Nova Law Review

Volume 12, *Issue* 3 1988 *Article* 6

AIDS in Perspective

Edmund C. Tramont*

*

AIDS in Perspective

Edmund C. Tramont

Abstract

AIDS is about people, not statistics and headlines.

KEYWORDS: AIDS

AIDS in Perspective*

Edmund C. Tramont**

AIDS is about *people*, not statistics and headlines. As the years progress, this disease will have a dramatic human impact as it begins to affect people we know and care about.

Propaganda surrounding the AIDS topic is not addressed here. Instead, a perspective of the genesis and current problems surrounding the virus is presented. This article is written from the perspective of Edmund C. Tramont, M.D., who advised the Army. However, the views expressed do not purport to reflect the position of the Department of the Army or the Department of Defense (para. 4-3 AR360-5). Dr. Tramont and his colleagues have been involved with the study of AIDS since the earliest recognition of the disease in the United States. What follows is an analysis of the virus from its historical genesis to its current controversy in the United States.[1]

A. *AIDS: An Infectious Disease*

Historian William H. McNeill has noted that in an effort to understand what lies ahead, as well as behind, the role of what constitutes an infectious disease must be discussed. Ingenuity, knowledge and organization can not cancel a human's vulnerability to invasion by parasitic forms of life.[2] "Infectious diseases antedate humankind and will last as long as humanity itself remains."[3] Infectious diseases are one of the fundamental parameters and determinants of history. "Even without mutation it is always possible that some heretofore obscure para-

* This essay is derived from a video presentation on AIDS by Dr. Tramont. The essay concludes with a series of random questions by members of the audience Dr. Tramont was addressing.

** M.D., Col., M.C. Professor of Medicine, U.S.U.H.S. Medical School and Chief of Infectious Diseases, Walter Reed Army Medical Center, Washington, D.C., 20307-5000.

1. One of the first cases in which the virus was isolated was from a soldier from *Walter Reed* whose blood was sent to Dr. Gallo at the NIH and that was one of the first times that the virus was isolated in the world.
2. W. McNeill, Plagues and Peoples (1986).
3. *Id.*

sitic organism may escape its accustomed ecological niche and expose the dense human population to infection."[4] This natural genetic phenomena is a biological truth that has the potential of leaving a devastating impact on human mortality.

An historical analysis of the population growth in Western Europe emphasizes the impact a new Infectious Disease can have. From the time of the birth of Christ, until approximately 160 A.D., the population of Western Europe increased. At that time the plague of Antonine spread throughout the Roman World and there followed a population decrease that took the next 350 years to recover. It took that long before the human race developed enough immunity to allow us to combat that infectious process. The population of Western Europe then increased again until 1340 A.D. when the great Plague struck. Again Western Europe's population decreased and didn't recover until approximately 1600 A.D. Since that time, the population of the world has steadily increased. Another example of the impact of Infectious Diseases can be seen in the New World. Diseases such as smallpox and tuberculosis that Europeans brought years ago to the New World devastated the native Indian populations. It is estimated that the American Indian population is less than 2% of what it was when Columbus discovered America in 1492!

In the last decade the human population has been subjected to a number of new infectious diseases: toxic shock syndrome; Legionnaire's disease; Lime disease; and Delta agent hepatitis to name a few. All of these infectious diseases were subjected to scientific scrutiny, and medical solutions to their genesis and consequences have come under better control. Our medical and scientific communities have not yet had such success with the AIDS virus.

The previously mentioned diseases affected everyone. For example, if one happened to innocently walk down the street during the infectious period, the possibility of being struck with the fatal disease was real. The AIDS virus, however, presents a different scenario. With regards to epidemiology and biology it is similar to syphilis. Historically, the first cases of syphilis were not recognized until the 16th century. However, the first medical description of syphilis was made in 1542. In 1907, the first tests to diagnose syphilis were developed. It is important to realize that the germ theory we all accept and understand today, is in actuality less than one hundred years old. By 1915 there were

4. *Id.*

surveys taken around the world. In London, Paris and Berlin between 12 and 15% of all adults were found to have been infected with syphilis! Although never published, it is anecdotally reported that the positive syphilis serology rate in Boston and New York were approximately 30% for all adults. By 1935, hospital admissions were screened for syphilis and the prevelance rate of positive tests was 8%. As human nature has not changed, this is the potential impact of AIDS on humankind!

AIDS Virus

The AIDS virus has undergone a three name change. Initially, it was called HTLV-III by Dr. Robert Gallo in the U.S. At approximately the same time, Dr. Luc Montagnier in France discovered the same virus and called it LAV. This led to disagreement between the two distinguished investigators and the controversy threatened to impact negatively upon advances in further research of this disease. An international congress was eventually convened, and a new name for the virus was coined: Human Immunodeficiency Virus or HIV-1. This phraseology has been universally accepted as the name of the AIDS virus.

Genesis of HIV-1

Scientific study has traced the origin of this disease to the African Green Monkey. A simian immunodeficiency virus which is quite similar to the HIV has been isolated in approximately 50% of this species of monkeys in Central Africa. About 150 years ago, African green monkeys were transplanted from Central Africa into some Caribbean Islands. However, these monkeys which have lived in the Caribbean for over 150 years have no evidence of being infected with HIV-1. Therefore, it appears the virus had its genesis in these primate populations in Central Africa. How the virus transferred from simian populations into human populations is still a question of speculation. In fact, it may have transferred the other way! Comparative analysis of blood specimens preserved from individuals living in that region of the world reveals a frightening scenario. In 1959, 0.1% (one out of a thousand) of adults in Central Africa were infected. In 1970, it had increased to 1%, by 1980 to 3%, by 1985 to 7%, and by 1986 to 10%! The rate appears to have leveled off in some populations to between 10 and 12%. Because 10 to 12% of the adult population in Central Africa is

now infected with HIV-1, a political upheaval in that part of the world is probable!

From Central Africa the HIV-1 virus has spread throughout the world. It is interesting to note that the most rapid spread has been in Western Europe and the United States, whose populations have frequent access to modern day travel, thus facilitating the ease of contact of their people with those of other nations.

Epidemiology of HIV

HIV-1 virus has increased rapidly in the United States. In 1980, 25 cases were reported; by 1983, 3500 cases were reported; by 1985, 15,000 cases; by 1986 30,000 cases, by 1987 50,000, doubling every twelve to fourteen months. Mathematical models project that by 1992, there will be 180,000 *new* cases in the U.S.A. and between 50,000 and 60,000 deaths due to this disease. Thus more Americans will die of this disease in one year than died in the ten year Vietnam War. Over the period from 1987 to 1992, it is projected that the total number of new cases may reach 750,000 or three quarters of a million new cases of AIDS. Since the vast majority of AIDS victims are between ages 30 and 40, AIDS represents death to young productive people. By 1992, AIDS will be the fourth common cause of death to young, productive individuals in the U.S.A.

A screening program in the U.S. military was begun in October of 1985, from which relevant information has been collected regarding the prevalence of the disease. In October 1987, the rate of those infected between the ages of 17 and 20 was 0.6 per thousand, or about 1 out of 1,700; as you get older, the age specific rates increase to an overall rate of 1.6 per thousand individuals applying for military service. This is probably an underestimate of the actual age specific rate in the U.S.A. because people who are involved in high risk behavior are unlikely to try to join the military.

Because the home zip code of everyone applying for military service is known, we can develop a relief map of infection in the United States. Most of the disease is presently centered in the eastern part of the United States. Many have a tendency to consider San Francisco as the "hotbed" of AIDS. It is not. In 1987, the eastern seaboard is where most of the disease has occurred in the United States and the infection rate is actually higher in Washington, D.C. than in San Francisco!

What must be appreciated is that AIDS is the *tip of the iceberg*. For every case of AIDS there are between 50 and 100 individuals who

are infected but do not exhibit the symptoms of the disease. These individuals are called asymptomatic carriers. They appear normal but carry the virus and are capable of spreading the infection. Persons infected with advanced symptoms of the disease are usually too ill to participate in sexual activities. Therefore, it is the asymptomatic carrier who is primarily responsible for spreading the disease and keeping the epidemic growing!

It is important to remember that when you read about "AIDS", you are focusing in on what happened five to ten years ago, since AIDS is the end stage of the disease process. Antibody data gives you a much clearer idea about what is happening at present. Thus, the military data is very ominous.

Why HIV-1 Kills

Why is AIDS such a devastating infection? It is because HIV-1 infects and eventually disrupts and destroys the *T-helper cells*. These helper lymphocytes are the principal target cells for the HIV virus. Basically, the T-helper cell is the traffic cop of the immune system; our entire immune system revolves around this single cell. When the T-helper cell cannot function properly, an individual can not withstand the deleterious effects of many infections and cannot ward off some cancers. Medically, when we transplant a kidney, heart or liver, we give drugs that *dampen* the effect of the T-helper cells so the body won't reject these transplanted organs. Since the HIV virus kills T-helper cells and eventually eliminates them from the body, the progression of the disease in an individual can be measured by monitoring the level of T helper cells.

Another important aspect of the disease is that this virus enters the cell and becomes integrated into the host's cell DNA and becomes part of the human body. This is why the probability of curing this disease is so small. There are no drugs that penetrate the DNA of our cells and can snip out the defective DNA and eliminate it from the cell. Therefore, once a cell is infected, it is infected for life! And that cell possesses the genetic material to replicate and produce new HIV virus which can infect other cells. This vicious cycle continues until death.

Transmission of HIV-1

The major mode of transmission is through sexual contact. AIDS is a venereal disease, a sexually transmitted disease similar to every

other sexually transmitted disease such as gonorrhea, syphilis, herpes etc. Because the T-helper cell lives in the blood, transfusions of large volumes of infected blood will spread the infection also. If there were no transfusions, the only mode of transmission would be sexual. If a woman is infected, she has about a 1 out of 2 chance of infecting her child, but the probability of her living to see her child's seventh birthday is virtually zero.

It is unfortunate in this country that the AIDS epidemic first began in the gay community, lulling many experts to believe that this was strictly a disease of male homosexuals. However, AIDS is a heterosexual disease just like every other venereal disease. The ratio of infected men to women in Africa is 1.1 to 1. Obviously this is not a gay disease in Africa! Spouse transmission studies involving stable monogamous relationships revealed that women and men who received infected blood transfusions subsequently infected their unknowing spouses. Recent studies have concluded that a woman has about 1 in 2 to 10 chance of being infected if she has sex with an infected male. This happens to be the same risk that she would face if the male was infected with gonorrhea or syphilis. The risk of a woman infecting a man is less, perhaps 1 in 10 to 25.

An analysis of civilian applicants to military service (October of 1985 to March of 1987) reveals a prevalence in men of 1.6 per thousand and a prevalence in women of 0.6 per thousand, which is a ratio of 2.6 men infected for every woman infected! In October 1987, 95% of dying AIDS victims were gay men. But virtually all the infected women will eventually develop full blown AIDS and many more will die of AIDS in the future! Thus we are witnessing a shift in sex prevelance.

The probability of contracting this disease relates to the number of sexual partners one has. For example, in Kenya if you have 1 to 40 different partners in a year, the infection rate is 7%. If you consider that a relative risk of 1, and the number of sex partners goes up to between 41 and 80 per year, the relative risk increases by 14 times; between 81 and 120 partners increases the relative risk by 42 times! Should it be surprising then that this epidemic took off in certain urban gay communities where it was not uncommon for some gay men to have as many as 100 or more different sexual partners in a year?

To examine the dimensions of HIV-1 as a heterosexual disease one might examine the rates in prostitutes. In Uganda, 90% of the prostitutes are infected; in Kenya, 66% of the prostitutes were infected, while on the other side of the African continent, the Ivory Coast, the

rate was relatively low at 13% of prostitutes infected. In Greece, 6% of the prostitutes were infected; in Germany, between 1% and 40%, depending upon the type of brothel investigated. In Central America the rate of infection among prostitutes servicing U.S. troops was at 4%. The rates of infection in prostitutes in selected United States cities were as follows: 40% in New York City; 40% in Miami, Florida; 27% in Colorado Springs, Colorado; 50% in Washington, D.C.; 26% in Las Vegas; 27% in Colorado Springs, Colorado; 58% in Newark, New Jersey; 47% in San Francisco; and 70% in Los Angeles. These studies concluded that overall, 55% of the prostitutes in the United States were infected with HIV in 1987!

A different picture is presented in the Far East, where the disease has not yet reached epidemic proportions.[5] In India, female prostitutes had a rate of infection of 3% in 1987. Interestingly, none of the homosexual men that were tested were positive.

Non Sexual Contact

It is well publicized that one cannot contract AIDS from "casual contact". But what is "casual contact"? Casual contact includes: hugging; kissing on the lips; kissing on the cheeks; holding hands; sharing: silverware, drinking glasses, razors, combs, the bath, toilets, toothbrushes, nail clippers, showers, towels, beds; but *not* having sex. What is the chance of being infected if you engage in those types of activities? In studies that include over 40,000 individuals that have had casual contact with AIDS positive patients, not one single person has yet been infected. The only mode of transmission is by sexual contact or exchange of contaminated blood. Therefore, there is no reason to discriminate against infected individuals from the perspective that they pose a threat to the rest of society, *unless* they have sex or have blood to blood contact, the latter usually through sharing drug paraphernalia.

Personnel in the medical field, where exposure to infected persons is obviously greater, reveal that no infections occurred in a study of 505 dentists, hygienists and assistants. A study done in October of 1987 involving 26 physicians exposed to AIDS patients in the San Francisco area revealed no infections. Eleven nurses involved in drawing blood of infected patients were not infected.

However, needle stick injuries do pose a threat. All individuals in the medical profession have an occupational risk of being stuck with a

5. The rate in 1985, was approximately 2 per thousand or about 0.2%.

needle that was in an AIDS patient. Presently, there have been over 1700 well-studied needle stick exposures. Three of these persons became infected. That is a rate of about one in 600. But 1 in 600 is a lot different than the risk of 1 in 2 to 10 if a woman engages in sex. Much has been made of the fact that prostitutes contracted their infection because they were drug addicts. But most prostitutes in our urban centers support drug habits by becoming prostitutes. A more realistic genesis of their infections is from sexual contact rather than drug abuse.

The medical profession has a small but definite risk. Thus, it is imperative that all hospital admissions be screened for HIV-1. This not only identifies individuals in need of specialized therapeutic treatment, but also allows health care workers to take necessary precautions.

Some scientists continue to speculate that this virus can be spread by insects. The following data indicates why their speculations are false. If this disease was an insect-borne disease and considering that up to 10% of the persons in Central Africa are infected, you would find this disease to be highly prevalent in young children who are not sexually active but are bitten by insects. It simply is not! Nor are young children in Belle Glade, Florida infected, another location where the incidence of HIV disease is very high. Furthermore, infectious agents that can be spread by insects have part of their life cycle in insects. For example, malaria plasmodia must infect a mosquito and go through part of its maturation before it can infect man. HIV-1 cannot infect insects. In fact, the only other animal that HIV-1 can infect is the chimpanzee, the primate that is closest in relation to man genetically.

Medical Issues

What are the medical issues of this disease? First the blood supply must be protected by the screening for antibodies to HIV-1. However, screening is not yet 100% effective in determining *all* infected units because there is a period when an infected person has not yet made antibodies and consequently the screening test is not positive. More sensitive tests are needed to close this infections window.

A second medical consideration concerns patient care. Both the medical profession and the public must be educated. For example, any physician who refuses to take care of an HIV infected person should have his medical license revoked as it is unethical for any medical professional to refuse care for a sick person. The public must also be educated. There is no reason to quarantine a responsibly behaving HIV infected person.

A third consideration is the cost of caring for HIV infected persons. It is estimated that in 1987 dollars, the cost per patient is over $100,000 per year. HIV is destined to have a major impact on medical care costs.

Finally there is the issue of prevention of the spread of the disease. This is a problem that society as a whole must address.

Disease Progression

A number of different studies have now shown that this is a progressive illness. Virtually everyone infected will develop full blown AIDS within 7-14 years.

Neurologic Involvement

The HIV-1 virus infects the brain in the terminal stages of the illness in up to 60% of individuals. It rarely infects those in the early stages of the illness. Judgment, insight and memory loss is most often affected.

The psycho-social aspect of the disease is also a concern. HIV-infected patients often feel an *alienation* and *rejection* from society combined with a feeling of *expendability*, which is further strained by lack of adequate support systems.[6] Thus some infected persons exhibit loss of impulse control, depression and anger. Suicide among HIV-1 infected persons is four to six times greater than with patients who have cancer.

Public reaction to HIV-1 has ranged between fear, apathy and withdrawal. Decreases in travel, a rise in prejudice and mass hysteria are also typical reactions to epidemic diseases. Mass hysteria is *the* one thing we must guard against as a society.[7]

Prevention

Condoms received great publicity as a preventive means to counter this disease. But they are not foolproof. The chance of a condom breaking is as high as 1 in 20 to 1 in 50. It should be noted that spermicides

---

6. Non homosexual individuals have been reported to claim themselves as homosexual to take advantage of gay group support systems.

7. The Holocaust was only 50 years ago and in World War II the U.S. interned many of its Japanese citizens. Mass hysteria is something we have to be very careful of as we are not immune to it.

kill the HIV virus.[8]

Testing and counseling must be made available to anyone with a sexually transmitted disease (i.e. gonorrhea, herpes, etc.) or anyone at increased risk. Those at an increased risk include: anyone who is sexually promiscuous, either heterosexual, homosexual or bisexual; sexual partners of homosexuals; bisexual men; prostitutes; intravenous drug abusers; hemophiliacs; or the recipient of a blood transfusion before 1985. Further, all hospital admissions should be screened as a precautionary measure.

There has been a lot of publicity about "safe sex". A better term would be responsible sex. It is defined as follows: absolute protection of spreading or contracting: *no sex*. If both partners are HIV negative, *absolute monogamy*. If both partners are positive, *only HIV* positive partners, *no HIV negative or HIV unknown partners and effective birth control*. If one partner is positive: *mutual masturbation*, but not oral sex. If the status of partners is unknown: mutual masturbation.[9]

Questions & Answers

Question: Is there any national prospect of people taking preventive measures in order to avert a major epidemic?

Answer: As a nation, I think we have the tools to do it. We have done it in the military as well as could be expected. We have been successful in reducing *other* venereal diseases by educational programs concerning AIDS. Transmission of the disease still exists but not at previously observed rates. However, this reduction is not prevalent outside of the military, except in San Francisco. Students are one of the most ignorant groups of individuals regarding this disease. Education must begin with our young people in order to have any hope of stemming this disease.

Question: Most people are waiting for immunization. How close are we medically to discussing a vaccine?

Answer: There is a possibility that we will develop a vaccine but probably not for 5-10 years.

---

8. Condoms and spermicides together, have become very popular in Europe.

9. Because of the long incubation period of the disease, the young are unlikely to know anyone who has AIDS. Therefore we must learn to confront this issue head-on. For example, when confronting young people, ask: "I know that you don't think AIDS will affect you and I hope it doesn't. But most of the people who have AIDS today became infected when they were much younger, not older than you. Let us assess whether your behavior is creating any risk of you getting AIDS."

Question: What percentage of the people who have the virus will develop full blown AIDS?

Answer: At least 99%.

Question: You focused on the transmission from the AIDS patient to other people. What about when we have people who test positive—admitted in the hospital with their corresponding low immune system—should we be able to move them from the hospital to isolated areas?

Answer: That is a theoretical argument to protect HIV infected patients. However, transmission of infections in hospitals *to* AIDS patients has not been a problem. Further, we must consider the social aspects of such a decision. The most difficult problem with AIDS is the politicization of the disease. It drives the disease underground. People simply want to protect their confidentiality. If there was no prejudice towards HIV patients there would be no concern about confidentiality. If this were true, screening could then be more easily utilized. Screening could be an effective measure necessary to begin our battle against this disease. Counseling is also a must — although not 100% effective — as there are some people who are going to be sexually promiscuous regardless and will spread the disease. If we could isolate these people we would be much better off.

Question: How do you feel about mandatory testing as far as a requirement for marriage, or people coming into the country?

Answer: I don't feel as strongly about people coming into the country because I think the epidemic is going to be worldwide. Screening should be required for marriage. The primary reason is that if a person knows his/her partner is infected, they can plan their lives together on an informed basis. Birth control is also of importance when discussing the requirement of screening for marriage. Fifty percent of children born to infected mothers will be infected themselves and a pregnant woman will likely die before her child reaches age seven. Therefore, screening potential nuptial mates allows for informal decisions to be made.

Question: Recent studies indicate that some infected persons have not been detected by the screening process. Is this a medical possibility?

Answer: Yes. Remember that human beings are an outbred species and therefore nothing is ever 100% in medicine. The screening tests we have utilized are the most advanced in the world. However, there are individuals who appear to be infected and instead of having a normal three week incubation period to develop antibodies, exhibit an antibody

negative period stretched out to 12 or 14 months. How many of these individuals exist? Not many.

Question: Have you noticed any kind of unwillingness in the areas of treatment, CPR, emergency type experiences, and so on?

Answer: There are an increasing number of individuals who do not want to care for trauma patients. There is a way to protect these individuals. Because blood is a means of transmission, one needs to train himself/herself to take the following precautions: wear gloves, protect your eyes, and cover any open cuts on your body. One method by which to accomplish this is to wear the standard protective clothes that are used when working in isolation units. This includes a plastic coverall, goggles and gloves. This attire could be implemented as standard garb for medical professionals dealing with any trauma patient whose HIV status is unknown. Remember, however, that the risk of contracting this disease in such a setting is quite low even without these precautions.