

## Diabetes Foot Care in the COVID-19 Pandemic

*M. Bates, M. Edmonds, V. Kavarthapu, C. Manu, H. Rashid, P. Vas*  
Diabetic Foot Clinic, King's College Hospital, London, UK

This commentary is written to help all healthcare professionals who are treating people living with diabetes and particularly those with foot problems. Whilst it is vital to protect the resources and facilities of hospitals so that they can care for the massive number of persons with COVID-19, it is important to support people living with diabetes who have foot problems and treat as many as we can outside the hospital. However, it is essential to acknowledge that some foot complications may be limb and/or life-threatening and need to be promptly recognised and referred for hospital care. At the same time, non-limb threatening complications should be identified and arrangements made for these to be treated at home and in the community with guidance when required from a multidisciplinary diabetic foot clinic. This should avoid unnecessary visits or admissions to the hospital to reduce the risk of exposure to COVID-19. In support of this overall approach, helpful documents have recently been made available<sup>1,2</sup>.

It is useful to have a triage system which can initially decide whether there is a need for the person with the foot problem to actually visit the clinic. This may be obvious from the actual referral but otherwise can be decided by telephonic or telemedicine communication either with the person with diabetes or the referrer. At the same time enquiry should be made about possible COVID-19 symptoms of cough or sore throat or fever and if present, national advice should be followed. In the absence of COVID-19 symptoms, a decision should be made as to whether the foot problem is limb or life-threatening or instead of a non-threatening condition. The former should be urgently seen in the diabetic foot clinic and the latter treated at home and in a community clinic, not needing to visit the hospital (Fig.1).

The limb and/or life-threatening conditions fall into the following groups: severe infection, sepsis, severe ischaemia and acute ischaemia<sup>3</sup>.

### **Severe Infection**

This may be recognised by ulceration associated with rapidly spreading cellulitis as indicated by redness, swelling, heat, pain and complicated by a discharge of pus or black discolouration or wet gangrene or gas in soft tissues identified by crepitus in the skin. Also, an ulcer deep to bone complicated by infection tracking through surrounding soft tissues can be limb-threatening. Such severe infections will need urgent surgical drainage in hospital and intravenous antibiotics.

### **Sepsis**

Severe infection may or may not be complicated by sepsis which may be recognised by flu-like symptoms, confusion or drowsiness. Possible signs of sepsis include a body temperature  $>37.5^{\circ}\text{C}$  or  $<36^{\circ}\text{C}$ , pulse rate  $>90$  beats/minute, and respiratory rate  $>20$  breaths/minute.

*At this stage in the assessment, beware of two points!*

Firstly, features indicative of sepsis may be absent or diminished in people with diabetes and in those who are elderly. Secondly, these clinical features may be caused by COVID-19 infection. Whatever the cause, people with such a clinical presentation should be sent immediately to the local hospital emergency department.

### **Severe ischaemia**

It is important to recognise the severely ischaemic limb that is truly critically ischaemic<sup>4</sup>.

Ischaemic rest pain may be present in the critically ischaemic limb although this may vary according to the degree of neuropathy. There are usually areas of necrosis. Foot pulses are absent, Doppler arterial signals in the foot are monophasic or absent and Buerger's sign is positive with the foot going pale on elevation and red when hung down (the so-called pink, painful ischaemic foot). If haemodynamic tests are available, critical ischaemia will be indicated by ankle systolic pressure < 50mmHg and toe systolic pressure < 30 mmHg.

People with such critical ischemia need urgent vascular assessment leading to revascularisation in secondary care.

### **Acute ischaemia**

People with acute limb ischaemia develop a sudden onset of a cold, pale, pulseless, painful limb with paraesthesia or paralysis. This will need immediate referral to hospital.

### **Non-limb threatening conditions**

As well as diagnosing limb-threatening conditions, it is also important to recognise conditions which are non-limb threatening that can be treated in the community (Fig 1). Uncomplicated foot ulcers which are non-infected and non-ischaemic ulcers in mild or moderately ischaemic but stable feet (that are not critically ischaemic) can be treated at home<sup>5</sup>.

Mild foot infections, with superficial ulcers and local erythema < 2 cm from the edge with no signs of tracking or sepsis can also be treated in the community with oral antibiotics. Deep but limited infection may be treated with repeated debridement and drainage in the diabetic foot clinic and intravenous antibiotics with close follow-up in the clinic or community.

The acute (active) Charcot foot can be offloaded by removable casts in the community. This is preferred to the total contact cast which is a challenge during the pandemic as it needs frequent visits to the diabetic foot clinic for change of cast.

Such non-threatening lower limb conditions should be treated in the community, using local infection, wound care and pain management guidelines with advice available from diabetic foot clinics. Considering the intention to reduce the number of patients attending acute units, it is important to be aware of the extra work needed to provide foot care for patients either in their own home or in community

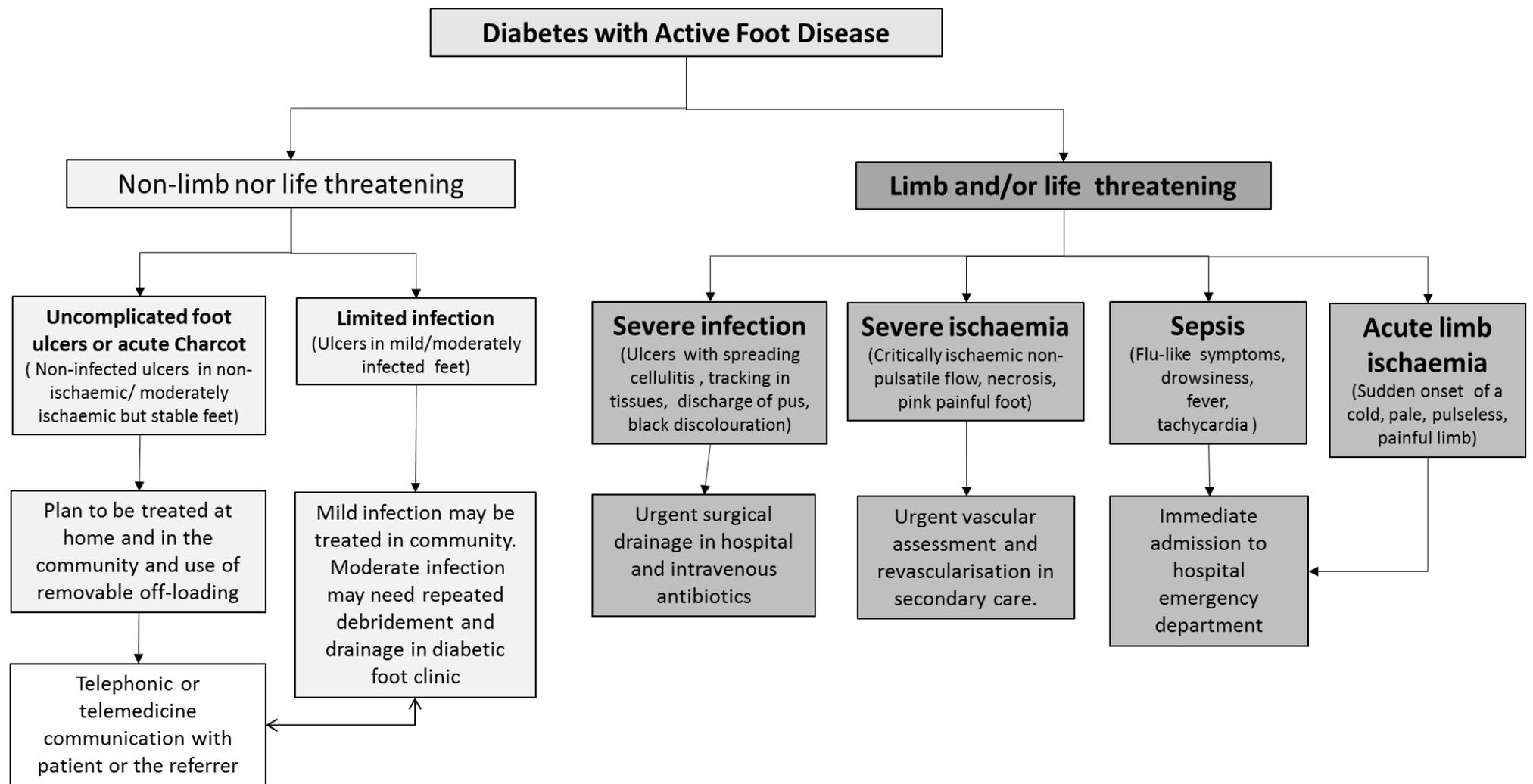
clinics. Diabetic foot clinics may support community colleagues with the offer of regular virtual clinics to provide ongoing case reviews and advice on the safe adjustment of management plans for patients, including those mutually shared patients. Persons in residential homes, care homes and dialysis units will also need surveillance.

The mode of care in the community will vary according to location and available technology, including telephone, video and telemedicine. The offer of conference and video calls across networks may be useful. This can be carried out using modern technology such as Zoom, and Microsoft Team applications, which are suitable for a fast team approach in responding to concerns which colleagues may have from across each network. Thus, when there is a lack of capacity in some areas due to staff shortages because of sickness or self-isolation, patients can be redirected to clinics where there is space available for them to be seen.

The overall aim is to treat as many foot complications as possible in the community and save precious hospital beds for life or limb-threatening complications and of course for the management of patients with COVID-19 infection.

## **References:**

- <sup>1</sup> Rogers LC, Lavery LA, Joseph WS, Armstrong DG. All Feet On Deck. During the COVID-19 Pandemic: Preventing hospitalizations in an overburdened healthcare system, reducing amputation and death in people with diabetes [published online ahead of print, 2020 Mar 25]. *J Am Podiatr Med Assoc.* 2020;10.7547/20-051. doi:10.7547/20-051.
- <sup>2</sup> Foot in Diabetes UK (FDUK). COVID-19 SITUATION v1.3 Lower Limb Amputation Prevention Guidance. *Diabetic Foot Journal* 2020; 23; 2-2.
- <sup>3</sup> Vas PRJ, Edmonds M, Kavarthapu V, Rashid H, Ahluwalia R, Pankhurst C, et al. The Diabetic Foot Attack: "Tis Too Late to Retreat!". *Int J Low Extrem Wounds.* 2018;17(1):7-13.
- <sup>4</sup> Huang DY, Wilkins CJ, Evans DR, Ammar T, Deane C, Vas PR, et al. The diabetic foot: the importance of coordinated care. *Semin Intervent Radiol.* 2014;31(4):307-12.
- <sup>5</sup> Meloni M, Izzo V, Ahluwalia R, et al *Diabetic Foot Journal.* 2019; 22:38-47 Fast-track pathway: an easy-to-use tool to reduce delayed referral and amputations in diabetic patients with foot ulceration.



**Figure 1** Flow diagram for the Diagnosis and Management of Limb and Life Threatening Complications of People with diabetes and foot problems. (Please see text for details of management)