al Viruses
Enemies

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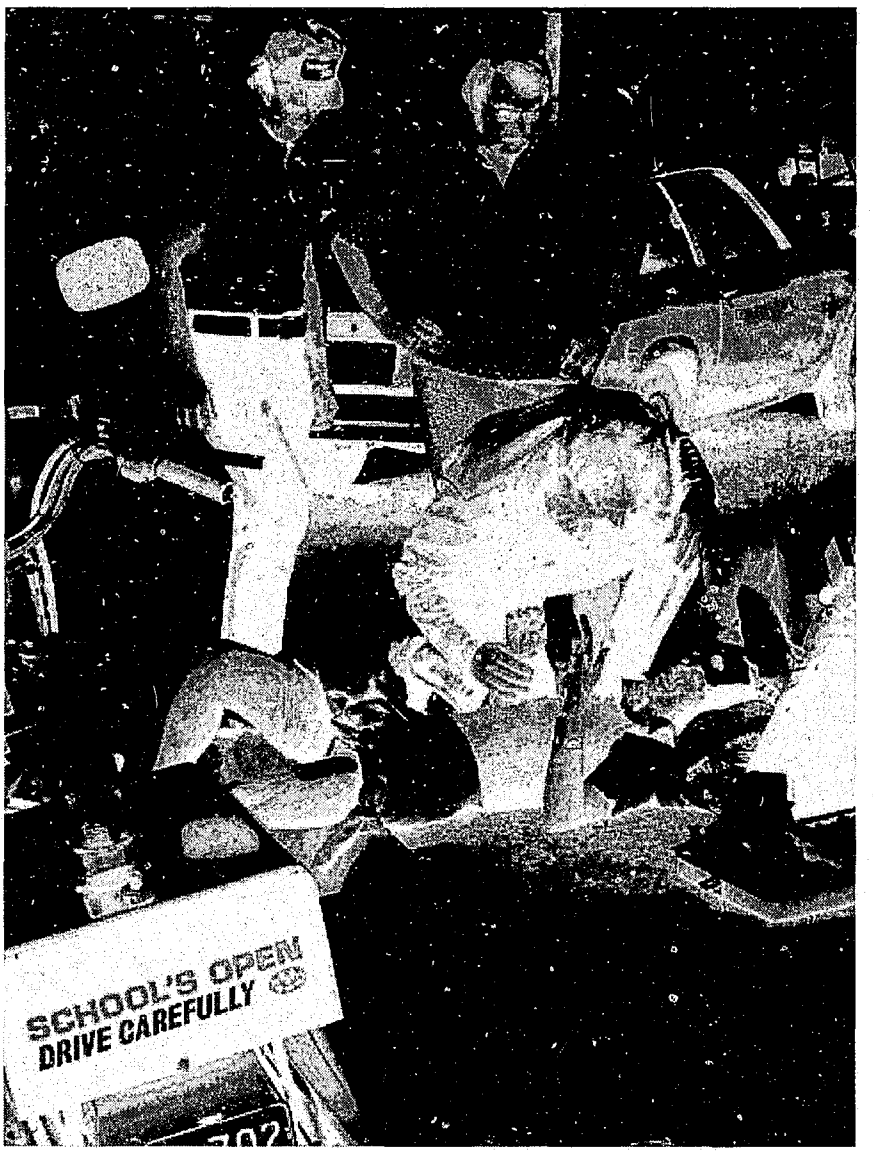
Pathogenic Microorganisms
Law Enforcement's Silent Enemies

By
DAVID BIGBEE, M.S.



In 1981, at the University of California Medical Center at Berkeley, young men began contracting a new and mysterious disease with multiple symptoms.[1] Most of the men died from a serious form of pneumonia, but more puzzling was the fact that they had almost totally deficient immune systems. Doctors eventually named this elusive condition, which is really a myriad of diseases, acquired immune deficiency syndrome (AIDS). They discovered later that the human immunodeficiency virus (HIV) transmits the AIDS virus.[2]

By the end of June 1992, 230,179 Americans had contracted HIV.[3] Furthermore, the World Health Organization estimates that at least another million Americans are currently infected with HIV, and by the year 2000, 30 to 40 million people worldwide will have contracted the virus.[4]

Every day, law enforcement officers come into contact with suspects and crime victims infected with HIV and other diseases, particularly hepatitis B and tuberculosis (TB). Recognizing the possibility of infection by these diseases to law enforcement officers, FBI Laboratory personnel, in conjunction with all FBI field offices, conducted a survey of all law enforcement agencies in the United States and its territories to determine if, and how often, police officers contracted HIV or hepatitis B while performing their official duties. This article discusses the results of this survey and its implications for law enforcement personnel.

Special Agent Bigbee serves as the Chief of the DNA Analysis Unit, FBI Laboratory Division, Washington, DC.

> ***"Every day, law enforcement officers come into contact with suspects and crime victims infected with HIV and other diseases...."***

THE DISEASES

AIDS

AIDS is a lethal disease, and the medical community holds little hope for either a cure or a vaccine for it in the near future. The incubation period—that is, the amount of time from infection to the appearance of symptoms—may be as long as 10 years.[5] In addition, approximately 30 percent of pregnant women infected with HIV transmit the virus to their unborn children.[6]

Hepatitis B

The hepatitis B virus (HBV) causes the disease hepatitis B (formerly known as serum hepatitis). The incubation period for hepatitis B averages 120 days. HBV can result in acute and chronic hepatitis, cirrhosis of the liver, and/or liver cancer. An estimated 750,000 to 1 million people in the United States carry the hepatitis B virus. And, approximately 90 percent of pregnant women with the disease pass it to their unborn children.[7]

Tuberculosis

Until recently, tuberculosis rarely existed in the United States. However, a multidrug-resistant strain of TB has surfaced, primarily in hospitals and correctional facilities. TB usually appears after the immune systems of its victims have been compromised by other diseases, such as AIDS and cancer.

Methods of Transmission

Both AIDS and hepatitis B are transmitted by sexual activity, the exchange of such body fluids as blood, semen, vaginal, and cervical secretions, the use of infected intravenous drug needles and syringes, the transfusion of infected blood products, or accidental infections. Neither so-called "casual contact," such as being in the same room with an infected person, nor insects transmit either disease. In addition, should a woman become pregnant subsequent to contracting the disease, she could infect her baby with either or both of the viruses.[8]

In contrast, because the bacteria that cause TB often affect the lungs, airborne transmission of saliva and sputum from infected people almost exclusively spreads the disease. Put simply, when people with TB cough, they produce tiny droplet nuclei that contain bacteria and can remain suspended in the air for prolonged periods of time. Anyone who breathes this contaminated air can become infected; however, a person with a healthy immune system usually does not.

Although about 10 to 15 million people in the United States are infected with TB, only about 10 percent of those people will ever become ill from the disease.[9] The remainder will only show evidence of infection through a positive skin test. Those who do become ill, however, especially with the multidrug-resistant strain, usually die from respiratory failure.

THE FBI'S SURVEY

Background

FBI Laboratory personnel first recognized the possibility of infection to law enforcement officers by the HIV and hepatitis B viruses in 1986.[10] Three years later, they began conducting a survey to determine if, and how often, police officers contracted either virus while performing their official duties. The FBI did not include TB in the survey because, at that time, TB cases rarely occurred, and multidrug-resistant TB cases did not exist at all.

FBI personnel conducted the study confidentially and requested only the number of cases reported by law enforcement agencies and the circumstances by which the

officers acquired the infections. The reporting agency made the determination as to whether the case constituted an occupational transmission.

In most cases, if the employee filed a workman's compensation claim that the agency accepted, it classified the transmission as having occurred on the job. Consequently, the FBI classified three of the seven reported AIDS cases as occupational for statistical purposes, even though the Centers for Disease Control (CDC) believed that sufficient evidence did not exist to prove that the officers contracted the diseases while on the job.[11]

However, the survey may not include all cases of AIDS or hepatitis B transmitted to police officers in the line of duty, since strict confidentiality and privacy laws prohibit some jurisdictions from disclosing the occurrence of certain types of diseases. In addition, as the CDC indicated, the agencies could not prove absolutely that officers were not infected off-duty. Therefore, this survey should not necessarily be considered scientifically valid in all cases.

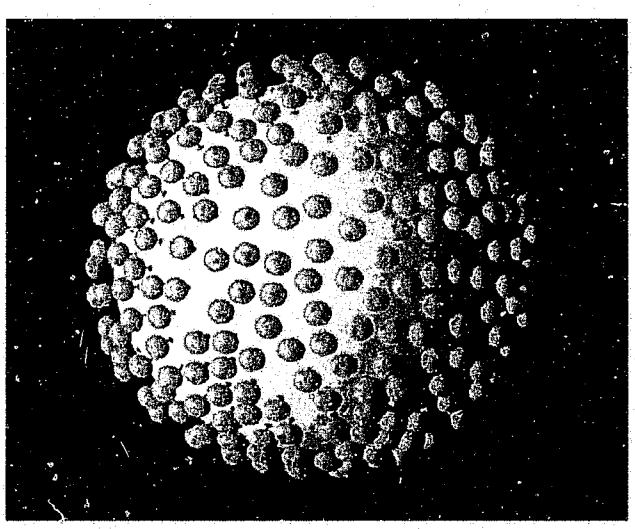
Synopsis of AIDS Cases

Of the seven police officers who acquired AIDS occupationally between 1981 and 1991, three absorbed infected blood through cuts, wounds, or scrapes on the skin; two from needle-stick injuries; one from a blood transfusion; and one in undescribed circumstances.

- Case #1: A 25-year-old deputy sheriff investigated a homicide that occurred in an AIDS ward at a correctional facility. Two inmates stabbed each other, one fatally. The deputy handled bloody evidence and apparently absorbed HIV-infected blood through cracks in his hands. This officer died of AIDS.
- Case #2: An officer received a needle-stick injury while conducting a personal search following an arrest. This officer is HIV positive.
- Case #3: An officer with open sores on his hands fingerprinted prostitutes who were bleeding. He retired with "line-of-duty" medical treatment.
- Case #4: An officer attempted to prevent an AIDS patient from jumping off a bridge. The officer became covered in blood, which he apparently absorbed through cracks and/or cuts on the skin or mucous membranes. This officer is HIV positive.
- Case #5: An intravenous drug user stuck a deputy sheriff with a hypodermic needle. The deputy developed hepatitis B, and later, AIDS. Both infections probably occurred at the same time. This officer died of AIDS.
- Case #6: A motorcycle officer, struck by a car, received a tainted blood transfusion during medical treatment. (This predated 1985, when blood tests for antibodies against HIV did not exist.) The officer died of AIDS.
- Case #7: An officer is on service-related disability after contracting HIV on the job. No further details were given.

Synopsis of Hepatitis B Cases

A total of 31 officers acquired hepatitis B occupationally between 1981 and 1991—8 from absorbing infected blood through cuts, wounds, or scrapes on the skin; 6 from needle-stick injuries; 6 from being bitten by suspects; and 11 in undescribed circumstances. The following cases show some of the



Computer model of HIV.

situations in which officers became infected with the hepatitis B virus.

- Case #1: An officer provided emergency medical care to a subject who had been shot during a domestic altercation. The officer had a cut on his right index finger, which came in contact with blood from the victim. This officer has hepatitis B.
- Case #2: An officer contracted hepatitis B and died after handling the blood-soaked clothing of a homicide victim. The officer was not wearing gloves at the crime scene.
- Case #3: Three officers contracted hepatitis B during the same incident. Following a high-speed chase and crash, the subject committed suicide with a handgun, and the officers came into contact with the subject's blood. All three officers had been issued gloves, but they were not wearing them.
- Case #4: A State trooper was stuck with a hypodermic needle while searching a suspect, who was under arrest. The officer developed hepatitis B and died.
- Case #5: An officer arrested an individual whose mouth was bleeding from a fistfight. The subject bit the officer on the hand, breaking the skin. The subject died from hepatitis B. The officer contracted the virus and transmitted it to his wife, presumably through sexual intercourse.

The remaining cases of hepatitis B infection occurred under the circumstances previously mentioned—absorption of infected blood through cuts, wounds, or scrapes on the skin; needle-stick injuries; bites; or undescribed circumstances. Of the 11 cases of hepatitis B in which the reporting agency did not describe the mode of transmission, 7 occurred to officers working in correctional facilities.

> ***"...officers should continue to guard against these lethal viruses."***

Multidrug-Resistant TB

Because multidrug-resistant TB did not exist in 1989, the FBI did not include it in this survey. However, the CDC reported one case of a law enforcement officer contracting the disease.[12]

A correctional officer, whose immune system had already been compromised by radiation therapy for cancer, contracted the disease through unknown means. However, because seven inmates at the same facility had also contracted multidrug-resistant TB, one of the inmates probably spread the disease to the officer. All seven inmates and the officer died an average of 25 days after contracting the disease.

Analysis of Survey Results

Law enforcement officers have legitimate concerns about contracting HIV from persons they encounter on the job. However, the results of this survey indicate that law enforcement officers have a greater chance of contracting the hepatitis B virus than HIV.

Fortunately, vaccination can easily prevent infection from hepatitis B in most people. Furthermore, as of March 6, 1992, the Federal Occupational Safety and Health Administration (OSHA) requires that law enforcement agencies offer the vaccination against hepatitis B to all officers who may have contact with body fluids while on the job, at no expense to the officer.[13]

OSHA requirements also mandate that agencies provide safety equipment to all officers who may be exposed to bloodborne pathogens. However, unless officers use this equipment, it will not protect them.

CONCLUSION

Law enforcement officers have an extremely small chance of contracting any disease on the job, including hepatitis B and AIDS. As this survey indicates, however, officers should continue to guard against these lethal viruses. They are not only life-threatening to police officers but also to their spouses and unborn children.

As noted, vaccination remains the best defense against hepatitis B. And, although no effective vaccine exists for TB, officers with healthy immune systems stand little chance of contracting the disease. In

addition, education regarding the methods of transmission and protecting oneself from infectious body fluids can help prevent the spread of AIDS. Taking precautions may not reduce the risk of infection completely, but it can decrease the risk substantially.

Law enforcement officers have a greater chance of being killed by a criminal in the line of duty, or even in an automobile accident, than dying from an infectious human disease contracted on the job. Yet, these invisible enemies strike silently and pose a serious hazard to their unsuspecting victims. ✦

Endnotes

[1] R.C. Gallo, "The AIDS Virus," *Scientific American*, 256, 1987, 146-56.

[2] R.C. Gallo, "The First Human Retrovirus," *Scientific American*, 225, 1986, 88-98.

[3] Department of Health and Human Services, Centers for Disease Control, *HIV/AIDS Surveillance*, 2d quarter ed. (Washington, DC: U.S. Department of Health and Human Services, Centers for Disease Control, 1992), 9.

[4] World Health Organization, "Current AIDS Pandemic," February 1992.

[5] A. Fauci, et al., "Acquired Immunodeficiency Syndrome: Epidemiological, Clinical Immunologic and Therapeutic Considerations," *Annals of Internal Medicine*, 100, 1989, 92-106.

[6] N. LaPointe, et al., "Transplacental Transmission of ITLV-III Virus," *New England Journal of Medicine*, 312, 1985, 1325-6.

[7] Department of Health and Human Services, Centers for Disease Control, "Protection Against Viral Hepatitis, Recommendations of the Immunization Practices Advisory Committee (ACIP)," *Morbidity and Mortality Weekly Report*, 30, no. RR-2 (Washington, DC: U.S. Department of Health and Human Services, Centers for Disease Control, 1992).

[8] David Bigbee, "The Law Enforcement Officer and AIDS," Federal Bureau of Investigation, Washington, DC, 1991.

[9] Department of Health and Human Services, Centers for Disease Control, "National Action Plan to Combat Multidrug-Resistant Tuberculosis," *Morbidity and Mortality Weekly Report*, 41, no. RR-11 (Washington, DC: U.S. Department of Health and Human Services, Centers for Disease Control, 1992).

[10] P.D. Bigbee, "Collecting and Handling Evidence Infected with Human Disease-Causing Organisms," *FBI Law Enforcement Bulletin* 56, no. 7, July 1987, 1.

[11] Mary Chamberland, U.S. Department of Health and Human Services, Centers for Disease Control, Washington, DC, interview by author, 1988.

[12] Department of Health and Human Services, Centers for Disease Control, "Transmission of Multidrug-resistant Tuberculosis Among Immuno-Compromised Persons in a Correctional System," *Morbidity and Mortality Weekly Report*, 41, no. 28 (Washington, D.C.: U.S. Department of Health and Human Services, Centers for Disease Control, 1992).

[13] Department of Labor, Occupational Safety and Health Administration, *Occupational Exposure to Bloodborne Pathogens*, 29 CFR Part 1910.1030, Docket no. H-370 (Washington, DC.: U.S. Department of Labor, Occupational Safety and Health Administration, 1992).

Wanted: Photographs

The *Bulletin* staff is always looking for dynamic, law enforcement-related photos to complement the various articles that appear in the magazine. We are interested in photos that depict the many aspects of the law enforcement profession discussed in the magazine and illustrate the numerous tasks and challenges law enforcement personnel perform.

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