

# DIABETIC FOOT AT RISK.

John Bardwell  
State Registered Podiatrist.

## Programme

- 1. Introduction - epidemiology.
- 2. Diabetic Triad.
- 3. Vascular and Neurological Assessment.
- 4. Foot at Risk, pathway of care and education.

## The Diabetic Foot Epidemiology

- 1. Diabetes is on the increase, 200,000 - type 1, 1 million - type 2 (Calman 1998).
- Recent figures however, (2005) suggest that there are now over 2 million diabetics registered in the U.K.
- 2. By the year 2010 figure will be 3 million or more. Epidemic disease. Tip of the Iceberg. Well over a million people yet to be diagnosed.
- By the year 2025. It is estimated that there will be 300 million worldwide with diabetes. (Zinker 1999).

## Problems.

- 1. Foot ulceration affects about 15% of people with diabetes.
- 2. Relating to diabetes, more hospital beds are occupied with diabetics that have foot problems.
- Diabetes is the main cause of amputation in the Western World.
- If a diabetic patient has lost one limb, they are more likely to lose the other limb within 18 months to two years.

## Morbidity.

- 1. Morbidity associated with diabetic foot ulcers is considerable.
- 2. Apelquist 1992, carried out a prospective study of 314 consecutive patients with foot ulceration, treated by a multidisciplinary team.
  - :62% ulcer resolved.
  - :25% went to amputation.
  - :13% died with unhealed ulcer.

## Prevention of diabetes. Lifestyle changes.

- Healthy diet
- Exercise & activity.
- Stop smoking.
- Reduce alcohol intake.
- Weight loss.
- Medication.

## Prevention of complications.

- DCCT-1993 : type1
- UKPDS-1998 : type 2  
Proof that stabilizing
- (a) glycaemic levels.
- (b) HbA1C <7% or below.
- (c) Blood pressure, 140/80mmhg or below.  
Less likely to develop complications.

## The Diabetic Triad.

- (1) Ischaemia.
- (2) Neuropathy.
- (3) Infection.

## Assessment

- 1. Visual examination of the lower limb.
- 2. Signs and symptoms of micro and macro vascular disease.
- 3. Foot pulses. Five palpation sites in the foot / ankle.

## Assessment- vascular.


- 1. Check pulses with doppler check phasic type.
- 2. Use ankle/brachial pressure index test. Validity and reliability doubtful. Need waveform analysis ideally.
- 3. Buerger's elevation test.
- 4. Pole test.
- 5. Referral for further examination (essential if problem found).

## Assessment-neurological.

- Types
- (1) Sensory.
- (2) Motor.
- (3) Autonomic  
( combination of all three)


## Sensory neuropathy.

- Signs and symptoms
- Tests
- (1) Vibration (Tuning fork)
- (2) Light touch/pressure. (Monofilament).
- (3) Proprioception.
- (4) Temperature.




### Tests cont'd.

- (5) Pin prick / pain.
- (6) Gait + co-ordination
- (a) Romberg's
- (b) Ataxia



### Motor neuropathy.

- (1) Reflexes.
- (2) Muscle power
- (3) Muscle atrophy



### Autonomic

- (1) Visual signs.
- Loss of sweat-dry cracked skin.
- (2) Clinical signs: postural hypotension, syncope.
- (3) Clinical sign: heart rate.
- (4) Skin temperature.
- (5) Gastric – genitourinary tract.
- (6) Eyes.



### Infection

- (1) Inflammation, redness, reduced flare response.
- (2) Painful/ painless.
- (3) Radiating infection, cellulitis. Locus of purulent discharge and tracking.
- (4) Lymphangitis.
- (5) Lymphadenitis.

### Infection cont'd

- (6) Glycaemia Inc.
- (7) Unwell.
- (8) Ketosis.
- (9) Complicated by ischaemic and neuropathic disease.

### Foot at risk pathway of care. Infection.

- (1) If there is any redness.
- (2) If there is any localised swelling.
- (3) If the foot is painful. ( bear in mind the neuropathic foot).
- (4) If there is any red streaking radiating up the foot.
- (5) If there is any swelling or pain at the back of the knee or groin

### Infection cont'd

- (6) If their glycaemia increases or they feel generally unwell.
- (7) If they have a break in the skin with surrounding redness or purulent discharge.
- (8) If any toe has become swollen compared with other toes: "sausage toe".
- (9) Redness , swelling, discharge around nail plate.

### Pathway of care.

- (1) Xray to check bony elements.
- (2) Antibiotics
- (3) IV antibiotics if severe.
- (4) Admission to hospital.
- (5) Glycaemic control.

### Foot at risk: Pathway of care.

#### Vascular.

- (1) If there is a significant colour change eg. Dusky cyanotic foot, which is painful at rest and especially in bed at night.
- (2) If they can only reduce pain in the foot or leg by hanging it down in a dependent position.
- (3) If one of the toes has significant colour change compared with the other toes ie. cyanotic or black.

### Vascular cont'd.

- (4) If they have painful fissures or sores around the heel or borders of the foot.
- (5) If they complain of painful cramp, pain in the calves during minor exercise ( a few metres walk).

### Pathway of care.

- (1) Check pulses with doppler.
- (2) A/B pressure index test.
- (3) Referral for segmental doppler studies or colour duplex scan.
- (4) Angiography.
- (5) Arterial therapy.

### Foot at risk pathway of care.

#### Neurological.

- (1) If they have any well demarcated redness especially over the arch of the foot and it is warm or hot compared to the other foot.
- (2) If they have traumatized the foot at anytime which has led to swelling or "cracking" when foot is loaded or moved.
- (3) If the medial arch has suddenly "fallen" or the shape of the foot has changed.

### Neurological cont'd.

- (4) If there is any blister or break in the skin that has been visually noticed but not felt by the patient.

### Pathway of care.

- (1) Xray to check bony elements, Charcot's / osteomyelitis / foreign body or #.
- (2) Rest area – air cast or plaster cast/ bivalve, crutches.
- (3) White cell labelled bone scan or M. R. I. Scan.
- (4) Bespoke footwear and orthotic insoles.