The role of silver dressings: Findings of a Scottish technologies scoping report

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Diabetes UK (2012) reports that 2.9 million people in the UK have diabetes, with a further 850 000 yet to be diagnosed. Treatment of diabetes-related complications costs the NHS £3 billion per annum; £600 million of this is spent on treatment of diabetic foot ulceration and £252 million on diabetes-related amputation (NICE, 2011).

Despite the growing burden of diabetic foot disease, it has been shown that care of the diabetic foot undertaken by a multidisciplinary team can improve outcomes (Edmonds et al, 1986). Encouragingly, a recent cohort study undertaken in Scotland demonstrated a 30% reduction in lower-extremity amputation (LEA), despite a 12.8% increase in the diagnosis of diabetes (Kennon et al, 2012).

The most common pathway to LEA is uncontrolled infection (Lipsky et al, 2012). Thus, local and systemic management of infection in people with diabetic foot ulceration is of great importance. A range of wound dressings designed to address local bioburden are now available, a subset of which contain silver.

Topical silver has multiple antimicrobial actions on target cells and, therefore, a low risk of bacterial resistance (Percivel et al, 2005). When seen at all, silver resistance most commonly occurs in the field of burns care, where silver suphadiazine is widely used (Poon and Burd, 2004; Silver, 2003).

The cytotoxicity of silver, especially its impact on keratinocytes and fibroblasts, has been postulated to be the cause of delayed wound healing in some studies (Burd et al, 2007), while others report improved healing with silver dressings (Cutting et al, 2007).

Clinicians have been accused of "over-use" of sliver dressings in the management of chronic wounds (Moffatt, 2005), with some pointing to a lack of high-quality published evidence for their use and perceived high cost (Health Improvement Scotland, 2013). To assess the quantity and quality of evidence for use of silver dressings in the treatment of infected wounds, and for the prevention of wound infection, among adults – including diabetic foot ulceration – Health Improvement Scotland (2013) has published a scoping document.

The four key questions investigated are listed in *Box 1*. Key literature databases were searched for systematic reviews, evidence-based guidance, and clinical summaries – limited to items published since 2002 and written in English.

The report states: "Complete wound healing – presumed to be the most important outcome for patients – was not used as the end point in any of the included studies. It was often measured as an outcome, but follow-up periods were too short to observe complete wound healing in the majority of study participants." However, others would argue that study endpoints related to the control of wound bioburden are entirely appropriate for products designed to manage local infection, rather than heal wounds outright (Jude et al, 2007; Michaels et al, 2009).

Looking specifically at diabetic foot ulceration, the report cited a Cochrane systematic review (Bergin and Wraight, 2011) on silver-based wound dressings and topical agents for treating diabetic foot ulcers in which no randomised or controlled trials meet the inclusion criteria. This finding highlights the need for high-quality research in this area.

Following the release of the report, Healthcare Improvement Scotland and the Scottish Health Technology Group (2013) published *Advice Statement 001/13*, which concluded that there was insufficient evidence to demonstrate that silver dressings prevent wounds progressing to infection, and insufficient evidence that they increased healing rates, when compared to other dressings. No evidence was identified relating to the cost-

effectiveness of silver dressings and Healthcare Improvement Scotland and the Scottish Health Technology Group found that NHS Scotland health board expenditure data in primary care showed marked variation in spend with no clear rationale. The report also revealed that the cumulative NHS Scotland expenditure on silver dressings is £1.54 million per annum.

In the current financial climate, it is understandable that boards wish to reduce the costs associated with the use of silver dressings. The Health Improvement Scotland report recommends that boards undertake local audit in order to develop local protocols to ensure safe, appropriate use of silver dressings, and cites the 2012 Wounds International publication *Appropriate Use of Sliver Dressing in Wounds: An Expert Working Group Consensus*.

In conclusion, silver dressings have an important place in the management of diabetic foot ulceration, but must be used appropriately in the presence of critical colonisation or local infection, and discontinued when these signs resolve. Management of diabetic foot ulceration requires a planned approach, in which dressing selection must be the "right product, for the right wound, at the right time" (Timmons and Chadwick, 2010). ■

Box 1. The four key questions use of silver dressings investigated by Health Improvement Scotland (2013).

1. Are silver dressings clinically effective for the healing of infected wounds, compared with other types of dressing?
2. Are silver dressings clinically effective for the prevention of wound infection, compared with other types of dressing?
3. If clinical effectiveness is established in the healing of infected wounds, are silver dressings cost-effective, relative to other types of dressing?
4. If clinical effectiveness is established in the prevention of wound infection, are silver dressings cost-effective, relative to other types of dressing?

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