

## Model of care for the diabetic foot

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# Model of Care for the Diabetic Foot



DIABETES

National Diabetes Programme  
Clinical Strategy and Programmes Directorate

2011

## Document Control

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## 1.0 Introduction

### 1.1 Purpose of the Model of Care

Diabetic foot disease is one of the most common, serious, feared and costly complications of diabetes. Patients with diabetes are at a 15 to 40 fold higher risk of a lower limb amputation than a non-diabetic patient. Eighty percent of lower limb amputations in diabetes are preceded by the development of a foot ulcer and it is estimated that the annual incidence of lower limb ulceration in patients with diabetes varies between 2.2% to 7.0%. Diabetic foot disease is costly, with patients frequently requiring admission to hospital, investigations, surgery and a prolonged hospital stay.

In Ireland, there were 1,297 hospital discharges for people with diabetes for foot ulceration without amputations in 2008 and 337 discharges for people with diabetes who had a lower limb amputation. This amounted to 23,601 bed days per year used for diabetics with lower limb ulcers and 11,622 bed days per year used for diabetics with lower limb amputations. The total DRG (Diagnosis Related Group) costs calculated for the bed days for diabetic foot ulcer care was €11,972,859 and for diabetic amputations was €7,648,233. The DRG figures for average foot ulcer hospital costs are a minimum, and may be a significant underestimation as illustrated by an Irish study<sup>1</sup>. This study suggested that the true cost of diabetic foot disease may be 2 to 3 times higher.

International studies and guidelines show that targeted foot care and proper screening of risk cases can result in a reduction in the incidence of foot ulcers in patients with diabetes<sup>2,3,4,5</sup>. Therefore with this target of reducing foot ulcers, lower limb amputations and reducing hospital costs in patients with diabetes, the National Diabetes Programme submitted a business case for the 2011 HSE service plan and was successful in recruiting 16 extra podiatrists to the care of the diabetic foot across the country. As a consequence the National Diabetes Programme developed a national model of diabetic foot care using the current number and newly appointed diabetes podiatrists. It is hoped that over time, the number of diabetes podiatrists will increase and the model will change and adapt to accommodate this increase in podiatry number.

The national model of foot care is adapted from the NICE guidelines<sup>4</sup>. The national model of care is for use by all health care professionals involved in the care of the diabetic foot, including practice nurses, primary care physicians, podiatrists, diabetes nurse specialists, tissue viability and public health nurses, orthotists, registrars and consultants.

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<sup>1</sup> Smith D, Cullen MJ, Nolan JJ. (2004). The cost of managing diabetic foot ulceration in an Irish hospital. *Irish Journal of Medical Science*, 173 (2): 89-92.

<sup>2</sup> Patout CA, Birke JA, Horswell R, Williams D, Cerise FP. (2000). Effectiveness of a comprehensive diabetes lower-extremity amputation prevention program in a predominantly low-income African-American population. *Diabetes Care*, 23 (9): 1339-42.

<sup>3</sup> Dargis V, Pantelejeva O, Jonushaite A, Vileikyte L, Boulton AJ. (1999). Benefits of a multidisciplinary approach in the management of recurrent diabetic foot ulceration in Lithuania: a prospective study. *Diabetes Care*, 22 (9): 1428-31.

<sup>4</sup> McIntosh A, Peters J, Young R, Hutchinson A, Chiverton R, Clarkson S, Foster A, Gadsby R, O Connor M, Rayman G, Feder G, Home PD. (2003). Prevention and management of foot problems in type 2 diabetes: clinical guidelines and evidence. Sheffield University: Sheffield.

<sup>5</sup> SIGN Scottish Intercollegiate Guidelines Network. (2010). *Management of diabetes, a national clinical guideline*. NHS Quality Improvement Scotland.

## 1.2 Overview

The National Diabetes Programme was established in June 2010 under the Clinical Strategy and Programmes Directorate. In 2011 funding was received to establish a national multidisciplinary foot care service for people with diabetes. Foot care management in diabetes is based on three categories of risk (see **Table 1**).

1. Patients “**at low risk of diabetic foot disease**” will be managed preventatively through annual screening and regular foot inspections/examinations by primary care nurses\*.  
[Definition: A low risk foot patient has normal foot pulses, normal vibration and sensation to 10g monofilament, no history of foot ulceration, no significant foot deformity, or no visual impairment].
2. Patients “**at risk of diabetic foot disease**” may be stratified as either **moderate risk** or **high risk**. All patients will be under regular surveillance by primary care nurses/general practitioners#.

**Moderate risk** patients will be referred by the GP to the podiatrist, either in the community or in the hospital, for an annual review. These patients will remain under the clinical governance of the GP and podiatrist #.

[Definition: The moderate-risk patient has either impaired peripheral sensation or impaired circulation or significant visual impairment or a structural foot deformity].

**High risk** patients will be called to be seen at least annually by the diabetes foot protection team in one of the 16 designated centres, and will be under the governance of the foot protection team for their foot care.

[Definition: The high-risk patient has an abnormality that predisposes them to foot ulceration. This can be impaired sensation and impaired circulation, or a previous foot ulcer, previous lower limb amputation or previous Charcot foot].

3. Patients with “**active diabetic foot disease**”, defined as patients with an active foot ulcer (defined as a full thickness skin break) or a Charcot foot, will be actively managed by a multidisciplinary specialist foot care service, in conjunction with vascular surgery, orthopaedics and orthotics input as required. This will be available in the 8 model 4 indicative hospitals.

\* *Reference to primary care nurses throughout the document include practice nurses, community registered nurses, public health nurses and nurses working in the elderly care setting.*

# *Patients being fully managed by the hospital clinic will receive their foot care from the foot protection team. The foot protection team will consist of representatives from consultants, diabetes nurse specialists and podiatrists based in the community or hospital.*

**Table 1: Overview of Risk Categories**

**Risk categorisation method for basic foot screening involving history of diabetes related foot complications, medical history, and assessment of peripheral sensation, arterial supply and presence of foot deformity (NICE Guidelines adapted)**

Risk Group	Risk Category	Foot Examination Frequency	Examiner
Green	Low Risk	Annual	Primary care nurse
Amber	At Risk (Moderate Risk Category)	Annual or more frequently as required	GP/primary care nurse. Annual review by podiatrist either in community or hospital.
Pink	At Risk (High Risk Category)	Annual or more frequently as required	GP/primary care nurse or hospital diabetes clinic, <b>Plus scheduled annual</b> review or more frequent review as required <b>by member of foot protection team.</b>
Red	Active Foot Disease	At least once weekly or as required	Diabetes multidisciplinary foot care service

The evidence base suggests that an effective care pathway for diabetes foot care will benefit patients and may specifically reduce adverse outcomes such as chronic or recurrent foot ulceration, infection and lower limb amputation.

**See Appendix 1 for the integrated model of management/care pathway for people with diabetic foot problems.**

### 1.3 Multidisciplinary Team Member Involvement

Diabetes foot care involves a wide range of professional groups from local HSE areas as well as patients and their carers. Central to diabetes foot care are patients, carers, podiatrists, practice nurses and other primary care nurses, general practitioners, diabetes specialist nurses, diabetes consultants, orthotists, vascular surgeons and orthopaedic surgeons. Other groups with an important input into diabetes foot care are tissue viability nurses, physiotherapists, infectious disease service, radiology consultants, ward nurses and ED staff.

### 1.4 Integrated Model of Management/Care Pathway for People with Diabetic Foot Problems

The integrated model of management/care pathway for the diabetic foot starts at the point of diagnosis of diabetes and continues indefinitely. It will/must be flexible to respond to the needs of the patient as developments occur during the course of their disease progression.

This integrated model of management/care pathway for the diabetic foot is intended to provide a structure and organisation to the foot care needs of patients with diabetes. The key feature is foot care being provided by an appropriate healthcare professional at a frequency appropriate to the patients needs. It is hoped that this will make the overall service more patient focused and efficient. Routine diabetes foot screening will be provided by the primary care team with referral on to podiatrists and secondary care guided by a national integrated model of care for the diabetic foot (**Appendix 1**). In this way, patients with low risk diabetic foot disease will not require foot screening by the podiatry services and will be treated in primary care and patients with complex diabetes foot

problems will be managed by community or hospital based podiatrists as part of a foot protection/ multidisciplinary foot team in one of the 16 designated foot care centres.

The FOOT PROTECTION TEAM is the group of professionals involved in the care of the person with the "AT RISK FOOT" who will observe, advise, treat and educate patients and where necessary prescribe footwear and orthotics in order to protect feet from developing active foot disease. The Foot Protection Team will consist of representatives from consultants, diabetes nurse specialists and podiatrists based in the community and hospital. In 2012, this team will be located in 1 of 16 designated sites and will serve the local catchment area.

The FOOT CARE SERVICE is the multidisciplinary team working together in the model 4 hospital looking after the "ACTIVE FOOT" and comprises of an endocrinologist, diabetes nurse specialist, senior podiatrist and other podiatrists working closely with vascular and orthopaedic surgeons and orthotists. This team will be based in the model 4 hospital and will serve the regional hospital network catchment area for active foot disease, in addition this will provide foot protection services to their local area.

**It should also be stressed that this model of care has been devised to allow a structured national programme to be put in place to reduce end stage diabetic foot disease. It is anticipated that it will undergo ongoing critical analysis and necessary change, particularly as further financial resources are made available in the future.**

## 2.0 Diabetes Foot Screening

Aim: to allow categorisation into Low, At Risk or Active Foot Disease.

Based on this assessment the patient should be allocated to a risk group using the integrated model of care for the diabetic foot, outlined in **Appendix 1**.

Routine diabetes foot screening should ensure that:

- All patients with diabetes are offered annual screening and regular foot inspections/examinations from early diagnosis.
- Foot review and screening is carried out by appropriately trained staff.
- Foot care education is provided to individuals according to their clinical and personal needs.
- Patients are regularly assessed for their risk of foot ulceration and classified as low, at risk (moderate or high risk) or with active foot disease.

### 2.1 Routine Foot Screening Process

Examination of a patient previously classified as low risk or with newly diagnosed diabetes mellitus should include:

Foot Inspection

- Inspection of skin, nails and for structural foot deformity.
- Examination of footwear.

Foot Screening (**Appendix 2: Diabetes Foot Screening Instructions**)

- Vibration perception testing (128 Hz tuning fork) and cutaneous pressure perception testing with a 10g monofilament sensation.
- Palpation of foot pulses.

Based on the findings of the screening process, patients should be assigned to a risk categorisation, as detailed in **Appendix 1**.

Subsequent foot management plan dependant on risk classification.

Screening process to be fully documented (**See Appendix 3: Diabetes Foot Screening Tool**) and the findings are recorded in the GP database for audit purposes.

### 3.0 Low Risk Foot (Green)

A low risk foot patient has normal foot pulses, normal vibration and sensation to 10g monofilament, no history of foot ulceration, no significant foot deformity, or no visual impairment.

#### 3.1 Foot Examination Frequency

All patients with diabetes should have their feet examined at a minimum on an annual basis whether they attend their primary care physician or a hospital based diabetes clinic. If the patient with diabetes attends their primary care physician or hospital diabetes clinic on a more frequent basis, the feet should also be examined as part of the routine clinical visit.

#### 3.2 Examiner

A practice nurse/primary care nurse in the patient's general practice who usually reviews the patient's general diabetes care and is appropriately trained to examine foot pulses, vibration and monofilament testing.

This clearly has resource implications both for nurse training and time for delivery of service.

#### 3.3 Screening of the Low Risk Foot

Patients previously classified as low risk or patients with newly diagnosed diabetes mellitus should have the following foot examination:

- Inspection of skin, nails and for structural foot deformity.
- Vibration perception testing (128 Hz tuning fork) and cutaneous pressure perception testing using the 10g monofilament.
- Palpation of foot pulses.
- Examination of footwear.

**See Appendix 3: Diabetes Foot Screening Tool.**

#### 3.4 Management

1. Further referral: there is no need for a patient with low risk of diabetic foot disease to routinely see a podiatrist for diabetes related purposes.
2. Foot care education:
  - Nail care
  - Emollient use
  - Footwear
  - Daily self-examination of the feet
  - Not walking in bare feet
  - Checking footwear and hosiery before putting them on
  - "Breaking shoes in" never to be attempted
  - No hot water bottles
  - Checking bath and shower temperature
  - Avoidance of home remedies e.g. corn plasters
  - What to do and the appropriate person to contact if foot problems develop
  - A low risk foot information sheet should be provided

**See Appendix 7: Care of the Low Risk Foot - Patient Information Leaflet**
3. Annual foot screening as part of the patient's general diabetes care.

## 4.0 At Risk Foot [**Moderate Risk (Amber)**, **High Risk (Pink)**]

This group consists of two categories of patients; those at Moderate Risk and those at High Risk respectively. The frequency of review differs between these two groups.

### 4.1 Moderate Risk Foot (Amber)

A patient at moderate risk of foot complications has either a reduction in vibration or 10g monofilament sensation or has absent foot pulses in either or both feet. There must be no history of ulceration and no significant foot deformity.

#### 4.1.1 Foot Examination Frequency

Ongoing review by GP/practice nurse or primary care nurse or hospital diabetes clinic as part of routine follow-up.

Annual podiatry review by the specialist podiatrist based either in the community or in the hospital.

**See Appendix 3 for Diabetes Foot Screening Tool to accompany Appendix 4 Referral to Foot Protection Service.**

#### 4.1.2 Examiners

Practice nurse/primary care nurse/GP/community podiatrist/member of hospital diabetes team.

#### 4.1.3 Examination

Patients previously classified as moderate risk should have the following foot examination:

- Inspection for structural foot deformity
- Skin and nail examination
- Vibration perception testing (128 Hz tuning fork) and cutaneous pressure perception testing using the 10g monofilament
- Palpation of foot pulses
- A comprehensive vascular assessment were indicated, including Doppler waveform analysis, ankle brachial index and toe brachial pressure index calculation
- Examination of footwear.

Findings of all assessments must be fully documented and recorded for audit purposes.

#### 4.1.4 Management

1. If there is loss of vibration and 10g monofilament sensation the patient should be educated on how to protect their feet.
2. If there is intact sensation and absence of foot pulses in either or both feet, the patient may require further vascular assessment particularly if there are symptoms of vascular insufficiency.

**Use Appendix 3: Diabetes Foot Screening Tool to accompany Appendix 4 Referral to Foot Protection Service.**

3. Foot deformity may not need any action but if it is severe, i.e. interferes with the function of the foot or the ability to obtain appropriate footwear, then the patient should be referred for specialist assessment. Podiatry advice, biomechanical assessment and discussion of all treatment options including accommodative footwear and orthoses where required. In some cases orthopaedic surgery may be required.

4. If there is other foot pathology such as nail conditions, corns, callus or verrucae then these can be dealt with during the examination by the podiatrist and referral to a community podiatrist should be made.
5. Foot care education:
  - Nail care
  - Emollient use
  - Footwear
  - Daily self-examination of the feet
  - Not walking in bare feet
  - Checking footwear and hosiery before putting them on
  - “Breaking shoes in” never to be attempted
  - No hot water bottles
  - Checking bath and shower temperature
  - Avoidance of home remedies e.g. corn plasters
  - What to do and the appropriate person to contact if foot problems develop
  - The moderate risk foot information sheet should be given to the patient

**See Appendix 7: Care of the Moderate Risk Foot - Patient Information Leaflet.**

#### **4.1.5 Clinical Governance**

For patients attending GP or combined GP/ hospital care clinical responsibility rests with the GP and podiatrist. For patients totally managed by the hospital clinics the clinical responsibility rests with the consultant (under the governance of the foot protection team or multidisciplinary foot care service).

## **4.2 High Risk Foot (Pink)**

A patient with high risk of foot complications has both a reduction in vibration and monofilament sensation and peripheral arterial disease (absence of foot pulses). If there is a previous history of ulceration or lower limb amputation or Charcot neuroarthropathy then the foot is classified as high risk automatically and remains in the high risk category.

### **4.2.1 Foot Examination Frequency**

Ongoing review by GP/primary care nurse/hospital diabetes team. Patients will be called for formal annual review (or more frequently as required) by the members of the foot protection team or service where appropriate (patients at “High Risk” will often have other complications and thus likely to already be hospital attendees). **See Appendix 3: Diabetes Foot Screening Tool to accompany Appendix 4 Referral to Foot Protection Service.**

### **4.2.2 Examiners**

A podiatrist/consultant/senior diabetes physician/diabetes nurse specialist with a special interest in foot disease as part of the diabetes foot protection service. The clinical governance for managing these patients’ feet is with the consultant leading the foot protection team, i.e. the local endocrinologist.

### **4.2.3 Examination**

Patients classified as high risk should have the following foot examination:

- Inspection for structural foot deformity
- A comprehensive neurological assessment
- A comprehensive vascular assessment where indicated, including Doppler waveform analysis, ankle brachial and toe brachial pressure index calculation
- Examination of footwear.

Findings of all assessments must be fully documented and recorded for audit purposes.

#### 4.2.4 Management

1. The diabetes foot protection clinic should take place on a monthly basis at minimum, within the model 3 or model 4 hospital and should have input from a diabetes specialist, podiatrist and diabetes nurse with input where necessary from vascular, orthopaedics and orthotics.
2. Podiatrist within the foot protection team or foot care service should review the high risk foot at least once every 12 months.
3. If ulceration is present then refer within 24 hours or the next working day to the multidisciplinary foot care service (model 4 hospital).
4. Review educational needs of the patient.
5. If there is a problem with footwear then referral to a podiatrist/orthotist for footwear assessment and orthoses provision as required.
6. Refer to vascular (**See Appendix 5: Diabetes Peripheral Vascular Assessment Form**) and/or orthopaedics where necessary.
7. If there is other foot pathology such as nail conditions, corns, callus or verrucae, then these can be dealt with during the examination by the podiatrist and referral to a community podiatrist should be made.
8. The hospital podiatrist will work closely with the community podiatrist in the joint care of high risk foot patients.
9. Foot care education:
  - Nail care
  - Skin and nail examination
  - Emollient use
  - Footwear
  - Daily self-examination of the feet
  - Not walking in bare feet
  - Checking footwear and hosiery before putting them on
  - "Breaking shoes in" never to be attempted
  - No hot water bottles
  - Checking bath and shower temperature
  - Avoidance of home remedies e.g. corn plasters
  - Avoidance of constrictive hosiery
  - What to do and the appropriate person to contact if foot problems develop
  - The high risk foot information sheet should be given to the patient

**See Appendix 7: Care of the High Risk Foot - Patient Information Leaflet.**

#### 4.2.5 Clinical Governance

For patients attending GP or combined GP/ hospital care clinical responsibility rests with the GP and podiatrist. For patients totally managed by the hospital clinics the clinical responsibility rests with the consultant (under the governance of the foot protection team or multidisciplinary foot care service).

## 5.0 Active Foot Disease (Red)

A patient with active foot disease has either an active foot ulcer (defined as a full thickness skin break) or an active Charcot foot.

### 5.1 Referral

All diabetes patients with an ulcer or active Charcot foot should be referred to the diabetes foot clinic urgently and patients should be seen within 24 hours or on the next working day by the diabetes multidisciplinary foot care service, and involve the appropriate specialties.

**See Appendix 6: Diabetes Foot Ulcer Assessment and Referral Form.**

### 5.2 Foot Examination Frequency

Patients will be seen weekly by a member of the multidisciplinary foot care service until healing of the ulcer and will be seen regularly in the specialist multidisciplinary foot care clinic until ulcer healing or the Charcot foot becomes stable and inactive.

### 5.3 Examiners

The clinical governance for managing patients with active foot disease is with the consultant leading the multidisciplinary foot care service, i.e. the local endocrinologist and the examiners will be members of the hospital diabetes multidisciplinary foot care team.

### 5.4 Examination

Patients classified with active foot disease should have the following foot examination:

- Inspection for structural foot deformity
- A comprehensive neurological assessment
- A comprehensive vascular assessment where indicated, including Doppler waveform analysis, ankle brachial, toe brachial pressure index calculation and/or radiological imaging of the lower limb vasculature
- Radiology investigations were indicated including foot X-Ray or MRI of the foot (isotope bone scan may also be used in certain circumstances)
- Examination of footwear.

Findings of all assessments must be fully documented and recorded for audit purposes.

### 5.5 Management

1. The diabetes foot care clinic should take place on a monthly basis at minimum, within the model 4 hospital and should have input from a diabetes consultant, senior podiatrist and diabetes nurse with input where necessary from vascular, orthopaedics, orthotics, tissue viability, physiotherapy, plastic surgery and infectious disease.
2. Podiatrist within the foot care service should review the active foot at least weekly until healing.
3. Review educational needs of the patient.
4. If there is a problem with footwear then referral to a podiatrist/orthotist for footwear assessment and orthoses provision as required.
5. Refer to vascular (**See Appendix 5: Diabetes Peripheral Vascular Assessment Form**) and/or orthopaedics where necessary.

6. If there is other foot pathology such as nail conditions, corns, callus or verrucae, then these can be dealt with during the examination by the podiatrist and referral to a community podiatrist should be made.
7. If there are clinical signs of infection, antibiotics should be commenced immediately.
8. If there are clinical signs of severe/limb threatening infection then the patient should be admitted urgently for intravenous antibiotic therapy.
9. If there is evidence or suspicion of osteomyelitis the patient should be referred for radiological and orthopaedic review.
10. Control vascular risk factors.
11. Once the foot ulcer has healed and appropriate footwear organised for the patient, they can be moved back to the **High Risk Group** in the “**At Risk**” category. However, if there is the likelihood of re-ulceration they should continue to attend the multidisciplinary foot care service in a model 4 hospital.
12. The high risk foot information sheet should be given to the patient  
**See Appendix 7: Care of the High Risk Foot - Patient Information Leaflet.**

## 5.6 Clinical Governance

Patients with active foot disease will be managed by the hospital diabetes clinics and the clinical responsibility rests with the hospital consultants (under the governance of the foot protection team or multidisciplinary foot care service).

## Appendices

**Appendix 1** Integrated Model of Management/Care Pathway for People with Diabetic Foot Problems

**Appendix 2** Diabetes Foot Screening Instructions

**Appendix 3** Diabetes Foot Screening Tool

**Appendix 4** Referral to Foot Protection Service

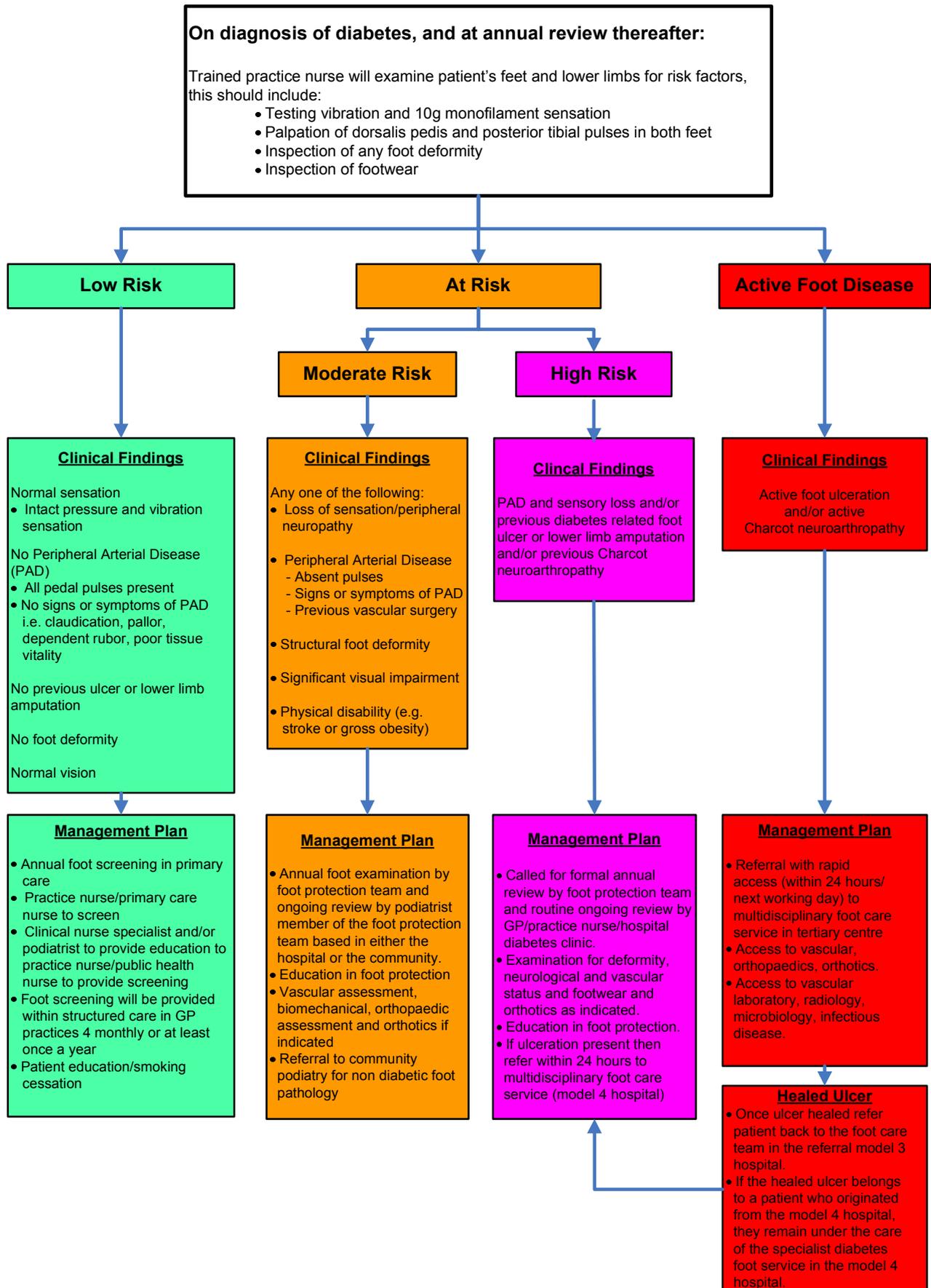
**Appendix 5** Diabetes Peripheral Vascular Assessment Form

**Appendix 6** Diabetes Foot Ulcer Assessment and Referral Form

**Appendix 7** Patient Information Leaflets

- a) Care of the Low Risk Foot
- b) Care of the Moderate Risk Foot
- c) Care of the High Risk Foot

## Appendix 1: Integrated Model of Management/Care Pathway for People with Diabetic Foot Problems

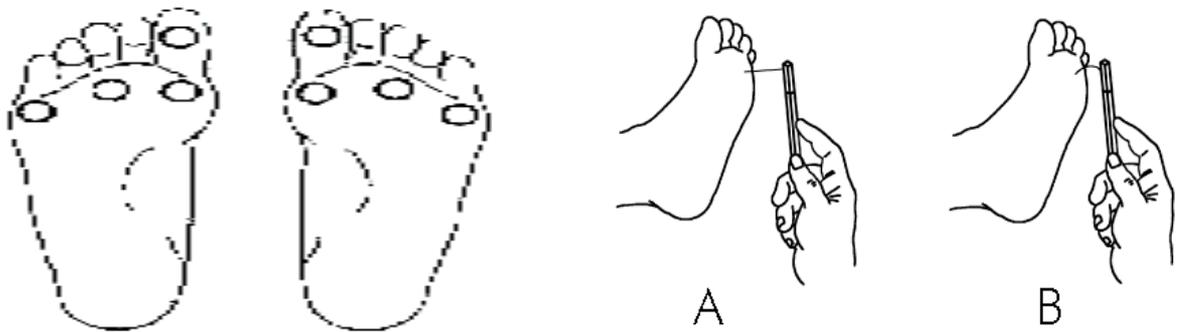


## Appendix 2: Diabetes Foot Screening Instructions

### Sensory Assessment:

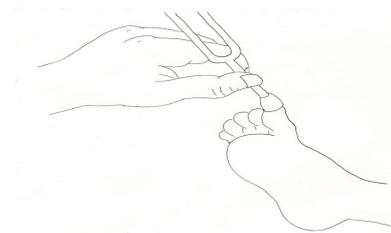
**Cutaneous Pressure Assessment (10g monofilament- 5.07):** delivers a 10-gram force when properly applied. Research has shown that a person who can feel the 10-gram filament in the selected sites is at reduced risk for developing ulcers.

- The sensory exam should be done in a quiet and relaxed setting. The patient must not watch while the examiner applies the filament.
- Test the monofilament on the patient's lower arm or sternum so he/she knows what to anticipate.
- The four sites to be tested are indicated on the screening form.
- Apply the monofilament perpendicular to the skin's surface (see figure A below).
- Apply sufficient force to cause the filament to bend or buckle (see figure B below).



- The total duration of the approach, skin contact, and departure of the filament should be approximately 1-1.5 seconds.
- Apply the filament along the perimeter and NOT ON an ulcer site, callus, scar or necrotic tissue. Do not allow the filament to slide across the skin or make repetitive contact at the test site.
- Press the filament to the skin such that it buckles at one of two times as you say "time one" or "time two." Have patients identify at which time they were touched. Repeat as necessary and randomise the sequence of applying the filament throughout the examination.

**Vibration Perception (128 Hz tuning fork) – Activate the tuning fork.** Test on the wrist first to ensure that the patient is responding to the correct stimulus. Place the stem of the fork over the tip of the big toe (figure C) and ask the patient to tell you if they feel vibration. Record the result as absent, reduced or present depending on the patients response.



**Figure C: Vibration Testing**

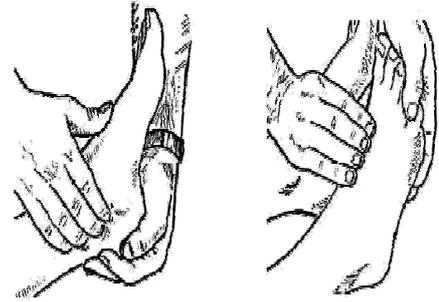
**Vascular Assessment:**

This involves the manual palpation of the dorsalis pedis and posterior tibia pulses in both feet. Location of these pulses are shown on figure D.

- If a person has claudication or rest pain (especially the latter), there is sufficiently severe peripheral vascular disease to predispose to vascular ulceration.
- If a person has no claudication or rest pain, then one relies on physical examination and, if necessary, investigations to determine the risk.
- Looking at the feet to see if they are dusky red or purplish in colour and feeling them to see if they are cold give important clue that the circulation may be impaired.

Posterior Tibial

Dorsalis Pedis

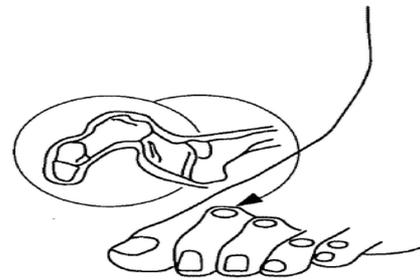


**Figure D: Pedal Pulse Palpation**

**Structural Foot Deformity**

Record on the diabetes foot screening tool whether these is the presence of:

- toe deformity (figure E),
- bunion deformity (figure F),
- high arch foot (figure G),
- Charcot foot (figure H).



**Figure E: Toe Deformity**



**Figure F: Bunion Deformity**



**Figure G: High Arch Foot**



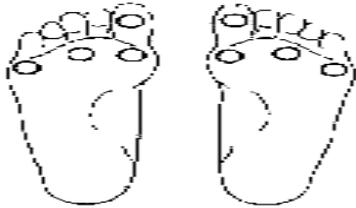
**Figure H: Charcot Foot**

**Footwear Assessment:**

Improper or poorly fitting shoes are major contributors to diabetes foot ulcerations. Educate patients about appropriate footwear. All patients with diabetes need to pay special attention to the fit and style of their shoes and should avoid pointed-toe shoes or high heels. Properly fitted athletic or walking shoes with soft upper leathers and no or minimal seams are recommended for daily wear. If off-the-shelf shoes are used, make sure that there is room to accommodate any deformities.



## Appendix 3: Diabetes Foot Screening Tool

<p><b>Patient Name:</b>.....</p> <p><b>Patient Address:</b>.....</p> <p>.....</p> <p><b>DOB:</b>.....</p> <p><b>Phone No:</b>.....</p> <p><b>Medical card/Long term illness card/neither</b></p> <p><b>Diabetes: Type 1 / Type 2</b></p>	<p><b>Date of latest HbA1c</b> .....: IFCC ..... mmol/l</p> <p><b>Medication:</b></p> <p>.....</p> <p><b>History of retinopathy/nephropathy/MI/CVA</b></p> <p><b>Smoker: Yes/No</b></p> <p><b>Anticoagulant Therapy: Yes/No</b></p> <p><b>GP Name:</b>.....</p> <p><b>GP Address:</b>.....</p> <p>.....</p>																																																																																				
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<p><b>Signature:</b> _____</p> <p><b>Printed Name:</b> _____</p>		<p><b>Job Position:</b> _____</p> <p><b>Date:</b> ____/____/____</p>																																																																																			

## Appendix 4: Referral to Foot Protection Service

<b>Patient Name:</b> ..... <b>Patient Address:</b> ..... ..... ..... <b>DOB:</b> ..... <b>Phone No:</b> .....	<b>Medical card/Long term illness card/neither</b>  <b>GP Name:</b> ..... <b>GP Address:</b> ..... ..... .....
------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------

Diabetes	Diabetes Complications	Current Medication
Type 1 / Type 2	1.	1.
Latest HbA1c: IFCC.....mmol/l	2.	2.
Date.....	3.	3.
Diabetes Duration	4.	4.
< 5 years <input type="checkbox"/> 5-10 years <input type="checkbox"/>		5.
> 10 years <input type="checkbox"/>		6.
		7.
		8.
		9.

**Reason for Referral:**

**Pre-Referral Work-up**

Investigation	Results Enclosed	Investigation	Results Enclosed
Full Blood Count		Fasting Cholesterol & Triglycerides	
Urea & Electrolytes		Creatinine	
HbA1c/IFCC		Vascular Scan Report	

**Foot Risk Classification (*please circle*):**

<b>Low Risk:</b> no sensory loss or PAD  <b>At High Risk:</b> Sensory + PAD + Hx healed ulcer/Charcot/Amputation	<b>At Moderate Risk:</b> Sensory or PAD or Structural foot deformity  <b>Active Foot Disease:</b> Active foot Ulcer or Charcot foot
------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------

**Signature** \_\_\_\_\_

**Printed Name** \_\_\_\_\_

**Referral Date** \_\_\_\_\_

## Appendix 5: Diabetes Peripheral Vascular Assessment Form

Patient Name:..... Patient Address:..... ..... ..... DOB:..... Phone No:..... Medical card/Long term illness card/neither Diabetes: Type 1 / Type 2	Date of latest HbA1c .....: IFCC ..... mmol/l Medication: ..... History of retinopathy/nephropathy/MI/CVA Smoker: Yes/No Anticoagulant Therapy: Yes/No GP Name:..... GP Address:..... .....												
<b><u>Vascular Assessment</u></b> <i>(Circle result)</i>													
<b>Manual palpation of pulses:</b>  <b>Doppler:</b>  <b>ABPI:</b>  <b>TBPI:</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><b>Right Foot</b></td> <td style="width: 50%; border: none;"><b>Left Foot</b></td> </tr> <tr> <td style="border: none;">PT: present/absent    DP: present/absent</td> <td style="border: none;">PT: present/absent    DP: present/absent</td> </tr> <tr> <td style="border: none;">PT: Mono/ Bi/ Tri    DP: Mono/ Bi/ Tri</td> <td style="border: none;">PT: Mono/ Bi/ Tri    DP: Mono/ Bi/ Tri</td> </tr> <tr> <td style="border: none;">Right Ankle:_____ Brachial:_____ Index:_____</td> <td style="border: none;">Left Ankle:_____ Brachial:_____ Index:_____</td> </tr> <tr> <td style="border: none;">Right Toe:_____ Brachial:_____ Index:_____</td> <td style="border: none;">Left Toe:_____ Brachial:_____ Index:_____</td> </tr> </table> </td> <td style="width: 50%; border: none;"></td> </tr> </table>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><b>Right Foot</b></td> <td style="width: 50%; border: none;"><b>Left Foot</b></td> </tr> <tr> <td style="border: none;">PT: present/absent    DP: present/absent</td> <td style="border: none;">PT: present/absent    DP: present/absent</td> </tr> <tr> <td style="border: none;">PT: Mono/ Bi/ Tri    DP: Mono/ Bi/ Tri</td> <td style="border: none;">PT: Mono/ Bi/ Tri    DP: Mono/ Bi/ Tri</td> </tr> <tr> <td style="border: none;">Right Ankle:_____ Brachial:_____ Index:_____</td> <td style="border: none;">Left Ankle:_____ Brachial:_____ Index:_____</td> </tr> <tr> <td style="border: none;">Right Toe:_____ Brachial:_____ Index:_____</td> <td style="border: none;">Left Toe:_____ Brachial:_____ Index:_____</td> </tr> </table>	<b>Right Foot</b>	<b>Left Foot</b>	PT: present/absent    DP: present/absent	PT: present/absent    DP: present/absent	PT: Mono/ Bi/ Tri    DP: Mono/ Bi/ Tri	PT: Mono/ Bi/ Tri    DP: Mono/ Bi/ Tri	Right Ankle:_____ Brachial:_____ Index:_____	Left Ankle:_____ Brachial:_____ Index:_____	Right Toe:_____ Brachial:_____ Index:_____	Left Toe:_____ Brachial:_____ Index:_____	
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<b>Right Foot</b>	<b>Left Foot</b>												
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Right Toe:_____ Brachial:_____ Index:_____	Left Toe:_____ Brachial:_____ Index:_____												
<b>Ulcer/ Amputation/ PAD / PN:</b>													
<b>Comment:</b>													
<b>Signature:</b> _____	<b>Date:</b> ____/____/____												
<b>Printed Name:</b> _____	<b>Department:</b> _____												

## Appendix 6: Diabetes Foot Ulcer Assessment and Referral Form

**Definition of an ulcer:** A full thickness skin break at least to Grade 1 of the University of Texas Wound Classification System, occurring distal to the malleoli.

Patient Name:..... Patient Address:..... ..... ..... DOB:..... Phone No:..... Medical card/Long term illness card/neither Diabetes: Type 1 / Type 2	Date of latest HbA1c .....: IFCC ..... mmol/l Medication: ..... History of retinopathy/nephropathy/MI/CVA Smoker: Yes/No Anticoagulant Therapy: Yes/No GP Name:..... GP Address:..... .....
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1. <b>Date foot wound(s) first detected:</b> ____/____/____ 2. <b>Location on foot</b> <i>please circle location of wound(s) on the diagram</i>	<b>Left Foot</b> 	<b>Right Foot</b> 
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3. **Ulcer description** *If there is more than 1 foot wound, please document each one separately on this form.*

Wound 1	Wound 2
<b>Approximate size of Wound:</b> <10mm <input type="checkbox"/> 10-30mm <input type="checkbox"/> >30mm <input type="checkbox"/> Approximate size (mm) _____	<b>Approximate size of Wound:</b> <10mm <input type="checkbox"/> 10-30mm <input type="checkbox"/> >30mm <input type="checkbox"/> Approximate size (mm) ____
<b>Wound appearance:</b> Granulation tissue <input type="checkbox"/> Slough tissue <input type="checkbox"/> Joint or bone detected <input type="checkbox"/> Tendon <input type="checkbox"/> Necrotic tissue <input type="checkbox"/> Purulent Exudate <input type="checkbox"/> Malodor <input type="checkbox"/> Cellulitis <input type="checkbox"/>	<b>Wound appearance:</b> Granulation tissue <input type="checkbox"/> Slough tissue <input type="checkbox"/> Joint or bone detected <input type="checkbox"/> Tendon <input type="checkbox"/> Necrotic tissue <input type="checkbox"/> Purulent Exudate <input type="checkbox"/> Malodor <input type="checkbox"/> Cellulitis <input type="checkbox"/>

**Texas Wound Classification**

Grade	Definition	Stage
0	A pre- or post-ulcerative site that has healed	A) Clean wounds B) Non-ischemic infected wounds C) Ischemic non-infected wounds D) Infected ischemic wounds
1	Superficial wounds through the epidermis, or epidermis and dermis, that do not penetrate to tendon, capsule, or bone	
2	Wounds that penetrate to tendon or capsule	
3	Wounds that penetrate to bone or into the joint	

Wound 1	Wound 2
Ulcer classified as: Grade _____ Stage _____ Comments:	Ulcer classified as: Grade _____ Stage _____ Comments:

4. **Further Information**

**Is the wound(s) infected:** Yes  No  If yes, is the patient on antibiotics for the wound(s) Yes  No

**To your knowledge has any other health professional reviewed/treated the wound(s):** Yes  No

If yes, please give details of whom and where (e.g. GP/nurse in local practice, doctor in A&E/Outpatient dept):

Printed Name	Position/Title	Work Location	Contact phone number

Signature: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

## **Appendix 7: Patient Information Leaflets**