DIABETIC FOOT SCREENING UPDATE.

Programme

- Screening
  - Why screen
  - where are we now and how did we get here?
  - Aims of screening
- What tools do we need for screening?
- Quick guide to screening
- Self assessment of competence (certified).
- How screening influences assessment and diagnosis in diabetes

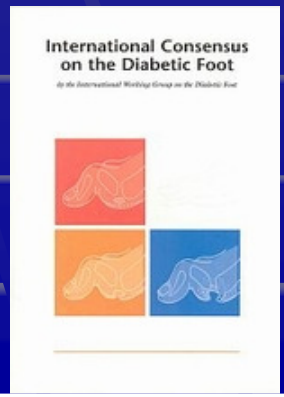
Screening----where did it start?

- **1989**
- St. Vincent's declaration
  - 5 year targets
- 50% reduction in Lower Limb Amputations.
- Taskforce
  - set up working groups.

Diabetic Foot Working Group

3 Main Strategies.

- Screening for the ‘At risk foot in the Community’.
- Intensive education and review of ‘At risk feet’.
- Prompt referral when infection/ulceration occurs to a multidisciplinary foot team.



NICE (2004 revised 2011)

- Clinical guideline 10—'Prevention and management of foot problems'.
- Trained personnel should examine patient's feet to detect risk factors for ulceration.
- Inc. 10g monofilament or vibration, palpate foot pulses, inspect for deformity and footwear.
- Classify as: low, increased, or high risk
- Includes suggested care pathways.

An Integrated Footcare Pathway

A collaboration with DUK, Society of Chiropodists and Podiatrists et al. 2013

PUTTING FEET FIRST

Commissioning/planning a care pathway for foot care services for people with diabetes

BACKGROUND

- The consequences of poor management of the foot in diabetes are considerable: prolonged ulceration and ill-health, gangrene and amputation, depression and death. The annual costs to health care agencies in the UK are estimated to exceed £1billion.
- Good management requires close coordination between different groups of health care professionals. S... coordinated management is ...
- It is imperative th... re-organisation is implemented in order to improve health outcome ...

... the management of all new disease. The FPT and MDT must work closely together.

Pathways of care must ensure prompt and effective transition of care across health care boundaries, including traditional boundaries that exist within the community, between community and hospital, and between different specialist groups in hospitals. The publication in A... 2011 of new C... indica... for general practice ... her wi... 19, Si... ICE G... e pict... s for p... t docu... nt demonstrates the way in which these requirements can be brought together in an integrated pathway of care.

Skills Framework also defines the constitution and responsibilities of the teams necessary to provide these services: the Foot Protection Team (FPT) with a primary responsibility for prevention; and the Multidisciplinary Team (MDT) which should coordinate ...

REFERENCES

NICE CG96: www.nice.org.uk/nicemedia/live/12948/47949/47949.pdf

Putting Feet First: www.diabetes.org.uk/Documents/Reports/Putting_Feet_first_010709.pdf

National Minimum Skills Framework: www.diabetes.org.uk/Documents/Professionals/Education%20and%20skills/NMSF_16Feb2011.pdf

NICE CG10: www.nice.org.uk/CG10

NICE CG119: www.nice.org.uk/nicemedia/live/13416/53558/53558.pdf

Nice Quality Standards Statement 10: www.nice.org.uk/media/PDF/87/DiabetesAdultsQualityStandard.pdf

SIGN 116 Management of diabetic foot disease March 2010: www.sign.ac.uk/guidelines/fulltext/116/index.html

TRANSFORMING FOOT CARE SERVICES IN DIABETES

1 PREVENTION OF ACTIVE DISEASE OF THE FOOT IN THOSE AT INCREASED RISK

Referral of those at increased risk to the Foot Protection Team (FPT)* Foot risk status correlates closely with outcome. The need to document risk of each individual with diabetes was incorporated in QOF targets in April 2011. The 2011 NICE Quality Standard 10 and the Diabetic Foot Risk Stratification and Triage (SIGN 116) also states that all people at increased risk will receive regular review by a member of a FPT. People with diabetes should be aware of their risk status and this entitlement. All people at increased risk should be referred promptly to a member of the FPT.

Education of specialist staff and patients It is necessary that those who examine the feet to determine risk status have the necessary training and competence. Training will be a role which can be provided by the FPT. An essential part of the annual review of feet is patient education. The person with diabetes should be aware of the reason for the examination being undertaken, the results of the examination, the services to which they should have access if they require specific preventive measures and action to be taken if they develop a foot problem.

A free online training programme is available at www.diabetesframe.org

* Sometimes referred to as the Foot Care Team

2 TREATMENT OF ACTIVE DISEASE OF THE FOOT

Active disease of the foot includes:

- Ulceration, with or without infection and peripheral arterial disease
- Peripheral arterial disease without ulceration
- Acute Charcot foot
- Painful peripheral neuropathy
- Disease of the foot unrelated to diabetes.

Ulceration All ulcers should be referred to the M... n 24 hours ...

... to have an acute Charcot foot and referred by phone for urgent assessment by the MDT. They should be told not to take weight on the foot until they have been seen.

Painful peripheral neuropathy Guidelines for the management ...

Reduction of cardiovascular risk The average survival rate at five years is just 50 per cent for people who present with active disease of the foot. Average life expectancy is reduced by 14 years – even in those with predominantly neuropathic disease. As the main cause of increased mortality is cardiovascular, it is essential that all necessary steps are taken to reduce cardiovascular risk.

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Beginning with screening

Aim

The aim of carrying out a foot screening is to identify the presence of risk factors for diabetic foot complications which could lead to ulceration such as –

Neuropathy,
Peripheral Arterial Disease,
Significant structural abnormalities,
Significant callus,
previous ulceration
and the inability to self care.

.

Skills required For Effective Screening/ risk classification

- Identify presence of sensory neuropathy
- Identify reduction in arterial supply to foot
- Identify deformities or foot problems that may put it at risk
- Identify other risk factors

The following slides are based on NHS Scotland

http://www.diabetesframe.org/

Foot Risk Awareness and Management Education (FRAME)

project commissioned by the Scottish Government

Equipment

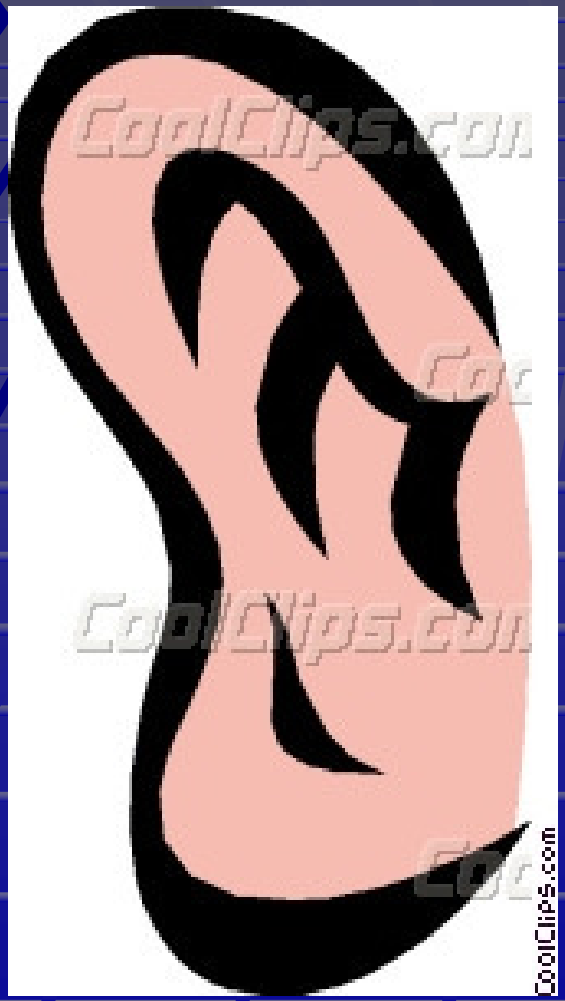
•The only piece of equipment that is required to carry out a simple, evidence based, foot screening is a 10g monofilament.

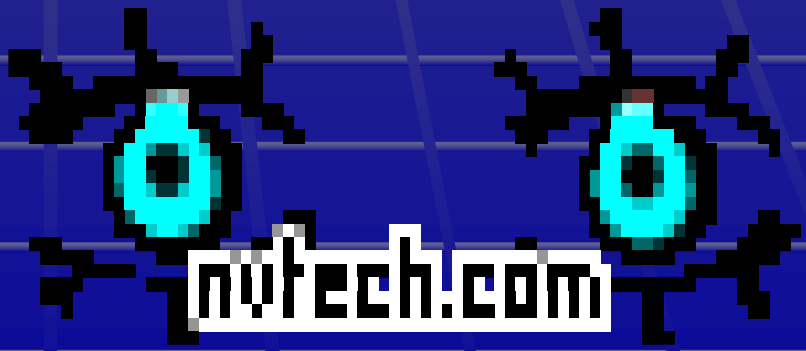
•The monofilament used should be of good quality such as those manufactured by Bailey Instruments or Owen Mumford and should be used and replaced as per manufacturers instructions to ensure that the monofilament remains accurate.

• The length of time a monofilament will remain accurate will vary according to it's frequency of use but Bailey Instruments and Owen Mumford recommend changing the monofilament after approximately 6 months of use.

•Many clinics use monofilaments much longer than this which can result in less accurate testing.

Your Screening Tools





To start the screening process you should:-

1. Seat patient on examination couch/chair
2. Inform the patient that you are going to examine their feet to check their circulation, sensation and any other risk factors that they might have which could lead to a foot problem related to their diabetes
3. Request patient remove shoes and socks/stockings and assist if required
4. **Ascertain if...**

•**Active ulceration** is defined by The International Working Group on the Diabetic Foot 2005 (IWGDF), as *"a full thickness wound, i.e. a wound penetrating through the dermis, below the ankle in a diabetic patient, irrespective of duration".*

•If during the screening process you discover the patient has a foot ulcer, the patient should be **referred without delay for treatment/management by an experienced podiatrist who is part of a multidisciplinary foot team/service.**

• A h/o previous amputation or deep foot infection should be notified to your local specialist team and a collaborative approach taken to longterm treatment plan

Other high risk factors

- **Previous ulceration** is defined as an area that has previously been ulcerated but has subsequently healed. After ulceration the affected area never repairs itself completely and only returns to 70% of tensile strength. This area is always vulnerable to future ulcerations. Previous ulceration is the highest risk factor for future ulceration.

Neuropathy

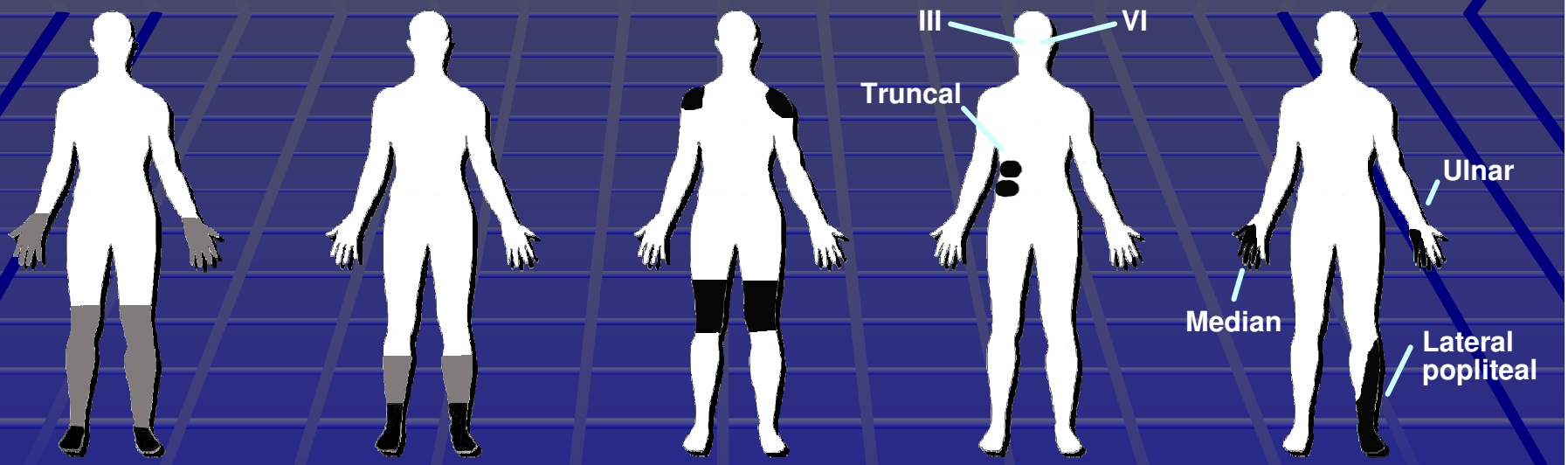
- Some people with diabetes lose their perception of feeling in their feet. This is called Diabetic Peripheral Neuropathy (DPN) and is defined as “the presence of symptoms and/or signs of peripheral nerve dysfunction in people with diabetes after exclusion of other causes” (Bolton 1998).
- Many people will be unaware that any such problems exist and up to 50 % of people at diagnosis may present with some signs of neurological changes.
- DPN can lead to various problems.
- Lose of protective sensation resulting in the inability to feel pain
- Change of shape of the foot such as clawing of the toes resulting in areas of increased pressure which may cause areas of callus especially under the metatarsal heads.
- The simplest and most evidence based way to determine if a patient is suffering from DPN is to test them with a 10g monofilament

Examination

Bedside Sensory Tests

Sensory Modality	Nerve Fibre	Instrument
Vibration	Aβ (large)	128 Hz Tuning fork
Pain (pinprick)	C (small)	Neuro-tips
Pressure	Aβ, Aα (large)	10 g Monofilament
Light touch	Aβ, Aα (large)	Wisp of cotton
Cold	Aδ (small)	Cold tuning fork

Diabetic Neuropathies

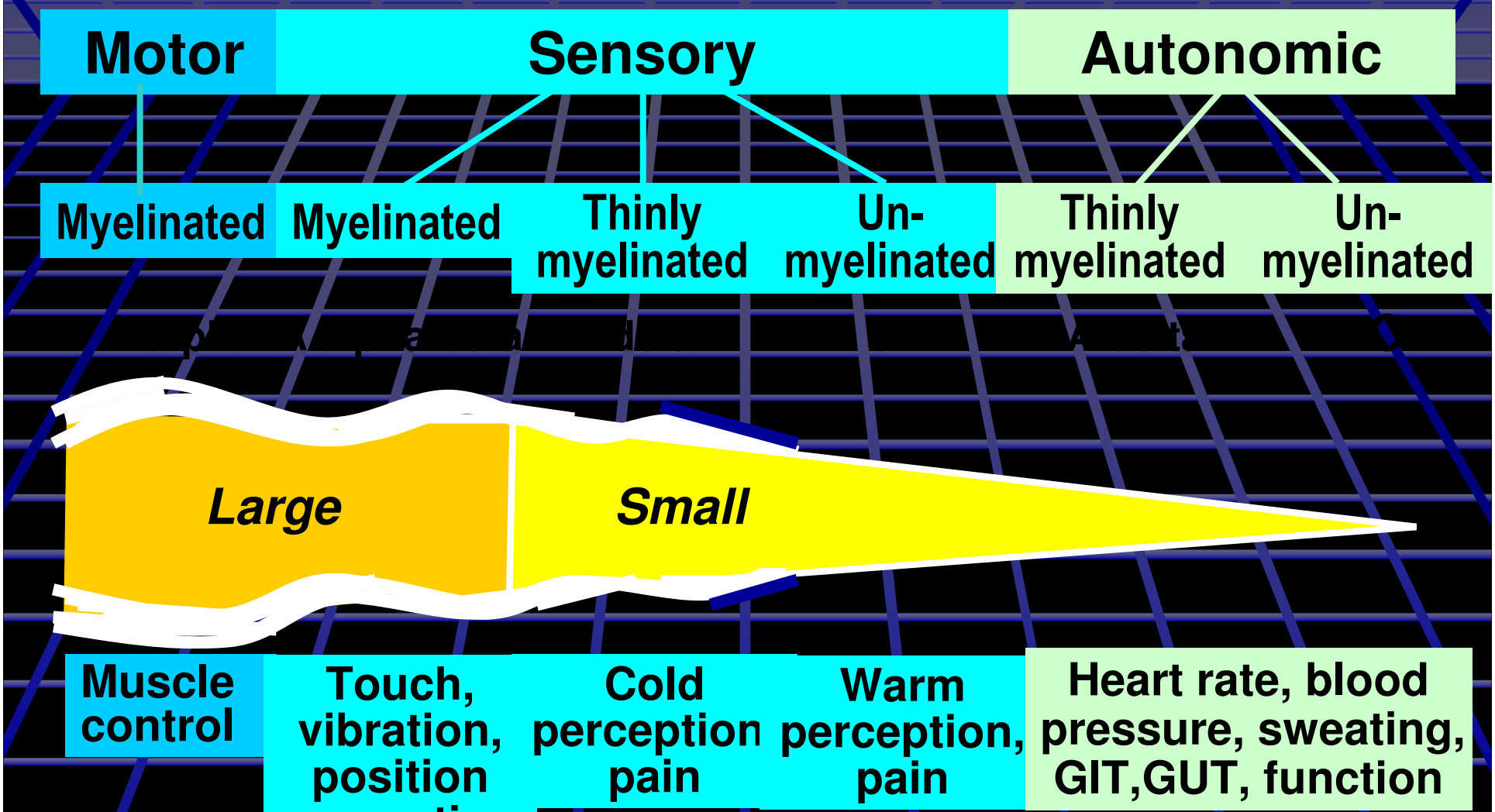


Large-fibre neuropathy	Small-fibre neuropathy	Proximal motor neuropathy	Acute mono neuropathies	Entrapment
Sensory loss: 0 – +++ (touch vibration) Pain: + – +++ Tendon reflex: N – ↓↓↓ Motor deficit: 0 – +++	Sensory loss: 0 – + (thermal allodynia) Pain: + – +++ Tendon reflex: N – ↓ Motor deficit: 0	Sensory loss: 0 – + Pain: + – +++ Tendon reflex: ↓↓ Proximal motor deficit: + – +++	Sensory loss: 0 – + Pain: + – +++ Tendon reflex: N Motor deficit: + – +++	Sensory loss in nerve distribution: + – +++ Pain: + – ++ Tendon reflex: N Motor deficit: + – +++

N, normal

Vinik A et al. *Clin Geriatr Med.* 2008;24:407.

A Simplified View of the PNS

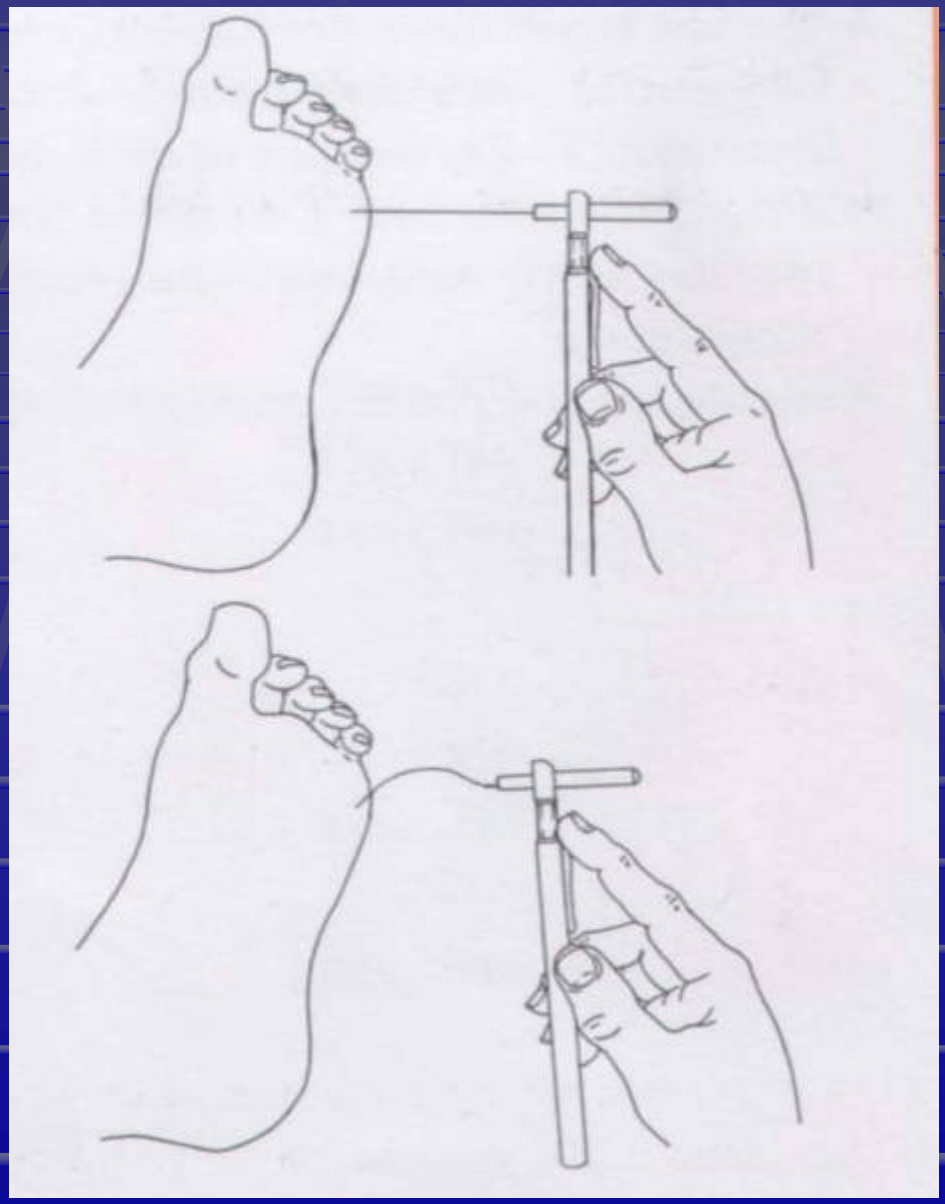


Vinik AI, et al. *Nature Clinical Practice Endocrinol Metab.* 2006;2:269-281.

Using the 10g Monofilament

- First show the patient that the monofilament is not sharp by performing the test on the back of your hand and then on the patient's forearm. The next stage is to inform the patient that you will be testing each foot with their eyes closed and they have to say yes each time they feel the monofilament touch their foot.

Application of the Monofilament



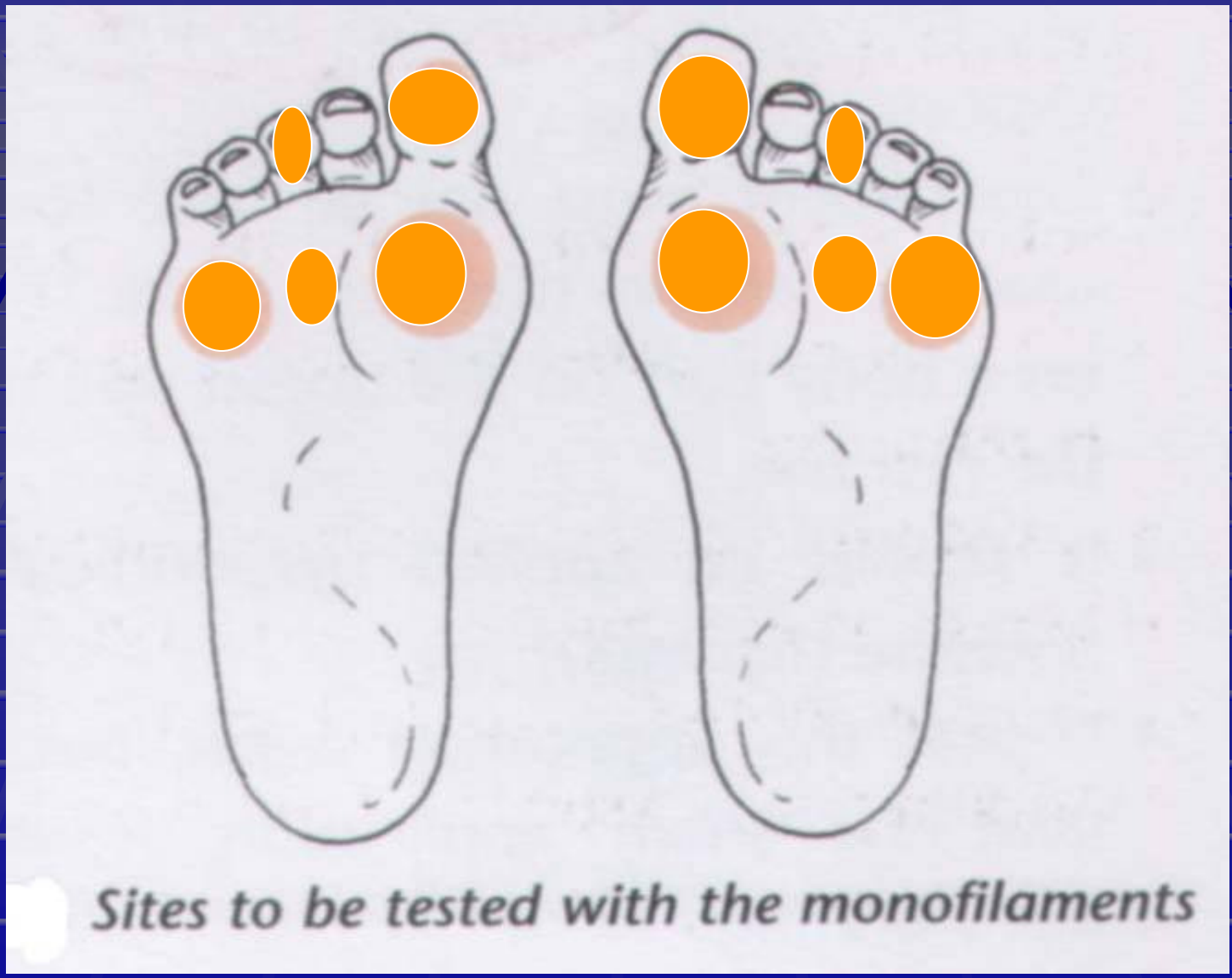
Sites for testing (10g Mf)

- There are 5 areas tested on each foot. They are the apex of the 1st and 3rd toes, the 1st, 3rd and 5th metatarsal heads. These tests are carried out in a random fashion with the monofilament at a 90° angle to the foot. The monofilament showed be depressed with enough force to cause a bend in the monofilament and should be in contact with the skin for between 1 and 2 seconds. The monofilament should not be allowed to slide across the surface of the skin and areas of callus or any breaks in the skin should be avoided.

10 gram Monofilament

10 gram monofilament

‘Where do you feel that?’



Sites to be tested with the monofilaments

Interpretation of Result

- If the patient can not feel more than 8/10 of the tested sites then they can be diagnosed as having PDN and this can put them at risk of developing a diabetic foot ulcer.
- Any such patients need to be in a managed treatment plan such as a Diabetic Foot protection Programme.
- This should then lead to the introduction or review of a treatment /management plan, including reinforcement of education, formulated in consultation with the patient and tailored to suit the patient's needs.

Peripheral arterial disease

- Diabetes is a condition that can affect the vascular system.
- The screening of somebody's feet for signs of vascular insufficiency is a simple process and is carried out by palpating the two main pulses in the foot the dorsalis pedis and posterior tibial.
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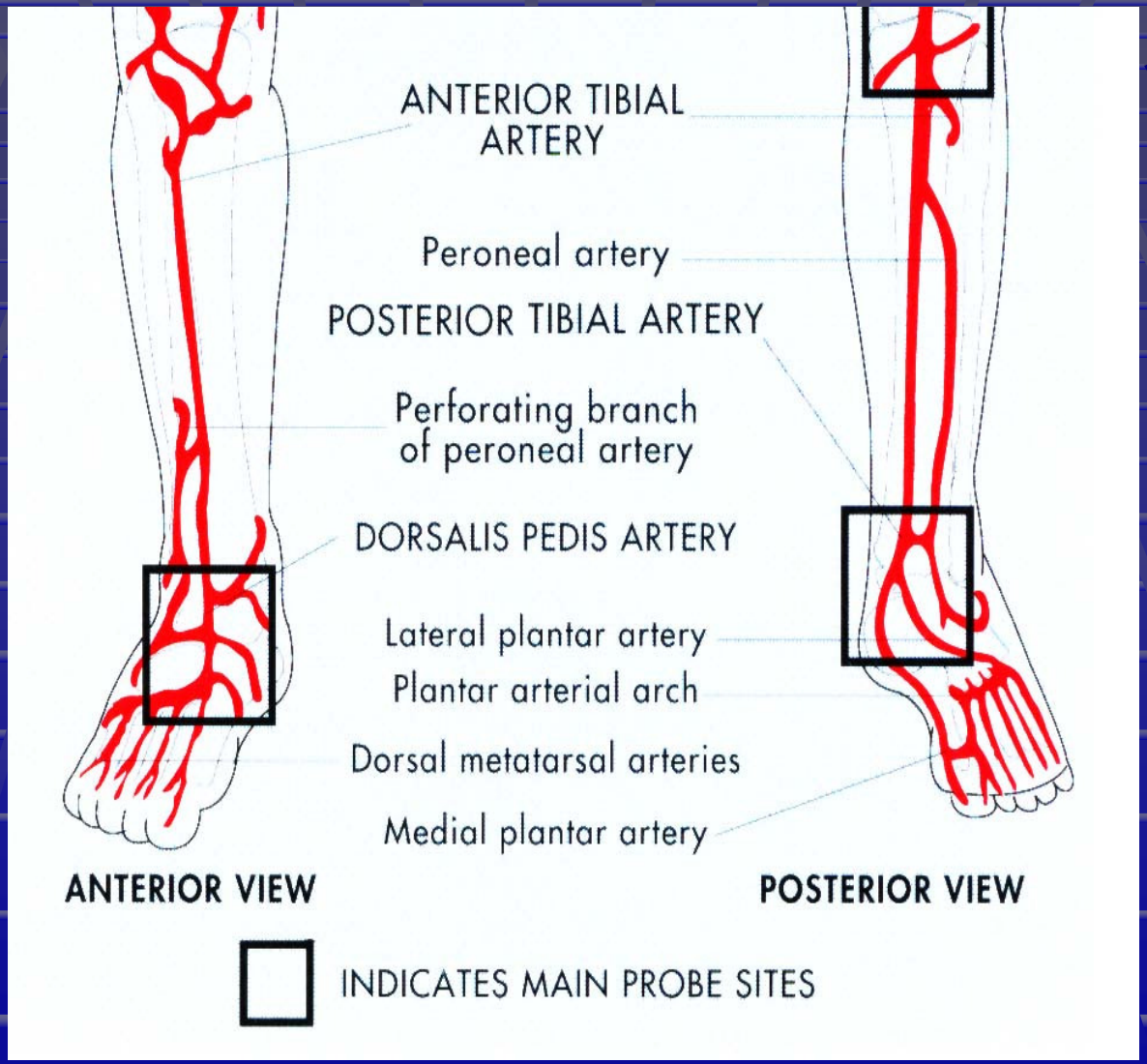
Vascular status

Screening for ischaemia

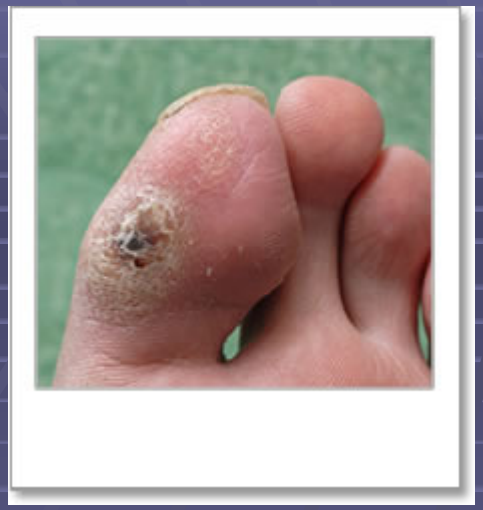
Arterial supply to foot



Interpreting findings for Peripheral arterial disease

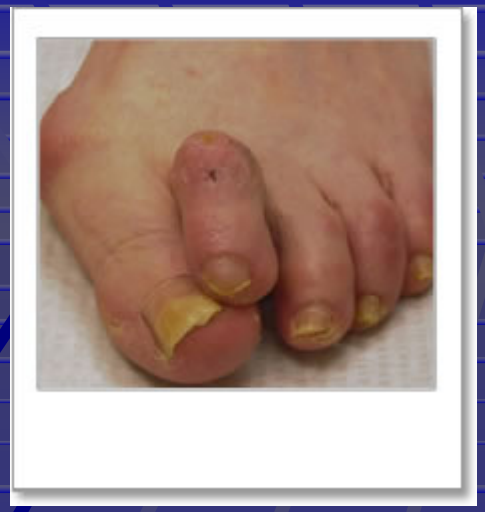
- If you can palpate either of these pulses on each foot then it is deemed the foot is sufficiently perfused vascularly and no further action needs to be taken apart from recording this.
- Some patient's pulses are not easy to palpate even although their circulation is intact and this may be due to many factors i.e. the presence of swelling (oedema) or the fact that in up to 10% of the population the dorsalis pedis is not palpable.
- If the pulses are not palpable then the patient will need to have a more in depth vascular assessment to determine if there is a problem with their circulation.
- This assessment would generally be carried out by a specialist podiatrist who would take any appropriate action required.

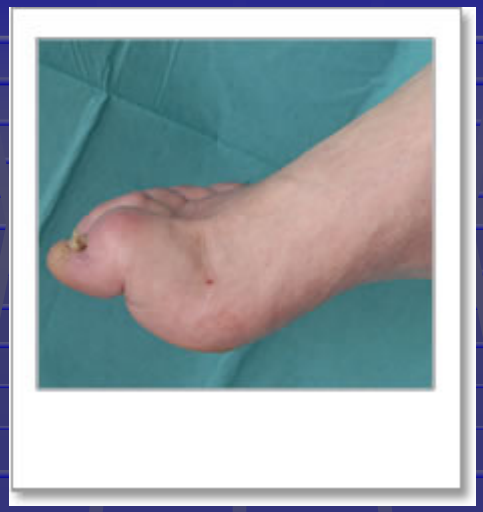
What to look For?

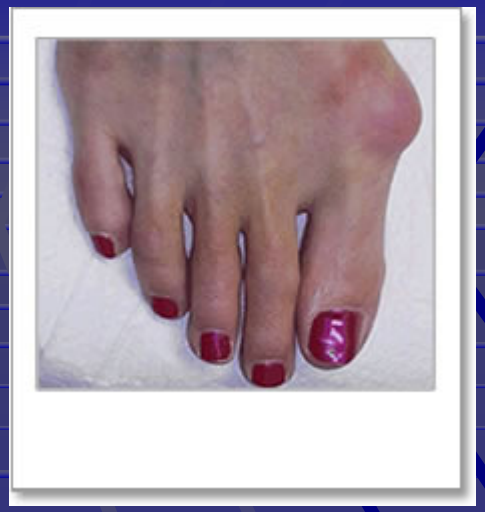


1. Significant callus (pictures below) is defined as *"Callus that requires Podiatric Management"* (Scottish Diabetes Group - Foot Action Group 2010). Significant callus causes pressure on the underlying tissues which can result in the tissues breaking down and an ulcer developing. If a patient has significant callus and is not attending a podiatrist then they should be referred to have a treatment/management plan agreed and introduced to suit their needs.

- **Non significant callus** can be described as callus that does not require podiatric treatment, does not pose any risk and can be treated/managed by the patient
- The **treatment** of non significant callus or areas of dry skin can be managed by the patient after some simple instruction. The careful use of emery boards/ pumice stone, the regular application of a moisturiser cream and by following the advice given in the Low risk leaflet will usually achieve this.







2. Structural abnormality of the foot (pictures below) is defined as *"A change in foot shape that resulted in a difficulty in fitting shoes which could be purchased in high street shops"*. (Scottish Diabetes Group – Foot Action Group 2010).

A **non significant structural abnormality** of the foot can be described as a very minor change of shape of the foot which does not result in areas of pressure, leading to callus formation, and can be safely accommodated in shoes which could be purchased in high street shops.

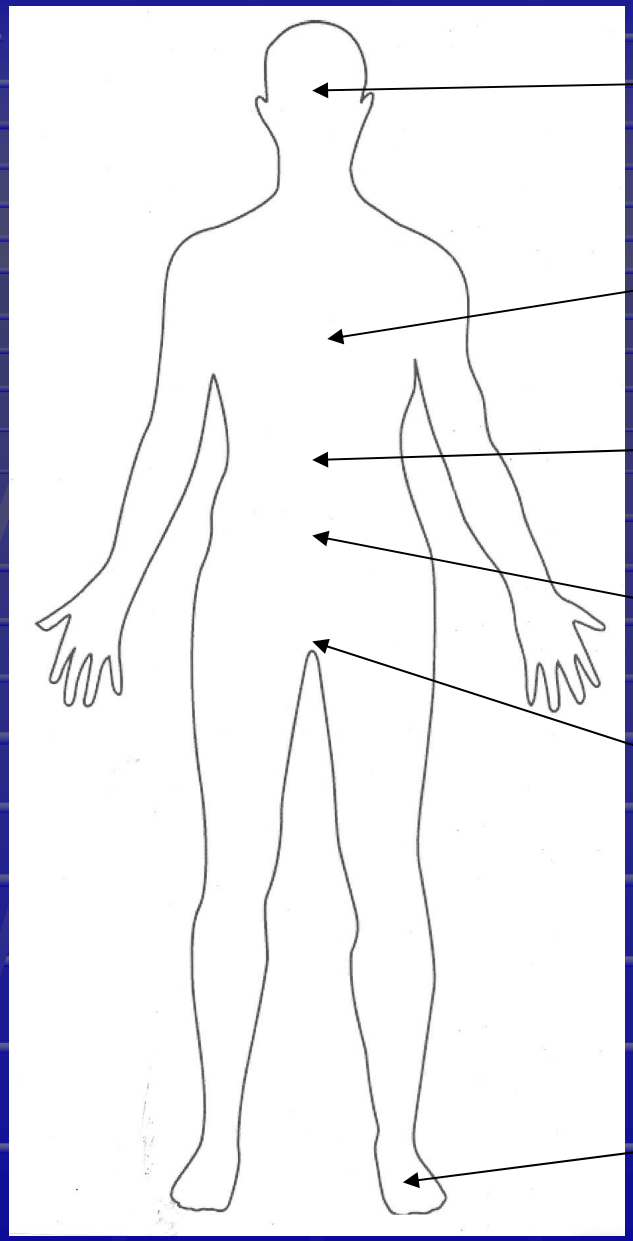
In the presence of neuropathy or ischaemia

- The inability for somebody to self care or have help to self care can increase the risk of them developing a foot problem. The following factors may contribute to this situation:
- Visual impairment
- Arthritis
- Inability to maintain personal hygiene
- Inability to check feet for any problems
- Learning difficulties

What Should you Listen For?

- The patient is experiencing any problems with their feet
- Has the patient noticed any changes since their last visit?
- If complaining of podiatric type problems (corns, nail problems etc.) check if currently attending a Podiatrist and refer/treat if necessary.
- Other diabetes related complications

  - Start at the top & work your way down!



RETINOPATHY

CARDIOVASCULAR DISEASE

NEPHROPATHY

GASTROPARESIS

IMPOTENCE

FOOT ULCERS

Recording findings

In Scotland The SIGN 116 guidelines recommend that foot screening information is recorded electronically which can be shared between all health care professionals,

'The result of a foot screening examination should be entered onto an online screening tool, such as SCI-DC, to provide automatic risk stratification and a recommended management plan, including patient information'.

PUTTING FEET FIRST

A footcare pathway for people with diabetes

Annual Foot Review

Foot examination with shoes and socks/stockings removed

- Test foot sensations using 10g monofilament or vibration
- Palpate foot pulses
- Inspect for any deformity
- Inspect for significant callus
- Check for signs of ulceration
- Ask about any previous ulceration
- Inspect footwear
- Ask about any pain

ADVISE THE PATIENT TO:

- Check their feet every day
- Be aware of loss of sensation
- Look for changes in the shape of their foot
- Not use corn removing plasters or blades
- Know how to look after their toenails
- Wear shoes that fit properly
- Maintain good blood glucose control
- Attend their annual foot review

DIABETIC FOOT RISK STRATIFICATION AND TRIAGE/IDENTIFICATION OF RISK STATUS

	DEFINITION	ACTION
ACTIVE	Presence of active ulceration, spreading infection, critical ischaemia, gangrene or unexplained hot, red, swollen foot with or without the presence of pain, painful peripheral neuropathy, acute Charcot foot*	Rapid referral to and management by a member of a Multidisciplinary Foot Team (see over). Agreed and tailored management/treatment plan according to patient needs. Provide written and verbal education with emergency contact numbers. Referral for specialist intervention when required.
HIGH	Previous ulceration or amputation or more than one risk factor present eg loss of sensation or signs of peripheral vascular disease with callus or deformity.	Annual assessment or 1–3 monthly according to need* by a specialist podiatrist or member of a foot protection team*. Agreed and tailored management/treatment plan by a specialist podiatrist or the FPT* according to patient needs. Provide written and verbal education with emergency contact numbers. Referral for specialist intervention if/when required.
MODERATE (INCREASED*)	One risk factor present eg loss of sensation or signs of peripheral vascular disease without callus or deformity.	Annual assessment or 3–6 monthly according to need* by a podiatrist or member of a foot protection team*. Agreed and tailored management/treatment plan by podiatrist or the FPT* according to patient needs. Provide written and verbal education with emergency contact numbers. Referral for specialist intervention if/when required.
LOW	No risk factors present eg no loss of sensation, no signs of peripheral vascular disease and no other risk factors.	Annual screening by a suitably trained Healthcare Professional. Agreed self management plan. Provide written and verbal education with emergency contact numbers. Appropriate access to podiatrist if/when required.

Risk status should be documented and the patient informed.

These risk categories relate to the use of the SCI-DC foot risk stratification tool. * NICE Guidance

Produced by the Scottish Diabetes Foot Action Group

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Risk classification

- High Risk = RED
- AT Risk (Medium/moderate) = AMBER
- Low Risk = GREEN

Care of people at **low risk** of foot ulcers

NICE Clinical Guideline CG10 Type 2 Diabetes - Foot care 2004

- **Low risk means**:
  - Normal sensation and palpable pulses
  - No previous ulcer
  - No foot deformity
  - Normal vision
- **Agree a management plan** including foot care education with each person:
  - Annual foot check
  - Patient's can cut own nails with appropriate education
  - No specific chiropody input needed
- **Patient education:** swelling, pain, colour change, breaks in skin

Care of people at **increased risk** of foot ulcers

- **Increased risk means:**
  - Neuropathy or absent pulses
  - Previous vascular surgery
  - Significant visual impairment
  - Physical disability e.g. stroke, obesity
- **Arrange regular review**: 3–6 monthly, by Diabetic foot protection team
- **Patient education:** swelling, pain, colour change, breaks in skin
- **At each review:**
  - Inspect patient's feet
  - Consider need for vascular assessment
  - Evaluate footwear
  - Enhance foot care education (high quality, cushioned trainers rather than shoes)

Care of people at **high risk** of foot ulcers

- **High risk means**:
  - Neuropathy or absent pulses
  - Deformity
  - Callus with risk factor
  - Previous ulcer
- **Arrange frequent review**: (1–3 monthly) Diabetic foot protection team
- **Patient education:** swelling, pain, colour change, breaks in skin
- **At each review:**
  - Inspect patient's feet
  - Consider need for vascular assessment
  - Evaluate and ensure the appropriate provision of
    - intensified foot care education/ specialist footwear and insoles/ skin and nail care
- Ensure arrangements for **access to foot protection team** for those people with disabilities/ immobility.

Care of people with **foot care emergencies and foot ulcers ie a foot attack**

- **Foot care emergency means:**
  - New ulceration
  - Critical ischaemia
  - Swelling
  - Severe infection
  - New discolouration
- **Refer to multidisciplinary foot care team within 24 hours** to:
  - Investigate and treat vascular insufficiency
  - Initiate and supervise wound management
  - Use dressings and debridement as indicated
  - Use systemic antibiotic therapy for cellulitis/bone infection
  - Ensure an effective means of distributing foot pressures
- **Try to achieve optimal glucose levels and control of risk factors for cardiovascular disease**

Self assessment of competence

- http://www.diabetesframe.org/
- Easy to use tool with training module
- Issues certificate on successful completion
- Linked to literature/leaflets appropriate for patient's risk status