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Communicable Diseases Intelligence

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Contents:

VIRUS REPORTING SCHEME: A total of 1,502 reports were processed for this period.

Ten cases of Q fever were reported, 1 from New South Wales, 2 from Victoria and 7 from Queensland. No occupational exposure data was available for the reported cases. However none of the ten patients was involved in the Q fever vaccine field trial conducted in South Australia.

Serological evidence of dengue was detected in a 50 year old couple when the husband presented with acute fever. Clinical dengue has been previously diagnosed in this couple in Sri Lanka.

Herpes simplex virus type I was isolated:
- from the skin lesions of a female, age unknown, with muscular dystrophy.
- from the saliva and urine of a 23 year old female with recurrent pharyngitis and lymphadenopathy.

Cytomegalovirus specific IgM antibody was detected in the serum of a 32 year old female who presented with a urinary tract infection complicated by pneumonia. The patient had a successful renal transplant three years prior to this episode, and it was not known whether her CMV infection had been sexually acquired.

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Rubella specific IgM was detected in the serum of a 13 year old female who presented with lymphadenopathy (in particular swelling of the occipital glands), three weeks following rubella vaccination.

Influenza B virus was isolated from the post-mortem tissues derived from the lungs of a 2 year old male who died of a severe lower respiratory tract infection.

Echovirus type 3 was isolated from the nasal aspirate of a 2 year old, immunodeficient male who died following a prolonged fever.

RISK OF HIV TRANSMISSION TO DENTAL PROFESSIONALS

Introduction

Although occupational exposure of dental care professionals predisposes them to blood- and saliva-borne infections, as indicated by a relatively high prevalence of antibodies to the hepatitis B virus (HBV)[1], only one dental professional has been reported in the New York Times, to have acquired HIV infection occupationally[2]. This case, revealed by a survey of 1231 dentists and hygienists, involved a New York dentist who rarely wore gloves, and who reported multiple episodes of instrument trauma to the hands.

In the broader context of health-care workers exposed to materials and patients infected with HIV, currently only eleven cases of HIV infection, have been attributed to occupational exposures:

- 7 female cases of occupationally acquired HIV infection have been documented; 4 in the United States[3,4], 1 in the United Kingdom[5], 1 in France[6] and 1 in Martinique[7]. All were exposed to the blood of patients with AIDS and none were found to have alternative risk factors for AIDS. None has yet developed AIDS.

- 4 other seropositve health-care workers, 2 males and one female in the United States[8,9] and one female Danish surgeon who had worked in Kinshasha (Zaire),[10] might have acquired the infection occupationally, although baseline sera were not available for any of them.

None of these health-care workers were dental professionals.

A. Risk of HIV transmission from HIV infected patients to dental professionals.

The risk of HIV transmission to dental care professionals exposed to patients infected with HIV cannot be reliably predicted; however such risk is estimated to be very low according to the following two major studies.

1. A published study[11] in Sacramento (California) metropolitan area surveyed 89 dentists, 36 dental

hygienists and 130 dental assistants. Despite a relatively large number of calculated and 110 documented exposures to patients who were probably infected with HIV at the time of the exposure, none of the 255 dental care professionals showed evidence of HIV infection by Western blot or immunofluorescent assay (IFA) techniques.

The cohort studied appears to be at relatively low risk for infection with HIV and several explanations may account for the findings:

- the sample size may be too small to detect significant risk; the actual risk based on the sample size could be as low as 0% or as high as 2.7% per exposure (95% confidence limits).

- the probability of an accidental puncture wound occurring with any individual patient is relatively small; therefore dental professionals probably rarely have blood-to-blood contact in the form of accidental puncture wounds while providing care to HIV-infected patients.

- the probability of transmission of HIV, even following needlestick exposure, appears to be low. It has been estimated that the risk of HIV transmission to health-care workers following a parenteral exposure to infected blood is 0.72% (upper bound of the 95% confidence interval is 2.24%)[12]. Hepatitis B and cryptococcosis have been transmitted as a result of needlesticks sustained by health care workers caring for AIDS patients, without concomitant transmission of the HIV[13,14]. It appears that HIV is rarely transmitted by the type of accidental exposures that occur between infected patients and health care professionals because of the small amount of blood transferred by needlestick and the low number of viral particles estimated to be present in the peripheral blood of HIV-infected persons (approximately 25,000 per ml serum)[15].

- there may be degrees of HIV viraemia, or infectivity of individual strains of the virus. Numbers and infectivity of virus could vary according to the duration of infection, individual donor-host factors and properties of the virus.

- a recipient's susceptibility to infection after inoculation with the virus may vary.

2. A larger study, conducted in areas of higher prevalence of HIV infection such as San Francisco and New York city to determine the prevalence of serum antibodies to HIV in dental professionals, involved 1009 subjects (807 males and 202 females) which included 919 (91%) dentists and 90 (9%) hygienists and excluded homosexual men and parental drug abusers[16].

Subjects completed questionnaires on demographics, type, duration and location of practice, AIDS high risk behavior, precautions used in treating patients, and types of patients treated. HIV antibodies were assayed by ELISA, with Western blot confirmation of positives.

The following results were reported among respondents to questionnaires:

. major types of dental practices: - restorative (52%)
- oral surgery (5%)

. geographical locations of dental practices:
- 324 (32%) practiced in New York city,
- 43 (4%) practiced in Miami, and
- 20 (2%) practiced in Houston, Los Angles and San Fransciso.

. types of patients treated:
- 116 of 988 respondents (12%) had treated known AIDS patients (medium 2, range 1-78), and
- 708 of 983 respondents (72%) had treated members of AIDS risk groups.

. precautions used in treating patients:

(a) hand protection, at the time of screening:
- 313 of 977 respondents (32%) used gloves at all times,
- 579 respondents (59%) used gloves for selected patients or procedures, and
- 85 respondents (9%) never used gloves.

(b) eye protection:
- 581 of 899 respondents (67%) used eye protection always,
- 238 respondents (27%) used eye protection sometimes, and
- 80 respondents (9%) never used eye protection.

(c) general precautions:
- 531 of 936 respondents (57%) had increased use since 1983, with 440 of those 531 (83%) becoming more cautious due to concern about AIDS.
- 895 of 987 respondents (91%) reported accidental parenteral puncture wounds by instruments; median number per subject over the preceding 5 years was 10 (range 1- 1000)
- 568 of 1002 respondents (57%) had not received hepatitis B vaccine; of these, 122 of 546 tested (22%) had Antibodies to HBsAg.

None of the 1009 subjects had antibodies to HIV confirmed by Western blot. Dental professionals appear to be at very low risk of occupational acquisition of HIV infection (95% confidence interval of 0 to 0.3%), even though recommended precautions are not always used and accidental parenteral puncture wounds are frequent.

2. Risk of HIV transmission from HIV infected dental professionals to patients.

Current studies only detect transmission of HIV from patient carriers to dental professionals, but there is also the theoretical possibility of transmission from a dental or medical professional carrier to his or her patients, analogous to transmission of hepatitis B from a HBeAg carrier professional to patients[17].

This possibility appears to be exceedingly unlikely because of the low numbers of HIV circulating in blood comparison to the enormous numbers of particles with HBeAg-positive HBV viraemia (N = 10^8 infectious particles per ml of serum)[18].

Health professionals, who are known HIV carriers or who are members of a high-risk group for infection with the virus and who perform procedures on patients in which transfer of the operator's blood to the patient may occur, should take extraordinary precautions to protect their patients until more is known about transmissibility of the virus.

There is also a theoretical possibility of transfer of the virus from one infected patient to another patient via the hands or contaminated gloves of professionals or via contaminated instruments such as parts of a drilling apparatus that have not been disinfected adequately between patients. Because this has not been reported to occur with the hepatitis B virus it is unlikely that HIV will be transmitted in this way.

Conclusion

In summary, both studies indicate that:

- transmission of HIV does not readily occur from infected patients to dental care professionals who carry out procedures on these patients;
- although professional contact between dental care professionals and those infected with HIV is frequent, HIV transmission does not readily occur in this cohort.

Despite the negative findings in both studies, it is recommended that dental professionals:

- take note of the risk of HIV transmission to health care professionals which is currently estimated to be 1.6% per parenteral or mucous membrane exposure (95% confidence upper limit)[12].
- follow the published guidelines from the Centers for Disease Control to reduce exposure to all blood-and-saliva-borne infections[19,20].

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VIRAL EPIDEMIC - VIETNAM

Vietnam is currently experiencing a major epidemic in which tens of thousands of people in 22 provinces are reported to be affected by an outbreak of haemorrhagic fever. A large but unspecified number have already died from the disease(1).

The aetiological agent of this outbreak is yet to be determined, however, in Southeast Asia, haemorrhagic fever is most likely caused by one of the two viruses:

- Dengue fever is caused by a group B arbovirus, a togavirus (flavivirus) which is transmitted by Aedes mosquitoes (A.aegyptii in rural and domestic setting, and A.albopictus in bush or jungle environment). A more severe syndrome - dengue haemorrhagic fever - may occur in individuals with passively acquired maternal antibody or endogenously produced heterologous dengue antibody. Although initial symptoms simulate normal dengue, the patient's condition abruptly worsens and is associated with hypoproteinemia, thrombocytopenia, prolonged bleeding time, and elevated prothrombin time. Dengue shock syndrome, characterised by shock and haemoconcentration, may supervene. These altered manifestations of dengue have been observed, often in epidemic form, in the Phillippines, Southeast Asia, and India - regions in which dengue serotypes are regularly present; the mortality rate is 5-10%.
  In studies of the dengue diseases in Southeast Asia, haemorrhagic fever, with or without shock, has been found to occur more frequently when dengue type 2 is the secondary infecting virus and the patient is a female age 3 years or older. Shock is probably a form of hypersensitivity reaction. It is postulated that virus-antibody complexes are formed within a few days of the second dengue infection which activate the complement system and lead to the disseminated intravascular coagulation seen in the haemorrhagic fever syndrome.

- Hantaan virus is transmitted to humans via contact with the excreta (saliva, urine and faeces) of small rodents (Apodemus species of field mice and Rattus species of urban rats). The incubation period of the diseases is thought to be 2-3 weeks and illness then begins abruptly with fever, chills, prostation, headache, backache, and anorexia. Petechiae appear early, and hypotension, proteinuria and oliguria follow. Shock, haemorrhages, and acute renal failure may result, leading to death in about 5% of cases. In patients who recover, diuresis resumes on about the tenth day of illness and is followed by a fairly rapid recovery.

The global distribution of Hantaan virus has been described with Southeast Asian countries such as China, the Republic of Korea and Japan reporting serious outbreaks and epidemics in the early eighties.

As no effective drug treatment is available for either illness, only supportive and symptomatic treatment is indicated.

In view of recent press reports that Vietnam has, since the beginning of this year, experienced serious problems of rat infestations, it is likely that the high fatality rate of this current epidemic is most likely due to Hantaan virus. However, the possibility of Dengue fever outbreaks cannot be ruled out.

The World Health Organisation (WHO) has listed Vietnam as infected by:

- plague in the provinces of Gia-Lai-Cong Tum, Lam-Dong and Phu Khanh, and
- cholera in the provinces of Binh Tri Thien, Nghia Binh and Phu Khanh.

Australian officials returning from a recent visit to Vietnam have also notified the CDI of serious hepatitis A outbreaks in Hanoi and Ho Chi Minh City.

Ongoing concern about the possible importation of Hantaan virus into Australia has been further emphasised by these recent reports of rat infestations, plague and probable Hantaan virus outbreaks in Vietnam. Since regular shipping movements between the two countries resulted in at least one ship from Vietnam docking Australian ports every month, State/Territory Health Departments, Shipping and Wharf/Dockyard Authorities, the Quarantine services and the Department of Primary Industry will be alerted of the possible introduction of Hantaan virus which could adversely affect the health of Australians.

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YELLOW FEVER - FRENCH GUIANA

WHO[1] has notified that :

- A yellow fever vaccination certificate is required for French Guiana from travellers over 1 year of age coming from all countries.

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RECOMMENDATIONS FOR PREVENTION OF HIV TRANSMISSION IN HEALTH - CARE SETTINGS

(Extracted from MMWR Vol 36/No.2S, 21 August 1987)

Introduction

Human immunodeficiency virus (HIV), the virus that causes acquired immunodeficiency syndrome (AIDS), is transmitted through sexual contact and exposure to infected blood or blood components and perinatally from mother to neonate. HIV has been isolated from blood, semen, vaginal secretions, saliva, tears, breast milk, cerebrospinal fluid, amniotic fluid, and urine and is likely to be isolated from other body fluids, secretions, and excretions. However, epidemiological evidence has implicated only blood, semen, vaginal secretions, and possibly breast milk in transmission.

The increasing prevalence of HIV increases the risk that health-care workers will be exposed to blood from patients infected with HIV, especially when blood and body-fluid precautions are not followed for all patients. Thus, this document exphasises the need for health-care workers to consider all patients as potentially infected with HIV and/or other blood-borne pathogens and to adhere rigorously to infection-control precautions for minimising the risk of exposure to blood and body fluids of all patients.

The recommendations contained in this document consolidate and update the Centers for Disease Control (CDC) recommendations published earlier for preventing HIV transmission in health-care settings:

- precautions for clinical and laboratory staffs[1] and precautions for health-care workers and allied professionals[2];
- recommendations for preventing HIV transmission in the workplace[3] and during invasive procedures[4];
- recommendations for preventing possible transmission of HIV from tears[5]; and
- recommendations for providing dialysis treatment for HIV-infected patients[6].

These recommendations also update parts of the "Guideline for Isolation Precautions in Hospitals"[7] and re-emphasise some of the recommendations contained in "Infection Control Practices for Dentistry"[8]. The recommendations contained in this document have been developed for use in health-care settings and emphasise the need to treat blood and other body fluids from all patients as potentially infective. These same prudent precautions also should be taken in other settings in which persons may be exposed to blood or other body fluids.

DEFINITION OF HEALTH-CARE WORKERS

Health-care workers are defined as persons, including students and trainees, whose activities involve contact with patients or with blood or other body fluids from patients in a health-care setting.

HEALTH-CARE WORKERS WITH AIDS

As of July 10, 1987, a total of 1,875 (5.8%) of 32,395 adults with AIDS, who had been reported to the CDC national surveillance system and for whom occupational information was available, reported being employed in a health-care or clinical laboratory setting. In comparison, 6.8 million persons - representing 5.6% of the U.S. labor force - were employed in health services. Of the health-care workers with AIDS, 95% have been reported to exhibit high - risk behavior; for the remaining 5%, the means of HIV acquisition was undetermined. Health-care workers with AIDS were significantly more likely than other workers to have an undetermined risk (5% versus 3%, respectively). For both health-care workers and non-health-care workers with AIDS, the proportion with an undetermined risk has increased since 1982.

AIDS patients initially reported as not belonging to recognised risk groups are investigated by state and local health departments to determine whether possible risk factors exist. Of all health-care workers with AIDS reported to CDC who were initially characterised as not having an identified risk and for whom follow-up information was available, 66% have been reclassified because risk factors were identified or because the patient was found not to meet the surveillance case definition for AIDS. Of the 87 health-care workers currently categorised as having no identifiable risk, information is incomplete on 16 (18%) because of death or refusal to be interviewed; 38 (44%) are still being investigated. The remaining 33 (38%) health-care workers were interviewed or had other follow-up information available. The occupations of these 33 were as follows: five physicians (15%), three of whom were surgeons; one dentist (3%); three nurses (9%); nine nursing assistants (27%); seven housekeeping or maintenance workers (21%); three clinical laboratory technicians (9%); one therapist (3%); and four others who did not have contact with patients (12%). Although 15 of these 33 health-care workers reported parenteral and/or other non-needlestick exposure to blood or body fluids from patients in the 10 years preceding their diagnosis of AIDS, none of these exposures involved a patient with AIDS or known HIV infection.

RISK OF HEALTH-CARE WORKERS OF ACQUIRING HIV IN HEALTH-CARE SETTINGS

Health-care workers with documented percutaneous or mucous-membrane exposure to blood or body fluids of HIV-infected patients have been prospectively evaluated to determine the risk of infection after such exposures. As of 30 June 1987, 883 health-care workers have been tested for antibody to HIV in an ongoing surveillance project conducted by CDC[9]. Of these, 708 (80%) had percutaneous exposures to blood, and 175 (20%) had a mucous membrane or an open wound contaminated by blood or body fluid. Of 396 health-care workers, each of whom had only a convalescent-phase serum sample obtained and tested 90 days post-exposure, one -for whom heterosexual transmission could not be ruled out- was seropositive for HIV antibody. For 425 additional health-care

workers, both acute- and convalescent-phase serum samples were obtained and tested; none of 74 health-care workers with nonpercutaneous exposures seroconverted, and three (0.9%) of 351 with percutaneous exposures seroconverted. None of these three health-care workers had other documented risk factors for infection.

Two other prospective studies to assess the risk of nosocomial acquisition of HIV infection for health-care workers are ongoing in the United States. As of April 30, 1987, 332 health-care workers with a total of 453 needlestick or mucous-membrane exposures to the blood or other body fluids of HIV-infected patients were tested for HIV antibody at the National Institutes of Health[10]. These exposed workers included 103 with needlestick injuries and 229 with mucous-membrane exposures; none had seroconverted. A similar study at the University of California of 129 health-care workers with documented needlestick injuries or mucous-membrane exposures to blood or other body fluids from patients with HIV infection has not identified any seroconversions[11]. Results of a prospective study in the United Kingdom identified no evidence of transmission among 150 health-care workers with parenteral or mucous-membrane exposures to blood or other body fluids, secretions, or excretion from patients with HIV infection[12].

In addition to health-care workers enrolled in prospective studies, eight persons who provided care to infected patients and denied other risk factors have been reported to have acquired HIV infection. Three of these health-care workers had needlestick exposures to blood from infected patients[13-15]. Two were persons who provided nursing care to infected persons; although neither sustained a needlestick, both had extensive contact with blood or other body fluids, and neither observed recommended barrier precautions[16,17]. The other three were health-care workers with non-needlestick exposures to blood from infected patients[18]. Although the exact route of transmission for these last three infections is not known, all three persons had direct contact of their skin with blood from infected patients, all had skin lesions that may have been contaminated by blood, and one also had a mucous-membrane exposure.

A total of 1,231 dentists and hygienists, many of whom practiced in areas with many AIDS cases, participated in a study to determine the prevalence of antibody to HIV; one dentist (0.1%) had HIV antibody. Although no exposure to a known HIV-infected could be documented, epidemiologic investigation did not identify any other risk factor for infection. The infected dentist, who also had a history of sustaining needlestick injuries and trauma to his hands, did not routinely wear gloves when providing dental care[19].

PRECAUTIONS TO PREVENT TRANSMISSION OF HIV

Universal Precautions

Since medical history and examination cannot reliably identify all patients infected with HIV or other blood-borne pathogens, blood and body-fluid precautions should be consistently used

for all patients. This approach, previously recommended by CDC [3,4], and referred to as "universal blood and body fluid precautions" or "universal precautions," should be used in the care of all patients, especially including those in emergency-care settings in which the risk of blood exposure is increased and the infection status of the patients is usually unknown[20].

1. All health-care workers should routinely use appropriate barrier precautions to prevent skin and mucous-membrane exposure when contact with blood or other body fluids of any patient is anticipated. Gloves should be worn for touching blood and body fluids, mucous membranes, or non-intact skin of all patients, for handling items or surfaces soiled with blood or body fluids, and for performing venipuncture and other vascular access procedures. Gloves should be changed after contact with each patient. Masks and protective eyewear or face shields should be worn during procedures that are likely to generate droplets of blood or other body fluids to prevent exposure of mucous membranes of the mouth, nose, and eyes. Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or other body fluids.

2. Hands and other skin surfaces should be washed immediately and thoroughly if contaminated with blood or other body fluids. Hands should be washed immediately after gloves are removed.

3. All health-care workers should take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices during procedures; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments after procedures. To prevent needlestick injuries, needles should not be recapped, purposely bent or broken by hand. After they are used, disposable syringes and needles, scalpel blades, and other sharp items should be placed in puncture-resistant containers for disposal; the puncture-resistant containers should be located as close as practical to the use are. Large-bore reusable needles should be placed in a puncture-resistant container for transport to the reprocessing area.

4. Although saliva has not been implicated in HIV transmission, to minimise the need for emergency mouth-to-mouth resuscitation, mouthpieces, resuscitation bags, or other ventilation devices should be available for use in areas in which the need for resuscitation is predictable.

5. Health-care workers who have exudative lesions or weeping dermatitis should refrain from all direct patient care and from handling patient-care equipment until the condition resolves.

6. Pregnant health-care workers are not known to be at greater risk of contracting HIV infection than health-care workers who are not pregnant; however, if a health-care worker develops HIV infection during pregnancy, the infant is at risk of infection resulting from perinatal transmission.

Because of this risk, pregnant health-care workers should be especially familiar with and strickly adhere to precautions to minimise the risk of HIV transmission.

Implementation of universal blood and body-fluid precautions for all patients eliminates the need for use of the isolation category of "Blood and Body Fluid Precautions" previously recommended by CDC[7] for patients known or suspected to be infected with blood-borne pathogens. Isolation precautions (e.g., enteric, "AFB" [7]) should be used as necessary if associated conditions, such as infectious diarrhoea or tuberculosis, are diagnosed or suspected.

Precautions for Invasive Procedures

In this document, an invasive procedure is defined as surgical entry into tissues, cavities, or organs or repair of major traumatic injuries

- 1) in an operating or delivery room, emergency department, or outpatient setting, including both physicians' and dentists' offices;
- 2) cardiac catheterisation and angiographic procedures;
- 3) a vaginal or caesarean delivery or other invasive obstetric procedure during which bleeding may occur;
- 4) the manipulation, cutting, or removal of any oral or perioral tissues, including tooth structure, during which bleeding occurs or the potential for bleeding exists. The universal blood and body-fluid precautions listed above, combined with the precautions listed below, should be the minimum precautions for all such invasive procedures.

1. All health-care workers who participate in invasive procedures must routinely use appropriate barrier precautions to prevent skin and mucous-membrane contact with blood and other body fluids of all patients. Gloves and surgical masks must be worn for all invasive procedures. Protective eyewear or face shields should be worn for procedures that commonly result in the generation of droplets, splashing of blood or other body fluids, or the generation of bone chips. Gowns or aprons made of materials that provide an effective barrier should be worn during invasive procedures that are likely to result in the splashing of blood or other body fluids. All health-care workers who perform or assist in vaginal or caesarean deliveries should wear gloves and gowns when handling the placenta or the infant until blood and amniotic fluid have been removed from the infant's skin and should wear gloves during post-delivery care of the umbilical cord.

2. If a glove is torn or a needlestick or other injury occurs, the glove should be removed and a new glove used as promptly as patient safety permits; the needle or instrument involved in the incident should also be removed from the sterile field.

Precautions for Dentistry

General infection-control precautions are more specifically

addressed in previous recommendations for infection-control practices for dentistry[8]. Blood, saliva, and gingival fluid from all dental patients should be considered infective. Special emphasis should be placed on the following precautions for preventing transmission of blood-borne pathogens in dental practice in both institutional and non-institutional settings.

1. In addition to wearing gloves for contact with oral mucous membranes of all patients, all dental workers should wear surgical masks and protective eyewear or chin-length plastic face shield during dental procedures in which splashing or spattering of blood, saliva, or gingival fluids is likely. Rubber dams, high speed evacuation, and proper patient positioning, when appropriate, should be utilised to minimise generation of droplets and spatter.

2. Handpieces should be sterilised after use with each patient, since blood, saliva, or gingival fluid of patients may be aspirated into the handpiece or waterline. Handpieces that cannot be sterilised should at least be flushed, the outside surface cleaned and wiped with a suitable chemical germicide, and then rinsed. Handpieces should be flushed at the beginning of the day and after use with each patient. Manufacturer's recommendations should be followed for use and maintenance of waterlines and check valves and for flushing of handpieces. The same precautions should be used for ultrasonic scalers and air/water syringes.

3. Blood and saliva should be thoroughly and carefully cleaned from material that has been used in the mouth (e.g., impression materials, bite registration), especially before polishing and grinding intra-oral devices. Contaminated materials, impressions, and intra-oral devices should also be cleaned and disinfected before being handled in the dental laboratory and before they are placed in the patient's mouth. Because of the increasing variety of dental materials used intra-orally, dental workers should consult with manufacturers as to the stability of specific materials when using disinfection procedures.

4. Dental equipment and surfaces that are difficult to disinfect (e.g., light handles or X-ray unit heads) and that may become contaminated should be wrapped with impervious-backed paper, aluminium foil, or clear plastic wrap. The coverings should be removed and discarded, and clean coverings should be put in place after use with each patient.

Precautions for Autopsies or Morticians' Services

In addition to the universal blood and body-fluid precautions listed above, the following precautions should be used by persons performing posmortem procedures:

1. All persons performing or assisting in postmortem procedures should wear gloves, masks, protective eyewear, gowns, and waterproof aprons.

2. Instruments and surfaces contaminated during postmortem procedures should be decontaminated with an appropriate chemical germicide.

Precautions for Dialysis

Patients with end-stage renal disease who are undergoing maintenance dialysis and who have HIV infection can be dialysed in hospital-based or free-standing dialysis units using conventional infection-control precautions[21]. Universal blood and body-fluid precautions should be used when dialysing all patients.

Strategies for disinfecting the dialysis fluid pathways of the haemodialysis machine are targeted to control bacterial contamination and generally consist of using 500-750 parts per million (ppm) of sodium hypochlorite (household bleach) for 30-40 minutes or 1.5%-2.0% formaldehyde overnight. In addition, several chemical germicides formulated to disinfect dialysis machines are commercially available. None of these protocols or procedures need to be changed for dialysing patients infected with HIV.

Patients infected with HIV can be dialysed by either haemodialysis or peritoneal dialysis and do not need to be isolated from other patients. The type of dialysis treatment (i.e., haemodialysis or peritoneal dialysis) should be based on the needs of the patient. The dialyser may be discarded after each use. Alternatively, centres that reuse dialysers - i.e., a specific single-use dialyser is issued to a specific patient, removed, cleaned, disinfected, and reused several times on the same patient only - may include HIV-infected patients in the dialyser-reuse program. An individual dialyser must never be used on more than one patient.

Precautions for Laboratories

(Additional precautions for research and industrial laboratories are addressed elsewhere[22,23].)

Blood and other body fluids from all patients should be considered infective. To supplement the universal blood and body-fluid precautions listed above, the following precautions are recommended for health-care workers in clinical laboratories.

1. All specimens of blood and body fluids should be put in a well-constructed container with a secure lid to prevent leaking during transport. Care should be taken when collecting each specimen to avoid contaminating the outside of the container and of the laboratory form accompanying the specimen.

2. All persons processing blood and body-fluid specimens (e.g., removing tops from vacuum tubes) should wear gloves. Masks and protective eyewear should be worn if mucous-membrane contact with blood or body fluids is anticipated. Gloves should be changed and hands washed after completion of specimen processing.

3. For routine procedures, such as histologic and pathologic studies or microbiologic culturing, a biological safety cabinet is not necessary. However, biological safety cabinets (Class I or II) should be used whenever procedures are conducted that have high potential for generating droplets. These include activities such as blending, sonicating, and vigorous mixing.

4. Mechanical pipetting devices should be used for manipulating all liquids in the laboratory. Mouth pipetting must not be done.

5. Use of needles and syringes should be limited to situations in which there is no alternative, and the recommendations for preventing injuries with needles outlined under universal precautions should be followed.

6. Laboratory work surfaces should be decontaminated with an appropriate chemical germicide after a spill of blood or other body fluids and when work activities are completed.

7. Contaminated materials used in laboratory tests should be decontaminated before reprocessing or be placed in bags and disposed of in accordance with institutional policies for disposal of infective waste[24].

8. Scientific equipment that has been contaminated with blood or other body fluids should be decontaminated and cleaned before being repaired in the laboratory or transported to the manufacturer.

9. All persons should wash their hands after completing laboratory activities and should remove protective clothing before leaving the laboratory.

Implementation of universal blood and body-fluid precautions for all patients eliminates the need for warning labels on specimens since blood and other body fluids from all patients should be considered infective.

ENVIRONMENTAL CONSIDERATION FOR HIV TRANSMISSION

No environmentally mediated mode of HIV transmission has been documented. Nevertheless, the precautions described below should be taken routinely in the care of all patients.

Sterilisation and Disinfection

Standard sterilisation and disinfection procedures for patient-care equipment currently recommended for use[25,26] in a variety of health-care settings - including hospitals, medical and dental clinics and offices, haemodialysis centres, emergency-care facilities, and long-term nursing-care facilities - are adequate to sterilise or disinfect instruments, devices, or other items contaminated with blood or other body fluids from persons infected with blood-borne pathogens including HIV[21,23].

Instruments or devices that enter sterile tissue or the vascular system of any patient or through which blood flows should be sterilised before reuse. Devices or items that contact intact mucous membranes should be sterilised or receive high-level disinfection, a procedure that kills vegetative organisms and viruses but not necessarily large numbers of bacterial spores. Chemical germicides that are registered with the U.S Environmental Protection Agency (EPA) as "sterilants" may be used either for sterilisation or high-level disinfection depending on contact time. Contact lenses used in trial fittings should be disinfected after each fitting by using a hydrogen peroxide contact lens disinfecting system or, if compatible, with heat (78° C-80° C [172.4° F-176.0° F]) for 10 minutes.

Medical devices or instruments that require sterilisation or disinfection should be thoroughly cleaned before being exposed to the germicide, and the manufacturer's instructions for the use of the germicide should be followed. Further, it is important that the manufacturer's specifications for compatibility of the medical device with chemical germicides be closely followed. Information on specific label claims of commercial germicides can be obtained by writing to the Disinfectants Branch, Office of Pesticides, Environmental Protection Agency, 401 M Street, SW, Washington, D.C. 20460.

Studies have shown that HIV is inactivated rapidly after being exposed to commonly used chemical germicides at concentrations that are much lower than used in practice[27-30]. Embalming fluids are similar to the types of chemical germicides that have been tested and found to completely inactivate HIV. In addition to commercially available chemical germicides, a solution of sodium hypochlorite (household bleach) prepared daily is an inexpensive and effective germicide. Concentrations ranging from approximately 500 ppm (1:100 dilution of household bleach) sodium hypochlorite to 5,000 ppm (1:10 dilution of household bleach) are effective depending on the amount of organic material (e.g., blood, mucus) present on the surface to be cleeaned and disinfected. Commercially available chemical germicides may be more compatible with certain medical devices that might be corroded by repeated exposure to sodium hypochlorite, especially to the 1:10 dilution.

Survival of HIV in the Environment

The most extensive study on the survival of HIV after drying involved greatly concentrated HIV samples, i.e., 10 million tissue-culture infectious doses per millilitre[31]. This concentration is at least 100,000 times greater than that typically found in the blood or serum of patients with HIV infection. HIV was detectable by tissue-culture techniques 1-3 days after drying, but the rate of inactivation was rapid. Studies performed at CDC have also shown that drying HIV causes a rapid (within several hours) 1-2 log (90%-99%) reduction in HIV concentration. In tissue-culture fluid, cell-free HIV could be detected up to 15 days at room temperature, up to 11 days at 37 degree C (98.6 degree F), and up to 1 day if the HIV was cell-associated.

When considered in the context of environmental conditions in health-care facilities, these results do not require any changes in currently recommended sterilisation, disinfection, or housekeeping strategies. When medical devices are contaminated with blood or other body fluids, existing recommendations include the cleaning of these instruments, followed by disinfection or sterilisation, depending on the type of medical device. These protocols assume 'worst-case' conditions of extreme virologic and microbiologic contamination, and whether viruses have been inactivated after drying plays no role in formulating these strategies. Consequently, no changes in published procedures for cleaning, disinfection, or sterilising need to be made.

Housekeeping

Environmental surfaces such as walls, floors, and other surfaces are not associated with transmission of infections to patients or health-care workers. Therefore, extra-ordinary attempts to disinfect or sterilise these environmental surfaces are not necessary. However, cleaning and removal of soil should be done routinely.

Cleaning schedules and methods vary according to the area of the hospital or institution, type of surface to be cleaned, and the amount and type of soil present. Horizontal surfaces (e.g., bedside tables and hard-surfaced flooring) in patient-care areas are usually cleaned on a regular basis, when soiling or spills occur, and when a patient is discharged. Cleaning of walls, blinds, and curtains is recommended only if they are visibly soiled. Disinfectant fogging is an unsatisfactory method of decontaminating air and surfaces and is not recommended.

Disinfectant-detergent formulations registered by EPA can be used for cleaning environmental surfaces, but the actual physical removal of microorganisms by scrubbing is probably at least as important as any antimicrobial effect of the cleaning agent used. Therefore, cost, safety, and acceptability by housekeepers can be the main criteria for selecting any such registered agent. the manufacturers' instructions for appropriate use should be followed.

Cleaning and Decontaminating Spills of Blood or Other Body Fluids

Chemical germicides that are approved for use as "hospital disinfectants" and are tuberculocidal when used at recommended dilutions can be used to decontaminate spills of blood and other body fluids. Strategies for decontaminating spills of blood and other body fluids in a patient-care setting are different than for spills of cultures or other materials in clinical, public health, or research laboratories. In patient-care areas, visible material should first be removed and then the area should be decontaminated. With large spills of cultured or concentrated infectious agent in the laboratory, the contaminated area should be flooded with a liquid germicide before cleaning, then decontaminated with fresh germicidal chemical. In both settings, gloves should be worn during the cleaning and decontaminating procedures.

Laundry

Although soiled linen has been identified as a source of large numbers of certain pathogenic microorganisms, the risk of actual disease transmission is negligible. Rather than rigid procedures and specifications, hygienic and common-sense storage and processing of clean and soiled linen are recommended[26]. Soiled linen should be handled as little as possible and with minimum agitation to prevent gross microbial contamination of the air and of persons handling the linen. All soiled linen should be bagged at the location where it was used; it should not be sorted or rinsed in patient-care areas. Linen soiled with blood or body fluids should be placed and transported in bags that prevents leakage. If hot water is used, linen should be washed with detergent in water at least 71° C(160° F) for 15 minutes. If low-temperature(70° C [158° F] laundry cycles are used, chemicals suitable for low-temperature washing at proper use concentration should be used.

Infective Waste

There is no epidemiological evidence to suggest that most hospital waste is any more infective than residential waste. Moreover, there is no epidemiologic evidence that hospital waste has caused diseases in the community as a result of improper disposal. Therefore, identifying wastes for which special precautions are indicated is largely a matter of judgement about the relative risk of disease transmission. The most practical approach to the management of infective waste is to identify those wastes with the potential for causing infection during handling and disposal and for which some special precautions appear prudent. Hospital wastes for which special precautions appear prudent include microbiology laboratory waste, pathology waste, and blood specimens or blood products. While any item that has had contact with blood, exudates, or secretions may be potentially infective, it is not usually considered practical or necessary to treat all such waste as infective[23,26]. Infective waste, in general, should either be incinerated or should be autoclaved befoe disposal in a sanitary landfill. Bulk blood, suctioned fluids, excretions, and secretions may be carefully poured down a drain connected to a sanitary sewer. Sanitary sewers may also be used to dispose of other infectious wastes capable of being ground and flushed into the sewer.

IMPLEMENTATION OF RECOMMENDED PRECAUTIONS

Employers of health-care workers should ensure that policies exist for:

1. Initial orientation and continuing education and training of all health-care workers - including students and trainees - on the epidemiology, modes of transmission, and prevention of HIV and other blood-borne infections and the need for routine use of universal blood and body-fluid precautions for all patients.

2. Provision of equipment and supplies necessary to minimise the risk of infection with HIV and other blood-borne pathogens.

3. Monitoring adherence to recommended protective measures. When monitoring reveals a failure to follow recommended precautions, counselling, education, and/or re-training should be provided, and if necessary, appropriate disciplinary action should be considered.

Professional associations and labor organisations, through continuing education efforts, should emphasise the need for health-care workers to follow recommended precautions.

SEROLOGIC TESTING FOR HIV INFECTION

Background

A person is identified as infected with HIV when a sequence of tests, starting with repeated enzyme immunosorbent assays (ELISA) and including a Western blot or similar, more specific assay, are repeatedly reactive. Persons infected with HIV usually develop antibody against the virus within 6-12 weeks after infection.

The sensitivity of the currently licensed ELISA tests is at least 99% when they are performed under optimal laboratory conditions on serum specimens from persons infected for 12 weeks. Optimal laboratory conditions include the use of reliable reagents, provision of continuing education of personnel, quality control of procedures, and participation in performance-evaluation programs. Given this performance, the probability of a false-negative test is remote except during the first several weeks after infection, before detectable antibody is present. The proportion of infected persons with a false-negative test attributed to absence of antibody in the early stages of infection is dependent on both the incidence and prevalence of HIV infection in a population (Table 1.)

TABLE 1. Estimated annual number of patients infected with HIV not detected by HIV-antibody testing in a hypothetical hospital with 10,000 admissions/year*

Initial prevalence of HIV infection	Annual incidence of HIV infection	Approximate number of HIV-infected patients	Approximate number of HIV-infected patients not detected
5.0%	1.0%	550	17-18
5.0%	0.5%	525	11-12
1.0%	0.2%	110	3-4
1.0%	0.1%	105	2-3
0.1%	0.02%	11	0-1
0.1%	0.01%	11	0-1

*The estimates are based on the following assumptions:
1) the sensitivity of the screening test is 99% (i.e., 99% of HIV-infected persons with antibody will be detected);

2)persons infected with HIV will not develop detectable antibody (seroconvert) until 6 weeks (1.5 months) after infection;
3)new infections occur at an equal rate throughout the year;
4)calculations of the number of HIV-infected perons in the patient population are based on the mid-year prevalence, which is the initial prevalence plus half the annual incidence of infections.

The specificity of the currently licensed ELISA tests is approximately 99% when repeatedly reactive tests are considered. Repeat testing of initially reactive specimens by ELISA is required to reduce the likelihood of laboratory error. To increase further the specificity of serologic tests, laboratories must use a supplemental test, most often the Western blot, to validate repeatedly reactive ELISA results. Under optimal laboratory conditions, the sensitivity of the Western blot test is comparable to or greater than that of a repeatedly reactive ELISA, and Western blot is highly specific when strict criteria are used to interpret the test results. The testing sequence of a repeatedly reactive ELISA and a positive Western blot test is highly predictive of HIV infection, even in a population with a low prevalence of infection (Table 2).

If the Western blot test result is indeterminate, the testing sequence is considered equivocal for HIV infection. When this occurs, the Western blot test should be repeated on the same serum sample, and, if still indeterminate, the testing sequence should be repeated on a sample collected 3-6 months later. Use of other supplement tests may aid in the interpreting of results on samples that are persistently indeterminate by Western blot.

TABLE 2. Predictive value of positive HIV-antibody tests in hypothetical populations with different prevalences of infection.

	Prevalence of infection	Predictive value of positive test*
Repeatedly reactive enzyme immunosorbent assay (ELISA)+	0.2%	28.41%
	2.0%	80.16%
	20.0%	98.02%
Repeatedly reactive ELISA followed by positive Western blot (WB)**	2.0%	99.75%
	2.0%	99.97%
	20.0%	99.99%

* Proportion of persons with positive test results who are actually infected with HIV.
\+ Assumes ELISA sensitivity of 99.0% and specificity of 99.5%.
** Assumes WB sensitivity of 99.0% and specificity of 99.9%.

Testing of Patients

Previous CDC recommendations have emphasised the value of HIV serologic testing of patients for:
1) management of parenteral or mucous-membrane exposures of health-care workers,
2) patient diagnosis and management, and
3) counselling and serologic testing to prevent and control HIV transmission in the community.

In addition, more recent recommendations have stated that hospitals, in conjunction with state and local health departments, should periodically determine the prevalence of HIV infection among patients from age groups at highest risk of infection[32].

Adherence to universal blood and body-fluid precautions recommended for the care of patients will minimise the risk of transmission of HIV and other blood-borne pathogens from patients to health-care workers. The usefulness of routine HIV serologic testing of patients as an adjunct to universal precautions is unknown. Results of such testing may not be available in emergency or outpatient settings. In addition, some recently infected patients will not have detectable antibody to HIV (Table 1).

Personnel in some hospitals have advocated serologic testing of patients in settings in which exposure of health-care workers to large amount of patients' blood may be anticipated. Specific patients for whom serologic testing has been advocated include those undergoing major operative procedures and those undergoing treatment in critical-care units, especially if they have conditions involving uncontrolled bleeding. Decisions regarding the need to establish testing programs for patients should be made by physicians or individual institutions. In addition, when deemed appropriate, testing of individual patients may be performed on agreement between the patient and the physician providing care.

In addition to the universal precautions recommended for all patients, certain additional precautions for the care of HIV-infected patients undergoing major surgical operations have been proposed by personnel in some hospitals. For example, surgical procedures on an HIV-infected patient might be altered so that hand-to-hand passing of sharp instruments would be eliminated; stapling intruments rather than hand-suturing equipment might be used to perform tissue approximation; electro-cautery devices rather than scalpels might be used as cutting instruments; and even though uncomfortable, gowns that totally prevent seepage of blood onto the skin of members of the operative team might be worn. While such modifications might further minimise the risk of HIV infection for members of the operative team, some of these techniques could result in prolongation of operative time and could potentially have an adverse effect on the patient.

Testing programs, if developed, should include the following principles:

- Obtaining consent for testing.
- Informing patients of test results, and providing counselling for seropositive patients by properly trained persons.
- Assuring that confidentially safeguards are in place to limit knowledge of test results to those directly involved in the care of infected patients or as required by law.
- Assuring that identification of infected patients will not result in denial of needed care or provision of suboptimal care.

- Evaluating prospectively
  - 1) the efficacy of the program in reducing the incidence of parenteral, mucous-membrane, or significant cutaneous exposures of health-care workers to the blood or other fluids of HIV-infected patients, and
  - 2) the effect of modified procedures on patients.

Testing of Health-Care Workers

Although transmission of HIV from infected health-care workers to patients has not been reported, transmission during invasive procedures remains a possibility. Transmission of hepatitis B virus (HBV) - a blood-borne agent with a considerably greater potential for nosocomial spread - from health-care workers to patients has been documented. Such transmission has occurred in situations (e.g., oral and gynaecological surgery) in which health-care workers, when tested, had very high concentrations of HBV in their blood (at least 100 million infectious virus particles per milliliter, a concentration much higher than occurs with HIV infection), and the health-care workers sustained a puncture wound while performing invasive procedures or hand exudative or weeping lesions or microlacerations that allowed virus to contaminate instruments or open wounds of patients[33,34].

The hepatitis B experience indicates that only those health-care workers who perform certain types of invasive procedures have transmitted HBV to patients. Adherence to recommendations in this document will minimise the risk of transmission of HIV and other blood-borne pathogens from health-care workers to patients during invasive procedures. Since transmission of HIV from infected health-care workers performing invasive procedures to their patients has not been reported and would be expected to occur only very rarely, if at all, the usefulness of routine testing of such health-care workers to prevent transmission of HIV cannot be assessed. If consideration is given to developing a serologic testing program for health-care workers who perform invasive procedures, the frequency of testing, as well as the issues of consent, confidentiality, and consequences of test results - as previously outlined for testing programs for patients - must be addressed.

MANAGEMENT OF INFECTED HEALTH-CARE WORKERS

Health-care workers with impaired immune systems resulting from HIV infection or other causes are at increased risk of acquiring or experiencing serious complications of infectious disease. Of particular concern is the risk of severe infection following exposure to patients with infectious diseases that are easily transmitted if appropriate precautions are not taken (e.g., measles, varicella). Any health-care workers with an impaired immune system should be counselled about the potential risk associated with taking care of patients with any transmissible infection and should continue to follow existing

recommendations for infection control to minimise risk of exposure to other infectious agents[7,35]. Recommendations of the Immunisation Practices Advisory Committee (ACIP) and institutional policies concerning requirements for vaccinating health-care workers with live-virus vaccine (e.g., measles rubella) should be also be considered.

The question of whether workers infected with HIV - especially those who perform invasive procedures - can adequately and safely be allowed to perform patient-care duties or whether their work assignments should be changed must be determined on an individual basis. These decisions should be made by the health-care worker's personal physician(s) in conjunction with the medical directors and personnel health service staff of the employing institution or hospital.

Management of Exposures

If a health-care workers has a parenteral (e.g., needlestick or cut) or mucous-membrane (e.g., splash to the eye or mouth) exposure to blood or other body fluids or has a cutaneous exposure involving large amounts of blood or prolonged contact with blood - especially when the exposed skin is chapped, abraded, or afflicted with dermatitis - the source patient should be informed of the incident and tested for serologic evidence of HIV infection after consent is obtained. Policies should be developed for testing source patients in situations in which consent cannot be obtained (e.g., an unconscious patient).

If the source patient has AIDS, is positive for HIV antibody, or refuses the test, the health-care worker should be counselled regarding the risk of infection and evaluated clinically and serologically for evidence of HIV infection as soon as possible after the exposure. The health-care worker should be advised to report and seek medical evaluation for any acute febrile illness that occurs within 12 weeks after the exposure. Such an illness - particularly one characterised by fever, rash, or lymphadenopathy - may be indicative of recent HIV infection.

Seronegative health-care workers should be retested 6 weeks post-exposure and on a periodic basis thereafter (e.g., 12 weeks and 6 months after exposure) to determine whether transmission has occurred. During this follow-up period especially the first 6-12 weeks after exposure, when most infected persons are expected to seroconvert - exposed health-care workers should follow U.S. Public Health Service (PHS) recommendations for preventing transmission of HIV[36,37].

No further follow-up of a health-care worker exposed to infection as described above is necessary if the source patient is seronegative unless the source patient is at high risk of HIV infection. In the latter case, a subsequent specimen (e.g., 12 weeks following exposure) may be obtained from the health-care worker for antibody testing. If the source patient cannot be identified, decisions regarding appropriate follow-up should be individualised. Serologic testing should be

available to all health-care workers who are concerned that they may have been infected with HIV.

If a patient has a parenteral or mucous-membrane exposure to blood or other body fluid of a health-care worker, the patient should be informed of the incident, and the same procedure outlined above for management of exposures should be followed for both the source health-care worker and the exposed patient.

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AUSTRALIA - COMMUNICABLE DISEASES INTELLIGENCE

REPORTING PERIOD - 7-9-87 to 20-9-87 BULLETIN NUMBER 87/19
VIRAL IDENTIFICATIONS FROM CONTRIBUTING LABORATORIES

VIRUS OR VIRAL ANTIGEN	ICPMR (NSW)/ WVH (ACT)	RAHC (NSW)	PHH/ POW (NSW)	FAIR-FIELD (VIC)	RCH (VIC)	IMVS (SA)	STATE LAB (QLD)	STATE LAB (WA)	Total
0100 ADENOVIRUS NOT TYPED	6		3	4	7		16	3	39
0101 ADENOVIRUS TYPE 1				4	1				5
0102 ADENOVIRUS TYPE 2	1				2	1		2	6
0103 ADENOVIRUS TYPE 3	9			5				1	15
0105 ADENOVIRUS TYPE 5	1					4			5
0107 ADENOVIRUS TYPE 7					2				2
0108 ADENOVIRUS TYPE 8								1	1
0127 ADENOVIRUS TYPE 27	1								1
0199 ADENOVIRUS TYPING PENDING			1		7				8
0201 INFLUENZA A VIRUS	4			1	2	2	5	8	22
0202 INFLUENZA A VIRUS SUBTYPE H3N2				8	6	1			15
0203 INFLUENZA B VIRUS	12		3	10	10	5	13		53
0301 PARAINFLUENZA VIRUS TYPE 1				1	1	2			4
0302 PARAINFLUENZA VIRUS TYPE 2					1		1		2
0303 PARAINFLUENZA VIRUS TYPE 3	1	1		3	7	7	6	4	29
0400 RESPIRATORY SYNCYTIAL VIRUS (RS)	21	8	4	31	26	16	34	10	150
0500 RHINOVIRUS (ALL TYPES)	2				3	3	16	1	25
0600 MYCOPLASMA PNEUMONIAE	16		4	12	3	6	20	10	71
0700 ORNITHOSIS-PSITTACOSIS								1	1
0809 COXSACKIEVIRUS A9								1	1
0901 COXSACKIEVIRUS B1				1		2			3
0902 COXSACKIEVIRUS B2					2				2
0905 COXSACKIEVIRUS B5				1					1
1002 ECHOVIRUS TYPE 2				1					1
1003 ECHOVIRUS TYPE 3		1							1
1018 ECHOVIRUS TYPE 18				3					3
1022 ECHOVIRUS TYPE 22			2						2
1025 ECHOVIRUS TYPE 25				1					1
1100 POLIOVIRUS NOT TYPED			2		5				7
1101 POLIOVIRUS TYPE 1	4			2				1	7
1102 POLIOVIRUS TYPE 2								2	2
1103 POLIOVIRUS TYPE 3				1	2				3
1200 MUMPS VIRUS	2							2	4
1300 HERPES VIRUS GROUP-NOT TYPED	19			3				1	23
1301 HERPES SIMPLEX VIRUS NOT-TYPED		4						2	6
1302 EPSTEIN-BARR VIRUS (EB VIRUS)	16		1	19		2	24	5	67
1303 VARICELLA-ZOSTER VIRUS	5		1	4			2	3	15
1306 HERPES SIMPLEX TYPE 1	8		10	40		11	40	23	132
1307 HERPES SIMPLEX TYPE 2	37		33	58		13	63	46	250
1399 HERPES VIRUS TYPING PENDING				8	2				10
1401 COXIELLA BURNETI	1			2			7		10
1502 PICORNA VIRUS-NOT TYPED	2		8				12	1	23
1521 MEASLES VIRUS		1		4					5
1522 RUBELLA VIRUS	1		2			1	5	2	11
1532 HEPATITIS B ANTIGEN	40	1	3	16	1	14	5	15	95
1535 HEPATITIS A ANTIBODY				1		3	1	2	7
1541 CHLAMYDIA A - C TRACHOMATIS	16	1		43		23	6	57	146
1543 CHLAMYDIA A - LGV TYPE				1					1
1556 CMV - CYTOMEGALOVIRUS	3	3	5	31	6	5	25	20	98
1563 CORONAVIRUS				1					1
1564 ROTAVIRUS	18	4	12	6	10	4	10	13	77
1565 CALICI VIRUS	1								1
1599 ENTEROVIRUS TYPING PENDING		2	7		4				13
9992 ROSS RIVER VIRUS				4			5		9
9993 ASTROVIRUS	1								1
9994 SMALL VIRUS (LIKE) PARTICLE	1			2					3
9995 DENGUE							2		2
9998 ARBO. GROUP B. ...				2			2		4
Total	249	26	101	334	110	125	320	237	1,502

AUSTRALIA - COMMUNICABLE DISEASES INTELLIGENCE

PERIOD :7-9-87 to 20-9-87 BULLETIN NO 87/19

Viral Identifications by Clinical Information Table 1.
Code 00,99 -No ill or data; 01,02,11,12 -Respiratory; E3 -Encephalitis; M3 -Meningitis; 04 -Paralysis; 05,13 -CNS other unspec.; 07,49 -GI; 17,47 -Hepatic; 19 -CVS; 89 -Urinary; 06 -Skin/mucous.

VIRUS OR VIRAL ANTIGEN	No-ill or data	Respir atory	Enceph alitis	Mening -itis	Para- lysis	CNS other unspec	GI	Hepa -tic	CVS	Urin -ary	Skin/ mucs memb
0100 ADENOVIRUS NOT TYPED.....	1										
0101 ADENOVIRUS TYPE 1.....		5									
0102 ADENOVIRUS TYPE 2.....		6									
0103 ADENOVIRUS TYPE 3.....	4	3				1	7				
0105 ADENOVIRUS TYPE 5.....		4									
0107 ADENOVIRUS TYPE 7.....		2									
0108 ADENOVIRUS TYPE 8.....										1	
0127 ADENOVIRUS TYPE 27.....							1				
0201 INFLUENZA A VIRUS.....	3	15							1		
0202 INFLUENZA A VIRUS SUBTYPE H3N2		12				1					1
0203 INFLUENZA B VIRUS.....	2	40		1		1			2		
0301 PARAINFLUENZA VIRUS TYPE 1....		4									
0302 PARAINFLUENZA VIRUS TYPE 2....		2									
0303 PARAINFLUENZA VIRUS TYPE 3....	1	27		1				1	1		
0400 RESPIRATORY SYNCYTIAL VIRUS (RS).....	5	140		1							
0500 RHINOVIRUS (ALL TYPES).....		4									
0600 MYCOPLASMA PNEUMONIAE.....	12	53									3
0700 ORNITHOSIS-PSITTACOSIS.....		1									
0809 COXSACKIEVIRUS A9.....		1									
0901 COXSACKIEVIRUS B1.....		2	1								
0902 COXSACKIEVIRUS B2.....				1			1				
0905 COXSACKIEVIRUS B5.....				1							
1002 ECHOVIRUS TYPE 2.....				1							
1003 ECHOVIRUS TYPE 3.....								1			
1018 ECHOVIRUS TYPE 18.....				3							
1022 ECHOVIRUS TYPE 22.....		2					1				
1025 ECHOVIRUS TYPE 25.....				1							
1101 POLIOVIRUS TYPE 1.....		4	1				1				
1102 POLIOVIRUS TYPE 2.....		1									
1103 POLIOVIRUS TYPE 3.....		1					1				
1301 HERPES SIMPLEX VIRUS NOT-TYPED											5
1302 EPSTEIN-BARR VIRUS (EB VIRUS).	15	10	1					1			7
1303 VARICELLA-ZOSTER VIRUS.....	3			1		1					
1306 HERPES SIMPLEX TYPE 1.....	1	4									7
1307 HERPES SIMPLEX TYPE 2.....	2										72
1401 COXIELLA BURNETI.....	3	2									
1521 MEASLES VIRUS.....		1				1					3
1522 RUBELLA VIRUS.....	1										4
1532 HEPATITIS B ANTIGEN.....	54	2						34		1	1
1535 HEPATITIS A ANTIBODY.....								3			
1541 CHLAMYDIA A - C.TRACHOMATIS...	9										2
1543 CHLAMYDIA A - LGV TYPE.....		1									
1556 CMV - CYTOMEGALOVIRUS.....	12	24				1	2	7		6	3
1563 CORONAVIRUS.....							1				
1564 ROTAVIRUS.....	2						74				1
1565 CALICI VIRUS.....							1				
9992 ROSS RIVER VIRUS.....	2	1									4
9993 ASTROVIRUS.....							1				
9994 SMALL VIRUS (LIKE) PARTICLE...							3				
9995 DENGUE.....	1										1
9998 ARBO. GROUP B.	1										1
Total.....	134	374	3	11		6	94	47	4	8	192

AUSTRALIA - COMMUNICABLE DISEASES INTELLIGENCE

PERIOD : 7-9-87 to 20-9-87 BULLETIN NO 87/19

Viral Identifications by Clinical Information Table 2.
Code 10 -Eye; 59 -Genital; 39 -Endo/sal gland;
38 -RES; 29 -Muscle/joint; 69 -Congenital; P8 -PUO;
G8 -Fever/malaise; 09 -Other; A1 -SIDS ...

VIRUS OR VIRAL ANTIGEN	Eye	Genital	Endo/sal gland	RES	Muscle/joint	Congenital	PUO	Fever/malaise	Other	SIDS
0103 ADENOVIRUS TYPE 3.....	1									
0105 ADENOVIRUS TYPE 5.....										1
0201 INFLUENZA A VIRUS.....								6	2	
0202 INFLUENZA A VIRUS SUBTYPE H3N2								5		
0203 INFLUENZA B VIRUS.....			1				1	4	3	
0301 PARAINFLUENZA VIRUS TYPE 1....								1		
0303 PARAINFLUENZA VIRUS TYPE 3....	1							1		
0400 RESPIRATORY SYNCYTIAL VIRUS (RS).....	1	1				1	1	6	1	
0600 MYCOPLASMA PNEUMONIAE.....			1		4		1	9		
0700 ORNITHOSIS-PSITTACOSIS.....		1								
1101 POLIOVIRUS TYPE 1.....							1			
1102 POLIOVIRUS TYPE 2.....										1
1103 POLIOVIRUS TYPE 3.....								1		1
1200 MUMPS VIRUS.....			2					1		
1301 HERPES SIMPLEX VIRUS NOT-TYPED	1									
1302 EPSTEIN-BARR VIRUS (EB VIRUS).			16	5	3		2	21	4	
1303 VARICELLA-ZOSTER VIRUS.....								2	1	
1306 HERPES SIMPLEX TYPE 1.....	6	42	1					1	4	
1307 HERPES SIMPLEX TYPE 2.....	1	175								
1401 COXIELLA BURNETI.....					2		1	6		
1521 MEASLES VIRUS.....								1		
1522 RUBELLA VIRUS.....				1	3		1	3		
1532 HEPATITIS B ANTIGEN.....									3	
1535 HEPATITIS A ANTIBODY.....									4	
1541 CHLAMYDIA A - C.TRACHOMATIS...	3	131							1	
1556 CMV - CYTOMEGALOVIRUS.....	2		3	1	1	8	1	15	23	3
1564 ROTAVIRUS.....								1		
9992 ROSS RIVER VIRUS.....					5			1		
9995 DENGUE.....								1		
9998 ARBO. GROUP B.					2			2		
Total.....	16	350	24	7	20	9	9	88	46	6