of her HIV status until she was hospitalized for hepatic complications in June 1996. At that time, she had a high HIV RNA load and low CD4 counts.

No exposure to blood was evidenced. To test the hypothesis of a possible nurse-to-patient transmission, phylogenetic analyses were conducted using two HIV-1 genomic regions (*pol* reverse transcriptase [RT] and *env* C2C4), each compared with reference strains and large local control sets (57 RT and 41 C2C4 local controls). Extensive analyses using multiple methodologies allowed the testing of robustness of phylogeny inference and assessment of transmission hypotheses. Results excluded nurse 1 and strongly suggested nurse 2 as the source of infection of the patient.

Because nurse 2 had advanced HIV disease, whereas the patient had signs of newly acquired infection, the researchers concluded that viral transmission occurred from the healthcare worker to the patient. Although the nurse was also infected with hepatitis C virus, the patient showed no signs of hepatitis C virus infection. The mode of transmission was not identified.

FROM: Goujon CP, Schneider VM, Grofti J, Montigny J, Jeantils V, Astagneau P, et al. Phylogenetic analyses indicate an atypical nurse-to-patient transmission of human immunodeficiency virus type 1. *J Virol* 2000;74:2525-2532.

Nosocomial Transmission of *Mycobacterium bovis* Bacille Calmette-Guérin

A previous report of nosocomial infection due to *Mycobacterium bovis* bacille Calmette-Guérin (BCG) implicated contamination of chemotherapy solutions reconstituted under the same biosafety hood as BCG vaccine used for bladder-cancer therapy. Waecker and coinvestigators from the Naval Medical Center, San Diego, California, reported three similar BCG infections in children and described evidence of respiratory transmission to healthcare workers (HCWs) from one patient. These children were receiving chemotherapy for leukemia when they presented with active tuberculosis. Each isolate was identified biochemically and by both gas-liquid chromatography and major polymorphic tandem repeat-polymerase chain reaction. Pulsed-field gel electrophoresis showed that two isolates were identical strains and identical to the Tice and Connaught strains licensed in the United States for bladder chemotherapy. The third isolate differed by a single fragment after *Dra*I restriction. One patient with heavily positive sputum exposed numerous HCWs. Of 41 HCWs, 2 (5%) converted their purified protein derivative skin test. These data underscored the risk of nosocomial BCG transmission by contamination of chemotherapy solutions and demonstrated the potential for transmission to HCWs from patients with active pulmonary disease.

FROM: Waecker NJ Jr, Stefanova R, Cave MD, Davis CE, Dankner WM. Nosocomial transmission of *Mycobacterium bovis* bacille Calmette-Guérin to children receiving cancer therapy and to their health care providers. *Clin Infect Dis* 2000;30:356-362.

Contaminated Vials of Epogen

Health professionals and dialysis clinicians have been notified by the FDA of problems with the multiple-use of Epogen vials (Amgen, Inc, Thousand Oaks, CA) labeled for single-use. Amgen was made aware of 21 episodes of bacteremia or pyrogenic reactions in patients receiving Epogen at a US dialysis unit. A CDC investigation revealed that unused portions of Epogen remaining in single-dose preservative-free vials were collected and pooled into common vials for use in other patients. These practices were linked to extrinsic bacterial contamination of Epogen.

The letter states that ". . . multiple entries should not be made into single dose vials, and residual medication from two or more vials should not be pooled into a single vial. As supplied, EPOGEN (Epoetin alfa) in single dose vials is a sterile solution. Although multidose vials with preservative are available, single dose vials *do not* contain a preservative. Once a syringe has entered a single dose vial, the sterility of the product can no longer be guaranteed."

Low Risk of Transfusion-Associated Bloodborne Infections in England

Regan and colleagues from the National Blood Service, London, England, recently reported the results of their ongoing study of recipients of 20,000 units of blood. Participants were adults who had been transfused recently. Patients had further blood samples taken at 9 months that were tested for markers of hepatitis B and C, HIV, and human T cell leukemia/lymphoma virus type I or II (HTLV) infections. Recent infections were distinguished from preexisting infections by comparison with blood samples taken before transfusion.

A total of 9,220 patients were recruited, and 5,579 recipients of 21,923 units of blood were followed up. No transfusion-transmitted infections were identified. Three patients acquired hepatitis B during or after hospital admission, but not through transfusion; 176 (3%) had preexisting hepatitis B infection. Sixteen (0.29%) patients had hepatitis C, and 5 (0.09%) had HTLV.

The authors concluded that the current risk of transfusion-transmitted infections in the United Kingdom is very small, although hospital-acquired infections may arise from sources other than transfusion. A considerable proportion of patients have preexisting infections.

FROM: Regan FA, Hewitt P, Barbara JA, Contreras M. Prospective investigation of transfusion transmitted infection in recipients of over 20,000 units of blood. TTI Study Group. *BMJ* 2000;320:403-406.

Safety and Cleaning of Medical Materials and Devices

Merritt and coinvestigators from the FDA, Center for Devices and Radiological Health, Division of Life Sciences, in Rockville, Maryland, conducted a study to evaluate dif-

ferent procedures to remove microorganisms, protein, and mammalian cells safely from materials and provide a suitable method for cleaning and assessing effectiveness of cleaning medical devices for reuse or for analysis of failure. Their primary focus was safety considerations for the personnel performing the cleaning or handling the device after cleaning. Polystyrene plates (96-well) were used to simulate device surfaces not amenable to manual scrubbing. *Staphylococcus epidermidis, Candida albicans, Escherichia coli, Pseudomonas aeruginosa,* and oral flora were grown in the plates. The plates were stained with crystal violet and the optical densities recorded.

The results indicated that *E coli* did not adhere well, and *P aeruginosa* formed clumps that were easily detached from the surface of the plates. However, *S epidermidis, C albicans,* and the oral organisms formed adherent biofilms that were difficult to remove from the plates. Detergents with enzymes and sodium hypochlorite (NaOCl) bleach were both effective in removing the biofilm. Other detergents and surfactants were not effective. The aldehyde agents did not remove the organisms and made further cleaning difficult. Allowing the biofilm to dry first made cleaning very difficult. Only the bleach solution could subsequently remove the dried or aldehyde-fixed organisms from the wells. The same 96-well polystyrene plate format was used to measure the amount of protein and cell adherence as well as the effectiveness of subsequent cleaning. Bradford reagent was used to detect protein as a measure of the cleaning efficacy. As with the bacteria, NaOCl bleach was effective at removing the protein and cells that had been dried or fixed by formalin or alcohol, whereas detergent with enzymes was not very effective. This study confirmed that used medical devices, contaminated with microorganisms, protein, or mammalian cells, should not be allowed to dry before cleaning and that a thorough cleaning procedure should precede sterilization or disinfection.

FROM: Merritt K, Hitchins VM, Brown SA. Safety and cleaning of medical materials and devices. *J Biomed Mater Res* 2000;53:131-136.

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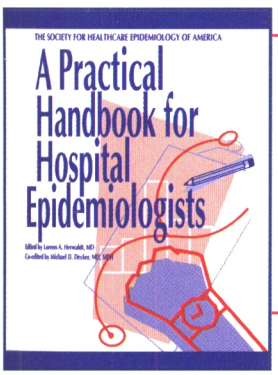
ALL THE ANSWERS UNDER ONE COVER



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