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MI PODIATRIC CPU TOOLS

Driving excellence in foot health

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Peripheral arterial disease and chronic limb threatening ischaemia.

Essentials for podiatrists and other lower limb practitioners.

Overview of peripheral arterial disease and chronic limb threatening ischaemia

Peripheral arterial disease (PAD) is a common long term health condition found in around 13% of the western World population aged over 50 [1]. It is essentially an atherosclerotic (narrowing) and/or arteriosclerotic (hardening) disease of the arteries, which reduces blood flow to the affected limb(s). It is associated with a range of common cardiovascular risk factors also found in people with other cardiovascular diseases and can progress to a severe stage, where these risk factors are not controlled or reduced. PAD is asymptomatic in most people, particularly if not at the severe stage of disease and therefore is often initially under-diagnosed and under-managed. Whether asymptomatic or symptomatic, PAD is associated with a significant risk of cardiovascular events such as heart attacks, strokes, and associated mortality. If arterial stenosis (narrowing) worsens, this limits the volume of oxygenated blood able to get down to the large leg and thigh muscles, particularly during activity when metabolic demand is increased. This results in the symptom of intermittent claudication, usually presenting as calf tightness, cramping or discomfort, that occurs only during walking and is relieved by rest. If the PAD becomes severe in the limb, as well as intermittent claudication becoming more severe, ischaemic rest pain can develop, usually in the toes or forefoot. This is when even at rest, the minimum metabolic demand for oxygenated blood is no longer being met, with the arterial supply no longer meeting the minimum needs of the most distal tissues. Ischaemic rest pain is usually constant, persistent and severe, present for more than 2 weeks in the foot, often worse with leg elevation, preventing sleep and not responding to usual pain medications. A person would be unable to walk any significant distance without this pain or co-existing leg claudication pain stopping them. This stage of PAD was formerly described as critical limb ischaemia but is now being referred to as chronic limb threatening ischaemia (CLTI), which encompasses a broader range of the people living with PAD - people who are at varying stages of amputation risk, often due to a combination of wound, ischaemia and infection in a limb [2]. See figure 1.

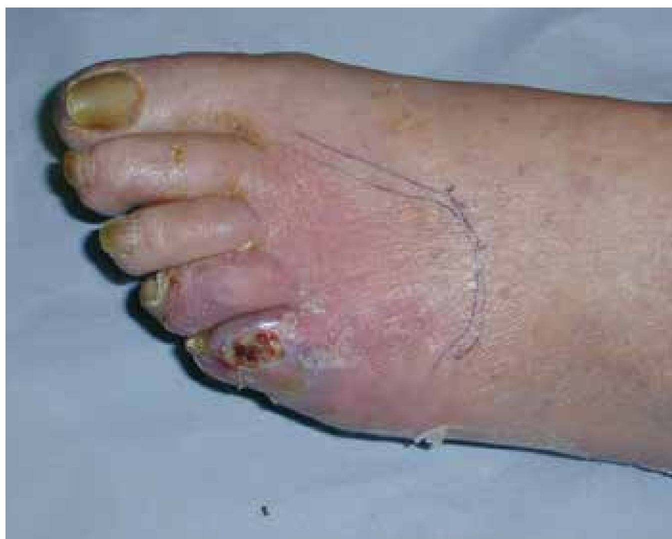


Figure 1
Ischaemic foot with ulceration and infection

The target population with potential CLTI are those people with objectively confirmed PAD (confirmed with ABPI/TBPI – see below), who also have any of the following symptoms or signs:

- Ischaemic rest pain (forefoot or toes usually)
- A diabetic foot ulcer OR any lower limb ulceration present for more than 2 weeks
- Gangrene involving any portion of the limb or foot.

Key Point: ABPI and TBPI

ABPI: ankle brachial pressure index – a simple arterial diagnostic test, where the highest of the two systolic brachial pressures is compared with the highest systolic pressure at the ankle in each lower limb (Figure 2).

TBPI: toe brachial pressure index – an alternative, similar test where the systolic pressures of a toe in each lower limb is compared with the highest brachial pressure. This test is usually an adjunct to ABPI, when leg artery calcification is suspected or likely, or there is a wound not healed at 2 – 4 weeks (Figure 3).

Confirmed PAD with any of the above factors can become actively limb threatening and the term CLTI is now used to help classify and manage people with this presentation of PAD. Epidemiological data on people with CLTI is not yet robust, but studies and meta-analysis to date have suggested anywhere between 5% - 21% of people with PAD can go on to develop CLTI within 5 years [2].

Overall, people with mild to moderate severity PAD alone are not at high risk of amputation and are far more likely to suffer heart attacks, strokes, and early deaths, than to lose a leg to amputation. Those who develop CLTI have higher risks of amputation, associated with the presenting severity or classification of the CLTI [2].

Reducing risks to life and limbs in people with PAD & CLTI

Life and limb-threatening risks are largely modifiable with a range of effective interventions such as medicines, lifestyle changes and with CLTI - surgical or endo-surgical treatments. The earlier the arterial disease is detected and confirmed with simple, objective clinical diagnosis, the more opportunities there are to offer people timely, effective treatments to protect both lives and limbs. The role and importance of all podiatrists and other lower limb practitioners in the early detection and diagnosis of PAD and CLTI cannot be overstated. As guardians and first-line providers of lower limb healthcare, particularly to people in the demographic of risk, we are in a unique position to play a leading role in both clinical diagnosis and lifelong management of PAD and CLTI, in partnership with GPs, Public Health and Vascular Teams … if we equip ourselves with the key knowledge, skills and capabilities to perform a minimum clinical examination necessary to confirm arterial disease presence and severity [2,3]. This is particularly important as we see a broad population of people in our podiatry clinics who can also present with a myriad of other common lower limb and general health conditions, many of which can mask or hide PAD or CLTI from obvious view, sometimes for many years.

Key Point:

As guardians and first-line providers of lower limb healthcare, podiatrists are in a unique position to play a leading role in the clinical diagnosis and lifelong management of PAD and CLTI - if we equip ourselves with the knowledge, skills and capabilities required.

Core vascular assessment skills and capabilities will not only enable us to confidently and accurately detect this common life and limb threatening disease, but also to triage people more confidently for safer podiatry treatments, appropriate cardiovascular medicines, effective exercise management or urgent vascular referral for those with CLTI. They will also help us to 'do no harm' by identifying significant unknown arterial limb risks in people presenting with common skin and nail problems, wound treatments or nail surgery. For example, where to intervene with podiatry treatments can be actively harmful, at worst resulting in avoidable loss of limbs [4].

Essentials of PAD and CLTI diagnosis; useful for any podiatry setting

Peruse any podiatry textbook on the theme of vascular assessment and there may be a range of suggested checks and observations that have directed the culture of our clinical teaching establishments and therefore our clinical assessment behaviours for generations. Whether we look at clinical indicators such as shiny, hairless atrophic skin, a variety of colours or hues in skin tone (red, cyanosed, pale, mottled, grey etc), temperature of foot or toes or capillary refill time, they all have one thing in common. They are unreliable as primary diagnostic clinical criteria which aim to help detect or exclude significant peripheral arterial disease [2].

The 3Ps approach to PAD assessment and diagnosis

The balance of best evidence currently stands behind three well established clinical assessment indicators which, when used separately, also have limitations with clinical diagnosis accuracy for detecting PAD/CLTI. When used together however, as part of a structured clinical assessment, they give the first-line clinician the most reliable approach to PAD & CLTI initial assessment and clinical diagnosis, as recommended in major national and international clinical guidelines (2, 3, 5). They can be described as the 3Ps, referring to pulses + phases + pressures.

Figure 2 Podiatrist taking a doppler waveform and systolic ankle reading

1. Pulse palpation (easily palpable or not, at the foot as a minimum - adding popliteal and femoral pulse checks is helpful).
2. Phases (Doppler – identifying multiphasic or monophasic waveforms).
3. Pressures (systolic ankle and/or toe pressures, best when compared with brachial pressures).

Although generally reliable and accurate when used together, the status quo in many podiatry clinics and services currently is that most podiatrists appear to rely on pulse palpation or Doppler insonation alone and do not gain or maintain the skills and confidence to assess ankle, toe and brachial pressures, using a combination of Doppler or photoplethysmography probes and manual sphygmomanometer devices. This has been illustrated in two separate published national surveys of podiatrists in Australia and New Zealand, and the UK, looking at our vascular assessment behaviours and practice (6, 7). ABPI was used by less than 40% of respondents and TBPI by less than 20%. This trend for podiatrists not investing in core skills, capabilities, equipment, and the brief amount of time needed to complete systolic limb and toe pressures, whilst at the same time working frequently with a demographic of people likely to have arterial disease, presents very real, broad, but largely avoidable risks. Risks to the person with unrecognised and untreated PAD/CLTI and a risk to the podiatrist and their practice, service or organisation.

Key Point

1. *Pulse palpation (easily palpable or not, at the foot as a minimum - adding popliteal and femoral pulse checks is helpful).*
2. *Phases (Doppler – identifying multiphasic or monophasic waveforms).*
3. *Pressures (systolic ankle and/or toe pressures, best when compared with brachial pressures).*

Risks of not using the 3Ps approach in nail surgery and wound assessment

The consequences and risks of not providing a 3Ps approach to vascular assessment of people with diabetic foot ulcers for example, is starkly illustrated in the 2022 NHS Resolution report on a thematic analysis of around 90 people with foot ulcers that resulted in amputations and subsequent litigation [8]. Peripheral vascular assessments prior to amputation in most cases were found to be 'brief, potentially inaccurate and delayed'.

Another area of vascular risk in podiatry other than wound care is nail surgery, which is offered routinely by many podiatry services, both in independent and NHS practice. Whilst in the majority of people seen and provided with nail surgery, outcomes are positive, there have been a small number of nail surgery cases brought to the attention of the author, where non-healing and amputations have resulted. Subsequent investigations too often highlighted inadequate vascular assessment prior to surgery, with an over-reliance on pulse palpation or Doppler insonation alone, as a minimum vascular assessment. Clinicians are not always comfortable highlighting when they are not sure about 'weak' foot pulses or 'whooshy' Doppler sounds (which can be clues to possible CLTI) and even experienced clinicians have been shown to be inaccurate when relying on foot pulse palpation to confirm or exclude PAD around 10% of the time [9]. Not checking systolic pressures at ankles or toes in people with a likely risk profile can lead to dangerous lower limb intervention decisions and occasionally to disastrous outcomes, for both people with undiagnosed PAD/CLTI and the clinicians who are treating them [8].

Key Point: Vascular assessment essentials.

If a pulse feels 'weak' or Doppler sounds 'whooshy', add some systolic pressures to your assessment, prior to providing foot or leg treatments

Essential guidance on vascular assessment for nail surgery or wound treatment

To help address this, bodies such as the Royal College of Podiatry and the North West NHS Podiatry Clinical Effectiveness Group have issued clinical guidelines [10, 11] which advise podiatrists to include objective vascular assessment steps such as ABPI, ankle/toe pressure or arterial duplex assessment, in cases where peripheral arterial disease is likely or suspected, by:

- Taking a history (e.g. people with diabetes, hypertension, renal disease, other arterial disease or smoking)
- Pulse palpation or Doppler insonation (where foot pulses may feel 'weak' or Doppler sounds are 'whooshy' or not clearly multiphasic i.e. bi or triphasic).

For example, these most recent podiatry guidelines [10, 11] suggest that nail surgery must not be performed without seeking further urgent vascular opinion, in any of the following assessment circumstances:

- ABPI is < 0.6 OR ankle systolic pressure is < 70 mmHg
- ABPI is > 1.4 AND foot pulses are non-palpable/ monophasic (or you are unsure)
- Toe systolic pressure is < 40 mmHg

Figure 3 Podiatrist taking a toe systolic pressure as a part of a perpheral arterial assessment

As well as being applicable to nail surgery assessment, the above also provide useful guidance thresholds relating to amputation risk or healing potential for use with most people presenting with common foot or ankle wounds. This guidance applies to the podiatrist in general or specialist clinics. Conversely, for nail surgery wounds or any foot and ankle wounds, systolic ankle or toe pressures as part of a full assessment can give confidence about healing potential. Where ankle systolic pressures are > 100 mmHg and toe systolic pressures are > 60 mmHg, particularly in the presence of palpable, multiphasic Doppler waveforms at the foot, arterial supply is likely to be adequate for healing to occur from a vascular perspective [2]. This statement assumes there are no other complicating factors, such as infection, oedema or excessive pressure or shear on the wound surface.

WIfI – a universal approach to adopt for nail surgery and wound assessment?

WIfI is an acronym which describes a 3-domain amputation risk classification approach [12]. This approach is particularly useful with lower limb wound assessment and helps clinicians to identify amputation risks and the potential triage need for planning wound or pain treatment, or non-urgent, urgent or emergency referral to a vascular team for consideration of limb revascularisation. As part of a holistic clinical history and assessment, it helps focus all clinicians on a structured clinical assessment and triage approach, using the major amputation risk domains of:

Wound - presence & severity

Ischaemia - presence & severity

Foot Infection - presence & severity

Although developed to help with diabetic foot ulcers, it is useful when assessing anyone with lower limb wounds or foot pain, where there is suspicion or risk factors for PAD or CLTI. [2, 12]

WIfI and wounds – using systolic pressures routinely to help identify amputation risk

The Vascular Society of Great Britain and Ireland, National Wound Care Strategy Programme (NWCSP) Lower Limb Guidance, and Foot in Diabetes UK publications have all now recognised and endorsed the importance of using ankle and toe systolic pressures in high risk, lower limb and wound assessment. They have now gone further and endorsed the use of the WIfI wound classification system (figure 4), as a universal approach to recognising, triaging and referring on CLTI in a timely way [13, 14, 15]. This has major implications for supporting timely and safe interdisciplinary and multidisciplinary working with lower limb wound care, across traditional professional and locational boundaries, e.g. community and hospital services for all podiatry, nursing and vascular teams. It will, as always, be up to individual teams and practitioners to become familiar with and adopt this best practice approach and introduce it into the clinical assessment processes, cultures, and behaviours of our clinical practice.

PAD/CLTI assessment and referral guidance tools available on-line

The NWCSP PAD and CLTI assessment and referral form can be downloaded, edited, and used as an e-form by any interested clinician. It has been developed by podiatrists, nurses, and vascular clinicians to help guide any clinician in a structured way through the lower limb arterial and limb risk assessment and referral guidance criteria, helping to determine presence and severity of any immediate limb threat [14]. Read here.

Quick to use WIfI calculators are also available and embedded into international vascular guideline apps, which can be downloaded onto smartphones and utilised quickly in a busy clinical setting, to support clinician assessment, triage and limb risk decision-making [16]. See here.

Five common scenarios of lower limb arterial and risk status

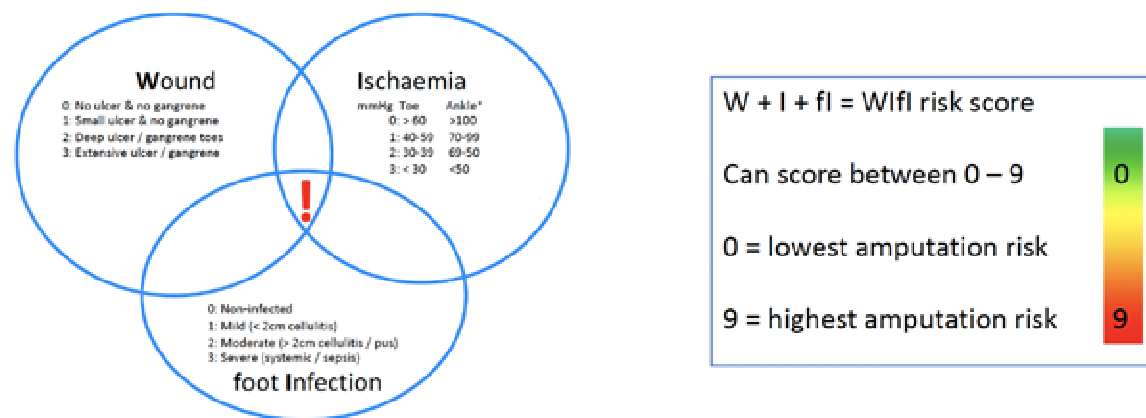
For people presenting with suspected PAD or CLTI, lower limb clinicians would safety-net themselves and the patient against potentially avoidable non-healing wounds, amputations, and early deaths by using a combination of standard patient history-taking and physical assessment, including the 3Ps or WIfI approach. Use of the 3Ps and WIfI will help clinicians accurately determine these 5 common stages of lower limb arterial and risk status, which will require different immediate or longer-term treatment or referral decisions, actions and communications with other teams, from the assessing clinician.

1. No significant PAD – foot and lower limb treatments can be considered and provided as appropriate.
2. Mild to moderate severity PAD - asymptomatic or with stable or improved intermittent claudication. This is PAD that can be communicated to and usually managed by the GP and patient, with cardiovascular medicines, a supervised or structured exercise plan and smoking cessation support where relevant and agreed.
3. Deteriorating/severe PAD - with no wound, usually with deteriorating intermittent claudication despite attempts to manage with cardiovascular medication, an exercise plan and smoking cessation. Refer to the vascular team for their consideration, either via GP or directly if possible, copying the GP into the referral for their information
4. CLTI with increased amputation risks - as determined by a WIfI assessment or similar. An urgent referral (7 – 14 days) must be initiated, either via GP or directly to the vascular team if possible, copying the GP into the referral for their information
5. CLTI emergency: severe wound + ischaemia + infection - this requires an immediate phone call (using SBAR- see below) to the GP or vascular registrar on-call at a hospital with a vascular hub service, to consider admission for revascularisation/limb salvage.

SBAR – a recognised tool for communicating urgent requests assertively and confidently

Use of the WIfI assessment approach in podiatry settings for anyone presenting for nail surgery or foot

WIFI & 3P's Amputation Risk Assessment



Ischaemia risk & severity: adapted to include other suggested 3P's indications of PAD / CLTI – doppler phases and pulse palpation

Risk	Toe mmHg	Ankle mmHg*	ABPI*	*Doppler phases*	*Foot pulse palpation*
0:	≥ 60	≥ 100	≥ 0.8	*Triphasic*	*All easily palpable*
1:	40-59	70-99	0.6-0.79	*Bi/monophasic*	*Not all easily palpable*
2:	30-39	50-69	0.4-0.59	*Monophasic*	*Non-palpable*
3:	< 30	< 50	< 0.4	*Mono / absent*	*Non-palpable*

** May be artificially elevated due to leg arterial wall calcification*

(Adapted from Mills et al 2014, Tehan et al 2018 & Londero et al 2016)

wound treatment, especially with adults who have any long-term conditions associated with cardiovascular disease, can help identify or exclude an unknown or not obvious amputation risk. It can then be combined with the SBAR communication tool, originally developed to improve safe communication on nuclear submarines and subsequently adopted by many healthcare organisations to help structure communications between different professionals or teams, for example in potentially urgent or complex limb or life-threatening scenarios [17]. SBAR promotes communication that is concise and focussed, using 4 standard and sequenced domains that make up the acronym:

Situation: summarise the presenting clinical situation

Background: briefly describe the background or history of the patient

Assessment: state your clinical assessment so far (e.g. WIfI domains for any wound)

Recommendation: give your recommendation or request, based on the above

SBAR is now endorsed broadly by NHS England and NHS Improvement [17] and is increasingly being used by clinicians who are becoming familiar with it to help them and other referring clinicians to communicate efficiently, effectively, and assertively when needed. It can be particularly helpful when referring between different disciplines or teams and is perhaps most useful when clinicians may be uncomfortable about making a recommendation or request, for example if they feel inexperienced, are non-specialised or are communicating with someone more senior than them [17]. For a non-specialist or specialist podiatrist, perhaps working in a non-NHS setting, isolated community clinic or hospital ward setting, using an SBAR approach to structure communication with GPs, specialist podiatrists/nurses, diabetes multi-disciplinary teams or a vascular on-call individual at the hospital, is likely to be useful as a minimum. It may also deliver a major benefit in communicating occasional or rarely presenting life and limb risk situations, to help optimise timely access to vital treatments.

Key Point

SBAR promotes concise and focussed communication between health professionals.

Situation: summarise the presenting clinical situation

Background: briefly describe the background or history of the patient

Assessment: state your clinical assessment so far (e.g. WIfI domains for any wound)

Recommendation: give your recommendation or request, based on the above

Case studies, using 3Ps, WIfI and SBAR together

The use of the 3Ps initial assessment approach, WIfI amputation risk classification and SBAR together, to communicate with expert or specialist clinicians when seeing someone with a limb of potential concern, is highlighted in the following two case studies. These illustrate two different people presenting to a podiatrist, both initially with shallow foot wounds, which are likely to require very different treatment and immediate referral decisions.

Shared lifelong care of people living with PAD or CLTI to protect limbs ... and lives

Podiatrists, other lower limb practitioners and health care staff are highly likely to be frequently seeing people living with PAD or CLTI throughout their lives, whether we are:

- initially diagnosing these conditions
- providing simple care of foot and leg health (e.g. nailcare, skin care, etc.)
- managing chronic nail, skin, and musculoskeletal problems, providing foot and leg pain management
- providing complex wound care or consideration for surgical foot and ankle interventions.

Foot healthcare for people living with PAD or CLTI may well be shared between the person, their carers, foot health practitioners, podiatrists, nurses, GPs, specialist clinicians and hospital diabetes or vascular teams. The need for core knowledge, capabilities, and skills in the initial assessment of arterial status, as well as being able to periodically review and recognise the presence, stability or deterioration of PAD/CLTI is important for all. A consistent and confident use of the 3Ps approach generally, WIfI principles when needed (new or worsening wound or pain in someone with known PAD/CLTI) and SBAR, particularly with urgent communication, may help clinicians and people living with PAD/CLTI to avoid amputations whenever possible.

Mortality versus amputation risk in PAD and CLTI

The risk of mortality (30%) 5 years after initial diagnosis of PAD has shown to be much higher than the risk of amputation (2%), with many of those deaths associated with cardiovascular events [18]. As well as limb assessment, a focus on assessing and optimising modifiable cardiovascular risk management at the point of clinical diagnosis of PAD & CLTI and then reinforcement for life, offers many opportunities for

Case 1 – someone at high current risk of amputation

The individual is a 63 year old male with a history of hypertension, hyperlipidaemia, chronic kidney disease stage 3 and osteoarthritis of the knees. He is an ex-smoker, is overweight and is usually quite sedentary due to his chronic knee problems. He developed a blister over his medial 1st metatarsal phalangeal joint from wearing some new wellies for a bit of gardening. The blister hasn't healed despite 2 weeks of dressings and avoidance of wearing the wellies.

Using the WIfI limb risk assessment calculator [16]:

Wound - 1	Shallow, 10mm diameter, forefoot
Ischaemia - 3	Doppler monophasic, ankle systolic 75mmHg, toe systolic 24mmHg
Foot Infection - 2	Erythema extending throughout forefoot and tracking up lower leg
WIfI score: 1 – 3 – 2	WIfI stage: 4 Risk of amputation: High

SBAR telephone communication with GP/High Risk Podiatry Service / Vascular Registrar

Situation: Hello, my name is ******* ***. I'm an independent practice podiatrist working in Bury and I have a patient with me who I'm concerned has chronic limb threatening ischaemia and an immediate high risk of amputation

Background: He's a 63 year old gentleman who has hypertension, hyperlipidaemia, chronic kidney disease stage 3 and osteoarthritis of the knees. He has a non-healing wound after 2 weeks of care on his left forefoot

Assessment (focussing on 3Ps and WIfI): The wound is shallow & sloughy, vascular assessment has shown he has signs of severe ischaemia - non palpable foot pulses, monophasic sounds in all foot arteries, ankle systolic pressure of 75 mmHg and toe systolic pressure of 24mmHg in the limb of concern - and he appears today to have signs of spreading infection (redness, swelling, new pain) throughout the forefoot and up into the lower leg.

Recommendation: I would appreciate your urgent assessment of this man today, if possible, to consider if he needs admitting for infection management and revascularisation. Is there anything else you advise I can do with him today?

Case 2 – someone at low current risk of amputation

The individual is a 74 year old female with a history of hypertension and diabetes type 2. She smokes, is not overweight and is fairly active as a carer for her husband, doing all the household shopping. She used to go to the gym but has stopped due to her responsibilities as a carer. She has developed an ulcer under a recurrent callus on the apex of a right 2nd hammer toe. It hasn't healed after 1 week, despite debridement and dressings.

Using the WIfI limb risk assessment calculator [16]:

Wound - 1	Shallow, 8mm diameter, forefoot
Ischaemia – 0	Doppler multiphasic, ankle systolic 110 mmHg, toe systolic 75 mmHg
Foot Infection - 1	Local redness and warmth spreading 1cm from ulcer edge
WIfI score: 1 – 0 – 1	WIfI stage: 1 Risk of amputation: Very low

SBAR telephone communication with Diabetes Foot MDT Clinic

Situation: Hello, my name is ******* ***. I'm a community NHS podiatrist working in Manchester, and I have a patient with me who has a diabetic foot ulcer which doesn't appear limb threatening, but I would appreciate your advice about ongoing treatment and referral

Background: She's a 74 year old lady who has hypertension and diabetes type 2, managed by her GP and nurse. She has a non-healing wound, after 1 week of debridement and dressings, on the apex of a hammered right 2nd toe. She acknowledges she has not rested the foot much since we last saw her, as she is the key carer for her husband.

Assessment (focussing on 3Ps and WIfI): The wound is shallow & granulating, vascular assessment has shown she has signs of reasonable arterial flow in that foot – with a palpable post tibial foot pulse, multiphasic sounds in both foot arteries, ankle systolic pressures of 110mmHg and toe systolic pressures of 75 mmHg in the limb of concern. There are signs of mild, local infection, 1cm of redness around the wound edges, but no signs of spread and she is generally well.

Recommendation: I'm thinking of requesting a course of antibiotics, offloading the wound area with a toe prop, she has agreed to reduce activity for a couple of weeks by asking her daughter to help with shopping and caring duties. I'm wondering whether to review her in our clinic for the next 1 - 2 weeks and speak to you again then on progress or deterioration Or should I refer her to your MDT clinic today?

all lower limb health professionals to help people understand and reduce their modifiable cardiovascular risks. It does not require the lower limb clinician to be a cardiovascular expert or practitioner, but regular review, reminders, and signposting people where interested or ready to make changes, can sometimes reap large cardiovascular risk benefits. This is no better illustrated than in a study of an MDT diabetes foot ulcer caseload, where half the study cohort were maintained on standard best care with lower limb interventions and half were reviewed and followed up for their existing cardiovascular risk medicines and medicines management. 5-year survival rates in the standard care cohort were 52%, whilst that in the cohort with active cardiovascular medicines review and management improved to 73% [19].

Influencing best cardiovascular risk management as a non-specialist practitioner

For all people living with confirmed (by clinical diagnosis) PAD or CLTI, advice, support, and treatment for the secondary prevention of cardiovascular disease (and events) needs to be offered and reviewed throughout life. For the non-specialist practitioner, it can be as simple as briefly asking the person living with PAD or CLTI about their current modifiable risk factors (see table 1), ascertaining any interest or readiness to address one or more of the risks and then signposting them to their GP (e.g. cardiovascular medicines review) and/or available public health or social prescribing support (smoking cessation, supervised exercise or self-directed exercise of choice).

Discussing best cardiovascular risk management essentials in PAD and CLTI

Exploring an understanding of modifiable cardiovascular risks, asking about readiness to change to support reducing any of these risks, then

Risks & prevention of risks for cardiovascular disease in PAD	Risk: Yes / No or unknown	Is considering or ready to reduce risk: Yes / No / Unsure
Smoking Any amount of tobacco		
Exercise Less than 150 minutes of moderate intensity exercise per week		
Lipid modification For example, if LDL > 2, TC > 4		
Antiplatelet therapy If has established / symptomatic PAD		
Hypertension For example, if BP > 140/90		
Diabetes For example, if HbA1c > 53		

Table 1. Modifiable cardiovascular risks discussion tool for PAD, adapted from [1, 3]

signposting or supporting people living with PAD and CLTI to enable such changes is something podiatrists and other lower limb clinicians can consider trying. Asking a person's permission before discussing such themes and actively listening to their thoughts on such risks, can help ensure conversations are focussed on the preferences and priorities of the person living with PAD or CLTI [3]. Any considerations, decisions, or agreements to try making health risk changes can then be communicated to the GP or other relevant public health support services. For example:

Smoking: Revisiting a person's understanding of their smoking risks and the benefits of quitting for disease progression and associated events then, if receptive, signposting them where interested to smoking cessation support services or the current Public Health meta analysis information on switching from smoking tobacco to e-cigarettes, may be useful or helpful [3].

Exercise: Supervised exercise for people diagnosed with PAD and intermittent claudication is as effective as angioplasty/stents, in managing or reducing intermittent claudication pain and improving pain free walking distances [3]. Where a supervised intermittent claudication programme is not available locally or not accessible for the individual, access to cardiovascular rehabilitation programmes, or community supervised public health classes may be an option. For many people, self-directed or social prescribing options such as park walks, Nordic Walking groups for people with various health conditions, or trying home pedal or cycle machines, may be other options for increasing physical activity, directing people to push into their claudication symptoms, resting briefly if severe. Setting personal exercise targets where safe to do so and where people feel enabled, can be important to clarify, e.g. working towards 150 minutes a week of moderate exercise (exercise where you feel a little breathless, but can still talk without difficulty) with any preferred activity.

Lipid modification: People with a clinical diagnosis of PAD should be referred to the GP for consideration of high dose statin treatment with daily Atorvastatin 80mg [3]. Lower dose statin is recommended if there are potential drug interactions, a high risk of adverse effects or if the person living with PAD prefers this. Where people with PAD are on no statin, or a low dose or alternative statin, it may be useful to ask about this and refer them back to the prescribing GP for review if necessary.

Antiplatelet therapy: People with established or symptomatic PAD (claudication or ischaemic rest pain) should be referred to the GP for consideration of commencing clopidogrel 75mg daily [3]. If they are on alternative antiplatelet e.g. aspirin 75mg or anticoagulant therapy for other cardiovascular conditions or risks, adding clopidogrel may not be appropriate. A recent NICE technical appraisal [20] has advised that GPs can consider prescribing people diagnosed with PAD, who are at high risk of ischaemic events, with daily low dose aspirin and rivaroxaban, as an alternative to clopidogrel alone. This showed benefits in people with PAD and those with limbs at high risk of amputation, including reduced heart attacks/strokes and amputations, when compared with using an antiplatelet (aspirin 75mg daily) alone. With antiplatelet and anticoagulant prescribing in PAD and CLTI, GPs and vascular teams need to weigh up the person's risk of atherothrombotic events against their risk of bleeding, especially before considering a combination of aspirin and rivaroxaban. The risks and benefits of continuing treatment with rivaroxaban should also be regularly reviewed. Asking about and reporting any new bleed history or events back to GPs,

when seeing people with PAD who are on antiplatelet or anticoagulant therapy, is important.

Hypertension: Late diagnosis and suboptimal management of hypertension is a national cardiovascular risk priority and people with established cardiovascular diseases, including those with diagnosed PAD, are a priority target group for good control. Many people over 40, even those on blood pressure medications, are not aware of their personal blood pressure targets. Brief conversations around targets and signposting for GP review if outside of these targets, is an important PAD & public health priority.

Diabetes: Around half of lower limb amputations and many cardiovascular events and deaths are associated with diabetes. Late diagnosis and suboptimal management of diabetes is a national challenge and people with established diabetes, especially those with co-existing PAD, are a priority population subgroup for good control. Many people with diabetes are not aware of their personal HbA1c targets. Brief conversations around targets and signposting for GP review if outside of these targets, is an important PAD and public health priority.

In conclusion

People living with PAD and CLTI are all too often under-diagnosed and under-managed [8, 21]. They are likely to present themselves often to podiatrists and other lower limb clinicians, maybe for unrelated lower limb health problems. Under-diagnosis and under-treatment of PAD and CLTI are associated with high and variable rates of early death and avoidable amputations. Podiatrists and other lower limb practitioners have many opportunities to make a huge difference. If we can strengthen our capabilities and confidence in the 3Ps and WIfI approach to suspecting and diagnosing PAD and CLTI early, followed by discussing, listening, and signposting people with arterial disease for modifiable cardiovascular risk management and using communication tools such as SBAR for urgent or important referrals and handovers, perhaps we might … just save many more lives and limbs?

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