

Society for Vascular Surgery Releases Guideline on Managing the Diabetic Foot

Key Points for Practice

- Those with diabetes mellitus should have an annual foot evaluation using the Semmes-Weinstein monofilament test to assess for peripheral neuropathy.
- A total contact cast or irremovable fixed ankle walking boot should be used for offloading in patients with plantar diabetic foot ulcers.
- Magnetic resonance imaging is recommended when more sensitive or specific imaging is needed, particularly if soft tissue abscess is suspected or the diagnosis of osteomyelitis is uncertain after standard imaging.
- Patients with diabetic foot ulcers and concomitant peripheral arterial disease should be referred to a vascular subspecialist to be assessed for revascularization.

From the AFP Editors

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This series is coordinated by Sumi Sexton, MD, Associate Deputy Editor.

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The diabetic foot is a key area of morbidity associated with diabetes mellitus. The Society for Vascular Surgery collaborated with the American Podiatric Medical Association and the Society for Vascular Medicine to create evidence-based guidelines to improve the care of patients with a diabetic foot. Although there is limited high-quality evidence, the guidelines use the best available evidence and consider patient preference and clinical context. The authors used the Grades of Recommendation Assessment, Development, and Evaluation system to rate the evidence, which identified stronger recommendations for which the benefits outweigh the risks and weaker recommendations for which the ratio of benefits to risks is dependent on the clinical scenario.

Prevention of Diabetic Foot Ulcers

STRONGER RECOMMENDATIONS

Patients with diabetes should have an annual foot evaluation performed by a physician or clinician with training in foot care. The evaluation should include the Semmes-Weinstein monofilament test to assess for peripheral neuropathy. Patients and families should be educated about preventative foot care. Custom therapeutic footwear is recommended

for high-risk patients, such as those with significant neuropathy, foot deformities, or previous amputations. Prophylactic arterial revascularization is not recommended for preventing diabetic foot ulcers.

WEAKER RECOMMENDATIONS

Custom therapeutic footwear is not recommended for average-risk patients. To lower the risk of diabetic foot ulcers, glycemic control should be maintained (A1C level of less than 7%), with strategies to minimize hypoglycemia.

Offloading for Patients with Diabetic Foot Ulcers

STRONGER RECOMMENDATIONS

A total contact cast or irremovable fixed ankle walking boot should be used for offloading in patients with plantar diabetic foot ulcers. In patients with nonplantar wounds, any modality that relieves pressure at the ulcer site can be used, such as a surgical sandal or heel relief shoe. To prevent recurrence after a healed diabetic foot ulcer in high-risk patients, those with a history of diabetic foot ulcer, partial foot amputation, or Charcot foot, therapeutic footwear with pressure-relieving insoles is recommended.

WEAKER RECOMMENDATIONS

If frequent dressing changes are required, a removable cast walker can be used. Post-operative shoes and standard or customary footwear should not be used for offloading plantar ulcers.

Diagnosis of Diabetic Foot Osteomyelitis

STRONGER RECOMMENDATIONS

If more sensitive or specific imaging is needed, particularly if soft tissue abscess is suspected or the diagnosis of osteomyelitis

is uncertain after standard imaging, magnetic resonance imaging is recommended. In patients at high risk of diabetic foot osteomyelitis, the diagnosis should be confirmed using bone culture and histology findings; a sample can be taken when the bone is debrided.

WEAKER RECOMMENDATIONS

In patients with an open-wound diabetic foot infection, a probe-to-bone test should be performed to aid in the diagnosis. In all patients with a new infection, serial plain radiography should be used to identify bone abnormalities, soft tissue gas, and foreign bodies. If additional imaging is needed in a patient with suspected diabetic foot osteomyelitis and magnetic resonance imaging cannot be used, the best alternative is a leukocyte or antigranulocyte scan, ideally in conjunction with a bone scan. If debridement is not performed, diagnostic bone biopsy should be considered if there is diagnostic uncertainty or inadequate culture information, or if empiric treatment is ineffective.

Wound Care for Diabetic Foot Ulcers

STRONGER RECOMMENDATIONS

Diabetic foot ulcers should be evaluated every one to four weeks, with measurement of wound size to assess healing progress. The patient should be evaluated for infection at presentation, with sharp debridement of devitalized tissue and surrounding callus material (initially and at one- to four-week intervals). Additionally, urgent surgical intervention for infections involving abscess, gas, or necrotizing fasciitis should be pursued. Dressing products should be used that maintain a moist wound bed, control exudate, and avoid maceration of intact skin. Treatment should follow current Infectious Diseases Society of America guidelines.

If there is inadequate improvement (less than a 50% reduction in the wound area) after four weeks of standard care, then vascular status, infection control, and offloading should be reevaluated, and adjunctive therapy considered. Choice of therapy should be based on clinical findings, availability, and cost-effectiveness. Options include negative pressure therapy, biologics (e.g., platelet-derived growth factor, living cellular therapy, extracellular matrix products, amniotic membrane products), and hyperbaric oxygen therapy.

WEAKER RECOMMENDATIONS

Because evidence is lacking regarding the superiority of debridement techniques, sharp debridement is the recommended method with subsequent choices made based on clinical context, availability, patient tolerance and preference, and cost-effectiveness. Negative pressure wound therapy is recommended for chronic wounds that do not heal adequately after four to eight weeks of using standard or advanced dressings. The following therapies should be considered for recalcitrant wounds: platelet-derived growth factor (becaplermin [Regranex]), living cellular therapy, and extracellular matrix products. Hyperbaric oxygen therapy is recommended for recalcitrant wounds in patients with adequate perfusion.

Diabetic Foot Ulcer and Peripheral Arterial Disease

STRONGER RECOMMENDATIONS

In patients with diabetic foot ulcers, pedal perfusion should be assessed annually using ankle-brachial index measurement, ankle and pedal Doppler arterial waveforms, and toe systolic pressure or transcutaneous oxygen pressure. In concomitant peripheral arterial disease, revascularization with surgical bypass or endovascular therapy should be performed.

WEAKER RECOMMENDATIONS

In patients with diabetes, ankle-brachial index measurements should begin at 50 years of age. An annual vascular examination of the lower extremities and feet, including ankle-brachial index and toe pressure measurements, is recommended in patients with diabetes and a history of diabetic foot ulcers, abnormal vascular examination, intervention for peripheral vascular disease, or known atherosclerotic cardiovascular disease.

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Evidence rating system used? Yes

Literature search described? Yes

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