

Laera, Elizabeth

From: Laera, Elizabeth
Sent: Thursday, October 13, 2016 10:53 AM
To: [REDACTED]
Subject: Screening for MRSA Prior to Surgery
Attachments: [REDACTED]

Follow Up Flag: Followup

There aren't any official US guidelines specifically addressing screening for MRSA in any capacity, so I found all the relevant guidelines and have put the applicable passages below.

There are two studies that I wanted to bring to your attention. The first is the 2008 JAMA study [REDACTED] that is considered to be the landmark study for this issue, and has sparked much controversy and debate. The second is a new study published in April [REDACTED]; I'm including it because it is too new to be taken into account in any of the guidelines or reviews, but is an excellent addition to the body of evidence.

Lastly, BMJ published a "Practice Pointer" on screening that covers a lot of the evidence [REDACTED]. They attempt to make some recommendations but I don't believe this can be considered a consensus statement or anything official. AHRQ conducted a comparative effectiveness review in 2013 on screening for MRSA. It's very long and not available in a pdf. However, the relevant section to your question can be found here:

<https://www.ncbi.nlm.nih.gov/books/NBK153103/#results.s46>. The discussion may also be of some interest: <https://www.ncbi.nlm.nih.gov/books/NBK153101/>

From the Guidelines:

A Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals: 2014 Updates [REDACTED]

- Screen for *S. aureus* and decolonize surgical patients with an antistaphylococcal agent in the preoperative setting for high-risk procedures, including some orthopedic and cardiothoracic procedures (quality of evidence: II).
- Active surveillance testing (AST)
 - Implement an MRSA AST program as part of a multi-faceted strategy to control and prevent MRSA (quality of evidence: II).
 - Screen HCP for MRSA infection or colonization if they are epidemiologically linked to a cluster of MRSA infections (quality of evidence: III).

Strategies to Prevent Methicillin-Resistant Staphylococcus aureus Transmission and Infection in Acute Care Hospitals: 2014 Update [REDACTED]

- Recommendations are categorized as either (1) basic practices that should be adopted by all acute care hospitals or (2) special approaches that can be considered for use in locations and/or populations within hospitals when HAIs are not controlled by use of basic practices.
- Special Approach: Implement an MRSA AST program as part of a multifaceted strategy to control and prevent MRSA (quality of evidence: II).

- AST is based on the premise that clinical cultures identify only a small proportion of hospital patients who are colonized with MRSA and that these asymptomatic carriers serve as a substantial reservoir for person-to-person transmission of MRSA in the acute care hospital.
 - Studies have reported that clinical cultures alone may underestimate the overall hospital prevalence of MRSA by as much as 85% and the monthly average prevalence of MRSA in ICUs by 18.6%–63.5%.
 - AST is used to identify these asymptomatic MRSA carriers so that additional infection control measures (eg, contact precautions, decolonization) can be put into place in an effort to decrease the risk of transmission to other patients and HCP.
- The effectiveness of AST in preventing MRSA transmission and infection has been an ongoing area of controversy, and optimal implementation strategies (including the selection of target populations) are unresolved.
 - Several published studies of high-risk or high-prevalence populations (including those in outbreak settings) have shown an association between the use of AST and effective control of MRSA transmission and/or infection.
 - Not all studies, however, have come to the same conclusion, including the single cluster-randomized trial of targeted MRSA active surveillance where active surveillance and use of barrier precautions in ICU patients was not associated with a reduction in MRSA colonization or infection, although limitations in the study design and suboptimal use of barrier precautions prevent definitive conclusions from being drawn.
 - A recently published comparative effectiveness review of MRSA screening strategies concluded that the strength of evidence for the use of universal screening for prevention of healthcare-associated MRSA infections was low and that there was insufficient evidence to assess other outcomes associated with universal screening or to assess the comparative effectiveness of other MRSA screening strategies (eg, targeted screening).
- Because of conflicting results from recently published studies and the low quality of evidence of many studies as well as differences among acute care hospitals and their associated patient populations, a definitive recommendation for universal screening for MRSA in all hospitals cannot be made.
- AST, however, may be beneficial in hospitals that have implemented and optimized adherence to basic MRSA prevention practices but that continue to experience unacceptably high rates of MRSA transmission or infection.

Strategies to Prevent Surgical Site Infections in Acute Care Hospitals: 2014 Update

- Screen for *S. aureus* and decolonize surgical patients with an antistaphylococcal agent in the preoperative setting for high-risk procedures, including some orthopedic and cardiothoracic procedures (quality of evidence: II).
 - Screening for *S. aureus* refers to the practice of attempting to identify patients colonized with methicillin-susceptible *S. aureus* (MSSA) and/or MRSA. Decolonization refers to the practice of treating patients with known *S. aureus* colonization with antimicrobial and/or antiseptic agents to eliminate *S. aureus* colonization.
 - There is no standardized approach to either screening or decolonizing. Most clinicians attempt to decolonize surgical patients with a combination of chlorhexidine gluconate applied to the skin and nasal mupirocin.

- A Cochrane review concluded that mupirocin alone may be effective, particularly in certain groups, including orthopedic and cardiothoracic patients. Several nonrandomized trials corroborate this conclusion.
- Clinical practice guidelines from the American Society of Health-System Pharmacists recommend giving mupirocin intranasally to all patients with documented *S. aureus* colonization for orthopedic procedures, including total joint replacement and hip fracture repair, and cardiac procedures.
- Some trials demonstrate that preoperative screening for *S. aureus*, coupled with intranasal mupirocin and chlorhexidine bathing is effective in reducing SSI for some patients.
 - For example, a randomized, double-blind, placebo controlled, multicenter trial that evaluated rapid identification of *S. aureus* nasal carriers followed by decolonization was associated with a greater than 2-fold reduction in the risk for postoperative infection due to *S. aureus* and an almost 5-fold reduction in risk for deep incisional SSI due to *S. aureus*.
 - This study was performed in a setting with high baseline rates of SSI and in the absence of MRSA.
- In contrast, other trials have failed to demonstrate a benefit.
 - A prospective, interventional cohort study with a crossover design involving 21,000 patients concluded that universal, rapid screening for MRSA at admission coupled with decolonization of carriers did not reduce the rate of SSI due to MRSA.
 - A double-blind randomized controlled trial involving more than 4,000 patients showed that intranasal application of mupirocin, which was not coupled with chlorhexidine bathing, did not significantly reduce the *S. aureus* SSI rate.
 - In a secondary analysis of these data, the use of intranasal mupirocin was associated with an overall decreased rate of nosocomial *S. aureus* infections among the *S. aureus* carriers.
- A recently published meta-analysis of 17 studies concluded that decolonization strategies prevent grampositive SSIs, *S. aureus* SSIs, and MRSA SSIs, although there was significant heterogeneity among the trials.
- Factors that impact the decision to implement screening for *S. aureus* and decolonization include adherence to basic SSI prevention strategies, baseline rate of SSI due to *S. aureus*, individual patient risk factors for acquiring SSI due to *S. aureus*, availability of resources to implement the protocol, and ability to follow-up on protocol parameters (eg, laboratory results) and adherence.
- Routine preoperative decolonization with mupirocin without screening is not currently recommended.
 - Mupirocin resistance has been documented.

Methicillin Resistant Staphylococcus Aureus (MRSA): Screening Options NASS Patient Safety Committee

- Note: this isn't a guideline, more of a consensus statement or recommendation
- For elective surgery patients: Screen patient 10 to 14 days prior to surgery, typically when generating other preoperative labs.
- For non-elective/urgent or emergency surgery patients: If data cannot be generated preoperatively, consider patient factors such as co-morbidities, frequency of healthcare contact and hospital admissions, duration of surgery, use of instrumentation and tissue trauma to guide preoperative antibiotic prophylaxis choice.

That is it from the American organizations. American Academy of Orthopedic Surgeons doesn't have anything official; all I could find was this 2012 patient safety report:
http://www.aaos.org/research/committee/ptsafety/PS_SE_2012.pdf. IDSA, SHEA, Joint Commission, APIC, and AHA all combined to put out that compendium in 2014 (see above).

There are a handful of things from the UK that may be useful. There is a summary of best practices for the NHS Trusts [REDACTED], and two sets of guidelines. The 2006 version [REDACTED] only recommends screening high risk surgical patients (it does define what is and isn't high risk), and 2008 guidelines [REDACTED] only advocate for prophylactic antibiotics in high risk populations, but make no mention of any sort of screening program.

From Europe, the European Society of Clinical Microbiology and Infectious Diseases and the International Society of Chemotherapy published a consensus statement in 2010 that concluded,

"We now agree and propose that universal or risk-based screening for potential sources of MRSA, whether in the guise of MRSA carriers amongst patients and [health care workers] or of MRSA-contaminated surfaces in the health care environment, is an indispensable part of an effective MRSA control strategy in healthcare institutes where MRSA is endemic"

and

"[...]screening for MRSA is pivotal to any strategy for MRSA prevention and control. For example, it enables interpretation of the impact of suppressive, decontamination and isolation strategies. As with healthcare-associated infection surveillance, MRSA screening should provide information for action. Increasingly in these cost-conscious times, it is vital that we consider the cost effectiveness and cost utility of MRSA screening and the intervention measures it informs. Diverting resources to screening may, for example, have a detrimental effect on patient safety or the quality of patient care."

I didn't include this in the attachments, but I can easily get it for you if you would like to read it.

The French Society of Hospital Hygiene released guidelines in 2014 but I have not yet received them from another library so I don't have any more information on their conclusions. They are pretty specifically titled, "Preoperative risk management: strategy for Staphylococcus aureus preoperative decolonization", so I assume that they will have some recommendations. I will send that to you when I get it.

I apologize for the length. Please let me know if you need anything else.

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Elizabeth Laera, AHIP
Medical Librarian
McMahon-Sibley Medical Library
205-783-3078



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