The Diabetic Foot Jigsaw

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Article points

1. Diabetic foot ulcer healing is multifactorial with patients frequently going on to re-ulcerate.
2. Patient education, in the form of a visual aid, can help patients to understand what is required to achieve ulcer healing and remain ulcer free.
3. The analogy of the 'pieces of the jigsaw' having to fit together with regard to treatment objectives and preventative measures has been developed into a poster.
4. This visual and educational tool helps patients understand the complexities of diabetic foot ulcer healing.
5. The Diabetic Foot Jigsaw has been well received by patients and healthcare professionals

Key words

- Diabetic foot jigsaw
- Diabetic foot ulcer
- Visual educational tool

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Foot ulceration is a major complication of diabetes. It is a major cause of morbidity and can ultimately lead to hospitalisation, infection and amputation. The cause of foot ulceration is multifactorial, with a number of measures that must be addressed, in order to achieve foot ulcer healing and remain ulcer free. Ensuring that the patient has knowledge of the complexities involved can be challenging, therefore, patient education is crucial to increase the probability of concordance and better understanding to heal diabetic foot ulcers and remain ulcer-free in the future. A visual educational tool that is simple and effective can be a great clinical tool to help patients understand the complexities of diabetic foot ulceration.

Diabetic foot ulceration (DFU) is experienced by 5% of people with diabetes. DFU is associated with a high risk of minor and major amputation of the lower limb (Ramsey et al, 1999; Morbach et al, 2012) and the mortality rate is high, with only 50–60% surviving 5 years following new ulceration (Armstrong et al, 2007; Morbach et al, 2012). It is also very costly — in the UK, it has been estimated that the total annual cost of management of DFUs is in excess of £1bn, which is 1% of the total NHS budget (Diabetes UK, 2015).

DFU is very complex and there are multiple causative factors that often overlap. There are factors that predispose a person to ulceration (neuropathy and peripheral vascular disease), factors which trigger ulceration (trauma) and factors that delay wound healing (infection, inadequate offloading, poor glycaemic control etc) (Jeffcoate et al, 2018). All these factors need to be considered, in order to achieve wound healing and prevent/reduce the risk of future ulceration. In addition, it is also recognised that patients at risk of foot ulceration are also associated with a risk of modifiable cardiovascular events and early death (Young et al, 2008; Fox, et al, 2018).

Following ulcer healing, the recurrence of a foot ulcer is high. Approximately 40% of people will develop a new foot ulcer at the same site or a different site within 12 months of healing (Armstrong et al, 2017). Many healthcare professionals now describe the once ulcerated diabetic foot as being 'in remission'.

In light of all these factors, providing patient education and understanding the complex nature of foot ulcer healing, the difficulty of diabetic foot ulcers remaining healed and the risk of early death associated with cardiovascular (CV) risk factors, is essential. This needs to be addressed in a manner that is clear, concise and makes an impact.

NICE guideline NG19 advocates the referral of a person with an active diabetic foot problem within 1 working day to the multidisciplinary foot team (MDFT) or foot protection service (according to local protocols/pathways) for triage within 1 further working day (NICE, 2015). In Bolton, the protocol is for all foot ulcers to be referred to the MDFT for initial assessment, treatment and ongoing management. The MDFT is part of the larger diabetes team and is based in the community at Bolton diabetes centre. The authors see, on average, 100 patients per week with active foot problems, the majority of which are foot ulcers.

All new foot ulcer patients are fully assessed and treated accordingly with the appropriate wound care, offloading, assessment and management of infection etc by the Diabetes Podiatry team. They

Figure 1: Authors pictured with the poster in the Bolton Diabetes Centre waiting area.

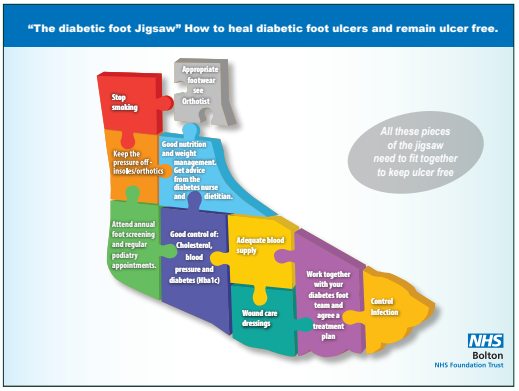

Figure 2: Diabetic Foot Jigsaw.

are also referred to the diabetes specialist nurse and dietitian to manage glycaemic control and the diabetes consultant to address cardiovascular risk factors.

Podiatrists in the diabetes team often use the analogy of a 'jigsaw' when talking to patients to help them understand the management of a foot ulcer. All the different pieces of the jigsaw need to fit into place if we are to achieve ulcer healing and remain ulcer free. It is often said that clinicians can use the most fancy dressings in the world, but if the wound is not debrided, the pressure is not taken off the area, the infection and glycaemic control is not managed and the blood supply to the foot is not improved, then the ulcer will not heal.

It was with this in mind that the authors decided to develop a visual aid to further emphasise this message in the form of the 'Diabetic Foot Jigsaw'. Following input from the authors' podiatry colleagues, the wider MDFT and the medical illustration department, a poster was developed that is displayed in the Bolton Diabetes Centre waiting area (*Figures 1 & 2*). This poster is a bright, multi-coloured foot, which is divided into pieces of a jigsaw. Each piece represents an important factor in diabetic foot ulcer healing, remaining ulcer free and reducing the risk of early death due to CV risk factors.

The diabetes specialist nurse and dietitian have laminated a smaller version of the poster which they use as a visual aid during the consultation with foot ulcer patients. This further reiterates to the patient the importance of addressing all the different sections of the foot jigsaw.

Initial response from patients has been positive. A questionnaire completed by a selection of patients has resulted in all patients confirming that they found the poster 'easy to read' and could 'understand the different sections of the jigsaw'. Some of the comments are:

- "Brilliant diagram — easy to understand and immediately visual. The patient can easily understand the risks and remedies."
- "Straight to the point of the concerns over getting the diabetic foot healed. It should go out to all the doctors and health centres as an example of what hopefully can be achieved."
- "Easy to read and understand. Bright colours that attract you. Very informative."

This is the first development of the 'Diabetic Foot Jigsaw'. The poster will be developed further following patient and professional feedback. The authors are also hoping to create a physical jigsaw to replicate the poster, which can be used in patient and professional education sessions as a fun and practical way to better understand diabetic foot ulcers. ■

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