

Is it time to re-evaluate the preferred cleansing solution for use on chronic wounds?

A systematic review has looked at the effects of water as a wound cleanser (Fernandez et al, 2002). In a review incorporating six randomised controlled trials (1,864 subjects), no evidence was found for any differences in infection or healing rates as a result of using distilled, boiled, or tap water as a wound cleanser. A recently published study of chronic wound healing (Jones et al, 2007) has indicated that a commercial cleansing agent as opposed to water, saline, toxic agent or no cleanser was associated with faster healing. This apparent paradox requires resolution. How best can this be achieved? Is it necessary to revisit the data or would a consensus approach (Delphi method) be a pragmatic choice, bearing in mind that clinical practice will not be advanced by an established polarity of view? For the past 20 years evidence has indicated that tap water is a safe and cost-effective wound cleanser, yet now this position is being challenged. Admittedly the Jones et al (2007) study does not clarify which commercial cleansers were used but most clinicians involved in wound care acknowledge that when wound cleansing is indicated, water is usually the first choice. The evidence to support the use of water in the management of not only chronic wounds but also acute wounds focused on wound infection and wound healing rates and was generated over a 20-year period. Should the topic of wound cleansing solutions be revisited in an attempt to resolve this apparent conflict of information? (KC and RW)

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What are the authors' personal preferences in respect of wound cleansers and is the preference a result of subjective or objective evidence?

MLW: When selecting a wound cleansing agent I personally lean towards the use of warm tap water for chronic and acute wounds. This choice is based on personal experience and the limited available evidence which suggests that healing and infection rates are not compromised by the use of water. This decision is made within an acute trust where the quality of the water can be verified and information about each individual's co-morbidities, immune function, and extent and nature of the wound can be considered. In cases in which these factors are in issue, normal saline would be the cleanser of choice and is the most readily available within the trust.

ZM/SC: Our preference for a particular wound cleanser depends on the clinical setting. In the hospital environment, for example, we would routinely use normal saline, whereas in the community setting we would recommend, as far as possible, showering with warm water. In the wound clinic's ambulatory patient setting, we use a combination of saline or warm water, depending on the wound type (leg ulcer versus a pilonidal sinus) and whether the patient can shower before visiting the clinic. Our preference is based on subjective, rather than objective, evidence.

Do you regard either or both of these publications of sufficient validity to merit a change in practice?

MLW: The question of validity of a publication in relation to wound care is often 'the million dollar question'. Whether it is a randomised controlled trial or a multi-centred qualitative approach there are many variables that affect the outcome of wounds and wound care. The paper by Jones et al (2007) is a retrospective review of medical records that examines a variety of different factors that can effect wound healing. The discovery that the use of commercial cleanser was associated with faster healing seems to be purely coincidental and only within a very small percentage of the subjects. The paper itself recognises that chronic wounds are influenced by multiple factors and it is difficult to verify the independent effect of commercial cleansers from other side-effects within the study. Fernandez et al's paper is a systematic review of previously undertaken RCTs concerning the cleansing of chronic and acute wounds. The findings suggest support for the use of tap water in cleansing both types of wound but the limitations of the nine studies examined has to be considered.

The findings of these studies therefore would not affect any change in local practice.

ZM/SC: The cornerstone of evidence-based practice is the integration of high-quality evidence (where available) into clinical decision-making. The difficulty in attempting to achieve this goal is that each piece of research must be appraised critically in order to judge its relative merit and then placed in the context of the specific clinical setting. For any practising clinician this is a real challenge because of the

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time needed to make a thorough critical appraisal. More than 6,000 articles are published each day (Levin, 2001) thereby compounding this challenge. Therefore, healthcare professionals need help in ensuring that up-to-date information is readily available to guide decision-making. The Cochrane Collaboration aims to be the medium through which this information is made accessible.

The work of Fernandez et al (2002) has been conducted in a systematic manner, with each trial being subjected to the rigours of quality appraisal and methodological scrutiny. Therefore, we can be confident that this systematic review is of excellent quality. Fernandez et al conclude that they found 'no difference in the infection and healing rates between wounds that were not cleansed and those cleansed with tap water and other solutions'. This is based on a review of five trials and it is our job to assess whether the individuals in these trials and their wound types, match those commonly encountered in our clinical practice. Furthermore, concluding that there is no difference, does not mean that a difference does not, in fact, exist. We need to know more in terms of whether the studies were adequately designed to find a difference, should one actually exist. This is not the job of Fernandez et al; this is the job of the individual researchers. Fernandez et al report the findings of the review of the relevant trials.

The study of Jones et al (2007) is a descriptive, retrospective analysis of the content of the medical records of 347 patients. These patients had a wide variety of wounds, were cared for in a wide variety of clinical settings, by a large number of clinical staff. Furthermore, the

individual patients themselves presented with a large number of co-morbidities. Therefore, from the outset, we can see that they are not a homogenous group of people. This means that we cannot combine their wound outcomes and report this finding as a true representation of wound healing in the group. In addition, we cannot take any one individual factor — such as the use of commercial cleansers — and suggest that this had a definitive influence on wound healing. We are lacking too much information needed to be confident in this conclusion. For example, what was the solution? How was it applied? How often? For how long? Was it warmed or applied cold? Which specific wounds? Who were the patients? What co-morbidities did they present with? What was the sample size and how was this calculated?

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Given the light of the evidence provided by Fernandez et al (2002) — could cost and convenience be the drivers in the absence of any other compelling safety issues?

MLW: In the current financial climate, cost and convenience obviously affect the choices of the individual practitioner. Within the community setting tap water has been commonly used for wound cleansing as it is easily accessible, efficient and cost-effective. As far as I am aware there have been no detrimental effects to individual clients due to this choice but the water supply in the individual home

should be considered. In cases where water tanks are still in use there may be a possible risk of *Pseudomonas* colonisation.

The availability of various wound cleansers within the acute setting has encouraged the use of sterile solutions to cleanse wounds when it is not always necessary to do so. If a wound is inappropriately cleaned, new granulation may be removed and healing delayed. The cost of a prolonged hospital admission is then added to the personal cost to the individual and the initial cost of the cleansing solution.

ZM/SC: Cost is always an issue in clinical practice, therefore, if all other aspects of the available products are equal, the most cost-effective alternative would be a driving force in the selection of a cleansing agent. On the other hand, ease of use and convenience are practical issues and ones which can influence the choice of treatment. Therefore, cost and convenience could be the drivers, but the clinical situation, for example home care *versus* hospital care, intensive care *versus* ambulatory care or self care *versus* professional care, will also have an impact on the choice of wound cleanser. At present we do not have adequate evidence upon which to base our judgement so cost and convenience remain the only other determining factors.

How do you interpret the discrepancy between the two authoritative reports?

MLW: The discrepancy requires further investigation as the Jones (2007) study examines chronic wounds and the many different variables that affect them. The study by Fernandez (2002)

specifically looks at cleansing agents, techniques, and the interaction of these in chronic and acute wounds. As one study is a retrospective review of notes and the other a review of RCTs they are both very different types of study and I feel they are not therefore comparable. As a result, there may be very little valuable evidence that can be taken from the studies, especially in the case of the individual practitioner who requires evidence to support practice.

ZM/SC: The discrepancy between the two reports is that they are, methodologically, two entirely different pieces of work. Fernandez et al's study is a systematic review of clinical trials, whereas Jones et al's article is a descriptive retrospective chart review. This is really important to clarify, as one cannot have confidence in a study that lacks sound methodological quality. Having only some of the information will result in biased interpretation of the strength, or direction, of the evidence base. This in turn may lead to inappropriate clinical decisions. On completion of a research project, the author's job is to discuss their findings within the context of the underlying literature. In doing this each researcher identifies the contribution of their research project to the body of knowledge. What Fernandez et al aimed to do was to summarise what is known and not known about the use of water for wound cleansing. In doing so they aimed also to provide some guidance for practice. Jones et al describe for us the current practices in wound care in a specific cohort of patients. In doing so, we are enlightened as to how wound care is conducted, but beyond this we cannot make any specific inferences.

Interestingly, there is a further Cochrane review by Moore and Cowman (2005) looking at wound cleansing for pressure ulcers. It concludes that there is no good evidence that cleansing pressure ulcers, or cleansing with a particular solution, helps healing. Indeed, very little research has studied the cleansing of pressure ulcers and therefore they were unable to draw any firm conclusions. Thus, it seems that wound cleansing, though conducted on a daily basis, is not as simple as once thought.

If one accepts that the discrepancy can be confusing for clinical practice development, how can the paradox be resolved?

MLW: The discrepancy may only be resolved by the undertaking of further research that includes factors such as the effectiveness of specific cleansing solutions on specific wounds and the comparison between cleansing and no cleansing. A two or three-armed RCT would be a method of undertaking this but these are time-consuming and require ethical approval. Audit would be a more practical alternative that is generally encouraged by individual trusts and driven by government directives.

To resolve the discrepancy in immediate terms I would suggest that choice of cleansing solution should reflect the individual requirements of the wound and the patient, and be underpinned by a sound knowledge/experience base. The question that I would have to pose at this point of assessment is 'Is it really necessary to cleanse at all?'

ZM/SC: We feel strongly that individual practitioners should be

enabled to confidently practice in the knowledge that their practice is based on the best available evidence. It is too much of a burden for individuals to make decisions based on what is published in the literature, as there is much more involved than just reiterating what has been read in one article. As we have seen, there is an abundance of literature published each day. It is a real challenge to develop rigorous guidelines as these should be based on a systematic review of the literature and many practitioners do not have the time or the skills to undertake such a review.

What is lacking here is a large, adequately powered, randomised controlled, clinical trial which aims to explore the most appropriate method of wound cleansing. This is the gold standard in clinical trials and it is important that we strive to achieve this standard wherever possible. In the absence of this, we need to know what is already known and not known about wound cleansing. Armed with this information it would be then possible to conduct a Delphi study to gain consensus on how best to approach wound cleansing within the clinical setting. **WUK**

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