

# Patient education, self-care and medical grade honey — managing a diabetic ulcer



Authors:  
LC Nwabudike and E Maruhashi

The prevalence of diabetes is rising globally with increasing budgetary burdens from the disease and its complications. In resource-limited environments, affordable treatment strategies are urgently needed. Wound care utilises diverse modalities, such as hydrogel, polyurethane and alginate dressings, as well as silver-containing agents. Honey is a well established treatment and is cost-effective. In a resource-limited setting, the authors detail a case report whereby the use of an affordable, easy-to-use agent was used in conjunction with patient education and self-care, which resulted in rapid wound healing without side-effects.

**T**he global prevalence of diabetes is on the rise, with the International Diabetes Federation (IDF) estimating that 415 million adults are diagnosed, 193 million undiagnosed and a further 318 million have impaired glucose tolerance. In 2040, the IDF anticipates that 642 million people will be living with the disease, in addition to millions of deaths yearly (IDF, 2015). Complications arising from diabetes include cardiovascular disease, retinopathy, nephropathy and peripheral arterial disease and neuropathy (IDF, 2015; Laursen et al, 2017). The latter often involves lower-limb ulcers, which can be chronic and recalcitrant, especially when factors such as oedema, uncontrolled diabetes and old age are present.

In resource-poor environments, diabetic foot ulcers may fail to improve, due to inadequate care of both the ulcers and the accompanying comorbidities. This emphasises the necessity to apply simple and cost-effective wound care. Honey has been used since ancient times for medicinal purposes and is considered the oldest dressing material known to man (Yaghoobi et al, 2013; Saikaly and Khachemoune, 2017). Its multiple modes of action include promoting autolytic debridement, antibacterial action, creating a moist wound environment and providing micronutrients that may favour healing and stimulate epithelial migration (Eddy et al, 2008; Yaghoobi et al, 2013; Cooper, 2016; Saikaly and Khachemoune, 2017).

With the evolution of standard honey to medical grade honey, there is now awareness that not all honey is suitable for safe and effective wound healing. Honey may pose the risk of containing clostridial spores and other pathogens, in addition to antibiotics and pesticides. Gamma-sterilisation makes it suitable for wound care, while still preserving the desired biological activity (Postmes, 1993).

From a management perspective, there is a noticeable focus towards patient education, with evidence that it plays a pivotal role in disease progression and prevention. The literature outlines concepts like patient education, health education, self-management programmes and patient education assessments, with the common objective of providing the patient with knowledge of their own chronic disease and ways to improve their quality of life (Coppola et al, 2015; Sharoni et al, 2016; Hurley et al, 2017; Laursen et al, 2017; Vas et al, 2017).

Efforts towards such initiatives may also influence economic impact, with diabetes mellitus currently placing a significant burden on a country's healthcare sector. A study by Barshes et al (2017) suggested that spending could be cut through low-cost prevention efforts that target patients with diabetes in general, rather than solely focusing on moderate to high-risk individuals. A series of interviews conducted in a study by Carlton et al (2017) reflected this need, during which people with diabetes expressed concerns that included fear or anxiety regarding correctly

*LC Nwabudike is Senior Consultant in Dermatology, N. Paulescu Institute, Bucharest, Romania; E Maruhashi is Head of Research, Triticum, Maastricht, Netherlands*



*Figure 1a (above left) and 1b (above right). Initial presentation – L-shaped ulcer with granulating tissue and clear exudate, with slough.*



*Figure 2a (above left). Week 1 of treatment with honey preparation.  
Figure 2b (above right). Week 1 - Epithelialisation at the margins represented by dashed curves and islands of healing tissue enclosed by ellipses.*



*Figure 3. Full skin coverage at approximately 24 days.*

administering insulin. This appeared to be linked to a low level of understanding about how diabetes affects the body and anxiety towards possible future consequences. Additionally, individuals noted that self-managing was positively affected by the feeling of support provided not only by loved ones, but also from healthcare professionals (Carlton et al, 2017). These findings further propel the notion that education and low-cost prevention should be provided to a large population that includes not only higher-risk patients but also newly diagnosed and even undiagnosed at-risk patients.

Once education and confidence have been successfully instilled in a population that will require support for life, the crucial issue of compliance remains. There seems to be a sense of frustration among healthcare professionals in this sector anecdotally, with barriers including breakdown in communication, lack of easily available aid tools for staff and patients, as well as gaps in

the healthcare system itself (Price, 2016).

The case presented here exemplifies, in a simple form, a combination of some of the aforementioned points, such as the result of effective communication between physician and patient, self-management education and implementation of tools for home-care.

### Case presentation

An 85-year-old male presented with a 2-week history of right leg ulceration. The ulcer had occurred as a result of a fall. History included long-standing type 2 diabetes mellitus, renal impairment and ischaemic heart disease. His HbA<sub>1c</sub> was 5.6%. On examination, the patient had a large (approximately 20 x 12 cm), irregular L-shaped ulcer on his lower right anterior and lateral leg [Figures 1a and 1b], with a granulating base, copious clear exudate and some slough.

To minimise costs without compromising efficacy, the patient was treated with a honey gel preparation (L-Mesitran© Soft, Triticum)

composed of gamma-sterilised honey and other healing factors, such as antioxidants. The product was initially applied by the consulting physician and instructions for home use were provided to the patient, who performed treatment once daily.

By one week of treatment, the suppuration had stopped and healing began, as evidenced by epithelialisation at the margin and islands of healing tissue in the ulcer [Figures 2a and 2b]. Through weekly follow-up visits with the physician and home care, full skin coverage was achieved at about 24 days [Figure 3] of treatment and the patient was discharged.

## Discussion

Chronic ulcers are often difficult to treat and resource-demanding, especially when significant comorbidities such as diabetes, renal impairment and cardiac disease are present. Despite being affected by all of these, the patient still improved rapidly, without complications. The ease with which this honey treatment was used by the patient allowed for home treatment. This translated into financial savings in terms of hospital costs with outpatient care and transportation costs incurred by the patient.

Honey use has been successfully reported in various wound care scenarios from burns to surgical to malignant wounds (Kegels, 2011; Saikaly and Khachemoune, 2017). Diabetic ulcers have also been among wound types most commonly treated (Candeias and Cardoso, 2007; Mohamed et al, 2013). Honey speeds up healing by generating a moist wound environment, keeping the wound less inflamed, stimulating epithelial migration and preventing infection. It is worth noting that the product employed here consisted of a formulation containing vitamins C and E. These antioxidants have demonstrated efficacy in animal wound studies on parameters such as inflammatory reaction and healing rates (Lima et al, 2009; de Freitas et al, 2016). This supports the authors' rationale that success is not only attributed to honey itself, but also to a likely synergy with other constituents. This global mode of action coupled with ease of use makes the honey product a viable tool for home care.

It must be emphasised that success of this treatment depended on equal success of the patient-physician relationship. This approach is frequently used and documented (Nwabudike and Tatu, 2017) by one of the authors and appears to improve patient

compliance without reducing efficacy. Such a relationship may alleviate feelings of powerlessness that patients with diabetic foot ulcers experience, while potentially resulting in significant financial savings (UK Department of Health, 2010; de Jesus et al, 2014). As elucidated by Price (2016), there is patience to be practiced, since we must repeat often, amend often, change our communication strategies and be prepared to support patients throughout a lifetime of adaptations.

## Conclusion

Medical Grade Honey may be an affordable and efficacious option for treating patients with multiple comorbidities and leg ulcers, however, controlled studies are needed for further support.

WINT

*Declaration: Emi Maruhashi is employed by Triticum, Netherlands, as Head of Research. This did not interfere with any aspect of the present work.*

- Barshes NR, Saedi S, Wrobel J et al (2017) A model to estimate cost-savings in diabetic foot ulcer prevention efforts. *J Diabetes Complications* 31(4):700–7
- Candeias N, Cardoso M (2011) Management of a diabetic foot ulceration with honey. *Wounds UK* 7(3): 84–6
- Carlton J, Elliot J, Rowen D, et al (2017) Developing a questionnaire to determine the impact of self-management in diabetes: giving people with diabetes a voice. *Health Qual Life Outcomes* 15(1): 146
- Cooper R (2016) Honey for wound care in the 21st century. *J Wound Care* 25(9): 544–52
- Coppola A, Sasso L, Bagnasco A, et al (2015) The role of patient education in the prevention and management of type 2 diabetes: an overview. *Endocrine* 53(1):18–27
- de Freitas CL, Braga AF, Cherubini K et al (2016) Topical application of Aloe vera and vitamin E on induced ulcers on the tongue of rats subjected to radiation: clinical and histological evaluation. *Support Care Cancer* 24(6): 2557–64
- de Jesus MTP, Magela SG, Guimarães OD et al (2014) Feelings of powerlessness in patients with diabetic foot ulcers. *Wounds* 26(6): 172–7
- Eddy JJ, Gideonsen MD, Mack GP (2008) Practical considerations of using topical honey for neuropathic diabetic foot ulcers: a review. *WMJ* 107(4): 187–90
- Hurley L, O'Donnell M, O'Hara MC, et al (2017) Is diabetes self-management education still the Cinderella of diabetes care? *Patient Educ Couns* 100(10): 1957–60
- International Diabetes Federation (2015) *IDF Diabetes Atlas* (7th ed.). Available at: <http://bit.ly/1IXlqgK> (accessed 06.11.2017)

- Kegels F (2011) Clinical evaluation of honey-based products for lower extremity wounds in a home care setting. *Wounds UK* 7(2): 46–53
- Laursen DH, Christensen KB, Christensen U, Frølich A (2017) Assessment of short and long-term outcomes of diabetes patient education using the health education impact questionnaire (HeiQ). *BMC Res Notes* 10(1): 213
- Lima CC, Pereira AP, Silva JR, et al (2009) Ascorbic acid for the healing of skin wounds in rats (2009) *Braz J Biol* 69(4): 1195–201
- Mohamed H, El Lenjawi B, Salma MA, Abdi S (2013) Honey based therapy for the management of a recalcitrant diabetic foot ulcer. *J Tissue Viability* 23(1): 29–33
- Nwabudike LC, Tatu AL (2017) Magistral prescription with silver nitrate and Peru balsam in difficult-to-treat diabetic foot ulcers. *Am J Ther* doi: 10.1097/MJT.0000000000000622.
- Price P (2016) How can we improve adherence? *Diabetes Metab Res Rev* 32(Suppl 1): 201–5
- Postmes T, Van Den Bogaard AE, Hazen M (1993) Honey for wounds, ulcers, and skin graft preservation. *The Lancet* 341(8847): 756–7
- Saikaly SK, Khachemoune A (2017) Honey and wound healing: an update. *Am J Clin Dermatol* 18(2): 237–51
- Sharoni SKA, Minhat HS, Zulkefli NAM, Baharom A (2016) Health education programmes to improve foot self-care practices among older people with diabetes: a systematic review. *Int J Older People Nurs* 11(3): 214–39
- Vas A, Devi ES, Vidyasagar S, et al (2017) Effectiveness of self-management programmes in diabetes management: a systematic review. *Int J Nurs Pract* doi: 10.1111/ijn.12571
- Yaghoobi R, Kazerouni A, Kazerouni O (2013) Evidence for clinical use of honey in wound healing as an anti-bacterial, anti-inflammatory, anti-oxidant and anti-viral agent: A Review. *Jundishapur J Nat Pharm Prod* 8(3): 100–4
- UK Department of Health (2010) Impact assessment of health care patient prospectus. DOH, London. Available at: <http://bit.ly/2zgm2Dv> (accessed 06.11.2017)

## Writing for *Wounds International*

*Wounds International* welcomes a range of articles relating to the clinical, professional, and educational aspects of wound care. If you have written an article for publication or if you are interested in writing for us and would like to discuss an idea for an article, please contact:

Adam Bushby on 0207 960 9673 or email [abushby@omniamed.com](mailto:abushby@omniamed.com)

