

## How to...

### Top tips on when to use silver dressings



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**S**ilver dressings play an important role in wound management; indeed, silver has been used in the management of infected wounds for hundreds of years (Lo et al, 2008). Over time, the use of silver has changed dramatically, from the original application of silver wires directly into the wound, to the current vast range of dressings, which are easy to use and provide a sustained release of silver over the treatment period (International Consensus Group, 2012).

As with any interventions employed in clinical practice, judicious use of silver is central to ensuring sustainability of these products. Thus, having an evidence base to support clinical decision making is central to the successful use of silver dressings (Clark and Price, 2005). Furthermore, in these times of economic constraints, cost-effectiveness is also a key issue (Phillips, 2005). Such concerns are not unique to the use of silver dressings, but, to provide clarity on these issues, an international consensus group produced a document covering the appropriate use of silver dressings (International Consensus Group, 2012). This document provides an evidence-based foundation, as well as guidance on the use of silver in the clinical setting.

The European Union (EU) report on the rising threat of antimicrobial resistance (Committee on the Environment, Public Health and Food Safety, 2012) stresses that, in order to maintain the efficiency of existing antimicrobials, these agents should only be used when strictly necessary, thus, alternate therapies are increasingly important.

Topical antiseptics, such as silver, differ from antibiotics in that they have multiple sites of antimicrobial action on cells and, therefore, lower the risk of bacterial resistance. As a result, antiseptics have the potential to play an important part in controlling bioburden in wounds, while limiting exposure to antibiotics, and thereby reducing the risk of developing further antibiotic resistance (International Consensus Group, 2012)

#### How does silver work?

Silver can be placed into three categories: inorganic, nanoparticles, or nanocrystalline. When exposed to wound fluid or moisture, silver is released in its ionic form (Ag<sup>+</sup>) (Canadian Agency for Drugs and Technologies in Health, 2010).

Silver ions are highly reactive and affect multiple sites within bacterial cells, ultimately causing cell death. They bind to bacterial cell membranes, causing disruption of the bacterial cell wall and cell leakage. Silver ions transported into the cell disrupt cell function by binding to proteins and interfering with energy production, enzyme function, and cell replication. Silver ions are active against a broad range of bacteria, fungi, and viruses, including many antibiotic-resistant bacteria, such as methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant *Enterococci* (International Consensus Group, 2012).

#### Types of silver dressing

A variety of silver dressings are available, including foams, hydrogels, alginates, hydrofiber, hydrocolloids, and polymeric films (Toy and Macera, 2011). These may be classed into four types: nanocrystalline silver dressings that release silver into the wound; dressings that release a silver compound, rather than silver ions; dressings that absorb wound fluid and bacteria into the dressing, where antibacterial action takes place; and dressings that release silver, while simultaneously absorbing wound fluid and bacteria (Drug Therapy Bulletin, 2010).

From a clinical perspective, having confidence in a product's ability to provide a sustained release of silver, at a therapeutic level, is integral (Parsons et al, 2005). However, it is accepted that not all products are the same, in terms of their composition and silver content. Furthermore, a greater amount of silver released by a dressing does not necessarily result in an enhanced antimicrobial activity (Parsons et al, 2005). This should be borne in mind by clinicians

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when selecting the most appropriate product for use.

**1 Adopt a systematic approach to the assessment of the individual with a wound:** Accurate and ongoing patient and wound assessment is essential to correctly identify the underlying aetiology of the wound and the potentially compounding patient factors that may delay healing (McCluskey and McCarthy, 2012). Once this is established, the plan of care may be developed, implemented, and subsequently evaluated. Use of a specific wound assessment model, such as TIME, is of value as it provides guidance on the specific areas to assess prior to planning a relevant management strategy (Dowsett and Newton, 2005). TIME addresses four components, namely: tissue management, infection/inflammation control, moisture balance, and edge of the wound advancement (Dowsett and Newton, 2005).

**2 Determine the need for a silver dressing:** Once an assessment has taken place, the need to use a silver dressing should be established. Silver dressings are specifically favoured to reduce bioburden in wounds that are infected or are being prevented from healing by microorganisms (International Consensus Group, 2012). They also act as an antimicrobial barrier for wounds at risk of infection or re-infection (International Consensus Group, 2012). Thus, when management of bioburden has been determined as the short-term goal of care, the use of a silver dressing may be appropriate.

**3 Familiarise yourself with the manufacturer's instructions for use of the silver dressing:** Competency in the selection and use of silver products is essential to ensuring safe use (McCluskey and McCarthy, 2012). Indeed, the EU Commission (2012) warns that compromising patient safety is costly, with between 13% and 16% of all hospital costs being attributable to healthcare-related injuries and ill health.

Not all silver dressings are the same, even though they may display similar physical characteristics, thus it is important to adhere to the manufacturer's instructions for how to use specific silver dressings (Parsons et al, 2005). These instructions will outline the indications and contraindications for the dressing, including specific guidance on how to use the product.

**4 Select a silver dressing to suit the size and shape of the wound:** It is essential that the dressing comes in contact with the entire wound surface to ensure that all aspects of the wound are exposed to the silver. Indeed, Bowler et al (2010) demonstrated *in vitro* that lack of conformability of the dressing results in reduced antimicrobial activity. Their study concluded that conformability and silver availability at the wound surface are crucial in maximising the functionality of the dressing.

It is relatively easy to apply dressings to wounds with a uniform shape; however, this task becomes more challenging in wounds that are deep or of irregular shape. The conformability of a silver dressing is, therefore, of importance for all wounds, including those with cavities or irregular contours (Bowler et al, 2010).

**5 Select a silver dressing that has appropriate fluid-handling properties:** It is common in wounds with bioburden to produce substantial amounts of wound fluid. Indeed, Cutting et al (2005) linked an increase in exudate with infection in a variety of wound types. The ability of the dressing to ensure that fluid is not left within pockets of the wound is important, as this increases the risk of further infection (Jones et al, 2004). Thus, the silver dressing selected must also have the ability to manage the specific level of exudate of the wound at hand to ensure moisture balance at the wound-dressing interface (Bowler et al, 2011).

Furthermore, good management of exudate is linked to patient comfort, which is a key consideration in wound management (Gorecki et al, 2009).

**6 Select a silver dressing that is appropriate for the wound tissue type:** In addition to dealing with bioburden, there may be other objectives of wound management that need to be considered. Once again, referring to the TIME model, tissue management is important (Dowsett and Newton, 2005). The presence of nonviable tissue in the wound bed is a focus for infection and also delays wound healing (Dowsett and Newton, 2005).

If surgical debridement is not an option, dressings that facilitate autolysis (the body's own ability to eliminate the dead tissue) should be considered. This is achieved by ensuring that a moist wound-dressing interface is maintained (Thomas, 1997). Thus, when infection and tissue management are

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the goals, the choice of silver dressing should facilitate this combined approach.

**7 Select a silver dressing that matches the frequency of dressing change:** For many people with wounds, daily dressing changes are not possible. Furthermore, such an approach often increases the discomfort of the patient and adds to the healthcare expenditure. Nonetheless, Bowler et al (2010) note the importance of continued antimicrobial activity of the dressing in order to ensure maximum control of bioburden. Thus, the sustained release of silver at therapeutic levels is necessary for the dressing to be effective (Leaper, 2006). When choosing a silver dressing, consideration should be given to the dressing change frequency and ability to achieve a sustained release of silver during use. This information will be available in the manufacturer's instructions for use of the specific dressing.

**8 Consider patient-related factors in the choice of silver dressing:** As with all treatment modalities, placing the patient at the centre of decision making is fundamental. Pain is often under-recognised by clinicians, yet is of major concern to the patient (Briggs and Closs, 2006). Walker et al (2011) found that pain and infection management are the most challenging for patients and clinicians alike. Therefore, it is important to consider specific factors, such as ease of application and removal, contribution to the pain experience, and overall acceptability to the patient, when choosing a silver dressing.

**9 Know how long to use the silver dressing for:** It has been recommended that antimicrobial dressings should be used for 2 weeks initially – seen as a 2-week "challenge" period – during which the efficacy of the silver dressing can be assessed (International Consensus Group, 2012). If, after 2 weeks, there is improvement in the wound, but there are continuing signs of infection, it may be clinically justifiable to continue use of the silver dressing with further regular reviews (International Consensus Group, 2012).

If the signs and symptoms of wound infection are no longer present, the silver dressing should be discontinued (International Consensus Group, 2012). If there is no improvement, the silver dressing should be discontinued and the treatment regimen reassessed (International Consensus Group, 2012). Once the bioburden is under control and the wound is improving, a traditional dressing should be used (International Consensus Group, 2012).

**10 Re-evaluate the patient and the wound to ensure that treatment goals remain consistent:**

As with all wound management strategies, it is important to regularly re-evaluate the patient and wound to determine the requirement for continuing with the current treatment plan (Gray et al, 2010). The TIME model is valuable at this juncture as it facilitates an assessment of whether there is improvement, or otherwise, in the wound (Dowsett and Newton, 2005). In order to provide a justification for decision making, use of a systematic approach to assessment and re-evaluation is essential. Thus, assessment planning, implementation, and evaluation is a cyclical process that should continue throughout the patient's care (Gray et al, 2010).

## CONCLUSION

Silver dressings play an integral role in the management of wound bioburden. A variety of silver dressings are currently available, thus it is important that clinicians using these products are aware of their indications and contraindications. A systematic assessment of the individual and their wound is central in the selection of an effective treatment strategy, including dressings.

The patient should be at the centre of care, and consideration of the impact of the wound and the chosen treatment strategies is closely aligned to quality of care. Not all silver products are the same, thus, having a clear understanding of the properties of the dressing and matching them to the needs of the wound and the patient is central to achieving success. Ongoing assessment and re-evaluation will provide guidance on the need to continue, alter, or discontinue the use of a silver dressing, thereby providing a clear rationale for treatment choices. ■

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