

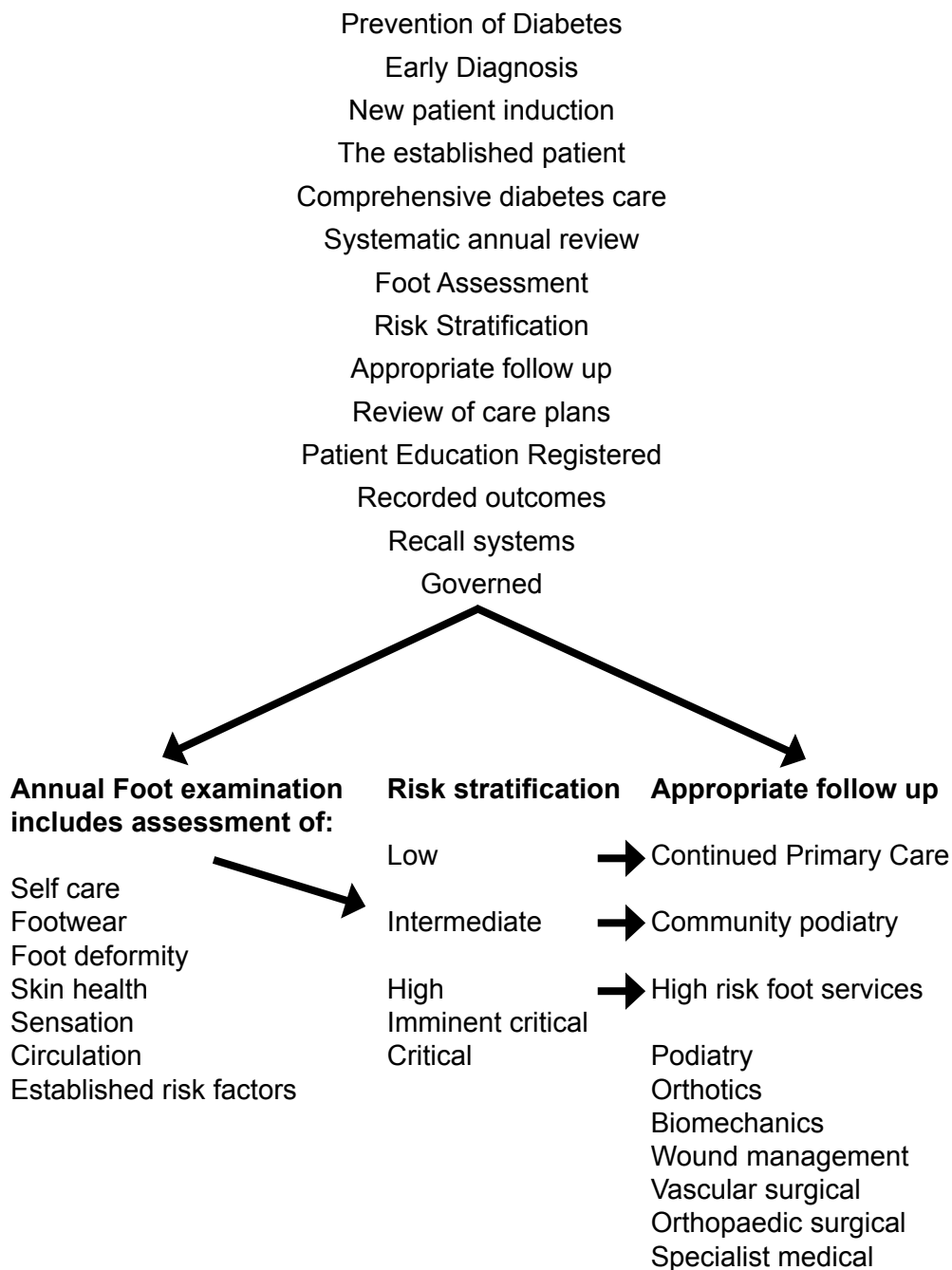


**Wolverhampton
Diabetes Care**

What Care to Expect

Foot Care

All people with diabetes should have a full understanding of foot self care, an annual systematic review, and follow on management of their feet. This should be according to clearly understood risk criteria in order to maximise the prevention of serious foot disease such as ulceration and amputation.



New patient induction

New patient induction must include an understanding of how they can help themselves and of what care patients should expect through comprehensive foot care education with re-education at each annual review as required.

The established patient and review of care plans

Established patients should fully understand their current foot status, the risks associated with that, the actions they are required to take to promote self help and the management plan proposed by their health professionals to deal with problems identified. Any revision of the care plan should be discussed with the patient and documented.

Structured comprehensive diabetes care

Comprehensive diabetes care to reduce the risk factors for vascular disease and neuropathy to include effective glycaemic control, blood pressure and vascular risk factor management including smoking cessation.

Monitoring through systematic annual review

Monitoring by systematic annual review should include foot examination at diagnosis and annually thereafter. The domains to be assessed for comprehensive foot care are outlined in Table 1. They include:

- Self care
- Footwear
- Foot deformity
- Skin health
- Sensation
- Circulation
- Established foot risk factors

Risk stratification

Appropriate, effective follow up

Risk stratification and appropriate follow up should be made according to the outcome of the systematic examination as outlined in Table 2 and Table 3.

- Low risk Continue in Primary Care
- Intermediate risk Community Podiatry referral
- High risk High risk specialist foot clinic, Multidisciplinary review
 - Podiatry
 - Orthotics
 - Biomechanics
 - Vascular assessment
 - Wound management
 - Vascular and orthopaedic surgical
 - MedicalWolverhampton Diabetes Centre
- Imminent critical event As for high risk with same day next day referral
- Critical event Refer urgently via emergency services

Specialist services

Community Podiatry Services

These services are not intended to provide a nail cutting service. They should not be seeing those patients categorised as having low risk. They should see those patients defined as intermediate risk. They may follow up those at high risk provided this is part of an agreed care plan with the high risk service.

Joint High Risk Diabetes Foot Service

These services should not follow those at low or intermediate risk. All patients high risk are their responsibility and should be under their on going care unless an agreed care plan has defined otherwise. Other care providers have a responsibility to ensure that referral to this service occurs according to the risk assessment.

The clinic service is podiatry centred, and other key provision will link around that to provide an efficient, integrated service.

Podiatry will ensure all referred high risk patients undergo a diabetes specialist medical review.

Podiatry will coordinate the use of the Orthotics, Biomechanics and Tissue Viability services.

Non invasive vascular assessment and referral to vascular surgery will be according to the guidance. Referral for invasive vascular imaging will only be made by the specialist vascular surgical team.

Orthotics and Biomechanics

All people with diabetes require appropriate footwear but few require specially made footwear. Neither specialised footwear nor Biomechanics assessment is likely to be required unless there is significant foot deformity, gait abnormality or active or previous foot ulcer.

Most patients requiring Orthotics or Biomechanical assessment will be at high risk. The Orthotics and Biomechanical services will not provide specialised assessment to patients with diabetes without prior review by the specialist high risk foot service.

Vascular surgical referral

The vascular surgical team do not need to see patients simply because they have absent foot pulses.

They should be involved in the management of all patients with a claudication distance of <200 yards, ischaemic rest pain, clinical critical foot ischaemia, ischaemic or mixed neuro - ischaemic foot ulcers.

All critical ischaemic events require urgent direct referral to the vascular surgical team.

Orthopaedic referral

Such referrals should only occur through the high risk foot service. In general such review will be for patients with Neuropathic foot problems (foot ulcer, infection, deformity and Charcot joint). Patients with a vascular component will be referred to the Vascular surgical team.

Diabetes Foot Care Specialised Protocols

It is neither appropriate or acceptable for these protocols to be applied in the non –specialist setting since they relate to high risk foot care..

All patients with problems that fall within the remit of these specialist protocols must be under the care of the diabetes specialist team and the high risk foot service or being managed jointly with them. They should not be managed by other general medical teams nor solely by surgical teams. These protocols include:

- **Infection Management and Antibiotic use in foot wounds and ulcers.**
- **Wound Management.**
- **Non invasive and invasive vascular assessment**

Registered

All patients should be known both to practice based and the central diabetes registers.

Recorded

The outcomes of systematic foot examination, risk stratification and outcomes must be recorded.

Patient education programmes, Review of care plan

Full foot care education should be given at diagnosis and at each subsequent annual review. Patient information leaflets, patient training videos, details of services and of “What Care to expect” are available on the website www.wdconline.org.uk .

The patient should be informed of the care plan arising out of foot care review.

Effective recall systems

Defaulting from structured care is a recognised risk for foot events. Responsibility for recall of patients for annual foot review lies with primary care unless it has become the responsibility of others following referral according to risk stratification. The central diabetes information system will inform primary care of all patients not known to have had a foot examination within 18 months.

Governed

Responsibility for the Diabetes Foot Care pathway will lie with a nominated clinical lead who will chair a representative committee reporting to the District Diabetes lead and to the Wolverhampton LIT. They will be responsible for ensuring:

Effective management of the care pathway including effective integration of services, maintaining evidence based practice, review of protocols and guidelines, audit, critical event analysis, team building, training, effective service planning.

They will present an annual end of year report to the LIT.

Infection Management and Antibiotic use in foot wounds and ulcers.

Minor foot infection such as “Athletes Foot” should be treated promptly and effectively to avoid progression to more complex problems.

Major foot infection should be under diabetes specialist review. Such cases should not be managed by other general medical teams nor solely by surgical teams.

In infection complicating foot ulceration, superficial wound swabs for culture are rarely of help. Deep tissue culture by aspiration, culture of pus or of abscess cavities may help and blood culture should be undertaken in systemically toxic patients. If osteomyelitis is suspected – every effort should be made to define the pathogen including the possibility of bone biopsy as determined by the specialist review of a Consultant Orthopaedic Surgeon.

It is not acceptable to deviate from the stipulated antibiotic policy on the basis of culture results alone without detailed consultant led review to include the views of a consultant microbiologist.

Oral vs. Intravenous antibiotics

Intravenous antibiotics are only required in patients with foot infection: who are systemically ill; who have deep or tracking infection, who have complicating necrosis or gangrene; who have not improved or deteriorate on oral antibiotics. When intravenous antibiotics are used, they should continue until the patient is not toxic, is able to take oral drugs and the foot lesion is definitely improving.

Which antibiotics

The standard combinations must cover streptococci, staphylococci and anaerobes.

Amoxicillin 500mg qds + Flucloxacillin 500mg qds + Metronidazole 400 mg tds
If penicillin allergic then Erythromycin 500mg qds or Clarithromycin 200 mg o bd + Metronidazole 400 mg tds.
If penicillin and erythromycin allergic then Clindamycin 300 mg qds

Diabetes Foot Wound Management.

Wound management is critical in the prevention amputation. There is little secure evidence base to wound management. Thus a “best practice” consensus approach is required and the pursuit of ad-hoc or anecdotal treatments or techniques is unacceptable.

Wounds need to be assessed, graded, documented, debrided, protected, and dressed.

Infection needs to be eradicated.

Circulation needs to be restored if inadequate.

Footwear needs to be reviewed.

The multi professional team needs to be involved.

The care plan must be clear and documented

The patient needs to be informed and educated.

Follow up must be meticulous

Refer. All patients with foot wounds or ulcers are to be seen by the Specialist high risk foot team at the Wolverhampton diabetes centre.

Define Cause. The immediate cause of wound must be determined, documented and corrected.

Document. The wound should be documented by clinical photography.

Grade. Wound grading will be kept in line with agreed district wide protocols.

The wound should be graded as follows

Grading of wound by depth	Exudate / Slough	Infection	Necrosis / Gangrene
Flat superficial Breakdown of epidermis only	None	None	None
Flat deep Breakdown of dermis with shallow cavity.	Moderate	Superficial or cellulitic	Localised
Deep or cavity wound	Heavy	Deep, or tracking or abscess	Extensive

Initial management. The wound will require debridement, cleansing, relief of pressure and protection as assessed by the Specialist Podiatry team. **Sharp debridement of diabetic foot ulcers may only be undertaken by the specialist chiropody and surgical teams.**

Further management and multi professional assessment

- The Specialist Podiatry team will work in conjunction with the Tissue Viability, Orthotic and Biomechanical teams.
- A full assessment will be undertaken of the broader medical need of the patient by the specialist diabetes medical and nursing team.
- Where deep infection, tracking infection or gangrene is observed and urgent surgical opinion should be sought for formal surgical debridement without delay.
- Where an ischaemic component is suspected a vascular assessment should be undertaken and the Vascular Surgical team involved urgently.

Further wound care

After wound assessment the following should be considered

Antibiotics – see protocol.

Cleansing – effective debridement is the key followed by simple saline or tap water cleansing.

Chemical debridement and Topical Antiseptics or antibiotics.

In certain dirty, superficially infected and sloughy wounds or malodorous wounds the following agents may be considered but **only by the specialist foot team.**

Effective mechanical debridement is the key. Sharp debridement of diabetic foot ulcers may only be undertaken by the specialist chiropody and surgical teams.

Otherwise the wound dressing choice may help in foot wound debridement. If chemical debridement is to be considered, then **Hydrogen Peroxide 1.5%** is the safest and cheapest.




Honey is probably the best and cheapest topical antibacterial agent and is effective in desloughing. Topical antibiotics are again best avoided unless a wound is sufficiently malodorous to cause offence or embarrassment in which case consider metronidazole gel. As antiseptics, **Chlorhexadine 0.05%** or **Iodine** may be used but both may cause an allergic reaction.

Dressings.

The dressing policy will be kept in line with district wide protocols.

Health Care Practitioners should refer to the Wolverhampton Wound Management Guidelines for advice on wound care. However, the guideline below provides some wound dressing options specific to the diabetic foot grading.

Use simple non adherent dressings on flat superficial wounds. Use hydrogels on flat wounds with dermis breakdown. On deeper dry wounds that are not exudating again use hydrogels but with exudating wounds use either alginates or synthetic foam dressings.

Appearance	Description		Wound Management
	Flat superficial - Breakdown of epidermis only	→	Non Adherent Contact Layer (Urgotul) – low exudate Protease Modulating Matrix (Promogran) (*) – static clean wound
	Flat deep - Breakdown of dermis with shallow cavity	→	Foam (Biatain) – clean bed, moderate exudate Protease Modulating Matrix (Promogran) (*) – static clean wound Hydrogel (Purilon) – necrosis, no exudate Alginate (Curasorb) – slough and exudate Antibacterial Povidone Iodine Dressing (Inadine) – localised infection, no exudate Hydrofibre with Silver (Aquacel Ag) – localised infection, exudate
	Deep or cavity wound	→	Hydrofibre (Aquacel) – soft necrosis / exudate Antibacterial Absorbent Silver Dressing (Acticoat Absorbent) – deep infection

Non invasive and invasive vascular assessment

Clinical examination remains the key to adequate assessment.

Do not use Doppler ultrasound to examine for pulses. Doppler ultrasound evaluation of pulses is not an adequate assessment of effective circulation and should not be used to re-categorise patients with clinically absent foot pulses to a lower risk category.

Do not use ankle-brachial pressure index to assess the vasculature. Ankle –brachial pressure index scores are not reliable in patients with diabetes since they may be falsely elevated. However a low index of <0.7 strongly supports the presence of poor peripheral circulation – this should be obvious clinically.

Foot temperature does not help indicate risk

Resting transcutaneous oximetry is only of value in defining critical ischaemia in the context of a wider detailed assessment and has no place in routine testing..

All patients with absent foot pulses and high risk feet (risk score >8) are to undergo non-invasive evaluation of peripheral circulation using transcutaneous exercise oximetry in order to best determine suitability for invasive vascular assessment. Patients with high risk feet and a trough exercise transcutaneous oxygen tension of <5kPa O₂ should be reviewed by the Vascular Surgical team.

All patients with significant claudication (distance of <200 yards), ischaemic rest pain, clinical critical foot ischaemia, ischaemic or mixed neuro - ischaemic foot ulcers should be evaluated by the Vascular Surgical for onward management including angiography.

The Charcot Joint

Charcot neuro-arthropathy is a potentially severely disabling complication of Diabetes that can result in morbidity, mortality through decreased mobility, increased foot ulcer and amputation risk. It most commonly affects the forefoot and ankle. It should be suspected in any patient complaining of a hot and / or swollen joint. The objectives are to make the diagnosis, ensure appropriate investigation and effective short, intermediate and long term treatment plans. The aim is prevent deformity or the complications of deformity.

- Charcot joint suspected
- Urgent referral to Specialist Foot services – Wolverhampton Diabetes Centre.
- If suspicion confirmed :
- Admit, bed rest, minimally weight bearing. If it is decided not to admit the patient, then the reasons must be clearly documented and the remainder of the care plan must still be executed.
- Baseline observations – full foot examination, record foot deformity by clinical photography, measure skin temperature bilaterally to document differential. (≥ 2 degrees is abnormal)
- Baseline investigations – to exclude infection and other causes of acute arthropathy
- Plain foot and ankle x-ray – to document baseline, x-rays may be normal in the early stages of the Charcot process and may not become abnormal for weeks..
- Bone isotope scan – should be undertaken on all patients suspected of Charcot neuro-arthropathy. Increased uptake indicates active pathology but does not differentiate between infection and arthropathy.
- Exclude infection – infection is unlikely if the patient is afebrile, the wbc is normal, the culture screens are negative and there is no foot ulceration or other obvious portal of entry of infection.
- Unable to exclude infection – infection must not be missed, discuss with consultant radiologist to consider MRI scan, labelled WBC scan. If unable to confidently exclude infection discuss with consultant orthopaedic surgeon regarding the possibility of bone biopsy for culture.
- Assessing activity /quiescence is very difficult but local foot temperature is the best clinical guide. Repeat bone isotope scanning with document continued activity but is rarely required since the management plan is not altered.
- Treatment and care plans
 - Immobilise the joint by casting
 - If confirmed Charcot neuro-arthropathy -give iv pamidronate 60 mg in 200ml n saline over 4 hours and repeat once at 72hours if no response clinically
 - If osteomyelitis strongly suspected or confirmed treat with intravenous then oral antibiotics for a minimum of 6 weeks.
 - Review mobility, social and work situation and commence effective discharge planning early – may need liaison with family, social services, physiotherapy and occupational therapy.
 - It is usually necessary to have a multidisciplinary team review to ensure all aspects of the care plan are coordinated
- The MDT review conclusions must be documented and formally communicated to all members of the team and to primary care (discharge letter)
- Follow up must be effectively organised with the specialist medical team and the high risk foot service.

Table 1. The Foot Examination

Assessment domain	Satisfactory Scores 0 for each	Unsatisfactory Score as indicated	Score
Self care	Can	Can not self care or inappropriately so	1
Footwear	Appropriate	Inappropriate, poorly fitting or traumatising	1
Foot deformity	Absent	Present and minor Present and more marked to include previous deforming foot surgery Present, gross and / or acute ?Charcot	1 4 8
Skin	Normal	Abnormal with cracks, corns, callous, Abnormal with infection or trauma of any sort Abnormal with infection causing deeper tissue involvement or any systemic features / toxaemia Any necrosis	1 4 16 16
Sensation	Fully intact	Absent vibration or monofilament sensation	2
Circulation	At least 1 pulse present in each foot	2 pulses absent in any foot, no claudication and no clinical features of ischaemia. Any history of claudication Non critical ischaemia - Any critical ischaemia - rest pain, ischaemic cyanosis (red blue dusky foot - "sunset foot"), gangrene	2 4 8 16
Prior high risk	None	Previous ulcer or amputation, Current ulcer, new or old With any infection or necrosis	4 8 16

Table 2. The Foot Examination & Scoring Risk

Item	Outcome	Score
Safely self caring	yes / no	1
Appropriate footwear	yes / no	1
Foot deformity minor	yes / no	1
Foot deformity marked	yes / no	4
Possible Charcot Joint	yes / no	8
Skin and other soft tissues	normal / abnormal	1
Foot sensation	present / absent (vibration / filament)	2
Circulation	pulse present / 2 Pulses absent L + or R	2
Claudication	no / yes	4
Claudication distance	none / >200 yards <200 yards	
Non critical ischaemia	no / yes	8
Critical ischaemia	no / yes	16
Previous ulcer / foot surgery	no / yes	4
New or current ulcer	no / yes	8
Infection non –critical	no / yes	4
Infection significant +- necrosis	no / yes	16

Calculate score and refer accordingly

Risk Level	Features	Actions and Follow up
Low Total score 0	No risk features	Patient education Continue in Primary Care
Intermediate Total score 1 - <5	One or 2 features Poor self care Poor footwear Minor foot deformity Sensory loss Loss of pulses with no ischaemic history or signs	Patient education Community podiatry referral
High Total score >5 -<8	Combinations of features Poor self care Poor footwear Marked foot deformity Sensory loss Loss of pulses with or without ischaemic features Previous foot ulcer or amputation	Patient education High risk foot clinic referral. Multidisciplinary team review. Wolverhampton Diabetes Centre Routine referral
Imminent critical event Total score >8 -<16	Combinations of features including Foot / ulcer infection New ulcer Ischaemic features	Patient education High risk foot clinic referral Multidisciplinary team review. Wolverhampton Diabetes Centre Same day / next review
Critical event Total score >= 16	Critical foot or limb ischaemia Critical infection	Refer via emergency services for diabetes medical / vascular surgery multidisciplinary team review. Urgent referral

Foot self-assessment for people with diabetes

Use this form either to assess your own foot risk, or to discuss your problems with your primary care team, diabetes team or chiropodist.

If you complete it fully and send it to the Diabetes Information System, so long as you are registered with a Wolverhampton GP, we will ensure you get your annual eye test and arrange chiropody or specialist foot care if you need it.

Send the completed form to:

**Diabetes Information Service
Wolverhampton Diabetes Centre
New Cross Hospital
Wolverhampton WV10 0QP**

Foot check list

- Any difficulty looking after your feet?
- Do your shoes pinch or rub?
- Are your feet misshapen?
- Do you have damage to the skin on your feet or hard skin or corns?
- Do you have loss of feeling, numbness or pins and needles in your feet?
- Do you think there is a serious circulation problem in your feet?
- Do you get cramps in your calves when you walk?
- Do you have or have you ever had an ulcer on your feet?

If you have answered yes to any of these questions you may need special foot care. You must see your chiropodist or GP team for advice.

Complete the information below and send to us if you would like us to promote your diabetes care.

Surname

Forename

Male / Female (please circle)

Date of Birth

NHS number

Address and Postcode

Smoking? (please circle)

Never / Gave up / Smoker

Year diabetes diagnosed?

Current diabetes treatment? (please circle) Diet alone / Diabetes tablets / Insulin

Other treatments? (please circle) Blood pressure tablets / Aspirin Cholesterol tablets

Have you had your diabetes foot test in the last year? Yes / No

If yes by whom? (please circle) GP / Chiropodist / Diabetes Centre

Have you had your diabetes eye test in the last year? Yes / No

Have you had all your diabetes blood tests in the last year? Yes / No

Please note that this information will be recorded on the Wolverhampton Diabetes Information system and subject to all NHS data protection rules. Your signature gives us consent to do this.

Thank you

Signature

Date