

The art and science of selecting appropriate dressings for acute open wounds in general practice



CPD 

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Background

Acute open wounds constitute a significant part of general practice. With an expanding global market of dressing products, selection of wound dressings remains an area of concern among doctors entering general practice.

Objective

The aim of this article is to describe a practical guide for choosing appropriate dressings when treating acute open wounds in general practice.

Discussion

Although dressing is an essential element of standard wound care, it is important to remember that dressing alone does not heal the wound. Judicious selection of dressings based on wound characteristics, physical properties of dressings and their costs, shelf life and availability are important for delivering appropriate care towards timely healing of acute wounds.

A SUPERFICIAL OPEN WOUND with loss of epithelial lining is described as an ulcer. However, the words ‘open wound’ and ‘ulcer’ are often used interchangeably. In this article, an acute wound/ulcer is defined as an injury to the skin that occurs suddenly following an accident or surgical injury and is expected to heal through an orderly and timely reparative process.^{1,2}

Patients with acute wounds of the skin (eg minor cuts, lacerations, puncture wounds, skin tears, animal bites, small burns) constitute a significant proportion of patients who present to general practice. Patients with diabetes may present with small and minor skin breakdowns, as these minor wounds have the potential to become serious and require attention to address systemic issues as well. The appropriate treatment of acute wounds involves avoiding deterrents to normal healing and preventing complications that may lead to conversion to a chronic wound,² which is a major burden on the healthcare system. In Australia, the estimated annual cost was \$3 billion in 2014.³

Teaching of wound care, including selection of wound dressings, as part of the undergraduate medical curriculum occurs in some medical schools⁴ and remains an area of concern among doctors entering general practice.⁵ The focus of this article is to provide a practical

overview for general practitioners (GPs) when choosing an appropriate dressing for acute open wounds, with the assumption that holistic assessment of the patient and the wound, and other important aspects of treatment (eg tetanus prophylaxis, need for antibiotics, wound cleansing and debridement),^{6,7} have been addressed.

Dressings for puncture wounds/needlestick injuries and animal/human bites are not included here because of their complex management, often requiring non-GP specialist consultation and care. Descriptions of dressings for post-surgical wounds⁶ and minor burns in general practice⁸ are available in earlier issues of *Australian Journal of General Practice* and *Australian Family Physician*.

Wound dressings

Although dressing is an essential element of standard wound care, it is important to remember that dressing alone does not heal the wound.

Ideally a wound dressing aims to promote healing or prevent further tissue damage. A good dressing accomplishes multiple goals, including providing an appropriate level of moisture and serving as a barrier to bacterial invasion. Additional benefits of an ideal dressing may include thermal insulation, debridement, enzymatic and growth factor

supplementation, gas exchange facilitation and protection of free nerve endings to reduce pain.⁹

The French military surgeon Ambroise Paré revolutionised the field of wound dressings when he abandoned the use of boiling oil and successfully applied his own concoction of egg yolk, rose oil and turpentine on wounds.¹⁰ Much later, the experimental work of George Winter in 1962 led to the foundation of modern-day moisture-retaining semipermeable dressings.¹¹

Normal wound healing follows a typical pattern of progression: haemostasis, inflammation, proliferation and remodelling. In open cutaneous wounds, it is usually described in three processes: epithelialisation, connective tissue deposition and contraction.¹² No single dressing is suitable for the management of all types of wounds. Dressings may need to be selected depending on the wound's stage in the healing cycle.

Hence, an understanding of the healing process combined with knowledge of the properties of the various available dressings is essential.

Wounds covered with moisture-retentive dressings and ointments heal faster than exposed or traditional gauze-covered wounds.¹³ Occlusive dressings allow for maintenance of a balanced moist environment on the ulcer surface. The natural moisture in a wound contains proteins and cytokines that facilitate autolytic debridement, angiogenesis, formation of granulation tissue and keratinocyte migration.¹⁴

The ideal wound dressing should facilitate collagen synthesis and epithelial regeneration by removing deterrents that delay healing, including bacteria, exudate, external trauma and other barriers.¹⁵ It should also have a prolonged storage time, be inexpensive and have minimal or no antigenicity, toxicity or carcinogenicity.¹² Involving patients in dressing choices

helps to maximise compliance, ensures minimising impact of dressings on activities of daily living¹⁶ and optimises follow-up care through telehealth, when deemed suitable.

Description of dressings

Dressings can be divided into several generic categories.¹⁷ Described here are the commonly used dressings suitable for acute open wounds (Table 1) from their initial stage of haemostasis (day one) to epithelialisation (approximately on day 12), with a summary in Table 2. Dressings may be left intact for up to seven days depending on the wound type and location, assessment of the wound bed and patient, the volume of exudate and the ability of the dressing to contain the exudate and protect the surrounding skin. Disturbances to wound temperature and granulating tissue is minimised by less frequent dressing changes.¹⁷

Table 1. Wound categories with recommended dressings

Wound type	Dressings recommended	Special comments
Skin tears	Apply silicone-covered foam dressing directly over the wound. If bleeding, apply haemostatic alginate dressing as primary dressing under a silicone-coated foam dressing.	Do not use any adhesive products on fragile skin as they may contribute to further skin tears, especially on forearms and hands of the elderly. Using a barrier wipe under the foam aids to secure application, reduce maceration and protect the skin on removal of the dressing. Remover wipes should also be used when removing a dressing from fragile skin. Removal of the dressing should be done in a direction that does not disturb viable tissue edges and flaps.
Minor cut/laceration	Cover with a low-absorbent dressing that prevents further trauma and absorbs exudate (dry island dressing).	Check for diabetes and the presence of at least two signs or symptoms of inflammation (redness, warmth, induration, pain/tenderness) or purulent secretions indicating infection. ²⁵
Postoperative wounds	For wounds without exudate, dress over sutures with a film or thin hydrocolloid. For wounds with exudate, apply a bordered low-absorbent dressing (dry island dressing).	In case of wound dehiscence, organise prompt surgical review.
Small superficial burns	After initial first aid treatment, cover burns area with hydrogel or hydrocolloid or film.	Refer to burns specialist for burns that are deep or infected or located on hands, feet, face or genitalia.
Diabetic foot	Apply a primary antimicrobial dressing product with secondary dressing according to exudate: 1. low exudate – low-absorbent pad 2. moderate exudate – silicone foam 3. high exudate – absorbent pad.	Check pedal pulses and sensation; if there is poor perfusion, referral to a diabetic foot clinic or vascular surgeon is recommended. Silicone foams on feet, if applied, should be without borders and anchored with tape or bandages.

Dressing types include the following:

- Film dressings – these materials are semipermeable and demonstrate beneficial effect in the healing of superficial burns, minor abrasions and lacerations. Many now include a skin-safe adhesive to reduce the risk of trauma in fragile skin; however, caution should be taken if the patient has particularly vulnerable skin. It may be advisable to use a skin protectant (barrier) product underneath the dressing to avoid any harm. Film dressings are most useful for postoperative wounds healing by primary intention as they facilitate easy monitoring of the wound.¹⁸
- Foam dressings – these are film dressings with the addition of absorbency. They are made from hydrophilic silicone or polyurethane that is in contact with the wound and an outer hydrophobic gas-permeable backing. They can absorb a large amount of exudate, are suitable for burns and deep ulcers and may be left for a week. There is some evidence of better healing of skin tears with foam dressings when compared with film.¹⁷
- Low-adherent, low-absorbent dressings – such dressings are useful

for small wounds (fingertip injuries and toenail avulsion) with minimal exudate and require a secondary absorbent dressing such as cotton gauze.¹⁹

- Hydrocolloid dressings – in the presence of wound exudate, hydrocolloid dressings absorb liquid and form a gel, maintaining a moist environment. They are ideal for abrasions, postoperative wounds and shallow ulcers.¹⁵ They adhere well to high-friction areas (eg heels, elbows). In some cases, hydrocolloid dressings may produce a distinctive odour, usually due to product breakdown and not infection.¹⁸
- Alginate dressings – these are highly absorbent and have haemostatic properties because of their calcium content; they are consequently useful for bleeding wounds. However, they require a secondary dressing, and there have been reports of allergic reactions.²⁰
- Antimicrobial impregnated dressings – products currently used contain iodine or silver (silver sulfadiazine and ionic silver-impregnated dressings). Their use is limited to contaminated wounds. However, they do not provide the necessary moist environment for optimal healing, and use should be limited to two weeks or less.¹⁹

Dressing types and costs

The issue of wound care costs in general practice has been highlighted by Whitlock et al¹⁹ as representing a financial burden for care providers. Australian general practice faces a dilemma over how best to involve GPs and practice nurses in treating wounds and in choosing between affordable lower quality dressings or expensive higher quality dressings. Some dressings for chronic wounds and ulcers are subsidised under the Repatriation Pharmaceutical Benefits Scheme (RPBS) for eligible Department of Veterans' Affairs (DVA) card holders. Referral to community nursing services may also provide patients with a range of dressing options for a service fee that may include dressing costs.

Role of telemedicine

Telemedicine is defined as 'the use of electronic information and communication technologies to provide and support health care when distance separates the participants'. Although evidence for telemedicine in acute wound care in the general practice setting is lacking, it is an area worth exploring, especially in the context of the COVID-19

Table 2. Dressing types

Dressing class (generic)	Purpose/action	Limitations and cautions	Wear time
Films	Permeable to gas but impermeable to bacteria and liquid. Useful on superficial wounds with minimum exudate.	May be traumatic on removal.	1–4 days
Foam	Suitable for moderately exuding wounds, skin tears, skin grafts and donor sites.	Nonsilicone types should be avoided in patients with fragile skin.	Up to seven days
Low adherence, low-absorbent dressing	Passive breathable dressing for low-exuding wounds. Protection over sutures or shallow wounds.	Not suitable for fragile papery skin as adhesive border can cause skin tear on removal. Not showerproof. Require secondary dressings for absorbing exudate – added cost.	1–4 days
Hydrocolloid	The sheet form of the dressing is self-adhesive and waterproof, and it does not need a secondary dressing, which makes this dressing type easy to use.	Low absorbency, produce unpleasant odour during removal.	Up to seven days
Alginate	Promotes haemostasis in actively bleeding wounds, used in moderate-to-high-exuding wounds, wicks away fluid from the wound, can be used in packing wounds. Available in sheets or ropes.	Will dry firm within 48 hours; may need to be soaked off to remove. Allergic reaction has been reported.	Up to two days
Antimicrobial	The clinical evidence supporting the routine use of antimicrobial dressings is weak.	Bacterial resistance with long-term use. High cost of silver-impregnated dressings.	1–4 days

pandemic.²¹ Studies on teledermatology for diagnosis and management of skin conditions²² and telemedicine follow-up care of leg and foot ulcers²³ support this initiative. A few recent studies have shown that telehealth has a positive impact on wound healing, reducing healing time and improving patient satisfaction.²⁴

Limitations of telehealth include lack of patient or doctor familiarity with the software, or lack of software availability in offices. Furthermore, while telehealth allows inspection of a wound, the practitioner is unable to conduct a more detailed examination. In this regard, during the initial consultation, demonstrating change of dressings with some wound photographs to the patient is advisable. The involvement of auxiliary members of the healthcare team, such as community nurses in the local network, would facilitate caring for the patient with the wound.

Conclusion

Initial dressing selection for patients with acute open wounds is important for their timely healing to prevent progression to a chronic wound, which is more difficult and expensive to treat. The process of selecting dressings may seem daunting, with numerous existing options. This article provides an evidence-informed practical guide to dressing selection for acute open wounds in the context of busy general practice.

Key points

- Dressing choices for acute open wounds requires an understanding of the normal healing process.
- Selection of a dressing is based on characteristics of the wound following holistic assessment of the patient.
- Costs, availability, source of supply and shelf life are important considerations for ordering dressings.
- Involving patients in dressing choices helps to maximise their compliance.
- Judicious use of telehealth is possible for follow up.

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