Medical News

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Additional news items in this issue: *Infection Control Measures Reduce Transmission of VRE,* page 730; *Pesticide-Resistant Lice Found in US,* page 735; Candida glabrata *Fungemia,* page 735; *Quinolone-Resistant Strains of* Escherichia coli, page 740; *Elucidating the Origins of* Candida albicans *in an ICU,* page 745; *Longitudinal Analysis of MRSA at a Teaching Hospital in Taiwan,* page 745; *Alcohol Gel as an Antimicrobial Sanitizing Agent,* page 751; *Sterilization of HIV With Irradiation: Relevance to Infected Bone Allografts,* page 751; *Effectiveness of a Manual Disinfection Procedure in Eliminating HCV From Experimentally Contaminated Endoscopes,* page 769; Mycobacterium tuberculosis *From Whirlpools,* page 777; *VRE Colonization in Berlin,* page 777; Outbreak of *Clostridium perfringens* Associated with Pureed Food, page 780; *Use of Avoparcin as a Growth Promoter and the Occurrence of VRE in Norwegian Poultry and Swine,* page 780.

Nosocomial Bacteremia in ICU

Edgeworth and colleagues from St Thomas' Hospital, London, United Kingdom, conducted a prospective observational study to identify bacterial pathogens, their antibiotic susceptibility, and the associated focus on infection-causing nosocomial bacteremia in patients in an adult intensive care unit (ICU) between 1971 and 1995. The setting was a 12-bed general adult ICU in a 1,000-bed tertiary referral teaching hospital. Included in the study were 486 episodes of bacteremia involving 570 organisms in 425 patients.

Between 1971 and 1990, the number of bacteremias and the relative frequency of isolation of individual organisms changed little, with *Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli,* and *Klebsiella* species predominating. During 1991 to 1995, the number of bacteremias increased twofold, largely attributable to increased isolation of *Enterococcus* species, coagulase-negative staphylococci, intrinsically antibiotic-resistant gram-negative organisms (particularly *P aeruginosa),* and *Candida* species. The most commonly used antibiotics for the treatment of bacteremic patients throughout the 1970s were amoxicillin and gentamicin. After the introduction of cephalosporins in the early 1980s, their use increased progressively to equal that of gentamicin in the 1990s, whereas amoxicillin use decreased. Since the introduction of cephalosporins, increases in the antibiotic resistance of gram-negative organisms have been largely confined to an outbreak of gentamicin- and ceftazidime-resistant organisms caused by contaminated arterial pressure monitors during 1992 and 1993 and a twofold increase in ceftazidime resistance of the *Pseudomonas* species. Gentamicin resistance of gram-negative aerobes remained unchanged (excluding the arterial pressure monitor outbreak), despite gentamicin being one of the most frequently prescribed antibiotics throughout the 25-year period. Between 1986 and 1995, two thirds of all bacteremic organisms were grown from intravascular catheters, which were designated as the focus of infection; 7% were secondary to gastrointestinal pathology, but only approximately 3% were secondary to wound, respiratory tract, or urinary tract infections.

The authors concluded that bacteremias have become more frequent in the ICU, probably because of the increased use of intravascular catheters, which are the most frequent foci for bacteremic infection. The spectrum of organisms has changed, and this can be temporally related to the changes in the antibiotics prescribed. Gentamicin resistance of gram-negative organisms has not increased during a 25-year period, despite being one of the most frequently prescribed antibiotics in the ICU.

FROM: Edgeworth JD, Treacher DF, Eykyn SJ. A 25-year study of nosocomial bacteremia in an adult intensive care unit. *Crit Care Med* 1999;27:1421-1428.

Vaginal Disinfection With Chlorhexidine During Childbirth

Stray-Pedersen and colleagues from Aker Hospital, University of Oslo, Norway, studied whether chlorhexidine vaginal douching, applied by a squeeze bottle intrapartum, reduced mother-to-child transmission of vaginal microorganisms including *Streptococcus agalactiae (Streptococcus* serogroup B=GBS) and hence infectious morbidity in both mother and child. During the first 4 months (reference phase), the vaginal flora of women in labor was recorded and the newborns monitored. During the next 5 months (intervention phase), a trial of randomized, blinded, placebo-controlled douching with either 0.2% chlorhexidine or sterile saline was performed on 1,130 women in vaginal labor.

During childbirth, bacteria were isolated from 78% of the women. Vertical transmission of microbes occurred in 43% of the reference deliveries. In the double-blind study, vaginal douching with chlorhexidine significantly reduced the vertical transmission rate from 35% (saline) to 18% (chlorhexidine; $P<.0001$). The lower rate of bacteria isolated from the latter group was accompanied by a significantly reduced early infectious morbidity in the neonates, par-

ticularly in *S agalactiae* infections. In the early postpartum period, fever in the mothers was significantly less likely in the patients offered vaginal disinfection, a reduction from 7% in those douched using saline compared with 3% in those disinfected using chlorhexidine. A lower occurrence of urinary tract infections also was observed: 6% in the saline group as compared with 3% in the chlorhexidine group ($P<.01$).

This prospective controlled trial demonstrated that vaginal douching with 0.2% chlorhexidine during labor can significantly reduce both maternal and early neonatal infectious morbidity. The squeeze bottle procedure was simple, quick, and well-tolerated.

FROM: Stray-Pedersen B, Bergan T, Hafstad A, Normann E, Grogaard J, Vangdal M. Vaginal disinfection with chlorhexidine during childbirth. *Int J Antimicrob Agents* 1999;12:245-251.

Effectiveness of Live, Attenuated Intranasal Influenza Virus Vaccine

A recent study by Nichol and colleagues concluded that, among healthy adults, a live, attenuated influenza vaccine delivered intranasally not only helps prevent serious illness but also saves money.

In a randomized, double-blinded, placebo-controlled trial of 4,561 healthy adults aged 18 to 64, investigators found that recipients of intranasally administered trivalent, live, attenuated influenza virus (LAIV) vaccine were as likely to experience one or more febrile illnesses as placebo recipients during peak outbreak periods (13.2% for vaccine vs 14.6% for placebo). However, vaccination significantly reduced the numbers of severe febrile illnesses (18.8% reduction) and febrile upper respiratory tract illnesses (23.6% reduction). Vaccination also led to fewer days of illness across all illness syndromes (22.9% reduction for febrile illnesses; 27.3% reduction for severe febrile illnesses), fewer days of work lost (17.9% reduction for severe febrile illnesses; 28.4% reduction for febrile upper respiratory tract illnesses), and fewer days with healthcare-provider visits (24.8% reduction for severe febrile illnesses; 40.9% reduction for febrile upper respiratory tract illnesses). Use of prescription antibiotics and over-the-counter medications was also reduced across all illness syndromes. Vaccine recipients were more likely to experience runny nose or sore throat during the first 7 days after vaccination, but serious adverse events between the groups were not significantly different.

The match between the type A(H3N2) vaccine strain and the predominant circulating virus strain (A/Sydney/05/97[H3N2]) for the 1997/98 season was poor, suggesting that LAIV provided substantial cross-protection against this variant influenza A virus strain. The authors concluded that intranasal trivalent LAIV vaccine was safe and effective in healthy, working adults in a year in which a drifted influenza A virus predominated.

FROM: Nichol KL, Mendelman PM, Mallon KP, Jackson LA, Gorse GJ, Belshe RB, et al. Effectiveness of live, attenuated intranasal influenza virus vaccine in healthy, working adults: a randomized controlled trial. *JAMA* 1999;282:137-144.

Gastrointestinal Endoscopic Reprocessing Practices in the United States

Patient infection from contaminated gastrointestinal (GI) endoscopes generally can be attributed to failure to follow appropriate reprocessing guidelines. Recently, the Food and Drug Administration recommended a 45-minute exposure of GI endoscopes to 2.4% glutaraldehyde solutions heated to 25°C. Simultaneously, the American Society for Gastrointestinal Endoscopy (ASGE), the American Gastroenterological Association, and the Society of Gastroenterology Nurses and Associates endorsed a reprocessing guideline that emphasized manual precleaning and recommended a 20-minute exposure to a 2.4% glutaraldehyde solution at room temperature. Since then, little information has become available regarding actual reprocessing practices in the United States.

Cheung and colleagues mailed a questionnaire regarding endoscopic disinfection practices to 730 randomly selected members of the ASGE; 294 (40%) responded. Appropriate manual cleaning (suctioning detergent through the accessory channel and brushing the channel and valves) was reported by 91% of respondents; 70% then used automated reprocessors for disinfection or sterilization. Glutaraldehyde was the most widely used chemical disinfectant; 85% used glutaraldehyde as one of their primary disinfectants. The most commonly used disinfection time with 2.4% glutaraldehyde was 20 minutes (83.9%) followed by 45 minutes (11.4%). Only 24% of users of 2.4% glutaraldehyde heated their solution; 60% of centers tested disinfectant concentration daily or more frequently; 74% sterilized nondisposable forceps before use; 29% of centers reused disposable endoscopic accessories (which are more frequently disinfected rather than sterilized). Twelve respondents reported cases of endoscopic cross-infection.

The authors note that a significant minority of endoscopy centers still do not completely conform to recent ASGE, American Gastroenterological Association, and the Society of Gastroenterology Nurses and Associates guidelines on disinfection, and they may not be appropriately disinfecting GI endoscopes. Rigid adherence to recommended guidelines is strongly encouraged to ensure patient safety.

FROM: Cheung RJ, Ortiz D, DiMarino AJ Jr. GI endoscopic reprocessing practices in the United States. *Gastrointest Endosc* 1999;50:362-368.