



Wound Care Benefit of Instillation Therapy

What is installation therapy?

Over the past decade the concept of proper wound bed preparation as a means to improve wound healing has gained increasing attention. The principles of wound bed preparation include proper wound debridement, managing wound exudates, and managing bioburden. Proper wound bed preparation creates an optimal wound healing environment; the presence of necrotic tissue or eschar is known to impede healing. Likewise, the presence of abnormally high levels of bacteria may also impede healing. These impediments to wound healing may in part be removed by practices such as wound irrigation.

Cleansing the wound by using an irrigant to remove loosely attached bacteria and cellular or other debris may decrease wound complications thereby allowing the wound to heal in a timely fashion. Typically wound irrigation is conducted at moderate pressures (less than 103.4 kPa) using an irrigant that does not cause trauma to the surrounding tissue.

Typical devices used to deliver irrigants to wounds include spray bottles, syringes, squeeze bottles and pulsatile lavage devices. All these types of approaches to fall under the category of instillation therapy.

Advances in instillation therapy

The clinical application of instillation therapy for treating wounds was first described by Fleischmann et al in 1998. Since then, several clinical articles have described various applications of instillation therapy, most of which address the treatment of wound infections. For example, Gabriel et al reported the use of instillation therapy for treating soft tissue infection. They showed that instill-

ing silver nitrate was effective at reducing bioburden, time to wound closure, and time to hospital discharge. Others have followed with similar clinical results. Schintler et al and Timmers et al showed that instilling polyhexanide solution was effective at treating soft tissue necrotising fasciitis and osteomyelitis.

Risk of cross-contamination from splatter

Even though the utility of wound irrigation for infected wounds is an accepted practice, cross-contamination from the splatter, which may be caused during the instillation process, is a safety concern to both the patient and the clinician. In a recent study, Angobaldo et al showed that bacteria from pulsatile lavage treated wounds could be captured a meter away from the wound. The spread of organisms and especially resistant organisms in the hospital environment is a growing concern. Studies have demonstrated that methicillin-resistant *Staphylococcus aureus* or vancomycin-resistant enterococci can be detected on the protective gowns and gloves of up to 67% of health-care workers tested.

With the increasing prevalence of antibiotic-resistant organisms and nosocomial infections it is important that techniques be used to prevent the spread and possible cross-contamination of infection. This is especially true with any type of instillation therapy where outbreaks of infection have been traced back to facility contamination caused by the therapy itself. It is likely that such outbreaks could be prevented by better containment of splatter during the instillation procedure.

Clinical benefits

In addition to the treatment of infection, there are a number of other potential uses for instillation therapy. The medi-

cal and scientific community recognises additional clinical benefits for instillation therapy. Nagai et al reported that instilling the protein sericin has a potent effect on wound healing and corneal epithelialisation in a rodent model. Jerome suggested using instillation therapy to provide pain management during and after dressing changes.

The addition and removal of a liquid solution from a wound bed may have other clinical benefits. Instilling a wound with lactated Ringer's solution or saline may dilute the bioburden and prevent potential clinical infections. At the same time instillation therapy with saline may help remove necrotic tissues and reduce the level of pro-inflammatory mediators, leading to a shift toward the proliferative phase of healing.

Reducing the amount of early inflammation may also lead to better tissue remodeling and tissue quality. Recently Acosta et al postulated that chronic and hyper-inflammation is detrimental to the repair of diabetic foot wounds. They highlighted the need for smart prophylactic interventions to reduce chronic inflammation. Instillation therapy may address this clinical need for a therapeutic intervention.

Historically there have been few product options to help clinicians easily deliver instillation therapy. Furthermore current saline lavage treatments can lead to the inadvertent spread of microbial cross-contaminations and increase the risks of nosocomial infections. With an appropriate instillation therapy system (therapy unit and dressings), clinicians can more safely use these tools while minimising the risk of inappropriate microbial transmissions thus leading to better treatment and healing of difficult wounds.

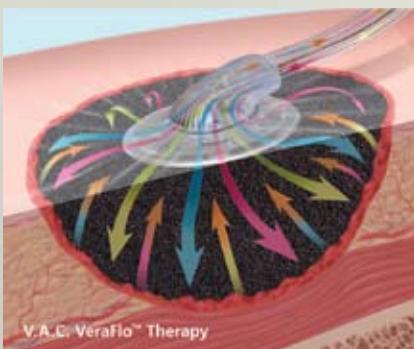
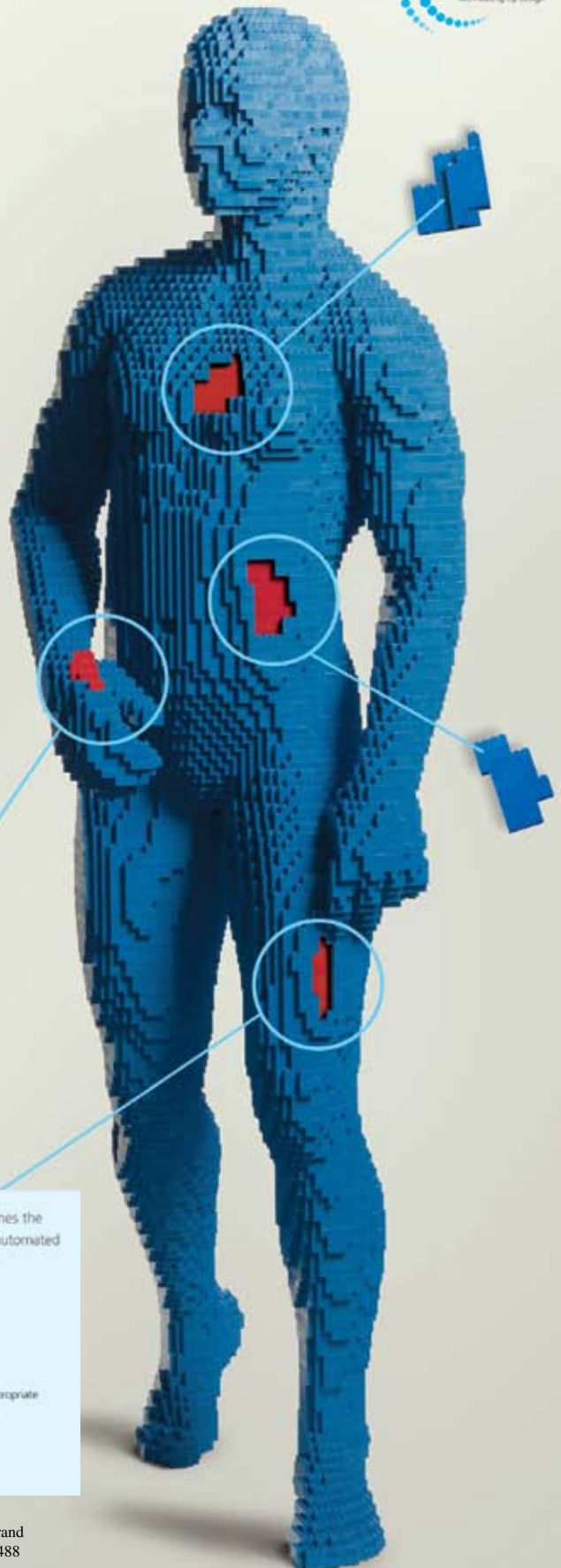
Reference: McNulty AK, Nguyen K. What is the benefit of instillation therapy? Int J Lower Extremity Wounds 2010;9(2):68.

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