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ANSWER

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Prepared and presented as a professional service by the Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow G20 9N8, Scotland

AIDS: GUIDELINES FOR FUNERAL DIRECTORS IN CANADA
Prepared by the Canadian National Advisory Committee on AIDS

(Based on and reproduced, with acknowlegement, from *Canada Diseases Weekly Report*, (1986) 12, no 45, 203-208)

These recommendations have been developed to afford guidance to funeral directors in Canada who provide mortuary care to persons who have died of AIDS. These guidelines, based on current knowledge of modes of transmission, indicate infection control procedures to protect and ensure the occupational safety of the profession during arterial embalming and the preparation and restoration processes.

Introduction

Acquired immunodeficiency syndrome (AIDS) is caused by a virus called the human immunodeficiency virus (HIV). This virus attacks cells which are a component of the immune system thereby affecting the body's capability to fight infection.

Persons with a diagnosis of AIDS are those with the more severe manifestations of infection with HIV. These cases meet strict criteria of definition and are those reported to national surveillance programmes. The infection in these cases is accompanied by one or more rare infections and/or cancers.

Some persons infected with the virus remain healthy and asymptomatic; others develop AIDS-related complex (ARC) which is manifest by such non-specific symptoms as fever, night sweats, weight loss, diarrhoea, tiredness and persistent lymphadenopathy. However, the spectrum of conditions associated with HIV infection remains unclear.

A diagnosis of HIV infection is usually based on the results of a laboratory test which determines the presence of antibodies in blood.

The virus is transmitted through sexual contact and transfusion or injection of infected blood and blood-products; the virus is also transmitted from an infected mother to her infant at or around the time of birth. There is no epidemiological evidence to indicate that the virus is transmitted by casual contact at home or in the workplace, by ingestion of contaminated food or water or by airborne or faecal-oral spread. The virus has been isolated from blood, semen, saliva, tears, breast milk, urine and vaginal and cervical secretions but transmission by saliva, tears and urine has not been documented. The virus probably exists in all body fluids. Therefore, infection may be acquired through a healing or open wound or ruptured mucous membrane coming into contact with contaminated blood or body fluid.

HIV infection has been seen most frequently in homosexual/bisexual men, intravenous drug abusers, persons transfused with contaminted blood or blood products, persons from endemic areas, heterosexual contacts of persons with HIV infection, and children born to infected mothers.

Occupational Exposure

The populations at greatest risk and the modes of transmission of HIV infection are similar to those of hepatitis B. However, the risk of acquiring HIV infection by occupational exposure is estimated at less than 1% which is far less than the 30% estimated risk of acquiring hepatitis B virus infection. The difference in frequency of infection is likely due to the number of infectious virus particles in the blood.

Occupational exposure to contaminated blood and body fluids is most likely to result from an accidental prick with a needle or a cut from a scalpel blade, other sharp instrument or a ragged bone end.

Several studies have been conducted in the United States to determine the prevalence of HIV antibodies in health-care workers who have sustained occupational exposure to contaminated blood or body fluids. Approximately, 1758 health-care workers have been followed and 26 (1.5%) were found to have antibodies to the virus on initial testing. All but three belonged to one of the groups at increased risk of AIDS. For two of these persons, no other risk factors could be found implying occupationally-acquired HIV infection. The third seropositive worker was tested anonymously and no information on risk factors was available. One other incidence has been reported; a nurse in the United Kingdom became transiently ill following an infected needlestick injury which resulted in an injection of a small amount of blood. She had evidence of antibodies to the virus 49 days after the accident. An occupational exposure survey has been ongoing in Canada for over six months. To this time, no seroconversions have been detected. This evidence indicates that the risk of transmission of HIV from an infected patient to a health-care worker is extremely low.

The Centers for Disease Control (CDC), US Public Health Service have recently published a case report of a mother who appears to have been infected with HIV while providing home nursing care to her infant son. The child, born with a congenital intestinal defect, acquired the infection from contaminated blood transfused before serological testing of blood donors became available. The mother was subsequently found to be seropositive when she was routinely screened as a potential blood donor. The mother apparently never wore gloves and on several occasions her hands became contaminated with blood and body fluids while performing nursing care such as emptying and changing ostomy bags daily, changing diapers and surgical dressings, inserting rectal tubes, and drawing blood through an indwelling catheter. She did not always wash her hands after contamination with blood or secretions.

One other case of HIV infection by a non-parenteral route may have occurred in an English woman who provided home nursing care to a patient who was diagnosed with AIDS at postmortem. The woman had extensive contact with the patient's body fluids while she suffered from an exacerbation of chronic eczema. (CDSNR Editorial Note - see also Update - USA in issue No. 12 of ANSWER (CDS 87/25)).

Recommendations

Part A: Transfer of Deceased from Place of Death

1. Persons who have open or healing wounds, or skin infections should not be charged with transfer of the body.

2. Double gloves, and disposable pants and gowns should be worn. Mask, cap and goggles should be worn in situations where blood/body fluids may splatter.

3. The body of the deceased should be clearly identified as "HIV-infected"; identification should remain with the body.

4. The body should be wrapped in a shroud and placed in an impervious body bag for transport. The body bag should not be opened in transit.

5. If death had occurred at home, the body should be checked for intravenous (IV) lines, catheters, colostomy bags, etc. Extreme care should be exercised to avoid accidental cuts and splashes when shrouding and encasing the body.

6. Once the body has been placed in the body bag, protective clothing may be removed and placed in a double plastic bag for incineration.

7. If spillage of blood or body fluids has occurred and after the body has been removed from the service vehicle, the stretcher and the interior of the vehicle should be disinfected with 1:10 dilution of 5.25% sodium hypochlorite solution (a final concentration of 0.5%). (CDSWR Editorial Note - see also ANSWER issue No. 17 (CDS 87/30) for recent UK advice).

Part B: Preparation for Embalming

1. Persons who have open or healing wounds, or a skin infection should not embalm or assist in the embalming and restoration processes. Such persons, however, should not be restricted unduly in other aspects of mortuary care.

2. Objects and equipment not required for embalming should be removed, if possible, from the preparation room. Articles which cannot be removed should be wrapped in plastic or placed in a storage cabinet.

3. Instruments should be set out to be readily accessible.

4. Individual items such as eye caps, trocar buttons, etc., should be removed from their bulk packages and placed as close to the work area as possible.

5. A sufficient number of puncture-resistant containers should be readily available for disposal of sharp instruments.

6. Garbage bins should be lined with double plastic bags for disposal of waste material and located within the work area.

7. The amount of cosmetics required should be placed on a paper towel or piece of wax paper and set aside for the restoration process.

8. A pail or washbasin of a 1:10 dilution of 5.25% sodium hypochlorite (household bleach) in water should be freshly prepared and placed as close to the work area as possible. This solution should be used to disinfect all potentially contaminated objects and surfaces during and after preparation. Any leftover solution should be discarded and not stored overnight. If a sodium hypochlorite solution other than household bleach is used, the ratio of water should be adjusted to yield a final concentration of 0.5% sodium hypochlorite. (see also ANSWER A17 (CDS 87/30)).

9. A porcelain, enamelware or stainless steel bucket should be placed immediately beneath the drainage hose of the embalming table. One gallon of undiluted sodium hypochlorite solution (a concentration of 5.25%) should be added to the container before starting the embalming process.

10. All persons involved in the embalming process should be assigned specific tasks before proceeding. Suturing should be done by one person and care should be taken in handling the suture cord and needle.

11. Arrangements should be made to answer the phone and the door. Another person should be "on call" to provide assistance if required.

12. The preparation room should be properly ventilated to avoid formation of chloromethyl ether which results from a combination of formaldehyde and sodium hypochlorite.

13. The casket should be prepared to receive the body immediately upon completion of the restoration process. It should be located in close proximity to the preparation room. Head, arm and foot rests should be encased in plastic and sealed tightly.

Part C: Embalming

1. Extreme care should be taken to prevent accidental cuts or lacerations by possibly contaminated instruments and/or bone ends and accidental splash by contaminated blood/body fluids. All body fluids and tissue should be considered potentially contaminated.

2. Work should be confined to the smallest possible area; personnel should not walk unnecessarily about the room.

3. Gloves, protective eyewear, mask, cap and gown or disposable jumpsuit with hood, waterproof apron and waterproof shoe coverings should be worn by all persons.

4. Two pairs of disposable gloves , intact and unpunctured, should be worn. If the gloves leak, or become torn or punctured (without laceration or abrasion to the hand), they should be removed, hands washed thoroughly and new gloves used.

5. When transferring the body from the stretcher to the embalming table, care should be taken to exert minimal pressure on the abdomen and thorax to prevent expulsion of waste material from nasal, oral and genito-urinary orifices.

6. The body should be unwrapped slowly and the body bag carefully lowered into the disposal bin to avoid splattering of blood/body fluid.

7. The body should be disinfected with the sodium hypochlorite solution, then washed with a germicidal soap and rinsed thoroughly. Water pressure should be kept low.

8. Open sores or lesions or any area that could ooze body fluid should be treated with surface pack or embalming gel and covered. All orifices should be packed with cotton saturated with sodium hypochlorite solution.

9. Disposable shaving equipment should be used.

10. Needles, scalpel blades and other sharp instruments should be placed in puncture-resistant containers located where they are readily accessible.

11. If a needle injector gun is used, the face should be covered with a towel soaked in sodium hypochlorite solution.

12. In the case of an autopsied body, rib ends should be covered with a towel and the viscera bag should be removed by wrapping it in a second plastic bag. If the viscera are to remain in the bag and not dry-packed, excess fluid should be removed from the bag by twisting the top and inverting it over the draining bucket.

13. If purging of nasal and oral orifices occurs, the packing should be removed and the orifices swabbed with an approved bactericide or sodium hypochlorite solution. The orifices should be repacked and the face covered with a cloth saturated with sodium hypochlorite.

14. An electric aspirator should be used to aspirate body fluids. The draining port should be covered to prevent splash back.

15. Blood, body fluids and contents removed by aspiration should be treated with undiluted sodium hypochlorite solution (a concentration of 5.25%) for at least 30 minutes before disposal directly into the sanitary sewer (see Part B, No. 9).

16. Any blood/body fluid spills should be saturated immediately with sodium hypochlorite solution and wiped clean with disposable absorbent material such as paper towels.

17. Any person who suffers a cut or needlestick injury should disengage himself immediately from the embalming process. The wound should be encouraged to bleed freely for a few minutes, washed with soap and water and treated with a fresh solution of sodium hypochlorite. A bandage may then be applied.

18. Eyes or skin splashed with blood or body fluids should be washed immediately in running water.

19. Any blood or body fluids which accidentally get in the mouth should be spit out and the mouth should be rinsed with water.

20. Any personnel who sustain a needlestick or mucous membrane exposure to blood or other body fluids should be evaluated clinically and serologically for evidence of HIV infection as soon as possible after exposure. If seronegative on initial testing, he/she should be retested for evidence of seroconversion every six weeks during the first six months and then at 9 and 12 months after exposure. He/she should be encouraged to enroll in the Canadian National Surveillance Programme maintainted by the Laboratory Centre for Disease Control in Ottawa. (CDSWR Editorial Note: In Scotland, the CD(S) Unit would welcome information on any such cases which arise - see ANSWER letterhead for address to contact).

21. After embalming has been completed, the body should be washed in sodium hypochlorite solution, rinsed and towel dried. Disposable absorbent material such as paper or prep towels should be used to dry the body.

22. Incisions, sores and lesions should be sealed with incision glue.

23. The body should be wrapped in plastic or clothes in plastic overalls prior to dressing.

24. Rubber or wooden-handled instruments should not be used for applying cosmetics. However, if such instruments are used they should be discarded after use. Any unused cosmetics should be discarded.

25. Protective clothing should be worn during dressing and cosmetic procedures.

26. The two persons who casket the body should each wear protective clothing regardless of the involvement of the assisting person.

Part D: Clean-up and Disposal

1. All instruments and the embalming table should be considered contaminated and potentially infectious. All working surfaces and instruments for embalming and restoration should be disinfected with sodium hypochlorite solution. The embalming table, floors, walls, and embalming machine should be then washed in hot soapy water. Instruments should be autoclaved if possible.

2. All disposable material (protective clothing, towels, cloths, drainage hoses) should be placed in tightly-secured double plastic bags and tagged for incineration. They should not be disposed of with regular garbage. Special arrangements for incineration should be made either through a local hospital or a private disposal company.

3. Personnel should wash their hands with an appropriate germicide following completion of the restoration procedure, removal of protective clothing and before leaving the preparation room.

N.B. These recommendations have been endorsed by the Funeral Services Association of Canada but are reproduced only "for information" in the United Kingdom context.

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ANSWER

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Prepared and presented as a professional service by the Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow G20 9NB, Scotland

ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)
INTERIM REPORT OF THE MEETING OF THE WHO COLLABORATING CENTRES ON AIDS

(Based on, and reproduced with acknowledgement from, *Weekly Epidemiological Record* of the World Health Organisation, Geneva (1987) 62, No. 30, 221-3)

The third meeting of the WHO Collaborating Centres on AIDS was held in Washington, DC, on 6 June in conjunction with the Third International Conference on AIDS. The meeting was called to inform the Collaborating Centres of the current status of the WHO Special Programme on AIDS and to discuss their role in the Programme.

Technical issues of international concern were discussed, including questions regarding HIV infection and the possible revision of the CDC/WHO AIDS case definition. A consensus was reached regarding a) transmission of HIV; b) HIV infection and health workers; and c) the present status and future developments in laboratory testing. The full text of these consensus statements is given below. Further evaluations of the CDC/WHO AIDS case definition and the case definition based on clinical criteria currently in use are required before a decision can be taken regarding a revision of the case definitions to be recommended by WHO.

1. Transmission of HIV

Epidemiological studies in Europe, the Americas, Africa and Australia repeatedly have documented only three modes of HIV transmission:

1. sexual intercourse (heterosexual or homosexual);
2. contact with blood, blood products, or donated organs and semen; the vast majority of contacts with blood involve transfusion of unscreened blood or the use of unsterilised syringes and needles by IV drug abusers or in other settings;
3. mother to child - mostly before, and perhaps during or shortly after birth (perinatal transmission).

There is no evidence to suggest that HIV can be transmitted by the respiratory or enteric routes or by casual person-to-person contact in any setting, including household, social, work, school or prison settings.

Epidemiological and laboratory studies have established that of the "body fluids", transmission seems limited to blood, semen and vaginal/cervical secretions. Kissing has not been documented to pose a risk of HIV transmission. While unproven, some theoretical risk from vigorous "wet" kissing (deep kissing or tongue kissing) may exist.

There is no evidence to suggest that HIV transmission involves insects, food, water, toilets, swimming pools, sweat, tears, shared eating and drinking utensils or other items such as second-hand clothing or telephones.

2. HIV infection and health workers

Reports of HIV infection of a small number of health workers have emphasised the need to adhere to existing guidelines for the prevention of blood-borne infections. Such existing guidelines refer to situations in which there is a possibility of exposure to blood or any body fluid regardless of their source.

Available information indicates that health workers are normally at very low occupational risk of HIV infection. This very low risk can be further minimised if existing guidelines for avoiding any blood-borne infection are rigorously implemented and strictly enforces.

Routine HIV screening of patients to protect health workers should not be implemented without careful and detailed consideration of all of the HIV screening criteria developed by the World Health Organisation.

3. Present status and future developments in laboratory testing for HIV

1. Introduction

The following types of tests are available or under development:

- measurement of antibodies against viral antigens;
- measurement of neutralising antibodies;
- detection of viral antigens;
- detection of viral RNA or cDNA;
- virus isolation and characterisation of virus isolates from various geographical regions.

2. Measurement of antibodies against viral antigens (anti-HIV)

Determination of anti-HIV should consist of a primary screening test to be followed by confirmation with a second supplemental assay based on a different test principle. Current antigen-antibody binding assays have a high degree of specificity and sensitivity. Second generation tests using recombinant antigens or future use of synthetic peptides promise to improve sensitivity and parcticularly specificity. Generally these test systems measure antibodies of the IgG class, but test systems measuring specific IgA and IgM antibodies are needed also and should be developed further.

Although more specific ELISA or other antigen-binding assays may in the future make supplemental (confirmatory) tests unnecessary, reactivities indicating presence of anti-HIV obtained with any of the currently available screening tests should be confirmed by another test method. Western-blots (immunoblots) are the most widely used and reliable tests, but radioimmunoprecipitation (RIPA) or immunofluorescence may be used. The latter should, however, only be used by laboratories with extensive experience with this test system.

Test systems should be developed which detect antibodies to HIV-1 and HIV-2 either together in one test or individually. The antigenic specificities of HIV isolates from different parts of the world should be continuously characterised to assure that the diagnostic method covers the antigens of the viruses prevalent in a given region. Simplified, less expensive tests should be developed further. These test systems should have at least the same sensitivity as currently used test systems, but a slight decrease in specificity might be acceptable.

3. Measurement of neutralising antibodies

Neutralisation tests are used for research purposes and for evaluation of antibody responses following vaccination. The biological relevance of the antibodies measured by the various test systems needs further study and all test systems must be standardised, so that results obtained in different laboratories can be compared.

4. Detection of viral antigens

The tests available today need further clinical and technical evaluation. They are not recommended for routine diagnosis or screening of blood donors. Increase of HIV p24 antigen in serum has been associated with progression of disease but this does not occur in all cases. Decrease of HIV p24 in serum has been taken as an indication of a decrease of HIV replication and is used for evaluation of the effectiveness of antiviral therapy. These preliminary observations require additional studies. Absence of detectable antigen does not guarantee lack of infectiousness of a given serum, semen, body fluid or organ.

5. Detection of viral RNA or cDNA

Methods for detection of viral RNA or cDNA in routine diagnostic laboratories are under development and may offer the most sensitive test systems for direct demonstration of HIV in fluids or tissues.

6. Virus isolation and characterisation of virus isolates from various geographical regions

Techniques are still cumbersome and time-consuming but have been considerably improved, so that an almost 100% isolation rate can be achieved if multiple blood samples are examined. An optimised standard protocol should be worked out and made available to laboratories using this technique for basic or clinical studies. Virus isolates should be characterised to monitor the emergence of variant or new antigenic types.

7. Standardisation and reference reagents

All of the above-mentioned test systems need further standardisation. International antibody units should be established and appropriate reference reagents (both antigens and antibodies) should be prepared. The WHO Collaborating Centres on AIDS should play an active role in the preparation and evaluation of these reference reagents and WHO standards should eventually be established. WHO should also establish a repository of HIV-1 and HIV-2 as well as SIV isolates. In addition it would be desirable to prepare a list of available clones of human and simian retroviruses.

8. HTLV-1 and HTLV-2

The prevalence of HTLV-1 and HTLV-2 in various population groups should be monitored, but there seems to be no current need for general screening of blood or organ donors for HTLV-1 and HTLV-2.