



# Back to the Basics: Wound Assessment, Management, and Documentation

Due to the plethora of wound care products on the market and varying physician practices, it can be very confusing for home healthcare clinicians to recommend and provide the best wound care. As a result, many outdated or ritual practices are still being used to manage wounds. Assessment, management, and documentation are the basis of delivering evidence-based wound care. This article will highlight those essential areas and offer best practices for clinicians in the home care setting.

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2018 retrospective analysis of Medicare patients found 8.2 million people had wounds with or without infection. Medicare cost estimates to treat wounds ranged from \$28.1 billion to \$96.8 billion (Sen, 2019). Many of these patients required wound care in their homes. Home healthcare clinicians are essential in providing optimal wound care and ensuring positive patient outcomes through monitoring of wounds and mitigating risk of infection as well as decreasing costs associated with wounds. There are many wound care products on the market, and physician practices vary, making it very confusing for home healthcare clinicians to recommend and provide the best wound care. As a result, many outdated or ritual practices are still used to manage wounds. Assessment, management, and documentation are essential to delivering evidencebased wound care. The purpose of this article is to review wound assessment, management and documentation, and offer best practices for clinicians in the home care setting.

#### Acute Versus Chronic Wounds

Acute wounds generally heal in an orderly and timely manner proceeding through the phases of healing: hemostasis, inflammation, fibroplasia (tissue formation), epithelialization, and maturation (Beitz, 2016). Acute wounds include traumatic and surgical wounds, and typically follow a trajectory of complete healing in 4 weeks. Complications include surgical site infections and/or dehiscence. The cost of healing an acute wound is generally minimal unless complications develop (Beitz, 2016).

Chronic wounds, however, do not follow a series of predictable, successive, or timely repair processes and include (but not limited to) diabetic/neuropathic foot ulcers, venous leg ulcers, and pressure injuries (Frykberg & Banks, 2015). Adults aged 65 years and older are more likely to have comorbidities such as diabetes, heart disease, and venous or arterial disease that affect wound healing and can have a significant impact on the cost of healing these wounds (Berti-Hearn & Elliott, 2019; Nazarko, 2018). Common complications include infection, presence of necrotic tissue, and biofilms that can influence the length of time to heal. Other factors such as patient adherence, bioburden (the number of microorganisms), and blood flow can impact the length of time it takes to heal chronic wounds.

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#### Wound Assessment

Performing a thorough wound assessment is the first step in developing a comprehensive plan of care that includes correction of etiological factors, systemic support, and evidence-based topical therapy and management (Krapfl & Peirce, 2016). The initial assessment should include the patient's overall health status and medical history, skin status, wound etiology, and the patient's ability to heal. The initial assessment should be completed when the wound is first observed. Follow-up assessments should be completed at least weekly. Based on the assessment, the clinician can compare data and determine the wound's response to treatment. Wound care in the home setting is initially performed by a licensed healthcare professional who then teaches the patient, family member, or caregiver. The assessment by a licensed professional is essential in treatment, management, and education of the patient and/or caregiver. Proper assessment includes location, shape, extent of tissue injury, dimensions (size and depth), presence of undermining or tunneling, wound base characteristics, amount of exudate, wound edges, and periwound skin (surrounding skin) condition. Additional considerations include presence of pain and/or infection.

#### **Location and Shape**

Location should be identified using accurate anatomical terms, which allow for correct ICD-10 coding as well as clear concise clinical record documentation (Bates-Jensen, 2016). Body diagrams or choosing an anatomical site from a list of anatomical locations are helpful tools for documentation. Most importantly, location can help determine wound etiology. For example, wounds below the knee are usually arterial, venous, neuropathic, or pressure-related. Wounds on bony prominences are usually pressure-related. In contrast, wounds in skin folds and perineal area are typically due to moisture-associated skin damage. Shape is also associated with wound etiology. Round wounds with punched out appearance are usually arterial in origin. Irregular or oval shape are often venous in origin (Bates-Jensen, 2016).

#### **Extent of Tissue Injury**

Extent of tissue injury is used to describe tissue loss. Partial thickness (superficial injuries) versus full thickness (deep tissue injury) are terms used for all wounds except pressure injuries. Partial thickness loss extends below the epidermis and into the dermis and usually heals by epithelialization. Full thickness loss extends below the dermis and into the subcutaneous tissue and fascia, and usually heals by granulation, contraction, and epithelialization. Pressure injuries are localized to the skin and/or underlying tissue over a boney prominence because of pressure and shear. Pressure injuries are classified from Stages 1 to 4; in some cases, they are staged only after wound debridement. When underlying tissue is covered by slough or eschar, the pressure injury cannot be staged and is considered unstageable.

#### Dimensions

Size (dimension) is determined by measuring length  $\times$  width  $\times$  depth in centimeters. Using head to toe as a reference, length is measured from 12 o'clock to 6 o'clock and the greatest width from 3 o'clock to 9 o'clock. Depth is determined by placing a cotton tipped applicator in the deepest part of the wound. Undermining and tunneling are also

#### Figure 1:



Note. Wound Ostomy and Continence Nurses Society. (n.d.). The WOCN Image library (Image database). Retrieved May 10, 2022, from http://www.wocn.org/page/Image library

#### Figure 2:



Note. Wound Ostomy and Continence Nurses Society. (n.d.). The WOCN Image library (Image database). Retrieved May 10, 2022, from http://www.wocn.org/page/Image library

measured for dimension and represent the amount of skin loss underneath an intact skin surface.

#### **Undermining and Tunneling**

Undermining is the area of tissue destruction extending under the intact skin and wound edge, and is measured using the face of a clock. A cotton tip applicator is placed under the lip of the wound and the depth is measured to the wound edge. Tunneling is a narrow tract in the wound or base of wound and is also measured with a cotton tip applicator. Documentation of tunneling should also use the clock method.

#### **Wound Base Characteristics**

Wound base characteristics include color, texture, tissue type, and percent of each tissue type. Red granulation tissue is beefy red, shiny, and granular. It may look bumpy and bleed easily. Beefy red granulation tissue is a positive indicator of wound healing. Necrotic tissue is dead devitalized tissue. Necrotic tissue needs to be debrided in order for the wound to heal (Figure 1). The characteristics of necrotic tissue change with wound duration, additional trauma, and tissue depth. As the wound undergoes debridement, tissue may change from eschar to slough. Slough is yellow or tan in color and can present as thin, stringy, mucoid like, or adherent to the base of the wound. Eschar is black, gray, or brown in color (Figure 2). It can be tough as leather or soft and boggy.

#### **Wound Exudate**

Assessment of wound exudate, or wound drainage, includes volume and characteristics such as type, color, and odor. Wound exudate characteristics Assessment of wound exudate, or wound drainage, includes volume and characteristics such as type, color, and odor.

can be indicative of wound infection, appropriateness of treatment, and wound healing. Normal exudate is clear serous, or serosanguinous, and should decrease as the wound heals and becomes smaller. In an infected wound, the exudate will be thick, yellow or purulent and increase in volume (Bates-Jensen, 2016). Sanguineous drainage is more common in a malignant or fungating wound due to the fragility of the wound bed and erosion of capillaries (Bauer, 2016).

### Wound Edges and Periwound (Surrounding Skin)

Wound edges should be clear, attached, and open. The edges can also reveal whether the wound is acute or chronic and can be a good indicator of wound etiology. A wound with rolled edges is indicative of a chronic wound. A calloused wound edge is an indicator of a neuropathic wound. Changes in the periwound are often the first indication that the wound treatment may need to be adjusted. Assessment of periwound skin should extend at least 4 cm from the wound edge and includes presence of induration, maceration, or discoloration (Bates-Jensen, 2016). Normal skin feels soft and spongy; new epithelial skin around a wound will be pink and dry. Maceration appears as a white waterlogged area most likely due to inadequate management of exudate and can be prevented by using a skin barrier cream around the wound and reevaluating the wound care plan. Deep purple or black discoloration may be an indication of pressure damage. Induration is red, firm/hard skin and may indicate infection or further skin breakdown.

#### **Additional Assessment Considerations**

Pain assessment should include the type of pain, pain severity, exacerbating factors, and relieving factors (Bates-Jensen, 2016). The presence of pain can also point to the etiology of the wound. Pain associated with arterial ulcers usually decreases when the affected extremity is in a dependent position. Neuropathic ulcers are associated with tingling or burning pain. Venous stasis ulcers are not usually painful, but if pain is present, it may decrease with leg elevation and as edema decreases.

Classic signs of infection include erythema, warmth, pain, swelling, or purulent drainage. Chronic wounds may exhibit infection differently than acute wounds. Deterioration in the wound bed such as changes in the tissue color, delayed healing despite appropriate treatment, new tunneling or undermining, increase in exudate or drainage, as well as change in consistency, or increase in necrotic tissue can all be signs of infection.

#### Wound Management

Once the wound is assessed and etiology identified, measures to address the etiological factors should be initiated. A detailed patient history will confirm or correct initial assessment. While choosing the most effective wound treatment one must also consider how to control some of the underlying causative factors. For example, if the patient has diabetes, assess whether their blood sugars are controlled and if not, consider a referral to a diabetes educator. If the patient has a pressure injury, a plan to eliminate the source of pressure is essential.

#### **Control Causative/Etiological Factors**

Wounds do not heal just by using a special wound care product. Many factors both intrinsic and extrinsic can affect wound healing. Wound healing is a systemic process that is affected by advanced

Table 1. Etiologic	al Factors and	Interventions
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Factors	Interventions	
Pressure/shear	Reposition and offload	
	Pressure redistribution mattress	
Friction	Gentle skin care	
Moisture-	Management of incontinence	
associated skin damage	Bladder/bowel training	
	Containment devices	
	Skin protectants	
	Management of diaphoresis	
Infection	Antimicrobial therapy	
Arterial	Vascular consult	
insufficiency	Smoking cessation	
Venous	Leg elevation	
insufficiency	Compression wraps/stockings	
Neuropathy	Offloading	
	Blood sugar control	
Note. Adapted from Krapfl & Peirce (2016).		

#### Table 2. Dressing Selection

Wounds	Filler Dressing	Cover Dressing	
DEEP WET WOUNDS Need to manage drainage	<ul> <li>Calcium alginate</li> <li>Hydrofiber</li> <li>Copolymer</li> <li>Gauze</li> </ul>	<ul><li>Gauze and tape</li><li>Waterproof adhesive foam</li></ul>	
DEEP DRY WOUNDS Need to hydrate and provide moisture	<ul><li>Wound gel to wound base and fluffed gauze</li><li>Gel sheets into wound bed</li></ul>	<ul><li>Gauze and transparent adhesive dressing</li><li>Waterproof adhesive foam dressing</li></ul>	
SHALLOW WET WOUND Need to manage drainage	N/A	<ul> <li>Adhesive foam dressing</li> <li>Alginate and adhesive foam dressing</li> <li>Nonadherent contact dressing and gauze cover or wrap</li> </ul>	
SHALLOW DRY WOUND Need to hydrate	N/A	<ul> <li>Hydrocolloid</li> <li>Transparent adhesive</li> <li>Nonadherent contact layer+ gauze</li> <li>Skin barrier ointments</li> </ul>	
Note. Adapted from Jaszarowski & Murphee (2016).			

age, nutrition, smoking, underlying disease such as diabetes or immunocompromised conditions, oxygenation, and blood flow, as well as social circumstances. Addressing and correcting patient factors if possible will optimize wound healing. A comprehensive approach to wound healing not only includes topical treatment, but also identifies etiological factors and interventions to address or correct those factors. See Table 1 for interventions to address or correct etiological factors that can hinder wound healing.

#### **Wound Cleansing**

The function of wound cleansing is to prepare the wound and create an environment that supports healing. Nontoxic solutions such as saline, tap water, or commercial wound cleansers are widely acceptable and available (Jaszarowski & Murphee, 2016). The cleansing of a wound with healthy tissue requires gentle cleansing to flush away exudate without damaging the newly formed tissue. A bulb syringe or spray bottle can effectively deliver this gentle flush.

Cleansing a necrotic or infected wound requires irrigation with saline, tap water, wound cleanser, or may require cleansing with a cytotoxic agent. A more forceful irrigation will assist in loosening and removing tissue debris and lowering the bacterial burden. It is recommended to use low pressure (4–15 psi) that can be obtained by using a 35 mL syringe or commercial wound cleanser using the stream option on the nozzle (Jaszarowski & Murphee, 2016). Hydrogen peroxide and povidone iodine are not supported by research and should not be used. Cytotoxic solutions such as Dakin's and acetic acid should be used in diluted form for short periods of time and discontinued when the wound bed is clean.

#### **Dressing Choice**

Once the wound has been assessed and cleansed, an appropriate dressing should be applied. This presents a challenge for many home healthcare clinicians because of the abundance of wound care products and dressings on the market. It is important to be knowledgeable about the function and characteristics of the dressing, but most importantly to have an understanding of the basic principles of moist wound healing. Adding to the confusion is the terminology to classify dressings. Wound dressings are classified as active or passive. The majority of passive dressings provide support through exudate control, moisture control, and protecting the wound from trauma or bioburden. Active wound dressing therapies are used in refractory wounds, wounds that will not heal, and are designed to correct the molecular imbalances, and include products such as matrix dressings and bioengineered skin substitutes (Netsch, 2016).

Dressings can be classified as wicks, fillers, or covers, and also as hydrators or absorbers. Hydrators (gel and moist gauze) are used for dry Once the wound is assessed and etiology identified, measures to address the etiological factors should be initiated. A detailed patient history will confirm or correct initial assessment.

wounds and absorbers (alginates and foam) are used for wet wounds (Table 2). Regardless of the classification, maintenance of a moist wound bed is the key principle of evidence-based wound therapy. Thus, an ideal dressing is nontoxic, nonallergic, and maintains a moist wound surface while removing necrotic material, and promoting granulation and reepithelialization (Ward et al., 2019).

#### **Dressing Change Frequency**

The frequency of dressing change should follow manufacturer guidelines, but in general, a timely dressing change occurs at the first sign of strikethrough drainage or when the dressing is soiled or contaminated. Home healthcare clinicians should always involve the patient and caregivers in decision making to maximize compliance and ensure dressing changes do not affect activities of daily living (Ward et al., 2019). With the introduction of more advanced dressings, daily gauze dressing changes to manage exudate are no longer practiced and it can actually be detrimental to wound healing (Jaszarowski & Murphee, 2016). Frequent removal of dressings, particularly in a cool environment, may result in reduction of temperature and delay wound healing as well as increase risk for wound infection (Brown, 2018).

#### Plan of Care Considerations

The wound assessment will guide the dressing selection. The dressing/wound care product should maintain a moist wound environment, manage exudate, and provide an ideal environment while increasing wear time, reducing dressing changes and/or clinician visits, as well as reducing the overall cost. There will be exceptions and circumstances when daily dressing changes are required, such as infected heavily draining wounds or fungating/malignant wounds that drain copious amounts of exudate. It is recommended to order only small amounts of wound supplies at a time (2-week supply) because wound assessments will change the wound care plan.

Clinicians should be mindful of the need to avoid pain and encourage use of analgesia before a dressing change. Also use adhesive remover wipes prior to removal of any adhesives. Pain is also an indication of wound status. Increased pain is a sign of infection that requires thorough assessment and, if associated with increased drainage, change in color or odor, the primary care provider should be notified. Antimicrobial dressings may be needed for patients at high risk for infection or wounds that are not showing signs of healing. These dressings include silver, cadexomer iodine polyvinyl alcohol with crystal violet or methylene blue. They are available in ointments, sprays, powders, and all forms of dressing (Jaszarowski & Murphee, 2016). When using these antimicrobial dressings, closely monitor and limit the use to 2-week periods to prevent antimicrobial resistance (Lumbers, 2020).

Recognize that even with evidence-based practice and appropriate dressing choices, some wounds may fail to heal. It is imperative that patients understand that direct treatment or a specific dressing does not guarantee a wound will heal. Reassessment of both intrinsic and extrinsic factors such as nutrition, smoking, and underlying diseases need to be addressed periodically. Seeking a wound specialist or a referral to a wound center may offer a different approach or more in-depth assessment.

#### Documentation of Wounds

Documentation is critical in the home health setting. In order for reimbursement of supplies under Medicare and other insurances, documentation in the clinical record must support the use and frequency of the products. Information defining the number and type of wounds being treated as well as the type of dressing should be documented in the record. Current clinical information that supports the reason and necessity of the dressings should also be in the clinical record. This includes weekly measurements, the amount of drainage, and any other relevant information. Medicare guidelines state that wound evaluation may be performed by a nurse, physician, or other healthcare professional (Schaum, 2016). Also, part of the clinical record should reflect the education of the caregiver who is performing the wound care as well as how the patient tolerated the wound care. This is required by many of the regulatory organizations.

#### Conclusion

A thorough patient history and assessment are key to determining appropriate wound care that promotes healing. Home healthcare clinicians routinely assess the wound size, characteristics, and response to treatment and report abnormal findings to the primary physician as well as collaborate with other advanced practitioners. A comprehensive plan of care includes identifying causative factors and implementing measures to remove or reduce their effects, providing evidence-based wound care, and supportive documentation to ensure positive patient outcomes. This article discussed those essential areas and offered best practices for clinicians in the home care setting.

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