Reviewing the evidence for selecting cleansing fluids for pressure ulcers

There is a lack of evidence to guide nurses on the selection of fluids for cleansing pressure ulcers

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ABSTRACT Moore, Z., Cowman, S. (2009) Reviewing the evidence for selecting cleansing fluids for pressure ulcers. Nursing Times; 105; 5, 22–23. Eighteen per cent of patients in hospital have a pressure ulcer. These are often difficult to manage and are associated with significant morbidity and mortality. Wound cleansing is a routine part of managing these wounds. This article summarises the challenges associated with pressure ulceration and reviews evidence to guide nurses in selecting wound-cleansing fluids.

Pressure ulcers are localised areas of tissue damage caused by excess pressure, shearing or friction forces. They occur in people who cannot reposition themselves to relieve pressure on their bony prominences. This ability is often diminished in people who are very old, malnourished or suffering from acute illness.

Pressure ulcer prevalence records the proportion of people with a pressure ulcer, in a healthcare setting, at a given point in time. These figures vary depending on the setting and the methods used to collect the data. For example, a prevalence of 12.5% has been found in acute care (Moore and Pitman, 2000) compared with 27% in long-stay settings (Capon et al, 2007), 4.4% in the community and 37% in palliative care (Kaltenthaler et al, 2001).

A pan-European study identified that 18% of patients in acute care settings have a pressure ulcer (European Pressure Ulcer Advisory Panel, 2002). In this study, only 4% of those at risk of pressure ulcers were receiving appropriate prevention.

Pressure ulcer incidence is concerned with the rate at which new pressure ulcers develop in a defined population in a specific time period. Reported incidence ranges are 2.2–66% in the UK, and 0–65.6% in the US and Canada (Kaltenthaler et al, 2001). There has been little change in prevalence and incidence figures for pressure ulcers over time. A review of data from a six-year national incidence study in the US found that the incidence was 8% in 1999 and 7% in 2004 (Whittington and Briones, 2004).

IMPACT OF PRESSURE ULCERS ON THE PATIENT

The presence of a pressure ulcer affects patients in many ways. For example, the wounds are painful (Hopkins et al, 2006) and malodorous, especially when there is a large amount of devitalised tissue and anaerobic bacteria in the wound bed. They can exude profusely, particularly during the early inflammatory phase (Iocono et al, 1998) and require frequent dressing changes.

The main findings from studies relating to quality of life demonstrate that pressure ulcers adversely affect patients’ quality of life from a physical, social and psychological perspective (Hopkins et al, 2006). Patients report negative experiences of treatments, including repositioning and equipment (Spilsbury et al, 2007; Hopkins et al, 2006). This is important as many patients with pressure ulcers may be unable to articulate how a treatment is affecting them.

Our understanding of the impact on quality of life provides valuable information to assist in caring for those with pressure ulcers.

MORTALITY AND PRESSURE ULCERS

Pressure ulcers contribute to increased mortality (Bo et al, 2003). One study identified that older patients with a pressure ulcer were three times more likely to die sooner than those without (Berlowitz and Wilking, 1990). In the community, Landi et al (2007) found that older people with pressure ulcers were more likely to die sooner than those without.

SOCIAL AND ECONOMIC IMPACT

Pressure ulcers are a significant financial burden on health services. Bennett et al (2004) suggest the annual cost of pressure ulcer management in the UK is £1.4–£2.1bn, 4% of total healthcare expenditure. Similar findings have been noted in the Netherlands (Haalboom, 2000), where pressure ulcers have been found to be the third most expensive condition. This is due to prolonged hospitalisation and the intensive nursing care required.

The length of hospital stay is estimated to be 2–3 times greater (30.4 days compared with 12.8) for those with a pressure ulcer than in typical cases without (Allman et al, 1999).

Although any individual of any age could develop a pressure ulcer, they are more common in certain patient groups such as...
older people. Furthermore, the majority of people with chronic wounds are nursed in the community or long-stay settings. Changing demographics and the rise in the number of older people in the future mean the number of people with pressure ulcers is set to increase.

MANAGEMENT OF PRESSURE ULCERS
The management of patients with pressure ulcers involves different interventions including nutritional care, pressure reducing/relieving surfaces, repositioning and skin and wound care.

To reduce patient distress, it is essential that the wounds are managed successfully (Spilsbury et al, 2007; Hopkins et al, 2006). Following assessment of both patient and wound, the goal of management is to create the optimum local wound environment for healing.

Selection of appropriate topical therapies is widely believed to contribute to healing. Available therapies include: wound debridement; physical therapies such as ultrasound and laser therapy (Baba-Akbari Sari et al, 2006); the application of dressings; and topical antimicrobial agents. However, there is little evidence to support the use of the therapies available.

ROLE OF WOUND CLEANSING
Wound cleansing is regarded as an important component of pressure ulcer care (Moore and Cowman, 2008). It is assumed that removal of dead tissue and foreign bodies is necessary, and this is usually undertaken before a dressing is applied.

Wound cleansing refers to the application of fluid to the ulcer to aid removal of exudate, debris and contaminants, but does not include the use of dressings or mechanical debridement.

Techniques used include high-pressure irrigation, swabbing, low-pressure irrigation, showering, bathing, washing the affected area under a running liquid or immersing it in a whirlpool bath, which is also known as hydrotherapy (Lindholm et al, 1999).

Different cleansing fluids are also used, for example normal saline, water and antiseptic solutions. Cleansing also involves use of equipment such as syringes, needles, catheters and pressurised canisters.

There is uncertainty about what constitutes best practice (Fernandez et al, 2004). Clinicians and manufacturers recommend different fluids and methods of application, which is confusing (Fernandez et al, 2004; Lindholm et al, 1999). Indeed, it is argued that wound-cleansing practice is often based on experience and ritual rather than the best available evidence (Joanna Briggs Institute, 2008; Moore and Cowman, 2008).

HOW TO CLEANSE A PRESSURE ULCER
The majority of pressure ulcers occur in people with impaired mobility and are located on the sacrum or the heels.

Since the majority of chronic wounds are managed in long-stay or community settings, the method used for cleansing must take into account its availability, accessibility and ease of use.

Only one study has looked at the effect of different wound-cleansing techniques on pressure ulcers (Burke et al, 1998). In this study, the authors wanted to explore the effect of whirlpool on the healing rates of grade 3 or grade 4 ulcers. Eighteen people with 42 ulcers were randomly allocated to the control group (non-whirlpool; n=18 ulcers) or to the intervention group (whirlpool; n=24 ulcers). Improvement in the condition of the ulcers was assessed by weekly measurements of their length and width. There was no statistically significant difference in healing rates between the two groups. The sample size in this study is small, so no firm conclusions can be drawn from it (Moore and Cowman, 2005).

There is a lack of trial evidence available to suggest which method is best (Moore and Cowman, 2005). Therefore, recommendations for practice are based on consensus. The effect of whirlpool is largely unknown (Moore and Cowman, 2005) and showering pressure ulcers should be undertaken with caution (Joanna Briggs Institute, 2008), so irrigation is the preferred technique (Joanna Briggs Institute, 2008).

WHICH FLUID SHOULD BE USED?
Two studies have compared the effect of different cleansing fluids on healing rates (Bellingeri et al, 2004; Griffiths et al, 2001). The first study enrolled 133 patients with pressure ulcers greater than grade 1 (Bellingeri et al, 2004). The pressure sore status tool (PSSST) was used as an outcome measure in this study (Bates-Jensen et al, 1992). The tool uses 13 items to assess ulcer condition. All items are scored with a Likert scale, so no firm conclusions can be drawn from it (Moore and Cowman, 2005). Therefore, there is little evidence to support the use of the therapies available.

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scale, giving a final value of between 13 and 65, with 13 indicating a healed ulcer (Bates-Jensen et al, 1992). The wounds in the control group (n=74) were cleansed with isotonic saline solution. In the experimental group, they (n=59) were cleansed with saline spray with aloe vera, silver chloride and decyl glucoside (Vulnopur). A statistically significant improvement was found in PSST scores for wounds cleansed with aloe vera, silver chloride and decyl glucoside compared with isotonic saline.

The second study (Griffiths et al, 2001) looked at 35 patients with 49 wounds, of which eight were pressure ulcers. There were six ulcers in the intervention group, which were cleansed with tap water. The control group consisted of two pressure ulcers, which were cleansed using saline. Three wounds cleansed with tap water healed in the six-week period, whereas none of those cleansed with saline had healed at six weeks. The sample size is too small to draw any conclusions.

Overall, there is little trial evidence to suggest which solution is best to use for cleansing pressure ulcers so, again, recommendations for practice are based on consensus. In the light of this, normal saline or potable tap water (water suitable for drinking) are recommended (Joanna Briggs Institute, 2008).

The CHALLENGES OF RESEARCH IN WOUND CARE

The randomised controlled trial (RCT) is considered the gold standard for evaluating the effect of interventions in clinical practice. However, rigid adherence to this standard has challenged wound researchers (Gottrup, 2006). Difficulties in achieving all the quality markers of the RCT, for example, adequate sample sizes (enough people in the study to detect a difference should one exist), and blinded outcome assessment (the person assessing the effects of the treatment does not know which group the patient is in), means wound care research often falls short of expectations (Clark and Price, 2005).

The very rigid sample selection in terms of the people included and excluded from studies often means that findings are not widely applicable in the clinical setting. It is argued therefore that other forms of evidence, such as cohort studies, may be just as valuable in answering the relevant clinical question (Gottrup, 2006).

CONCLUSION

There is little evidence available on wound cleansing for pressure ulcers. Only one study found a statistically significant difference in outcomes for wounds cleansed with saline spray containing aloe vera, silver chloride and decyl glucoside compared with isotonic saline solution. It appears there is no evidence supporting the use of a whirlpool or the use of water rather than saline for wound cleansing.

It is interesting that so little evidence is available when one considers that 18% of hospitalised patients have a pressure ulcer (Vanderwee et al, 2007) and that wound cleansing, among many other interventions such as repositioning and nutritional support, is a routine component of the management of these wounds.

Despite this lack of evidence, to reduce the distress for patients it is essential that pressure ulcers are managed successfully (Spilsbury et al, 2007; Hopkins et al, 2006). Following assessment of both the patient and the wound, the goal of management is to create the optimum local wound environment for healing. Clinical consensus suggests the appropriate method for cleansing is irrigation with saline or potable water (Joanna Briggs Institute, 2008).

Further research is needed and it is important that future studies are of sound methodological quality.

AREAS FOR RESEARCH

Because there is a lack of trial evidence, the following should be considered as future areas for research:

- Wound cleansing versus no wound cleansing
- Comparisons of different wound-cleansing fluids
- Comparisons of different wound-cleansing techniques

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