

# When patient education fails: do we consider the impact of low health literacy?

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## Article points

1. This case study describes a patient presenting with a self-inflicted diabetes foot ulcer following application of an over-the-counter corn remedy. Despite regularly issued verbal and written education, the patient failed to contact his local foot clinic when a new foot lesion developed. Poor health literacy may play a role in the ineffectiveness of diabetes foot education, including appropriate self-care behaviours.
2. The Single Item Literacy Screener is described and presented as a means of determining health literacy. The 'teach-back' method is proposed as a means of ensuring patient appreciation of education dispensed.

## Key words

- Diabetes foot education
- Health literacy
- Over-the-counter corn remedies
- Single item literacy screener
- Teach-back method

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**Diabetes foot education concerning foot care knowledge and appropriate self-care behaviours is considered vital in the prevention of diabetes foot ulceration. Verbal education and advice should be issued and reinforced at each patient intervention to improve patient's knowledge and self-care behaviours. Written education materials have been developed in Scotland to standardise the information patients receive. Despite standardised written and verbal advice, many patients continue to develop preventable foot ulcers. This case study describes one such instance of self-induced diabetes foot ulceration secondary to the application of an over-the-counter corn remedy and considers whether poor health literacy contributed to this adverse outcome.**

In a recent editorial in this journal, Fox and Smith (2015) highlighted the lack of evidence and best practice guidelines regarding patient education for diabetes foot disease. In their 2014 Cochrane review, Dorresteijn et al (2014) concluded from 12 prospective randomised controlled trials (RCTs) that robust evidence is lacking for patient education in preventing both foot ulceration and amputation. While improvements have been demonstrated in patients' foot care knowledge (Rettig et al, 1986; Barth et al, 1991; Hämäläinen et al, 1997; Corbett, 2003; Frank, 2003) and self-reported self-care behaviours (Barth, 1991; Kruger and Guthrie, 1992; Hämäläinen et al, 1997; Corbett, 2003; Frank, 2003; Borges, 2004; Lincoln et al, 2008), positive effects are short-lived.

This case study describes an incident where patient education failed to prevent an avoidable foot ulcer in a patient with long-standing type-two diabetes mellitus and peripheral vascular disease. This case should reinforce the importance of regular, effective education for patients at high risk of foot ulceration. The role of poor health literacy is discussed and recommendations made for improving patient appreciation of foot health and self-care behaviours, including the application of the Single Item Literacy Screener (SILS) and 'teach-back' method.

## Patient history

This case study presents an active, 65-year-old male receiving foot care every 10 weeks at a community podiatry teaching clinic since 2012. The patient had been diagnosed with type 2 diabetes mellitus in 2000, was an ex-smoker, and his medications included aspirin, atenolol, atorvastatin, bendroflumethiazide, enalapril, exanotide and metformin. Blood tests revealed an HbA<sub>1c</sub> of 42mmol/mol and total cholesterol of 3.7mmol/mol. His blood pressure was found to be 145/73mm Hg. Pedal pulses were not palpable and the patient was insensate to a 10-g monofilament at all standard sites tested, representing high foot ulcer risk. The patient did not have a history of previous foot ulceration.

The patient received regular review by the vascular surgery team at a tertiary teaching hospital and had previously undergone left femoropopliteal bypass grafting in 2006 and a right iliac angioplasty in 2015. Verbal diabetes foot education had been delivered at each podiatry intervention with written high risk foot care advice issued annually in-line with Scottish national guidance (Scottish Diabetes Group — Foot Action Group, 2010). High-risk foot leaflets issued specifically advise against the use of over-the-counter corn remedies due to the possibility

of tissue destruction and ulceration, and to contact the local foot clinic should new lesions develop.

### Over-the-counter corn remedies

In addition to written advice in Scotland, over-the-counter corn remedies are also discouraged for people with diabetes by The Society of Chiropodists & Podiatrists (2016), Diabetes UK (2016) and the NHS Choices website (2016), and such products are clearly labelled as unsuitable for people with diabetes or reduced circulation. A wide range of over-the-counter corn remedies are available throughout the UK as liquids, gels or medicated pads or plasters to be directly applied to the lesion. Many such products contain the monohydroxybenzoic acid, salicylic acid, a powerful keratolytic. This keratolytic action is not self-limiting and, therefore, in the presence of peripheral neuropathy, may cause considerable damage to the keratotic lesion and surrounding skin without accompanying pain.

### Case history

On February 9, 2016, the patient attended a pre-scheduled appointment at a community podiatry teaching clinic. At this time, he reported a painful right fifth toe of several weeks duration. The pain had increased 3 days prior when his wife had applied an over-the-counter corn remedy to the area. The patient was advised that he had developed an ulcer over the lateral aspect of his right fifth distal interphalangeal joint (DIPJ) with mild surrounding cellulitis. Sharp wound debridement was contraindicated due to significant vascular disease and pain. The toe was dressed with a non-adherent pad and the patient was advised to wear an open-toed sandal to offload this area. The general practitioner was contacted and he was prescribed a short course of 500 mg flucloxacillin (four times a day) for local infection.

The patient returned to the clinic after 3 days, at which time, the surrounding cellulitis had reduced and the ulcer had become necrotic (*Figure 1*). Offloading was increased with a 7mm semi-compressed lateral shaft pad and a referral sent to the local multidisciplinary diabetes foot service for further assessment and management. Despite advice to the contrary, the patient remained very active throughout his ulcer management. Twice weekly podiatric care was shared by the community podiatry teaching clinic and multidisciplinary diabetes foot service.

Further vascular surgical input was also sought in order to explore further options for revascularisation and promote wound healing. The wound eventually healed on June 3, 2016, 115 days following initial presentation (*Figure 2*).

### Practical considerations

This case study describes self-induced ulceration in a patient who had multiple previous interactions with healthcare professional's prior to developing this ulcer. While verbal and written advice was routinely provided by podiatry students and the community podiatry team, the patient failed to adhere to this advice with potentially limb-threatening results.



*Figure 1. Neurovascular, necrotic ulcer over the lateral right 5th distal interphalangeal joint (DIPJ) with mild surrounding cellulitis.*



*Figure 2. Healed ulcer 115 days following initial presentation.*

## Page points

1. The 2009 Scottish Survey of Adult Literacies (SSAL) reported 26.7% of respondents occasionally struggle with literacy and numeracy and 3.6% are severely challenged.
2. One factor warranting further attention is the influence of health literacy on patients' appreciation of education dispensed.
3. The 'teach-back' method may be employed to assess a patient's appreciation of healthcare information.

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Dorresteijn J, Kriegsman D, Assendelft W, Valk G (2014) Patient education for preventing diabetic foot ulceration (review). *Cochrane Database of Systematic Reviews* 12: CD001488

Fox M and Smith L (2015) Communicating the risks to life and limb: what do we say and how do we say it? *Diabetic Foot Journal* 18: 162-63

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Hämäläinen H, Rönnemaa T, Toikka T, Liukkonen I (1998) Long-term effects of one year of intensified podiatric activities on foot-care knowledge and self-care habits in patients with diabetes. *The Diabetes Educator* 24:734-40

Health Literacy (2016) Why is health literacy important? Health Literacy, Stoke-on-Trent. Available at: <http://www.healthliteracy.org.uk> (accessed 27.02.2016)

Kruger S, Guthrie D (1992) Foot care: knowledge retention and self-care practices. *The Diabetes Educator* 18: 487-90

While the vascular team had promoted physical activity to promote collateral vessel development, advice regarding appropriate foot care is also likely to have been dispensed. This case study is presented in an effort to highlight the complexities of diabetes foot education and to promote a discussion of tools available to the practitioner to improve patient appreciation of self-care education and advice.

Current practice in Scotland is to reinforce foot care advice and appropriate self-care behaviours annually, and is supported by written materials and a web-based training programme. The Scottish Diabetes Group – Foot Action Group (SD-FAG, 2011), together with The University of Edinburgh, have developed Foot Risk Awareness and Management Education (FRAME) training to increase the effectiveness of diabetic foot screening throughout Scotland. This training details the correct technique for diabetes foot screening, however, perhaps further training is required with regards to how patient education is delivered.

By issuing a leaflet and discussing the contents with patients, many healthcare providers may feel they are imparting sufficient education and advice to promote appropriate self-care behaviours. Unfortunately, as this case study demonstrates, we may be failing to correctly determine whether our patients understand the advice issued. One factor warranting further attention is the influence of health literacy on patients' appreciation of education dispensed.

## Health literacy

Health literacy has been defined as “the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health choices” (Nielsen-Bohlman et al, 2004). A large sample of 1,927 Scottish people aged between 16 and 65 years undertook the 2009 Scottish Survey of Adult Literacies (SSAL, 2009). This survey reported 26.7% of respondents occasionally struggle with literacy and numeracy and 3.6% are severely challenged (St. Clair et al, 2010). Furthermore, the plain English summary of The Patient Rights (Scotland) Act 2011 states “people should be communicated with in a way that they can understand” (Scottish Government, 2011) and The Charter of Patient Rights and Responsibilities states care and treatment information should meet the needs of the individual (The Scottish Government, 2012).

The Scottish Government (2014) supports measures to promote health literacy through the document, *'Making It Easy: A Health Literacy Action Plan for Scotland'*. Several websites also provide healthcare professionals with helpful resources and advice concerning health literacy, including [www.healthliteracyplace.org.uk](http://www.healthliteracyplace.org.uk) (NHS Education for Scotland 2016) and [www.healthliteracy.org.uk](http://www.healthliteracy.org.uk) (Health Literacy, 2016). Additionally, the collaborative, pan-European project, Diabetes Literacy (2016), is currently developing literacy-appropriate diabetes self-management programmes (Saha et al, 2015).

## The single item literacy screener

In order to identify patients with low health literacy, Morris et al (2006) developed the Single Item Literacy Screener (SILS), which asks “how often do you need to have someone help when you read instructions, pamphlets, or other written material from your doctor or pharmacy?” Such a screening question may potentially identify patients whereby poor health literacy may reduce comprehension and adherence to advice provided and may prove beneficial at the beginning of a consultation.

## The 'teach-back' method

The 'teach-back' method may be employed to assess a patient's appreciation of healthcare information. When applying this method, the patient is asked to repeat the advice issued in their own words, in order to confirm their understanding (Scottish Health Council 2014). Rather than enquiring if the patient has understood the information presented, a question such as “can you tell me what you found most important?” should enable the practitioner to better assess patient appreciation (NHS Lothian 2011). By addressing low health literacy with our patients, a greater number of preventable foot ulcers may avoided should patients seek professional care in a timely manner as new lesions present.

## Conclusion

This case study has sought to highlight the potential pitfall of low health literacy in undermining healthcare professional's efforts to promote foot health education and positive self-care behaviours for patients at high risk of diabetes foot ulceration. One potential means of determining patient's health literacy status is by enlisting the SILS described by Morris et al (2006).

The “teach-back” method may also be employed in order to confirm patient appreciation of information discussed. As this case has demonstrated, poor health literacy may play an important role in diabetes foot education. By ensuring patients appreciate the importance of appropriate self-care behaviours, including not applying over-the-counter corn remedies and contacting their local foot clinic when new lesions present, limb-threatening ulceration may be avoided. ■

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