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## QUESTION 2: What is the optimal antibiotic (type, dose and route of administration) treatment for infections after foot/ankle fracture or fusion procedures?

**RECOMMENDATION:** The optimal antibiotic treatment after foot/ankle fractures or fusion should be determined based on the result of culture. In the absence of culture results, administered antibiotics should include coverage against common pathogens such as *Staphylococcus aureus*.

**LEVEL OF EVIDENCE:** Strong

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

### RATIONALE

The commonality in the literature when addressing infection following traumatic foot/ankle procedures or fusions is to target antibiotic therapy to the specific pathogen [1–6]. This is achieved by taking intraoperative cultures, often preceded by preoperative joint aspiration. The majority of the literature suggests a six-week course of intravenous antibiotics; however, the range of recommended therapy is five days to three months [2,5,7].

The second method for delivery of antibiotics is by the incorporation of the antimicrobial agents into the cement spacer when surgical intervention is used [1,2,8]. Since conventional cultures used to identify the infecting organism are often obtained at the time of surgery, the offending pathogen is often not known preoperatively. In this situation, or when the culture results are negative, broad-spectrum antibiotics should be administered. Vancomycin is most commonly used, not infrequently in conjunction with tobramycin or gentamycin [1,5,9].

Methicillin-sensitive *Staphylococcus aureus* (MSSA) is the most common pathogen identified with post-traumatic/post-fusion foot and ankle infections [1,4,6,10,11]. The second most common infectious organism is *Staphylococcus epidermidis* [6,12]. Multi-drug resistant organisms, such as methicillin-resistant *Staphylococcus aureus* (MRSA), are also isolated in cultures with some regularity [6,11]. Diabetic patients have some increased risk of *Pseudomonas* infections as compared to non-diabetics [4]. Importantly, rare bacteria have been identified in case reports and polymicrobial infections have been regularly reported as well [5,13].

There is great heterogeneity in those patients being treated for post-traumatic/post-fusion infection, so it is difficult to interpret outcomes with regard to recurrent infection, ambulatory status/functionality and bony union [1,2]. Stability contributes to the resolution of infection and it has been proposed that antibiotic-coated retrograde nails can also provide local antibiotic delivery [14]. Even for those patients deemed inappropriate for a return to the operating room and for those treated definitively with an antibiotic-laden spacer, independent ambulation can be reliably achieved [3].

In conclusion, we recommend that the treatment of any foot and ankle infections following fracture or fusion procedures be based on the results of the culture, whenever available. In the absence of culture results, broad-spectrum antibiotics should be used.

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