

Medical News

EDITED BY GINA PUGLIESE, RN, MS; MARTIN S. FAVERO, PHD

Additional news items in this issue: *Rising Incidence of Hepatocellular Carcinoma in the United States*, page 311; *Surgical-Wound Surveillance*, page 317; *PCR and Conventional Tests Used for MRSA Detection*, page 330; *Group A Streptococcus Outbreaks Linked to Healthcare Workers*, page 340; *Russia's TB Epidemic*, page 361.

Heparin Bottles Source of Pseudobacteremia due to *Pseudomonas fluorescens*

Pseudobacteremia might be responsible for up to 50% of all positive blood cultures, and is important to recognize early to avoid unnecessary treatment with antibiotics and delay in the search for the true cause of the fever. Namnyak and coinvestigators describe a pseudobacteremia outbreak of *Pseudomonas fluorescens* related to contaminated lithium heparin bottles in a pediatric ward. Twelve patients were involved in this outbreak from December 1996 to January 1997. None of the patients had clinical evidence of sepsis, but, nevertheless, most children were treated with antibiotics. Blood-collection bottles were suspected as the source of pseudobacteremia, and lithium heparin bottles were found to be contaminated with *P fluorescens* indistinguishable from the blood isolates taken from these children. Withdrawal of these bottles led to the termination of the pseudobacteremia.

FROM: Namnyak S, Hussain S, Davalle J, Roker K, Strickland M. Contaminated lithium heparin bottles as a source of pseudobacteremia due to *Pseudomonas fluorescens*. *J Hosp Infect* 1999;41:23-28.

A Liposomal Hydrogel for the Prevention of Bacterial Adhesion to Catheters

The adhesion of bacteria to medical implants and the subsequent development of a biofilm frequently results in the infection of surrounding tissue and may require removal of the device. DiTizio and coinvestigators from the Institute of Biomedical Engineering, Department of Botany, University of Toronto, Ontario, Canada, have developed a liposomal hydrogel system that significantly reduces bacterial adhesion to silicone catheter material. The system consists of a poly (ethylene glycol)-gelatin hydrogel in which liposomes containing the antibiotic ciprofloxacin are sequestered. This mixture was applied to a silicone surface that had been pretreated with phenylazido-modified gelatin. Hydrogel cross-linking and attachment to surface-immobilized gelatin was accomplished through the formation of urethane bonds between gelatin and nitrophenyl carbonate-activated poly (ethylene glycol). Liposomal

hydrogel-coated catheters were shown to have an initial ciprofloxacin content of $185 \pm 16 \mu\text{g}/\text{cm}^2$. Ciprofloxacin was released over 7 days, with an average release rate of $1.9 \pm 0.2 \mu\text{g}/\text{cm}^2/\text{h}$ for the first 94 hours.

In vitro assays using a clinical isolate of *Pseudomonas aeruginosa* established the antimicrobial efficacy of the liposomal hydrogel. A modified Kirby-Bauer assay produced growth-inhibition zone diameters of 39 ± 1 mm, while bacterial adhesion was inhibited completely on catheter surfaces throughout a 7-day in vitro adhesion assay. This new antimicrobial coating shows promise as a prophylactic or for treatment for catheter-related infection.

FROM: DiTizio V, Ferguson GW, Mittelman MW, Khoury AE, Bruce AW, DiCosmo F. A liposomal hydrogel for the prevention of bacterial adhesion to catheters. *Biomaterials* 1998;19:1877-1884.

TB Transmission During Train and Bus Travel

In January 1996, smear- and culture-positive TB was diagnosed in a 22-year-old black man who had traveled on two US passenger trains (29.1 hours) and a bus (5.5 hours) over 2 days. To determine if transmission had occurred, passengers and crew were notified of the potential exposure and instructed to undergo a tuberculin skin test (TST). Of the 240 persons who completed screening, 4 (2%) had a documented TST conversion (increase in induration of ≥ 10 mm between successive TSTs), 11 (5%) had a single positive TST ≥ 10 mm, and 225 (94%) had a negative TST (< 10 mm). For two persons who underwent conversion, no other risk factors for a conversion were identified other than exposure to the ill passenger during train or bus travel. These findings support limited transmission of *Mycobacterium tuberculosis* from a potentially highly infectious passenger to other persons during extended train and bus travel.

FROM: Moore M, Valway SE, Ihle W, Onorato IM. A train passenger with pulmonary tuberculosis: evidence of limited transmission during travel. *Clin Infect Dis* 1999;28:52-56.

Efficacy of Influenza Vaccine Among Healthcare Workers

Wilde and colleagues conducted a study to determine the effectiveness of trivalent influenza vaccine in reducing