

group 1 (classical catheter) and 90 in group 2 (catheter coated with hydrogel and silver salts). Urine from the patients was tested for 10 days after the insertion of the catheter (reactive dipsticks each day and diagnostic urinalysis every 2 days). The UTI associated with catheterization was defined on the basis of bacterial and cytological criteria ($>100,000$ colony-forming units bacteria/mL and >10 leucocytes per mm^3).

Twenty-two UTIs were recorded: 13 in group 1 and 9 in group 2. The cumulative incidence of UTI associated with catheterization was 11.1% overall: 11.9% for group 1 and 10% for group 2; the odds ratio was 0.82 (95% confidence interval, 0.30-2.20); the cumulative incidence for UTI, calculated by the Kaplan-Meier method, was 36.3 overall: 35.2 in group 1 and 36.0 in group 2; the overall incidence density was 19 per 1,000 days of catheterization: 21 in group 1 and 18 in group 2. The differences between the two groups were not significant.

The authors pointed out that there is not enough evidence to conclude that catheters coated with silver salts and hydrogel give greater protection than classical catheters and to recommend widespread use.

FROM: Thibon P, Le Coutour X, Leroyer R, Fabry J. Randomized multi-centre trial of the effects of a catheter coated with hydrogel and silver salts on the incidence of hospital-acquired urinary tract infections. *J Hosp Infect* 2000;45:117-124.

Studies on the Disinfection of VRE-Contaminated Surfaces

The incidence of vancomycin-resistant enterococci (VRE) as a nosocomial pathogen has been steadily increasing, and the role of environmental surfaces in the transmission of VRE is incompletely defined. At the recent Association of Practitioners in Infection Control meeting, Rutala, Weber, and Gergen, from the University of North Carolina (UNC) School of Medicine and UNC Hospitals, Chapel Hill, reported a study designed to assess the efficacy of a quaternary ammonium compound (quat) to eliminate VRE from environmental surfaces and to assess the transfer of VRE from environmental surfaces via gloved hands.

Test surfaces were inoculated with a VRE suspension (~100 bacteria/sq in). Cleaning methods tested included wiping the inoculated surface with a dry cloth, a cloth immersed in sterile saline, a cloth sprayed with a quat, and a cloth immersed in a quat (drying time 1 minute). Transfer experiments were performed by inoculating a surface as above. The surface was then touched with sterile gloved hands, and, following this contact, the fingertips were pressed onto a blood agar culture plate. Assays were performed using Rodac plates.

Reductions in VRE for dry cloth, saline treated cloth, quat-sprayed cloth, and quat-immersed cloth were 71.2%, 99.5%, 95.4%, and 98.1%, respectively. The results were similar for both test surfaces (overbed table, Formica) for both VRE and vancomycin-sensitive enterococci. For transfer experiments, the mean colony count of the inoculated sur-

face (overbed table, Formica, linoleum, metal) was 79 VRE/Rodac with 0 VRE transferred.

The authors concluded that all cleaning and disinfecting procedures using a moistened cloth are highly effective in removing or inactivating VRE from contaminated surfaces. They observed no difference in elimination of a vancomycin-susceptible and a vancomycin-resistant strain of *Enterococcus*. Transfer of VRE from a contaminated surface via gloved hands was poor, with a transfer efficiency of less than 1%. These data suggest that currently used disinfection processes likely are highly effective in eliminating VRE. However, surface disinfection must involve contact with all contaminated surfaces. Given the low efficiency of transmission via gloved hands, low-level environmental contamination is not likely to play a major role in VRE transmission for patients on contact isolation.

FROM: Rutala WA, Weber DJ, Gergen MF. Vancomycin-resistant *Enterococcus* sp (VRE): surface disinfection and transmissibility via contaminated surfaces. Presented at the Association for Professionals in Infection Control and Epidemiology, Inc, 27th Annual Conference and International Meeting; June 18-22, 2000; Minneapolis, MN. Abstract.

Effect of Temperature and Soil on Ortho-phthalaldehyde Solution

In the healthcare setting, high-level disinfectants (HLDs) such as those containing glutaraldehyde are used routinely to prevent the transmission of infections by contaminated medical devices. Ortho-phthalaldehyde, an aromatic dialdehyde, has emerged as an alternative HLD to glutaraldehyde.

Chan-Myers and Roberts from Advanced Sterilization Products, Irvine, California, conducted studies to evaluate the effect of temperature and organic soil (horse serum) concentration on the biocidal activity of ortho-phthalaldehyde solution. The normal use concentration of ortho-phthalaldehyde is 0.55% with an exposure time of 12 minutes at 20°C. Using the suspension test and membrane filtration methodology, 0.3% ortho-phthalaldehyde solution was tested against *Bacillus subtilis* spores (American Type Culture Collection 19659, Rockville, MD) at 20°C, 25°C, 30°C, and 35°C. The same solution with 5%, 20%, and 40% added horse serum was evaluated against *Staphylococcus aureus* and *Pseudomonas aeruginosa* at 20°C. At predetermined time exposures, aliquots were sampled from the test solutions (contaminated with 10^6 cells or spores), neutralized, and processed.

The results showed that the level of biocidal activity was directly related to the study temperature. A 5-log reduction was observed in 3 hours at 35°C as compared with 24 hours at 20°C. For *S aureus* and *P aeruginosa*, with an exposure time of 5 minutes or below, a decrease in biocidal activity was observed with increasing horse serum concentration, but there was no difference in efficacy when the exposure time was 10 minutes or longer.

The authors concluded that an increase in organic

soil concentration had no adverse effect on the efficacy of ortho-phthalaldehyde solution and that the sporicidal activity of ortho-phthalaldehyde increased with increasing temperature.

FROM: Chan-Myers H, Roberts C. Effect of temperature and organic soil concentration on biocidal activity of ortho-phthalaldehyde solution. Presented at the Association for Professionals in Infection Control and Epidemiology, Inc, 27th Annual Conference and International Meeting; June 18-22, 2000; Minneapolis, MN.

Sterilization of Bone Allografts

Coronado and colleagues from the College of Veterinary Medicine, Michigan State University, East Lansing, conducted a study to compare virucidal effects and bone incorporation properties of cortical bone allografts transplanted into specific-pathogen-free (SPF) cats. Allografts consisted of untreated bone from an SPF cat (negative-control group) and bone from 5 feline leukemia virus (FeLV)-infected cats that was subjected to sterilization with ethylene oxide (ETO), preservation with glycerol, or no treatment (positive-control group). Bones from the aforementioned groups and 20 8-week-old SPF cats (5 cats/group) were implanted with an allograft from one of the aforementioned groups. After implantation, blood samples were collected weekly to monitor FeLV p27 antigen and antibody titers. Quantification of FeLV provirus was performed on blood samples at weeks 0, 4, and 8, and donor bone samples at time of implantation. Cats were sacrificed 8 weeks after transplantation, and graft sites were evaluated.

All results for negative-control cats were negative. All ETO-group cats had negative results for antigen and provirus in blood, whereas one cat had a low antibody titer. Although three ETO-treated allografts were positive for provirus, the DNA appeared denatured. One cat in the glycerol group had positive results for all tests in blood samples. All glycerol-preserved allografts were positive when tested for provirus. All results for positive-control-group cats were positive. Differences in incorporation of bone grafts were not observed.

It was concluded that glycerol preservation of FeLV-infected bone allografts did not eliminate transmission of retrovirus to recipients. In contrast, ETO sterilization appeared to denature DNA and prevent infection. Treatments did not affect incorporation of bone grafts in young cats. This research may have implications for proper sterilization of bone grafts in humans.

FROM: Coronado GS Jr, Swenson CL, Martinez SA, Burkhardt KS, Arnoczky SP. Effects of a 98% solution of glycerol or sterilization with ethylene oxide on FeLV in bone allografts and effects on bone incorporation of allografts in cats. *Am J Vet Res* 2000;61:665-671.

Infection Risks in Pediatric Organ Transplantation

Infectious complications are a major cause of morbidity and mortality after organ transplantation. There are several reports on infections during the first months after transplantation, but there are very few data regarding infections in long-term survivors of pediatric organ transplantation. Their and colleagues from the Hospital for Children and Adolescents, University of Helsinki, Finland, retrospectively analyzed the incidence and type of infections in 56 children who underwent 59 liver or renal transplantations. Follow-up was begun when the patient was sent home after a successful operation. All of the children received triple immunosuppression.

During a mean follow-up of 4.8 years (total, 286 patient-years), 1,540 episodes of infection were recorded. The median incidence was 4.8 episodes per patient-year. The greatest number was seen in the smallest children, 3 to 6 months after transplantation. Viral upper respiratory tract infections were the most common problem, accounting for one half of the episodes (2.7 episodes/patient-year). Gastroenteritis was the second most common viral infection. Only 45 episodes of infection with herpesviruses were recorded, and 7 of those were caused by cytomegalovirus. Otitis media and sinusitis were the most common bacterial infections and complicated upper respiratory infection in 23% of episodes. Thirty-nine episodes of urinary tract infections were diagnosed, 31 in children with renal transplants. Other bacterial infections were rare, and only three episodes of verified bacterial sepsis were diagnosed.

The authors concluded that the frequency and type of infections in children with liver and renal transplants who are on triple immunosuppression are quite similar to those in age-matched healthy children.

FROM: Their M, Holmberg C, Lautenschlager I, Hockerstedt K, Jalanko H. Infections in pediatric kidney and liver transplant patients after perioperative hospitalization. *Transplantation* 2000;69:1617-1623.

Expiration of Multidose Vials of PPD

The United States Pharmacopeial Convention (USP) recently issued an alert regarding the expiration dating of tuberculin purified protein derivative (Aplisol, Parkedale Pharmaceuticals, Rochester, MI) diluted after the vial is entered. Pharmacists should be aware that, once entered, vials should be used for no longer than 30 days. This information is mentioned in the package insert for Aplisol, but not on the box or the vial label. Product quality concerns can be reported to the USP on line at www.usp.org or by calling 800-487-7776.

FROM: US Pharmacopeial Practitioner reporting at www.usp.org.