In the absence of slough, visible debris, devitalised tissue or infection in the wound bed, the practice of routinely cleansing a wound during dressing changes is largely ritualistic and may actually delay healing (Flanagan, 2013). Scrubbing or rigorously cleaning with gauze swabs a granulating wound bed may damage newly forming capillaries and disrupt fragile new tissue growth. The body may perceive this as a new injury and re-launch an inflammatory response, which will only delay the healing process. Cleansing wounds is, therefore, not recommended unless the wound shows signs of infection, presents with slough or is visibly contaminated with faecal material or debris. This article explains the circumstances in which it is appropriate to cleanse a wound, when it is appropriate to use tap water and when a sterile solution is recommended. It also discusses the re-emergence of antiseptic solutions – which are becoming more popular, particularly for infected or heavily contaminated wounds – and offers guidance on when to consider using them to cleanse wounds.

**Key points**

- Wounds are often cleansed without proper consideration of whether this is necessary
- Wound cleansing can interrupt the healing process by damaging new tissue or reducing the temperature of the wound bed
- Potable tap water is as safe and effective as normal saline for wound cleansing, although saline should be used on post-operative wounds
- Antiseptic solutions are increasingly used to cleanse wounds showing signs of critical colonisation and when the presence of a biofilm is suspected
- Visibly contain debris, such as grit picked up in a road accident (Wolcott and Fletcher, 2014; Flanagan, 2013).

**In this article...**

- Circumstances in which wound cleansing is appropriate
- How to select a wound cleansing solution
- When to use topical antiseptic solutions

**When is wound cleansing necessary and what solution should be used?**

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**Abstract** Routinely cleansing wounds at every dressing change can do more harm than good, as scrubbing the granulating wound bed with gauze swabs may disrupt fragile tissue growth and damage new capillaries. The body may perceive this as a new injury and re-launch an inflammatory response, which will only delay the healing process. Cleansing wounds is, therefore, not recommended unless the wound shows signs of infection, presents with slough or is visibly contaminated with faecal material or debris. This article explains the circumstances in which it is appropriate to cleanse a wound, when it is appropriate to use tap water and when a sterile solution is recommended. It also discusses the re-emergence of antiseptic solutions – which are becoming more popular, particularly for infected or heavily contaminated wounds – and offers guidance on when to consider using them to cleanse wounds.

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ensure the temperature of the solution used will not cool the wound unnecessarily.

**Normal saline or tap water?**

Traditionally, sterile normal saline (0.9%) has been used as the cleansing solution of choice due to its isotonic qualities, which mean it will not disrupt the normal healing process (Flanagan, 2013). However, a systematic review found no difference in infection rates in acute, surgical or chronic wounds cleansed with potable tap water compared with wounds cleansed with sterile normal saline (Fernandez and Griffiths, 2012); the authors concluded that potable tap water is a safe and effective alternative to sterile normal saline for wound cleansing. Despite this robust evidence, potable tap water is still not used universally in clinical practice, and decisions on whether to use it are often based on personal experience, personal preference, clinical setting and local protocol (Santos et al, 2016).

**Care setting**

Although the evidence indicates that tap water is a safe solution for wound cleansing – particularly for chronic wounds – health professionals need to be mindful of the setting in which they are working. In inpatient settings, swabs cultured in the laboratory have shown high numbers of bacteria growing in and around washbasins (Jeffries et al, 2012; Johnson et al, 2009; Trautmann et al, 2005). As such, although it may be convenient to use tap water in a patient’s home or at a GP surgery, in an acute hospital it may be preferable to use sachets of sterile water or normal saline. In the acute setting, if health professionals decide to use tap water to cleanse a wound, they should let the tap or shower head run for a few seconds before using the water so any impurities and bacteria are flushed away (Flanagan, 2013).

If a patient is at home with an open wound and cleansing is required, showering is the preferred method of irrigation – and it may also increase the patient’s sense of wellbeing (Fernandez and Griffiths, 2012). Patients whose wounds are located in the pelvic region – such as excised pilonidal sinuses or episiotomy wounds – are generally encouraged to shower daily and after every bowel movement (Harris et al, 2016); this is because the wound can be easily contaminated with faecal material.

**Cleansing surgical wounds**

The National Institute for Health and Care Excellence recommends that sterile normal saline is used for cleansing surgical wounds during the first 48 hours after surgery (NICE, 2013). Once the incision site has healed and the wound is no longer open, there should be no need to cleanse the wound.

Heal et al (2006) compared three groups of patients eight days after they had undergone surgery to investigate whether wound cleansing reduced infection rates. In the groups, patients’ wounds were:

- Kept completely dry;
- Cleansed using tap water only;
- Cleansed using a combination of tap water and shower gel.

No wound infection was found in any of the groups, and the authors concluded that most surgical wounds do not need routine cleansing. In 2015, a Cochrane review concurred with these findings; this led the researchers to recommend that dressings be removed 12 hours after surgery and patients encouraged to shower as normal (Toon et al, 2015).

However, there are occasions when it will be necessary to cleanse surgical wounds – for example, when there is evidence of excessive bleeding on the dressing. In that case, cleansing the wound may be necessary not only to avoid upsetting patients and/or their relatives, but also to better see the suture lines and establish the cause of bleeding (Peate and Glencross, 2015).

**Topical antimicrobials**

Topical antimicrobials are commonly used to reduce the number of bacteria in:

- Infected wounds;
- Wounds that may harbour a biofilm (a colony of multiple strains of bacteria that has a slimy protective layer around it and is resistant to systemic antibiotics);
- Wounds with excessive exudate, necrotic tissue or debris in the wound bed (Cutting et al, 2010).

Antimicrobial products can inhibit or eradicate micro-organisms and have broad-spectrum activity against the main bacteria and fungi found in wounds (Wolcott et al, 2008).

**Antimicrobial** is an umbrella term for a group of products, which have been outlined in Box 1.

**The case for using antiseptics**

Until recently, antiseptics were not recommended for routine use in wound care (Wounds UK, 2013). However, they are gradually becoming a popular addition to the wound care toolkit for managing wounds presenting with obvious signs of critical colonisation, including the presence of biofilm and excess exudate, necrotic tissue or debris (Cutting et al, 2010). This rise in popularity is due, in part, to the current drive to reduce the prescribing of...
systemic antibiotics due to concerns about drug resistance (Cooper and Kirketerp-Møller, 2018).

Chronic wounds are prone to developing a high bacterial load because they remain open for a long time. If the bacterial load is not reduced or managed effectively, bacteria will continue to reproduce rapidly. If this reaches a critical stage, the wound may progress to local infection (Cutting et al, 2010) or develop a biofilm (Rajpaul, 2015; Werthen et al, 2010).

Cutting et al (2010) argued that there is a case for using antiseptic cleansing solutions – particularly in critically colonised wounds – in the following instances:

- When a localised infection has already developed;
- In patients with a history of recurrent infection;
- When systemic antibiotics need to be given to halt spreading infection such as cellulitis.

Box 2 provides guidance on how to use antiseptic wound-cleansing solutions.

Choosing the right antiseptic solution

One antiseptic solution used for wound cleansing is polyhexanide and betaine (PHMB) (Braun et al, 2014; Fletcher and Bradbury, 2011). PHMB has been found to be less toxic and damaging to healthy cells than chlorhexidine and povidone iodine (Hübner and Kramer, 2010; Moore and Gray, 2007); it has also been shown to be effective in reducing the bacterial burden in wounds (Fletcher and Bradbury, 2011).

An alternative antiseptic solution commonly used nowadays for wound cleansing is octenidine dihydrochloride, which was introduced over 20 years ago as a decolonisation product (Greener, 2011; Siebert, 2010). Although this water-based solution is generally prescribed pre-operatively for the eradication of methicillin-resistant Staphylococcus aureus (MRSA) (NHS Choices, 2017), it has broad-spectrum properties. It has been found to be effective in debriding slough, as it maintains a moist environment, thereby facilitating autolysis, which disrupts biofilms and bacteria in the wound bed (Chamanga et al, 2015; Andriessen and Strohal, 2010).

However, octenidine dihydrochloride is not effective against viruses and spores. A solution of 0.01-0.2% PHMB is recommended for the treatment of critical colonisation or local wound infection (Lindholm, 2010) and PHMB 0.04% is recommended for heavily colonised and clinically infected wounds – the recommended contact time is 15 minutes for all strengths of solution (Andriessen and Strohal, 2010). Similarly, a 100g solution of octenidine dihydrochloride contains 0.19g of octenidine and the manufacturers recommend a minimum contact time of 1 minute (Bit.ly/octenidine).

Both antiseptics are available as irrigation solutions or gels and can be applied directly from the container onto a moistened wound (Fletcher and Bradbury, 2011). Alternatively, they can be applied with a soaked gauze pad (Fletcher and Bradbury, 2011); however, this needs to be done at least once a day and the gauze pad needs to be left on the wound for at least 15 minutes when using PHMB, which may not be possible in busy clinical environments (Fletcher and Bradbury, 2011; Andriessen and Strohal, 2010). If using a soaked gauze pad is a problem, it may be preferable to apply the antiseptic in gel form under a secondary dressing at every dressing change (Andriessen and Strohal, 2010).

Managing biofilms

Biofilms are 10 times more likely to form in chronic wounds than in acute ones (Perival and Suleman, 2015; Rajpaul, 2015; James et al, 2008; European Wound Management Association, 2005). Chronic wounds with high bacterial loads and biofilms may become difficult to heal (Greener, 2011).

The signs that a biofilm is present are very subtle and often invisible to the naked eye. As there are currently no diagnostic tools available to detect biofilms, their presence should be suspected in wounds that are not responding as well as anticipated. The signs suggesting the presence of a biofilm include:

- Delayed or stalled healing despite appropriate wound assessment and management;
- Persistent slough that returns rapidly after debridement (Cutting et al, 2010).

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This wound on an individual’s leg has become infected, as is evident by the presence of pus and inflammation.

Health professionals should be vigilant when managing wounds displaying any of these characteristics. If a biofilm is suspected, the application of an antiseptic solution may be appropriate. Frequent debridement combined with the use of an antiseptic cleansing solution has been found to be an effective management strategy for wounds with a biofilm (Wounds UK, 2013).

Conclusion

The decision whether or not to cleanse a wound depends on the type of wound and the condition of the wound bed. If a wound requires cleansing simply so the health professional can better see the wound bed or remove debris, potable tap water will be the most appropriate solution. However, if the health professional suspects that a biofilm may be present or if the wound appears to have a high bacterial load, the timely application of a topical antiseptic solution for a limited period may prevent the wound from developing an infection.

References

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For more on this topic online

● Diagnosing and managing infection in acute and chronic wounds
Bit.ly/NTInfectedWounds