Universal Screening at Admission Halves Rates of MRSA Infection

BY HEIDI SPLETE
Senior Writer

Rates of methicillin-resistant *Staphylococcus aureus* infections were reduced by more than half when all newly admitted hospital patients were tested for MRSA, according to results from three hospitals.

Methicillin-resistant *S. aureus* (MRSA) has become a fixture in many hospitals in the United States, and the resulting MRSA infections are causing poor health outcomes and increasing health care costs, reported Dr. Ari Robicsek of Evanston (Ill.) Northwestern Healthcare and his colleagues.

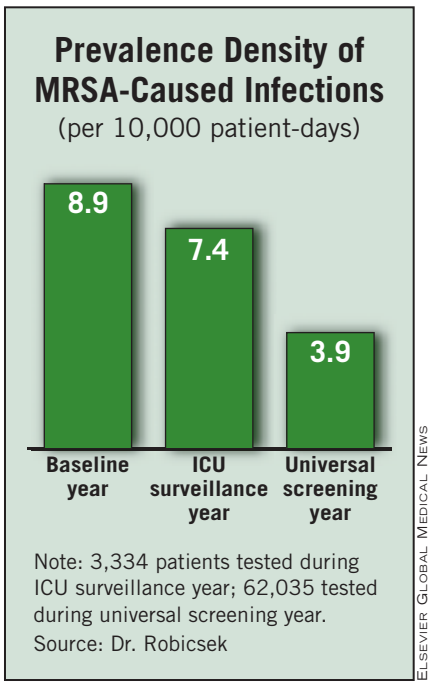
To cut MRSA infection rates, the researchers implemented a universal MRSA surveillance program at a three-hospital organization in Chicago.

Their observational study compared MRSA rates during a baseline year when patients were not universally screened at the time of hospital admission with MRSA rates after conducting polymerase chain reaction–based nasal tests for MRSA. The tests were conducted on all patients admitted to the ICU for 1 year and on all patients admitted to the hospital for another year (Ann. Intern. Med. 2008;148:409-18).

During the ICU surveillance year, 3,334 of 4,392 patients (76%) admitted to the ICU were tested for MRSA and 277 (8%) were positive. During the universal screening year, 62,035 of 73,464 patients (84%) admitted to the hospital were tested for MRSA and 3,926 (6%) were positive. Patients who tested positive were isolated. Of the 2,085 patients for whom mupirocin data were available, 1,288 (62%) received at least four doses of mupirocin.

During the year of universal surveillance, the total number of isolation days was 11,454 across the three hospitals. "With no surveillance, clinical cultures alone would have captured 2,036 of those days," the investigators noted. "Thus, 9,418 MRSA patient-days would have been spent without infection control contact precautions to limit MRSA spread."

Overall, the prevalence density of clinical infections caused by MRSA decreased from 8.9/10,000 patient-days during the baseline year to 7.4/10,000 patient days during the ICU screening year, but this difference was not statistically significant. By contrast, prevalence density decreased significantly from baseline to 3.9/10,000 patient-days during the universal screening year.



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In addition, the prevalence density of four types of MRSA infections—bloodstream, respiratory tract, urinary tract, and surgical site infections—dropped significantly between baseline and the end of the universal screening year.

This improvement in MRSA rates following universal screening persisted for up to 30 days after the patients left the hospital but had no apparent effect on infection rates from 31 days to 180 days. The types of infections represented the major body sites that might be affected by culture-confirmed MRSA, the researchers noted.

To control for a possible unrecognized coinfection, the researchers also compared changes in rates of hospital-associated MRSA bacteremia with rates of hospital-associated methicillin-susceptible *S. aureus* (MSSA) bacteremia. The MRSA bacteremia rates decreased significantly after the surveillance program was implemented, but MSSA bacteremia rates did not.

The study was limited by the lack of an unscreened control group and the inclusion of only one hospital organization, but the findings support results from previous studies in which anything less than universal screening detected fewer than 20% of patients with MRSA infections.

"Given the intermediate size and community-based nature of our three hospitals, our experience is probably representative of most U.S. hospitals," the investigators wrote.

But using the same MRSA screening strategy for every hospital may not be feasible. In an editorial, Dr. Ebbing Lautenbach of the University of Pennsylvania, Philadelphia, observed that commitment and support of each hospital's administration is needed for universal MRSA screening to succeed and that the cost of rapid screening tests may be a barrier for some facilities (Ann. Intern. Med. 2008;148:474-6). "We need better evidence to point us toward what works best in the complex universe of MRSA screening," he said. ■

FDA Halts Daptomycin Use in ReadyMed Pump

BY ELIZABETH MECHCATIE
Senior Writer

ReadyMed elastomeric infusion pumps should not be used to deliver the antibiotic daptomycin (Cubicin) because of a "potentially significant impurity" that has been identified in the antibiotic when stored in this particular pump, according to the Food and Drug Administration and manufacturer of the antibiotic.

In a notice posted on the FDA's MedWatch site, the FDA announced that 2-mercaptobenzothiazole (MBT) has been isolated from reconstituted Cubicin stored in the ReadyMed infusion pumps, which are manufactured by Cardinal Health Inc. MBT is used to manufacture rubber, "and has been reported to leach from rubber stoppers and syringe components into medicinal products in the past," the FDA said.

However, no MBT has been found in reconstituted Cubicin in other standard infusion systems that have been tested.

Daptomycin for injection is marketed as Cubicin by Cubist Pharmaceuticals Inc. In a letter to health care professionals, the company advised against the use of the ReadyMed pumps "until this issue is addressed."

The lab studies that detected MBT in samples of daptomycin stored in the ReadyMed pumps examined the stability of daptomycin reconstituted in 0.9% sodium chloride for injection and stored in the pumps at a concentration of 20 mg/mL for at least 10 days in refrigerated conditions. The company also did not detect MBT in samples of daptomycin stored in Eclipse pumps, another elastomeric infusion pump manufactured by the I-Flow Corp., but has not evaluated its stability in other elastomeric infusion pumps.

"The clinical significance of this finding is unknown," according to the letter. Neither the letter nor the FDA mentions any reports of adverse events in patients associated with this finding. But the letter also says that cutaneous exposure to MBT has been associated with dermal sensitization, and that chronic administration of MBT has been associated with an increased risk of certain tumors in laboratory rodents. ■

Cubist Pharmaceuticals can be contacted at 866-793-2786. The MedWatch notice is available at www.fda.gov/medwatch/safety/2008/safety08.htm#cubicin. Adverse reactions should be reported to MedWatch at 800-332-1088 or www.fda.gov/medwatch.

Low Albumin Held Risk for Surgical Site Infection

BY JEFF EVANS
Senior Writer

CINCINNATI — Surgical site infections found in deep wounds or in organs or spaces manipulated during an operation might occur more often after general surgical procedures if patients have low blood albumin or are operated on through a previous incision, according to the results of a case-control study.

These new risk factors for surgical site infection (SSI) join old suspects—such as prolonged operative time and chronic obstructive pulmonary disease (COPD)—as independent predictors of any kind of SSI, according to a study presented by Dr. Manjunath Haridas at the annual meeting of the Central Surgical Association.

The risk factors should guide clinicians in their assessment of SSI risk and identify potential targets for intervention to reduce their incidence, said Dr. Haridas, a resident in the department of surgery at Case Western Reserve University, Cleveland.

During 2000-2006, 316 SSIs occurred in 10,253 general surgical procedures performed at one center. Dr. Haridas and his coinvestigator at Case Western, Dr. Mark Malangoni, compared 300 of these patients with SSIs with 300 matched control patients who also underwent surgery but did not develop an SSI (16 patients were excluded because no suitable matches could be found).

The patients, whose mean age was 56 years, underwent operations for the gastrointestinal tract, including the hepatobiliary system and pancreas (39% of patients); hernia repair (19%); and vascular (16%), breast (13%), and extra-abdominal areas (13%). They developed superficial (84%), deep (7%), or organ/space infections (9%).

Multivariate logistic regression revealed that reoperation through a previous incision was independently associated with 2.4-times higher odds of developing an SSI, whereas a prolonged operation (surgery time greater than the 75th percentile), a blood albumin level of 3.4 mg/dL or less, and COPD each were independently associated with 70%-80% greater odds of developing an SSI.

Patients who had either low blood albumin or a reoperation through a previous incision were between two and three times more likely to develop a deep or organ/space SSI than were those in which neither condition occurred.

It might be a good idea to take a postoperative surgical time-out to "reassess where you have been"; if more blood was lost or the operation took longer than expected, it could be worth keeping a closer eye on the patient, said Dr. Hiram C. Polk of the University of Louisville (Ky.), a discussant at the meeting.

Although the investigators did not record how many SSIs occurred in previously operated wounds that also had previously had an SSI, Dr. Malangoni thought that reoperation through a previously infected wound incision should be avoided because of the likelihood of reinfection after the second operation.

The investigators did not determine the rate of SSI in minimally invasive surgical procedures, but they did match patients with an SSI who underwent such procedures with those who did not have an SSI after a minimally invasive surgical approach. There did not appear to be a decrease in deep or organ/space SSIs with minimally invasive approaches. ■