

Foot in Diabetes UK and the COVID-19 lower-limb amputation prevention guidance challenge

The Foot in Diabetes (FDUK) COVID-19 Lower Limb Amputation Prevention Guidance document was published in *The Diabetic Foot Journal* in March 2020 (FDUK, 2020) and can also be found on page 2 of this issue. It originated at the virtual committee meeting of FDUK on March 18. Subsequently, the guidance was completed by the committee through email and telephone communication over the following week with input from expert advisors from around the UK. It was published as COVID-19 SITUATION v1.3 Lower Limb Amputation Prevention Guidance on March 27, four days after the lockdown took effect in the UK (FDUK, 2020). At this time, a massive NHS response to the greatest global health emergency in its history was taking place and health service personnel were being redeployed to meet frontline care needs associated with the COVID-19 pandemic. It was deemed vital to protect the resources and facilities of hospitals so that they could care for the increasing number of persons with COVID-19. Most non-urgent care NHS services were stopped from seeing patients face to face for clinical assessments, diagnosis, treatments or referral planning.

It was in this context that FDUK agreed, collaborated and wrote its guidance document to help all healthcare professionals who are treating people living with diabetes and other long-term conditions, that can put the foot and leg at risk of amputation. This creation of a national clinical guidance document within just 2 weeks was also unprecedented in the 15+ year history of FDUK and its allies, demonstrating what multidisciplinary clinical collaborations can achieve, when necessary.

The basic premise of the document held that it was still essential to recognise foot and leg complications that are limb- or life-threatening and refer them for urgent multidisciplinary care. Indeed, NHS England and NHS Improvement (2020) had stipulated in a 'clinical guide for the management of acute diabetes patients during the coronavirus

pandemic' that multidisciplinary diabetic foot services may need to continue at full capacity.

Conversely, people presenting with non-limb-threatening conditions should be treated in the community and the patient's home with guidance, if required, from the multidisciplinary team, thus avoiding unnecessary visits or admissions to hospital and reducing the risk of exposure to COVID-19. On a practical basis, the aim of the document was to assist important clinical assessment and decisions around clinical triage, urgent referrals and access to high-risk podiatry, hospital vascular, multidisciplinary diabetic foot/diabetes/orthopaedic or infectious diseases teams, for potential life- and limb-saving treatments or surgery. The limb- or life-threatening conditions were divided into two groups, severe infection and severe ischaemia, which can present separately or together.

Severe infection can be recognised by ulceration associated with rapidly spreading cellulitis as shown by redness, swelling, heat, pain and complicated by discharge of pus. Furthermore, wet gangrene or gas in soft tissues as indicated by crepitus in the skin indicates severe infection. Also, an ulcer deep to bone associated with infection tracking through adjacent soft tissues can be limb threatening. Such severe infections should be referred urgently to hospital, to undergo surgical drainage, removal of necrotic tissue and intravenous antibiotics.

Severe infection may be complicated by sepsis which can be recognised by flu-like symptoms, confusion or drowsiness. Signs of sepsis are a body temperature >37.5 °C or <36 °C, pulse rate >90 beats/minute, and respiratory rate >20 breaths/minute. These features may be absent or diminished in people with diabetes and also in those who are older. It is important to note that these clinical features may also be caused by COVID-19 infection. Healthcare professionals should be careful not to diagnose foot infection when the patient has COVID-19 infection and alternatively, not to diagnose COVID-19 infection when the patient has a foot infection. Whatever the cause of such a clinical

Mike Edmonds
Graham Bowen
Martin Fox

All authors write on behalf
of FDUK

The COVID-19 SITUATION v1.3 Lower Limb Amputation Prevention Guidance can be found on page 2 of this issue.

presentation, patients should be sent immediately to the local hospital emergency department.

It was also important to recognise both the critically ischaemic and acutely ischaemic limb. The critically ischaemic limb is usually characterised by rest pain and areas of necrosis, although the pain will vary according to the degree of co-existent neuropathy in diabetes. Buerger's sign is positive with the foot going pale on elevation and red when hung down, (the so-called pink, painful ischaemic foot). Critical ischaemia will be indicated by ankle systolic pressure <50 mmHg and toe systolic <30 mmHg although pressures may be falsely elevated by arterial medial wall calcification in diabetes. People with critical ischaemia need urgent vascular referral, assessment and revascularisation. People with acute limb ischaemia indicated by the sudden onset of a cold, pale, pulseless, painful limb, especially if also developing paraesthesia or paralysis, will need immediate referral to a hospital with a vascular team on site, as delays of hours rather than days can result in an unsalvageable limb.

How this guidance regarding limb- and life-threatening complications has been implemented has been determined by local organisation and staffing of community foot protection teams and multidisciplinary hospital services. Furthermore, the implementation has taken place against a back drop of the challenges of the community foot protection teams being redeployed into other areas, reduced access to their traditional clinical estates and with patients scared and anxious to access NHS services both within the community and within secondary care. Although multidisciplinary clinics have continued in the NHS, their mode of working may have been altered according to local hospital protocols and rotas.

Rather than attending joint formal joint clinics, vascular and orthopaedic surgeons may be called to see specific patients, having been given initial patient information by telephone or by virtual platform, such as on Pando or Visionable. Furthermore, multidisciplinary clinics may have taken on expanded roles, such as more extensive debridement than is usually performed in the clinic and offering different solutions for offloading to limit hospital admissions and protect beds for patients with COVID-19. Regarding the severely ischaemic limb, interventional radiological approaches may be considered rather than open vascular surgery so that high dependency beds can be saved for seriously ill patients with

COVID-19 (The Vascular Society for Great Britain and Ireland, 2020). As well as identifying immediately limb-threatening complications, it has been equally important to recognise non-limb-threatening conditions that can be followed in the community by podiatry, foot protection or other lower-limb teams (Meloni et al, 2019). These comprise foot ulcers that are non-infected and non-ischaemic and ulcers in mild or moderately ischaemic but stable feet. Also, mild foot infections, with superficial ulcers and local erythema <2 cm from edge may be treated in the community with oral antibiotics. Such an approach has been supported by the use of antibiotic PGDs held within podiatry services and with the benefit of services having podiatrists who are independent prescribers, both to manage and support teams in treating these infections quickly and effectively and to prevent mild infections from being missed and/or progressing on to moderate or severe infections.

In certain cases, deep but limited infection may undergo repeated debridement and drainage in the multidisciplinary foot clinic and intravenous antibiotics administered in the community. The suspected acute Charcot foot should be initially assessed in the multidisciplinary foot clinic. If not possible, in the absence of significant infection, the foot must be completely rested/offloaded, until access to a multidisciplinary team is possible. Total contact casts have been regarded as the gold standard to offload the acute Charcot foot but in this pandemic, removable casts have been considered as possible substitutes (unless there is severe deformity) to stabilise and offload the foot, allowing regular follow up in the community and avoiding frequent visits to the hospital clinic for change of cast. Increased awareness of non-limb-threatening (but important) conditions has resulted in a significant transfer of foot care to the community, where podiatry, tissue viability and community nursing teams have kept access open for people with wounds. Patients have been either entered into shared care between hospital and community or handed over to full community care.

Multidisciplinary foot teams have supported community colleagues with the offer of regular virtual clinics to provide ongoing case reviews and advice on the safe adjustment of management plans for patients, including those for shared patients. To further support this, there has been an extension of telemedicine, increasing direct contact between multidisciplinary

clinic and healthcare professional and patient (Rogers et al, 2020). This has taken various forms, including simple telephonic contact with patients, sometimes aided by patients sending photos to the clinic on their smart phones. Alternatively, a healthcare professional may be with the patient and take the photo and liaise directly with the clinic on the patient's behalf. Modern technology has facilitated interaction between healthcare professionals by use of Zoom and Microsoft Team applications, which are suitable for a fast team approach in responding to concerns which are voiced by healthcare professionals in the community, once patient confidentiality and data security issues have been addressed.

When the Lower Limb Amputation Prevention Guidance was published in March 2020, there was a real concern that NHS hospitals would be overwhelmed and would run out of beds. As we write now in mid-May, we are relieved that this has not happened. Every COVID-19 patient needing hospital care, including ventilation, has been able to receive it (NHS, 2020). We do not yet have firm data as to how the pandemic and the response of the diabetic/high-risk foot community has affected outcomes for the person living with diabetic foot disease and/or other high-risk lower-limb conditions. The data are eagerly awaited and what is important is that local services all play a role in capturing this information as this will be key as we begin to reflect on the impact COVID-19 and the additional interventions delivered.

However, we are now entering the second phase in the NHS's response to the pandemic with the intention to step up non-COVID-19 urgent services.

We need to ensure that that urgent and time-critical surgery, such as Charcot foot reconstruction and open vascular bypasses and endovascular procedures, can be provided at pre-COVID-19 levels of capacity. Furthermore, we have to preserve the beneficial changes in diabetic and high-risk foot and lower-limb care that have been facilitated by the pandemic, including enhanced local system working, professional networking and technology-enabled service delivery options, such as digital consultations (NHS, 2020). These innovative ways of working together have greatly aided communication and collaboration between patient, community and hospital and need to be preserved in this next phase of care. It is clear that the structure, function and delivery of diabetes and high-risk foot services will be changed for the better as we move forward through the COVID-19 pandemic. ■

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