Foreword

Diabetes is the commonest cause of non-traumatic amputations in UK with 80% of amputations preceded by foot ulcer. However ulceration and amputation should not be seen as an inevitable consequence of diabetes. Many foot ulcers and/or amputations could be prevented.

The early identification of the at risk foot by competently trained health care professionals, combined with the application of preventative measures plus the rapid and intensive treatment of complications by a Multi Disciplinary foot Team [MDfT] should help avoid this scenario.

Therefore this training package has been designed to support the development of a competent workforce across the Merseyside cluster (and beyond) in the screening and assessment of the diabetic foot.

The package supports the dissemination of standardized educational content, based on the existing comprehensive evidence based ‘Putting Feet First’ diabetes footcare pathway, with its content being drawn from:

- NICE Adult Quality standards for Diabetes (2011)
- National Minimum Skills Framework for Commissioning of Foot Care Services for People with Diabetes (2011)
- Putting Feet First National Campaign (DUK March 2012)
- National Service Framework for diabetes (2001/2)
- Putting Feet First National minimum skills framework (2011)

This resource is the product of collaboration between the NHS Merseyside Diabetes Network and Merseyside and Cheshire Health Innovation and Education Cluster (MCHIEC). As such we would like to thank our colleagues from the following organisations for their collaboration in producing this training resource.
The MCHIEC is part of a national network of Health Innovation and Education Clusters, (HIECs) whose purpose is to promote innovation, quality and productivity in the NHS through training, education and the sharing of best practice across the region via formal partnerships between NHS organisations, leading education institutes, industry and academia.

It is the intention that this training package has been designed to be adopted outside of the Merseyside Cluster and supports the inclusion of local level information to complement existing content.

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Diabetes Foot Screening Training

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Final Version November 2012

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Introduction

Disease of the foot is a complication of diabetes caused by damage to the nerves and blood vessels that service the limbs. Worryingly, one in three people with diabetes do not realize that having the condition puts them more at risk of having an amputation.

15% of the diabetic population will experience foot ulceration at some point in their life with 6% undergoing a lower limb amputation; a problem that costs the NHS over £38 million per year, accounts for more hospital bed days than all other diabetes complications put together and carries a mortality rate of over 50% at 2 years post amputation. Unsurprisingly, amputation and foot ulcers have a huge impact on the wellbeing of people living with diabetes.

If the incidence of ulcers and amputations is reduced by 25% using intensive prevention measures there could be a significant saving to both the patient and the NHS fulfilling all the principles of the Quality, Productivity, Innovation and Prevention (QIPP) agenda.

It is therefore essential that all staff involved in the care of people with diabetes are trained, informed and clinically competent in undertaking a diabetes foot examination and risk stratification referring to specialist Foot Protection Teams (FPT) or Multi-disciplinary foot care teams (MDfT) as appropriate in accordance with the Diabetes Footcare Pathway.

National drivers

National Service Framework for Diabetes (DH 2001/2)
NHS Operating Framework (DH 2011/12)
National Quality Innovation Productivity and Prevention [QIPP ] Agenda
NICE Quality Standards for Adult Diabetes (2011)
Putting Feet First, National Minimum Skills Framework (Revised march 2009)
Putting Feet First National Campaign (DUK March 2012)

The National Service Framework for Diabetes aims to:-

- Minimise the impact of the long-term complications of diabetes by early detection and effective treatment and maximise the quality of life of those who develop long-term complications (Standards 10, 11 & 12).
- Maximise the quality of life of all people with diabetes and to reduce their risk of developing long-term complications of diabetes (Standard 4).
- Minimise the impact on people with diabetes of the acute complications of diabetes (Standard 7).
- Ensure good quality consistent care is provided for people with diabetes whenever they are admitted to Hospital (Standard 8).
The NICE Adult Diabetes Quality standards

The quality standard for diabetes in adults requires that services should be commissioned from and coordinated across all relevant agencies encompassing the whole diabetes care pathway.

An integrated approach to provision of services is fundamental to the delivery of high-quality care to people with diabetes. The diabetes in adult's quality standard supports the National Service Framework for Diabetes and locally agreed pathways of care. Specifically, it is expected that achieving the high-quality care set out in this quality standard will reduce the complications associated with diabetes.

Quality standards specifically relating to foot care

Quality statement 10: ‘At risk’ foot
People with diabetes at risk of foot ulceration receive regular review by a foot protection team in accordance with NICE guidance

Quality statement 11: Foot problems requiring urgent medical attention
People with diabetes with a foot problem requiring urgent medical attention are referred to and treated by a multidisciplinary foot care team within 24 hours.

National Campaign: ‘Putting Feet First’

Diabetes UK is campaigning to Put Feet First. Worldwide, diabetes-related complications result in the amputation of a lower limb every 30 seconds. It's estimated that people living with diabetes are 30 times more likely to have an amputation compared to the general population.

We want to bring an end to the thousands of potentially preventable amputations affecting people with diabetes.

We’ve identified some key areas that we believe will help dramatically reduce the number of people with diabetes suffering amputations. We’re campaigning across the UK to make sure:

• People with diabetes know how to look after their feet and know what to expect from their health service
• Local health services provide an integrated footcare pathway – the right treatment at the right time in the right place
• Healthcare professionals are more aware of the risk of diabetic foot disease and provide annual checks
• A national diabetes implementation plan is put in place, with all aspects of care monitored
# AGENDA: Theory Session

<table>
<thead>
<tr>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction / Pre-Training Questionnaire</td>
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<tr>
<td>Theory Presentation</td>
</tr>
<tr>
<td>BREAK</td>
</tr>
<tr>
<td>Practical - Presentation</td>
</tr>
<tr>
<td>Demonstration of Baseline Foot Check Screening</td>
</tr>
<tr>
<td>Group Work</td>
</tr>
</tbody>
</table>
# Diabetes Foot Screening Training

## Pre-Training Questionnaire

<table>
<thead>
<tr>
<th>Question</th>
<th>YES / NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you currently undertake foot checks as part of the annual review of Diabetes?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>2. Have you ever received any training in undertaking a foot check for people with Diabetes?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>3. Have you ever used a 10g Monofilament to assess for neuropathy?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>If yes, do you feel confident in the use of the 10g Monofilament?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>4. Do you assess circulation by palpating pulses?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>If yes, do you feel confident in your ability to palpate foot pulses?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>5. Do you refer all patients with Diabetes to the Podiatry Service?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>6. Do you give out patient education material regarding footcare?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>7. Do you give out verbal advice regarding footcare to patients?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>8. Do you feel confident to identify deformities or problems of the foot which may put it at risk?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>9. Do you feel confident to identify other factors which may put the foot at risk including inability to self care, impaired renal function, poor glycaemic control, cardiovascular and cerebrovascular disease?</td>
<td>YES / NO</td>
</tr>
<tr>
<td>10. Do you feel confident that you understand the current correct referral pathway for patients with ‘increased risk’ and ‘high risk’ feet?</td>
<td>YES / NO</td>
</tr>
</tbody>
</table>

Date: / / 

Name: 

Designation:
Diabetes Foot Screening

Health Care Professional Training

Aims

- To understand how diabetes affects the lower limb
- To understand the importance of foot screening
- To be able to determine the “risk” status of the foot
- To be able to refer patients appropriately
- Give appropriate advice on basic foot care
How does Diabetes affect the foot?

Background

- In 2010 the UK average prevalence of diabetes was 4.26% with a known diagnosed population of 2.8 million.

- Hyperglycaemia over a long period increases risk of complications.
  - (UKPDS 1998; DCCT 1993)

- Neuropathy is the most common complication of diabetes affecting up to 50% of all people with diabetes.
  - (Edmonds & Foster 2000)

- Foot ulceration is a serous complication which affects 7% of patients with diabetes at any one time and 15% at some point during their lifetime.
  - (Boulton 2004; Mayfield et al 1998; Williams & Pickup 2004)
Peripheral Arterial Disease (PAD)

- Affects the macrovascular & microvascular circulation
- Occurrence in patients with diabetes is 2 – 3 times greater
- Particularly increased in vasculature below the knee.
  (Murray & Boulton 1995)
- More prone to calcification of artery wall.
  (Sumpio et al 2003)

PAD – Clinical Signs & Symptoms

- Absent pedal pulses
- Atrophic, shiny skin
- Coldness
- Absence of hair
- Atrophic, thin brittle nails
- Colour changes – pallor, redness
- Oedema
- Claudication - pain in calf on walking, relieved by rest
- Rest pain - occurring at rest often relieved by placing leg in dependant position.
  (Mayfield et al 1998)
Peripheral Arterial Disease

- Signs and Symptoms
- Foot screening
- Absent foot pulse

Neuropathy

- **Sensory** Loss of protective response to injury
- **Motor** Small muscle wasting; deformity; abnormal pressures
- **Autonomic** Systemic problems; anhydrous skin, fissures, A-V shunting, distended veins, oedema
Deformity

- High mechanical pressure
- Susceptible ulceration
Charcot Neuroarthropathy

- Sensory & autonomic neuropathy
- Insensitivity & weakening of bone put the foot at risk of injury
- Oedema leads to joint instability
- Hypervascular response to injury leads to bone softening & re-absorption
- Weight bearing causes further trauma

Callus

- Predisposes ulceration
Infection

- Discharge
- Erythema
- Swelling
- Warmth
- Systemically unwell

Skin Breakdown

- Fissures
- Blisters
- Ulceration

(May be discharge / exudate / colour changes under callus or nail plate / pain / swelling / warmth / erythema)
Importance of Foot Screening

• Screening is essential to be able to focus on those most at risk
  (Foster & Edmonds 2001)

• The need for regular, accurate & reliable screening methods is highlighted
  (St Vincent Workgroup Report 1996; SIGN 2001; NICE 2004)

Minimum Foot Check


• Detects presence of risk factors leading to ulceration

• Recommends regular foot examination should include:
  - Testing of foot sensation (10g monofilament)
  - Palpation of foot pulses
  - inspection for any deformity

• Screening is used to determine patients level of risk:
  - Current Low Risk
  - Increased Risk
  - High Risk
  - Ulceration
How do we determine the Risk Status of the Foot?

Vascular assessment-Baseline

Palpation of pulses

Posterior Tibial pulse

Below and behind medial malleolus

Dorsalis Pedis pulse

Lateral to extensor hallucis longus tendon on dorsum of foot; between the base of 1st & 2nd metatarsals

If either pulse can be felt it is highly unlikely that there is significant ischaemia

(Edwards & Foxer 2005)
Symptoms / signs of PAD

- Absent pulses
- Skin & nail atrophy
- Change in colour, temperature cool / burning
- Intermittent claudication / rest pain
- Poor tissue viability and slow healing

Vascular Assessment – Follow up by Podiatry

- Palpation of pulses
- Doppler Assessment – insonation +/- ABPI’s
- Capillary refill
- Symptoms / signs of PAD
Neurological Assessment - Baseline

- Light touch using 10g monofilament

Test on 3 sites:-
- plantar aspect of 1st toe
- under 1st MP joint
- under 5th MP joint

- Physical Appearance
  - motor neuropathy
  - autonomic neuropathy – dry skin

Neurological Assessment – Follow up by Podiatry

- Light touch – 10g monofilament
- Vibration perception – 128 MHz Tuning Fork
- Pain perception – neurotips
- Physical appearance
- Proprioception
- Tendon reflexes
Assessment – Baseline / Follow up

- **Deformity**
  - High mechanical pressures
  - Susceptible to ulceration

- **Callus**
  - Predisposes ulceration

- **Swelling/Oedema**
  - Poor footwear fitting
  - Impedes healing

- **Skin Breakdown**
  - Ulceration/fissures/blisters

Footwear

- Deforrmities should be accommodated by properly fitting footwear
- May require specialist footwear via orthotist
- Must not be allowed to cause ulceration
- Badly fitting footwear can cause permanent damage
- Patients should be told principles of good footwear

- Long, broad and deep enough
- Adjustable fastening
- Low heel
- Smooth inner lining
- Avoid prominent seams from hosiery
Education for ‘Low Risk’ patients

- Continue to cut your own toenails regularly, following the shape of the end of your toe. Do not cut down the sides of your nails or cut them too short. File any rough edges of nail.
- Wash your feet nails and dry carefully especially in between toes.
- Apply a moisturising cream daily but avoid using it between toes.
- Always wear well fitting shoes. If possible have your feet measured for new shoes to ensure they are the correct length, width and depth to your feet.

- Check your feet daily for any signs of damage when you take your socks and shoes off. If your eyesight is poor ask a friend or relative to do this for you (at least weekly). If you have any problems bending try using a mirror to check the bottom of your feet.
- Cover any minor cuts and blisters with a dry dressing until it has healed. If it is slow to heal, seek advice from your Podiatrist, GP or Practice Nurse.

### Annual Diabetes Foot Screening Referral Pathway

Patients should be categorised according to the presence of the following signs:

- Normal Sensation: Palpable Pulse
  - No other risk factors
  - LOW RISK
    - Foot Health Leaflet
    - Annual foot check by trained health professional
    - Patient education on appropriate self-care
    - Review Time: SCREEN ANNUALLY

- Neuropathy or absent foot pulses or other risk factors, including inability to self-care, poor eye sight, footswelling, deformity, pathological callus, amputation, previous ulceration, any present manages as high risk
  - INCREASED RISK
    - Foot Health Leaflet
    - Refer to Community Podiatry for ongoing care and assessments
    - Review Time: 6–12 Months SCREEN ANNUALLY

- Neuropathy or absent foot pulses, plus deformity or skin changes
  - HIGH RISK
    - Foot Health Leaflet
    - Refer to Community Podiatry for care and ongoing assessments
    - Review Time: 3–6 Months SCREEN ANNUALLY

- Chronic/Severe Foot Ulceration
  - ULCE
    - Foot Health Leaflet
    - Refer to Diabetes Multidisciplinary Foot Care Team
    - Review local contact details
    - Tel: [Contact Information]

**Foot Emergency:** If critical ischaemia, spreading cellulitis, severe infection or suspected Acute Charcot Osteoarthropathy is present immediate referral should be made to A&E or admission arranged via the patients GP. The earliest possible appointment should also be arranged with the Multidisciplinary Diabetes Footcare Team.

References:
Roles and responsibilities

- Foot Protection – FPT
- Multidisciplinary foot team - MDfT
Annual Diabetes Foot Screening Referral Pathway

Patients should be categorised according to the presence of the following signs:

**LOW RISK**
- Normal Sensation
- Palpable Pulses
- No other risk factors

- Foot Health Leaflet
- Annual foot check by Trained health professional
- Patient education on appropriate self care

- **Review Time:** SCREEN ANNUALLY

**INCREASED RISK**
- Neuropathy or absent foot pulses or other risk factor (e.g., inability to self care, poor eye sight, foot/hair deformity, pathological callus, atrophy, previous ulcer/amputation)*
- *if any present manage as high risk

- Foot Health Leaflet
- Refer to Community Podiatry for ongoing care and assessments

- **Review Time:** 3-6 Months
- SCREEN ANNUALLY

**HIGH RISK**
- Neuropathy or absent foot pulses; plus deformity or skin changes (pathological callus, atrophy) or previous ulcer/amputation

- Foot Health Leaflet
- Refer to Community Podiatry for care and ongoing assessments

- **Review Time:** 1-3 Months
- SCREEN ANNUALLY

**ULCER**
- Chronic / Stable Foot Ulceration

- Foot Health Leaflet
- Refer to Diabetes Multidisciplinary Foot Care Team

- **Insert local contact details**
- Tel: 
- Fax: 

**Foot Emergency:** If critical Ischaemia, spreading cellulitis, severe infection or suspected Acute Charcot Osteoarthropathy is present immediate referral should be made to A&E or admission arranged via the patients GP. The earliest possible appointment should also be arranged with the Multidisciplinary Diabetes Footcare Team.

References:
- Diabetic foot problems: In patient management of diabetic foot problems (NICE) Clinical Guideline 119 March 2011
For patients with an active diabetes foot ulcer, where transfer of care to a Multidisciplinary footcare team (MDfT) would be detrimental to their health and wellbeing, a decision must be made enabling the clinical management of a named individual with an active diabetic foot ulcer, to be undertaken by a competent member of the foot protection team (FPT).

This must be undertaken in conjunction with support and advice from a member of the MDfT.

The decision must only be taken after a full and documented discussion with the individual patient concerned (if able) and/or their carer, the patients GP and any other clinicians involved in the patients clinical care.
# Baseline diabetes foot screening annual foot check & referral

<table>
<thead>
<tr>
<th>Name ........................................</th>
<th>NHS No..................................</th>
<th>Date of Examination / /</th>
</tr>
</thead>
</table>

### Neuropathy
Protective sensation is absent at each site if patient incorrectly answers 2 out of 3 applications of monofilament (including 1 sham).

### Peripheral Arterial Disease
If less than 4 pulses palpable refer to Podiatry Service for further investigation/assessment.

<table>
<thead>
<tr>
<th>10g monofilament Sensation</th>
<th>R</th>
<th>L</th>
<th>R</th>
<th>L</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st toe plantar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st MP joint</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5th MP joint</td>
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<tr>
<td>Dorsalis Pedis Pulse</td>
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<tr>
<td>Posterior Tibial Pulse</td>
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<tr>
<td>Callus</td>
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<tr>
<td>Foot / Nail Deformity</td>
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<tr>
<td>Previous amputation</td>
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<tr>
<td>Claudication</td>
<td></td>
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<tr>
<td>Previous ulcerations</td>
<td></td>
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</tr>
</tbody>
</table>

### Description of findings
Normal sensation, palpable pulses

### Current Low Risk
- Neuropathy or absent pulses or other risk factor (inability to self care, Foot/Nail deformity causing foot pathology, pathological callus, poor eyesight)

### At Increased Risk
- Neuropathy or absent pulses plus deformity or skin changes or previous ulceration or amputation.

### At High Risk
- Ulceration – Chronic / stable
- Ulceration - Acute / Emergency (Spreading cellulitis, critical ischaemia, systemically unwell)

### Suspected Charcot Foot
- Charcot/Red, Hot, Swollen foot

### Action required
- Foot Care Education & Screen Annually at Practice
- Refer to Podiatry Service
- Refer to Podiatry Service
- Refer to MDFT Foot Ulcer clinic & Podiatry Service
- Refer Urgently to GP / A&E
- Urgent referral to A&E or admission via GP Earliest possible appointment to also be arranged with MDFT

### IF REFERRAL TO PODIATRY SERVICE INDICATED PLEASE COMPLETE THE SECTION BELOW

### Patient Details
- Name........................................
- Address......................................
- Postcode....................................
- DOB...........................................
- Tel No......................................

### GP Details
- Name........................................
- Address......................................
- Postcode....................................
- DOB...........................................
- Tel No......................................

### Referrer Details
- Name........................................
- Designation..............................
- Contact No................................

ONCE COMPLETED PLEASE EMAIL/FAX TO: (insert local contact details)
Diabetes - Health Information Leaflet

LOW RISK

Normal Sensation, Palpable Pulses

Diabetes is a life-long condition which can cause foot problems such as ulcerations, infection and in extreme cases gangrene and amputation. These foot problems usually occur because of damage to nerves (affecting the sensation) and blood vessels (circulation).

• Your foot examination has shown that you have no such damage.
• Foot problems can be minimised and often prevented through good diabetes control as well as specific foot care.
• You can continue to care for your own feet using the advice overleaf.
• You will receive an appointment for an annual foot check by the podiatrist/chiropractist at your local health centre.

If you develop any problems and require a podiatry appointment sooner, please contact us.

KEEP YOUR FEET HEALTHY

• Continue to cut your own toenails regularly, following the shape of the end of your toe. Do not cut down the sides of your nails or cut them too short. File any rough edges of nail.
• Wash your feet daily and dry carefully especially between the toes.
• Apply a moisturising cream daily but avoid using it between toes.
• Always wear well fitting shoes. If possible have your feet measured for new shoes to ensure they are the correct length, width and depth for your feet.
• Check your feet daily for any signs of damage when you take your socks and shoes off. If your eyesight is poor ask a friend or relative to do this for you (at least weekly). If you have problems bending try using a mirror to check the bottom of your feet.
• Cover any minor cuts and blisters with a dry dressing until it has healed. If it is slow to heal, seek advice from your Podiatrist, GP or Practice Nurse.

If you notice any redness, swelling, heat or pain and need immediate attention for a foot problem, contact the podiatry department, visit your GP, Practice Nurse or A&E dept.
Diabetes Footcare General Advice

FOOT CARE ON HOLIDAY

- Avoid wearing new shoes
- Plan adequate rest periods to avoid additional stress on feet
- Use sun block on your feet
- Take a first aid kit with you covering any sore areas with a sterile dressing
- Contact a doctor, hospital or podiatrist if you develop any foot problems
- Ensure your holiday insurance covers diabetes
- Foot problems can be minimised through good diabetes control as well as specific foot care

For further information on diabetes and foot care contact:

www.diabetes.org.uk
Guidelines for baseline foot screening in people with Diabetes

An assessment should be completed annually for a person with diabetes.

**Vascular Examination**

**Pulses**

The most important manoeuvre to detect ischaemia is the palpation of foot pulses, an examination often undervalued.

- Palpate dorsalis pedis and posterior tibial pulses on both feet.
- Record presence or absence of either pulse for right and left limbs in the tick boxes.

**Method for Vascular Assessment**

The posterior Tibial Pulse can be palpated below and behind the medial malleolus.

The Dorsalis Pedis Pulse can be palpated lateral to the extensor hallucis longus tendon on the dorsum of the foot; between the base of the 1st & 2nd metatarsals.

If either of these foot pulses can be felt then it is highly unlikely that there is significant ischaemia (Edmonds & Foster 2005).

**Neurological Examination**

**Light Touch**

A 10g Semmes-Weinstein Monofilament (5.07) which bends at 10g of stress has been identified as a measure of protective sensation i.e. persons who perceive this level of sensation are not thought to be at risk from foot injuries relating to neuropathy.

(Brodbeck & Collier 1994)

The approach, skin contact and departure of the filament should be approximately 1.5 seconds duration, applying sufficient force to bend the filament.

(Gillis. W. Long Hansons Disease Centre)

**Method for Neurological Assessment**

- Assess light touch with a 10g (5.07) monofilament.

If the above is absent then significant neuropathy is present.
**Semmes-Weinstein Monofilament**

1. Apply monofilament to patient’s hand, elbow or forehead so they know what to expect.

2. Patient must not be able to see if & where examiner applies monofilament. Test on 3 sites (under each great toe Metatarsophalangeal joint (MTPJ), under each 5th MTPJ, plantar aspect each great toe).

3. Apply monofilament perpendicular to the skin surface.

4. Apply sufficient force to cause monofilament to bend or buckle.

5. Total duration of approach, skin contact & removal of monofilament should be approximately 2 seconds.

6. Apply filament along perimeter of and not on an ulcer site, callus, scar or necrotic tissue. Do not make repetitive contact at the test site.

7. Press filament to the skin & ask patient IF they feel pressure (yes/no) and next WHERE they feel the pressure applied (left/right foot).

8. Repeat this application twice at the same site but alternate this with at least one ‘sham’ application in which no filament is applied.

9. Protective sensation is present at each site if patient correctly answers 2 out of 3 applications. Protective sensation is absent if 2 out of 3 incorrect answers & the patient is considered to be at risk of ulceration.

   *(International Working Group on the Diabetic Foot 2011)*

**Callus**

- Record presence / absence of callus for left and right feet in the appropriate tick box.

**Foot / Nail Deformity**

- Record presence / absence of foot and / or nail deformity in the appropriate tick box.

**History**

- Investigate history of previous amputation, ulcerations, claudication or known Charcot.
- If present record these details in the appropriate tick box.

**Comments section**

- Record any additional findings (e.g.)
  - Atrophic, shiny skin
  - Coldness
  - Absence of hair
  - Thin brittle nails
  - Oedema
  - Abnormal colour – palor, rubor
Examination Summary

- Indicate examination summary using the series of tick boxes on the foot screening form.
- Select the category that most adequately describes the findings of the assessment and the action you feel should be taken for each particular patient.

### Action Guidelines

<table>
<thead>
<tr>
<th>Description of findings</th>
<th>Examination Summary</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal sensation, palpable pulses</td>
<td>Current Low Risk</td>
<td>Foot Care Education &amp; Screen Annually at Practice Y □ N □</td>
</tr>
<tr>
<td>Neuropathy or absent pulses or other risk factor (inability to self care, Foot/Nail deformity causing foot pathology, pathological callus, poor eyesight)</td>
<td>At Increased Risk</td>
<td>Refer to Podiatry Service Y □ N □</td>
</tr>
<tr>
<td>Neuropathy or absent pulses plus deformity or skin changes or previous ulceration or amputation.</td>
<td>At High Risk</td>
<td>Refer to Podiatry Service Y □ N □</td>
</tr>
<tr>
<td>Ulceration – Chronic / stable</td>
<td>Foot Ulcer</td>
<td>Refer to MDT Foot Ulcer clinic &amp; Podiatry Service Y □ N □</td>
</tr>
<tr>
<td>Ulceration - Acute / Emergency (Spreading cellulitis, critical ischaemia, systemically unwell)</td>
<td>Foot Care Emergency</td>
<td>Urgent referral to A&amp;E or admission via GP. Earliest possible appointment to also to be arranged with MDfT Y □ N □</td>
</tr>
<tr>
<td>Charcot/Red, Hot, Swollen foot</td>
<td>Suspected Charcot Foot</td>
<td>Urgent referral to A&amp;E or admission via GP. Earliest possible appointment to also to be arranged with MDfT Y □ N □</td>
</tr>
</tbody>
</table>

### Notes

<table>
<thead>
<tr>
<th>Deformity</th>
<th>Foot/nail deformity causing pathology e.g. Skin Changes and Other Risk Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin Changes</td>
<td>Pathological callus, corns, atrophy</td>
</tr>
<tr>
<td>Other Risk Factors</td>
<td>No-one to help with foot care</td>
</tr>
<tr>
<td></td>
<td>Poor sight</td>
</tr>
<tr>
<td></td>
<td>Foot deformity causing foot pathology</td>
</tr>
<tr>
<td></td>
<td>Nail deformity</td>
</tr>
<tr>
<td></td>
<td>Devitalised skin</td>
</tr>
<tr>
<td></td>
<td>Pathological callus, corns, fissuring</td>
</tr>
</tbody>
</table>
### Introduction

**Group Work - Discussion**
- Demonstration / Recap of use of 10g monofilament
- Demonstration / Recap of palpation of pulses
- Recap on Referral / Completion of screening form
- Recap on Pathway
- Introduction & Discussion of competencies

## AGENDA: Practical Session

### Group Work - Practical Screening

### Assessment of Practical Skills

Competencies sign off using:
- Practical Screening (candidates to be assessed whist undertaking foot screening on patient with diabetes with:  
  - No complications  
  - Neuropathy  
  - PAD)
- Completed screening forms
- Identification / recognition of foot pathologies including foot care emergencies using photographs / slides
- Post Training Evaluation Form
Diabetes Foot Screening

Practical Session

Practical – Baseline Foot Screening

- 10g monofilament
- Palpation of dorsalis pedis pulse
- Palpation of posterior tibial pulse
- Examination of foot/nail deformity
- Examination of footwear
- Education
Practical – Introduction to Baseline Foot Screening

- **Neuropathy**
  - Light Touch using 10g Monofilament

- **Sites**
  - 1st toe plantar
  - 1st Metatarsophalangeal joint
  - 1st Metatarsophalangeal joint

- **Methodology**

---

Peripheral Arterial Disease - Palpation of pulses

- **Posterior Tibial pulse**
  - Below and behind medial malleolus

- **Dorsalis Pedis pulse**
  - Lateral to extensor hallucis longus tendon on dorsum of foot; between the base of 1st & 2nd metatarsals
Practical session & competency assessment

Aims, Objectives & Competencies

• Based on:-
Diabetes Foot Screening Training
Practical Session - Group Work (Leader Grade)

- Divide into 4 / 5 groups.
- 1 Podiatrist to lead each.
- Each person to complete up to 8 Screenings.
- 1/2 from each group remain static.
- 1/2 of group to move amongst other groups to obtain a variety of screening.
Diabetes Foot Screening Training
Practical Session - Introduction to Baseline Foot Screening

Neuropathy
• Light Touch using 10g Monofilament.

Sites
- 1st toe plantar
- 1st Metatarsophalangeal joint
- 5th Metatarsophalangeal joint

Method
• Apply monofilament to patient’s hands (or elbow, or forehead) so the patients know what to expect.
• Patient must not be able to see if and where the examiner applies the filament (eyes closed).
• Test on 3 sites on each foot (shown in diagram above).
• Apply perpendicular to skin surface.
• Apply sufficient force to bend / buckle.
• Skin contact & removal – 2 seconds.
• Do not apply on ulcer site, callus, scar or necrotic tissue.
• Do not make repetitive contact or allow to slide across the skin.
• Press filament to the skin and ask patient IF they feel pressure (Yes / No) and next WHERE they feel the pressure applied (left / right foot).
• Repeat this application x2 at same site but alternate this with at least 1 ‘mock’ application in which no filament is applied (total 3 questions per site).
• Protective sensation is present at each site if patient correctly answers 2 out of 3 applications.
• Protective sensation is absent with 2 out of 3 incorrect answers and the patient is considered to be at risk of ulceration.
• Replacement of Monofilaments is recommended after 100 uses.
• Rest Monofilament for 24 hours after 10 patients.

Peripheral Arterial Disease
• Palpation of pulses.

Sites
• Posterior Tibial pulse – below and behind medial malleolus.
• Dorsalis Pedis pulse – lateral to extensor hallucis longus tendon on dorsum of foot; between the base of 1st & 2nd metatarsals.
Diabetes Foot Screening Training
Aims, Objectives & Competencies for Diabetes Foot Screening

Based on the National Minimum Skills Framework for Commissioning of Foot Care Services for People with Diabetes & Diabetes National Workforce Competency Framework Guide

Competency Area

HA3: Examine the feet of an individual with diabetes and advice on care.

HA3.1: Examine individual’s feet and assess risk status.

HA3.2: Provide advice and referral to help individuals care for their feet.

Overall Aim

Ability to provide routine basic assessment and care of the foot without any ulcer / lesion.

Aim: 1. Identification of risk status.

This is usually undertaken by a single health care professional (e.g. assistant practitioner, nurse, podiatrist, doctor) who may have limited specialist knowledge.

That HCP should have the skills necessary to:-

Objectives

1) Identify the presence of sensory neuropathy (loss of ability to feel monofilament) and / or the abnormal build up of callus.

2) Identify when the arterial supply to the foot is reduced (absent foot pulses, signs of tissue ischaemia, symptoms of intermittent claudication).

3) Identify deformities or problems of the foot (including bony deformities, dry skin, fungal infection), which may put it at risk.

4) Identify other factors which may put the foot at risk (which may include reduced capacity for self care, impaired renal function, poor glycaemic control, cardiovascular and cerebrovascular disease).
Aim: 2. Provide basic footcare advice

The HCP should also have the skills and knowledge necessary to:

Objectives

1) Discuss with the patient their individual level of risk and agree plans for future surveillance

2) Initiate appropriate referrals for expert review of those with increased risk.

3) Advise on action to be taken in the event of a new ulceration / lesion arising

4) Advise on the use of footwear which will reduce the risk of a new ulcer / lesion

5) Advise on other aspects of footcare which will reduce the risk of a new ulcer / lesion.

Aim: 3. Management of newly presenting ulcer / lesion

Objectives

The HCP who undertakes routine basic assessment and care should be aware of the need for urgent expert assessment of all newly presenting foot ulcers / lesions, and the steps to be taken to obtain it.

Such lesions include all ulcers, the development of unexplained inflammation / swelling of the foot, the development of pain in the foot and any other problems which cause concern.
NAME......................................................     DESIGNATION..........................................................

KEY
1 = demonstrated during practical session
2 = require further training.

Action 1.1

• Appropriate use of 10g Monofilament on both 1st toes plantar aspect, 1st MPjt & 5th MPjt.

• Knowledge of maximum repetitive use of Monofilament in each screening session.

• Correct identification of pathological callus on the foot.

• Correct interpretation of result of 10g Monofilament test.

Action 1.2

• Correct palpation of dorsalis pedis and posterior tibial pulses.

• Correct interpretation of findings from palpation.

• Ability to correctly identify normal / abnormal skin colour and texture.

• Ability to correctly identify symptoms of lower limb ischaemia.

Action 1.3

• Ability to correctly identify foot deformity.

• Awareness of other risk factors which impact on foot health / condition i.e.:-
  - Reduced ability to self care.
  - Impaired renal function.
  - Poor glycaemic control.
  - Cardiovascular & cerebrovascular disease.
Action 2.1

- Ability to correctly determine low risk patients and provide appropriate education and future screening.

Action 2.2

- Understanding of correct referral pathway for increased and high risk patients.

Action 2.3

- Understanding of correct education and referral pathway for patients with foot ulceration / foot emergency.

Action 2.4

- Ability to correctly identify feature of good and bad footwear.

Theory Session:

Date attended
Name of Podiatrist
Signature

Practical Session:

Date attended
Name of Podiatrist
Signature
Name of Practice Nurse
Signature
### Assessment / ] – Areas for discussion

<table>
<thead>
<tr>
<th>Maximum repetitive use of 10g monofilament</th>
<th>Pathological Callus</th>
<th>Dry Skin</th>
</tr>
</thead>
<tbody>
<tr>
<td>• X100 uses then replace</td>
<td>• Callus causing trauma</td>
<td>• Requires use of moisturiser daily.</td>
</tr>
<tr>
<td>• X10 patients then rest for 24 hours</td>
<td>• Requiring debridement</td>
<td>• Use of foot file to remove</td>
</tr>
<tr>
<td></td>
<td>• Causing increased pressure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Likely to lead to ulceration</td>
<td></td>
</tr>
<tr>
<td>Discuss pathological callus vs. dry skin</td>
<td>Pathological Callus</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Callus causing trauma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Requiring debridement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Causing increased pressure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Likely to lead to ulceration</td>
<td></td>
</tr>
<tr>
<td>Discuss normal vs. abnormal skin appearance</td>
<td>Dry Skin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Dry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Atrophic, inelastic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Colour changes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Temperature changes</td>
<td></td>
</tr>
<tr>
<td>Discuss signs &amp; symptoms of ischaemia of lower limb</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Absent pulses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Atrophic, shiny skin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Coldness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Absence of hair</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Atrophic, thin brittle nails</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Colour changes – pallor, rubor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Oedema</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Claudication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Rest pain</td>
<td></td>
</tr>
<tr>
<td>Discuss foot deformity &amp; criteria for referral</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nail / Foot deformity – causing:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Foot pathology / problem</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Not able to accommodate in normal / existing footwear</td>
<td></td>
</tr>
<tr>
<td>Discuss risk factors &amp; what these are</td>
<td>Factors that impact on foot health:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Inability to self care</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Impaired renal function</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Poor glycaemic control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Cardiovascular disease</td>
<td></td>
</tr>
<tr>
<td>Discuss features of footwear – good &amp; bad</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Long, broad &amp; deep enough</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Adjustable fastening</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Low heel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Smooth inner lining – no seams</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Avoid seams from hosiery</td>
<td></td>
</tr>
</tbody>
</table>
Diabetes Foot Screening Training Case Studies

Case Study 1

Mrs Brown has Type 2 diabetes and is attending for annual foot screening.

She undergoes testing for ‘loss of protective sensation’ using the monofilament and her responses are as follows.

**Right Foot**

<table>
<thead>
<tr>
<th>Hallux</th>
<th>1st MPJ</th>
<th>5th MPJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch – correct</td>
<td>Touch – correct</td>
<td>Sham – correct</td>
</tr>
<tr>
<td>Sham – correct</td>
<td>Touch – incorrect</td>
<td>Touch – correct</td>
</tr>
<tr>
<td>Touch – incorrect</td>
<td>Sham – correct</td>
<td>Touch - correct</td>
</tr>
</tbody>
</table>

**Left Foot**

<table>
<thead>
<tr>
<th>Hallux</th>
<th>1st MPJ</th>
<th>5th MPJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sham – correct</td>
<td>Touch – correct</td>
<td>Touch – correct</td>
</tr>
<tr>
<td>Touch – correct</td>
<td>Sham – Incorrect</td>
<td>Touch – correct</td>
</tr>
<tr>
<td>Touch – correct</td>
<td>Touch – correct</td>
<td>Sham - correct</td>
</tr>
</tbody>
</table>

**Question:** Do these results indicate presence of neuropathy at any of the sites?

**Answer:** No. Three incorrect answers but at different sites.
Case Study 2

Mrs Green has Type 2 diabetes and is attending for annual foot screening.

She undergoes testing for ‘loss of protection sensation’ using the monofilament and her responses are as follows

### Right Foot

<table>
<thead>
<tr>
<th>Hallux</th>
<th>1st MPJ</th>
<th>5th MPJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sham – incorrect</td>
<td>Touch – correct</td>
<td>Sham – incorrect</td>
</tr>
<tr>
<td>Touch – correct</td>
<td>Sham – correct</td>
<td>Touch – correct</td>
</tr>
<tr>
<td>Touch – correct</td>
<td>Touch – correct</td>
<td>Touch - correct</td>
</tr>
</tbody>
</table>

### Left Foot

<table>
<thead>
<tr>
<th>Hallux</th>
<th>1st MPJ</th>
<th>5th MPJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch – correct</td>
<td>Touch – correct</td>
<td>Sham – correct</td>
</tr>
<tr>
<td>Touch – correct</td>
<td>Sham – correct</td>
<td>Touch – correct</td>
</tr>
<tr>
<td>Sham – incorrect</td>
<td>Touch – correct</td>
<td>Touch - correct</td>
</tr>
</tbody>
</table>

**Question:** Do these results indicate presence of neuropathy?

**Answer:** No. Incorrect answers were all Sham’s, not indicative of neuropathy as only one incorrect answer at three separate sites.
Case Study 3

Mrs White has Type 2 diabetes and is attending for annual foot screening.

She undergoes testing for ‘loss of protective sensation’ using the monofilament and her responses are as follows:

**Right Foot**

<table>
<thead>
<tr>
<th>Hallux</th>
<th>1st MPJ</th>
<th>5th MPJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch – correct</td>
<td>Sham – correct</td>
<td>Touch – correct</td>
</tr>
<tr>
<td>Sham – correct</td>
<td>Touch – correct</td>
<td>Sham – correct</td>
</tr>
<tr>
<td>Touch – correct</td>
<td>Touch – correct</td>
<td>Touch – correct</td>
</tr>
</tbody>
</table>

**Left Foot**

<table>
<thead>
<tr>
<th>Hallux</th>
<th>1st MPJ</th>
<th>5th MPJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch – incorrect</td>
<td>Touch – correct</td>
<td>Sham – correct</td>
</tr>
<tr>
<td>Sham – incorrect</td>
<td>Touch – correct</td>
<td>Touch – correct</td>
</tr>
<tr>
<td>Touch – correct</td>
<td>Sham – correct</td>
<td>Touch – correct</td>
</tr>
</tbody>
</table>

**Question:** Do these results indicate presence of neuropathy?

**Answer:** Yes. 2 incorrect answers at one site
**Podiatry Service**

**Foot Screening Training – Post-Training Questionnaire**

Having received the training in undertaking a minimum foot check for people with diabetes:-

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Do you feel confident in the use of a 10g monofilament for the detection of neuropathy?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>2</td>
<td>Do you feel confident in your ability to palpate normal foot pulses?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>3</td>
<td>Do you have an understanding of the criteria for referring patients on to the Podiatry Service?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>4</td>
<td>Do you feel confident to give basic foot care advice to those patients with low risk feet?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>5</td>
<td>Do you feel confident to identify deformities and problems of the foot which may put it ‘at risk’?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>6</td>
<td>Do you feel confident to identify other factors which may put the foot at risk including inability to self care, impaired renal function, poor glycaemic control, cardio vascular disease?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>7</td>
<td>Do you feel confident that you understand the current correct referral pathway for those patients with ‘increased risk’ &amp; ‘high risk’ feet?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>8</td>
<td>Was the level of information given:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Please TICK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❑ Too easy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❑ Just right</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❑ Too hard</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Would you have preferred the training to have delivered differently, If Yes please comment:-</td>
<td>Yes / No</td>
</tr>
<tr>
<td></td>
<td>..............................................................................................................................................</td>
<td></td>
</tr>
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<td></td>
<td>..............................................................................................................................................</td>
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<td></td>
<td>..............................................................................................................................................</td>
<td></td>
</tr>
</tbody>
</table>
Acknowledgments

This Diabetes foot screening training resources pack has been developed in conjunction with the Merseyside Diabetes patient group and the following members of the Merseyside diabetes network footcare workstream:

**Sam Ashton-Mort** - Business Manager 5 Boroughs Partnership NHS Foundation Trust

**Annie Bush** - Podiatry University Hospital Aintree

**Tanvir Kokhar** - High-Risk Specialist Podiatrist Royal Liverpool & Broadgreen Teaching Hospital

**Stephanie MacGlashan** - Podiatry operational manager 5 Boroughs Partnership NHS Foundation Trust

**Helen Pendlebury** - Advanced podiatrist LTC 5 Boroughs Partnership NHS Foundation Trust

**Jackie Rooney** - Merseyside Diabetes Network NHS Merseyside

**Andrew Sharpe** - High-Risk Specialist Podiatrist Liverpool Community Health NHS Trust

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