

Preventing MRSA Infections in Orthopaedic Surgery

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Surgical Site Infections (SSIs) are an unfortunate and sometimes disastrous complication associated with spine surgery. More than 50% of SSIs in orthopaedic surgery are caused by *Staphylococcus aureus* and 85% of *S. aureus* SSIs are caused by bacterial strains found in the patient's nares [1]. Infections with methicillin-resistant *Staphylococcus aureus* (MRSA) is one of the most problematic SSIs and frequently leads to morbidity, mortality and increased costs of surgical care [2-4].

Hospital-Acquired Conditions (HAC), or conditions deemed by CMS as reasonably preventable, have been targeted as an area of pay for performance. On July 31, 2008, in the Inpatient Prospective Payment System (IPPS) Fiscal Year (FY) 2009 Final Rule, CMS included SSIs for the HAC payment provision. To encourage hospitals to avoid hospital-acquired conditions, as of October 1, 2008, Medicare no longer pays hospitals for their higher costs of care that result when a patient is harmed by SSI if it was hospital-acquired. Medicare prohibits the hospital from billing the beneficiary for the difference between the lower and higher payment rates [5].

One strategy that can be used is to screen patient's pre-operatively for the presence of MRSA and to decolonize the patients that are carriers and also adjust the perioperative antibiotic regimen of known carriers. Although this may not total eliminate the risk of a SSI, it will diminish the risk of an SSI [1]. There is also some evidence of MRSA colonization preoperatively is indicative of the state of the host and thus so indicates that SSIs in general are more likely in this type of patient [6].

Screening for MRSA is strategy that has worked effectively for us and has been validated in the literature for both adults and children and involves topical mupirocin as well as a week of rifampin and doxycycline antibiotics [7,8]. Some studies have validated mupirocin topically by itself but we did not seem to have the same anecdotal success [9,10]. This protocol is also suggested by the North American Spine Society Safety Committee [5].

Screen patient 10-14 days prior to surgery

If negative: Chlorhexidine wipe/wash protocol for all these patients (at least 3 days of wipe/wash to surgical site) and then cefazolin as the pre-op antibiotic.

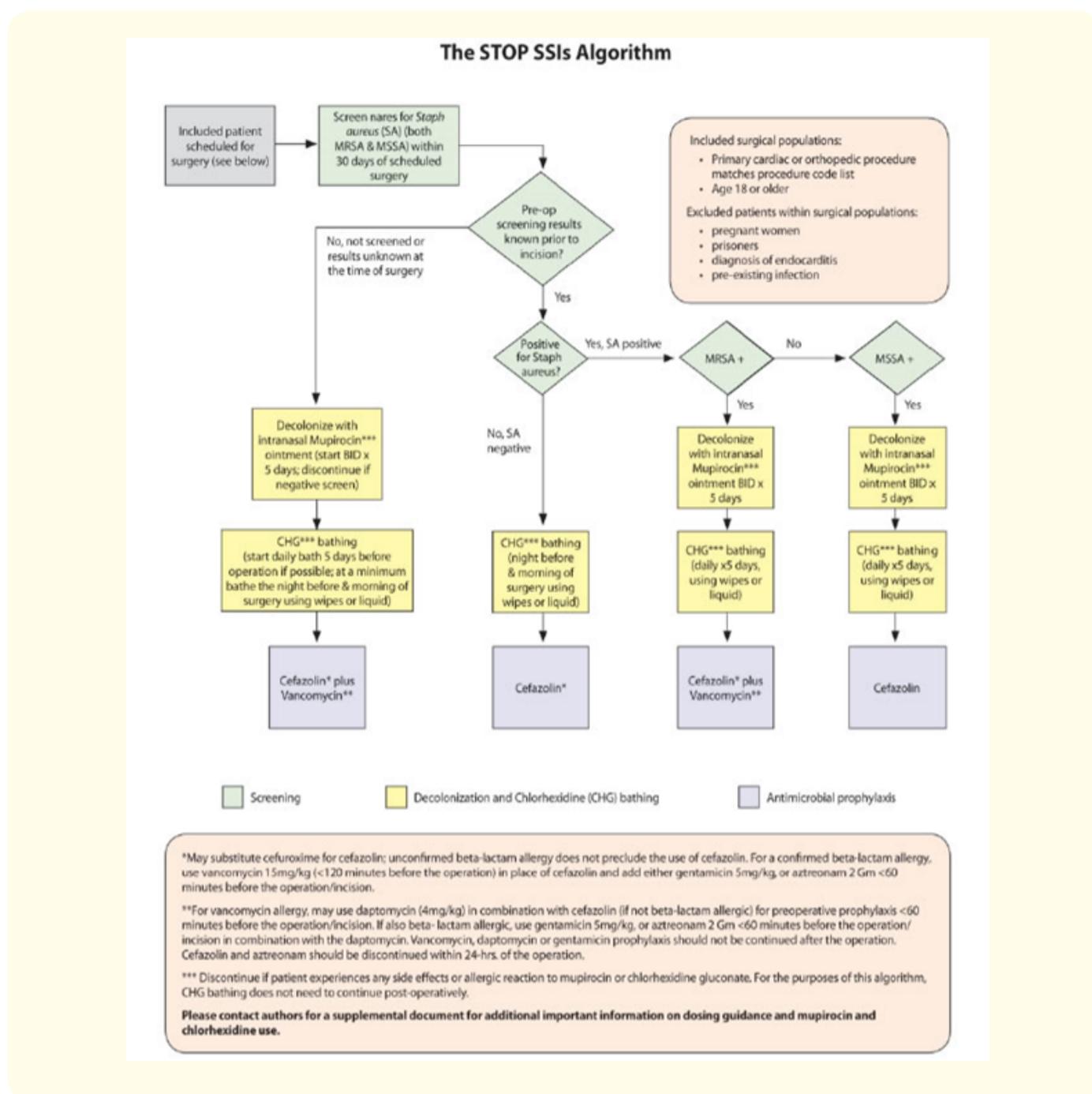
If positive: Treat with bactroban to nares and chlorhexidine wash/wipes to the surgical site for 5 days and consider rescreening pre-operatively

- Rescreen with negative result available prior to operation: consider prophylactic administration of cephalosporin and final chlorhexidine wipe immediately pre-operatively
- Rescreen with positive result available prior to operation: Retreat with bactroban and consult with Infection Control Department
- If not rescreening prior to operation or after treatment or if rescreening results are only available after operation, consider treating with vancomycin

At the surgeon's discretion, vancomycin may be considered in patients with a history of MRSA infection.

The NASS Patient Safety Committee recognized that pre-operative MRSA screening and treatment may likely only result in the short term eradication of MRSA, but this may be sufficient enough to prevent early SSI [5].

The Agency for Healthcare Research and Quality, an agency of the U.S. Department of Health and Human Services has developed a similar algorithm as part of their development and implementation of a *Consensus Algorithm to Optimize Preoperative Antimicrobial Prophylaxis and Decrease Gram-Positive Surgical Site Infections for Cardiac and Orthopaedic Procedures*.



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