

Medical News

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

Reliability of Rectal Swab Culture Method for Detection of VRE

The diagnostic accuracy of the rectal swab culture method in identifying gastrointestinal colonization with vancomycin-resistant enterococci (VRE) is not known. D'Agata and colleagues from Vanderbilt University School of Medicine, Nashville, Tennessee, performed a study in which serial quantitative stool cultures, skin cultures, and rectal swab cultures were collected from patients with VRE infections to assess the false-negative rate of the rectal swab and the prevalence of skin colonization, a prerequisite for cross-transmission, at varying VRE stool densities. A total of 35 stool samples were obtained from 13 patients. The sensitivity of the rectal swab culture was 58%, ranging from 100% (at VRE densities of $\geq 7.5 \log_{10}$ colony-forming units [CFUs]/g of stool) to 0% (at VRE densities of $\leq 4.5 \log_{10}$ CFUs/g of stool).

Skin colonization was detected at low VRE stool densities, but it was more common at higher VRE densities ($P < .001$). Antibiotic exposure was significantly associated with higher VRE stool densities ($P < .001$).

The high false-negative rate of the rectal swab may be contributing to the continued increase in the prevalence of VRE.

FROM: D'Agata EM, Gautam S, Green WK, Tang YW. High rate of false-negative results of the rectal swab culture method in detection of gastrointestinal colonization with vancomycin-resistant enterococci. *Clin Infect Dis* 2002;34:167-172.

Detection of Organisms in the Sputum of Cystic Fibrosis Patients

Van Dalfsen and colleagues from Chiron Corporation, Seattle, Washington, evaluated a culture method using quantitative plating on media containing antibiotic as a technique for detecting tobramycin-resistant organisms that has been proposed to be more sensitive than standard methods. Typical sputum culture methods quantitate the relative amounts of each distinct morphotype, followed by antibiotic susceptibility testing of a single colony of each morphotype. Sputum specimens from 240 patients with cystic fibrosis were homogenized, serially diluted, and processed in parallel by the standard method (MacConkey agar and OF basal medium with agar, polymyxin, bacitracin, and lactose) and by plating on antibiotic-containing media (MacConkey agar with tobramycin added at 25 $\mu\text{g}/\text{mL}$ [MAC-25] and 100 $\mu\text{g}/\text{mL}$ [MAC-100]). Minimal

inhibitory concentrations (MICs) of tobramycin were determined for all *Pseudomonas aeruginosa* isolates by broth microdilution.

Growth of *P. aeruginosa* on MAC-25 was considered to be equivalent to a tobramycin MIC of 16 $\mu\text{g}/\text{mL}$ or more, and growth on MAC-100 was considered to be equivalent to a tobramycin MIC of 128 $\mu\text{g}/\text{mL}$ or more. An analysis of method-specific detection rates showed that medium containing tobramycin was more sensitive than the standard method for detecting tobramycin-resistant *P. aeruginosa*, *Stenotrophomonas maltophilia*, and *Achromobacter xylosoxidans*, but was less sensitive than the standard method for detecting *Burkholderia cepacia*. When MICs for *P. aeruginosa* that grew on medium containing tobramycin were tested by broth microdilution, the MICs for 28 (23%) of 121 strains growing on MAC-25 and 22 (39%) of 56 strains growing on MAC-100 were less than 16 and less than 128 $\mu\text{g}/\text{mL}$, respectively.

The addition of a MacConkey plate containing tobramycin to the routine media for sputum culture may provide additional, clinically relevant microbiologic data.

FROM: Van Dalfsen JM, Stapp JR, Phelps C, Stewart P, Burns JL. Comparison of two culture methods for detection of tobramycin-resistant gram-negative organisms in the sputum of patients with cystic fibrosis. *J Clin Microbiol* 2002;40:26-30.

Staphylococcus aureus Conjugate Vaccine in Hemodialysis Patients

In patients with decreased resistance to infection, *Staphylococcus aureus* is a major cause of bacteremia and its complications. The capsular polysaccharides are essential for the pathogenesis of and immunity to *S. aureus* infection and are targets for vaccines.

Shinfield and colleagues from the Kaiser Permanente Vaccine Study Center in Oakland, California, conducted a double-blind trial involving patients with end-stage renal disease who were receiving hemodialysis to evaluate the safety, immunogenicity, and efficacy of a vaccine with *S. aureus* type 5 and 8 capsular polysaccharides conjugated to nontoxic recombinant *Pseudomonas aeruginosa* exotoxin A. Between April 1998 and August 1999, 1,804 adult patients at 73 hemodialysis centers were randomly assigned to receive a single intramuscular injection of either vaccine or saline. IgG antibodies to *S. aureus* type 5 and 8 capsular polysaccharides were measured for up to 2 years, and episodes of *S. aureus* bacteremia were record-

ed. Efficacy was estimated by comparing the incidence of *S. aureus* bacteremia in the patients who received the vaccine with the incidence of *S. aureus* bacteremia in the control patients.

Reactions to the vaccine were found to be generally mild to moderate, and most resolved within 2 days. The capsular polysaccharides elicited an antibody response of at least 80 µg/mL (the estimated minimal level conferring protection) in 80% of patients for type 5 and in 75% of patients for type 8. The efficacy during weeks 3 to 54 was only 26% ($P = .23$). However, between weeks 3 and 40 after vaccination, *S. aureus* bacteremia developed in 11 of 892 patients in the vaccine group who could be evaluated for bacteremia, as compared with 26 of 906 patients in the control group (estimate of efficacy, 57%; 95% confidence interval, 10% to 81%; nominal $P = .02$).

The researchers concluded that for patients receiving hemodialysis, a conjugate vaccine can confer partial immunity against *S. aureus* bacteremia for approximately 40 weeks, after which protection wanes as antibody levels decrease.

FROM: Shinefield H, Black S, Fattom A, et al. Use of a *Staphylococcus aureus* conjugate vaccine in patients receiving hemodialysis. *N Engl J Med* 2002;346:491-496.

Promotion of Prescription Drugs to Consumers

Spending on prescription drugs is the fastest growing component of the healthcare budget. There is public concern about the possibility that direct-to-consumer advertising of prescription drugs will result in inappropriate prescribing and higher costs of care. Guidelines issued in 1997 by the Food and Drug Administration (FDA) regarding advertising to consumers through electronic media are considered by some to be responsible for unleashing a flood of direct-to-consumer advertising.

Rosenthal and colleagues from the Harvard School of Public Health examined industry-wide trends for various types of promotion using data on spending for promotional purposes and sales of prescription drugs. They also tracked the relation between promotional efforts and sales over time. They documented the variation in direct-to-consumer advertising among and within five therapeutic classes of drugs and compared the variation in the intensity of such advertising with the variation in the intensity of promotion to healthcare professionals.

The results indicated that annual spending on direct-to-consumer advertising for prescription drugs tripled between 1996 and 2000, when it reached nearly \$2.5 billion. Despite this increase, such advertising accounts for only 15% of the money spent on drug promotion and is highly concentrated on a subgroup of products. Within a therapeutic class, there is marked variation in the intensity of direct-to-consumer advertising, and the amount of such advertising for specific products fluctuates over time. The initial surge in direct-to-consumer advertising preceded the 1997 FDA guidelines that clarified the rules for electronic

direct-to-consumer advertising, and thus the 1997 guidelines may not have been the most important reason for the overall increase.

The researchers concluded that although the use of direct-to-consumer advertising has grown disproportionately in relation to other forms of promotion, it continues to account for a small proportion of total promotional efforts. Nevertheless, physicians must assist patients in evaluating health-related information obtained through direct advertising.

FROM: Rosenthal MB, Berndt ER, Donohue JM, Frank RG, Epstein AM. Promotion of prescription drugs to consumers. *N Engl J Med* 2002;346:498-505.

Community-Acquired Outbreak of Foodborne Illness Caused by MRSA

Infections with methicillin-resistant *Staphylococcus aureus* (MRSA) are increasingly community acquired. Jones and colleagues from the Tennessee Department of Health, the Centers for Disease Control and Prevention, and Vanderbilt University School of Medicine investigated an outbreak in which a food handler, a food specimen, and three ill patrons had positive results on culture for the same toxin-producing strain of MRSA.

The investigation began when three members of the same family became ill within 3 to 4 hours of eating barbecued pork and coleslaw purchased from a convenience store. *S. aureus* was recovered from the stool cultures of these individuals, from one sample from the coleslaw, and from five nasal swabs from the three food handlers at the convenience store. Isolates from the stool cultures of the three family members, from the sample from the coleslaw, and from the nasal swab of one of the food handlers were indistinguishable by pulsed-field gel electrophoresis. This strain produced enterotoxin C and was identified as MRSA (resistant to penicillin and oxacillin, but sensitive to all other antibiotics tested). The food handler with MRSA did report visiting an elderly relative in a nursing home approximately two to three times the month before the outbreak. The relative had an MRSA infection and subsequently died.

This outbreak suggests that as MRSA becomes increasingly common in the community, it will be implicated in clinical manifestations of staphylococcal infection. This is the first report of an outbreak of gastrointestinal illness caused by community-acquired MRSA.

FROM: Jones TF, Kellum ME, Porter SS, Bell M, Schaffner W. An outbreak of community-acquired foodborne illness caused by methicillin-resistant *Staphylococcus aureus*. *Emerg Infect Dis* 2002;8:82-84.

Interactive Education Increases Sinkless Hand Washing

Despite current guidelines that recommend hand cleansing before and after patient contact, the adherence of