

Executive Summary: Evaluation and Management of Diabetes-related Foot Infections

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Diabetes-related foot infection (DFI) can devastate patient's mobility and quality of life, with many patients fearing lower limb amputation more than death. This disease disproportionately affects marginalized communities and social barriers frequently complicate treatment. Multidisciplinary DFI teams can reduce major (above-ankle) amputations, yet inconsistent and unstructured collaboration between specialists remains common. In our full review (available online, summarized here), we overview a comprehensive approach to DFI and offer best practices for clinician-clinician and patient-clinician shared decision-making.

A common language is key to multidisciplinary collaborations. We advocate infectious disease (ID) clinicians familiarize themselves with the Society for Vascular Surgery's WIfI (Wound, Ischemia, Foot infection) classification system, which iterates on the 2012 IDSA DFI criteria with wound and ischemia staging. WIfI, a validated predictor of both a patient's risk of amputation and potential to benefit from revascularization, incorporates key factors informing our surgical colleagues' practice.

Shared decision-making about antimicrobial and surgical therapies for DFI and diabetes-related foot osteomyelitis (DFO) should acknowledge that these are just two components of a comprehensive strategy (Table 1). While reports of cure are modestly higher with surgery for DFO versus nonoperative strategies, published data indicate most patients can achieve cure nonoperatively. Key caveats are that a nonoperative strategy is inappropriate for life-threatening infection (eg, necrotizing fasciitis), substantial gangrene or undrained purulence, or clear worsening on antimicrobial therapy. Surgical delay in such cases increase risks of proximal amputation and death. Clinical trials indicate that well-selected oral antimicrobials are as effective as IV therapy,

and emerging trial data suggests shorter-than-traditional durations are often adequate for multiple forms of DFI.

Conservative surgical management of DFI can preserve independent mobility. The decision to proceed with debridement and/or amputation should depend not only on the extent of infection but on the degree of mobility at risk, which in turn depends on the patient's baseline functional status and the foot territory under threat (eg, a heel DFO for which a nonhealing surgical wound would require BKA, versus a distal phalanx DFO that can be cured surgically with little impact on mobility). All patients with DFI should undergo vascular studies and revascularization if indicated, because concurrent PAD substantially increases risk of amputation.

When conflict arises out of shared decision-making, simple miscommunication, conflicting prognostications, and genuine conflicts in values (eg, a surgical colleagues' emphasis on preservation of mobility, or a patient's emphasis on avoidance of amputation, versus an ID clinician's emphasis on eradication of the infection with minimal necessary antimicrobial exposure) are common sources. Specifically identifying and addressing these sources often facilitates reaching consensus. In some cases of conflicting values where surgery is not strictly indicated, the ID clinician may most benefit the patient's care by framing antimicrobials as a "therapeutic trial" to be reevaluated at early clinic follow-up, and by ensuring that antimicrobials are being given as part of a comprehensive treatment strategy to preserve the patient's functional status via limb salvage. Multidisciplinary DFI teams can mitigate these conflicts by fostering mutual trust between clinicians based on frequent communication and longitudinal relationships and can centralize patient's care and optimize outcomes.

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Comprehensive approach to diabetic foot infections



*Society for Vascular Surgery Wound, Ischemia, foot Infection (WIFI) score

Table 1. "To-do" list for a comprehensive approach to diabetes-related foot infection care

Surgical debridement: if present, drain deep purulence and excise necrotic tissue. Assess risk of amputation using clinically validated criteria (Wlfl) and if elevated request surgical evaluation and risk-benefit/shared decision-making

Peripheral artery disease: Obtain relevant vascular studies (eg toe pressure measurements); request vascular surgery evaluation if patient is likely to benefit from revascularization (ie, by Wlfl classification)

Antibiotic therapy: Once patient is stabilized and has responded to initial antimicrobial therapy, select an appropriate oral (or IV) definitive antimicrobial regimen, with considerations including:

- The results of the patient's deep tissue cultures, or the local epidemiology and antibiogram if cultures are not available
- Duration appropriate to the degree of infection and surgical management provided
- Social factors, including the ability to adhere to the regimen (eg, affordability, pill burden, ability to store and administer IV antibiotics or travel to infusion centers) and whether giving IV antibiotic therapy inpatient or via SNF facilitates access to other needed care (eg, wound care)

Offloading: Provide the patient with either a non-removable device (eg, total contact cast) or removable device (ie, surgical boot) to provide mechanical off-loading of the diabetic foot wound; consider surgical off-loading referral for select patients who do not heal with mechanical devices.

Wound care: Secure longitudinal outpatient followup with a wound care specialist who can provide serial assessment, debridement, and appropriate dressings or negative pressure wound therapy. Ensure the patient has access to adequate wound care supplies upon discharge and at each followup visit.

Glycemic control: Initiate or intensify diabetes treatment to achieve goal HbA1c to optimize wound healing

- Goal HbA1c for most adults is <7% (comparable continuous glucose monitoring targets are time in range >70% with time below range <4%). Higher or lower glycemic targets may be appropriate based on individual's comorbidities and risk of hypoglycemia

Concurrent foot pathology: Identify and address other conditions that provide a bacterial portal of entry into the foot or otherwise predispose to infection:

- Treat onychomycosis and tinea pedis if present
- Offer compression garments and recommend leg elevation if venous stasis is present and degree of PAD allows
- Recommend daily moisturizer to areas of dry, cracked skin
- Arrange longitudinal follow-up every three months, preferably by a podiatrist, for secondary prevention and early detection of ulcers/infection

Other key comorbidities:

- Offer pharmacotherapy and referral to local evidence-based programs for tobacco cessation if patient has any active tobacco use
- Initiate pharmacotherapy (eg, buprenorphine-naltrexone for opiate use disorder, SSRI for major depression) or request psychiatry consultation for untreated mood or substance use disorders

Barriers to care: Mitigate social factors likely to impede patient's adherence to treatment (see table 4 of full online text for specific potential solutions)

- Inadequate access to transportation/limited time off work
- Inadequate access to healthcare providers
- No stable housing
- Poverty
- Insecure employment
- Lack of English fluency

Notes

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