

MODULE 4

Diabetic Foot Exam –

It involves more than sensory testing

(Approx 10 mins)

Learning Objectives

At the end of this module, learners will be able to:



List the key components of a diabetic foot examination, and perform a complete foot exam in 3 minutes



Use a number of tools for assessing diabetic neuropathy

Diabetic Foot Complications

Occur as a consequence of BOTH:

Diabetic peripheral neuropathy (DPN)

- Sensory, motor, and/or autonomic
- DPN results in:
 - Loss of protective sensation in feet
 - Motor weakness in foot muscles resulting in deformities
 - Changes in blood circulation and skin growth

Peripheral arterial disease (PAD)

- involving small and/or large vessels

A diabetic foot exam involves checking for all of these, not just sensation.

Screening for diabetic neuropathy

Peripheral sensory neuropathy –

- Involves testing for loss of protective sensation (LOPS) on the foot
- Usually determined by loss of sensitivity to 10 gram monofilament OR loss of sensitivity to vibration (128Hz tuning fork) at the dorsum of the first toe.
- What does LOPS mean for the patient? He/she will not be able to feel if a foreign body (twig or stone) is inside the shoe and injuring the foot, or if developing a blister from footwear rubbing on skin.

Counsel patients with LOPS to take extra care of their feet and do a visual inspection of feet every day.

Screening for diabetic neuropathy

Peripheral motor neuropathy –

Look for deformities of the foot which result from weakness of the intrinsic foot muscles

- Ask the patient to do the one-foot-stand test
- Peripheral motor neuropathy increases risk of falls

Peripheral autonomic neuropathy –

Look for skin and vasomotor changes in feet:

- Shiny dry appearance
- Fissures, callous
- Loss of hair on dorsum foot/toes

Sensory screening options

Screening for sensory neuropathy is routinely performed with the Semmes-Weinstein Monofilament Test.

Other options include:

- Ipswich Touch the Toes Test
- Vibratory Sensation test
- Vibratory Threshold testing

Sensory screening options

Semmes-Weinstein Monofilament test

1. Show and touch monofilament to patient's arm or upper leg.
2. Ask the patient to close his/her eyes and say "yes" when monofilament felt.
3. Touch monofilament until filament bends in a letter "c" shape (do not test over calluses, scars or ulcers).
4. 10 g monofilament testing must be done at minimum 4 sites – 1st, 3rd, 5th MT heads and distal 1st toe on plantar aspect foot.
5. Preferable to test more sites including mid and hind-foot and dorsum of foot
6. Lack of feeling (in ≥ 4 out of 10 test areas) indicates sensory neuropathy.



Practical tip –
25 lb fishing
line cut into
4 cm lengths
may be used
in place of
10 gram
monofilament

Sensory screening options

Ipswich Touch-the-toes Test (IpTT)

- IpTT and 10g MF – almost perfect agreement
- Both showed approx. 80% sensitivity and 90% specificity in identifying at-risk feet
- IpTT is a useful screening test for sensory neuropathy; requires no equipment.

Rayman et al. Diabetes Care 2011; 34:1517

To open a PDF of *Ipswich Touch-the-toes Test*, click on the link in the sidebar. 

STEP-BY-STEP INSTRUCTIONS

HOW TO PERFORM THE TEST

The test simply involves very lightly touching six toes, three on each foot as shown to find out how many of the touches are felt. Importantly the touch must be gentle, light as a feather and brief.

VERY IMPORTANT!

- The touch must be light as a feather, and brief (1–2 seconds): do not press, prod or poke tap or stroke the skin.
- If the person did not respond do not attempt to get a reaction by pressing harder. They did not feel; this should be recorded as not felt.
- You must not touch each toe more than once. If not felt do not repeat the touch, there is no second chance.

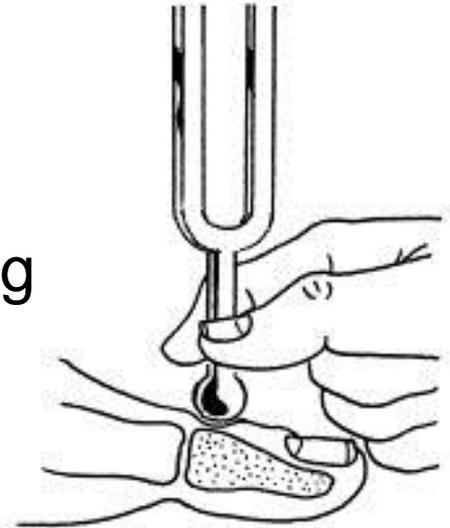
- 1 Remove socks and shoes and rest the subject with their feet laying on a sofa or bed.
- 2 Remind them which is their RIGHT and LEFT leg, pointing this out by firmly touching each leg, saying “*this is your right*” when the right leg is touched and “*this is your left side*” when the left is touched. If you face the soles of their feet their right is on your left (see reference guide, page 1).
- 3 Ask them to close their eyes and keep them closed until the end of the test.
- 4 Inform them that you are going to touch their toes and ask them to say right or left as soon as they feel the touch and depending on which foot was touched.
- 5 Perform the touch, using your index (pointing finger) as shown in the photos and diagrams.
- 6 The pictures also show which six toes should be touched and the sequence.



Sensory screening options

Vibratory sensation test

- conventionally tested with a 128-Hz tuning fork at the MTP joint of the big toe



Vibration perception threshold testing (VPT)

- performed using a handheld device
- instrument costs about \$700



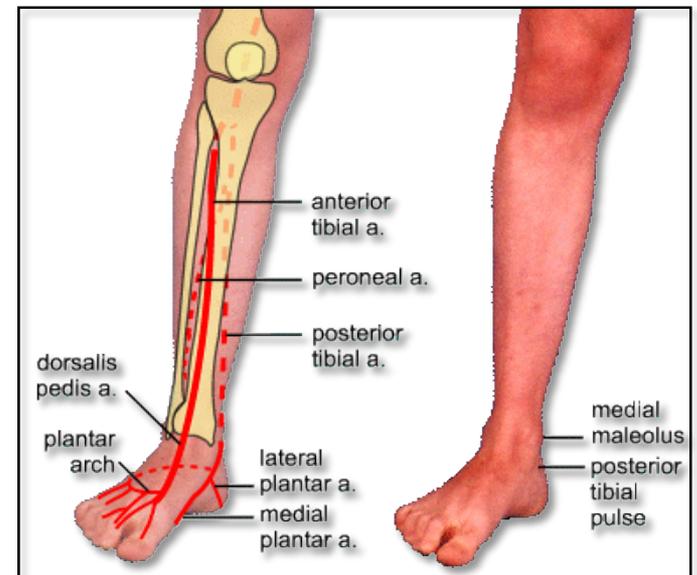
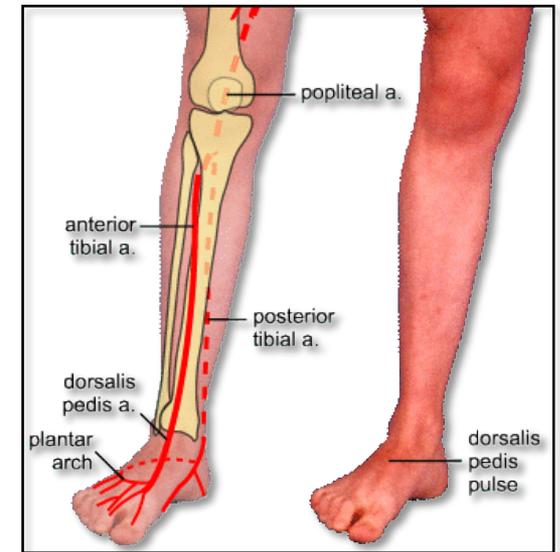
Reference: Craig A. B. et al. Foot Sensation Testing in the Patient With Diabetes: Introduction of the Quick & Easy Assessment Tool. WOUNDS. 2014; 26(8): 221-231

Neuropathy

- The tests for sensory neuropathy described on the previous slides are for screening.
- If an individual fails the screening test, further in-depth evaluation of peripheral neuropathy is required.
- It is important to consider the differential diagnosis of peripheral neuropathy, as there may be a reversible etiology such as vitamin B12 deficiency.

Peripheral circulation – arterial and venous

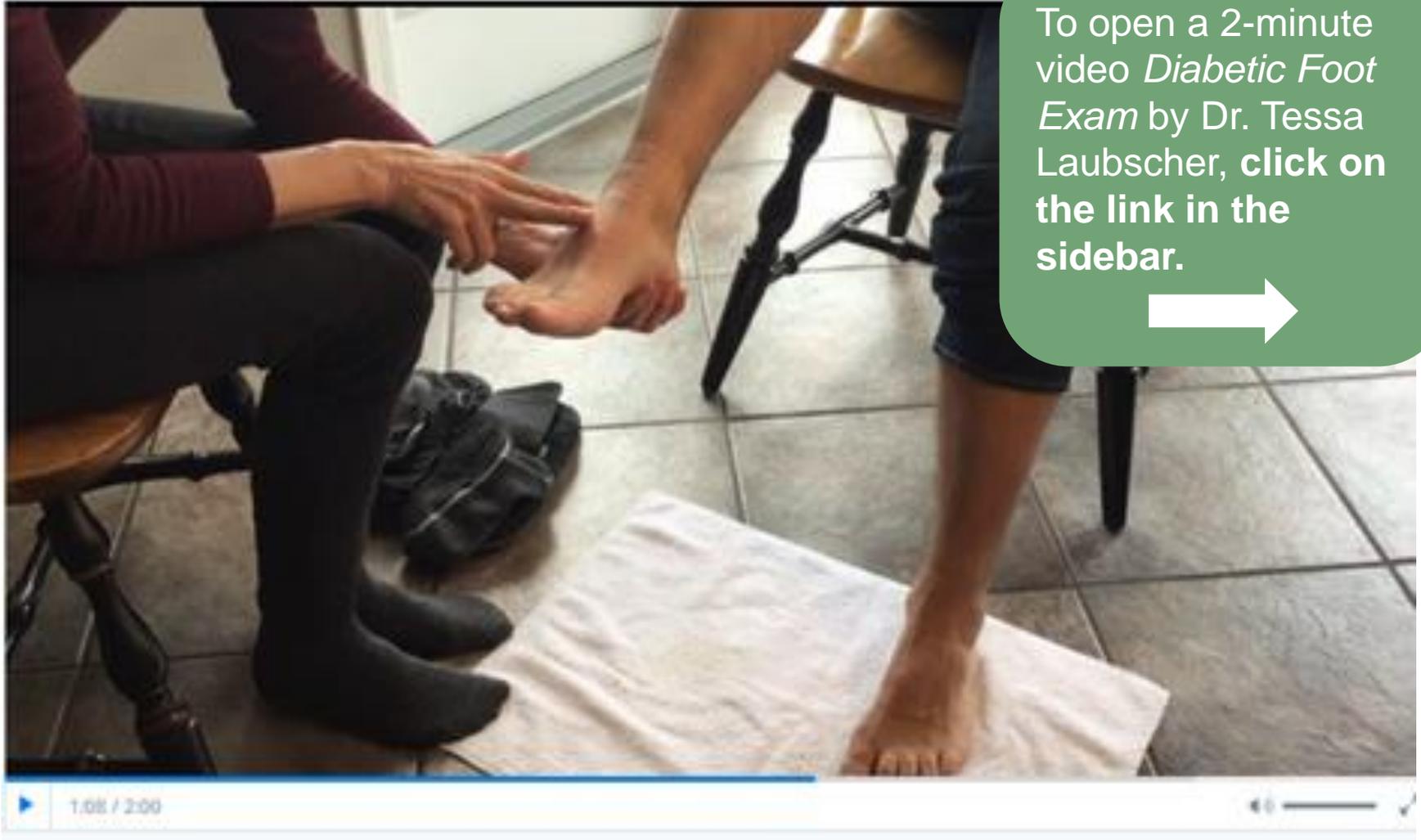
- When performing a diabetic foot exam, it is useful to briefly look for skin changes in the lower leg. Older patients often have signs of chronic venous insufficiency, which can be appropriately treated with compression stockings.
- Palpate dorsalis pedis and posterior tibial pulses, but also look for skin changes suggestive of chronic mild ischemia



Diabetic foot exam as part of a routine diabetes visit

- A complete screening diabetic foot exam takes only a few minutes, and should be performed annually to screen for diabetic foot complications.
- Once an individual has diabetic foot complications, a foot exam should be performed more frequently.
- It only takes 2-3 minutes to perform a complete exam and provide some educational tips to the patient

More on diabetic foot exam



To open a 2-minute video *Diabetic Foot Exam* by Dr. Tessa Laubscher, **click on the link in the sidebar.**



END OF MODULE

There is no quiz for module 4. Proceed to module 5.