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QUESTION 3: Should routine methicillin-resistant *Staphylococcus aureus* (*S. aureus*), or MRSA, screening be in place prior to total ankle arthroplasty (TAA)?

RECOMMENDATION: Unknown. The role of screening for MRSA and decolonization prior to TAA remains unclear. Further data is needed to support this practice in TAA, which can be costly and logistically difficult to implement.

LEVEL OF EVIDENCE: Consensus

DELEGATE VOTE: Agree: 100%, Disagree: 0%, Abstain: 0% (Unanimous, Strongest Consensus)

RATIONALE

There is growing concern about the increase of postoperative infections due to antibiotic-resistant organisms [1], and this is particularly important in orthopaedic surgery where the increasing incidence of antibiotic-resistant *Staphylococci* threatens the outcome of implant-related procedures. The complication rate and cost of periprosthetic joint infection (PJI) associated with MRSA is considerably higher compared to those associated with methicillin-sensitive *Staphylococcus aureus* (MSSA) [2]. Patients receiving orthopaedic implants are most vulnerable, given the potential for biofilm formation and long-term morbidity [3].

Furthermore, the prevalence of surgical site infections (SSIs) as a result of MRSA has increased over the last few years. Between 1992 and 2003, the prevalence of MRSA increased from 32% to 64% of all isolated nosocomial pathogens found on patients in hospital intensive care units (ICUs), representing a 3.1% increase in MRSA prevalence per year [4].

The last two decades have seen an increase in community-acquired MRSA (CA-MRSA), a subpopulation of MRSA with unique antibiotic resistance properties, high virulence characteristics and pathogenic capability. This subset of MRSA tends to affect young and otherwise healthy patients [5–7].

Several screening strategies have been studied in terms of their cost-effectiveness [8,9]. As the *S. aureus* strain isolated from SSIs commonly matches (in up to 85% of cases) the *S. aureus* strains sampled from the noses of colonized patients, nasal swabs emerge as a potentially cost-effective screening option [10–12].

However, the evidence is not conclusive regarding an association between rapid screening and the acquisition rate for MRSA or risk of MRSA-induced SSIs. However, in the setting of a positive result, it allows for the implementation of a decolonization protocol that is indeed effective in significantly reducing the rate of SSIs caused by MRSA [7].

A recently published, large multicenter prospective cohort trial by Schweizer et al. involving > 40,000 unique operations examined the effect of the introduction of a standardized preoperative *S. aureus* screening and decolonization program on deep *S. aureus* SSIs in cardiac surgery and hip and knee arthroplasties performed at 20 hospitals [13]. The authors reported that the hip and knee arthroplasty cohort demonstrated a significant reduction in postoperative rates of deep infection with *S. aureus* following the introduction of the screening and decolonization program.

Numerous studies have demonstrated that the most common pathogens in SSIs following total hip arthroplasty/total knee arthroplasty (THA/TKA) are MSSA and MRSA. Additionally, many of these studies have demonstrated that positive colonization correlates with increased SSIs and multiple studies have demonstrated the benefit of treating patients who test positive on preoperative screening. When assessing the cost-effectiveness of screening and decolonization, multiple studies have shown potential to substantially reduce the cost of THA/TKA by decreasing the rate of SSIs. Lastly, recent studies have demonstrated cost-effectiveness in universal decolonization programs with or without the inclusion of preoperative *S. aureus* screening. The latter has become a reality as numerous non-antibiotic agents have been introduced.

In the absence of concrete evidence supporting MRSA screening and decolonization in patients undergoing TAA, perhaps consideration should be given to universal decolonization of these patients using one of these non-antibiotic agents.

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