Medical News

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Variation in Nosocomial Infections by Patient-Care Setting

Sax and coinvestigators from the University of Geneva Hospitals, Geneva, Switzerland, performed a study to estimate the prevalence of nosocomial infections (NIs) and to assess differences between medical care settings in one hospital complex. A 7-day–period prevalence survey was conducted in May 1998 in a large primary and tertiary healthcare center in Geneva, Switzerland, that included all patients in acute-, sub-acute–, and chronic-care settings. Variables included demography, exposure to invasive devices and antibiotics, surgical history, and patients' localization. Overall prevalence of NIs was 11.3% (acute, 8.4%; sub-acute, 11.4%; chronic-care setting, 16.4%) in the 1,928 patients studied and ranged from 0% in ophthalmology to 23% in critical-care units. Risk of infection in sub-acute– and chronic-care settings was significantly higher than in the acute-care setting, even after adjustment for case-mix. As a distinct group, patients in the geriatric location (belonging to the sub-acute–care setting) showed a significant proportion of urinary (39%) and respiratory (21%) tract infections, contrasting with a relatively low exposure to urinary catheters (6.1%) and orotracheal intubation (0%).

The authors concluded that sub-acute– and chronic-care settings are associated with high infection prevalence, even after case-mix adjustment. Prevalence studies are an easy surveillance tool that can be exploited further by analyzing data according to hospital-care settings to identify high-risk areas.

FROM: Sax H, Hugonnet S, Harbarth S, Herrault P, Pittet D. Variation in nosocomial infection prevalence according to patient care setting: a hospital-wide survey. *J Hosp Infect* 2001;48:27-32.

Serratia Outbreak From Contaminated Epoetin Alfa

The CDC investigated an outbreak of infections among patients at a hemodialysis center. In a 1-month period, 10 *Serratia liquefaciens* bloodstream infections (BSIs) and 6 pyrogenic reactions occurred. Grohskopf and coinvestigators performed a cohort study of all hemodialysis sessions on days that staff members reported *S liquefaciens* BSIs or pyrogenic reactions. They reviewed procedures and obtained cultures of water, medications, soaps, and hand lotions, and swabbed the hands of personnel.

They analyzed 208 sessions involving 48 patients. In 12 sessions, patients had *S liquefaciens* BSIs; in 8, patients had pyrogenic reactions without BSI. Sessions with infections or reactions were associated with higher median doses of epoetin alfa than the 188 other sessions (6,500 vs 4,000 U; P=.03) and were more common during afternoon or evening shifts than morning shifts (P=.03). Sessions with infections or reactions were associated with doses of epoetin alfa of more than 4,000 U (multivariate odds ratio, 4.0; 95% confidence interval, 1.3-12.3).

A review of procedures revealed that preservative-free, single-use vials of epoetin alfa were punctured multiple times, and residual epoetin alfa from multiple vials was pooled and administered to patients. *S liquefaciens* was isolated from pooled epoetin alfa, empty vials of epoetin alfa that had been pooled, antibacterial soap, and hand lotion. All isolates were identical by pulsed-field gel electrophoresis. After the practice of pooling epoetin alfa was discontinued, and the contaminated soap and lotion were replaced, no further *S liquefaciens* BSIs or pyrogenic reactions occurred at this hemodialysis facility.

The authors concluded that puncturing single-use vials multiple times and pooling preservative-free epoetin alfa caused this outbreak of BSIs in a hemodialysis unit. To prevent similar outbreaks, medical personnel should follow the manufacturer's guidelines for the use of preservative-free medications.

FROM: Grohskopf LA, Roth VR, Feikin DR, Arduino MJ, Carson LA, Tokars JI, et al. *Serratia liquefaciens* bloodstream infections from contamination of epoetin alfa at a hemodialysis center. *N Engl J Med* 2001;344:1491-1497.

Catheter Manipulations and Risk of Catheter-Associated BSIs

Mahieu and coinvestigators, from the University Hospital of Antwerp, conducted a prospective cohort study to evaluate the influence of catheter manipulations on catheter-associated (CA) bloodstream infection (BSI) in neonates. Neonates admitted between November 1, 1993, and October 31, 1994, at the neonatal intensive care unit of a university hospital were included in the study. Seventeen episodes of CA BSI occurred in 357 central catheters over a period of 3,470 catheter-days, with a cumulative incidence of 4.7/100 catheters and an incidence density of 4.9/1,000 catheter-days. Patient and catheter-related risk factors independently associated with CA BSI were catheter-hub colonization (odds ratio [OR], 32.6; 95% confidence interval [CI_{95}], 4.3-249) and

extremely low weight (≤1,000 g) at time of catheter insertion (OR, 9.1; CI_{95}, 1.9-42.2). Catheter manipulations independently associated with CA BSI were disinfection of the catheter hub (OR, 1.2; CI_{95}, 1.1-1.3), blood sampling (OR, 1.4; CI_{95}, 1.1-1.8), heparinization (OR, 0.9; CI_{95}, 0.8-1.0), and antisepsis of exit site (OR, 0.9; CI_{95}, 0.8-1.0).

This study indicates that certain manipulations (eg, blood sampling through the central line) and disconnection of the central venous catheter, which necessitates disinfection of the catheter hub, increase the risk of CA BSI, whereas other procedures (eg, heparinization and exit-site antisepsis) protect against CA BSI in neonates.

FROM: Mahieu LM, De Dooy JJ, Lenaerts AE, Ieven MM, De Muynck AO. Catheter manipulations and the risk of catheter-associated bloodstream infection in neonatal intensive care unit patients. *J Hosp Infect* 2001;48:20-26.

Regional Program for Control of VRE

In late 1996, vancomycin-resistant enterococci (VRE) were first detected in the Siouxland region of Iowa, Nebraska, and South Dakota. A task force was created, and in 1997 the assistance of the CDC was sought in assessing the prevalence of VRE in the region's facilities and implementing recommendations for screening, infection control, and education at all 32 healthcare facilities in the region.

In October 1998 and October 1999, the infection control interventions were evaluated with point-prevalence surveys and a case-control study of gastrointestinal colonization VRE, comparing infection control practices and screening policies for VRE at the acute-care and long-term–care facilities in the Siouxland region.

Perianal-swab samples were obtained from 1,954 of 2,196 eligible patients (8%) in 1998 and 1,820 of 2,049 eligible patients (89%) in 1999. The overall prevalence of VRE at 30 facilities that participated in all 3 years of the study decreased from 2.2% in 1997 to 1.4% in 1998 and to 0.5% in 1999 ($P<.001$ by chi-square test for trend). The number of facilities that had at least 1 patient with VRE declined from 15 in 1997 to 10 in 1998 to only 5 in 1999.

At both acute-care and long-term–care facilities, the risk factors for VRE colonization were prior hospitalization and treatment with antimicrobial agents. Most of the long-term–care facilities screened for vancomycin-resistant enterococci (26 of 28 in 1998 [93%] and 23 of 25 in 1999 [92%]) and had infection control policies to prevent the transmission of VRE (22 of 25 [88%] in 1999). All four acute-care facilities had screening and infection control policies for VRE in 1998 and 1999.

The authors concluded that an active infection control intervention, which includes the obtaining of surveillance cultures and the isolation of infected patients, can reduce or eliminate the transmission of VRE in the healthcare facilities of a region. The authors note that the success of the intervention resulted from the collaboration among the participating health departments and the personnel of the healthcare facilities and should be viewed as a model for action in this era of emerging antimicrobial resistance.

FROM: Ostrowsky BE, Trick WE, Sohn AH, Quirk SB, Holt S, Carson LA, et al. Control of vancomycin-resistant *Enterococcus* in health care facilities in a region. *N Engl J Med* 2001;344:1427-1433.

Guidelines for Control of West Nile Virus Infection

The CDC has issued revised "Guidelines for Surveillance, Prevention, and Control of West Nile Virus Infection in the United States, April 2001." These guidelines are available from the CDC at www.cdc.gov/ncidod/dvbid and were derived from discussions during the national meeting on West Nile virus held in Charlotte, North Carolina, from January 21 to February 4, 2001. The guidelines include strategies for surveillance, laboratory diagnosis, public education, mosquito abatement, public health infrastructure changes, interjurisdictional data sharing, and research priorities.

Relationship of a Clonal Outbreak of VRE to MRSA Incidence in an Australian Hospital

Bartley and colleagues from Princess Alexandra Hospital, Brisbane, Australia, point out that Australian isolates of vancomycin-resistant enterococci (VRE) have been widely scattered geographically and are predominantly polyclonal and of the VanB phenotype. Forty-nine VRE were isolated from 47 patients in their hospital from October 1996 to December 1999; 44 of these VRE were *Enterococcus faecium* with a *van*A glycopeptide resistance genotype. Four isolates were pathogenic. Thirty-five VRE were from an outbreak in the renal and infectious diseases units over a 4-month period.

Pulsed-field gel electrophoresis demonstrated that 41 of the 49 VRE were indistinguishable or closely related. Enhanced environmental cleaning, strict contact isolation of colonized patients, and reduced inpatient admissions terminated the epidemic. Cohorting of methicillin-resistant *Staphylococcus aureus* (MRSA)-positive patients was restricted, because VRE patients occupied the isolation facilities. This resulted in a statistically significant increase in MRSA infections across the hospital.

VRE epidemics have the ability to influence the epidemiology of other nosocomial pathogens when infection control resources are exhausted.

FROM: Bartley PB, Schooneveldt JM, Looke DF, Morton A, Johnson DW, Nimmo GR. The relationship of a clonal outbreak of *Enterococcus faecium van*A to methicillin-resistant *Staphylococcus aureus* incidence in an Australian hospital. *J Hosp Infect* 2001;48:43-54.