

Diabetes-related Foot Ulcer Flow Chart

Assessment

- **History**
 - medical
 - wound
 - medications
 - psychosocial & nutrition
- **Characteristics of the wound**
 - site, area, depth, ulcer bed, infection
 - Classify as neuropathic, neuro-ischaemic or ischaemic
- **Assess risk factors***
 - Assess peripheral arterial disease (PAD), via pedal pulses, Doppler waveforms, Ankle or Toe Brachial Pressure Index (ABPI/TBI) or toe pressures. An ABPI less than 0.9, or TBI less than 0.7 suggests PAD. An ABPI over 1.3 requires further investigation
 - Assess neuropathy, e.g., monofilament testing, vibration testing, clinical assessment
 - Assess foot structural abnormality and past foot disease

**Assessment should be undertaken by those with training and skills in the area*

Wound Bed Management

- Gently cleanse ulcers with a neutral, non-irritating solution, e.g., warm sterile water or saline
- Remove necrotic or devitalized tissue, unless revascularisation is needed*
- Select a dressing that will:
 - Maintain a moist environment
 - Protect surrounding skin
 - Manage wound exudate
 - Be non-traumatic and cost-effective
- If infection is present:
 - Obtain a biopsy for culture
 - Treat with an appropriate antibiotic
 - Investigate suspected osteomyelitis
 - Hospitalise if severe or complex infection is present

**Debridement should be undertaken by a trained health practitioner*



When to Refer

Refer for urgent medical specialist help if life or limb-threatening diabetes related foot disease is present, i.e.,

- Fever or signs of sepsis
- Symptoms of limb ischaemia
- Suspicion of deep tissue or bone infection
- Gangrene (with or without ulceration)

Management

- Offload pressure points, e.g.,
 - Use non-removable knee-high devices of total contact cast for neuropathic plantar forefoot or midfoot ulcers
 - Secondary options are removable knee or ankle-high devices
 - Use surgery, removable off-loading devices, footwear modifications or orthoses for ulcers at other sites
- Refer for urgent specialist review if ABI <0.4, ankle pressure <50mmHg, toe pressure <30mmHg, critical limb ischaemia (rest pain, failure to heal, tissue loss), deep or extensive infection
- Optimise glucose control
- Regularly document progress in healing. Re-evaluate treatment if the ulcer fails to achieve 50% size reduction after 4 weeks
- Involve a multidisciplinary team, include podiatrist, orthotist, GP, vascular/orthopaedic surgeons, nurses, endocrinologist
- Access remote expert advice and care for people living in remote areas

References

Botros M, Kuhnke J, Embil JM et al. Best practice recommendations for the prevention and management of diabetic foot ulcers. Wounds Canada 2017; www.woundscanada.ca
Brouwers JJ, Willems SA, Goncalves LN, et al. Reliability of bedside tests for diagnosing peripheral arterial disease: systematic review. EClinical Medicine 2022; 50.
Kaminski MR et al. Australian guideline on prevention of foot ulceration: 2021 Australian evidence-based guidelines for diabetes-related foot disease. J Foot Ankle Res 2022;15:53.
Lazarini PA, Raspovic A, Prentice J et al. Australian evidence-based guidelines for the prevention and management of diabetes-related foot disease. Med J Aust 2023; 219:485-495.
NICE. Diabetic foot problems: prevention and management. NICE Guideline 2019; www.nice.org.uk/guidance/ng19
Schaper NC, van Netten JJ, Apelqvist J et al. IWGDF Guidelines on the prevention and management of diabetes-related foot disease. 2023; www.iwgdfguidelines.org

Prevention

- Reduce risk factors:
 - cease smoking
 - control blood glucose levels
 - control elevated lipids
 - control hypertension
 - anti-platelet therapy
 - control weight
- Refer to vascular surgeon for assessment if appropriate
- Exercise the lower limbs
- Protect legs and feet:
 - ensure soft, conforming, well-fitting shoes
 - refer to podiatrist for foot care, orthotics and offloading as necessary
 - protect legs (e.g., padded equipment, long clothing)
 - use pressure relief devices (e.g. foam or air cushion boots) for those with limited mobility
- Keep the legs warm
- Eat a nutritious diet

Characteristics of a Diabetes-related Foot Ulcer



Diabetes-related ulcers typically:

- Occur on the sole of the foot or over pressure points e.g., toes
- The wound bed can be shallow or deep, producing low to moderate amounts of exudate
- The surrounding skin is usually dry, thin and frequently has callous formation



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