Diabetic foot infections (DFI), which are infections of the soft tissue or bones below the malleolus, are a common clinical problem. Most infections occur in a site of skin trauma or ulceration. The estimated lifetime risk of a person with diabetes mellitus developing a foot ulcer is 15% to 25%, with an annual incidence of 3% to 10% in 1. In 2001, diabetes-related foot ulcers and amputations were estimated to cost U.S. health care payers 11 billion dollars. Major predisposing factors are peripheral neuropathy, peripheral arterial disease, and impaired immunity. More than one-half of non-traumatic lower extremity amputations are related to diabetic foot infections, and 85% of all lower extremity amputations in patients with diabetes are preceded by an ulcer.\(^3,4\)

The most common pathogens in diabetic foot infections are aerobic gram-positive cocci, mainly Staphylococcus species. Methicillin-resistant staphylococcus aureus (MRSA) is present in 10% to 32% of diabetic foot infections and is associated with a higher rate of treatment failure.\(^5\) Nevertheless, it is common to see a polymicrobial infection in DFI including anaerobes and gram negative bacteria. The success to arrest the infection may vary depending on the presence of multiple factors such as comorbidities, adherence to therapy, complications, the etiology and the extent of the infection as well as complications such as bacteremia. In many instances the treatment is not only managed by one specialist, but as a multidisciplinary approach including Infectious Diseases, Podiatry, Vascular Surgery, Pharmacy and Microbiology.

### Study Design and study population

This was a retrospective, observational study of patients with foot osteomyelitis followed by the multi-disciplinary Bone and Joint Infection Program at the University of Louisville Hospital, Kentucky. A secondary data analysis from the Bone and Joint Infection Organization (BAJIO) database was done in order to obtain data regarding patient's characteristics, antimicrobials used, and outcomes.

### Study definitions

**I. Osteomyelitis:** defined as a positive imaging of the foot plus a positive culture from the affected bone.

**II. Study outcomes:** Clinical outcomes were evaluated 12 months after the end of induction antibiotic therapy. Outcomes were classified as:

- Failure to arrest if no clinical or laboratory evidence of infection after the antibiotics were discontinued;
- Failure with suppressive therapy if no clinical or laboratory evidence of infection but the antibiotics were continued due to presence of hardware;
- Failure during suppressive therapy if clinical or laboratory evidence of infection within 12 month after while being on suppressive therapy;
- Successful antimicrobial therapy if the patient showed clinical or laboratory evidence of infection or relapse within 12 month after the end of antibiotic therapy.

### RESULTS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection arrested</td>
<td>20 (24.4)</td>
</tr>
<tr>
<td>Infection arrested + suppressive therapy</td>
<td>1 (1.2)</td>
</tr>
<tr>
<td>Failure during suppressive therapy</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Failure, not on antimicrobial therapy</td>
<td>6 (7.3)</td>
</tr>
<tr>
<td>Clinically Unvalueable: New episode of chronic infection</td>
<td>38 (46.3)</td>
</tr>
<tr>
<td>Died</td>
<td>10 (12.2)</td>
</tr>
<tr>
<td>Unknown, Lost to Follow-up</td>
<td>7 (8.5)</td>
</tr>
</tbody>
</table>

### DISCUSSION

- This study indicates that, with a multidisciplinary approach, 80% of patients with foot osteomyelitis can reach clinical success at 12 months.
- Vancomycin and Levofloxacin were the most common antibiotics used empirically, covering the most common isolated bacteria for foot osteomyelitis including Staphylococcus aureus (MSSA, MRSA) and aerobic gram negative rods such as Pseudomonas aeruginosa.
- A primary weakness of this study is the minimal number of patients that could be followed for a full 12 months after antibiotic therapy.
- Further studies are needed to better understand clinical outcomes of patients with foot osteomyelitis.

### REFERENCES