

## Ten top tips: myth-busting wound care



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As long as people have had wounds, there have been theories about the best ways to help them heal. These ways have resulted in adages, wives' tales, mother-knows-best and other theories of how to manage and promote healing, however, some of which have stood the test of time and are supported by research. Some have been abandoned due to better evidence emerging, others have been lost to better products, while others have been deserted due to a better understanding of human anatomy and physiology. While it would be wonderful to say that all clinicians are practicing with the most up-to-date science, we know that is not true. This article is going to discuss 10 of the biggest myths in wound care that have perpetuated, despite significant improvements in current science and research to disprove their effectiveness.

**1 Myth 1: All wounds should be cleansed with normal saline:** The practice of wound cleansing has made substantial improvements over the past 10 years. The purpose of wound cleansing is to use enough pressure, fluid and chemicals to remove the microscopic biofilm and other debris on the surface of the wound. Normal saline has been the most common solution used due to its lack of harm to the wound bed cells. However, normal saline does not contain any properties to reduce the bioburden within the wound bed. When the volume and pressure of saline is low, there is also no force to remove debris from the wound. Unfortunately, clinicians still use saline pink 'bullets' for wound cleansing. The pink container of normal saline is used for nebuliser treatments and does not contain any antimicrobial chemicals, nor enough pressure or volume to effectively cleanse a wound. Pressurised saline works to clean a wound, but again, there is no antimicrobial function in saline.

The use of hypochlorous acid (HOCl) as a wound cleanser appeared in the 2019 pressure injury prevention and treatment guidelines (European Pressure Ulcer Advisory Panel et al, 2019). HOCl is gaining in use by clinicians because it has been shown to be an effective agent in reducing wound bacterial counts in open wounds. HOCl has also been shown to retard biofilm formation. In a study comparing wound irrigation with saline versus HOCl using an ultrasonic system in adults with full-thickness

wounds (Hiebert et al, 2016), bacterial counts were lowered by 4 to 6 logs initially. By the time of definitive wound closure a week later, the bacterial counts were back up to 10<sup>5</sup> logs for the saline solution-irrigated control wounds but remained at 10<sup>2</sup> logs or lower for the HOCl-irrigated wounds. Postoperative closure failure occurred in more than 80% of patients in the saline solution group versus 25% of those in the HOCl group.

Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) is a chemical designed for bleaching, oxidising and as an antiseptic, but only when diluted in water. While many a parent has used hydrogen peroxide to clean dirty scrapes and cuts from outside, there is no indication to continue using it once the wound has been cleaned. In fact, the aggressive chemical destroys all tissues, both malicious and beneficial, and will never allow any wound to heal. The authors only have hydrogen peroxide to induce vomiting in a dog who has consumed a toxic substance (Khan et al, 2012).

**2 Myth 2: All wounds need 'fresh air' to dry out:** Wounds do not need fresh air and fresh air can, in fact, expose the wound to environmental contaminants. At times, when wounds have large volumes of exudate, drying the wound seems to make sense. But the exudate should be absorbed by dressings and the reason for all the drainage should be addressed. A common reason for excess exudate is inflammation from biofilm, edema, or pressure on the wound. Additionally, wounds that are exposed to air dry out have impaired formation of granulation tissue and epithelialisation. Granulation tissue is capillary beds, fibrin and collagen, which requires a moist, but not wet, environment.

**3 Myth 3: Every wound can benefit from a hydrocolloid dressing:** Next to gauze and bedlinens, hydrocolloid dressings are one of the oldest wound care products. They were introduced for the attachment of the ostomy appliance; therefore, initially designed to be placed on intact skin. They were also designed to be very adherent. Hydrocolloids were moved into wound care decades ago and can be used today on a clean, healing, shallow wound. The dressing is created to be removed every 3–7 days, so they cannot be placed on a high-risk wound with odour or necrotic

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tissue or on a body part at risk of worsening infection, such as sacrococcygeal or buttock wounds. Sometimes, these dressing are used to promote autolytic debridement, but they must be used cautiously even in those situations, because the patient may not have enough immune function to clean up the wound.

**4 Myth 4: Enzymatic debridement can be used until the wound is healed:** Collagenase (Santyl™, Smith & Nephew) was shown to be the preferred method of enzymatic debridement in the early 1990s. Collagenase, as its name implies, breaks down denatured collagen in necrotic tissue in the wound bed. Collagenase should not be used in acutely infected wounds because the pH of the wound becomes more alkalotic, reducing the effectiveness of the enzymatic debridement. So, writing wound care orders such as “Collagenase every 3 days until healed” is wrong because the wound won’t ever heal if it is continuously debrided! Other issues with this order: 1) enzymatic debridement is used for the removal of necrotic tissue only; 2) Santyl needs to be applied more often than every 3 days; and (3) a wound with necrosis needs to be assessed more often than every 3 days. This type of topical treatment is only appropriate when needing to debride slough from the bed.

**5 Myth 5: Wet to dry dressings are cost effective because they just use gauze dressings:** Wet to dry dressings are a form of non-selective mechanical debridement. All that is commonly needed is gauze dressings, a gauze wrap, pain medication and a person to change the dressings. Sometimes they are changed several times a day, each dressing change taking about 15 minutes. If a nurse is paid US\$50/hour to work and the dressing is changed 4 times a day, this dressing is costing at least US\$50 per day. Wet to dry dressings remove necrotic tissue and healing cells, sometimes leading to bleeding, always leading to pain. They have been out of favour for many years, in favour of absorptive foam and enzymatic debridement.

**6 Myth 6: Antibiotics are needed to promote healing:** Acute wounds, such as lacerations or incisions, prompt a well-orchestrated immune response designed to remove foreign material and bacteria. Coagulation to stop bleeding starts the healing process. But what about chronic wounds? Chronic wounds are chronic due to persistent inflammation often triggered by a biofilm built by the bacteria. But neither topical nor systemic antibiotics will reach that biofilm. Follow your

‘antibiotic stewardship’ process and save those antibiotics for sepsis. Bacteria are getting more resistant to antibiotics and indiscriminate use promotes more resistance. In addition, the side-effect profile, and complications of antibiotics (*Clostridium difficile*, renal impairment etc) can actually do more harm to the patient.

**7 Myth 7: Soaking your feet and legs helps the wound heal:** Soaking the body allows the fluid to be absorbed by the keratinocytes. Sometimes, that water can be trapped against the skin to help hydrate it. Excess water leads to boggy skin. If the fluid is Epsom salt, which is magnesium and sulfate, while actual benefit of Epsom salt soaks has not proven, there is no reason to think that these electrolytes would not enter the skin. Soaking other wounds can increase risk of infection. If the patient has a pelvic wound and soaks in a bath the bacteria from the bowel enter the water and contaminate the open wound.

**8 Myth 8: The deeper the wound, the more pain:** Years ago, a surgeon told me that his orders for narcotics were based on “how far I went into the body during the operation” — true story. This decision making certainly stumbles when burns are factored into the story. The outermost layer of skin has the most nerve endings per square inch of body. Exposed nerve endings trigger substance P(undecapeptide) to be produced and alert the brain of pain. Deeper organs, such as visceral organs, have minimal nerve endings that sense pain. These organs respond to pressure and ischaemia with pain. The presentation of visceral pain is diffuse. Chest pain can be caused by over 15 different disease processes, but the mind can quickly pinpoint the papercut exposed to hand sanitiser. However, pain is what the patient says it is, and the mind interprets visceral pain differently than dermal pain. Visceral pain is much more difficult to treat because of its many causes so it can appear the patient has more pain with a deep wound than with a partial or shallow wound.

**9 Myth 9: Wound care providers heal wounds:** This adage comes with the idea that topical dressings and ointments make wounds heal. However, it has long been known that the body needs three things to heal a wound: adequate nutrition, perfusion and the appropriate environment for the wound. The science of wound healing rests on these aspects. Nutrition contains the subsections of caloric intake, vitamins and minerals, protein and metabolism. Perfusion includes diabetes management, proper blood flow and venous return and, at times, the removal

of pressure to reduce ischaemia. The appropriate environment includes the health of the wound bed, removal of necrotic tissue if appropriate, removal of infection and the appropriate topical dressing to facilitate an ideal healing environment. The human body is designed to want itself fixed and homeostatic. Wound healing is within that realm of fixed and homeostatic. The role of the wound care provider is to identify what is lacking in those three categories, and their subcategories, to optimise the body to heal. While there are thousands of products on the market for promoting wound healing, without the body's own mechanisms at work, the wound will never heal.

**10 Myth 10: Time heals all wounds:** This adage probably came from many mothers over the course of time as they tried to help their love-sick teenagers get over heartbreak. All wounds need the same three things to heal: nutrition, perfusion and environment. None of those elements require time. While different wounds take different amounts of time to heal, not all wounds heal; indeed, some people die with wounds that never healed. If the body is not optimised to heal, the time it takes will be prolonged. The healing process cannot begin until

the body is optimised to heal. If the optimisation occurs and continues, the body will do its best to heal the wound but may ultimately risk itself to another wound or other harm in the process.

## Conclusion

Perhaps you recognised an old method described here that you have used for wound healing, that have been debunked as a myth. There have been many significant advances in wound care over recent years. If you recognise a practice you still follow in these myths, please re-examine the evidence behind your practice. **WINT**

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