Wound cleansing: is it necessary, or just a ritual?

In general, this article discusses wound cleansing of chronic wounds; however, some acute wounds may also require cleansing. Although there is no consensus and a lot of debate with regards to the differentiation between what constitutes a chronic or an acute wound, in general, wounds such as leg ulcers, pressure ulcers, diabetic foot ulcers and fungating wounds are classed as chronic wounds. In general, chronic wounds are contaminated, but not necessarily infected. They will take longer than 4 to 6 weeks to heal and the patient will usually present with underlying pathologies, such as age and illnesses that contribute to delayed healing.

Acute wounds, on the other hand, are wounds such as surgical wounds, traumatic wounds or burns that heal in a timely and orderly fashion (Fletcher, 2004).

Criticisms of cleansing
The term wound-bed preparation and the acronym ‘TIME’ (tissue, infection/inflammation, moisture, edge) are becoming common when discussing wound healing and the importance of preparing the wound bed for healing (Dowsett and Newton, 2005). Wound cleansing is a procedure that has been carried out in wound care for centuries and the aim of wound cleansing should be to establish an environment to promote healing (Horrocks, 2006). However, wound cleansing is one aspect of wound care that is often considered to be ritualistic, not evidence-based, and inconsistent (Young, 1995; Towler, 2001; Watret and Armitage, 2002; Magson-Roberts, 2006). Is wound bed preparation therefore about debridement, or is there a role for wound cleansing?

Debridement
Debridement is defined as the removal of devitalised (necrotic) tissue or contaminated tissue from the wound and the surrounding area until healthy tissue can be seen (Haemmerle et al, 2011). There are several methods of debridement, some of which require specialist skills.

Cutting (2010) offers two definitions of wound cleansing. The first is ‘the use of fluids to remove loosely adherent debris and necrotic tissue from the wound surface’. But he then goes on to explain that a Cochrane review (Fernandez et al, 2010) included studies that compared wound healing outcomes/infection rates, and explained that the definition presented by Rodeheaver and Ratliff (2007) may therefore be more appropriate. They defined wound cleansing as ‘remove surface contaminants, bacteria and remnants of previous dressings from the wound surface and its surrounding skin’ (Rodeheaver and Ratliff, 2007). This definition is supported by Principles of Best Practice: Wound Infection in Clinical Practice (MacGregor, 2008), which recommends that infected wounds should be cleansed at each dressing change, with the aim of removing debris and microorganisms. The definitions of wound cleansing suggest that there is a need to cleanse some wounds—but is it appropriate to clean all wounds?

To cleanse or not to cleanse?
According to Young (1995), routine wound cleansing can be considered to be outdated and ritualistic and cleaning all wounds is not necessary. It is always important when discussing wound cleansing to note that although wound cleansing is advantageous for some wounds (Box 1), other wounds...
Box 1. Indications for wound cleansing

- To remove contaminants at the wound bed
- To remove debris and foreign bodies following trauma
- To remove debris and microorganisms in infected wounds
- To remove superficial slough
- To remove dressing materials
- To remove crusting and hyperkeratosis from wound edges and surrounding skin
- To remove excess exudate and aid with malodour
- To aid with personal hygiene and patient comfort

From: Main, 2008.

Wound-cleansing solutions

Once it has been established that wound cleansing is necessary, the next step is to select an appropriate solution. Over time, a variety of solutions—ranging from seaweed to urine and hypochlorites—have been used to cleanse wounds (Watret and Armitage, 2002). However, Main (2008) explains that today cleansing solutions should:

- Be non-toxic to human tissue
- Reduce the number of microorganisms
- Not cause sensitivity reactions
- Remain effective in the presence of organic material
- Be widely available and cost-effective

Normal saline or tap water?

The most commonly used solutions today are normal saline and tap water. Water has been used for centuries to cleanse wounds with no detrimental effect and a good example is seen within our own homes, where wounds are often cleansed using tap water (Magson-Roberts, 2006).

Hundreds of patients in community clinics and leg clubs have their legs washed with tap water with no obvious increase in infection rates or any other adverse effect identified. Lindsay (2007) explains that washing the legs of patients with leg ulcers is therapeutic and soaking the leg in a bucket of warm water gives the patient a feeling of well-being. This is especially relevant in patients whose ulceration is being treated with compression and who have to keep the bandaging in place for up to 7 days (Watret and Armitage, 2002; Lindsay, 2007).

Nevertheless, Sibbald et al (2000), in discussing wound bed preparation, recommend that saline or sterile water are the agents of choice and that if tap water is to be used, it should be reliably clean before use; and they suggest it should not be used for immunosuppressed patients.

However, a recent Cochrane review (Fernandez et al, 2010) concluded that there is no evidence that using tap water as a cleanser increases infection; in fact, there was some evidence that it actually reduced infection. Tap water can therefore be considered appropriate for the care of some wounds, for example, soaking leg ulcers.

Antiseptic solutions

The use of antiseptics solutions for wound cleansing has been questioned and Main (2008) reported that antiseptics have been found to be detrimental to healing wounds. Sibbald et al (2000) also recommended the use of antiseptics, but only for non-healing wounds or where the local bacterial burden is of a greater concern than healing the wound. It is also argued that antiseptics are quickly denatured by contact with bodily fluids and toxic to healing tissue (Watret and Armitage, 2002).

However, infected wounds can be problematic and normal saline and water may not be appropriate for use especially where biofilms are present as they are known to be resistant to both irrigation and antibiotics. Biofilms are complex microbial communities that are embedded in a slime-like substance that is made up of an extracellular matrix of...
proteins, nucleic acids and polysaccharides and attached to a surface (Cutting, 2010). Dental plaque is an example of a biofilm (Horrocks, 2006).

**Wound irrigation solution and gel (Prontosan)**
Horrocks (2006) evaluated a wound irrigation solution and wound gel, Prontosan, which contains polyhexamethylene biguanide (PHMB) and the surfactant betaine and reported that, in a small study, seven out of 10 of the patients demonstrated a dramatic improvement in their wounds within a 3-week period.

Elimination of the biofilms resulted in the nursing staff reporting a reduction in the level of exudate. Horrocks (2006) concluded that Prontosan wound irrigation and gel appeared to offer a safe and cost-effective wound cleanser for wounds that contain biofilms. It was pain-free and reportedly improved patient quality of life (Horrocks, 2006; Cutting, 2010).

**Solution temperature**

It is evident that selecting the correct solution for wound cleansing is not straightforward and selecting the most appropriate solution is dependent on the findings of a holistic assessment and patient preference.

However, the temperature of the wound-cleansing solution is important. Studies suggest that wound temperature influences wound healing, with healing best at a body temperature between 36 and 38°C, with delayed healing demonstrated when the temperature falls below core body temperature or rises above 42°C. It is therefore important to ensure that any solution used is, where possible, warmed to body temperature.

Not using solutions at body temperature can result in it taking up to 40 minutes for the wound to return to normal temperature and up to 3 hours for mitotic cell division to recommence (McGuiness et al, 2004; Magson-Roberts, 2006).

**Wound-cleansing techniques and the role of the HCA and AP**
The role of the HCA and AP is dependent on local organisational protocols. However, every HCA and AP involved in wound care needs to be aware of the evidence-based recommendations pertaining to wound cleansing in all aspects of wound care. Even if the HCA or AP is not involved in the actual procedure of wound cleansing, he or she may be responsible for preparing the patient and wound for wound cleansing and dressing changes.

Having selected the appropriate solutions, there are several techniques available for cleansing the wound; however, like selecting the appropriate solution, selecting the most appropriate technique is mainly dependent on the findings of assessment, local protocol and patient choice (Watret and Armitage, 2002).

For example, for a patient with a leg ulcer, good hygiene can greatly improve quality of life. Immersing the limb in warm water assists in the removal of build-up of exudate and slough, while cleansing the affected area without damaging granulation or epithelialisng tissue. It also has the benefit of allowing the patient to wash the leg and foot and maintain personal hygiene (Watret and Armitage, 2002; Lindsay, 2007).

A patient with a pilonidal sinus or burns, for example, may find bathing or showering the method of choice. This method gives the patient the control and autonomy, where appropriate, to remove his or her own dressings—and it involves him or her directly in his or her own care. To prevent the risk of cross-contamination, it is important to follow infection-control policies with regards to using the appropriate equipment, for example, lining the bucket, and washing the

**Wound cleansing by autopilot is not a good practice. Only undertake it if there are clinical indications.**
bath, shower and equipment etc (Watret and Armitage, 2002).

**Swabbing**
Swabbing the wound using a gloved hand is preferred to using forceps. However, it is important to use non-woven gauze swabs, as gauze and cotton wool have been shown to shed fibres into the wound. Swabbing with a soaked non-woven gauze has been used to remove slough and loose necrotic tissue (Towler, 2001)—although swabbing clean granulating or epithelialising wounds can cause trauma to the wound.

Young (1995) suggests that swabbing is unlikely to damage slough and necrotic tissue and explains that it is the amount of pressure applied that is important, although measuring appropriate pressure is difficult. Today, a monofilament fibre debrider is available that is capable of removing slough gently without causing trauma or pain.

**Monofilament fibre debrider (Debrisoft)**
Debrisoft is described by its manufacturer as a fast-acting, highly efficient, active debridement system that can rapidly remove wound debris, necrotic material, slough, bacteria and exudate from the wound bed, as well as scaly hyperkeratotic tissue from surrounding skin.

Although it is referred to as a debrider, Debrisoft can also be used to cleanse wounds, for example, superficial slough and crusting (Figures 1 and 2 show pre- and post-cleansing) and hyperkeratosis from surrounding skin (Benbow, 2011b).

Debrisoft comprises a pad of 100% knitted mono-filament (single) polyester fibres, with the outer surface coated with polyacrylate, thus providing stability and preventing shedding of fibres.

Haemmerle et al (2011) explain that the debrider can be used like a gauze swab or any other cleansing materials; it can be used with a selected cleansing solution of choice, reducing pain and saving time.

**Irrigating**
Cleansing by irrigation is considered advantageous, in that there is no problem with shedding fibres into the wound; however, there has been a lot of debate with regards to the most appropriate equipment and amount of pressure required to effectively cleanse a wound without causing trauma (Towler, 2001).

Today, there are commercial products available including spray cans and pods that have been designed to deliver irrigation at the appropriate pressure without causing trauma. They also eliminate the need for supplementary equipment, such as syringes and forceps (Williams, 1999).

**Patient care**
Patients should be kept informed of any intended procedure: explain to them what you are going to do and gain their consent. Place them in a comfortable position and ensure they feel comfortable and not overexposed. Make sure everything is prepared before starting the procedure and ensure the solution is, where possible, at body temperature.

Some patients may be concerned that you are not going to wash the wound, as it has been deemed unnecessary and so will require an understanding by them of your rationale (Watret and Armitage, 2002).

At the end of the procedure, make sure the patient is comfortable. Dispose of any fluids and dispose of or clean any equipment used, as per local infection-control policies. Report any changes or concerns to the registered nurse.

**Conclusion**
Appropriate wound cleansing is an important component of wound-bed preparation. Wound cleansing is often seen as an unnecessary procedure that is ritualistic and not based on research evidence.

However, following a holistic assessment and providing that the most appropriate solution and wound cleansing technique have been selected, wound cleansing can be both appropriate and beneficial.

Depending on local organisational policies, HCA's and AP's may have a direct or indirect role to play in wound cleansing. In order to provide appropriate care without causing damage or delay to wound healing, HCA's and AP's need to have an understanding of the current evidence and the resources available.


Conclusion
Routine wound cleansing can be considered to be outdated and ritualistic
Cleansing can be detrimental and traumatising fragile new tissue
The most commonly used solutions today are normal saline and tap water
The use of antiseptics solutions for wound cleansing has been questioned
It is important to ensure that any solution used is where possible warmed to body temperature
The role of the HCA and AP is dependent on local organisational protocols

**Key Points**