Medical News

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Additional news items in this issue: *Risk of Cross-Patient Infection With Use of a Needleless Injector Device,* page 23; *Skin Hygiene and Infection Prevention: More of the Same or Different Approaches?* page 32; *Quinolone-Resistant* E coli *in the Community,* page 38; *Molecular Epidemiology of VRE in New York,* page 52; *HCV Common Among US Veterans,* page 56; *Clinicians' Interpretation of PEP for Occupational Exposure to HIV,* page 58; *Comparison of Nosocomial Infections in Trauma and Surgical Patients,* page 64; *Epidemiology of* P aeruginosa *Infection in CF Patients,* page 65.

OSHA Announces Enforcement of Safety Devices

On November 5, 1999, OSHA issued a revised Compliance Directive 2-2.44D, Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens, replacing the previous CPL 2-2.44C issued in February 1992 (see http://www.osha.gov). This CPL is used by OSHA to establish uniform procedures for compliance officers to enforce the Bloodborne Pathogen Standard (29 CFR 1910.30) that was issued in December 1991. Clarification was needed in light of the increased use and acknowledged feasibility of effective engineering controls since the release of the standard in 1991, the agency said.

Providing greater detail than the original directive, the revision states that preventing worker exposure to bloodborne pathogens, such as human immunodeficiency virus and hepatitis, requires a comprehensive program including engineering controls, such as needleless devices, shielded needle devices, and plastic capillary tubes, as well as proper work practices. The employer must make changes to its exposure control plan to include these engineering controls.

"Where engineering controls will reduce employee exposure either by removing, eliminating, or isolating the hazard, they must be used," according to OSHA. "Significant improvements in technology are most evident in the growing market of safer medical devices that minimize, control, or prevent exposure incidents," the directive said. OSHA, however, does not advocate the use of one particular device over another.

The agency encourages employers to involve employees in the device selection process to improve employee acceptance of the newer devices and to improve the quality of the selection process. "This directive doesn't place new requirements on employers, but it does recognize and emphasize the advances made in medical technology," Secretary of Labor Alexis Herman said in a statement. "And it reminds employers that they must use readily available technology in their safety and health programs."

Although adoption of this directive is not required by those states that have approved state OSHA plans (approximately half of the states), these state-plan states are required to have enforcement policies and procedures in place that are at least as effective as those of federal OSHA. It is likely that most OSHA-approved state plans will adopt the federal directive. Some states plans, such as California's, already have adopted more stringent requirements.

An employer's failure to evaluate or consider effective engineering controls or safe needle devices will result in a citation, the agency said. Citations will be issued if a combination of engineering or work practice controls used by the employer do not eliminate or minimize exposure or when the compliance officer finds that an employer is using an engineering control but believes another device would be clearly more effective than the one in use.

In the latter case, the compliance officer should document how the device was used, and how it was selected by the employer or the employee. Engineering controls must be maintained or replaced on a regular schedule to ensure their effectiveness, the directive said. If a compliance officer finds that there is no system for regular checking of the engineering controls or that regular checking is not done, the employer will be cited.

The rush to purchase newer technology in California has resulted in product availability problems. The new OSHA mandate will only heighten this problem. Someone that is familiar with the devices being used should be actively involved in evaluating the supply and the use of potential alternatives when there may be a back order. Appropriate records should be kept of products that are on back order to document for OSHA the attempt to comply, with failure due to lack of market availability of a particular safety device.

The directive provides employers with safety evaluation forms and a Web-site resource list in its appendix section to assist in the evaluation of the devices.

FROM: OSHA. National News Release: OSHA Revises Bloodborne Pathogen compliance directive; November 5, 1999. http://www.osha.gov/media/oshnews/nov99/national-19991105.html.

Blood Cultures Drawn From CVCs

Because of concern about low specificity, American College of Physicians guidelines and expert opinion dis-

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courage the use of a central venous catheter (CVC) when obtaining blood for culture for bacteremia or fungemia. However, data on the reliability of cultures done with blood obtained from CVCs are conflicting.

DesJardin and colleagues conducted a retrospective cohort study of hospitalized patients with cancer in whom samples for paired blood cultures were drawn through CVC and peripheral venipuncture. Blinded assessments of culture results done by infectious disease experts were used as the gold standard. Sensitivity, specificity, and positive and negative predictive values were compared for culture of blood from CVCs and culture of blood from peripheral venipuncture.

Of 551 paired cultures, 469 (85%) were catheter-negative/venipuncture-negative, 32 (6%) were catheter-positive/venipuncture-positive, 17 (3%) were catheter-negative/venipuncture-positive, and 33 (6%) were catheter-positive/venipuncture-negative pairs. For the 82 paired cultures with at least one positive result, blinded determination of true bacteremia or fungemia was made by two infectious disease specialists. For catheter draw and peripheral venipuncture, sensitivities were 89% and 78%, specificities were 95% and 97%, positive predictive values were 63% and 73%, and negative predictive values were 99% and 98%.

The authors concluded that, in hospitalized hematology-oncology patients, culture of blood drawn through either the CVC or peripheral vein shows excellent negative predictive value. Culture of blood drawn through an indwelling CVC has low positive predictive value, apparently less than from a peripheral venipuncture. Therefore, a positive result from a catheter needs clinical interpretation and may require confirmation. However, the use of a catheter to obtain blood for culture may be an acceptable method for ruling out bloodstream infections.

FROM: DesJardin JA, Falagas ME, Ruthazer R, Griffith J, Wawrose D, Schenkein D, et al. Clinical utility of blood cultures drawn from indwelling central venous catheters in hospitalized cancer patients. *Ann Intern Med* 1999;131:641-647.

Diagnosis of CVC-Related BSI

Current methods for the diagnosis of bloodstream infection (BSI) related to central venous catheters (CVCs) are slow and in many cases require catheter removal. Since most CVCs that are removed on suspicion of causing infection prove not to be infected, removal of catheters unnecessarily exposes patients to the risks associated with reinsertion. The Gram stain and acridine-orange leucocyte cytospin (AOLC) test, done on blood samples withdrawn through the CVC, is effective in the rapid diagnosis of BSI in neonates, but has yet to be proven in adults. The Gram stain and AOLC is rapid (30 minutes), inexpensive, and requires only 100 µL of blood and the use of light and ultraviolet microscopy. Kite and colleagues evaluated the Gram stain and AOLC test in suspected cases of CVC-related BSI in comparison with two methods requiring catheter removal (tip roll and tip flush) and with a third technique, done in situ (endoluminal brush), in conjunction with quantitative peripheral-blood cultures.

Kite and colleagues assessed 128 cases of suspected CVC-related BSI in 124 adult surgical patients (median duration of CVC placement was 16 days). In 112 cases (88%), CVC blood was obtainable. CVC-related BSI was diagnosed in 50 cases (culture of the same organism from the catheter, in material numbers, and from peripheral-blood culture). The sensitivity of the Gram stain and AOLC test was 96%, and the specificity was 92%, with a positive predictive value of 91% and a negative predictive value of 97%. By comparison, the tip-roll, tip-flush, and endoluminal-brush methods had sensitivities of 90%, 95%, and 92%, and specificities of 55%, 76%, and 98%, respectively.

The authors concluded that the Gram stain and AOLC test is a simple and rapid method for the diagnosis of CVC BSI. This diagnostic method compares favorably with other diagnostic methods, particularly those that require the removal of the catheter, and can permit early targeted antimicrobial therapy.

In an accompanying editorial, Barry Farr, MD, MSc, points out that physicians are likely to continue to collect two blood samples for qualitative blood cultures to investigate the cause of fever, so the gram-acridine technique could be regarded as an extra expense. The issue of the relative cost-effectiveness of diagnostic techniques could be resolved by a trial in which patients are randomly assigned management with different diagnostic strategies.

FROM: Kite P, Dobbins BM, Wilcox MH, McMahon MJ. Rapid diagnosis of central-venous-catheter-related bloodstream infection without catheter removal. *Lancet* 1999;354:1504-1507.

Farr BM. Accuracy and cost-effectiveness of new tests for diagnosis of catheter-related bloodstream infections. *Lancet* 1999;354:1487-1488.

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