Management of the Diabetic Foot

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16th September 2023

Beacon Hospital

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The Diabetic Foot

- Epidemiology
- Aetiology
- Risk classification
- Management of ulceration

Diabetic Foot Disease

- 6% DM prevalence
- 15% of DM patients will have a foot ulcer
- 22 times more likely to have an amputation
- Enormous cost and morbidity
- Prevention is effective

Diabetic Foot Disease

- Peripheral sensory neuropathy
- Neuropathic pain
- Peripheral vascular disease
- Ulceration
- Infection and osteomyelitis
- Charcot's disease
- Amputation

Development of Foot Ulceration

- Diabetic peripheral sensory neuropathy
- Painful peripheral neuropathy
- Autonomic neuropathy
- Motor neuropathy

Game, Ch5 The Diabetic Foot, Vascular and Endovascular Surgery, Elsevier 2018

Diagnosis of Neuropathy

- Stocking distribution
- Pain
- Pressure
- Temp
- Vibration
- Nylon monofilament

Neurological screen

	Right Foot	Left Foot
10 gram monofilament *(6 sites - 3 each foot to be recorded)*	 ☐ Detected ☐ Not detected	 ☐ Detected ☐ Not detected
Vibration sensation *(Tuning fork 128Hz)* Site dorsal halux	☐ Present ☐ Absent	☐ Present ☐ Absent
Foot Symptoms ✓ *TICK all relevant*	☐ Pain ☐ Pins & needles ☐ Numbness ☐ Burning ☐ None	☐ Pain ☐ Pins & needles ☐ Numbness ☐ Burning ☐ None

Peripheral Vascular Disease

- Very common
- Distribution of PVD
- Revascularisation
- ABPI

Vascular Screen

Completed screen for each Foot / Limb ☐ Yes ☐ No

Compare each limb for colour, temperature and hair growth

	Right	Left
Skin temperature: *Knees to toes*	☐ Warm to cool ☐ Cold ☐ Warm ☐ Bilateral difference	☐ Warm to cool ☐ Cold ☐ Warm ☐ Bilateral difference
Skin colour	☐ Pale ☐ Cyanotic ☐ Red ☐ Other (specify)	☐ Pale ☐ Cyanotic ☐ Red ☐ Other (specify)
Hair growth *Consider clothes friction*	Digits ☐ Yes ☐ No Lower limb ☐ Yes ☐ No	Digits ☐ Yes ☐ No Lower limb ☐ Yes ☐ No
Dorsalis pedis pulse	☐ Present ☐ Absent	☐ Present ☐ Absent
Posterior tibial pulse	☐ Present ☐ Absent	☐ Present ☐ Absent
Intermittent claudication	☐ Present ☐ Absent	☐ Present ☐ Absent
Rest pain	☐ Present ☐ Absent	☐ Present ☐ Absent
Oedema	☐ Present ☐ Absent	☐ Present ☐ Absent

Biomechanics

- Loss of painful sensation
- Deformity
- Plantar pressures
- Callus
- Clinical examination
- Footwear

Risk Factors		
Previous foot ulceration	Right ☐ Yes ☐ No	Left ☐ Yes ☐ No
Foot Shape - Risk	Right ☐ Yes ☐ No ☐ Toe deformities ☐ Bunions ☐ Flat foot ☐ High arched	Left ☐ Yes ☐ No ☐ Toe deformities ☐ Bunions ☐ Flat foot ☐ High arched
Diabetes related amputation BKA Below knee Amputation AKA Above Knee Amputation TMA Transmetatarsal Amputation Digital Digital Amputation	Right ☐ Yes ☐ No ☐ BKA ☐ AKA ☐ TMA ☐ Digital	Left ☐ Yes ☐ No ☐ BKA ☐ AKA ☐ TMA ☐ Digital
Skin condition	☐ Dry	☐ Calloused
Nails	☐ Ingrowing	☐ Thickened
Footwear ☐ Bespoke ☐ Bespoke insoles ☐ Prescribed ✓ *TICK as appropriate*		

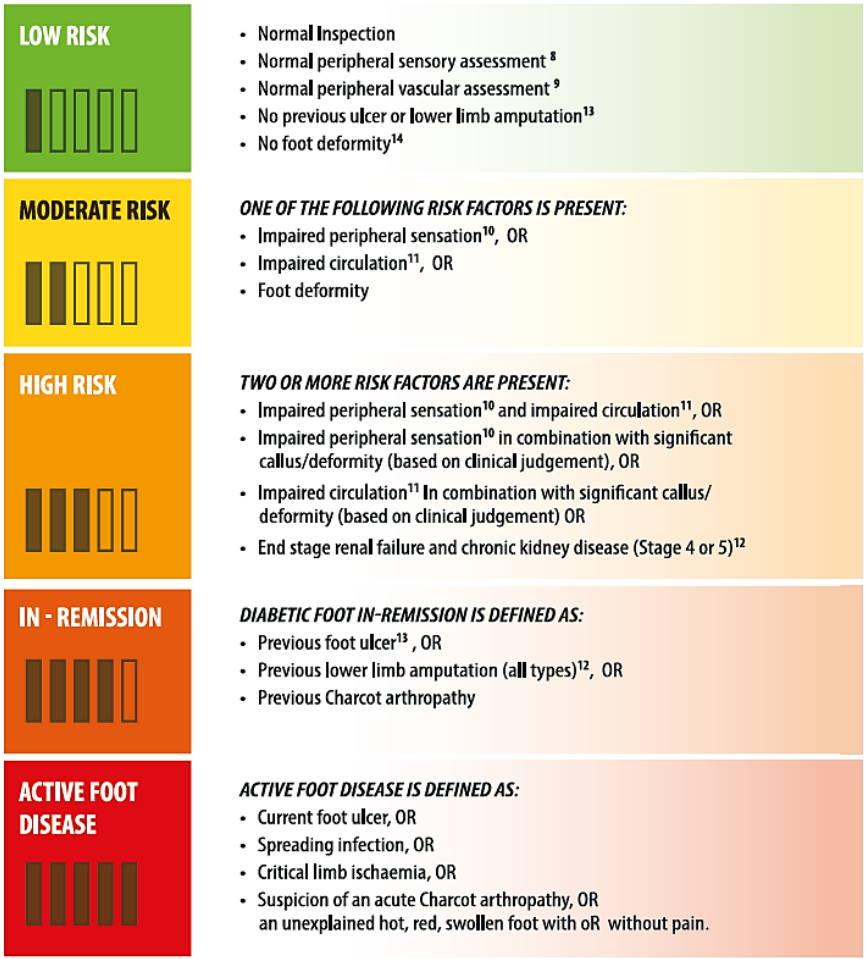
Other Risk Factors

- Visual impairment
- Immobility
- ESKD

Multidisciplinary Foot Team

- Endocrinology
- Podiatry
- Diabetes specialist nursing
- Vascular surgery
- Orthopaedic surgery
- Orthotics/Biomechanics
- Interventional radiology
- Wound care
- Nutrition
- Microbiology
- Infectious Diseases

Risk classification of the diabetic foot for Type 1 and Type 2 Diabetes



Taken from NICE 2019, Risk classification of the diabetic foot.

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Care Plans

- Education on DM, foot care, lifestyle
- Low risk
- Moderate risk
  - Annual review with podiatry
  - Footwear/Biomechanics
- High risk
  - 6 monthly review with podiatry
- Remission
  - 2-6 monthly review with podiatry
- Active foot disease
  - MDFT or ED

Managing Ulcers

Sinbad Score

Clinical Features	Score = 0	Score = 1
Site	Forefoot	Midfoot or hindfoot
Ischemia	Pedal blood flow intact; at least one pulse palpable	Clinical evidence of reduced pedal blood flow
Neuropathy	Protective sensation intact	Protective sensation lost
Bacterial infection	None	Present
Area	Less than $1cm^2$	Greater than $1cm^2$
Depth	Skin and subcutaneous tissue	Reaching muscle, tendon, or deeper

Neuropathic Ulceration

Taken from Eastman, Dreyer, "Neuropathic Ucer", StatPearls Publishing 2023

Ischaemic Ulceration

Taken from Neschis, Golden, "Clinical features and diagnosis of lower extremity artery disease", UpToDate 2023

Diabetic Foot Infection

- Any 2 of swelling, erythema, local tenderness, warmth, purulence
- Mild infection - <2cm of cellulitis, superficial, systemically well
- Moderate infection – 2cm+ of cellulitis, deep involvement, systemically well
- Severe infection – systemically unwell
- Samples
- 20% will have osteomyelitis

Conclusions

- Major disease burden
- Preventable
- Simple interventions
- Continued investment
- Offloading, adequate perfusion and treatment of infection

Further Suggested Reading

- NICE 2019 NG19 Diabetic foot problems: Prevention and Management
- HSE 2021 Diabetic Foot Model of Care
- HSE patient info booklets on footcare
  https://www.hse.ie/eng/about/who/cspd/ncps/diabetes/resources/education/

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