Should MRSA protocols include screening for surgical patients?

Will your preoperative process need to accommodate screening for MRSA? More hospitals are looking at whether to test presurgical patients for methicillin-resistant *Staphylococcus aureus*, at least for certain procedures, such as those with implants.

Evidence shows that patients colonized with MRSA are more likely to develop an infection than those colonized with regular *Staphylococcus aureus*. And certain types of MRSA infections are more likely to be fatal, including sternal wound infections and other surgical site infections, notes the Healthcare Infection Control Practices Advisory Committee.

MRSA is taking a heavy toll in hospitals. Patients who develop MRSA infections have longer hospital stays, higher mortality, and increased costs. One in every 20 patients treated for MRSA in US hospitals in 2005 died of the infection, according to the Agency for Healthcare Research and Quality.

Data from Pennsylvania, which requires reporting of hospital infections, shows patients infected with MRSA stayed in the hospital 8 days longer and had an average charge of $87,990—3 times the average charge for patients without a MRSA infection.

At least 2 states have introduced legislation to mandate screening hospital patients for MRSA. A new Illinois law requires hospitals to screen for MRSA in ICU patients and other at-risk groups and isolate those who are colonized or infected.

Some hospitals are moving to screen patients at “high risk” of being colonized with MRSA or at higher risk of infection if colonized. Each organization defines high risk, which typically includes patients in ICUs, burn units, oncology units, and those transferred from long-term care. Some have gone a step further and screen all patients on admission. The decision should be based on an assessment of risk, resources, staff support, and cost analysis, advises the Association for Professionals in Infection Control and Epidemiology (APIC).

Should surgical patients be screened?

There is no national recommendation on MRSA screening before surgery. Many organizations are considering it, at least for certain groups.

“Our facility and many others are looking at some version of screening for *Staph aureus* and MRSA, particularly for patients having procedures with implants,” says Shannon Oriola, RN, CIC, COHN, an APIC board member and department head for infection prevention and clinical epidemiology at the Sharp Metropolitan Campus in San Diego. Examples are patients having total hip or knee replacements, coronary artery bypass, or spinal surgery with hardware.

Some are screening aggressively. Veterans Affairs medical centers now screen admitted patients for MRSA upon admission, transfer, and discharge.

The program was piloted by the Veterans Affairs Pittsburgh Healthcare System (VAPHS), which started screening in the surgical unit and ICUs in 2001 and expanded it hospitalwide in 2005. The pilot reduced the prevalence of MRSA infections on these units by about 75% by 2006. MRSA surgical site infection rates fell by 50% from over 0.3% in July 2005 to less than 0.2% in October 2006. Cost savings have been substantial, says the VAPHS chief of staff, Rajiv Jain, MD.

VAPHS screens certain high-risk surgical patients, including those admitted on the day of surgery. These include patients having:
vascular surgery
• cardiac surgery
• neurosurgery or orthopedic surgery with implants.

The patients are screened during the preoperative evaluation process by nasal swab and rapid DNA testing. For those who are colonized for MRSA, the protocol includes:
• mupirocin applied to the nares for 5 days
• a chlorhexidine scrub to use for 2 days prior to surgery.

Evanston Northwestern Healthcare in Evanston, Illinois, has screened all patients for MRSA in its 3 hospitals since 2005. All surgical patients having anesthesia-attended procedures are screened for both MRSA and regular Staph aureus, including outpatients and inpatients.

“This is a bit of a confusing area,” says Lance R. Peterson, MD, FASCP, epidemiologist and director of clinical microbiology and infectious disease research. “For presurgical patients, you want to look for both MRSA and regular Staph aureus. For most ambulatory surgery patients, 2% to 3% will carry MRSA, and about 25% to 30% will carry regular Staph aureus.”

In 3,000 patients who have had hip and knee replacements or spinal surgery since the program was implemented, postoperative infections with Staph aureus or MRSA have fallen fivefold, Dr Peterson says.

Which test to use?
In MRSA screening, the options are the traditional tests, which provide results in 24 to 72 hours, or newer rapid PCR (polymerase chain reaction) tests, which can give results in 2 hours but cost more. Reagents alone for the PCR tests run $26 to $29, about double the cost of a culture test.

A new option, cleared by the Food and Drug Administration Jan 2, is a rapid 2-hour assay for simultaneous detection of methicillin-resistant Staphylococcus aureus and regular S aureus. The assay is performed after there is a blood culture that is positive for infection. In clinical trials for the FDA, the assay identified 100% of MRSA-positive specimens and more than 98% of more common and less dangerous Staph specimens. The GeneOhm StaphSr assay is from BD Diagnostics, a unit of Becton Dickinson & Co. The cost is $35. BD says it is also applying to the FDA for nasal swab and wound label claims.

In addition to the cost of the test, organizations need to consider staff training for collecting specimens, lab capacity, turnaround time for results, and reimbursement issues.

Costs of screening
VAPHS has analyzed the costs of MRSA screening. In general, it costs the hospital $32,000 to treat a patient with a MRSA infection, Dr Jain says.

“We have done a cost-effectiveness analysis, looking at the numbers of patients with MRSA infection prior to implementing the aggressive prevention program and the number after the program was implemented. The numbers indicate the program pays for itself by decreasing the numbers of infections,” he says.

“We look at our surgical site infection rate very closely,” he adds, “Those rates have also come down significantly in the 3 to 4 years since we have implemented this program.

“I think you have to keep in mind a balance,” he says, adding that the literature supports their current approach to target high-risk procedures, particularly those with implants.

References


**Resources on MRSA**

Practical information on preventing MRSA transmission.

**Association for Professionals in Infection Control & Epidemiology (APIC)**

Guide to Elimination of Methicillin-Resistant *Staphylococcus aureus* (MRSA) Transmission in Hospital Settings.

www.apic.org

**Centers for Disease Control and Prevention**

Infection Control in Healthcare Settings web page has guidelines and documents including:

- Management of Multidrug-Resistant Organisms in Healthcare Settings, 2006
- MRSA resources.

www.cdc.gov/ncidod/dhp/index.html

**Institute for Healthcare Improvement**

- MRSA information and tools from the 5 Million Lives Campaign.
  www.ihi.org/IHI/Programs/Campaign/MRSAInfection.htm
- How-to Guide: Reduce MRSA infection.
  www.ihi.org. Look under Programs, then Campaign.
  www.ihi.org. Look under Topics, then Critical Care, then Intensive Care, then Tools.

**MRSA in hospitals**

**APIC snapshot**

In a “snapshot” survey by the Association for Professionals in Infection Control and Epidemiology in 2006:

- 46 of every 1,000 patients were either infected or colonized with MRSA—8 to 11 times more than previous MRSA estimates.
- 35 out of every 45 MRSA patients were admitted to the facility already infected or colonized, having acquired MRSA either during a previous stay or in the community.

**Mortality**

In Pennsylvania’s statewide reporting system, the mortality rate for patients with a MRSA infection in 2004 was 9% versus 2% for patients without a MRSA infection.

**Cost of MRSA**

Hospital stays involving MRSA infections cost an average of $14,000, compared with $7,600 for all other stays. The length of stay was more than double—10 days for MRSA infections versus 4.6 days for all other stays, according to the Agency for Healthcare Research and Quality.
Are ORs as clean as we think?

Operating rooms might not be as clean as we think, even with standard terminal cleaning, suggest findings from Dartmouth Hitchcock Medical Center, Lebanon, New Hampshire.

The researchers swabbed 31 sites in 3 ORs after standardized terminal cleaning in the morning, before the start of cases, and after terminal cleaning at the end of the same day. More than half (52%) of the sites had >10 colony forming units (defined as less than very clean).

A variety of types of bacteria were identified, but no methicillin- or vancomycin-resistant bacteria were found.

An abstract of the study was presented at the American Society of Anesthesiologists meeting in October.


MRSA precautions for transferring patients

Each organization needs to develop its own policy for transferring patients to the OR, notes Shannon Oriola, RN, CIC, COHN, a board member of the Association for Professionals in Infection Control and Epidemiology (APIC) and department head for infection prevention and clinical epidemiology at the Sharp Metropolitan Campus in San Diego.

This is Sharp’s procedure:

• Patients identified with MRSA are brought directly to the OR if possible, bypassing the holding area. Contact precautions are observed en route.
• If more than one person is needed to transport a critically ill patient, the person providing care en route wears gown and gloves, leaving the others free to touch the elevator button and other surfaces.
• For a single-person transfer, steps include:
  —using a clean vehicle
  —donning gown and gloves to transfer the patient to the vehicle
  —removing gown and gloves, cleaning hands after the transfer, and not touching the patient during the transport.
• Once the patient reaches the OR, staff transferring the patient to the OR table don gown and gloves, discard these after the transfer, and clean their hands.
• When transferring patients after surgery, staff must clean their hands after dropping patients off in the receiving unit.
• In the postanesthesia care unit (PACU), patients are placed away from other patients when possible with a sign reminding the staff to use contact precautions. Hand hygiene between all patient contacts in the PACU is stressed.