is the basis of classical statistics. His later admirers have promulgated Farr's Law which simply states that epidemics rise and fall in a normal curve. During an epizootic of cattle plague in London in 1865-

1866, when the incidence was seemingly disasterously increasing he predicted that the epizootic would soon crest and rapidly decline. He was right. Thus began the hazardous game of predicting the course of epidemics.

I am known among my colleagues as temerous Alex, foolishly courageous in making predictions. I have been right some of the time, and wrong on many occasions. I persist in this trait for several reasons. First of all it is exciting and fun to be at the cutting edge of an unresolved epidemic problem and sometimes even over the edge. More seriously to make reasonably responsible predictions demands at least the beginning of an understanding of the underlying theory of the disease. When predictions are fulfilled one gains confidence in going forward toward a more complete theory. When predictions fail you pick up the pieces, reevaluate your basic premises and start over.

I first indulged my obsession concerning AIDS in October 1985. I was "drafted" by Dr. Fred Robbins, then president of the Institute of Medicine to open the discussion at a panel on the subject during the annual meeting that was devoted to AIDS. He instructed me, "Be provocative."

I quoted William Farr. I then went on to challenge the then prevalent and still widely believed concept that AIDS would continue to spread geometrically and extend widely into the heterosexual population. I stated categorically on the basis of my professional judgement that "No biological system, surely not an epidemic, can increase geometrically for long. I argued that among the four principal transmission categories, the homosexuals, the IV drug abusers,

the transmission recipients and the hemophiliacs I could find no theoretical basis for a continuing geometric increase. In fact the then already well known "increase in the doubling time" precluded such a conclusion. I even hazarded a forecast, the word prediction is too strong, that the epidemic would crest in "mid summer of 1986." This caused no ripple of interest in the panel. They went on to discuss other matters. No mention was made in the book summarizing the whole meeting.

It is just as well. The forecast missed. The incidence continued to increase, to some alarmingly, although the rate of increase was dampened and the doubling time lengthened. I was wrong.

With my colleague Dennis Bregman we persisted. In May we submitted a brief manuscript to the CDC with proposed publication in the Morbidity-Mortality Weekly Report. We predicted a crest to the epidemic in December 1987. The paper was respectfully declined. Although all the evidence is not yet in it appears that we were wrong again

Reassessment of our failures led to what we think are clear explanations. The first time, in 1985, I had grossly underestimated the incubation period. I assumed it to be two to three years. In this error I had ample company. We now believe it is more nearly six to seven years and quite variable. The second failure was an artifact of reporting. During the late months of 1986 and early months of 1987

reporting from the states to CDC lagged perceptibly only to be corrected by an increase in reporting during the late winter of 1987. This gave, for a short period, a false sense of an impending turnover in the curve.

Now Bregman and I are persisting in our view. A manuscript that has been submitted to a peer review scientific journal has already been introduced in evidence to the panel. I would like to examine the two tables and figures in that paper.

Table 1 presents the incidence data of AIDS in the USA from 1982 through 1986 by transmission category. This comes directly from the official CDC AIDS surveillance data and is or at least should be familiar to all students of the problem. It has been published in essentially this form regularly in the Morbidity-Mortality Weekly Report. There are certain crucial differences. These data are by date of diagnosis. The are limited to cases diagnosed in 1986 or earlier. They are drawn from the October quarterly report for October 1987. Thus a nine month period has elapsed to correct for the lag between diagnosis and report to CDC. The data have been further corrected for longer delayed reports. The table has been submitted to CDC, not for approval but for criticism. None has been offered.

These data are graphed in figure 1, using the standard semilogarithmic scale which shows relative change and properly reflects comparative trends. The straight line steep upward trends in 1982, 83, and 84 are evident reflecting the logarithmic phase of the epidemic. Then all of the curves veer off to the right with increasing speed, which is a graphic portrayal of the familiar increase in the doubling time.

The curves are astonishingly parallel, a phenomenon I did not expect to find, but which I believe to be of great significance. The essential congruity of the curves must mean that some overriding force, or rather a composite of many forces, in mathematical terms a vector or resultant, is exerting approximately equal effect on all four transmission categories in spite of the wide divergence among these groups.

Any epidemiologist who accepts William Farr as a role model cannot resist the temptation to apply his law to these data. To achieve the stablest data for curve fitting we have combined the semi-annual figures in table 1 to annual data and merged the homosexual data with the IV drug abuser figures in Table 2. Using the simplest arithmetic procedures we have fitted a normal curve. The fit is astonishingly good. The crest occurs in mid summer 1988. The decline is symmetric to a low point in 1995. The total projected cases of AIDS in the USA is approximately 130,000.

We make no claim to great precision in this projection, We rather expect the curve to decline somewhat more slowly and thus be skewed to the right. It should fall-off to an endemic level yet to be accuratelly estimated.

The important part of the projection is that the epidemic will crest soon. The total projected cases will be in the range of one half the presently widely accepted figure.

The policy implications of this projection are enormous and serious. I would be happy to offer my views if the panel is interested.

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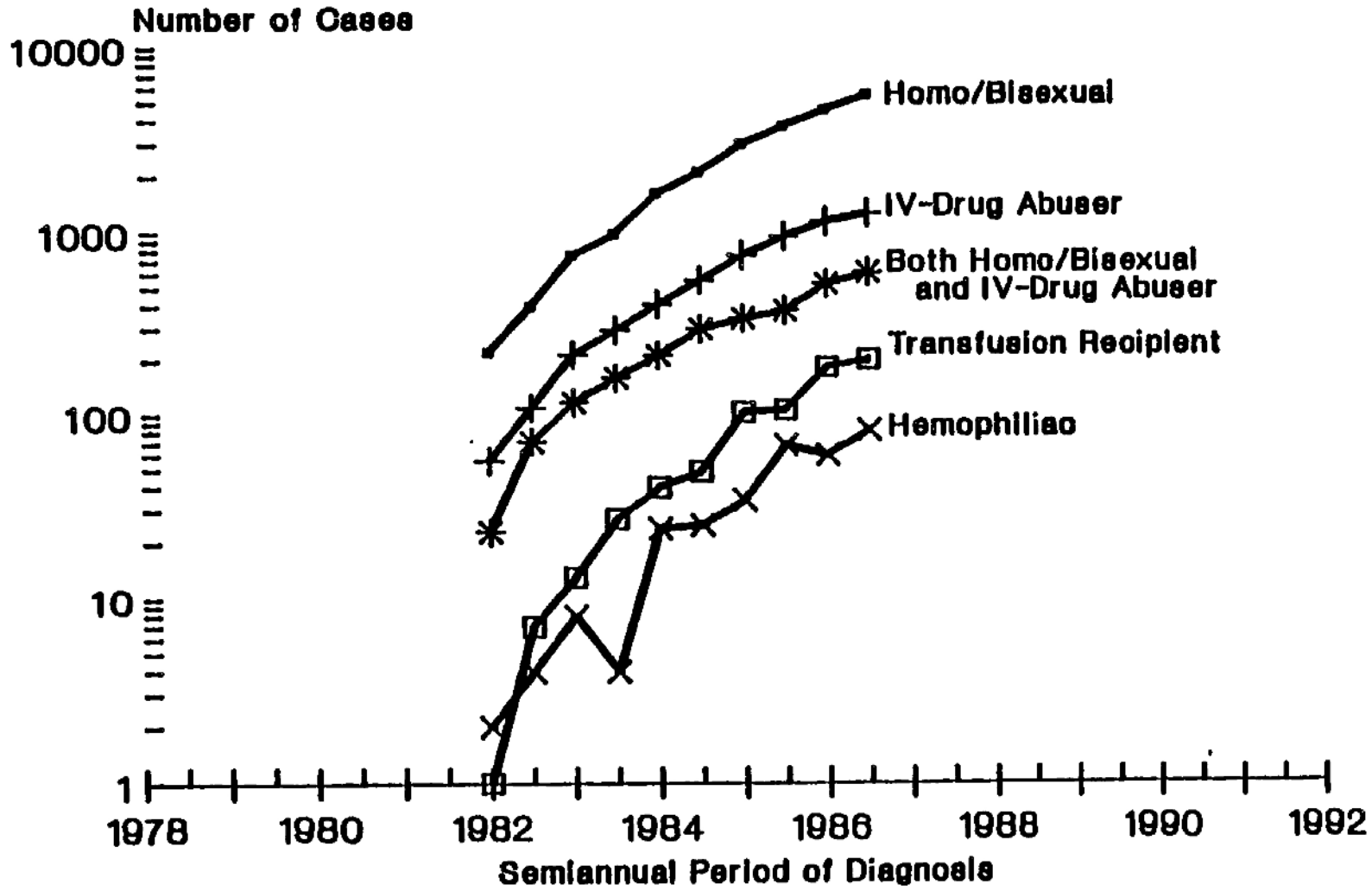

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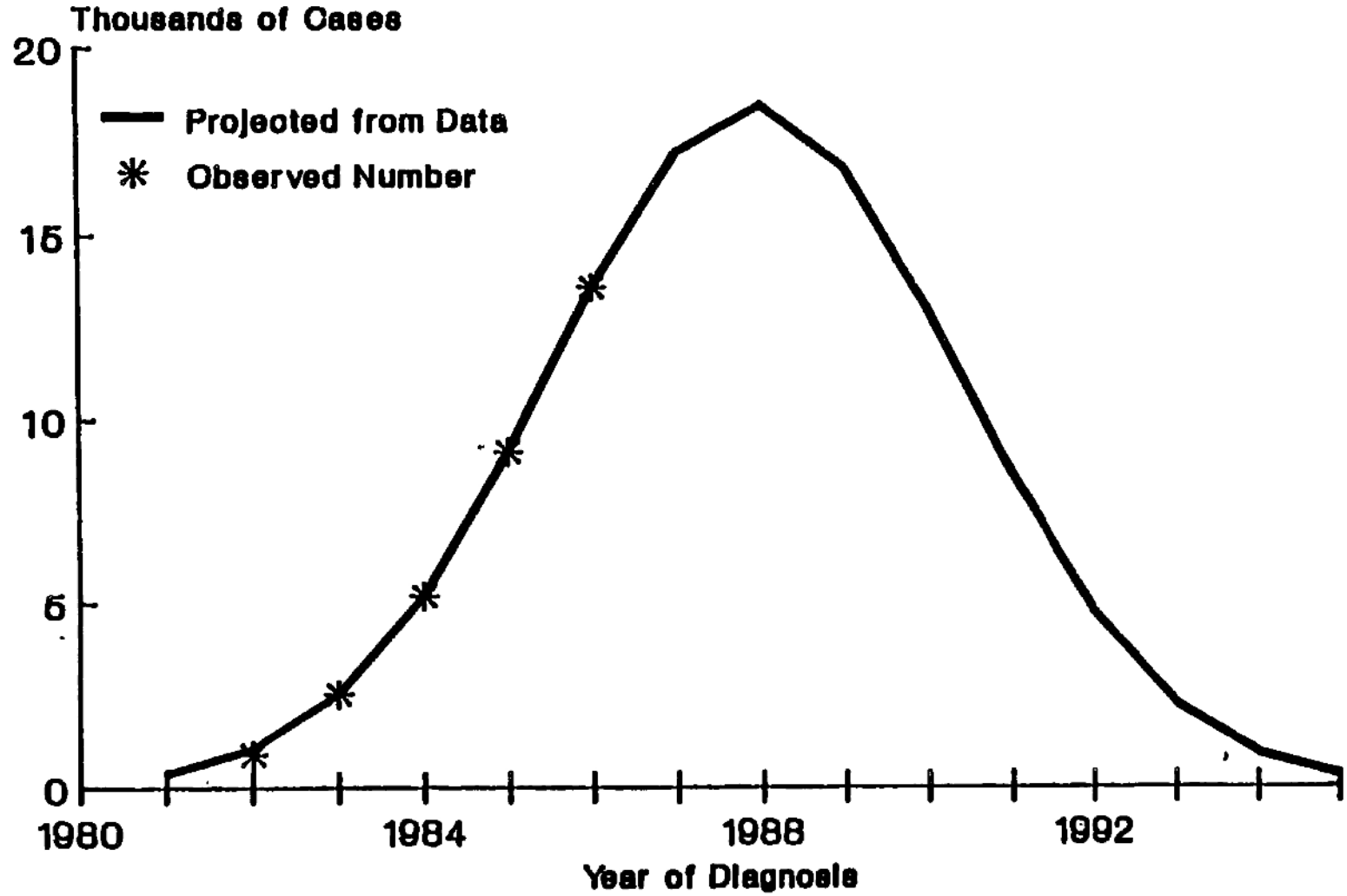

Corrected for delayed reports

Osternoi

REVISED OBJECTIVES OF THE STATEWIDE HIV RISK REDUCTION AND DISEASE PREVENTION PLAN, MINNESOTA

DECEMBER 1987

The AIDS epidemic continues to grow in Minnesota. As of November 23, 1987, 279 persons had been reported to the Minnesota Department of Health (MDH) and 159 had died. The MDH estimates that an additional 15,000-20,000 persons in Minnesota are infected with the human immunodeficiency virus (HIV). These persons are capable of transmitting HIV, even though they may not be aware of their own infection status. Approximately 1,500 cases of AIDS are expected to occur in Minnesota by the end of 1990 (1), and it is likely that every community in the State will eventually be affected. Many of the AIDS cases that will occur by 1990 are already infected with HIV; however, it is still possible to impact on future trends in the HIV epidemic. An effectively implemented risk reduction and disease prevention plan that has broad support and involvement by all segments of the statewide community is essential to reduce the tragic morbidity and mortality caused by this disease in Minnesota.

The Commissioner's AIDS Task Force approved a statewide human immunodeficiency virus (HIV) risk reduction plan in the spring of 1986. The original plan has been updated to incorporate the following objectives for 1988.

I. Objective 1: To study the prevalence and incidence of HIV infection in Minnesota.

This objective will be met by continuing the current system of ongoing tabulation and follow-up of AIDS cases and patients with positive test results for HIV infection (repeatedly reactive EIA with a positive

Western blot, positive HIV antigen test, or positive culture for HIV), regardless of symptoms. Ongoing tabulation of seroprevalence rates from the blood banks and the state-sponsored counseling and testing sites can also provide such information. During 1988, seroprevalence data will be obtained from patients attending sexually transmitted disease (STD) clinics in the Twin Cities (the Red Door Clinic and Room 111 Clinic). Such data will provide the basis for recommendations about HIV screening among sexually active persons (including gay and bisexual men, and heterosexuals). In addition, during this time period, seroprevalence data will be obtained from family planning clinics (testing of high-risk women), drug abuse treatment facilities and patients with tuberculosis. In addition, data may be obtained from one metropolitan hospital (inpatients and outpatients) and neonates born in Minnesota. Such data will be used to evaluate the existing HIV surveillance system and to make appropriate recommendations for risk assessment and screening among persons potentially at risk of acquiring infection. Screening in these programs will follow guidelines set forth in the document entitled, "The Use of Human Immunodeficiency Virus (HIV) Antibody Testing in Public Health," which was submitted by the Task Force for the Commissioner's subsequent approval on October 20, 1986.

II. Objective 2: To study and evaluate knowledge, attitudes and behavior of persons at risk for acquiring HIV infection.

High-risk persons include those likely to be exposed to HIV through sexual contact, and persons who share needles when using intravenous drugs. To obtain these data, persons attending counseling and testing sites (CTS's), family planning clinics, sexually transmitted disease

(STD) clinics, and chemically dependent treatment centers can be surveyed. Also, at-risk participants of AIDS education/safer sex programs can be given pre- and post-tests to assess these issues. In addition, studies can be designed through MDH-funded programs to assess knowledge, attitudes and behavior of other persons at high-risk for HIV infection (such as persons in correctional facilities who may have engaged in high-risk activities).

III. **Objective 3: To conduct outreach programs.**

Outreach programs are intended to access high-risk persons so that: 1) they perceive their risk of acquiring HIV, 2) persons who are infected with HIV know ways to limit transmission, and 3) persons who are not infected can remain so. These programs are specifically intended to reach persons who may not be identified through community-based organizations. Outreach programs include the following: 1) media campaigns; 2) third-party contact notification; 3) partner outreach services (a program aimed at helping HIV-infected persons notify their own partners); and 4) follow-up of persons identified to be HIV-infected through physicians' offices, hospitals, clinics and laboratories (including blood banks). Those programs that are in place will continue.

IV. **Objective 4: Conduct programs leading to risk elimination/reduction through behavior change.**

The major mechanism for meeting this objective is through MDH funding of community-based organizations. Such organizations should provide services to persons at increased risk, such as gay or bisexual men, persons who engage in prostitution, intravenous drug users, persons

with hemophilia, and sexual partners of persons at risk. On October 1, 1987, the MDH awarded funding to eight agencies in Minnesota to conduct community-based risk reduction activities. These include: Health Start (high-risk teenagers), Hennepin County Community Health Department (training of correctional facility staff and inmates), Lutheran Social Services (youth in prostitution), the Minneapolis Health Department (women of childbearing years at high risk), the Minnesota Institute for Black Chemical Abuse, the Minnesota AIDS Project, St. Paul Division of Public Health (HIV-antibody-negative clients who persistently engage in high-risk behaviors), the University of Minnesota Comprehensive Hemophilia Center, and Women Helping Offenders (women in the correctional system). Funding for these agencies will be for a 15-month period (October 1987 through December 1989). Also, the outreach programs mentioned above (Objective 3) provide counseling to assist in behavior change.

V. **Objective 5: To provide adult public education.**

This objective is ongoing and is achieved predominately through media efforts, public lectures and seminars, education in the workplace, and the Minnesota AIDSLINE. Public education is aimed at the prevention of HIV transmission, and the prevention of "hysteria" related to AIDS and discrimination against HIV-infected persons. Since some persons engaging in high-risk activities do not have access to information directed at high-risk groups, educational programs for the general public must also contain information about specific risk activities.

VI. **Objective 6: To provide youth education.**

Providing education to youth allows impact on behavior formulation, so that young people in the State can be educated to develop healthy behaviors and avoid developing behaviors that put them at risk for acquiring HIV infection. In addition, the MDH will work with other professional organizations to provide such education. The MDH will continue to work with the Minnesota Department of Education to assure that all Minnesota students know how to protect themselves from becoming infected with HIV. Currently, the MDH is also working to assure that local community health services (CHS) agencies can respond to the HIV informational needs of school administrators and educators. The MDH is also contracting with the Minnesota AIDS Project to develop and pilot test a peer education approach for youth.

VII. **Objective 7: To provide professional education to health-care providers.**

Professional education can be provided through the MDH Disease Control Newsletter (DCN), and seminars and lectures intended for health-care professionals. In addition, the MDH will work with other professional organizations to provide such education, including the Minnesota Medical Association (MMA), the Minnesota Nursing Association (MNA), the Minnesota Hospital Association (MHA), the Minnesota Dental Association (MDA), and the Minnesota Chapter of the Association of Practitioners in Infection Control (APIC). Professional education should focus on routine HIV risk assessment and, where appropriate, risk reduction counseling. Professional education should also emphasize infection control practices aimed at limited transmission of HIV to

health-care providers.

VII. Objective 8: To develop a plan for addressing the disproportionate risk of acquiring HIV infection among Minnesota's communities of color.

Currently, a disproportionate number of AIDS cases has occurred among Minnesota's communities of color, indicating that such persons are at increased risk of acquiring HIV infection. Therefore, the MDH is currently assessing the level of risk and evaluating HIV antibody seroprevalence in persons of color. In addition, the MDH is developing a survey to determine current knowledge, attitudes and behaviors regarding HIV infection in persons of color. Also, programs aimed at risk reduction and behavior change for communities of color in Minnesota will be developed. Such programs need to be focused around culturally-based service organizations.

IX. Objective 9. To assist local public health agencies in developing community-based plans for dealing with HIV infection in their area and providing education to their local populations.

The MDH recently awarded funding to eight local public health agencies to enable them to develop model community education programs. In addition, the MDH intends to work with other CHS agencies throughout Minnesota to help them develop community-based approaches for providing HIV education and services. These approaches need to: 1) develop consensus in the community for dealing locally with issues related to HIV infection; 2) provide education to local populations through the use of media, schools, social and religious organizations, and education in the workplace; 3) assure that adequate services are available to persons

infected with HIV and to persons with AIDS.

X. **Objective 10: To evaluate the efficacy of risk reduction programs.**

It is important to assure that risk reduction efforts reach persons at highest risk for acquiring or transmitting HIV infection. Efficacy of risk elimination/reduction programs can be measured through specific and general outcome, impact and process objectives outlined by the MDH. Outcome objectives focus on measurable data (i.e., seroprevalence rates in high-risk populations) for Minnesota in 1991. Process objectives identify activities to be conducted by the MDH during the current one-year budget period. Impact objectives specify anticipated results of targeted educational efforts during the corresponding budget period. All such objectives involve timed and measurable outcomes. Such objectives have been determined for current programs, and this evaluation is ongoing. These objectives are available from the MDH.

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1 Shultz JM, Danila RN, MacDonald KL, Osterholm MT. The predicted disease impact of acquired immunodeficiency syndrome in Minnesota: five-year projection models for a low-incidence state. Minnesota Medicine 1987;70:203-209.

TESTIMONY PREPARED FOR PRESIDENTIAL COMMISSION ON HUMAN IMMUNODEFICIENCY VIRUS EPIDEMIC

DECEMBER 11, 1987

Topic: Heterosexual Transmission

Presented by: Sheldon H. Landesman, M.D.
Associate Professor of Medicine
Director, AIDS Study Group
State University of New York - Health Science Center at Brooklyn
(718) 270-2275

Prepared by: Sheldon H. Landesman and the Brooklyn AIDS Clinical Care Initiative

INTRODUCTION

The focus of my testimony is heterosexual transmission of Human Immunodeficiency Virus (HIV). This topic has generated much discussion, many conferences and voluminous literature. Unfortunately, little clarity has been shed on the problem. There is widespread confusion in the mind of the public, governmental and political figures and even health officials as to the true nature and magnitude of the problem. During my brief time with you, I will attempt to clarify some of the confusing or contradictory concepts.

I will discuss nine specific points:

1) Phases of disease spread - heterosexual spread of HIV occurs in the secondary phase of HIV transmission.

2) There already exists a large pool of infected heterosexual persons in the country that exceeds a quarter million people.

3) 30,000 - 115,000 persons are already been infected through heterosexual contact.

4) The terminology we use to classify people with HIV disease masks the potential for heterosexual transmission.

5) The burden of heterosexual transmission of HIV will fall most heavily on the poor, and the urban inner city minority women

6) Heterosexually transmitted HIV is a family disease.

7) Care, tact, boldness and sense of urgency must imbue our own attempts to control the epidemic.

8) AIDS is already in the "general population"

9) Recommendations

Phases of Disease Spread:

1) HIV spread can be divided into three phases - primary, secondary and tertiary. Heterosexual spread is currently going on in the secondary phase of disease transmission.

HIV transmission can be conceptualized as occurring in three phases. Phase one was the introduction and spread of the virus into gay men and intravenous drug users. The phase may be considered the primary (1°) phase with gay men and drug users constituting the 1° infected populations. The secondary phase (2°) of spread is from infected drug users and bisexual men into their non-drug using female partners. This 2° phase is characterized by HETEROSEXUAL SPREAD of the virus from a large population of infected men into their non-drug using females sexual partners. Although female to male spread of HIV will also occur in this phase, it is less likely to do so simply because the reservoir of infection is largely male (100% of bisexual men and 75% of drug users are men). The tertiary phase (3°) or "spread out of the risk groups" occurs when there are a sufficient number of non-drug using infected females (infected from the secondary phase) to infect or feedback the virus to non-drug using heterosexual men. These men would obviously then infect more women and the process could become self-sustaining.

Confusion arises because of the inadvertent blurring together of the secondary and tertiary phases of epidemic spread of HIV. What much of the population and many governmental and public officials mean when

they refer to heterosexual transmission of HIV or "spread of the virus out of the risk groups" is the tertiary phase of spread. Tertiary spread of HIV cannot proceed until there is a significant amount of 2° heterosexual spread. Currently, there is little evidence that indicates wide tertiary spread of HIV. However, the secondary stage of heterosexual transmission e.g. spread from drug users and to a lesser extent bisexual men into non drug using women and their offspring is occurring in certain areas of the country and in certain populations. It is a significant problem now and will be a more serious problem in the near future. If we hope to prevent areas of the country from being overrun by the tertiary or third phase of the epidemic we must aggressively address the ongoing secondary stage of heterosexual HIV transmission.

2) There already exists a large pool of infected heterosexual persons in the country. The number is in excess of one-quarter million and they are principally drug addicts.

Cases of AIDS and HIV infection are classified by risk group (e.g. gay men, drug users, hemophiliacs, heterosexual contact, no identified risks, etc.) This classification is a means of identifying how persons acquired the virus. If we look at these risk groups carefully, we see that approximately 25% of all AIDS cases occur among persons who themselves are heterosexual, the single largest group being drug users (19%). In some areas of the country drug users with AIDS account for more cases than do gay men.

The point I wish to make here is that when we look at persons with AIDS or HIV infection we must not only look at how they acquired the virus but also at how they spread the virus. We de-emphasize the potential for heterosexual transmission by focusing on the mechanism by which drug users acquired their infection (e.g. - sharing of needles). We must remember that most drug users are male heterosexuals and can thus spread the virus two ways - through heterosexual contact and by sharing of needles.

If 25% of the AIDS cases are in persons who are heterosexual, then at least 25% of the reservoir of HIV infected are heterosexual. The CDC report to the Domestic Policy Council estimates that there 900,000 - 1.4 million infected persons in the U.S. Thus, approximately 25% of this pool of infected persons are heterosexual (225,000 to 420,000 persons Table 14, CDC report). This is large reservoir of heterosexual HIV infected persons matter how you look at it. The majority of this pool is composed of drug users or persons infected heterosexually from drug addicts. Keeping in mind that infection is by and large a permanent condition, we are currently faced with a large reservoir, equal to or exceeding 250,000 chronically infected heterosexuals. The impact of this population on future generations of women and children is just starting to be felt.

For the rest of this presentation, I will focus on drug addicts since they are the largest reservoir of heterosexuals with HIV infection. The majority of drug uses are male and the majority (70%) of

their partners are non drug using women. Thus, the infected male drug user, is and will continue to be in the foreseeable future, the principal vector for spread of the virus into non-drug using women. In its November 30th report to the Domestic Policy Council, the CDC estimated that there are 900,000 regular drug users of whom 25% are infected with HIV (225,000) and 200,000 occasional drug users of who 5% are infected (10,000).

3) **Current estimates are that 30,000 - 115,000 persons have already been infected through heterosexual contact.**

What is the consequence of having such a large reservoir of infected heterosexually active persons? A natural consequence is the infection of women who live in close social proximity to these men and who interact sexually with them. This brings us to the problem of HIV infection in women and children. In our own hospital, Kings County Hospital Center, in Brooklyn, New York, 2% (1 in 50) of all women who give birth are infected. Approximately half of these women are infected via heterosexual activity, the remainder being drug users themselves. At other hospitals in New York City, the rate is even higher. At Emory Hospital in Atlanta, GA, more than 1% of women who deliver are infected. In a recent study in Massachusetts, the rate of infection among women who recently delivered ranged from approximately 1/1000 in rural areas to 1/100 in inner city areas. In San Juan, Puerto Rico, 1.7% of women coming to prenatal clinics are seropositive, while in

Alameda, California, 0.5% of women tested positive. Other studies of a revealing nature include a nearly 1% rate of HIV positivity in a Baltimore Family Planning Clinic and a 0.7% rate of positivity in prenatal women at a university hospital in Jacksonville, Florida.

These numbers reflect a mixed population of women, some of whom acquired their infection via drugs, some of whom were sex partners of infected men. It is important to realize that infected drug using women will comprise a decreasing proportion of infected women over time while the number of women infected through heterosexual transmission will gradually and inexorably increase as a consequence of the sexual activity of the large number of infected males. Estimates derived from CDC document indicate the numbers of persons infected through heterosexual contact is already significant. These estimates are in the range of 30-115,000 persons. This number thus represents the current extent of the secondary phase of HIV spread and defines the current magnitude of the heterosexual transmission problem.

4) **The terminology we use to classify people with HIV infection and AIDS masks the potential for heterosexual transmission.**

The existence of more than 250,000 people infected heterosexuals and 30-115,000 persons infected through heterosexual contact is partially masked by the terminology with which we describe the epidemic.

For example, it is often stated that HIV disease is not spreading outside of the risk groups. While this statement is technically correct, it contains a basic flaw. Specifically, persons who are heterosexually active with another risk group member (e.g. bisexual man or drug users) and acquire the disease are themselves defined as being in a risk group. Thus, partners of drug users, female sex partners of bisexual men, female sex partners of hemophiliacs, etc. constitute a risk group.

Our terminology then, hides the concept of heterosexual transmission. By classifying sex partners of bisexual men and drug users as a risk group, we count the cases that occur in this manner, state that they still are in a risk group and then assure ourselves that the disease is staying within our self-defined risk groups. This may calm the population but does little to slow the heterosexual spread of the virus.

5) **The burden of heterosexual transmission of HIV will fall most heavily on the poor, the indigent and the urban inner city minority women and their children.**

As mentioned earlier, heterosexual transmission is inextricably linked to drug users. The majority of the drug using population reside in the large inner city areas of this country. This population is largely composed of Black and Hispanic people. Thus, the problem of heterosexual transmission of HIV is largely but not exclusively a

problem of urban minority populations. The population at greatest risk for heterosexual transmission of HIV is the young inner city minority women who live in close social and sexual contact with the infected male drug users. Infection to this population is a terrifying addition to equally depressing already existing conditions of poverty, unemployment, discrimination and drug abuse.

The threat to this population is large. As noted earlier 30-115,000 persons are estimated to have been infected through heterosexual transmission the largest number being people of color. As the AIDS epidemic continues its spread, it is this population that will suffer. The rates of seropositivity in pregnant women quoted earlier gives stark evidence to the fact; most of the studies cited earlier are from inner city populations are composed almost exclusively of people of color. Blacks and Hispanics clearly represent a disproportionate number of AIDS cases. Excluding homosexual men, the likelihood of acquiring AIDS if you are Black is 12-13 times that of a white person while eighty percent of all children with AIDS come from minority families.

In our own city of New York, the problem is most extreme. In the South Bronx area of the city where drug use is common, Dr. Ernest Drucker from Montefiore Hospital has performed studies and has calculated that 8-20% of the sexually active males in that area are infected. The risk to the sexually active woman in this area is immense. Areas of northern New Jersey have comparable figures. In other cities, the problem is less severe, but nonetheless present. Every city that

has a serious drug use problem is under siege by HIV. The situation in NYC should give solace to no one. Rather, it is a message that efforts must be redoubled elsewhere so as to prevent the problem from reaching a comparable order of magnitude.

6) **Heterosexually transmitted HIV is a family disease.**

Heterosexual transmission of HIV has many severe derivative consequences; the most important being the creation of what I call a "family disease". Preeminently among diseases HIV infection within the heterosexual community is a family affair. The usual scenario is that of an ailing or dead infected male drug user who has infected his non-drug using wife or girlfriend. The wife or girlfriend may have already given birth to an infected child or may give birth to one in the future. Often, the infected woman is already clinically ill and usually has two or three young children at home. Thus, we are faced with a seriously ill male, largely unable to care for himself, an infected or ill partner with young children at home who. If the children are lucky, they might be free if HIV infection, but they still suffer the serious effects of having ill and or absent parents. All of this generally occurs within an environment and social circumstance of extreme poverty, general poor health, inadequate housing, a fragile family structure and the near total absence of significant resources or support systems.

It cannot be emphasized too strongly that HIV destroys families, father, mother and children. The children caught in this situation lose on two counts; either they are born infected (1/3 to 2/3 of children born to an infected mother will themselves become infected) or their infected parents will get ill and the children often end up in foster care institutions, as boarder babies in the hospital or some other secondary home setting.

Added to all of the above is the misery and pain associated with HIV infected children. The Coolfant report, published in 1986, estimated that there would be 3,000 cases of pediatric AIDS in 1991. Since there are 3-4 HIV infected infants for every case of AIDS, we can anticipate 10,000 cases of perinatal HIV disease by 1991. The problem of perinatal or pediatric AIDS, already severe will only get worse with time. The reservoir of infected heterosexual males and the fact that 1-3% of pregnant women in many inner city locations are currently infected tells us that pediatric and perinatally acquired HIV disease will be an enormous problem in the upcoming decade.

7) Care, tact, boldness and sense of urgency must imbue our own attempts to control the problem if we are to have even a minimal chance at success.

Reaching the communities most affected by heterosexual transmission will not be easy. The minority communities are justifiably concerned about their being labeled and stigmatized as another "risk

group". They fear that any campaign directed towards HIV counseling and testing could turn into a eugenics program with forced sterilization or coerced abortion. Both of these fears have a strong basis in reality; the discrimination and stigmatization surrounding populations at risk for HIV is well known; less well known but well documented is the history of 100,000 forced sterilizations imposed on minority populations in earlier years. Further, these communities are concerned that the condom or sexual abstinence campaigns, designed to slow transmission represent subtle or not so subtle campaign of racial genocide and denials of procreative rights.

A total lack of understanding of the social and sexual mores of minority populations increases our difficulties. We know little enough about the sexuality of white middle class teenagers and young adults (e.g. in the recent CDC document the sexual study most often cited was the Kinsey Report of 40 years ago); we know less about the sexuality of the urban inner city populations.

In approaching the problem of heterosexual transmission of HIV infection in the ghetto areas of our country, understanding and boldness will be required by all concerned. The power structures and governmental authorities who allocate money and set policy for this problem must understand that the Black and Hispanic population will approach any governmental solution with caution if not outright suspicion and hostility. Patience will be needed.

The social and political leaders of these communities must not underestimate the threat that HIV poses to their communities nor must they shy away from meeting the problem head on. Once the level of HIV infection in females reaches a significant but as undefined level, tertiary spread of the virus can occur. We already have 1-3% of females of child bearing age being infected in certain cities. If the level continues to rise, the consequences are dire. If HIV infection progresses much further, the issue of altering sexual behavior and use of condoms will not be one of racial genocide, rather, it will be one of racial survival. Thus, empathetic and sensitive leadership is required by government as they fashion their programs but bold forward planning is also required by the key leaders of these affected communities.

8) AIDS is already in the "general population"

All persons involved in the AIDS epidemic talk of "risk groups" (gay men, drug users, hemophiliacs, etc.) as if they are separate and apart from the general population. Commonly, I have heard government and public health officials state that AIDS is not spreading to the general population (general population refers to white middle class heterosexual individuals) but in staying within the risk groups. These statements, put forth with the best of intentions, mislead the public in several ways.

First, all persons who are infected with HIV <u>are</u> part of the general population. Is there any doubt that the estimated 900,000 to

1,400,000 infected persons are part of the everyday ordinary population of the country? They may differ from us by race, sexual orientation or economic status, but they are the general population. They may not be your next door neighbor or previous sex partner but they are part of this country.

Second, the concept that HIV disease is still within risk groups and not yet in the general population fosters the concept of the infected versus the uninfected. It fosters within the mind of the public the concept that <u>they</u> are infecting <u>us</u>, it increases the public's concern that sometimes turns into hysteria; most of all it prevents rational discourse about the problem and its proposed solutions. The concept of the general population versus risk groups fosters divisiveness within our society and divides us at a time when we must unite.

Divisiveness is especially troublesome when discussing heterosexual transmission. We must recognize that HIV disease already exists in the general population, not in the general population as defined as white middle class, but the general population as defined by persons who live in this country. Failure to correct this misuse of language can only result in increased fear on the part of white middle class and increasing severe coercive attempts as <u>they</u>, the uninfected seek to protect themselves from us, the infected. As we attempt to slow the transmission of HIV further into the heterosexual population, we must realize that we are all in the same boat and will either sink or sail

together.

Recomendations can be placed in three categories: Provision of care, research, and education.

9) **Recommendations:**

Provision of Care

1. Additional resources must be targeted toward the drug users: this must be our first priority. We can never hope to stop the epidemic until we slow transmission among and by drug users. We must place addicts into counselling and drug treatment centers where education concerning needles and heterosexual transmission can be intensely and repeatedly applied. Other speakers will address in greater detail the needs related to drug users.

   One point to remember within the context of resource allocation for drug users is that they are not the popular persons in this country. Nonetheless, we treat and care for them because our societal ethic demands that we care for all our citizens. Further, it is critical to understand that we must provide resources for the drug users if for no other reason than our own narrow self-interest as we attempt to stop heterosexual transmission of HIV.

2. Regional comprehensive care programs for women and children infected with HIV should be created. These programs would: (1) educate women at risk, (2) provide linkage between community based support programs and hospital based programs, thereby lessening

the fragmentation of health care so common in the inner cities, (3) stabilize the fragmented and (4) decrease the number of homeless infants (boarder babies) and children born to HIV infected mothers.

Education

3. Culturally appropriate educational programs should be targeted to the female populations at highest risk of HIV disease. Including widespread availability of volunatry HIV counseling and testing. Such programs must be accompanied by additional support services; you cannot tell a 23 year old woman she is pregnant and infected and just leave the office. Campaigns advocating increased condom use are useful; but a broader approach is needed. Especially in the inner city areas women must be made aware of the high risk attendant to sexual activity, particularly with a IVDA. A message of sexual selectivity must be incorporated into educational programs. The recent debate of condom promotion versus promoting abstinence is a false issue. It is possible to steer a middle course.

4. Educational campaigns and grants should be subject to critical analysis as to their effect and impact. Exhortation, history tells, rarely changes behavior. Behavioral scientists, including anthropologists and sociologists should be drawn into the creation and evaluation of education programs. We must learn if the message sent is the message received and if received, is it acted upon?

Research

5. More information is needed about heterosexual transmission of HIV - its incidence, prevalence, causative factors (behavioral and biological) and prevention. Additional behavioral, biologic and epidemiologic research in this area should be a priority. As an example, studies on the seroprevalence of HIV infection in women should be continued. The currently planned national study of HIV infection in new mothers (done by testing a drop of blood from newborns) uses a relatively unbiased method to give a true picture of HIV infection in childbearing women. This type of study will be very useful to public health management and HIV surveillance.

Serosurvey of Human Immunodeficiency Virus Infection in Parturients

Implications for Human Immunodeficiency Virus Testing Programs of Pregnant Women

Sheldon Landesman, MD; Howard Minkoff, MD; Susan Holman, RN, MS; Sandra McCalla, MD; Odalis Sijin, MD

Although perinatal transmission of the human immunodeficiency virus (HIV) is well documented, seroprevalence rates of HIV in populations of women of reproductive age have not yet been reported. To determine the seroprevalence o' childbearing women from a population with a high incidence of acquired i deficiency syndrome, cord blood samples were collected from 602 infants delivered at an inner-city municipal hospital in New York. Demographic and HIV risk factor information was also collected from mothers of these infants. Twelve (2%) of 602 samples (95% confidence interval, 1% to 4%) were positive for HIV on enzyme-linked immunosorbent assay and Western blot analysis. In interviews, seven of 12 seropositive women had risk factors as defined by the Centers for Disease Control, Atlanta; the remaining five seropositive women had no self-identified risk factors. The HIV seroprevalence rate in our hospital (2.0%) is several times higher than that of many other diseases for which screening is already routine. This serosurvey indicates that HIV infection of inner-city parturients is a significant problem that warrants broadly implemented health strategies. Furthermore, the data also suggest that if risk factor information elicited by physicians is used to initiate HIV antibody counseling and testing of pregnant women, a significant number of seropositive parturients is missed. In areas with significant seroprevalence rates of HIV infection, a broader counseling and testing program may be needed.

(*JAMA* 1987;258:2701-2703)

RECOMMENDED strategies to reduce perinatal transmission of the human immunodeficiency virus (HIV) depend on counseling and antibody testing programs directed toward parturients who are willing and able to identify themselves as "at risk."[1] The scope and focus of these programs, in turn, must be predicated on accurate seroprevalence and demographic data. There are few data extant, however, on the seroprevalence of HIV infection in childbearing women. Furthermore, there are no data on the seroprevalence of HIV among sexually active women in inner cities, where a large number of men who are intravenous drug abusers live in close sexual and social contact with a pool of women of reproductive age. These men, through heterosexual encounters, could potentially infect women who might not realize they have engaged in risk behavior and, hence, would not report a risk factor at a prenatal or family planning clinic. Failure to self-report could in turn reduce the efficacy of counseling and testing programs directed only toward self-identified members of risk groups. Since public health policies related to HIV testing of parturients in the inner city depend on seroprevalence rates and the demographics of infection, the following studies were conducted to collect this information.

See also pp 2693 and 2736.

From the Departments of Medicine (Dr Landesman and Ms Holman) and Obstetrics and Gynecology (Drs Minkoff and McCalla), State University of New York Health Science Center at Brooklyn, and the Department of Obstetrics and Gynecology, New York University (Dr Sijin).

Reprint requests to Box 56, SUNY-Health Science Center at Brooklyn, 450 Clarkson Ave, Brooklyn, NY 11203 (Dr Landesman).

METHODS

Kings County Hospital Center (KCHC) is a 1200-bed municipal hospital in Brooklyn, New York. It provides medical care for a large inner-city minority population, including a sizable Haitian community (500 to 600 deliveries a year at KCHC). There are 5000 deliveries a year at KCHC and an equal number of planned abortions. Currently, HIV testing of pregnant females is not available at the hospital.

Preliminary Study

In April and May of 1986, we undertook an anonymous random serosurvey of 359 cord blood samples obtained from approximately 600 newly delivered in-

Table 1.—Summary of HIV* Cord Blood Subjects

Ethnic Group	No. (%) of Total
White	4 (0.7)
Hispanic	109 (18.1)
Black American	217 (36.0)
West Indian	136 (22.6)
Endemic area†	69 (11.5)
Other‡	49 (8.1)
Unknown	18 (3.0)
Total	602 (100)

*HIV indicates human immunodeficiency virus.
†Haiti or black Africa.
‡Thirty-eight of these 49 subjects were from Guyana.

Table 2.—Risk Factors

Risk Factor	No. of Patients
Intravenous drug abuse	23
Sex partner of intravenous drug abuser	23
Sex partner bisexual, or sex partner received transfusion	6
From endemic area, or sex partner from endemic area	76
Transfusion	37
Total*	165

*Seventeen women had two risk factors. One hundred forty-eight (24.6%) of 602 women had risk factors.

Table 3.—Patients With Cord Blood Samples Seropositive for HIV*

Subject No./ Age, y	Ethnic Group	Risk Factor
1/28	Hispanic	None
2/25	Hispanic	None
3/25	Black American	Intravenous drug abuser/sex partner of intravenous drug abuser
4/31	West Indian	None
5/33	Black American	Intravenous drug abuser
6/32	Haitian	Endemic area
7/26	Black American	Intravenous drug abuser/sex partner of intravenous drug abuser
8/21	Black American	Multiple sex partners
9/21	West Indian	Transfusion
10/22	Black American	None
11/27	Hispanic	Intravenous drug abuser
12/19	Black American	None

*HIV indicates human immunodeficiency virus.

fants. In this preliminary survey, 1.7% of the samples were positive for HIV on enzyme-linked immunosorbent assay (ELISA) and Western blot analysis. Three additional samples were confirmed to be positive but were not counted because they were collected from women known to have risk factors and therefore represented an accrual bias. Had these three samples been included, the seroprevalence rate would have been 2.5%. Because our initial serosurvey was too small and lacked prospectively collected risk factor data, we performed the larger study described below.

Current Study

Between Dec 8, 1986, and Jan 31, 1987, cord blood samples were obtained at the delivery of children born at KCHC. The serum from these samples was stored at −70°C until antibody testing was done.

Risk factor data for HIV infection were obtained from all newly delivered mothers by means of an interview. House officers and senior medical students specially trained to ensure accurate acquisition of risk factor information collected the data. Training included meetings and discussions with our special perinatal study staff. Issues concerning privacy, guilt, definition of risk factors, etc, were discussed and reviewed. The interview took about ten to 15 minutes; extensive counseling did not occur. Women who expressed interest in additional information concerning HIV disease were referred to an HIV counseling and testing site. After the demographic and risk group data were obtained, they were matched to the cord blood sample. All identifiers were then removed, and HIV testing was performed.

We performed ELISA testing by standard methods using a licensed ELISA kit (Electro-Nucleonics, Columbus, Md). All initial positive results were confirmed by Western blot analyses. A minimal positive blot consisted of a p24 band with one additional band, such as p55 or p41. All positive blots had multiple positive bands.

RESULTS

During the study period, 761 women delivered. Cord samples for serologic study were obtained from 673 patients. Demographic data, risk factor information, and HIV serologic findings are available for 602 patients. The remaining women either had no serum samples or were not interviewed either because they delivered on a weekend or because the study personnel were on vacation. No attempt was made to select or specifically collect samples from parturients at high risk. The 602 patients for whom we have HIV serology results and interview information constitute our study population. The characteristics of the population are listed in Table 1.[1] Eighty-four percent (84%) of our study population was black, Caribbean, or Hispanic. The ethnic breakdown of our study population reflects the population seen at the KCHC prenatal clinics.

Of the 602 women, 148 (24.6%) had a self-identified risk factor (Table 2).[2] Among the women with risk factors, 23 were past or current intravenous drug users, and 23 had sex partners who used intravenous drugs. Thus, 46 (7.6%) of 602 women had self-reported risk factors directly attributable to drug use. Seventy-six women (12.6%) had a sexual partner from or were themselves from an area where the acquired immunodeficiency syndrome (AIDS) is endemic. Many of these women came from Haiti; a few came from Central Africa.

Of the 602 samples tested, 12 sera (2.0%) were positive for HIV on both ELISA and the Western blot analysis (95% confidence interval, 1.0% to 4.0%). Table 3* summarizes the data for the 12 seropositive individuals. Seven of these 12 women had risk factors for HIV acquisition elicited by interview. Included among these seven were a woman from Haiti, a woman with 30 sexual partners, and a woman who received a single blood transfusion in 1982. None of the three *perceived themselves* to be at risk, but all were classified as such based on the categorization of risk groups by the Centers for Disease Control (CDC), Atlanta.[1,3] The rate of seropositivity for women with risk factors was 4.7% (7/148). Five of the remaining 454 women were seropositive, indicating a seroprevalence rate of 1.1% in the group with no identified risk factors. It is important to note that while seven of the 12 seropositive patients were in self-identified risk groups, the remaining five (42%) were not.

COMMENT

In our hospital, 2.0% of women who delivered were infected with HIV. Among Haitian women, one of 67 was seropositive. Thus, if all Haitian women were removed from the study population, the seroprevalence rate would still be 2.0%. To our knowledge, there are no published rates of seropositivity from comparable hospitals in the United States. In Africa, however, 8% of births in Kinshasa, Zaire, and 2.0% of births in Nairobi, Kenya, are to seropositive women.[4]

It is reasonable to assume that the seroprevalence of HIV at KCHC is not unique among certain hospitals in New York or other areas where AIDS is more commonly diagnosed in women (ie, Newark, NJ, Miami). If cases of pediatric AIDS are indicative of the prevalence of HIV infection among women in the reproductive age range, then Brooklyn ranks third among the boroughs of New York, since it trails the Bronx and Manhattan in cases of pediatric AIDS per 100 000 persons.[5] Unpublished data from Bellevue Hospital in Manhattan show a 3.7% seroprevalence rate among parturients (K. Krasinski, MD, W. Borokovsky, MD, oral communication, June 1987).

It is probable that five of the seven seropositive women with risk factors acquired their infections nonsexually (intravenous drug addicts and one blood transfusion). The other two patients with risk factors, one from Haiti and one with multiple sex partners, probably acquired their disease sexually. We are less certain about the five seropositive women who had no risk factors. They may have chosen not to admit to a risk factor (eg, intravenous drug use, a sex partner who used drugs) because they were suspicious of institutions or were reluctant to admit to illegal or socially unacceptable behavior. Alternatively, they may simply have been unaware that their sex partner was infected. In either case, these data imply that a substantial number of infected women are not identified by self-reporting or brief interviews.

In our institution, self-reporting and physician interviews only identified seven (58%) of the 12 potentially seropositive patients. Thus, if our physicians had followed the current recommendations of the CDC,[1] asked patients about risk factors, and recommended that those at risk be tested, five (42%) of the seropositive women would have gone undetected. It is possible that a trained interviewer who spent a time with each patient might be able to elicit risks that were not detected by our clinicians. However, the logistics of spending more than 15 minutes with every prenatal patient to determine who has HIV risk factors and needs further counseling and testing may be prohibitive, especially in settings with a high patient volume, such as municipal hospitals. Furthermore, as HIV continues its spread into the heterosexual population, a patient's awareness of risk status may be reduced to the point where even in-depth interviews will not suffice.

We believe that HIV testing should be routinely offered to all pregnant women in a situation where there is a combination of high seroprevalence and poor identification of people at risk. Such testing must be accompanied by counseling, consent, and appropriate provisions for privacy.

The relevance of a 2.0% HIV antibody prevalence rate to standards of prenatal care and counseling can best be gauged by comparing the frequency of perinatally transmitted AIDS with that of other perinatal diseases for which screening standards already exist. For example, the incidence of perinatally contracted herpes is approximately one in 7500 to 20 000 births,[8] congenital rubella occurs once in 300 000 births,[9] and neural tube defects occur once in 1000 births.[7] Assuming, conservatively, a 33% transmission rate of the HIV,[5,10] the incidence of perinatally acquired HIV at our hospital is approximately one in 150 births. Although $56 million is spent annually to perform cultures for herpes on women,[11] rubella antibody studies are routine in many prenatal clinics, and testing for maternal serum α-fetoprotein in pregnancy is becoming standard despite its 95% false-positive rate, no comparable HIV counseling and testing program currently exists in any hospital despite the much greater prevalence of perinatally acquired HIV.

Hospital facilities throughout the country, in areas of low and high prevalence rates of HIV infection, should perform similar surveillance studies in obstetric and family planning clinics, sexually transmitted disease clinics, and abortion clinics. A locally determined and continually reassessed seroprevalence rate can then be utilized for the creation of an appropriate HIV counseling and testing program directed at women of childbearing age. Such programs will be useful in bringing information about HIV serostatus to women before they become pregnant or early in their pregnancy.

Since this article was written, the CDC has published revised guidelines for counseling and antibody testing. The new guidelines expand the definition of women at risk for HIV infection to include persons who "are living in communities or were born in countries where there is a known or suspected high prevalence of infection among women." According to the guidelines, "these women should be routinely counseled and tested for HIV antibody." Our study population, which had a 2% rate of positivity, would appear to qualify under this expanded definition.

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Facing the Complex Issues of Pediatric AIDS: A Public Health Perspective

A simple child,
That lightly draws its breath,
And feels its life in every limb,
What should it know of death?

William Wordsworth, 1798

Almost seven years have passed since the first recognition of the acquired immunodeficiency syndrome (AIDS) in this country, and during the past four years we have been able to identify many of the clinical and epidemiologic consequences of human immunodeficiency virus (HIV) infection. Although children with AIDS were recognized early in the epidemic, the impact of pediatric AIDS on clinical medicine and society in general is only now being fully appreciated. In this issue of THE JOURNAL, Landesman et al[1] provide us with important insights into the pediatric HIV infection problem of today and the AIDS problem of tomorrow through their survey of women delivered of infants at King's County Hospital Center in Brooklyn, NY.

See also p 2701.

In their study of HIV seroprevalence in cord blood samples from 602 infants delivered in an inner-city municipal hospital, Landesman and colleagues found a demographic and HIV risk factor history similar to what is currently reflected in reported cases of AIDS in this country. All of the mothers were part of a large inner-city minority population (ie, persons of color). Their finding of a 2% infection rate among the women who gave birth is similar to that reported from some hospitals in central Africa.[2] In addition, in their study, 42% of the HIV-seropositive women did not acknowledge or could not identify a recognizable risk factor for their HIV infection, suggesting unrecognized heterosexual transmission. These findings, along with studies in other metropolitan areas of the country, demonstrate an emerging shift in the sociodemographic pattern of HIV infection. Although this study provides information only on the number of infants born with HIV antibody–positive cord blood, we can expect that between 30% and 65% of such children will be infected with HIV.[3,4]

The results of this study are sobering. Unfortunately, many of us in public health may take comfort in recognizing that these observations come from New York City and thus have only limited implications for the remainder of the country. However, we must remember that early in the HIV epidemic, many practitioners in clinical medicine and public health believed that AIDS in gay men would be an important problem only in New York City, San Francisco, and several other metropolitan areas on the east or west coasts. Today, the "Heartland" is repeating the experience of those coastal metropolitan communities with regard to AIDS in gay men. We need to recognize that HIV infection in women and the resultant cases of pediatric AIDS will likely unfold as a similar story in selected urban populations throughout the United States.

As of Sept 30, 1987, five hundred eighty-four children 13 years of age or younger with pediatric AIDS as defined by the Centers for Disease Control (CDC) case definition criteria were reported in this country. Of these, 177 (30%) were reported after Jan 1, 1987. As many as 2000 additional children currently are known to have symptoms of HIV infection but do not fit the specific CDC AIDS case definition.[5] The Public Health Service estimates that by 1991, some 3000 children will suffer from the disease, and without new efficacious drug therapy virtually all will die.

Pediatric AIDS cases currently account for only 1.4% (584/42 354) of AIDS cases reported in the United States. While this is a relatively small proportion of all cases, we believe that these numbers will grow. Also, control of HIV infection in the pediatric population raises many difficult issues that touch the core of the social fabric among America's urban poor, especially communities of color. These issues include poverty; drug abuse; teenaged pregnancy; prostitution; and inadequate social services, education, and health care systems. To address HIV infection in this population, we must also address these complex social issues with a multidisciplinary approach.

The first step in any program aimed at primary HIV prevention must be to identify the population at risk. Seventy-eight percent of all cases of AIDS in children younger than 13 years of age and reported to the CDC had a parent with, or at risk for, AIDS. Also 78% of reported AIDS cases in children younger than 6 years of age (457/584) were in children of color. In contrast, children of color constitute only approximately 21% of our nation's population in this age group. To understand this striking disparity in the risk of pediatric AIDS by race, one must only look at the risk factors for adult AIDS by race.

As of Sept 30, 1987, 80% (5511/6885) of all reported AIDS cases in intravenous (IV) drug abusers have been in persons of color; similarly, of all reported cases related to heterosexual transmission, 83% (1386/1660) have occurred in persons of color. These data do not represent "just" the risk of IV drug abuse in selected metropolitan areas such as New York City or Newark, NJ. For example, in Minnesota, part of the "Heartland," we too have documented an emerging, but similar, increased risk of AIDS in persons of color. Of 260 cases of AIDS reported to the Minnesota Department of Health through Sept 30, 1987, 12% (32 cases) have been reported in persons of color; in contrast, persons of color account for only 3.5% of the state's population.

With this background, what are the implications for primary prevention of pediatric AIDS? We must first realize in a straightforward but compassionate manner that the great weight of pediatric AIDS will continue to fall on our communities of color, particularly in the inner-city areas. It will be important for these communities to take ownership in developing creative solutions to this problem, with public health support, and to begin addressing its many complexities. Thus, if we are to have any impact with HIV primary prevention programs among potential mothers, we will also have to address the issues of IV drug abuse, the high rates of unwanted or teenaged pregnancies, poverty, and lack of education. Particularly, these issues should be raised in younger age groups where the developing behavior patterns can be influenced, rather than attempting to devote all resources to behavior change among adults and older adolescents.

These social problems are of dramatic proportion. After more than 70 years of organized attempts by publicly and privately sponsored intervention programs to address the issue of IV drug abuse in this country, we find the estimated number of individuals who share needles for purposes of injection at an all-time high. At the same time, we continue to lead the industrialized world in the rate of teenaged pregnancy and birth rates. In particular, the rate of black, never married women aged 15 through 19 years who are sexually active is almost 35% higher than that of white women. While government, private foundations, and concerned citizens' groups have made numerous efforts through the years to address these issues, success has generally not been forthcoming. It is likely that new strategies to address these problems will be needed. Also, we recognize that programs aimed at social change require extensive economic and human resources. However, the added burden in cost and life lost to our society as a result of high AIDS incidence rates in inner-city populations should be taken into account when examining the cost of programs for social change that may impact on HIV transmission. Allocating resources now for such programs may prevent a much greater cost in the future.

We acknowledge that the social and economic reality for women of childbearing age in our inner cities cannot easily be changed; therefore, we must also consider the more limited traditional public health strategies of disease prevention and control. The CDC issued recommendations for assisting in the prevention of perinatal transmission of HIV infection in December 1985.[6] Emphasis was placed on counseling and testing for HIV antibody in those populations of women with increased prevalence of HIV. These include women who have used drugs intravenously for nonmedical purposes; women who were born in countries where heterosexual transmission is thought to play a major role; women who have engaged in prostitution; and women who have been sexual partners of men who abuse IV drugs, are bisexual, have hemophilia, or have evidence of HIV infection. Landesman and colleagues have concluded in their own area that these recommendations, when applied to their hospital-based population, indicate that counseling and HIV antibody testing should be routinely offered to all pregnant women. We would agree with them and also agree that public health officials in other areas need to obtain similar data to assess the potential public health utility of such programs in their local areas.

In counseling pregnant women, screening programs also raise the need for appropriate counseling that focuses on issues from a culturally specific approach. Counseling must include options for limiting disease transmission to offspring. One option, abortion, is already a volatile issue that will only further increase the difficulty of dealing with HIV infection in the population of pregnant women. The option of avoiding future pregnancies also has cultural implications for the women being counseled, and these need to be taken into consideration. There are many difficult questions; there are no easy answers.

In addition, despite primary and secondary prevention efforts in the populations most likely to be hardest hit by pediatric AIDS, we must also be prepared to deal with the increasing pediatric AIDS caseload. Unanswered questions include the following: "How do we diagnose HIV infection in the newborn?" "How do we provide compassionate and appropriate care for the increasing number of HIV-infected infants who will be left to foster homes and other sources of public care?" And, "How do we deal with potential HIV transmission associated with child sexual abuse?" The list goes on.

In April 1987, Surgeon General C. Everett Koop convened a "Surgeon General's Workshop on Children With HIV Infection and Their Families." The workshop provided a unique opportunity "to summarize the current knowledge about pediatric AIDS and to make recommendations about future directions in research, prevention, and amelioration of the effects of pediatric AIDS." Recommendations from this workshop have been printed and should provide a viable community framework on which to begin dealing with this painful problem.[5] Now is the time that the clinical and public health communities must begin to address pediatric AIDS with the same energy and effort as other aspects of the AIDS epidemic. Programs aimed at social change and HIV-related disease prevention may help limit the number of future children who will "have to know death."

Michael T. Osterholm, PhD, MPH
Kristine L. MacDonald, MD
Minnesota Department of Health
Minneapolis

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Testimony of

James A. Wiley, PhD

Survey Research Center and
San Francisco Men's Health Study,
University of California, Berkeley

before the

Presidential Commission on the
Human Immunodeficiency Virus Epidemic

December 11, 1987
Washington, D.C.

J.A. Wiley, 12-11-87

The introduction of the human immunodeficiency virus (HIV) into heterosexual populations can result in three different patterns of AIDS incidence among heterosexuals. The first type---a "passive" epidemic---will result if all or most cases of HIV infection are acquired from heterosexual contact with members of known risk groups who were not infected heterosexually but by other means, e.g., through homosexual contact, sharing needles, or tranfussion of contaminated blood products. The second type of heterosexual epidemic is "mixed". It includes infections brought about by contacts with established risk groups and a lesser number of infections caused by heterosexual contact with persons who themselves acquired infection heterosexually. The third type of heterosexual epidemic is "self-sustaining". It would maintain itself more or less independently of HIV transmissions from members of known risk groups.

In the United States, at present, the heterosexual epidemic appears to be a passive one. Present evidence, taken at face value, also appears to support the idea that a self-sustaining epidemic among heterosexuals is unlikely:

1. The percentage of AIDS cases attributed to heterosexual contact is very low, i.e., only 2% of cases among American born adults and adolescents. Virtually all are attributed to contacts with members of known risk groups--persons who themselves became infected from contacts with gay males, or contaminated needles or blood products.

2. Both the African and U.S. gay epidemics are associated with rates of sexual contact which exceed the rates for American heterosexuals. Since epidemic spread is directly related to the rate of sexual contact, American heterosexuals are regarded as less vulnerable to this outcome.

3. It appears that the average risk of acquiring HIV infection from a single heterosexual contact with an infected person is quite low. For example, my Berkeley colleagues and I have ascertained (based on interviews with and serological testing of blood from the female partners of HIV-seropositive men) that the average risk of male-to-female transmission is on the order of 1 per 1,000 contacts. The risk for female-to-male transmission is probably lower.

4. Large-scale screening of military recruits, blood donors, and applicants for marriage licenses indicates a fairly low prevalence of HIV infection in these groups. From this it is inferred that the rate of infection in the general population, excluding high risk groups, is correspondingly low.

Does this evidence eliminate the possibility of a self-sustaining epidemic or allow us to conclude that the probability of such an occurrence is very low? In my opinion, because we do not yet know enough about the disease or the factors that affect the rate of its spread, the answer is no.

1. While it is true that the current number of AIDS cases attributed to heterosexual contact is low, we cannot conclude that the number of persons infected through this route is also low. Attempts to extrapolate from AIDS cases to infections depend on making strong assumptions about two matters that are presently unknown: the number of infections that will eventually result in AIDS and the length of time from infection to diagnosis. If the average time from infection to diagnosis is quite long---and we are beginning think that it is---then the ratio of infections to cases can be very high, especially in the early stages of an epidemic. This can mask the initial phases of a self-sustaining epidemic.

2. Although research has established that the African heterosexual and U.S. gay male epidemics were fueled by high rates of sexual contact, it does not follow that the lower rates of sexual contact of American heterosexuals fall below the threshold for a self-sustaining epidemic. Given differences in rates of sexual contact and practices, it does not appear likely that American heterosexuals will experience an epidemic on the scale of those experienced by African heterosexuals or American gay men. However, we do not know enough to rule out the possibility of a smaller, but nevertheless devastating growth of HIV infection (e.g. 2-5% prevalence among sexually active heterosexuals) within a decade.

3. The evidence suggests that the average risk of acquiring HIV infection from a single heterosexual contact with an infected person is quite low. However, a low average risk may still be consistent with growth of HIV infection in the population. This can happen in several ways. First, rates of sexual contact may be high enough to produce high rates of new infections inspite of low efficiency of transmission. Second, an average conceals wide variability in risk. Some individuals are more infectious than others; some are more susceptible than others. For example, as much as a ten-fold increase over the average risk can result under any of the following circumstances: when the infected partner is in the later stages of disease progression; when either partner has genital lesions; or when sexual contact includes anal intercourse. In making predictions about the potential for epidemic spread, knowing about average risk may be less important than knowledge about the number of highly infectious individuals (the so-called super-spreaders) and their sexual practices.

4. Although large-scale screening of special groups (e.g., military recruits, blood donors, etc.) has resulted in fairly low estimates of HIV prevalence, we cannot conclude that the rate of infection in the general population is correspondingly low. Because members of special groups are not representative, and may even be self-selected in relation to their serostatus, their prevalence rates do not reliably indicate the level of HIV

infection in the general population.

In my remarks before the committee, I attempted to convey the uncertain state of knowledge about AIDS infection among heterosexuals. It should be clear that the currently available data do not permit us to predict the likely course of AIDS in this population. At this time, we cannot even rule out the terrible prospect of a self-sustaining heterosexual epidemic.

* * *

National Minority AIDS Council

Mencer D. Edwards
Executive Director

TESTIMONY BEFORE PRESIDENTIAL COMMISSION ON THE HIV EPIDEMIC

DECEMBER 11, 1987

HUBERT H. HUMPRHREY BUILDING

WASHINGTON, DC

MENCER D. EDWARDS, RN, MSN, MPH

EXECUTIVE DIRECTOR

NATIONAL MINORITY AIDS COUNCIL

Office Address: 1012 14th St. NW, Suite 601, Washington, DC 20005
Mailing Address: P.O. Box 28574, Washington, DC 20038

Good afternoon . Mr. Chairman and Commission members, my name is Don Edwards. I am the Executive Director of the National Minority AIDS Council.

The National Minority AIDS Council is an organization dedicated to working with and through national minority leadership organizations, minority businesses, local minority community-based AIDS projects,and national and local health agencies to assist in preventing the spread of hiv, and helping communities to better care for minority persons already infected.

The council has four key objectives:

1. Advocacy
2. Education of national and local policy makers
3. Promotion of minority community-based AIDS projects
4. Application of minority economic resources to AIDS

I am personally pleased to offer testimony as part of these hearings which have been looking at data collection and related issues. Persons perceived as "advocates" are often excluded when the focus is on the more "technical" aspects of scientific phenomena. You know me for the advocacy I practice on behalf of people of color regarding the absolute necessity for culturally sensitive AIDS education, and the special kinds of direct services needed in Black, Latino, Asian, and Native American communities.

But I hope after today you will also know me as a novice epidemiologist, now lapsed, who was the first person in the U.S. to use the CDC's Public Access Data Set to describe the epidemiology of AIDS among Black persons born in the US. Thus I want to assure you that, like my distinguished co-panelists, I am quite ready to discuss "the numbers" as regards the HIV epidemic.

In preparation for this testimony, I spoke with a number of individuals in the Black community. I want you to know that in the past sixty days, a quantum leap forward on the part of leading minority clinical researchers and health practitioners has taken place. Last week a National Institute on Drug Abuse sponsored a technical review meeting hosted by your fellow Commissioner Dr. Benny Prim. He and his colleagues at Addiction Research and Treatment Corporation in Brooklyn brought together minority scientists, health providers, and community activists from across the nation to discuss issues relevant to the subjects on which you are now taking testimony. In two prior meetings, one sponsored by the Detroit chapter of the National Medical Association, and again by the Provident Medical Society, the Brooklyn NMA affiliate, critical attention was again devoted to these issues among others.

My testimony is offerred as preface to what may become a rising tide of interest -- and with that interest, disturbing questions. I want to share some of these key questions which keep being raised in the Black community with you now.

1. Is it as bad as they say it is for Blacks?

No matter who says it, or what their motives are, yes it is as bad as they say it is. As of November 23, 1987 47,022 cases of AIDS have been reported to the Centers for Disease Control's AIDS's Surveillance Program. Of this number 11,746 (25%) were Black. This number represents 11,373 (25%) adults and adolescents over the age of thirteen. The rest are 373 (55%) cases in children under age 13.

Overall, the cummulative incidence or cases per million population for all Black adults is 3.1 times that for white adult cases. The cummulative incidence for Black women is 13.3 times that for white women. Twenty-five percent of the total number of Black cases are between the ages of 13-19 years.

As much as sixty percent of Black adult cases can be found in three states: New York, New Jersey, and Florida. However, the incidence of Black cases is climbing in each of the top 25 U.S. cities with the highest prevalence of AIDS cases. In the Black community, the previous East coast focus of the epidemic is quickly disappearing as more cases among Blacks are reported in cities like St. Louis, Kansas City, and Denver. Increases have also been noted in Los Angeles and San Francisco, where Blacks make up small percentages of the overall metropolitan population.

Adult Black cases are expressed in significant percentages in

every category except hemoplilia/coagulation disorder which has less than one percent of the cases. As of November 23, in adults 40% of cases are homosexual/bisexual; 35%, IV drug user; 7% homosexual/bisexual male/IVDU; heterosexual cases, 11%; 1%, transfusion related; and 5% in the incomplete information category.

In the pediatric population, 2% of the cases are in the hemoplilia/coagulation category; 87%, parent with/or at risk of AIDS; 6%, transfusion related; and 5%, incomplete information.

The vast majority of cases in the adult and pediatric groups report Pneumoncystis carinii pneumonia and/or other opportunistic infections as the key diagnostic features.

The AIDS Surveillance Program of the Centers for Disease Control is to be commended for the efforts they have taken to ensure that the nation has a regular up-date of this type of data. Yet, I am sure they know that they have not met the needs of everyone. The question is should they be expected to? If not them, who?

I bring the following feedback regarding surveillance. First, in addition to the national surveillance, it may be time to institute systematic, standardized surveillance and reporting of cases in the top 25 high prevalence cities. These cities, coincidentally, have significant Black populations. The point is to describe not one national epidemic, but to examine whether in

fact there are a number of regional or local epidemics occurring which look very different from one another.

Additionally, considerable dissatisfaction has been expressed regarding the lack of standardization and quality of surveillance in states and localities. For instance 40% of the cases in Alabama are Black, but hardly anyone in or out of Alabama knows this. Whose responsibility is this -- the state's or the CDC's?

Black activists are nearly unanimous in their desire to have national and state geographic data by race, data on gender by race, and especially AIDS cases by risk factor combinations by race. They would also like to see homosexual cases separated from bisexual cases for Blacks.

This aggregation of data might be done monthly or bi-monthly, but it is crucially needed to confirm or deny anectdotal community information. If this responsibilty falls to the states, the CDC should provide the standard for the collection and reporting of this information. There are legitimate issues regarding breach of confidentiality raised whenever data is cut too fine, but, safeguards can be put in place.

Surveillance should reflect a greater sensitivity to race/ethnicity as a highly significant variable.

2. Did AIDS become a health problem for Blacks only recently? If yes, how did it happen so quickly? If no, why didn't we know about it sooner?

As more information is diseminated, it will become clear that scientific awareness of the disproportionate impact of the HIV on the Blacks and other minorities was evident long before the publication of the report titled "Acquired Immunodeficiency Syndrome (AIDS) among Blacks and Hispanics-United States" published in the Center for Disease Control's Morbidity and Mortality Monthly Report of October 24, 1986.

There is a concern among many Black AIDS activists that as more Black persons learn the about the early evidence of the disproportionate impact dating back to at least 1983, there may develop a "credibilty gap" as to whether any other data is being held back. The suspicion and anger engendered may detract scarce resources from education and direct services at a point where progress is being made.

The answers to the questions above involve more than mere curiosity. At their heart is the question of credibility--of the current message about the impact of AIDS on blacks, and of the messenger.

The fact is that there was evidence available which had it been subjected to more informed interpretation could have hastened the

1986 report. In the MMWR dated August 28, 1981 (p. 409.) demographic data provided for the first 102 cases by disease, race, and sexual preference showed that 73% were white, 11.2% Black, and 10.3% Hispanic. Had characteristics other than sexual orientation been seriously considered, it might have been noted that cases among Blacks already equaled their percentage in the US population. If compared to the percentage of Blacks in each of the two west coast cities from which most of the cases were drawn an even more significant association might have been drawn.

I want to draw your attention to a statement which was made in that report. It said, "the majority of the reported cases of Kaposi's Sarcoma and/or Pneumocystis carinii pneumonia have occurred in white men." Examined in hindsight this is a chilling statement because even after the numbers began to change more dramatically, the perception remained the same. It became a confirmation of the classic warning given to all new researchers to avoid looking for something lest that be all you find.

2. Why does it seem that all the bad news on AIDS is about Black people? Are all these studies just another way to blame Blacks for AIDS?

Numbers paint pictures. For Blacks, the picture has been consistently suspect, and in the case of the Haitian community, particularly ugly. First, in the minds of Black persons, the Haitians were "blamed" for bringing AIDS to the US. Second,

initial reports on AIDS in Black Africa seemed more interested in pointing out how the governments of these countries were standing in the way of scientific progress, of help for their citizens, and of an explanation of where AIDS started. Lastly, in the U.S. data was released which fueled perceptions that it was black drug addicts who were spreading AIDS across the country. Because of them, AIDS is going to infect heterosexuals, and kill hundreds of unsuspecting women and innocent babies.

To the Black person on the street, the perceptions listed above confirmed what many of them already believed as rote: In America, if there is no explanation to be found, blame it on Blacks. AIDS education is now hampered by all the poison that has been injected into the community atmosphere by what was at its most essential a stereotypical, insensitve, and uninformed processing of experience and of data. I hope that the fundamental importance of sensitivity to culture and tradition is now accepted and will no longer contribute to the erection of tedious and divisive barriers.

Researchers need to keep a number of points in mind during both the conceptualization and the conduct of any research in the US Black community. How many times do these point have to be made? First, the U.S. Black Community is not a monolith. In the U.S., Black identity includes early and recent immigrants from Carribean nations who may speak native languages, as well as the languages of their former colonizers -- English, French, Spanish,

Dutch -- and recent immigrants from African nations who despite being from the same continent, are tremendously separated by language, geography, and national experience. The U.S. Black community consists of separate ethnic communities joined into a multi-ethnic community by African ancestry, common cultural values, cross-cultural marriage, and a common experince of racism and racial pride.

Second, there is a psychology at work in the Black community that serves many purposes. A key function of this psychology is self-preservation. It appears that it may be contributing to the denial already aggravated by stigmatization that has produced a "SEE NO EVIL-HEAR NO EVIL-SAY NO EVIL" process which resists education related to AIDS. Disrespect of this psychological process only serves to reaffirm its need to exist. It is particularly ironic that in the case of AIDS, this psychology will not lead to self-preservation, but to death. But it will not be a self-imposed death sentence. A large part of the responsibilty will rest with those who ignore the social context and consequences of research and data collectiion.

3. Is the impact on Blacks really as bad as they say? Is it really so disproportionate?

There is disagreement on the answer to this question. From a scientific standpoint, a number of Black researchers have pointed out that using general population figures for denominator data

drives the disproportion up. Epidemiologically, it would make more sense to use either the percentage of Blacks in the urban center, or in the metropolitan SMSA as the denominator. On the East Coast in paticular, given the high percentage of Blacks in these cities, the ratio would probably begin to approach 1:1. Others hold to the 2:1 ratio as correct considering the projected spread of the epidemic into the heartland of the U.S., and the higher degree of undercount that is suspected for Black cases.

The interesting point is that there seemed to be less concern about the accuracy of this message than what would be the benefits accruing from either one. If the higher ratio engages the attention span of Blacks, and drives increased funding, it should be maintained. However, past experience with other high prevalence health problems affecting Black Americans has not led to increased allocation of resources as the classic formula dictates. Therefore, some activists suggest that the emphasis on the 2:1 incidence rate unneccessarily increase stress and stigma. They argue that Blacks will "open up" to AIDS if these two elements are decreased or eliminated.

4. Is there a genetic link which explains the high incidence of HIV infection among Blacks?

It is particularly important that this line of investigation be recognized for the red flag it waves in the Black community. Rightly or wrongly, anytime "genetics" is mentioned, it raises

the spectre of ever-recurring racist attempts to explain the lives of black people with an up-date on archaic pseudo-scientific social-biological theory. The research on the high incidence of HTLV-1 in some parts of Africa which are contiguous with the presence of HIV, as well as in a number af carribean nations should be given appropriate attention. But the Black community will reject anything remotely suggesting that something inate to being a Black person increases one's risk for infection.

To the Black person on the street, much of the talk about DNA and RNA, as well as that about mothers passing the virus to their children translates to "genetics". Researchers should also understand that considerable concern exists regarding whether AIDS is a "genocidal plot of the racist U.S. government to destroy Black peoples world-wide".

The existence of Black people is not accepted by many Blacks themselves as a given. Thus is should not come as a surprise that the high number of AIDS cases among Black women and babies raises the suspicion quotient of Blacks rather easily. They are also quite mindful that the "Government" was responsible for the "Tuskegee Experiment." All these fears can be subsumed under the category -- Genes, Genetics, and Genocide. Researchers should be mindful of the power these perceptions hold.

5. With whites, it seems only gay men get AIDS. With Blacks, men, women, and children get AIDS. Why?

Though the epidemic is six years old, it was only thirteen months ago that the Centers for Disease Control published a report in the Morbidity and Mortality Weeekly Report titled "Acquired Immunodeficiency Syndrome (AIDS) Among Blacks and Hispanics-United States". Thus it has been difficult to accept the data though it delivered a clear and unmistakeable message: AIDS is not a gay white man's disease.

But for the most part, where it appears that so much has been determined about the sexual practices, the degree of behavioral change, percentage by population, etc. for gay men, Blacks have been mostly left with a lot of interesting, but unanswered questions.

Where are the longitudinal studies exclusively of Blacks or at least oversampled for Blacks? Where are the case-control studies linking cases and controls to ascertain independent or multiple variables? For the category homosexual/bisexual male, where do most black men fall? For homosexual/IV drug user, which contributes the greatest to risk? If there is one area in which there is almost complete unanymity, it is that the degree of scientific investigation absolutely contradicts and renders impotent the declaration that a crisis exists.

In addition to the potential "genetic" factor, at least two other factors have been suggested as possible avenues of exploration. One is that the racial distribution of AIDS cases reflects the racial distribution of populations in the high prevalence areas. A second factor suggested is economic and cultural factors that may also account with observed differences in incidence.c

Both of these lines of investigation lie dormant. Perhaps in one of them lies key information which will help save countless lives in the Black community. The quesion being asked in the community however, is "Do they want to know?" After they know, will they spend the money? If they start with AIDS, will they really use what they already know about teenage pregnancy, drug use, and sexually transmitted diseases in Blacks to do something to stop that?

Commissioners, these are a mere sampling of the questions which I was asked by key individuals in the Black community to raise with you this morning. I would like to acknowledge Dr. Lawrence Sanders, MD, MPH of the Philadelphia Health Department, Dr. Helene Gayles, MD, MPH of the AIDS Surveillance Program at the Centers for Disease Control, and Dr. Wayne Greaves, MD, MPH, Chief of Infectious Diseases at Howard University Hospital who was to my knowledge the first Black physician and epidemiologist to ask the hard questions and demand answers about the impact of AIDS in the Black community.

AIDS Update: No Longer Gay White Man's Disease

By Dion B. Sanders
Via Gay Press Association Wire Service

SAN FRANCISCO—Shattering a widely-held belief that AIDS is a "white gay man's disease," previously-unpublicized data compiled by the national Center for Disease Control in Atlanta show that more than a third of all AIDS patients in the United States are from racial and ethnic minorities.

Moreover, a doctor's report published in a leading medical journal says that while a significant percentage of black and Hispanic AIDS patients—not counting Haitians—are intravenous drug users, an equally-significant percentage of them are upfront gays.

In a telephone interview from Atlanta, Dr. Richard Selik, director of AIDS information at the CDC, reported that as of Oct. 19, out of a total of 2513 AIDS cases nationwide, only 57.9 percent are white.

Blacks (including Haitians), Hispanics, Asians and Native Americans make up a combined 40.9 percent, Selik said, with the remaining 2.2 percent of undetermined ethnic origin.

For months, news media reports have repeatedly stated that AIDS patients are primarily gay men, IV drug users, Haitians and hemophiliacs receiving blood transfusions. Gay men account for 71 percent of all AIDS cases nationwide.

The belief that AIDS is a "white gay man's disease" stems from a long-held perception of the gay community by the general public—especially by minority communities—as being exclusively white, despite the emergence of gay and lesbian people of color into the public eye in recent months.

(In San Francisco, this perception has led to charges by some minority community leaders that public funds being appropriated for AIDS are being taken away from existing health programs for the poor—a disproportionate percentage of whom are black and Hispanic, according to local press reports.)

As of Oct. 19, there have been 1048 deaths, for a mortality rate of 41.7 percent nationally, Selik reported.

Providing a breakdown of nationwide AIDS figures by ethnic group, Selik

AIDS CASES IN THE U.S. BY RACIAL/ETHNIC ORIGIN
AS OF OCTOBER 19, 1983

ethnic group	number of cases	percent of cases
White	1456	57.9%
Black (Non-Haitian)	648	21.1%
Haitian	117	4.7%
Latinos	354	14.1%
Asians	8	*
Native American	3	*
Other Ethnic Origin	47	2.2%
TOTAL	2513	100.0%

*Less than 1 percent.

Source: Center for Disease Control, Atlanta, Ga.

reported that blacks make up 21.1 percent, "with the figure rising to 25.8 percent when Haitians are included.

"Hispanics make up 14.1 percent, with Asians and Native Americans combined comprising approximately 1 percent," Selik said.

"The remaining 3.2 percent of AIDS patients are of undetermined ethnic origin," he reported.

The proportion of blacks and Hispanics among people with AIDS is striking in that it is nearly double the proportion of blacks and Hispanics in the U.S. population as a whole.

Even more striking is the fact that as of Oct. 19, there have been only eight cases of AIDS reported nationally among Asians and only three among Native Americans.

No nationwide city-by-city ethnic breakdown was available from the CDC, but [illegible] Health, out of a total of 288 cases in the Greater Bay Area as of Oct. 18, 90.3 percent are white, 4.9 percent are black, 3.8 percent are Hispanic, and a fraction of 1 percent are Asian or Native American.

In sharp contrast, 50 percent of AIDS cases reported in Philadelphia as early as last July are black, according to that city's health department, prompting the creation of an AIDS education program aimed specifically at black gays in that city.

Philadelphia, Atlanta and Washington, D.C. all have sizeable black populations, with blacks an overwhelming majority in the nation's capital.

Asked what percentage of the non-white AIDS cases are gay and what percentage are IV drug users, Selik quoted figures from an article by Dr. Harold Jaffe published in the Aug. '83 issue of the *Journal of Infectious Diseases* (Vol. 148, p. 339).

The article, based on CDC reports of 2000 AIDS cases nationally as of last July, reported that among non-Haitian blacks who had AIDS, 17 percent were upfront gays, 46 percent were IV drug users, and 37 percent were of undetermined risk factors.

(A similar breakdown of Haitian AIDS patients by the Jaffe article has been rendered unreliable because of recent news reports disclosing that many such Haitians were gay, but were unwilling to admit it, because of severe taboos against homosexuality in Haitian society, Selik said.)

Among Hispanic AIDS patients, the Jaffe article reported that 11 percent were upfront gays, 33 percent were IV drug [illegible] article contained no report on Native Americans and Asians with AIDS because there were no report[illegible] among them at the time the article was published, Selik said.

Nor did the article contain inform[illegible] on the number of AIDS pa[illegible] women.

In the San Francisco area, only [illegible] cases of AIDS among IV drug [illegible] been reported so far, [illegible] Norman, coordinator [illegible] health services for the city.

Two are white; the third is black.

Norman noted that whereas 71 percent of AIDS cases nationally are gay, the figure rises to 90 percent in the San Francisco area, as there are "only a handful of Haitians," living here.

Locally, there have been 96 deaths, for a mortality rate of approximately 35 percent.

Norman attributed the disparity of the national and local mortality rates to the near-absence of IV and Haitian AIDS cases here.

Selik reported that the percentage ethnic breakdown "has been fairly constant for more than a year." Asked why the ethnic data had not previously been published by either the gay or the mainstream media up to now, Selik responded, "Perhaps they (editors) for some reason thought that it wasn't newsworthy."

The New Haven Inquirer Vol.8 #29 11/13/85 1-A

More Than 3,300 Affected

AIDS Strikes Blacks At High Rate

A close look at the victims of AIDS reveals a disproportionate number of blacks struck by the deadly disease, while more than half of the nation's children with AIDS are black.

Citing recent data from the Centers for Disease Control, Dr. Wayne Greaves, chief of the division of infectious diseases at Howard University Hospital in Washington, D.C., notes that he has found "a lot more cases among blacks than we previously thought."

Nationally, blacks comprise 25 percent of all victims of Acquired Immune Deficiency Syndrome – more than double the 12 percent black population in the nation. And some 56 percent of the nation's children hit by AIDS are black, Greaves emphasizes in an interview.

Since the AIDS virus was first reported in this country in 1981, more than 13,400 Americans have been afflicted by the disease, which destroys the body's immune system and is ultimately fatal. Blacks account for more than 3,300 of those victims, says Greaves, formerly with the CDC in Atlanta, indicating that half of all Americans contracting the disease have died.

Of the known "pediatric cases" – comprising children under age 13 – 107 of 191 children with AIDS have been black, he adds, noting that children make up about 1 percent of all AIDS cases reported in the United States.

The epidemiologist points to the state of Maryland as a good example of the disproportionately high incidence among blacks. In that state, 116 of the 222 known cases have been black victims, accounting for 52 percent – more than double the 22 percent black population in Maryland, he stresses.

Like the disease itself, mystery shrouds the reasons why there is a high AIDS incidence among blacks.

"There's still belief (in the black community) that AIDS is a white man's disease," says Greaves, who is also an assistant professor of medicine at Howard. "AIDS is color blind."

Another problem is tha blacks often tend to seek health care when a medical problem has reached an advanced stage of development. At Howard University Hospital, where most AIDS victims treated thus far have been black, AIDS sufferers have generally lived about six to eight months after diagnosis of the disease. The median survival nationally is 18 months from diagnosis to death.

While Greaves is on what he calls "the front line" of treating AIDS patients, his colleague, Dr. Winston Frederick, assistant professor of medicine at Howard, is trying to unlock the secrets of AIDS. The former National Institutes of Health researcher is conducting research to find certain perameters or "reliable markers" that may give clues to the disease's development.

So far, AIDS has primarily struck homosexual and bisexual men, intravenous (IV) drug abusers and recipients of contaminated blood. But in these high-risk groups, a stark difference emerges between white and black AIDS victims.

According to Greaves, about 85 percent of the nation's whites with the disease are gay and 8 percent are intravenous drug abusers. Among black AIDS victims, 49 percent are gay and 38 percent are IV drug abusers.

He believes that more attention needs to be given to drug abusers.

Dr. Wayne Greaves, chief of infections diseases at Howard University Hospital, consults with Dr. Soon-Young Park for the university's College of Pharmacy and Pharmacal Sciences on drug treatment of AIDS patients, most of whom are black at the Washington, D.C., hospital. Greaves emphasizes that nationally blacks comprise 25 percent of all AIDS victims—more than double the 12 percent black population in the nation.

THE IMPACT ON HISPANICS IN SELECTED STATES

A COSSMHO BACKGROUND PAPER

DRAFT--NOVEMBER '87

COSSMHO
The National Coalition of Hispanic
Health and Human Services Organizations

1030 15th Street, NW
Suite 1053
Washington, DC 20005
(202) 371-2100

EPIDEMIOLOGY

Since the identification of AIDS, the disease has had a disproportionate effect in the Hispanic community, claiming the lives of infants, denying families their care providers and prematurely ending the lives of thousands of Hispanic men and women in the United States.

The data surrounding AIDS in the Hispanic community is a sobering litany. (Data according to November 16, 1987 Centers for Disease Control reports)[1]

- While Hispanics represent 7.9 percent of the population, according to 1987 Census data, they represent 14 percent of all AIDS cases—a proportion that has remained fairly constant in recent years.

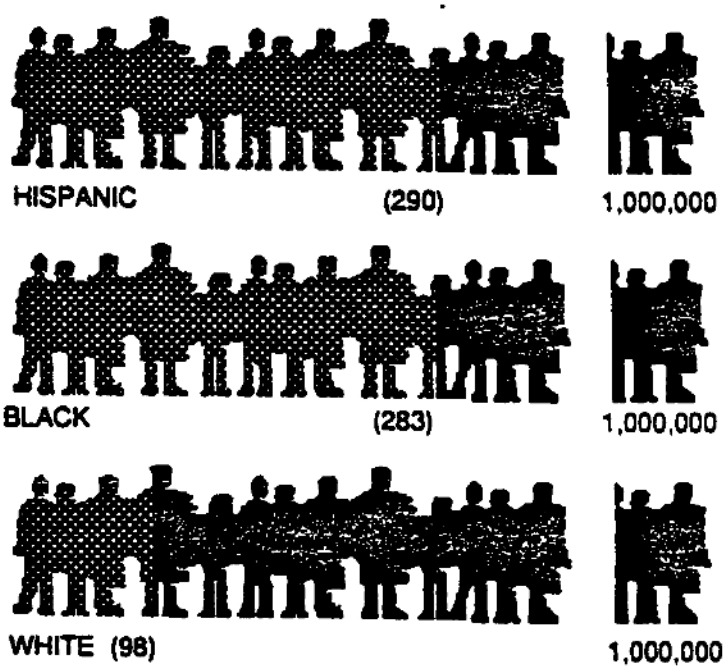
- Hispanics account for 20 percent of AIDS cases among women—a rate that is almost three times that which would be expected based on the proportion of Hispanic women in the U.S. female population.

- Hispanics account for 23 percent of pediatric AIDS cases—a rate that is more than twice that which would be expected based on the proportion of Hispanics in the U.S. population of children under the age of thirteen.

- Data presented by CDC researchers, Selleck and Rogers, at the 1987 International Conference on AIDS, indicated that the cumulative incidence of AIDS for Hispanics is 290, compared to 283 for Blacks and 98 for non-Hispanic whites (per 1 million population segment). Such figures translate into a cumulative incidence of AIDS among Hispanics that is almost three times that of non-Hispanic whites. (Note: see Figure 1--doted area represents cumulative incidence of AIDS for each 1 million population segment of the relevant racial or ethnic group.)

Given the stability of Hispanic representation among AIDS cases and the projection by the Public Health Service that new AIDS cases will continue to come from the currently recognized transmission categories, it is reasonable to project that Hispanics will continue to represent a disproportionate share of AIDS cases in the United States. Furthermore, Hispanics are overrepresented in transmission categories projected by the Public Health Service to have the most significant growth over the next four years.

FIGURE 1



Cumulative Incidence of AIDS by racial/ethnic group per 1 million population segment

EPIDEMIOLOGY

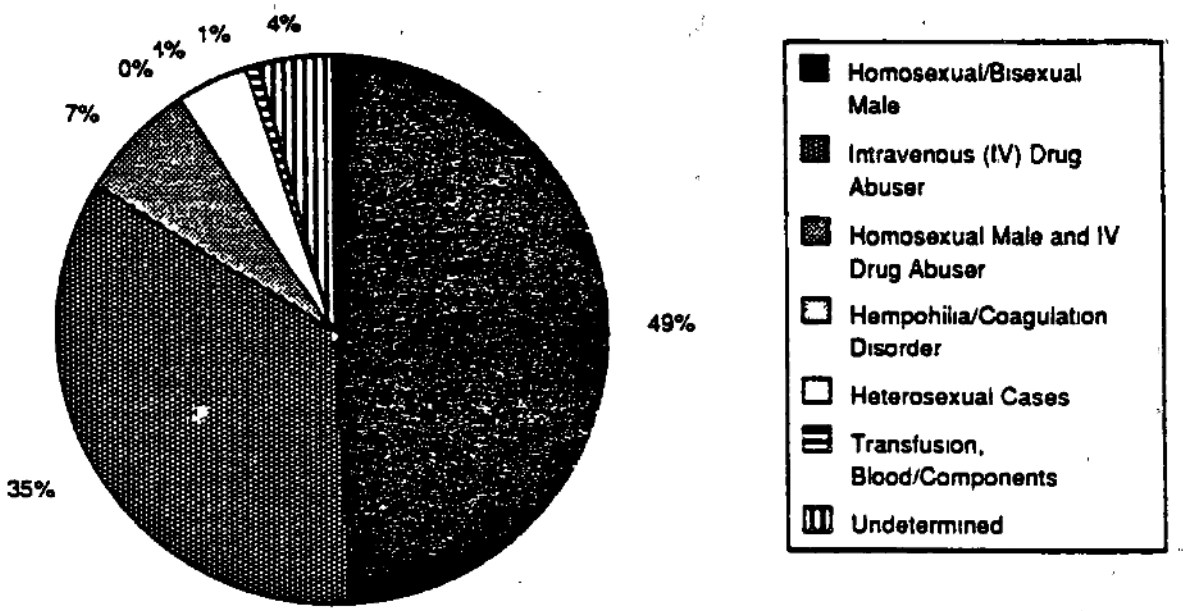
The most significant transmission categories (see Figure 2) for Hispanic AIDS cases are:

- Homosexual/Bisexual male which accounts for 49 percent of cases,
- Intravenous (IV) Drug Abuser which accounts for 35 percent of cases,
- Homosexual Male and IV Drug Abuser which accounts for 7 percent of cases, and
- Heterosexual Cases which accounts for 4 percent of AIDS cases among Hispanics in the United States.

The representation of Hispanics in the heterosexual transmission categories of "IV Drug Abuser" and "Heterosexual Cases" is significant as Hispanics are 3.5 times as likely to be represented in these categories than are non-Hispanic whites. Hispanics are seven times as likely as non-Hispanic whites to fall under the transmission category of "IV Drug Abuser".The Public Health Service has projected that new cases acquired through heterosexual contact will increase almost seven-fold by 1991.

Also of great concern is the overrepresentation of Hispanics among pediatric AIDS cases. The majority of pediatric AIDS cases fall under the transmission category of "Parent with/at risk of AIDS" with other transmission categories being far less significant. Hispanic pediatric AIDS cases under this transmission category are 81 percent compared to 42 percent for non-Hispanic whites. Only 11 percent of Hispanic pediatric AIDS cases fall under the transmission category of "Transfusion, Blood/Components" compared to 32 percent of non-Hispanic white pediatric AIDS cases. Given the development of blood screening

FIGURE 2

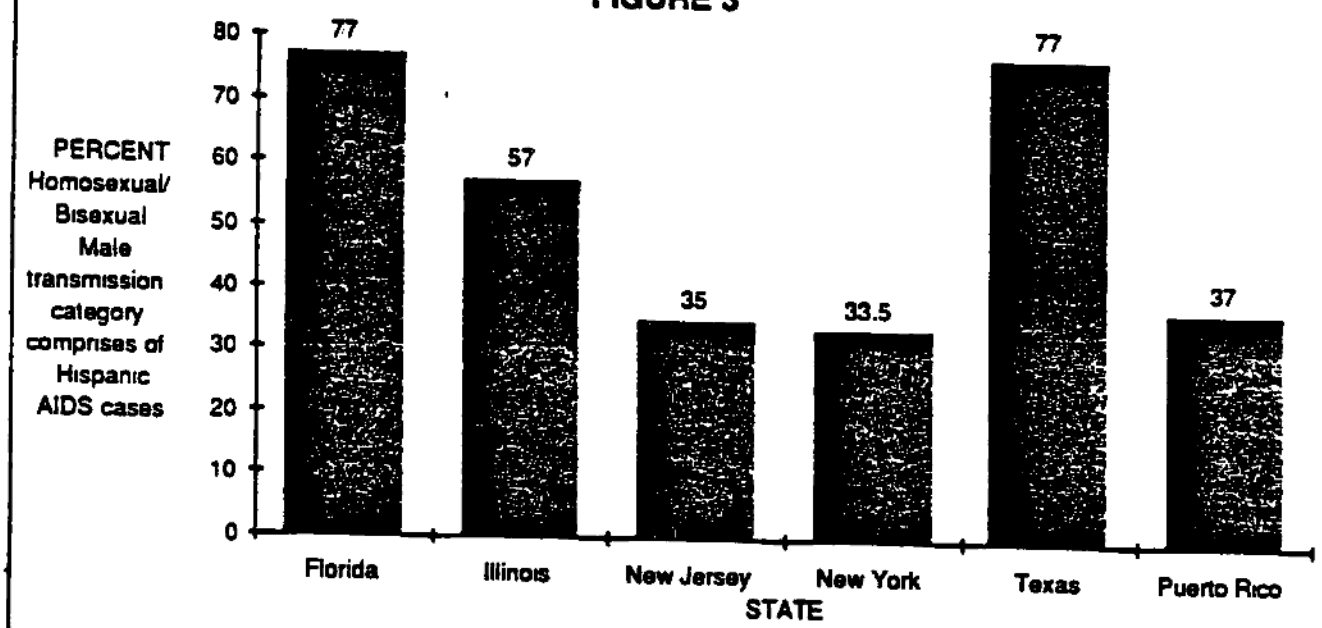


Percentage of Incidence of various Transmission Categories in Hispanic AIDS cases

procedures, this category is not expected to grow. Hispanic children currently account for approximately one out of every four pediatric AIDS cases. New pediatric AIDS cases are projected by the PHS to increase almost ten-fold by 1991.

There is significant variation by state, however, in the percentage of AIDS cases represented by Hispanics and in the transmission categories of those cases (see Figures 3 and 4). The following sampling of states include: Florida, Illinois, New Jersey, New York, and Texas as well as Puerto Rico.[2] Other states were surveyed by COSSMHO when it became difficult to get appropriate information from the Centers for Disease Control, especially surrounding state breakdowns of Hispanic AIDS by transmission categories. There was also difficulty, however, in getting this information from the states. Many states cited issues of confidentiality, but in states, such as California, where this is not an issue because of a large enough sample of Hispanic AIDS cases there was still not a response. In no state was there an ongoing effort to collect data on Hispanic AIDS in terms of transmission categories and case-fatality rates. All data received was the result of special studies by COSSMHO contacts in the various state AIDS epidemiology programs. It is disturbing that this information is not part of an ongoing effort by CDC or any states, but is a result of the dedication of a handful of state government employees. Studies of Hispanic AIDS cases were done by states on an individual basis and not as part of surveillance, therfore, the following information is for different dates. The Puerto Rico surveillance report is only updated every two years and reflects the latest available information.

FIGURE 3



Percentage of Incidence of "Homosexual/Bisexual Male" as a Transmission Category in Hispanic AIDS cases for selected states

STATE DATA

FLORIDA

As of September 4, 1987, Hispanics represented 13 percent of AIDS cases in Florida. Of these 354 cases:

- 77% were Homosexual/Bisexual Males,
- 8% were IV Drug Abusers,
- 6% were Homosexual Males and IV Drug Abusers, and
- 1% were Heterosexual Cases.

As of the same date, there were 2 Hispanic pediatric AIDS cases forbiding any further breakdown of transmission category for reasons of confidentiality.

ILLINOIS

As of August 31, 1987, Hispanics represented 8 percent of AIDS cases in Illinois. Of these 82 cases:

- 57.0% were Homosexual/Bisexual Males,
- 6.1% were IV Drug Abusers,
- 3.7% were Homosexual Males and IV Drug Abusers, and
- 2.0% were Heterosexual Cases.

As of the same date, there were 2 Hispanic pediatric AIDS cases forbiding any further breakdown of transmission category for reasons of confidentiality.

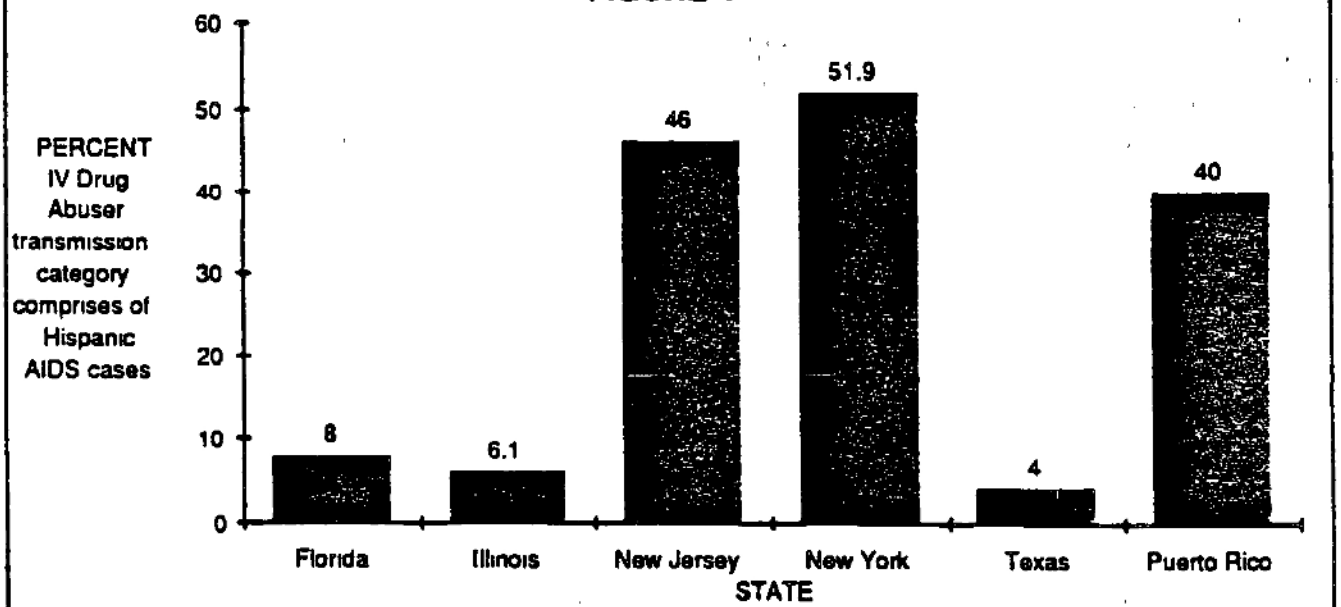
NEW JERSEY

As of November 1, 1987, Hispanics represented 13 percent of AIDS cases in New Jersey. Of these 349 cases:

- 35% were Homosexual/Bisexual Males,
- 46% were IV Drug Abusers,
- 5% were Homosexual Males and IV Drug Abusers, and
- 8% were Heterosexual Cases.

As of the same date, there were 18 Hispanic pediatric AIDS cases, 89% were in the transmission category of Parent with/at risk of AIDS.

FIGURE 4



Percentage of Incidence of "IV Drug Abuser" as a Transmission Category in Hispanic AIDS cases for selected states

STATE DATA

NEW YORK

The largest number of Hispanic AIDS cases are in New York State. As of October 1, 1987, Hispanics represented 24.4 percent of AIDS cases in New York State. Of these 2,937 cases:

- 33.6% were Homosexual/Bisexual Males,
- 51.9% were IV Drug Abusers,
- 5.7% were Homosexual Males and IV Drug Abusers, and
- 4.4% were Heterosexual Cases.

As of the same date, Hispanics represented 34 percent of pediatric AIDS cases in New York State. Of these 72 cases, 91.6% were in the transmission category of Parent with/at risk of AIDS.

TEXAS

As of October 1, 1987, Hispanics represented 10 percent of AIDS cases in Texas. Of these 294 cases:

- 77% were Homosexual/Bisexual Males,
- 4% were IV Drug Abusers,
- 10% were Homosexual Males and IV Drug Abusers, and
- 1% were Heterosexual Cases.

As of the same date, Hispanics represented 26 percent of all pediatric AIDS cases in the state. Of these 5 cases, 40% were in the transmission category of Parent with/at risk of AIDS, 40% were in the transmission category of Hemophilia/Coagulation Disorder, and 20% were in the transmission category of Transfusion Blood/Components.

PUERTO RICO

As of June 15, 1987, there were 456 cases of AIDS in Puerto Rico. Of these cases:

- 37% were Homosexual/Bisexual Males,
- 40% were IV Drug Abusers,
- 13% were Homosexual Males and IV Drug Abusers, and
- 5% were Heterosexual Cases.

As of the same date, there were 22 pediatric AIDS cases in Puerto Rico. Of these cases, 82% were in the transmission category of Parent with/at risk of AIDS.

The variation among geographic areas in the significance of IV drug use as a transmission category may be due to the time the HIV virus was introduced in the IV drug user community. Sera prevalence studies conducted in New York City indicate that the HIV virus was introduced in the IV drug user community in the late 1970's. All sera collected between 1960 and 1976 in this study were HIV seronegative and the first seropositive serum sample was collected in 1978. After this first positive sample, seroprevalence rose rapidly to over 40% of the 1980 samples.[3] It is possible that the HIV virus was introduced in some states at a later date, e.g., Texas. Thus, at this time IV drug use is not a significant transmission category in some states.

Disease and death resulting from HIV infection are likely to increase not only through the next four years but into the next century.[4] Despite the tragic and devastating effects of AIDS in the Hispanic community, the prospect for turning back the tide is not good. While Black and Hispanics account for 40 percent of all AIDS cases, 71 percent of all women with AIDS, and 77 percent of all pediatric AIDS cases; there has been little money directed to national and local community-based Black and Hispanic groups for the mounting of community and cuturally-appropriate AIDS education, prevention, and treatment programs. Such a commitment, along with a greater concentration on collecting Hispanic AIDS epidemiological information, must be made at the national level before the Hispanic community can effectively deal with AIDS in its communities.

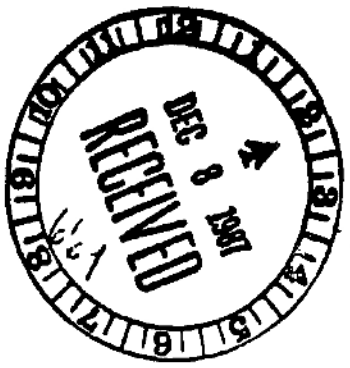
ENDNOTES

1) All data derived from the Centers for Disease Control (CDC), AIDS Program, Center for Infectious Diseases Aids Weekly Surveillance Report --United States for November 16, 1987 unless otherwise stated.

2) State data derived from a COSSMHO survey of state AIDS epidemiology programs.

3) Novic DM, MJ Kreek, DC Des Jarias, et al. Abstract of Clinical Research Findings: Therapeutic and Historical Aspects. Problems of Drug Dependence 1985: Proceedings of the 47th Annual Scientific Meeting, The Committee on Problems of Drug Dependence, Inc. NIDA Research Monograph 67, ed LJ Harris. (Washington, DC: USGPO).

4) Institute of Medicine--National Academy of Sciences, Confronting AIDS: Directions for Public Health, Health Care, and Research, pg. 9. (Washington, DC: National Academy Press).



THE USE OF DOUBLING TIME

IN ASSESSING THE COURSE OF THE AIDS EPIDEMIC[1]

Victor De Gruttola and Stephen W. Lagakos

Harvard School of Public Health

INTRODUCTION

The doubling time for the AIDS epidemic in the U.S. has been observed to increase from 5 to 13 months over the past six years. What can we infer from this increase? Does it mean, as some have suggested, that the epidemic may have begun to 'run its course', or that behavioral changes have had a major impact in reducing the incidence rate?

The purpose of this note is to discuss how interpretation of doubling time depends on the dynamics of the AIDS epidemic. Apart from changes in behavior, doubling time is influenced by three phenomena: 1) as the prevalence of HIV infection among individuals at highest risk increases, the rate of new infections in that population decreases; 2) the populations at risk for AIDS are highly heterogeneous: some, such as homosexually-active men practicing high risk behavior with many partners can be almost entirely infected while others have lower prevalences and rates of spread of HIV infection; and 3) the risk of

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1 Condensed from 'The Value of Doubling Time in Assessing the Course of the AIDS Epidemic'.

AIDS after infection is not constant but appears to increase with time since infection.

The first two of these phenomena are characteristic of most epidemics resulting from introduction of a new infectious agent into a population, and tends to cause the doubling time in cumulative infection rate to increase over chronologic time. The third phenomenon also tends to increase doubling time for most epidemics in which there can be long delays between infection and disease. Thus, the observed increase in doubling time for the AIDS epidemic is, at least in part, an inevitable consequence of the dynamics of epidemics. We will argue from examples that it is not possible to determine the degree to which behavioral changes may have contributed to the increase in doubling time, and that changes in doubling time are not particularly informative about future spread of the epidemic to lower-risk populations such as heterosexually-active individuals.

INFECTION, LATENCY ANDINCIDENCE DISTRIBUTIONS

Doubling time in incidence is difficult to interpret because it reflects two features of the epidemic: 1) the rate over time of new HIV infections; and 2) the risk of contracting AIDS once infected. The doubling time in AIDS incidence will be constant if the doubling time in the cumulative number of infections is constant and the risk of contracting AIDS once infected is constant. Even in simple epidemics in a homogeneous population, however, constant doubling time in cumulative number of infections will occur only early in the epidemic when the number of infectives is negligible relative to the number of susceptibles. As the epidemic spreads, the reduction in the proportion

of the population that remains susceptible causes the doubling time in the total number of people infected to increase with chronologic time. The proportion infected does not have to be very large for the doubling time in AIDS incidence to increase substantially. For example, with plausible models for rates of infection and risk of AIDS after infection (estimated from a cohort in San Francisco described below), the doubling time in cumulative incidence of AIDS increases by more than 50% by the time the prevalence of infection is 25%.

An additional factor that causes doubling time in cumulative number of infection to increase is that the populations at risk are heterogeneous. Heterogeneity refers not only to different 'risk groups' such as homosexually-active men and IV drug users, but also to heterogeneity in behavior within groups. For example, variations in the rate of new partner acquisition, type and frequency of sexual acts per partner, and duration of relationship all affect the rate of new infection. This heterogeneity is believed to be the reason that the observed rise in infection in cohorts of homosexually-active men is more nearly linear than exponential.

Even if rate of new infection were exponentially increasing, it would also be necessary that the risk of contracting AIDS does not change with time since infection. However, neither of these assumptions about risk of AIDS after infection are consistent with the available data.

INCREASING DOUBLING TIME

What type of changes in doubling time for cumulative AIDS incidence should be expected based on what is known about rate of new infection

and of onset of AIDS after infection? As indicated above the rise in the rate of HIV infection does not appear to be exponential, but more nearly linear or quadratic. In addition, the risk of AIDS appears to increase with time after infection: recent data from a cohort of men at high risk for AIDS in San Francisco suggest that the risk of AIDS is very low for about 2 years after infection, constant or slightly increasing for the next 4 years, and more rapidly increasing in years 6 and 7. With any of these combinations for the latency distribution and a rate of new infection, the doubling time in incidence of AIDS increases with chronologic time. Thus, from what we know about the dynamics of the AIDS epidemic and the risk of AIDs after infection, one would expect the doubling time in cumulative AIDS incidence to increase over chronologic time, even if there were no changes in sexual practices and/or I.V. drug use.

ESTIMATING HIV INFECTION RATES

If the risk of AIDS after infection and AIDS incidence were known exactly, then the rates of HIV infection over time could, in principle be estimated accurately. In practice, however, very different models of rate of HIV infection in combination with given estimates of risk of AIDS after infection yeild estimates of incidence that match the observed data equally well. This means that there is still considerable uncertainty in the distribution of times of HIV infection. To illustrate this point, we estimated the incidence of AIDS for three different models for rates of infection assuming that the risk of AIDS after infection is known. The three models used for rise in cumulative number of infections are the linear, quadratic and epidemic--the latter

model results from an assumption that the rate of new infection is proportional to the number of susceptibel individuals in a population times the number who are infectious (Figure 1). Figure 2 gives the corresponding estimates of cumulative AIDS incidence. Although the three models lead to an estimated cumulative AIDS incidence that mathces the observed data almost equally well, the three estimates of rise in number of infected individuals are substantially different and, as we show below, can lead to very different interpretations of the magnitude of the epidemic.

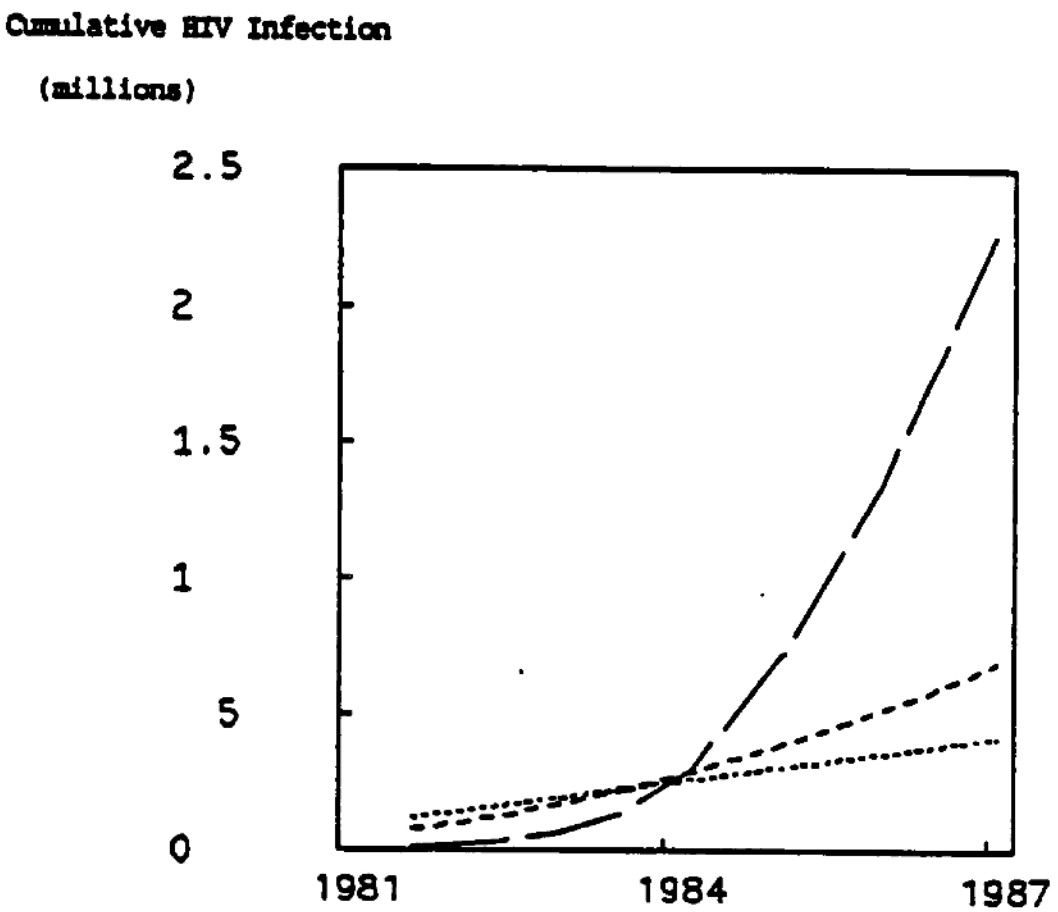
To carry the example further, consider the use of cumulative AIDS incidence data to estimate the current number of infected individuals. Such estimates are sometimes obtained by multiplying the total number of AIDS cases by the ratio of infecteds to cases in a defined cohort of subjects. In our example, the infected:AIDS ratio in March 1987 is 67:1, 21:1 and 13:1 for the epidemic, quadratic and linear models for rise in infection respectively. Thus, the three models give vastly different estimates of the current prevalence of HIV infection. Note also that incidence data does not provide information about changes in behavior that have occurred in the past two years because the risk of AIDS appears to be very small for at least two years after HIV infection. Thus, had transmission of AIDS among homosexual men ceased in 1985, the incidence curve for AIDS would be essentially the same as it is now, yet the 1987 infected:AIDS ratio would then be closer to 20 to 1 for the epidemic model.

INTERPRETING HIV INFECTION DISTRIBUTION

Finally, consider how the epidemic curve of infection might be interpreted if an accurate estimate of it were available. The shape of this curve is influenced by a variety of factors--none well characterized-- including heterogeneity of the population at risk, efficiencies of transmission by various routes, and variability in infectivity of HIV. Population heterogeneity refers both to variability in behavior among individuals and to behavioral change over time. Even in populations with no behavioral change over time, the variability among individuals alone could produce rise in rate of HIV infection arbitrarily close to any given epidemic curve; although as changes in the slope of the curve become more abrupt, increasingly complex population dynamics are needed to produce them. Therefore, virtually nothing about changes in behavior can be inferred from this curve. A decrease in the rate of rise of number of infected occurs when the number of individuals at risk drops substantially, yet this drop can result from a change in behavior or near saturation of the pools most at risk. Similarly, the curve of HIV infection gives no information about the degree of spread to lower risk populations (homosexual men practicing safe sex, promiscuous heterosexuals, etc.) even though such groups may account for an increasingly large proportion of cases in the future.

Without additional information, changes in doubling times, taken alone, are of very limited use in explaining or predicting the future course of the AIDS epidemic.

FIGURE 1



Fitted Values of Cumulative HIV Infection: 1981-1987

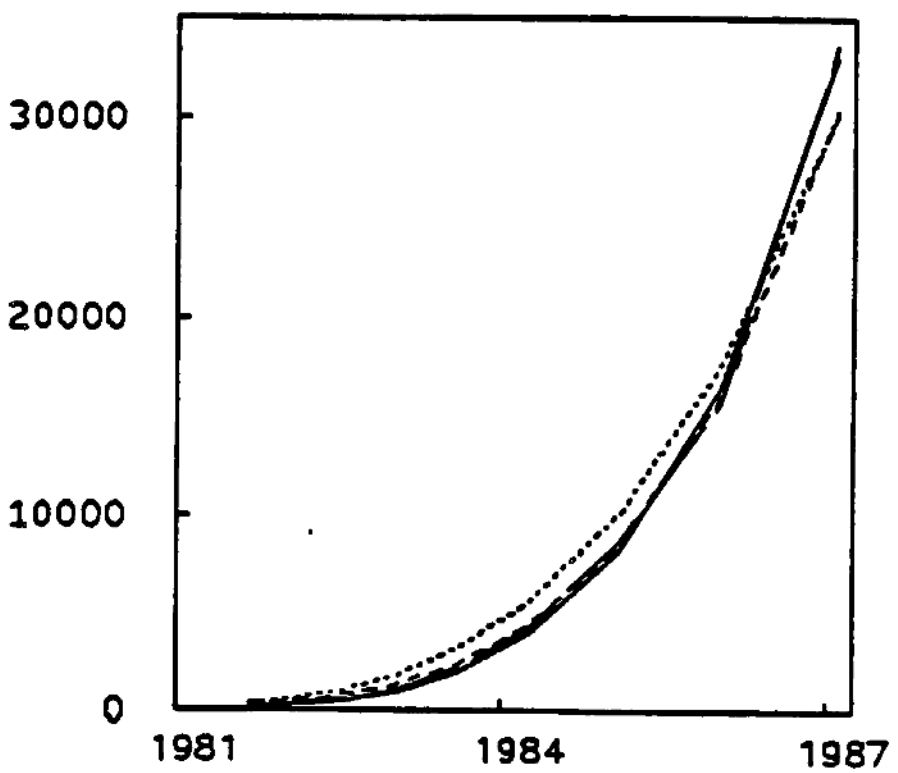
$\cdots\cdots\cdots W_1(\tau) = k_1(\tau-\tau_1)$ for $\tau \geq \tau_1$ (≈June 1979)

$- - - - - - W_2(\tau) = k_2(\tau-\tau_2)^2$ for $\tau \geq \tau_2$ (≈January 1979)

$\text{———} \text{——} W_3(\tau) = {}_0\int^{\tau}[k_3\, S(u)I(u)]/[I(u)+S(u)]n_0 du$ for $\tau \geq \tau_3$ (≈July 1975)

FIGURE 2

Incidence of AIDS



Observed and Fitted Values of Cumulative AIDS Incidence: 1981-1987

———— Observed

---------- Fitted, based on: $W_1(\tau) = k_1(\tau-\tau_1)$ for $\tau \geq \tau_1$ (=June 1979)

– – – – – Fitted, based on: $W_2(\tau) = k_2(\tau-\tau_2)^2$ for $\tau \geq \tau_2$ (=January 1979)

—— —— Fitted, based on: $W_3(\tau) = {}_0\int^{\tau}[k_3S(u)I(u)]/[I(u)+S(u)]n_0du$

for $\tau \geq \tau_3$ (=July 1975)

Anthony Robertson:

Testimony before the Presidential Commission on HIV
December 11, 1987

1. General.

To control the spread of an infection completely it is axiomatic that one must be able to tell who is infected while they are infectious. This information is needed not only for the purposes of infection containment, but also for the purposes of planning and of determining whether control measures have been effective. It is even more important than usual when, as is the case for AIDS, there is neither cure nor vaccine nor are any likely.

The AIDS epidemic is unusual in that for various reasons we do not know who is infected even though we could, in principle, detect the vast majority. Furthermore, the syndrome on which reporting, in the United States, is based occurs at a late, pre-terminal stage in the disease. It therefore does not give an accurate representation of the current pattern of infection, even though in broad terms current infection incidence is likely to mimic the geographical pattern of past AIDS cases. Experience from other countries shows the potential danger of relying on reported AIDS cases as the best measure of the epidemic.

2. What do the current data show?

The epidemic is still at an early, exponential, phase of growth except perhaps in some homosexual populations. We have too little information to make predictions yet, but must rather model trends from the current AIDS case data. These empirical models, as used by the Centers for Disease Control, are useful for short-term projection, but they are dependent on present trends - for example of reporting - remaining constant. We have essentially no current information about reporting efficiency, except that there is some under-reporting which, anecdotally, is believed to be high amongst drug addicts.

The limited data on the prevalence of HIV infection in the United States do not provide grounds for optimism. They show that in isolated groups, for example the San Francisco City Clinic Cohort, infection spread rapidly then saturated with most people infected. We have almost no information about the spread of infection in well-observed groups in the early stages of the epidemic, so we have little knowledge on which to base any predictions of the spread of disease amongst the "general" population, where typical prevalences of infection are well below 1%. It should be sobering that, even though the surveys involved small numbers

of people, quite high prevalences have already been found in inner city pregnant women and in men attending an emergency room. In the very limited data available from the sentinel hospital survey patients from medium risk areas and not in infectious disease or emergency units have shown prevalences of up to 0.9%. This too is a disturbing number since it is in a group at relatively low risk.

The AIDS cases reported to the CDC show several phases of growth, being roughly exponential up to late 1983, with a doubling time of about 9 months, then with increasing doubling times until September 1987 when the overall epidemic had a doubling time of about 16 months. The case definition was changed and reporting under the new definition has been in force since October 1, 1987. The rate ofincrease in new cases has gone up by about 40%; it will take some time before we know whether this increase includes only those who are, in effect, being diagnosed earlier or those who would not have been reported ever under the old definition. In either case the growth rate has accelerated with a current doubling time, if the increase in reporting rate persists, of 12 months. I do not mean to say that the epidemic has increased in severity, though it may have, but that even the reported number of AIDS cases is subject to quite extreme fluctuations and is therefore not a reliable basis for projection, even to determine medical costs.

The data, insofar as they are available, show no great differences amongst the various risk groups in rate of progression to AIDS if infected, nor in death rate. Apart from a possible effect of age the major differences amongst the groups relate to the times at which the infection entered them, as can be seen by looking at the growth rates of AIDS cases in the groups (attached tables and paper). There is nothing in these data to suggest that we have had an effect on the spread of disease (as can be seen by comparing the "transfusion" data with, say the "heterosexual" data) nor that there is any great difference between the efficacies of heterosexual and homosexual transmission.

The data from small cohorts do show two trends that make modeling and prediction even more difficult: both infectiousness and AIDS attack rate increase with time. Indeed, it now seems that the AIDS attack rate is close to zero for the first two years after infection, at least in adults. This makes any estimate of the numbers in the general population infected now from the mubers of AIDS cases reported now even more hazardous.

3. Data needed.

For all the reasons I have mentioned we need much better data of the current spread of the virus. Ideally, a large random survey of the population should be done and

repeated at intervals. The next most useful data would come from expansions of the sentinel hospital survey and, perhaps the easiest, in testing the blood of newborns. Both these kinds of testing should be started on a wide scale immediately. Even if they were to show little or no spread of the virus they would be useful (and encouraging), but this is unlkikely. As it is we have no way of even comparing our situation with that of other countries which are ahead of us in the epidemic. If we delay we shall never get the data on the early part of the epidemic, and modeling endeavors will be made much more difficult. Furthermore it seems to me that we shall have to decide what rates of infection and ultimate disease are acceptable to our society. A few years ago the idea of even a million Americans infected with a lethal virus would have been shocking; we have adapted to it quite readily - and we are probably being optimistic. Again, it is useful to look at the actual numbers of reported AIDS cases, which have just exceeded 1,000 in the CDC's original "heterosexual" contact risk group. These have doubled three times in the past two years and stand where the cases reported for homosexual men were about four years ago. It is sometimes erroneously assumed that a comparable growth rate does not equate with a comparable spread of disease; that is, that a "breaking-out" into the heterosexual population would be marked by an "explosive" increase in new AIDS cases. The data we have show that the growth rates, at comparable phases in the epidemic, were quite similar in the heterosexual and homosexual groups. We lack the most important data, the incidence of new infections in the population at large.

CDC DATE	CDC Total Adult AIDS Cases 'Bisex.Men	IV Drug Abuser	Hemophiliacs	Heterosexuals	T ...sions	Unknown/Other	Total Cases
30 Nov 1987	33,994	7,849	471	1,047	1,046	2,200	46,607
23 Nov 1987	33,860	7,746	471	1,030	1,039	2,194	46,430
16 Nov 1987	33,267	7,528	464	986	1,001	2,197	45,245
9 Nov 1987	32,867	7,368	459	919	986	2,196	44,795
2 Nov 1987	32,332	7,311	452	913	958	2,163	44,129
26 Oct 1987	32,080	7,258	445	966	936	2,090	43,775
19 Oct 1987	31,548	7,109	430	928	906	2,013	42,934
12 Oct 1987	31,182	6,976	423	930	886	1,973	42,730
5 Oct 1987		NO	NEW	DATA	NEW	CASE	DFINEN
28 Sep 1987	30,717	6,885	383	916	889	1,980	41,770
21 Sep 1987	30,612	6,853	379	902	882	1,974	41,602
14 Sep 1987	30,360	6,776	377	885	872	1,960	41,250
7 Sep 1987	30,328	6,758	373	877	869	1,956	41,161
31 Aug 1987	30,046	6,708	370	872	862	1,937	40,795
24 Aug 1987	29,683	6,617	369	851	850	1,912	40,282
17 Aug 1987	29,477	6,546	365	836	844	1,902	39,970
10 Aug 1987	29,068	6,506	364	826	839	1,890	39,403
3 Aug 1987	28,780	6,396	356	809	829	1,866	39,036
27 Jul 1987	28,516	6,337	351	801	818	1,849	38,712
20 Jul 1987	28,205	6,288	348	792	809	1,833	38,275
13 Jul 1987	27,892	6,185	343	773	797	1,795	37,785
6 Jul 1987	27,776	6,164	342	769	793	1,791	37,635
29 Jun 1987	27,548	6,128	341	758	781	1,791	37,347
22 Jun 1987	27,145	6,091	336	742	764	1,792	36,870
15 Jun 1987	26,848	6,061	335	733	741	1,789	36,507
8 Jun 1987	26,421	6,037	328	729	729	1,756	36,003
1 Jun 1987	26,067	5,919	328	716	716	1,808	35,544
25 May 1987	26,013	5,902	327	714	716	1,805	35,477
18 May 1987	25,847	5,878	326	704	711	1,805	35,268
11 May 1987	25,667	5,843	313	695	701	1,801	35,020
4 May 1987	25,456	5,800	309	687	691	1,782	34,725
27 Apr 1987	25,339	5,793	302	682	686	1,770	34,575
20 Apr 1987	25,018	5,646	300	663	675	1,727	34,029
13 Apr 1987	24,601	5,604	293	654	655	1,729	33,518
6 Apr 1987	24,424	5,568	289	637	644	1,690	33,245
30 Mar 1987	24,242	5,540	284	630	640	1,675	33,011
23 Mar 1987	24,015	5,482	281	608	635	1,676	32,696
16 Mar 1987	23,681	5,421	274	599	626	1,664	32,265
9 Mar 1987	23,111	5,344	266	570	602	1,635	31,526
2 Mar 1987	23,019	5,312	263	567	598	1,614	31,387
23 Feb 1987	22,460	5,155	259	556	577	1,635	30,593
16 Feb 1987	22,409	5,136	257	550	574	1,569	30,395
9 Feb 1987	22,127	5,128	254	547	567	1,565	30,188
2 Feb 1987	21,952	5,099	254	540	564	1,550	29,959
26 Jan 1987	21,371	4,956	254	522	547	1,510	29,159
19 Jan 1987	21,339	4,951	252	521	544	1,507	29,114
12 Jan 1987	21,296	4,921	249	515	537	1,501	29,019
5 Jan 1987	21,048	4,903	247	510	525	1,494	28,727
29 Dec 1986	20,980	4,846	246	508	524	1,489	28,593
22 Dec 1986	20,898	4,840	245	506	522	1,485	28,496
15 Dec 1986	20,821	4,795	242	498	515	1,463	28,124
8 Dec 1986	20,327	4,723	240	485	505	1,424	27,704
1 Dec 1986	20,417	4,760	243	488	508	1,428	27,843
24 Nov 1986	20,357	4,756	241	483	503	1,427	27,767
17 Nov 1986	20,134	4,643	240	464	497	1,412	27,390
10 Nov 1986	19,963	4,594	239	459	489	1,396	27,140
3 Nov 1986	19,774	4,547	235	454	485	1,383	26,878
27 Oct 1986	19,489	4,502	229	450	469	1,364	26,503
20 Oct 1986	19,260	4,452	228	446	458	1,355	26,199
13 Oct 1986	18,950	4,421	226	441	443	1,333	25,814
6 Oct 1986	18,839	4,378	219	433	444	1,329	25,642
29 Sep 1986	18,587	4,322	215	425	436	1,311	25,296
22 Sep 1986	18,506	4,285	214	421	433	1,304	25,163
15 Sep 1986	17,946	4,222	208	417	423	1,294	24,510
8 Sep 1986	17,739	4,165	205	413	419	1,287	24,228

1	Sep	1986	[illegible]	633		4,142		201		407		[illegible]		1,286		24,085
25	Aug	1986		772	(732)	4,088		196		406				1,271		23,844
18	Aug	1986		49	(732)	4,058	(172)	194	(12)	404	(22)		(22)	1,255	(52)	23,667
11	Aug	1986		168	(732)	4,006	(172)	192	(12)	387	(22)		(22)	1,210	(52)	23,363
4	Aug	1986	16,891	(732)	3,933	(172)	188	(12)	384	(22)	394	(22)	1,193	(52)	22,963
28	Jul	1986	16,762	(742)	3,889	(172)	182	(12)	379	(22)	390	(22)	1,190	(52)	22,792
21	Jul	1986	16,523	(732)	3,850	(172)	179	(12)	371	(22)	384	(22)	1,187	(52)	22,494
14	Jul	1986	16,392	(732)	3,824	(172)	176	(12)	363	(22)	375	(22)	1,189	(52)	22,319
7	Jul	1986	16,186	(732)	3,778	(172)	176	(12)	360	(22)	367	(22)	1,177	(52)	22,044
30	Jun	1986	16,044	(732)	3,755	(172)	175	(12)	359	(22)	361	(22)	1,169	(52)	21,863
23	Jun	1986	15,876	(732)	3,693	(172)	171	(12)	346	(22)	358	(22)	1,163	(52)	21,607
16	Jun	1986	15,707	(732)	3,671	(172)	168	(12)	326	(22)	351	(22)	1,197	(62)	21,420
9	Jun	1986	15,546	(732)	3,641	(172)	166	(12)	322	(22)	351	(22)	1,187	(62)	21,213
2	Jun	1986	15,403	(732)	3,612	(172)	164	(12)	312	(12)	342	(22)	1,177	(62)	21,010
26	May	1986	15,227	(732)	3,571	(172)	162	(12)	308	(12)	339	(22)	1,164	(62)	20,771
19	May	1986	14,998	(732)	3,524	(172)	160	(12)	304	(12)	332	(22)	1,155	(62)	20,473
12	May	1986	14,842	(732)	3,480	(172)	157	(12)	301	(12)	326	(22)	1,134	(62)	20,240
5	May	1986	14,670	(732)	3,437	(172)	157	(12)	294	(12)	321	(22)	1,137	(62)	20,016
28	Apr	1986	14,520	(732)	3,399	(172)	158	(12)	286	(12)	318	(22)	1,126	(62)	19,807
21	Apr	1986	14,351	(732)	3,332	(172)	158	(12)	273	(12)	310	(22)	1,116	(62)	19,540
14	Apr	1986	14,141	(732)	3,297	(172)	158	(12)	266	(12)	308	(22)	1,111	(62)	19,281
7	Apr	1986	13,869	(732)	3,238	(172)	155	(12)	257	(12)	299	(12)	1,089	(62)	18,907
31	Mar	1986	13,646	(732)	3,184	(172)	151	(12)	256	(12)	296	(22)	1,077	(62)	18,610
24	Mar	1986	13,449	(732)	3,113	(172)	149	(12)	247	(12)	288	(22)	1,064	(62)	18,310
17	Mar	1986	13,322	(732)	3,098	(172)	146	(12)	248	(12)	284	(22)	1,045	(62)	18,143
10	Mar	1986	13,097	(742)	3,036	(172)	143	(12)	242	(12)	278	(22)	1,016	(62)	17,814
3	Mar	1986	12,935	(732)	3,007	(172)	143	(12)	240	(12)	277	(22)	1,015	(62)	17,617
24	Feb	1986	12,839	(732)	2,984	(172)	143	(12)	244	(12)	275	(22)	1,004	(62)	17,489
17	Feb	1986	12,689	(732)	2,940	(172)	138	(12)	224	(12)	277	(22)	998	(62)	17,266
10	Feb	1986	12,570	(732)	2,919	(172)	138	(12)	199	(12)	279	(22)	1,010	(62)	17,115
3	Feb	1986	12,307	(732)	2,860	(172)	138	(12)	195	(12)	266	(22)	993	(62)	16,759
27	Jan	1986	12,156	(732)	2,804	(172)	135	(12)	187	(12)	266	(22)	995	(62)	16,543
20	Jan	1986	11,998	(732)	2,778	(172)	132	(12)	185	(12)	263	(22)	987	(62)	16,343
13	Jan	1986	11,910	(732)	2,766	(172)	124	(12)	182	(12)	261	(22)	984	(62)	16,227
6	Jan	1986	11,688	(732)	2,698	(172)	123	(12)	180	(12)	252	(22)	968	(62)	15,909
30	Dec	1985	11,513	(732)	2,684	(172)	123	(12)	179	(12)	252	(22)	968	(62)	15,719
9	Dec	1985	11,118	(732)	2,597	(172)	117	(12)	156	(12)	239	(22)	949	(62)	15,176
2	Dec	1985	10,958	(732)	2,557	(172)	116	(12)	155	(12)	237	(22)	933	(62)	14,955
4	Nov	1985	10,491	(732)	2,448	(172)	106	(12)	148	(12)	228	(22)	892	(62)	14,313
28	Oct	1985	10,388	(732)	2,438	(172)	106	(12)	146	(12)	228	(22)	883	(62)	14,189
7	Oct	1985	10,003	(732)	2,342	(172)	96	(12)	139	(12)	212	(22)	851	(62)	13,643
2	Sep	1985	9,365	(732)	2,178	(172)	86	(12)	129	(12)	195	(22)	814	(62)	12,767
5	Aug	1985	8,861	(732)	2,082	(172)	75	(12)	120	(12)	184	(22)	785	(62)	12,107
1	Jul	1985	8,222	(732)	1,914	(172)	73	(12)	110	(12)	163	(12)	737	(72)	11,219
3	Jun	1985	7,732	(732)	1,822	(172)	70	(12)	97	(12)	148	(12)	687	(72)	10,553
6	May	1985	7,294	(732)	1,690	(172)	67	(12)	81	(12)	135	(12)	663	(72)	9,930
1	Apr	1985	6,777	(742)	1,565	(172)	64	(12)	73	(12)	123	(12)	612	(72)	9,214
11	Mar	1985	6,377	(732)	1,486	(172)	62	(12)	70	(12)	108	(12)	590	(72)M	8,693
4	Feb	1985	5,921	(732)	1,403	(172)	55	(12)	64	(12)	102	(12)	575	(72)	8,120
7	Jan	1985	5,601	(732)	1,324	(172)	52	(12)	59	(12)	92	(12)	566	(72)	7,694
3	Dec	1984	5,153	(732)	1,209	(172)	46	(12)	55	(12)	82	(12)	519	(72)	7,064
5	Nov	1984	4,901	(732)	1,154	(172)	46	(12)	50	(12)	78	(12)	491	(82)	6,720
8	Oct	1984	4,566	(732)	1,076	(172)	43	(12)	46	(12)	72	(12)	458	(82)	6,261
3	Sep	1984	4,217	(722)	1,010	(172)	39	(12)	44	(12)	68	(12)	449	(82)	5,827
6	Aug	1984	3,931	(722)	965	(182)	42	(12)	-		-		541	(102)	5,479
2	Jul	1984	3,620	(722)	875	(172)	39	(12)	-		-		503	(102)	5,037
4	Jun	1984	3,372	(722)	816	(172)	34	(12)	-		-		468	(102)	4,690
7	May	1984	3,143	(722)	759	(172)	31	(12)	-		-		437	(102)	4,370
2	Apr	1984	2,819	(722)	697	(182)	28	(12)	-		-		410	(112)	3,954
5	Mar	1984	2,601	(722)	635	(182)	24	(12)	-		-		386	(112)	3,646
3	Feb	1984	2,432	(722)	594	(182)	22	(12)	-		-		361	(112)	3,409
10	Jan	1984	2,257	(722)	546	(182)	20	(12)	-		-		334	(112)	3,157
5	Dec	1983	2,052	(722)	490	(182)	19	(12)	-		-		307	(112)	2,868
7	Nov	1983	1,909	(722)	460	(182)	17	(12)	-		-		292	(112)	2,678
5	Oct	1983	1,734	(722)	404	(172)	16	(12)	-		-		262	(112)	2,416
2	Sep	1983	1,612	(722)	384	(172)	16	(12)	-		-		247	(112)	2,259
1	Aug	1983	1,400	(712)	338	(182)	15	(12)	-		-		219	(122)	1,972
1	Jul	1983	1,224	(712)	297	(182)	14	(12)	-		-		202	(122)	1,737
1	Jun	1983	1,077	(722)	254	(172)	12	(12)	-		-		165	(122)	1,508
2	May	1983	971	(722)	231	(172)	11	(12)	-		-		153	(122)	1,366
5	Apr	1983	933	(722)	217	(172)	11	(12)	-		-		139	(112)	1,300
3	Mar	1983	812	(722)	187	(172)	11	(12)	-		-		118	(112)	1,128
2	Feb	1983	745	(732)	-		-		233	(232)	-		47	(52)	1,025M

11 Jan 1983	659 (74%)	-	-	144 (16%)	-	88 (10%)	891*
1 Dec 1982	590 (75%)	-	-	120 (16%)	-	78 (10%)	788
6 Nov 1982	534 (75%)	-	-	110 (16%)	-	72 (11%)	716
7 Oct 1982	478 (76%)	-	-	93 (15%)	-	63 (10%)	634
3 Sep 1982	435 (76%)	-	-	83 (15%)	-	60 (11%)	578
6 Aug 1982	381 (76%)	-	-	70 (14%)	-	54 (10%)	505
8 Jul 1982	339 (75%)	-	-	79 (18%)	-	34 (8%)	452*
15 Jun 1982	315 (77%)	-	-	76 (19%)	-	22 (6%)	413

* denotes a time-period in which CDC redefined risk groups.

	CDC Total Adult AIDS Cases					
CDC DATE	Homo/Bisex.Men	IV Drug Abuser	Hemophiliacs	Heterosexuals	Transfusions	Unknown/Other	Total Cases