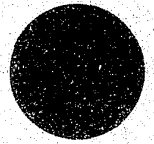
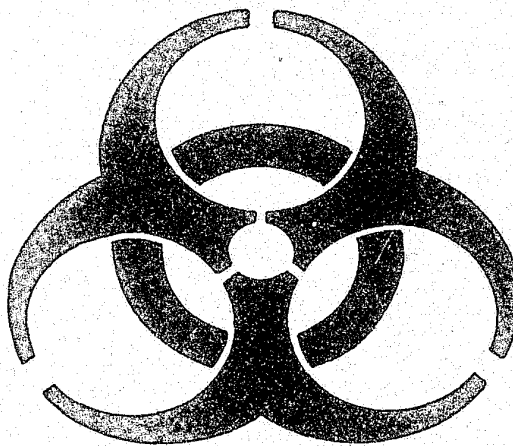




U.S. Department of Justice
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The Law Enforcement Officer and AIDS



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THE LAW ENFORCEMENT OFFICER AND AIDS

Second Edition

BY

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**FORENSIC SCIENCE RESEARCH AND TRAINING CENTER
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TABLE OF CONTENTS

INTRODUCTION	1
HISTORY	1
THE CAUSATIVE AGENT OF AIDS AND IT POSSIBLE ORIGIN	2
TREATMENT OF AIDS.	4
TESTING FOR AIDS	4
BODY FLUIDS WHICH MAY CONTAIN THE AIDS VIRUS	5
TRANSMISSION OF THE AIDS VIRUS	5
ACCIDENTAL TRANSMISSION:	6
ACCIDENTAL TRANSMISSION TO LAW ENFORCEMENT/CORRECTIONAL FACILITY OFFICERS	6
TRANSMISSION BY INSECTS	7
AIDS CASES IN THE UNITED STATES	8
SURVIVABILITY AND DISINFECTION OF THE AIDS VIRUS	10
DEALING WITH A SUSPECT INFECTED WITH HIV.	11
SALIVA	12
HANDS	13
FACE MASK AND EYE PROTECTION	13
NEEDLESTICKS AND OTHER INJURIES	14
TESTING FOR THE AIDS VIRUS.	14
CPR (CARDIOPULMONARY RESUSCITATION).	16
DECONTAMINATION OF CLOTHING, THE SQUAD CAR AND PERSONAL EQUIPMENT	16
CORRECTIONAL FACILITIES	17
PRECAUTIONS AT THE CRIME SCENE	18
LABORATORY MATTERS	21
AUTOPSIES AND HANDLING DECEASED PERSONS	22
TRAINING	22

CONCLUSION	23
APPENDIX A	24
TECHNICAL INFORMATION ABOUT HIV	25
APPENDIX B	27
FREQUENTLY ASKED QUESTIONS ABOUT AIDS	28
REFERENCES	40

INTRODUCTION

Law enforcement officers, crime scene technicians and correctional facility officers are frequently exposed to blood and other body fluids, in many instances, on a daily basis. Today, more than ever, there is a need for greater understanding and knowledge about infectious disease-causing microorganisms which may be found in body fluids. Evidence may also be contaminated with infectious body fluids and precautions should be taken to decrease the risk of infection by the officer. This booklet will discuss several means of dealing with infectious body fluids but the primary emphasis will center on the virus responsible for AIDS. This booklet will offer some recommendations or guidelines which may be used in handling potentially infectious materials but are by no means all inclusive. It should be pointed out that no set of guidelines or policies can possibly cover every situation the law enforcement officer may encounter in his or her daily activities. Appendix B lists a series of frequently asked questions about the AIDS virus and may serve as a quick answer summary of this booklet.

HISTORY

In 1981 at the University of California Medical Center, Dr. Michael Gottlieb treated five young male patients with a rare and deadly form of pneumonia and with a completely deficient immune system. These patients also had a type of cancer known as Kaposi's sarcoma usually seen only in elderly male patients. It was learned that all of the patients were homosexual men. From the symptoms of Dr. Gottlieb's patients, the term AIDS or Acquired Immune Deficiency Syndrome came into existence.¹ Several years later, Dr. Robert Gallo at the National Cancer Institute and Dr. Luc Montagnier at the Pasteur Institute in France simultaneously discovered viruses similar to one Dr. Gallo had

previously discovered which caused a form of leukemia in humans.² The virus, which Gallo called HTLV-III and Montagnier called LAV was shown to be the virus responsible for AIDS.^{3,4,5,6,7,8}

THE CAUSATIVE AGENT OF AIDS AND IT POSSIBLE ORIGIN

The virus called HIV (Human Immunodeficiency Virus), is the causative agent of AIDS (Acquired Immunodeficiency Syndrome). This virus causes a disease that basically destroys the hosts immune system allowing other microorganisms, many of which are normally not dangerous, to invade and grow in the body. Once infected, these microorganisms may produce various diseases and eventual death. These diseases include a rare form of pneumonia (Pneumocystis carinii pneumonia) as well as cancers which may develop. Additionally there may also be direct damage to the central nervous system (brain and spinal cord) from the virus.⁸

The virus is unusual and particularly deadly because after invading the body, it enters the blood stream and invades certain white blood cells called "T-lymphocytes" which are essentially the master control cells of the immune system. At that point, the virus causes its genetic information to be released from its core and through a complicated set of biochemical reactions, incorporates its genetic information into the chromosome of its human host.^{9,10,11,12,13} This insertion of genetic material may be the only immediate event that occurs after the virus has entered the blood stream. It is possible for the virus to remain dormant in the human cells for a short period of time or up to 10 years and possibly longer. Even though the person who has been infected may not show symptoms of AIDS or any other disease, he or she is still infectious and can transmit the AIDS virus to others during this dormant period. At some later point, and for reasons not fully understood, the virus becomes active and starts reproducing in the body. This may result in a disease state

in which some symptoms of AIDS appear causing a condition known as "AIDS Related Complex" (ARC) or may develop into full blown AIDS where the hosts immune system is completely destroyed. At this point, the person eventually dies. People with AIDS do not improve substantially, and most die within two years after the disease has been diagnosed.^{14,15}

As previously mentioned, it is not fully understood what triggers the virus to begin multiplying in the human body after a period of dormancy. It is known that in some people infected with AIDS, the contraction of other sexually transmitted diseases, such as herpes, syphilis and gonorrhea may activate the virus. It has also been shown that in some people other infections such as the common cold or influenza can also trigger the virus. It is believed that a second or subsequent exposure to HIV can also cause the virus to begin multiplying.¹

The origin of the AIDS virus is uncertain. However, one widely accepted theory is that it is a mutant form of a similar virus found in African Green Monkeys. After the virus mutated in the monkey, it was spread to persons in Africa presumably from the blood of the monkeys when they were skinned, eaten or by some other ritualistic means which involved the mixing of blood from the monkeys with the blood of the Africans. The spread of AIDS from Africa to the United States and other countries is also not clear. However, one theory is that during the 1970s there was a cultural exchange of some 10,000 people from Zaire to Haiti, which was a popular vacation spot for male homosexuals from the United States. American male homosexuals may have contracted the virus from people in Haiti, transmitted it to others in New York City, and then spread throughout the rest of the United States and eventually the world.¹⁵

TREATMENT OF AIDS

Like many other viral infections, the medical response to AIDS is to treat the symptoms of the illnesses caused by the virus. One experimental drug, AZT or azidothymidine, is being used, and although it is not a cure, in some cases it does prolong the life of a person with AIDS.¹⁶ Researchers all over the world are working to produce either a vaccine or cure for AIDS but the prospect of this development in the near future is remote.

TESTING FOR AIDS

In 1985 a blood test was developed that determined if a person had been exposed to the AIDS virus.¹ This test does not detect the actual presence of the virus in the blood but rather antibodies produced against it. A positive test for the presence of antibodies against the AIDS virus does not mean that a person has AIDS, however it is a good indicator that he or she may eventually develop the disease. A person who is positive for the antibody test is contagious and can transmit the virus to others. This test is currently being used to screen donated blood and has probably made the U.S. blood supply the safest in the world. However, the test is not completely fool-proof. The Centers for Disease Control in Atlanta, Georgia, estimate that out of 16 million units of blood transfused each year in the United States, 100 transfusion related AIDS infections will occur.¹⁷ In addition, if a person donated blood after having been exposed to the virus but before antibody production had occurred, the test could not detect the virus. One case recently reported in Europe stated that one individual showed no antibodies against the virus after having been infected 13 months prior. However, this data has not been confirmed. Usually it takes six to twelve weeks after infection by HIV until the presence of antibody is detectable.

BODY FLUIDS WHICH MAY CONTAIN THE AIDS VIRUS

Blood and blood products, semen (sperm), vaginal secretions, cervical secretions, saliva, human milk, urine, tears, and body organs have all been found to harbor the AIDS virus.^{5,18,19,20,21,22,23,42} However, the concentrations of virus vary in these fluids with blood and semen showing the highest levels. As a precaution, when dealing with ANY body fluid, it should be assumed that it is infectious.

TRANSMISSION OF THE AIDS VIRUS

There are several means by which the virus can be transmitted, and most often it is by blood and semen. Several instances of unusual transmission have occurred but these are certainly rare. Most cases of transmission of the virus have occurred through sexual intercourse, mainly by homosexuals but heterosexual transmission occurs and is increasing. The second highest rate of transmission is by people using intravenous drugs and sharing contaminated hypodermic needles.²⁴ Hemophiliacs, especially before a blood screening method was developed, were also victims of the virus by using blood factors necessary for their treatment.²⁵ Blood transfusions also account for another means of transmission, even though this means has decreased dramatically since 1985 when testing of donated blood began. A pregnant woman with AIDS is capable of infecting her fetus either by the virus crossing the placenta, or during the birth process.^{26,43} Other unusual cases include women who have been infected from semen by artificial insemination, children by consumption of human milk and by organ transplantation.^{25,27,28} It appears highly unlikely that the virus can be transmitted from individual to individual by so-called "casual" means such as hand shakes, sneezes, food, toilet seats, etc.²⁹ The virus is found in saliva,

and the likelihood of transmission through kissing seems remote. In fact, no case of transmission of the AIDs virus through saliva has ever been reported. However, the more often a person is exposed to the virus in any body fluid, the more likely the possibility exists of becoming infected.

ACCIDENTAL TRANSMISSION

Although not frequent, there have been a few cases of accidental transmission of the virus in medical and laboratory personnel. The majority of these cases involved the worker being accidentally inoculated with a contaminated hypodermic needle and/or blood from an AIDS patient, or laboratory workers dealing with concentrated samples of the virus. In three instances, medical workers became positive for the virus after having been splashed in the face with blood, or by absorbing the virus through cracks in the skin or sores coming in contact with infected blood.³⁰

ACCIDENTAL TRANSMISSION TO LAW ENFORCEMENT/CORRECTIONAL FACILITY OFFICERS

There have been several reported cases of occupational transmission of the AIDS virus to law enforcement personnel. However, these cases, which were reported by the police agencies are currently under investigation by public health authorities and have not been confirmed as occupationally acquired. According to an epidemiologist at the Centers for Disease Control, the criteria used to definitely classify an HIV positive individual as having acquired the virus on the job is so stringent that it may be impossible to ever document these cases as occupational transmissions. The CDC criteria is, for the most part, based on interviews of the victims who may or may not be completely candid with the investigators.⁴⁶ Statistics concerning occupational transmission in police officers and correctional facility officers must be documented and

compiled over several years to determine if and how prevalent this route of transmission may be. Obviously, it is possible to contract the virus by needlesticks and having infected blood come in contact with mucous membranes of the mouth, nose and possibly eyes. It is also possible that blood containing the virus can be absorbed through breaks in the skin whether or not these breaks can be seen.

The possibility of a law enforcement officer contracting the virus from saliva after being bitten by a person with AIDS seems highly remote. However, persons with AIDS often have bleeding gums and mouth sores.³¹ Consequently, if this blood comes in contact with an officers blood by having the skin broken by a bite, the possibility of transmission, even though highly unlikely, does exist. The greatest potential means of accidental transmission to law enforcement officers is probably during the search of crime scenes, automobiles, and clothing of persons using intravenous drugs. Secreted hypodermic needles have been and will continue to result in officers being injured during searches. The officer must use every possible precaution when searching for needles or other sharp objects that may be contaminated with blood.

TRANSMISSION BY INSECTS

Research scientists from around the world, including Africa, have done extensive studies into the possible transmission of AIDS by insects, such as mosquitoes, ticks, fleas and others. To date, no case of insect transmission has been shown to occur. It is possible for the AIDS virus to enter an insect, such as a mosquito when she feeds of a person infected with the AIDS virus. However, studies have shown that even though the virus gets into the mosquito, she cannot transmit it to another person if interrupted during her blood meal. Only the genetic material of the virus has been found in insects, not intact

viruses. In addition, epidemiology studies reinforce the research. If insects could transmit the virus, all people, regardless of age, sexual habits, and those not considered to be in the "high risk" groups would contract AIDS. In other words, small children who are not sexually active and don't use intravenous drugs, and the elderly would also be infected at the same rate as the "high risk" groups such as male homosexuals and intravenous drug users. This is not the case. Worldwide studies of isolated villages with no AIDS cases but within proximity for insects to travel from villages with numerous AIDS cases have shown no transmission by insects.³² Dr. Charlton Prather, State Health Officer in Florida aptly summarized the enigma of insect transmission in a video-tape entitled "AIDS Bulletin for Law Enforcement", produced by the Florida Department of Law Enforcement when he said, "If you can explain to me how a female mosquito would be so selective in who she bit then I would listen to your suggestions that mosquitoes might be able to transmit AIDS."

AIDS CASES IN THE UNITED STATES

As of September, 1988, there have been 72,766 AIDS cases reported to the Centers for Disease Control with 41,064 or 56% of the patients dead. The CDC has predicted that by the year 1992, there will be 365,000 cases in this country. Some people believe this number is too low since only certain criteria technically places individuals in the AIDS category. CDC revised their classification for AIDS cases in 1987 which added many of the above figures.³³ In addition, the cause of death reported by physicians often will not list AIDS as the cause, but some other disease such as cancer or pneumonia to prevent embarrassment to the families of the deceased. The number of babies born with AIDS is increasing at an alarming rate. For example, in a study recently conducted in one New York City hospital, it was determined that 2% of all

pregnant women were positive for the AIDS virus. This is a rate that is close to the infection rate in certain parts of Africa. There have been an estimated 1,157 cases of AIDS in children since 1981, almost all of them born from high-risk parents. These children, if they fully develop the disease, usually die within two years after birth.³⁴

It is estimated by various agencies, including the Centers for Disease Control, the National Academy of Sciences and the U.S. Public Health Service, that the number of people currently infected with the AIDS virus, but not actually having the disease, is anywhere between 100,000 and 1,500,000.^{35,36} How many of these people will ultimately develop the disease is not known. However, it is estimated that between 50% and 99% of them will eventually. The greatest number of AIDS cases is predominantly in large cities. The states of New York, California, New Jersey, Florida and Texas account for over 70% of all AIDS cases in the country. However, no state or continent except Antarctica is AIDS free.⁸

Of the 66,464 cases of AIDS reported to the Centers for Disease Control in the period June 1, 1981 - July 4, 1988, most (60%) occurred among non-Hispanic whites; however, blacks and Hispanics accounted for 70% of the cases in heterosexual men, 70% of those in women, and 75% of those in children. This data supports the findings that AIDS patients are disproportionately black and Hispanic and that the proportion of intravenous drug abuse associated AIDS cases is substantially greater in U.S. blacks and Hispanics than in U.S. whites.³⁴

Studies done by the U.S. Army show that the rate of AIDS-positive individuals in recruits is approximately 1.5 cases per 1,000 recruits, and this number has been fairly constant for the past few years.³⁵ Certain geographical areas such as New York City have shown considerable higher rates.⁴⁵ Two studies

done in Washington D.C., and published in The Washington Post, stated that a survey conducted in the D.C. jail of known intravenous drug users indicated 80% of them were positive for the AIDS virus and another study of D.C. prostitutes showed a 50% infection rate. Obviously this number should be higher than the general population considering the behavioral habits of these two groups.

The infection rate in U.S. prisons has remained generally almost identical to the general population infection rate. Some correctional facility administrators have expressed concern that as more younger prisoners are incarcerated the infection rate may increase.

SURVIVABILITY AND DISINFECTION OF THE AIDS VIRUS

Studies indicate that the AIDS virus is relatively fragile when removed from its environment - human body fluids. Scientific tests conducted with highly concentrated amounts of the virus, amounts which could not possibly be found in the human body, have shown that in a liquid state, the virus can survive at room temperature for at least 15 days. For example, a tube of liquid blood from a suspect or victim in a homicide or sexual assault case theoretically could harbor live viruses for prolonged periods of time. However, even in some individuals with "full blown" AIDS, no live viruses can be found in their blood stream. If refrigerated, the life of the virus is prolonged even further. In dried states, several studies have shown that the virus can survive between 3 and 13 days at room temperature with the conservative consensus of opinion by experts at about 3 days or less.^{36,37} In a study conducted at the Centers for Disease Control it was determined that upon drying, the rate of inactivation of the virus was from 90% to 99% within several hours. In tissue culture fluid, cell-free viruses could be detected up to 15 days at room temperature, up to 11 days at body temperature, and up to 1 day if the virus was

cell-associated.¹⁸ If the dried stains are frozen, the virus might be killed along with infected lymphocytes or, if circulating free in the blood, can survive almost indefinitely, since viruses are preserved by freezing.

Fortunately, the virus is highly susceptible and fragile to most common forms of disinfectants, drying, and heat. Ordinary liquid household bleach, when mixed in a 1:9 or 1:10 dilution (about one cup of liquid bleach in a gallon of water) or 70% alcohol will inactivate the virus within one minute. Moderately high heat will kill the virus as will the use of the autoclave (pressure cooker), many commercial disinfectants, fire, and gamma and x-ray irradiation (at least 25,000 rads).^{37,38,39,40,41,44} Officers should bear in mind that if using bleach and alcohol, they should never be mixed and especially not mixed with ammonia due to the production of toxic fumes.

DEALING WITH A SUSPECT INFECTED WITH HIV

This issue is a difficult and controversial one to discuss. Many police departments and correctional facilities have developed guidelines for dealing with prisoners and for the officer exposed to potential or purported infectious blood or other body fluids of a person while making arrests. The best way to formulate these types of policies is to first learn as much about the virus and its transmission as possible, including the many myths that may be circulating and to provide this factual information to all personnel in the department.

Law enforcement officers have always been subjected to many infectious diseased persons. Today, besides AIDS, the officer should also be aware that persons with AIDS are also highly likely to be infected with hepatitis B, tuberculosis, and other communicable diseases. Even intravenous drug users and prostitutes not infected with the AIDS virus still present a problem with hepatitis B. Therefore, many departments already have policies and guidelines

dealing with infectious diseases. Most of these policies and guidelines are identical to those which should be followed for AIDS with a few exceptions. This does not mean that departments and law enforcement officers should be complacent when dealing with AIDS. They should be practical as well. The guidelines stated below are examples of some that could be adopted by a particular department, but are not all inclusive and are simply recommendations. Departments must develop their own guidelines to deal with their particular situations. For example, law enforcement officers working in Montana are certainly at lower risk of being involved with a person infected with AIDS than a New York City officer. But that doesn't mean the officer in Montana should not use precautions. A police officer or correctional facility officer will not necessarily know whether or not a person is infected with AIDS or any other communicable disease, especially during an arrest. Therefore, officers should assume any person they are arresting or dealing with is potentially infectious. That is not to say that all officers should be on patrol wearing enough protective equipment to survive in outer space. It simply means that precautions should be taken before and after an incident occurs. Remember that some situations will arise not covered by guidelines or policies, and that caution and common sense should prevail.

SALIVA

No case has ever been reported where HIV has been transmitted by saliva. A recent study conducted by the American Dental Association researchers revealed that some as yet unknown substance in saliva in fact inhibits the transmission of the virus. Other studies conducted on family members of persons with AIDS, such as hemophiliacs, have failed to show that saliva or any other form of casual or intimate contact such as kissing has transmitted the virus. The

concentration of HIV in saliva is much less than that found in blood or semen. However, that does not mean that precautions against saliva should not be taken. For example, if an officer is spit on by a suspect or prisoner, whether or not it is known if the person has AIDS, the saliva should be removed by cleaning with soap and water (or rubbing alcohol if it would make you feel better). If the saliva comes in contact with the mouth or eyes, appropriate substances such as mouthwash and eye drops should be used (NOT ALCOHOL OR BLEACH).

HANDS

Any time your hands come in contact with any body fluid, they should be cleaned thoroughly with soap and water as soon as possible after the incident. If you are aware that you are going into an incident that will most likely result in your hands coming in contact with blood or other body fluids, protective latex gloves are highly recommended. These gloves need not be sterile, and should be disposed of properly (see section on decontamination of equipment). These gloves can be purchased in boxes of 50 in different sizes and are ambidextrous. Even though gloves are worn, after they are removed hands should still be thoroughly washed with soap and water. Liquid soap in dispensers is preferable to bar soap for communal use.

FACE MASK AND EYE PROTECTION

Unless you are about to be involved in an incident where there is a likelihood that body fluids will be splashed in your face, mouth, nose or eyes, masks and eye protection are not needed routinely. The use of these protective devices are very controversial, especially in the area of public relations, and their use should be considered accordingly. However, that does not mean that masks and eye protection should necessarily be routinely excluded. They are highly recommended at certain types of crime scenes (see section on the Crime

Scene).

NEEDLESTICKS AND OTHER INJURIES

It cannot be overemphasized that extreme care should be taken by the law enforcement officer when searching individuals, dwellings, automobiles or other areas for secreted hypodermic needles and other sharp instruments which may bear the blood of infected individuals. In the event an injury does occur, these general guidelines can be followed:

1. Allow the wound (unless severe bleeding occurs) to bleed until all flow ceases. Then cleanse the wound with rubbing alcohol if available (it is recommended that individual packets of alcohol sponges be provided to all officers) and then with soap and water.
2. Seek medical attention as soon as possible after the injury. A physician will then decide on the proper treatment of the wound.
3. Advise your superior, make a report, or follow any other policy for reporting injuries, including the filing of appropriate workman's compensation forms.

TESTING FOR THE AIDS VIRUS

If a law enforcement officer is exposed to the body fluids of a person with AIDS or a person potentially exposed to AIDS, obviously a tremendous amount of apprehension exists for the officer, as well as his spouse and family. In addition to the anxiety produced by the thought of contracting a lethal disease, some officers also experience fear that they will be accused of contracting the disease through sexual intercourse or intravenous drug use and ostracized by fellow officers and family. Therefore, it is highly recommended that a trained counselor be provided for officers, especially those who receive needlesticks or other injuries where the officers blood and the blood or other body fluids from

a person infected with AIDS occurs. It should be remembered that after a person has been exposed to the AIDS virus it may take weeks, months, or possibly even longer before antibodies are produced and are detectable through laboratory tests. Therefore, the most expedient means to determine if the officer has been exposed to HIV is to determine if the suspect, prisoner, etc., is infected. This is not always such an easy task. Procedures to make this determination vary from jurisdiction to jurisdiction and may be impractical or illegal according to local, state or federal laws. Therefore, law enforcement and correctional facility managers must be knowledgeable of applicable laws prior to adopting any testing or screening program. Thus, the guidelines listed below may not be acceptable in all jurisdictions.

The person whose body fluid came into contact with the officer may state that he or she has AIDS. Quite often criminal suspects, especially those using illicit drugs, may use this ploy in an attempt to prevent the police from withdrawing blood for drug screening. On the other hand, the suspect may be very cooperative and voluntarily submit to a blood sample for AIDS testing. Each individual is different. In some jurisdictions, court orders, search warrants, etc., may be obtained to withdraw blood from a suspect who is not cooperative. Even if these legal means are accomplished, the jurisdiction's medical confidentiality laws may prevent the disclosure of the result of testing. When that occurs, the only alternative is to test the officer who was contaminated for the AIDS virus. Medical personnel should be contacted for this procedure. Commonly, officers are tested immediately after exposure (to establish if he or she had been exposed prior to the accident), six to twelve weeks after exposure, six months, possible at nine months and after a year. It should again be emphasized that the officer should receive qualified counseling

during this justifiably apprehensive period. Furthermore, prior to adopting this type policy, workman's compensation personnel should be contacted regarding their responsibility in these matters. It should not be the monetary burden of the law enforcement officer to determine if he or she has been infected. Several states have passed laws which require medical authorities to notify emergency service personnel (police, firemen, paramedics etc.) when they are aware these personnel have been exposed to a person with any infectious disease. Police managers should be aware of their appropriate state laws.

CPR (CARDIOPULMONARY RESUSCITATION)

The officer on patrol, or in any other position, may be involved in incidents where he or she must administer CPR to a person in distress. It is recommended that protective face shields and CPR devices be issued to all officers. These relatively inexpensive devices are equipped with a one-way valve which is fitted into the victim's mouth and a reusable or disposable plastic shield which will cover the victim's mouth or face depending on which type is used. The valve prevents blood, saliva, or vomit from entering the officer's mouth. If the reusable masks are used, they should be thoroughly cleaned and disinfected after each use. Some of these devices cannot be used on children because of size. Be sure to follow the manufacturer's instructions.

DECONTAMINATION OF CLOTHING, THE SQUAD CAR

AND PERSONAL EQUIPMENT

Depending upon the type of uniform or clothing worn by the law enforcement officer, different means of disinfection should be used if the clothing is stained by human body fluids. If washable, the clothing should be washed with warm or hot water and ordinary detergent and bleach may be used if appropriate for the garments. If the item cannot be washed, for example wool clothing that

must be dry cleaned, the body fluid, especially blood, should be soaked in cold water and dry cleaned. The chemicals used to dry clean the garment will kill the AIDS virus. Even though bloody garments have been removed, the officer should be sure to shower with soap prior to changing clothes.

Items such as handcuffs, night sticks, etc., may be disinfected with either a bleach solution or rubbing alcohol. Any spill, including vomit and feces, in the squad car should be thoroughly cleaned by appropriate means and decontaminated with a bleach solution, alcohol, or other commercial disinfectant. Shoes, boots, helmets, and other pieces of equipment should also be decontaminated with the appropriate disinfectant.

CORRECTIONAL FACILITIES

Correctional facilities, whether prisons or holding cells, present unique problems when dealing with persons with infectious or contagious diseases, especially AIDS. It is well known that illicit drug use and homosexual rape, even though illegal, occurs in prisons. As with disclosure and confidentiality laws in the different jurisdictions, the policies of dealing with prisoners with AIDS varies widely. Generally, prisoners who are HIV positive but do not have symptoms of AIDS are kept in the normal prison population. Those with symptoms are usually confined to a hospital ward or isolated from other prisoners.

Correctional officers should follow the same guidelines when dealing with prisoners with AIDS, hepatitis B, or any other infectious disease or while working crime scenes that occur in prisons as all other law enforcement officers. In other words, the universal precautions for dealing with any body fluid should be followed. It should be noted that the U.S. Bureau of Prisons screens all inmates for HIV and the percentage of prisoners who are HIV positive is almost exactly the same as the general public population. But, prisons do

present some unusual circumstances. For example quite frequently prisoners share razors, and other personal items while confined in relatively small areas and the possibility of body fluid transfer is higher than the general population.

One major area which can be addressed in correctional facilities is education of the inmates concerning facts and myths about transmission of HIV, since there is a "captive audience". In addition, training and education for correctional facility officers and staff should be implemented. There have been no reported or confirmed cases of HIV transmission to correctional facility officers to date. For more detailed information concerning this topic see the book entitled AIDS in Correctional Facilities: Issues and Options published by the U.S. Department of Justice, National Institute of Justice.⁴⁸

PRECAUTIONS AT THE CRIME SCENE

Officers and crime scene technicians confront unusual hazards, especially when the crime scene involves violent behavior such as homicide where large amount of blood have been shed. No person at any crime scene should be allowed to eat, drink, smoke, or apply makeup. As with the street officer, the best protection for officers at the crime scene is latex gloves. They should be changed if torn or soiled, and always removed prior to leaving the scene, even if temporarily. While wearing gloves, avoid handling personal items such as expensive pens and pencils. Hands should always be washed after gloves are removed, even if the gloves appear to be intact. Always keep a plastic bag in the crime scene kit or the car which is to be used only for the disposal of contaminated items such as gloves, masks, etc. If desired, commercially made bright orange biohazard bags which are autoclavable can be purchased.

If cotton gloves are to be worn when working with evidence of potential

latent fingerprint value, the cotton gloves can be worn over the latex ones.

Shoes and boots can become contaminated with infectious blood and transferred to the car, station or home. In certain cases, disposable shoe coverings should be considered. In cases where large amounts of blood are present, disposable plastic lined coveralls or coats should be worn over clothing.

Particles of dried blood fly in every direction when a stain is scraped. If the dried stain is less than one week old, it is recommended that protective masks and eyewear be worn when removing the stain for laboratory analyses. Masks and eyewear will not prevent an individual virus from passing through due to the tiny size of a virus particle, however, free viruses won't exist in body fluid stains. They will be in droplets or flakes of blood or in fibers, which will be effectively blocked by the mask and eyewear. The protective eyewear should include side shields. If using ultra-violet lamps to search for seminal stains, the protective eyewear should also be of the type that filters ultra-violet radiation.

While processing the crime scene, be constantly on the alert for sharp objects such as hypodermic needles, knives, razors, broken glass, nails, or any other sharp object. Use the utmost care to prevent a cut or puncture wound. Use of mirrors and flashlights should be used in every instance while looking under car seats, beds, or other areas prior to reaching into those areas with the hands. Quite frequently intravenous drug users will secrete syringes and hypodermic needles in between or in the creases of automobile seats especially during traffic stops. The use of a "slim jim" or a wooden paint stirrer can be used to search these areas effectively before the hands are used. Hypodermic needles should never be recapped and it is recommended that if procedures such

as the placing of a pencil eraser on the end of the needle are used that long forceps or pliers are utilized for that purpose. A better alternative is to place the entire needle and syringe in a large screw cap test tube or a metal tube such as a used cigar tube which is appropriately labeled. Even seemingly innocuous items, such as metal staples in paper, present a potential hazard, especially since they will tear latex gloves quite readily. For this reason, use paper or plastic tape whenever possible to seal items of evidence in plastic or paper bags.

If practical, use only disposable items at a crime scene where blood or other body fluids are present. However, even those items such as pens, pencils, gloves, masks and shoe covers should be decontaminated before disposal. Preferably, the items should be incinerated. If this is not possible, arrange with your pathologist or a local hospital to sterilize the items by autoclaving and then dispose of them properly. Even though sterile, health department and other laws concerning the disposal of hypodermic needles may apply. Applicable local, state, and federal laws should be determined prior to disposal. In situations where incineration or autoclaving is not possible, contaminated, disposable items should be covered with bleach solution prior to disposal. All nondisposable items, such as cameras, tools, notebooks, etc., also must be decontaminated. This may be accomplished with bleach solution or alcohol.

Blood that is suspected of being infectious and will not be collected for evidence should also be disinfected with the bleach solution or alcohol. The solution should be poured on stains or liquid blood and allowed to air dry. Before releasing the crime scene, advise the owner of the potential infection risk, especially if the victim/suspect is in the "high risk" group.

Evidence bearing blood or other body fluids that is wet must be handled

accordingly. The evidence must be completely dried before it is sent to the laboratory for analysis. If infectious blood is suspected in evidence, it should be placed in plastic bags, taken to the police station, evidence room or other appropriate and secure space, removed from the plastic bag while using the safety precautions listed above and allowed to air dry before being repackaged for shipment to the laboratory. Items with body fluids on them should not be dried in direct sunlight or heated with any device such as a hair dryer.

Evidence bearing body fluid stains known or suspected of coming from an individual with an infectious disease or those in the "high risk" categories should be appropriately labeled as such so that laboratory personnel and others handling the items will be aware of that fact. Even though in past years it was recommended that all evidence bearing blood or other body fluids be stored in paper containers, it is now recommended that evidence from individuals with infectious diseases be thoroughly dried, and placed in sealed clear plastic containers with any initials, marking etc., showing through the plastic so that the item will not have to be removed from its container, even in the courtroom.

LABORATORY MATTERS

It is suggested that police managers consult with laboratory personnel who analyze their evidence for any particular policies or practices required by the respective laboratory. For example, some laboratories will not accept hypodermic needles (they will accept the syringes) in evidence. The FBI Laboratory routinely irradiates all liquid blood samples submitted as evidence with 25,000 rads of x-rays to inactivate the AIDS virus. Because DNA typing cannot be used on blood that has been irradiated, alternate methods for DNA typing have been established. Therefore laboratories must be made aware if this type analyses will be requested as the evidence is being submitted.

AUTOPSIES AND HANDLING DECEASED PERSONS

The Centers for Disease Control recommend that when performing or attending autopsies on persons with AIDS or suspected AIDS, or any other infectious disease, protective masks, eyewear, laboratory coats, gloves and waterproof rubber aprons should be worn.¹⁸ In addition, when handling a deceased person, such as during body removal, appropriate precautions should be taken, especially in homicides where a large amount of blood is present. Gloves should be worn in almost all instances. It should be kept in mind that viruses, including HIV can only survive in living humans and living tissue. As soon as a person dies, any microorganisms present, including those which cause disease, tend to be taken over by other microorganisms, primarily bacteria that are unpleasant but relatively harmless. This does not mean that precautions should not be taken, however. The precautions to be used with body fluids and deceased persons should also be used when handling amputated limbs, hands or other body parts.

TRAINING

It is recommended that all departments or agencies designate a knowledgeable person as the safety officer/consultant. This person would maintain knowledge of current facts about infectious diseases, their transmission and prevention which is then disseminated to all personnel in an active and continuous training program. The department should seek outside expertise in the area if necessary. In years past, aspects of safety among law enforcement officers and correctional facility officers with respect to disease-causing organisms was practically nonexistent. Today, more than ever before, there is a real need for safety programs, especially training that separates the facts from myths.

CONCLUSION

Body fluids that the law enforcement officer may or will encounter in his or her daily activities may be infected with microorganisms that can lead to severe disease or death if acquired. Therefore, every precaution which is reasonable, and knowledge of these potentially lethal microorganisms is essential when dealing with body fluids. The risks of contracting a disease from the blood and body fluids of infected persons is very low. However, the consequences of an infection, particularly from the AIDS virus is devastating, not only to the officer, but possibly to his or her spouse or unborn children. Precautions that are not excessive but appropriate must be taken along with using common sense and being careful. We have all the knowledge we need to protect ourselves from AIDS both on and off the job. The earlier information or lack of information about the virus has changed and fortunately, we have learned that it is difficult to contract AIDS from being on the job. The safety precautions against AIDS have led all of us in law enforcement to be more aware of all infectious diseases and will protect us more than ever before - but only if they are used.

APPENDIX A

TECHNICAL INFORMATION ABOUT HIV

Human Immunodeficiency Virus (HIV), also designated HTLV-III (Human T-lymphotropic Virus Type III) and LAV (Lymphadenopathy Associated Virus) is the etiological agent of AIDS (Acquired Immune Deficiency Syndrome).^{3,4,5,6,7,8} The virus infects helper/inducer T-lymphocytes and possibly other cell types with a direct cytopathic effect and/or indirect effects on cells involved in cellular and humoral immunity. The virus, described as a "retrovirus", utilizes the enzyme reverse transcriptase to incorporate the genetic information of the viral RNA into the DNA of the host cell. Once the virus invades the human body, it utilizes the antigenic sites of its protein coat (GP 120) to adhere to a T-helper lymphocyte or a macrophage bearing T-4 protein. It then is absorbed into the lymphocyte by what is believed to be receptor mediated endocytosis, and incorporates its DNA into the host DNA at apparently random positions. At this point, the infected T-lymphocyte(s) may continue to function normally or later the virus may become activated, cause cell lysis and release new viruses. Since the T-lymphocyte is infected, this disruption in the immune system affects the T-8 cytotoxic cells, plasma and B-lymphocytes, suppression etc., of the other immune responses. When this occurs to a great extent, the person has AIDS and will usually die within a short period of time.^{9,10,11,12,13} Direct cytopathic damage may occur since the infected macrophage may pass through tissue space and infect nerve tissue, such as in the brain.⁸ HIV has been isolated from blood, bone marrow, lymph nodes, brain tissue, semen, cell-free plasma, vaginal secretions, cervical secretions, tears, urine and human milk.^{5,18,19,20,21,22,23,42} Persons infected with HIV may present a variety of manifestations ranging from asymptomatic infection to severe immunodeficiency and life threatening secondary infectious diseases or cancer. The CDC classifies AIDS patients in one of four categories ranging from acute

to those classified as "other conditions." Manifestations of the disease can include a mononucleosis-like syndrome with or without meningitis, lymph node enlargement that persists for months (not caused by other disease states), cancers and myelopathy. Secondary infections and death can occur from such microorganisms as Pneumocystis carinii, which produces a severe form of pneumonia to unusual forms of tuberculosis.³³

APPENDIX B

FREQUENTLY ASKED QUESTIONS ABOUT AIDS

1. What is AIDS?

AIDS (Acquired Immune Deficiency Syndrome) is a disease which destroys the body's immune system.

2. What exactly do people die from who have AIDS?

AIDS generally lowers the body's ability to fight off other diseases such as pneumonia, which eventually kills the victim.

3. Does AIDS cause any direct damage other than destroying the immune system?

It may. The causative agent of AIDS can cause direct damage to certain types of human cells, especially nerve cells such as those in the brain.

4. What causes AIDS?

The causative agent of AIDS is a virus called HIV (Human Immunodeficiency Virus) also called HTLV-III and LAV.

5. What is a virus?

A virus is a simple organism (if it is even considered an organism) that must have a living cell in which to reproduce. In other words, it is a strict parasite. Many forms of viruses exist, some which affect plants, others that affect animals, and some that exclusively affect humans, such as the AIDS virus.

6. What makes the AIDS virus so deadly in humans?

The AIDS virus is called a "retrovirus" which has the ability to reverse the normal flow of genetic information and incorporate its genetic material in the human chromosome or genes.

7. **Where does the AIDs virus incorporate its genetic information in the human body?**

In cells called T-lymphocytes, basically the master control cells of the human immune system.

8. **What happens once the virus has invaded the T-lymphocytes?**

Several things can happen at this point. The virus can become dormant for possibly as long as ten years without causing any symptoms of AIDS or it may begin to reproduce, destroying lymphocytes until the immune system fails. When that happens, the person has "full blown AIDS."

9. **What triggers the virus to become active?**

The answer to that question is not fully known. Studies indicate that in some instances a second exposure to the virus can trigger the reaction, or other sexually transmitted diseases such as a Herpes infection or syphilis can trigger it. In some instances, even a relatively minor infection such as a cold or influenza can trigger the virus.

10. **Do all people who contract the virus develop AIDS?**

It is not known exactly how many people who harbor the virus will actually develop AIDS. Estimates range from 30% to 100%. The dormant period has been shown to be up to tens years after infection whereas earlier beliefs were only five years. The average life expectancy after infection is seven years.

11. **If a person does not have symptoms of AIDS, how can exposure to the virus be detected?**

A blood test for the AIDS antibody was developed in 1985 that will determine if a person has potentially been exposed to the virus. This preliminary test, if positive, is confirmed by a more extensive test.

12. If persons exposed to the virus build up antibodies, why doesn't that process remove the virus from the body?

Antibodies are produced against the virus, but not in sufficient quantity to completely remove the virus from the body, especially since it incorporates its genetic make up in the human chromosome.

13. Can a person be sick from AIDS but not have "full blown AIDS?"

A person can have some symptoms caused by the virus but not have full blown AIDS. This condition is called "AIDS Related Complex" or ARC.

14. Is there a cure for AIDS or ARC?

There is presently no cure for either condition.

15. Is there any treatment for the disease?

Symptoms of some of the diseases which occur in AIDS such as Pneumocystis carinii pneumonia can be treated, and experimental drugs are being used to treat AIDS with varying levels of success but so far, no cure has been found.

16. Is there a vaccine against the virus, such as there is for measles or smallpox?

No.

17. Is there a prospect for the development of a vaccine in the near future?

It is doubtful that a vaccine will be in general use in the near future. The AIDS virus tends to mutate into different strains, and each strain would require a different vaccine. However, researchers all over the world are currently attempting to develop a vaccine and/or cure.

18. How is the virus transmitted from one person to another?

Sexual intercourse and the sharing of infected hypodermic needles are the most common means of transmission in humans.

19. What body fluids is the virus transmitted in by these two means of transmission?

Blood and semen are responsible for most cases of transmission.

20. What group of people are most likely to transmit the disease by sexual intercourse?

The majority of people with AIDS that can be attributed to sexual intercourse are male homosexuals and male bisexuals.

21. Does that mean that the virus cannot be transmitted by females?

Heterosexual transmission can occur from women to men and from men to women. Heterosexual transmission from female prostitutes, women who have sexual intercourse with bisexual men, and drug abusing females is increasing in this country.

22. Could a prostitute who uses intravenous drugs and contracted AIDS by that means transmit the virus sexually?

Yes.

23. Why are male homosexuals the major group with this disease?

Because of their sexual activities and large numbers of sexual partners. Primarily, male homosexuals spread the virus by anal intercourse which tends to cause tearing of the rectum allowing infected semen, as well as fecal microorganisms to enter the bloodstream.

24. Females don't produce semen, and yet can transmit the virus during heterosexual intercourse. How does that occur?

From vaginal secretions. The virus has been isolated from vaginal and cervical secretions.

25. What other body fluids has the virus been found in?

Besides blood, semen, and vaginal secretions, the virus has been isolated from saliva, tears, spinal fluid, urine, body tissues and human milk.

26. Can the virus be transmitted in the body fluids it has been found in other than blood, semen or vaginal secretions?

The concentration of the virus is much less in other body fluids than it is in blood and semen, and it appears the chances that the other body fluids could transmit the virus is very low, if at all, however, that possibility still exists.

27. How would a person know if he or she had been infected with the virus but showed no symptoms and did not have a blood test?

He or she wouldn't know.

28. Could a person who had been infected but showed no symptoms, and didn't know he had the virus transmit it to others, for example a spouse?

Yes.

29. Besides sexual intercourse and intravenous drug use, are there any other ways the virus has been transmitted?

In it's earlier history, the virus was transmitted by people having blood transfusions and hemophiliacs receiving blood products. However, in 1985 a test was developed which detected the antibody in blood. The test is not fool-proof but fortunately, very few pints of blood escape detection.

30. How long does it take for a person to develop antibodies after they are exposed to the virus?

Earlier estimates ranged from six to twelve weeks, however, a recent study in Europe stated that some people did not show antibody production for as long as 13 months.

31. Then that means that a person infected with the virus, with no symptoms and no detectable antibodies could donate blood that is potentially deadly.

That is correct.

32. Other than sexual intercourse, has semen been implicated in the transmission of the virus?

There have been instances where the virus was transmitted by artificial insemination.

33. Can a pregnant woman transmit the virus to her unborn child?

Yes, the virus can be transmitted transplacentally.

34. Is there any other way a mother can transmit the virus to her child?

In at least one instance, human milk from breast feeding a child was shown to transmit the virus.

35. Has the virus ever been transmitted by organ donation?

Yes.

36. Can saliva, urine or tears transmit the virus?

Presently, saliva, urine or tears have not been shown to be body fluids that have transmitted the virus.

37. In other words, a person could not become infected by kissing an infected person.

Kissing has not been shown to transmit the virus.

38. What about saliva on a cigarette or glass shared between two people or from toilet seats?

Studies have indicated that no form of "casual" contact has transmitted the virus, including shaking hands, kissing, eating, or drinking after an infected individual; from food handling or preparation; or from toilet seats.

39. **Could a person catch AIDS by getting into a swimming pool or hot tub after a person with AIDS had been there?**

No. The amount of chlorine in a swimming pool or hot tub, and the heat present would kill the virus; nor can the virus survive in water.

40. **Can insects, such as mosquitos transmit the virus?**

Researchers worldwide have conducted studies and have failed to find any insect capable of transmitting the virus, although some insects do harbor the virus.

41. **Have any medical or laboratory people contracted the virus from their jobs?**

Yes, but only a few. Several have contracted the virus by accidental needle sticks in hospitals, two researchers in laboratories have contracted the virus accidentally, and three health care workers have contracted the virus through mucous membrane exposure in the mouth, nose or eyes, as well as through breaks in the skin.

42. **Have any law enforcement officers or forensic laboratory workers contracted the virus through their occupation?**

There are several anecdotal reports of police officers who have contracted the virus occupationally, however, these cases are currently under investigation by public health authorities and no case has been confirmed to date. No case of forensic laboratory infections have been reported.

43. **But it is possible to contract AIDS by sticking a used hypodermic needle in one's hand, for example, during the search of a drug suspect?**

Yes, it is. Your chances of contracted AIDS by needle stick is about 1 in 100.

44. What can one do if he or she is accidentally stuck with a hypodermic needle from an IV drug user?

Allow the blood to flow from the wound until it stops (unless it is a serious wound) clean with rubbing alcohol if available and wash with soap and water. Then seek medical care.

45. What can I do if I am stuck by a hypodermic needle from a drug user known to have AIDS other than clean the wound and seek medical care?

You may wish to seek counseling.

46. Most likely what would a physician treat me for if I did receive an accidental needle stick?

That depends on the physician. Some might give you a tetanus shot, some might give you gamma globulin or even the vaccine for hepatitis B.

47. What can a physician do if I were exposed to the AIDS virus accidentally?

The only real thing a physician can currently do is screen your blood periodically for HIV antibodies.

48. Will I have to remain celibate after that occurs until I am shown not to have the virus?

That is a personal decision you alone must make, however, most law enforcement agencies provide counseling for you in the event you are accidentally inoculated with blood from a person known to have AIDS.

49. If I had an open sore on my forearm, for example, could the infected blood from a person with AIDS enter my bloodstream by that route?

Yes. Any open wound should be covered prior to going on duty with a clean bandage and changed if it becomes loose or soiled.

50. What precautions should the law enforcement officer use when proceeding to arrest a person known to have AIDS or at high risk of having AIDS such as male homosexuals and IV drug users, especially if violent behavior occurs during the arrest?

No unusual protection need be worn in a non-violent arrest unless the person has visible lesions or is bleeding. To be on the safe side, however, lightweight latex surgical gloves can be kept within easy reach and worn. If violence is anticipated, always wear gloves. Although almost impossible to anticipate, if you know you are going to be involved in a situation where blood could be splashed or otherwise end up in your eyes, mouth or nose, a surgical mask and eye protection should be worn. That includes officers attending autopsies.

51. Suppose a prisoner bites me to the point blood is drawn. What can I do? First, subdue the prisoner. Although the possibility of transmission from the saliva of an infected person is very remote, certain people with AIDS tend to have bleeding sores and gums, therefore possibly allowing the mingling of the blood of the person with AIDS and your blood. These bite wounds should be treated promptly with alcohol, cleansed with soap and water and medical treatment sought.

52. Will the small alcohol sponge packets that are sealed in paper foil be sufficient to disinfect a bite wound?

Yes. These are convenient to carry in a pocket or in the patrol car and usually contain 70% isopropyl alcohol which will inactivate the AIDS virus within one minute. The alcohol, if placed on a wound should not be wiped off, but allowed to air dry.

- 53. Suppose blood from a person with AIDS or a high risk group individual gets in the patrol car, on my clothing, or other equipment such as handcuffs. How can I disinfect them?**

Objects such as metal handcuffs, should be disinfected with a solution of common household liquid bleach diluted to one cup of bleach in a gallon of water or roughly 1:9. This solution should be prepared on a weekly basis since it will lose some of its disinfectant properties after a week. The interior of the patrol car generally should be cleaned with a commercial disinfectant soap and/or spray, since the fumes from the bleach will burn the eyes, skin and mucous membranes and interfere with the officers functions. Clothing may be cleaned with soap and warm or hot water and/or bleach if compatible, or if not, place the garment in a plastic bag with cold water (do not use hot water on blood) and then have the item dry cleaned.

- 54. Suppose I get blood on my shoes, how can I disinfect them prior to getting in the patrol car, the station or going home.**

Depending on the type shoe or boot, use alcohol or bleach solution to clean them. If you are working in an area with a great deal of blood, such as a crime scene involving a homicide, inexpensive, disposable shoe coverings can be worn.

- 55. What can I do with all the contaminated items once I am finished with them, such as gloves, masks, etc.?**

If they are disposable, they should be placed in a plastic bag marked for that purpose and autoclaved (steam sterilized) in the medical examiner's office, incinerated (if appropriate), or covered with bleach solution.

56. How long can the AIDS virus live in dried blood stains, and should precautions be taken when handling dried stains?

Researchers have done experimentation with concentrated samples of the AIDS virus in the dried state and have determined that the virus can survive between three and seven days in dried body fluid stains and at least 15 days in liquid blood kept at room temperature. The Centers for Disease Control determined that over 90% of the AIDS viruses in a stain were killed by drying within 2 hours. But regardless of the state a body fluid stain is in, it should be considered infectious and handled appropriately. Liquid blood samples in particular should be handled with care. That includes the outside of a blood tube even though no blood appears to be present.

57. Won't refrigeration or freezing kill the AIDS virus?

No. Freezing is the preferred method of preserving viruses. Freezing and refrigeration prolong the life of the virus.

58. I have heard that hepatitis B is more dangerous than AIDS in body fluid stains. Is that so?

Hepatitis B is not more dangerous than AIDS but is much easier to contract than AIDS, primarily because it will live longer and is more concentrated in blood and other body fluids.

59. There is a vaccine against hepatitis B but I heard they made it from the blood of high risk groups who also tend to have AIDS. Can you get AIDS from the hepatitis B vaccine?

No. The older vaccine was made from donated blood but was sterilized by three different methods, all three of which would kill the AIDS virus. The newest vaccine is a genetically engineered one made from yeast cells.

60. What precautions should be taken when fingerprinting an individual with AIDS or positive for HIV?

Generally none, unless the person has open sores or lesions that are bleeding or oozing on their hands then you should wear latex gloves.

61. Occasionally police officers are called upon to administer CPR to individuals. How can we safely perform this procedure, especially if the person is bleeding?

There are several commercially made mouth pieces and breathing masks available which should be purchased and kept with the officer for that purpose. However, some are not made for children. Be sure to read the manufacturers instructions.

62. When collecting evidence at a crime scene, what should be done with bloody items from people with AIDS or high-risk groups?

When transporting the items short distances, place bloody items in plastic bags long enough to get them to the station where they can be dried in a controlled environment, then after they are thoroughly dry, place in plastic where your initials or other markings are visible through the plastic. If transmitting to a laboratory, be sure the evidence is labeled on the outside of the package indicating that it contains infectious evidence.

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