

## Medical News

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### Nosocomial Infections Prevented with Sinks Beside Beds

Dr. Jonathan Freeman of West Roxbury Veterans Administration Hospital in Massachusetts recently reported a reduction in nosocomial pneumonia and urinary tract infections associated with location of the sink for handwashing adjacent to the bedside.

Surveillance was conducted on 1,113 adult medical and surgical patients in a tertiary care hospital. The majority of these patients were housed on irregularly shaped intensive care units and open wards where beds were distant from the few sinks available for handwashing. Using Cox regression to account for censoring, patients were stratified by DRG, and comparisons of daily risk for first nosocomial infection were computed after further adjustment for DRG relative weight, comorbidities, service, gender, and prior infection. The adjusted relative risk of a first nosocomial infection for patients with sinks adjacent to the bedside was  $RR=0.74$  (CI., 0.17 to 0.81) compared with patients in beds distant from sinks.

The largest protective effect of sinks adjacent to bedside was found among patients with nosocomial pneumonia:  $RR=0.36$  (CI., 0.04 to 0.73). There was also a substantial preventive effect of sinks adjacent to the bedside for urinary tract infections in medical patients:  $RR=0.38$ . Researchers found no effect on postoperative wound infections. Overall, sinks for handwashing located adjacent to the bed-sides were associated with a 26% reduction in nosocomial infection risk in this hospital.

FROM: Freeman J. Prevention of nosocomial infections by location of sinks for handwashing adjacent to bedside. 33rd Interscience Conference on Antimicrobial Agents and Chemotherapy; New Orleans, LA, October 17-20, 1993. Abstract 60.

### Italian Study Documents Occupational HIV Infection After Mucous Membrane Exposure to Blood

Dr. Giuseppe Ippolito et al at the Spallanzani Hospital in Rome reported the findings of a prospec-

tive study to determine the risk of occupationally acquired HIV infection. In collaboration with the Italian Study Group on Occupational Risk of HIV Infection, 29 acute-care public hospitals participated in the multicenter study between 1986 and 1990. Healthcare workers (HCWs) who reported percutaneous, mucous membrane, or nonintact skin exposures to blood or body fluids from HIV-infected patients were enrolled in the study.

Almost 5% of the injuries occurred as a result of inadvertent injury/needlestick from a coworker. The most common procedures associated with needlestick exposures were phlebotomy (27%), and continuous intravenous therapy (24%), followed by intravenous therapy (12%), intramuscular therapy 10%, suturing (10%), arterial puncture (2%), and other practices (15%). Hollow-bore needles accounted for more than 90% of the needlestick injuries. The most common site of mucous membrane contamination was the eye (70%). No barriers were worn during 69% of the mucous membrane exposures.

Two seroconversions were observed among a total of 1,488 HCWs followed for at least six months. One occurred in a student nurse who had been stuck with a needle used for an HIV antibody-negative, p24 antigen-positive drug addict; the other was a nurse who experienced mucous membrane contamination with a large quantity of blood from an HIV-positive hemophiliac patient while trying to clear a blocked arterial catheter.

The seroconversion rate in this study was 0.1% after percutaneous exposure (1/1,003) and 0.63% after mucous membrane contamination (1/158). Although there have been numerous case reports of occupational HIV infection following mucous membrane contamination, this is the first case reported from a prospective study.

This study demonstrates that transmission can occur during the "window period" of HIV infection and confirms the need for appropriate use of barriers and implementation of safer needle devices.

To estimate the risk of HIV infection more precisely, Dr. Ippolito pooled his data with the findings of 21 published prospective studies of HCWs exposed to blood or body fluids of HIV-infected patients. A total of 6,170 exposed HCWs were reported,

with 10 cases of occupationally acquired HIV infection (0.16%). Rates of 0.25% (9/3,628) after percutaneous exposures and 0.09% (1/1,007) after mucous membrane exposures represent the best available estimates of the magnitude of risk of occupationally acquired HIV infection.

FROM: Ippolito G, Puro V, De Carli G, et al. The risk of occupational hiv infection in HCWs. *Arch Intern Med* 1993;153:1451-1458

## HIV Key Receptor Identified

A French research team at the Pasteur Institute, headed by Dr. Ara Hovanessian, has identified a "co-receptor" molecule, named CD26, used by all strains of HIV to gain entry into blood cells. Since 1984, the CD4 receptor molecule has been known as the site of attachment on the surface of some blood cells. However, it was unknown how the virus moved inside the cell. This discovery that both the CD4 and CD26 molecules are necessary for the virus to penetrate and infect a cell could lead to the development of a vaccine to lock out the virus.

Just days after the French researchers made their announcement about the discovery of the "gateway" molecule, CD26, Australian scientists cloned the gene that makes the CD26 molecule and have invited the Pasteur Institute to share the clones.

John-Paul Levy, head of France's National AIDS Research Center, said the findings represent a major breakthrough because of implications for a vaccine that would work against all HIV strains.

## Universal Vaccination Urged as Incidence of Penicillin-Resistant Pneumococci Increases

Until recently, clinical isolates of pneumococci that were penicillin resistant were rare. However, recent nationwide surveys of U.S. isolates revealed that 4% to 5% of the clinical isolates of *Streptococcus pneumoniae* either were resistant intermediately or highly resistant to penicillin. In a recent review article, Dr. Gregory Caputo et al from Presbyterian Medical Center in Philadelphia warn clinicians that this development has significant implications for treating patients with suspected or documented pneumococcal infections. They suggest that the current evidence supports the use of vancomycin as the therapeutic agent of choice, reserving third-generation cephalosporins for selected cases in which in vitro susceptibility of the infecting strain is confirmed.

Finally, the authors suggest that the threat of further increases in the incidence of penicillin-resistant pneumococcal infection should serve as added support for the goal of universal pneumococcal vaccination in high-risk patients.

FROM: Caputo GM, Appelbaum MD, Liu HH. Infections due to penicillin-resistant pneumococci. *Arch Intern Med* 1993;153:1301-1310.

## Preoperative *S aureus* Colonization of Nares a Risk Factor for Saphenous Vein Harvest Site Surgical Wound Infection

A recent study suggests that *Staphylococcus aureus* colonization of the nares and sternum may contribute to saphenous vein harvest site surgical wound infections (SVHSWI). Since November 1990, patients undergoing coronary artery bypass grafting at the University of Iowa have been enrolled in a surgical wound surveillance study. The nares were cultured preoperatively and the sternal wounds cultured within three days of surgery. Postoperative venectomy wounds were inspected twice weekly, and cultures were obtained from all abnormal wounds. Infections were identified by a concurrent infection control surveillance system using standard definitions.

From 1991 to 1993, 87 patients developed SVHSWI. *S aureus* was isolated from 36% of the infections. Paired isolates of *S aureus* from nasal or sternal wound surveillance cultures and from postoperative SVHSWI were available from nine patients. All isolates were typed by restriction endonuclease digestion of plasmid DNA (Clal; REP-PDNA) and of chromosomal DNA (Smal: pulsed-field gel electrophoresis [PFGE]). In eight of nine patients, the REP-PDNA of the preoperative isolate matched the REP-PDNA of the postoperative SVHSWI isolate. PFGE typing confirmed these results.

These findings suggest that *S aureus* carried in the nares and on the sternum can contaminate and infect distal surgical wound sites. The researchers suggest that preoperative screening for carriage and possibly decolonization might decrease the risk of surgical site infections.

FROM: Morales E, Herwaldt L, Sanford L, et al. The role of *Staphylococcus aureus* carriage in saphenous vein harvest site surgical wound infections. 33rd Interscience Conference on Antimicrobial Agents and Chemotherapy; New Orleans, LA; October 17-20, 1993. Abstract 1446.