# Best Practice Intervention Package

## Wound Management

HHQI
Home Health
Quality Improvement

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# ACKNOWLEDGEMENTS

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# WOUND MANAGEMENT OVERVIEW

Wound care can be taxing on a variety of home health agency (HHA) resources, from materials to maintaining clinician expertise. For this reason, it is imperative for the HHA to integrate the following:

- Interdisciplinary team including patients and caregivers
- Evidence-based practices & products
- Care coordination focused on reducing unnecessary costs
- Available wound specialists
- Patient and family self-management tools

The Wound Management Best Practice Intervention Package (BPIP) provides information on various aspects of wound prevention, healing, and treatment for a variety of wound types, including: pressure ulcers/injuries, stasis ulcers, neuropathic ulcers, surgical wounds, lacerations, burns, and ostomy/peristomal skin issues. Evidence-based treatments and resources from leading organizations are incorporated in the BPIP.

The BPIP content begins with an overview of an interdisciplinary approach to wound care followed by evidence-based information on the various wound types. Additionally, information on potential general wound complications, interventions, and resources are provided. This will include a section related to how tobacco and smoking affect wound healing. The outline for this BPIP follows the framework of the Outcome and Assessment Information Set (OASIS). Interventions will be provided in each section as well as in the Wound Infection tool (Great Plains Quality Innovation Network-Quality Improvement Organization [QIN-QIO]) which begins on page 35.

A hammer icon will represent tools for provider's consideration. The BPIP will support both the initiation/update of a wound management program and personal learning.

# INTERDISCIPLINARY WOUND CARE TEAM

The goal of CMS is to have high quality healthcare systems that provide better care at lower costs, with the aim of improving the health of those to whom the care is provided (*Conway*, 2015). Specialized teams can provide evidence-based wound care resulting in appropriate treatment and faster healing, which in turn leads to higher patient satisfaction rates. Interdisciplinary care coordination with strong communication skills can also reduce spending.




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Some states allow **sharp debridement** by nurses (RNs and LPNs), physical and occupational therapists, and their assistants (*Richlen & Richlen*, 2016). Review state discipline specific practice acts and your agency's policy and procedures.

**Tool:** Sample Conservative Sharp Debridement Non-Viable Tissue Policy

Physical therapists can play an active role with wound management by providing dressing changes in conjunction with a planned skilled therapy visit (*Ablen & Pitassi*, 2012). This care coordination practice can lead to higher patient satisfaction by reducing the number of clinical visits and the number of different staff members in the home. Also see the discipline specific actions in the BPIP.

Partnering with patients and their caregivers is essential to expedite wound healing. As a partner in their own health care, patients can greatly assist with wound healing, ultimately resulting in improved outcomes and reduction in avoidable hospitalizations and emergent care. Clear and regular communication with patients and caregivers encourages active participation, resulting in a common understanding of the current treatment plan. CMS has an expectation for HHA to communicate changes in health status and any new physician orders with patients, representatives, and/or caregivers. Wound status and any modifications in care of the wound would be a logical component of this expectation. For more information see Section §484.60 of the Home Health Conditions of Participation.

# SKIN AND WOUND BASICS

## Skin Layers

**Epidermis**: Thin outermost layer consisting of four to five distinct cell layers and no blood vessels. Provides a protective waterproof barrier and also helps to regulate skin tone and temperature.

**Dermis:** Consists of connective tissue, elastin and collagenous fibers, blood and lymph vessels, nerves, and other structures (e.g., hair follicles, sweat glands, nerve endings). Dermis provides the skin flexibility, strength, cushioning, and nourishment.

**Subcutaneous:** Consists of well-vascularized, loose, areolar connective tissue and adipose tissue, which functions as a mode of fat storage and provides insulation and cushioning for the integument.

*Betts, et al.*, n.d.



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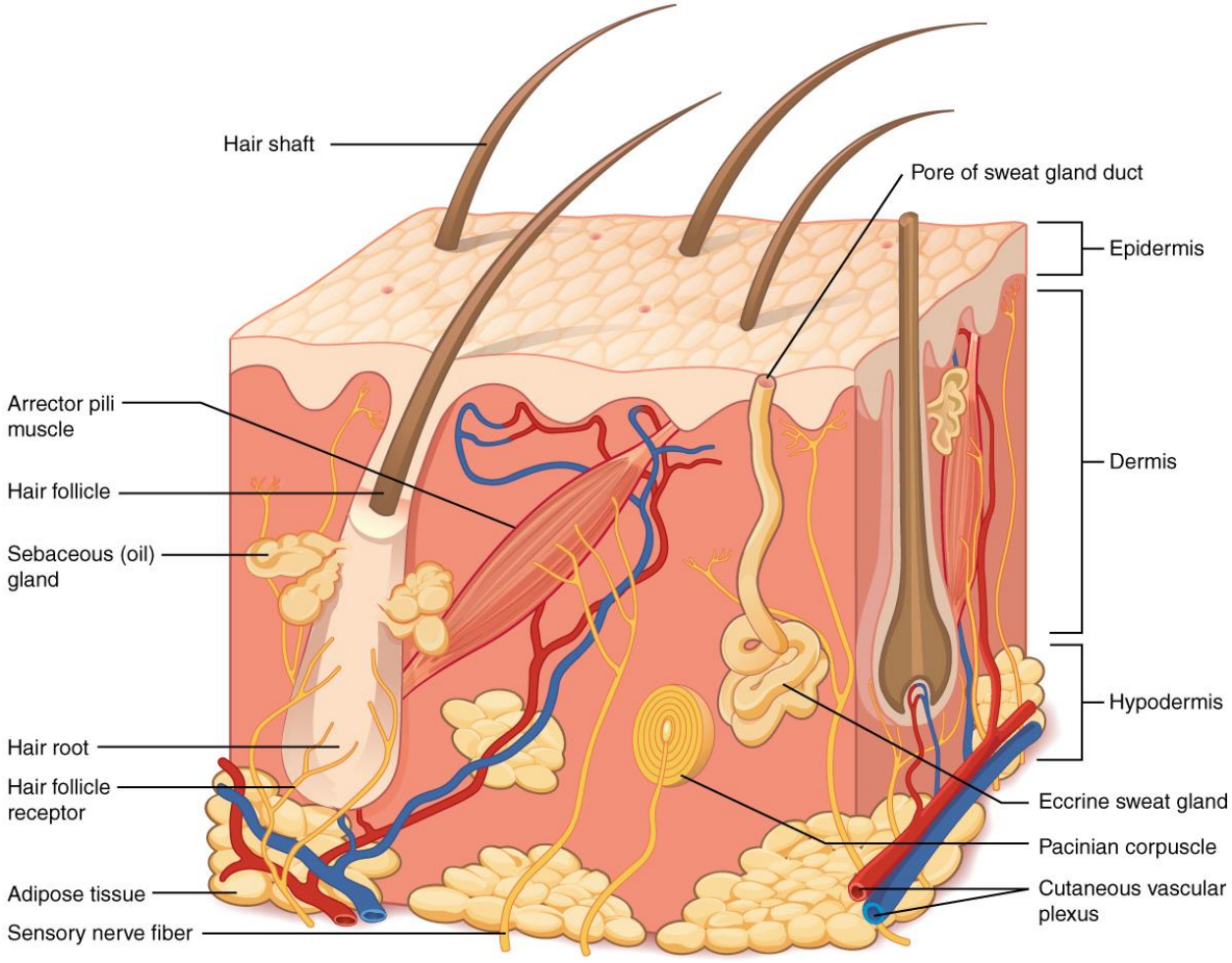
**Figure 1: Skin Diagram**




*Betts, et al.*, n.d.

## Four Phases of Wound Healing

The body has a systematic process for healing tissue injury that occurs at the cellular level in four overlapping stages. Note that some references refer to three phases and exclude hemostasis. In the four phase model, healing begins immediately after the injury. Some wounds can become "stuck" in one of the phases (e.g., inflammatory) and never completely heal. Doyle & McCutcheon (n.d.) provides an overview of each phase in Table 1. Additional resources are provided below for a more thorough and/or visual explanation of the wound healing process.



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**Table 1: Phases of Wound Healing for Full Thickness Wounds**

| Phase | Additional Information |
|---|---|
| **Hemostasis phase** | Blood vessels constrict and clotting factors are activated. Clot formation blocks the bleeding and acts as a barrier to prevent bacterial contamination. Platelets release growth factors, which alert various cells to start the repair process at the wound location. |
| **Inflammatory phase** | Vasodilation occurs, allowing plasma and leukocytes (white blood cells) into the wound to start cleaning the wound bed. This process is seen as edema, erythema, and exudate. Macrophages (another type of white blood cell) work to regulate the cleanup. |
| **Proliferative phase** | Four important processes occur in this phase:<br>1. Epithelialization: new epidermis and granulation tissue are developed<br>2. New capillaries: angiogenesis occurs to bring oxygen and nutrients to the wound<br>3. Collagen formation: this provides strength and integrity to the wound<br>4. Contraction: the wound begins to reduce in size |
| **Maturation (remodeling) phase** | Collagen continues to strengthen the wound, and the wound becomes a scar. |
| Data source: British Columbia Provincial Nursing Skin and Wound Committee, 2011; Perry et al., 2014 | |

Source: *Doyle & McCutcheon* (n.d.)

Additional information on wound healing phases:

- How Wounds Heal (Vancouver Coastal Health Authority, 30-minute course)
- Scar Tissue Formation (Snyder, S., 3-minute video,)
- Skin Wound Healing (Medscape, 2016)
- The Four Stages of Wound Healing Blog (Wound Source, 2016)
- Tissue Repair (Maher, M., 1-minute video)

**Scars**

Scar formation occurs only in full thickness wounds and begins in the proliferative phase and continues through maturation. Scar tissue is strong with less flexibility than normal skin. The amount of scar tissue developed is affected by wound depth, volume of skin pigment, and age [taut skin] (*Sussman & Bates-Jensen*, 2012).



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## Healing by Intention

Three types of wound closure include:

- **Primary:** A clean wound, often a surgical site, is closed in a sterile environment with sutures, staples, or synthetic adhesive closure materials
- **Secondary:** Wound edges cannot be approximated and are left open allowing granulation tissue to fill the wound space
- **Tertiary (delayed primary closure):** Combination of both primary and secondary healing where a surgical wound is initially left open, most likely due to infection or edema, and then surgically closed after infection is treated or edema is decreased.

(*Hinkle & Cheever*, 2018; *Myers*, 2008; *Salcido*, 2017)

## Chronic Wounds

Although there is not an industry accepted definition for a non-healing or chronic wound, most references agree that if a wound does not improve after four weeks or does not heal in eight weeks, it is considered "chronic." The most common types of chronic wounds include:

- Pressure ulcers/injuries
- Diabetic foot ulcers
- Leg ulcers (venous/arterial)
- Non-healing surgical wounds
- Wounds related to metabolic disease or other chronic disease states
- Wounds that repeatedly break down after closure

Factors that delay healing:

- Medications (e.g., NSAIDS, steroids, immunosuppressant, anticoagulants)
- Immobility (pressure points/shearing)
- Radiation therapy/Chemotherapy
- Vascular insufficiency
- Diabetes & other chronic medical diseases
- Repetitive trauma to a wound site
- Aging
- Nutritional deficits
- Smoking , tobacco and nicotine replacement use
    - Note that the effects from nicotine, carbon dioxide, hydrogen cyanide, effects last for 1 hour after smoking a cigarette
- Infection (prolongs the inflammatory stage, increases tissue destruction, prevents epithelialization)

(*Sorensen*, 2012; *Sussman & Bates-Jensen*, 2012)

Chronic wounds may require advanced wound care therapy which could include antimicrobial dressings, vacuum therapy, electrical stimulation, ultrasound, surgical treatment, and/or debridement. See more information on page 8 of the Wound Infection tool from Great Plains Quality Innovation Network (QIN).



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# TYPES OF WOUNDS

## Pressure Ulcers/Injury

The National Pressure Ulcer Advisory Panel (NPUAP), the leading scientific experts on pressure ulcers, continually monitor research and address staging and other issues through their position statements. The Centers for Medicare & Medicaid Services (CMS) utilizes NPUAP's pressure ulcer expertise for the home health OASIS assessment. The following section provides a brief synopsis of significant NPUAP's 2017 Position Statement updates.

**Ulcer vs. Injury**

The term "**pressure injury**" is now supported by the NPUAP because it more accurately describes pressure ulcers. The definition is inclusive of intact and open areas as well as deep tissue injuries. This terminology is changing and will be a synonym for the draft ICD-11 codebook. At the time of this BPIP release, CMS is still considering the name change. The BPIP will refer to pressure ulcers/pressure injury as (PU/PI).

> A pressure injury is localized damage to the skin and/or underlying soft tissue usually over a bony prominence or related to a medical or other device. The injury can present as intact skin or an open ulcer and may be painful. The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear. The tolerance of soft tissue for pressure and shear may also be affected by microclimate, nutrition, perfusion, comorbidities and condition of the soft tissue.
>
> (*NPUAP*, 2017)

Risk factors for PU/PI include:

- Immobility
- Inactivity
- Sensory perception loss
- Extrinsic factors (e.g., increased moisture, friction, and shear)
- Intrinsic factors (e.g., malnourishment, aging, decreased oxygenation and perfusion, emotional stress, smoking, and skin temperature

(*Hinkle & Cheever*, 2018; *Sussman & Bates-Jensen*, 2012)

Table 2 provides key points from the NPUAP's position statement that impact home health patients. Click here to read the entire NPUAP (2017) statement. Also see the Wound, Ostomy and Continence Nurses Society (WOCN) Position Paper: Avoidable versus Unavoidable Pressure Ulcers (Injuries) for more information on this topic.



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**Table 2: NPUAP Position Statements**

| Statement# | Statement Details |
|---|---|
| **Statement 1** | • The diagnosis of a "pressure injury" does not mean that the health care provider(s) "caused" the injury.<br>○ PI means that the tissue injury is the result of pressure and/or shear. |
| **Statement 2** | • Some pressure injuries are unavoidable despite provision of evidence-based care by the health care team.<br>○ Injury does not imply causation just by the terminology.<br>○ Careful review of each case is needed to determine if preventative care was or was not provided according to acceptable standards of evidence-based pressure injury prevention. |
| **Statement 3** | • The numerical staging system does NOT imply linear progression of pressure injuries from Stage 1 through Stage 4, nor does it imply healing from Stage 4 through Stage 1.<br>○ "Nevertheless, while the various pressure injury stages are assigned numbers, and numbers imply progression, the deterioration of a pressure injury does not predictably follow a linear evolution from Stage 1 to Stage 4. Until more clinical evidence is available, especially about the impact of pressure on levels of soft tissue and the tolerance of soft tissue for pressure and shear, clinicians cannot steadfastly state, for example, that a stage 3 had its beginnings as a stage 1 or that a stage 1 will inevitably evolve into a stage 4" (*Edsberg, et al.*, 2016).<br>○ No reverse, down, or back staging (i.e., unless it becomes unstageable, a stage 4 will remain a stage 4 until it is completely healed, then it is no longer a PU/PI). |
| **Statement 4** | • The NPUAP Staging System classifies pressure injuries based on the type of tissue loss that can be visualized or directly palpated.<br>○ PI can be staged (i.e., Stage 1, 2, 3, or 4) if the tissue can be visualized or palpated (e.g., Stage 4 with exposed bone).<br>○ Two options for when staging is not possible:<br>▪ Unstageable pressure injuries – when the wound base is obscured by slough and/or eschar.<br>▪ Deep Tissue Pressure Injury (DTPI) – when the skin may still be intact, but is purple or maroon indicating deeper tissue damage has occurred.<br>• Note: As DTPI evolves or unstageable PI is debrided the injuries can be numerically staged<br>▪ Mucosal membrane PI cannot be staged.<br>• Note: Mucosal membrane PI are not included in OASIS data items |



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| Statement# | Statement Details |
|---|---|
| **Statement 5** | • The pressure injury may be more extensive than initially apparent. The wound base and surrounding tissue should be assessed for variations in sensation, temperature, firmness, color and any expression of drainage from surrounding tissues when palpated.<br>○ "…the tissue surrounding the 'visible injury' should be assessed for changes in sensation (e.g., pain), temperature (e.g., warmer from inflammation, colder as tissues die), firmness (firmer or boggy with tissue destruction and edema), color (signs of inflammation consistent with skin tone) and drainage expressed from surrounding tissues as they are palpated. This more thorough assessment of surrounding tissue may alert the clinician to more extensive damage than is readily visible. These additional findings should be described and documented." |
| **Statement 6** | • Deep Tissue Pressure Injury (DTPI) may evolve into a full thickness wound despite optimal care (e.g., pressure relief). |
| **Statement 7** | • Any pressure injury should be treated in accordance with current evidence-based practices and monitored closely for changes that require re-evaluation of treatment strategies. |

**Pressure Ulcer/Pressure Injury Assessments**

As an initial best practice for PU/PI prevention and management, each patient should receive a thorough skin assessment. Evidenced-based tools assist clinicians in systematically assessing a patient to identify those at-risk for developing PU/PI. Some of the following evidence-based tools/scales have been in practice for decades.

**Tools: Evidence-Based PU/PI Assessments**

- Braden Scale – Provides objective assessment on sensory perception, moisture, activity, mobility, nutrition, and friction & shear.
- Norton Pressure Sore Risk-Assessment – Provides a subjective assessment on physical and mental conditions, activity, mobility, and incontinence status.



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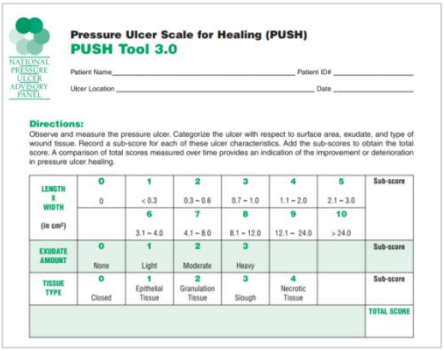
- Pressure Ulcer Scale for Healing (PUSH Tool) – Focuses on PU/PI's surface area, exudate, and type of wound tissue.
  - PUSH Tool (PDF)
  - Instructions on use of PUSH – Note that the tool is copyrighted, but free to use for noncommercial usage (e.g., providing care at your organization). PUSH is a research-validated tool and the text should not be altered or modified by individual users.


Pressure Ulcer Scale for Healing (PUSH)
PUSH Tool 3.0

Patient Name _____ Patient ID# _____
Ulcer Location _____ Date _____

Directions:
Observe and measure the pressure ulcer. Categorize the ulcer with respect to surface area, exudate, and type of wound tissue. Record a sub-score for each of these ulcer characteristics. Add the sub-scores to obtain the total score. A comparison of total scores measured over time provides an indication of the improvement or deterioration in pressure ulcer healing.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LENGTH X WIDTH (in cm²) | 0<br>0 | 1<br>< 0.3 | 2<br>0.3 – 0.6 | 3<br>0.7 – 1.0 | 4<br>1.1 – 2.0 | 5<br>2.1 – 3.0 | Sub-score |
| | | 6<br>3.1 – 4.0 | 7<br>4.1 – 8.0 | 8<br>8.1 – 12.0 | 9<br>12.1 – 24.0 | 10<br>> 24.0 | |
| EXUDATE AMOUNT | 0<br>None | 1<br>Light | 2<br>Moderate | 3<br>Heavy | | | Sub-score |
| TISSUE TYPE | 0<br>Closed | 1<br>Epithelial Tissue | 2<br>Granulation Tissue | 3<br>Slough | 4<br>Necrotic Tissue | | Sub-score |
| | | | | | | | TOTAL SCORE |

**OASIS Integumentary Assessment**

CMS' Outcome and Assessment Information Set OASIS Guidance Manual provides standardized data sets including Section F – Integumentary including:

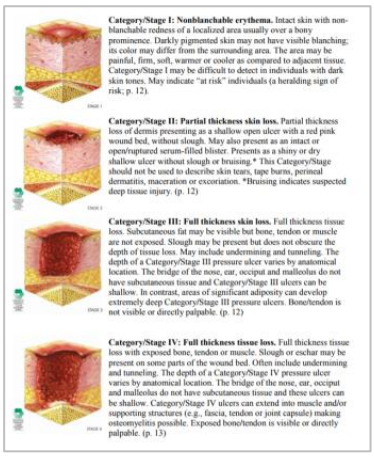
- Pressure Ulcers
- Stasis Ulcers
- Surgical Wounds

CMS (2017) provides the following statement in the guidance when scoring OASIS items (see M1306):

> Home health agencies may adopt the NPUAP guidelines in their clinical practice and documentation. However, since CMS has adapted the NPUAP guidelines for OASIS purposes, the definitions do not perfectly align with each stage as described by NPUAP. When discrepancies exist between the NPUAP definitions and the OASIS scoring instructions provided in the OASIS Guidance Manual and CMS Q&As, providers should rely on the CMS OASIS instructions.

**Tools:**

- Wound, Ostomy and Continence Nurses Society's Guidance on Integumentary Items: Best Practice for Clinicians provides detailed information on the integumentary OASIS items. The terminology for staging and status is identical to the language used by CMS. This tool includes descriptions and guidance for each of the OASIS items:
  - Pressure ulcer staging and status
  - Venous stasis ulcers status
  - Surgical wounds status
  - Glossary of terms


**Category/Stage I: Nonblanchable erythema.** Intact skin with non-blanchable redness of a localized area usually over a bony prominence. Darkly pigmented skin may not have visible blanching; its color may differ from the surrounding area. The area may be painful, firm, soft, warmer or cooler as compared to adjacent tissue. Category/Stage I may be difficult to detect in individuals with dark skin tones. May indicate "at risk" individuals (a heralding sign of risk; p. 12).

**Category/Stage II: Partial thickness skin loss.** Partial thickness loss of dermis presenting as a shallow open ulcer with a red pink wound bed, without slough. May also present as an intact or open/ruptured serum-filled blister. Presents as a shiny or dry shallow ulcer without slough or bruising.* This Category/Stage should not be used to describe skin tears, tape burns, perineal dermatitis, maceration or excoriation. *Bruising indicates suspected deep tissue injury. (p. 12)

**Category/Stage III: Full thickness skin loss.** Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling. The depth of a Category/Stage III pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and Category/Stage III ulcers can be shallow. In contrast, areas of significant adiposity can develop extremely deep Category/Stage III pressure ulcers. Bone/tendon is not visible or directly palpable. (p. 12)

**Category/Stage IV: Full thickness tissue loss.** Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often include undermining and tunneling. The depth of a Category/Stage IV pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and these ulcers can be shallow. Category/Stage IV ulcers can extend into muscle and/or supporting structures (e.g., fascia, tendon or joint capsule) making osteomyelitis possible. Exposed bone/tendon is visible or directly palpable. (p. 13)



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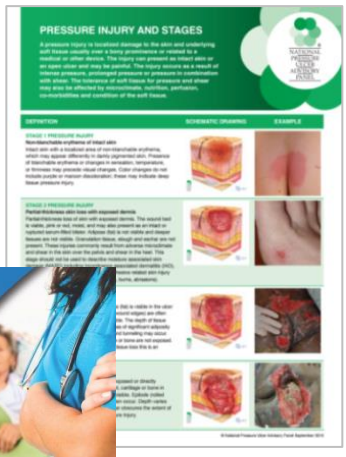
**Tools:**

- NPUAP Pressure Injury and Stages (2-page) guide provides definition, schematic drawing and photo examples.
- Pocket Cards: Wound Management (HHQI)
  - Pressure Ulcer/Injury Stages
  - Status Stasis Ulcers, PU/PI & Surgical Wounds





**PU/PI Prevention Measures**

Best practice for PU/PI prevention begins with evidence-based assessments to identify specific areas of risk. The following are some prevention best practices including:

- **Sensory Perception**
  - Assess for ability to respond to meaningful pressure-related discomfort, especially for diabetes related peripheral neuropathy
  - Provide reminders to increase participation in self-care and frequent movement such as frequently weight shifting (e.g., paraplegia every 15 minutes and quadriplegia every 30 minutes)
  - Use electrical stimulation with patients with neuromuscular injuries to increase collagen flexibility strength, protein synthesis, and blood flow
- **Tissue Perfusion**
  - Assess tissue perfusion at wound site and surround areas
  - Encourage regular activity, exercise, and repositioning
  - Avoid massaging reddened areas as it may result in capillary and deep tissue damage
  - Educate on tobacco cessation related to decreased tissue perfusion and wound healing
    - Tobacco Cessation tools (BPIP page 55)



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- **Moisture**
  - Assess at-risk skin frequently for exposure to moisture from urine, stool, perspiration, wound drainage, mucous, etc.
  - Provide skin care
    - Cleanse vulnerable skin with gentle cleanser with minimal rubbing and pat dry with soft towel
      - Avoid alkaline pH soaps (e.g., Dial, Irish Spring, Ivory, Nivea, Zest)
    - Apply lubricants that contain dimethicone (e.g., Aloe Vesta Skin Conditioner, Alveeno Baby Calming Comfort or Skin Relief, Cetaphil moisturizing cream) to rehydrate skin
  - Apply barrier to vulnerable skin (e.g., petrolatum-or silicone based barrier ointments, zinc-oxide)
    - Learn more about advantages/disadvantages of barriers (Table 1 in Management of Moisture-Associated Skin Damage: A Scoping Review article)
  - Address and develop a management plan for underlying cause of moisture issue (e.g., incontinence, excessive wound draining)
  - Treat skin infections and dermatitis per practitioner orders
  - Use absorbent wound dressings when appropriate
  - Use atraumatic tapes or adhesives to secure dressings

**Moisture Associated Skin Damage (MASD)** is the inflammation or erosion of the epidermis as the result of prolonged exposure to moisture (e.g., urine, stool, sweat, wound drainage, saliva, or mucus). The tissue is susceptible to further breakdown, as well as friction and shear damage. Symptoms include: pain, burning, and pruritus. Complications include dermatitis, cutaneous fungal/bacterial infections, and PU/PI.

(*Woo, Beeckman, & Chakravarthy,* 2017)

**Tool:** Care and Management of Patients with Urinary Catheters: A Clinical Resource Guide (WOCN)

**Tool:** Reversible Causes of Acute/Transient Urinary Incontinence: Clinical Resource Guide (WOCN)

- **Mobility/Activity**
  - Assess patient's ability and frequency of physical activity
  - Create a patient exercise plan
    - Exercises to intermittently relieve pressure in a chair or bed (e.g., chair push-ups)



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        - Active and passive exercises to increase muscular, skin and vascular tone
    - Obtain an order for an overhead trapeze for hospital bed, for patients who can use upper body to facilitate mobility
    - Position patients off of bony prominences in 30° lateral position using wedges and pillows
    - Educate caregiver to turn or reposition patient at least every two hours in small, but meaningful changes
        - **Two hours** is the maximum duration time for a patient in a single position with **normal circulatory capacity**
        - See exceptions in the Palliative/Hospice section

    **Tool:** Pressure Ulcer Prevention brochure (IHI – also available in Spanish)

- **Nutrition** – Conduct evidence-based nutritional assessment
    - Optimize nutrition and hydration
    - See NPUAP nutritional recommendations (BPIP pages 52-53)
    - Monitor weight, girths, and/or food intake
        - Track food and water intake for 2-4 days
    - Reassess need for therapeutic diets during the time of wound healing to boost nutritional intake (e.g., less restrictive diabetic or heart healthy diet)

    **Tool:** My Food Diary (Centers for Disease Control and Prevention [CDC])

- **Friction & Shear**
    - Assess patient's ability to move in bed/chair
    - Avoid semi-fowlers position (keep head of bed flat or below 30 degrees, if tolerated)
    - Use a draw sheet to reposition and transfer
    - Protect elbows, heels, shoulders, etc. by utilizing pillows, towel rolls, foam wedges, or protectors
    - Evaluate for pressure-redistribution surfaces (e.g., mattresses, beds, cushions) for beds and wheelchairs (examples provided in the following tool)

    **Tool:** An Evidence- and Consensus-Based Support Surface Algorithm (WOCN) is an online algorithm to assist in selecting appropriate surfaces
        - *Identifying the Right Surface for the Right Patient at the Right Time: Generation and Content Validation of an Algorithm for Support Surface Selection* (2015) provides insight and validation of the support surface algorithm

Research on the use of prophylactic creams and/or dressings applied over bony areas is **unclear** to support or refute the use.



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(*Hinkle & Cheever*, 2018; *IHI*, 2011; *Moore & Webster*, 2013; *Tung, Stead, Mann, & Popovic,* 2015; & *Woo, et al.*, 2017)

**Tool:** Pressure Injury Prevention Points (NPUAP) provides key points for acute or long-term setting that are valuable and applicable for the home health setting.

**Treatment of PU/PI:** Wound Infections (Great Plains QIN) (BPIP pages 35-48)

**Palliative/Hospice Care of Pressure Ulcers/Pressure Injuries**

Patients with advanced and terminal conditions are at-risk to develop or advance the stage of a PU/PI related to their debilitating condition. Often the soft tissue injury is seen in the last two weeks of life as the body systems' functions are slowing. Risk factors often include advancing age, protein-calorie malnutrition, friction and shearing, and exposure to moisture (*Langemo, Black, & NPUAP*, 2010).

Several terms to describe skin changes in dying patients have been noted in the literature for decades, but are now becoming more widely-accepted. The terms describe skin changes that are typically part of the dying process and not preventable.

**Kennedy Terminal Ulcer (KTU)** is a PU/PI that occurs suddenly with some patients as they are dying. The exact cause is not known but thought to be a perfusion problem exacerbated by the dying process. KTU is a deep tissue injury and has an ICD code of **L89.159** (ICD-10). Treatment is the same as other PU/PIs.

KTU Characteristics:

- Often located on the sacrum or trunk, shaped like a pear, butterfly, or horseshoe with irregular borders
- Color is red, yellow, black, or purple
- Begins as a blister or at Stage 2 and then progresses rapidly
- The difference between KTUs and other PU/PIs is the larger size, initially started as superficial, but rapidly progresses in size, depth, and color

**Skin Changes at Life's End (SCALE)** is a pneumonic for a group of clinical changes that occur in dying patients. The definition of SCALE is, "physiologic changes that occur as a result of the dying process may affect the skin and soft tissues and may manifest as observable (objective) changes in skin color, turgor, or integrity, or as subjective symptoms such as localized pain. These changes may be unavoidable and may occur even with the application of appropriate interventions that meet or exceed the standard of care" (*Sibbald, et al.*, 2009). Additional information focusing on skin assessment, PU/PI care, and end-of-life care can be found in expert panel statements. Also see Table 3 that includes problems and interventions that address symptoms of SCALE.



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**Trombley-Brennan Terminal Tissue Injury (TB-TTI)** is when skin alterations suddenly appear and progress quickly in areas where there is little or no pressure such as the thighs (*Trombley, Brenna, Thomas, & Kline,* 2012).

**Skin Failure** is a term that has been used for more than twenty years with no universal definition. The concept is when "tissue tolerance is so compromised that cells can no longer survive in zones of physiological impairment that includes hypoxia, local mechanical stresses, impaired delivery of nutrients, and buildup of toxic metabolic byproducts" (*Levine*, 2016).

### Goals and Treatment Plan for Palliative/Hospice Patients

Normally the goal for PU/PI is healing and closure, but in this population that goal may not be appropriate. The 2009 NPUAP-EPUAP guidelines support patient-specific goals to reduce or eliminate pain, odor, and infection; promote pressure ulcer closure if possible, and improve self-image to help prevent social isolation (*Langemo, et al.*, 2010).

It is essential for the clinician to discuss with the patient and family their goals around the pressure injury and honor their wishes. Table 3 provides specific pressure injury issues experienced by patients at the end of life with alternative interventions beyond the evidence-based practices.

**Table 3: Palliative Care Considerations for PU/PI**

| Issue | Potential Interventions |
|---|---|
| **Pressure Distribution due to limited mobility** | • Collaborate on flexible repositioning schedule (e.g., every 4 hours or as tolerated and desired)<br>• Utilize a low-air loss mattress<br>  ○ Creates dryer and cooler climate and redistributes weight<br>  ○ Reduces need for frequent turning<br>• Position at 45˚ angle when side lying (minimizes pressure on trochanter)<br>• Offer positioning support items (e.g., pillows, wedges, bolster rolls, etc.)<br>• Add a chair cushion if able to get out of bed<br>  ○ Add no slip mats to stop cushion from sliding<br>• Protect heels and elbows<br>• Pre-medicate 20-30 minutes before scheduled turning (see medication section) |
| **Infection & Odor** | • Provide supportive environment to reduce embarrassment, depression, and self-imposed isolation from wound odor<br>  ○ Provide frequent wound changes and irrigation, if tolerated<br>  ○ Select longer lasting dressing products to reduce changes if patient is unable to tolerate frequent changes<br>  ○ Arrange for wound debridement, be cautious with sharp debridement since tissue is fragile and will bleed |



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| Issue | Potential Interventions |
|---|---|
| | ○ Use odor-controlling dressings/products such as metronidazole, cadexomer iodine, charcoal, Dakin's solution, povidone iodine, Manuka honey, or silver dressings<br>▪ Other products include essential oils, potent antimicrobial agents, or larva<br>○ Try ways to decrease the odor in room by placing cat litter or coffee grounds under bed, set a container of vinegar, vanilla, or coffee beans in room, or use a candle, if safe. |
| **Pain** | • Initiate prevention measures<br>○ Keep wound bed moist<br>○ Reposition as tolerated<br>○ Keep linens straightened and fairly taut<br>○ Contain urine and stool incontinence (e.g., urinary catheter or fecal containing devices)<br>• Educate about pain reducing measures<br>○ Actively engage patient and family to assess and medicate early in the pain cycle<br>• Mitigate wound pain<br>○ Premedicate 20-30 minutes before dressing changes or repositioning<br>○ Decrease frequency of dressing changes<br>○ Try relaxation techniques, meditation, guided imagery, music, or transcutaneous electrical nerve stimulation |
| **Nutrition and Hydration** | • Make environment conducive to eating<br>○ Eliminate body waste or wound odors<br>○ Make room cheery<br>○ Increase socialization during mealtime<br>○ Provide nasal cannula for meals, if using oxygen mask<br>• Offer mouth care before meals<br>○ Use medicated mouth washes - if stomatitis is present<br>• Educate on food choices<br>○ Serve food at mild or cool temperatures if stomatitis is present<br>○ Encourage the following, if tolerated:<br>▪ Decrease carbohydrates to avoid increase in patient's carbon dioxide levels<br>▪ Increase fatty foods for calories<br>▪ Include protein supplements<br>○ Encourage patient to make food selections based on taste, not nutrient value since wound healing is not the goal<br>○ Confirm patient is being offered favorite fluids since patient may be less independent with drinking |

References: *Bechert & Abraham*, 2009; *Langemo, et al.*, 2010; & *Sibbald, et al.*, 2009



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## Venous, Arterial, and Neuropathic Lower-Extremity Wounds

Tissue perfusion involves the interconnections of the arterial, venous, and lymphatic systems. The vascular system works at a macro- and micro-vascular level to provide oxygen and nutrients to the tissue. Macrocirculation involves the vessels that can be seen with the naked eye (*Sussman & Bates-Jensen*, 2012).

**Tool:** Venous, Arterial, and Neuropathic Lower-Extremity Wounds: Clinical Resource Guide (WOCN) is a 12-page document that includes tables that compare the wounds related to assessment findings, characteristics, treatment measures, and goals.

**Lower-Extremity Venous Disease (LEVD)** often called chronic venous insufficiency (CVI) is the most common cause of leg ulceration. 75% of leg ulcers are the result of chronic venous insufficiency. LEVD ulcers can take up to 6-12 months to heal with adequate treatment, and approximately 70% reopen within five years (*Sussman & Bates-Jensen*, 2012).

**Lower-Extremity Arterial Disease (LEAD)** often called peripheral artery disease (PAD) is caused by atherosclerosis of the arteries in the legs which can lead to ischemia, tissue death, and even amputations. LEAD is progressive and often asymptomatic (*Sussman & Bates-Jensen*, 2012).

**Supervised Exercise Therapy (SET)**

CMS allows patients who have symptomatic peripheral artery disease (PAD) to receive up to 36 outpatient therapy exercise sessions (*CMS*, 2017). Click here for more details. Discuss with patient and practitioner before home health discharge and transition care.

**Lower-Extremity Neuropathic Disease (LEND)** involves sensory, motor, and autonomic nerves (e.g., neuropathy diabetes). The neuropathy symptoms of numbness, tingling, burning, and pins-and-needles sensations occur gradually. Over time, the loss of sensation and decreased muscle tone can result in clawed toes or foot drop, as well as dry, cracked, and non-elastic skin (*Sussman & Bates-Jensen*, 2012). More information on diabetic foot wound interventions on BPIP page 20.

Pseudoclaudication, a neurocompression condition, will cause the patient to sporadically experience claudication type symptoms when ambulating, but the distances vary each day. Stretching usually relieves the symptoms (*Sussman & Bates-Jensen*, 2012).

**Tools:**

Wound, Ostomy and Continence Nurses Society's Guidance on Integumentary Items: Best Practice for Clinicians (WOCN) includes guidance for venous stasis ulcer OASIS items.



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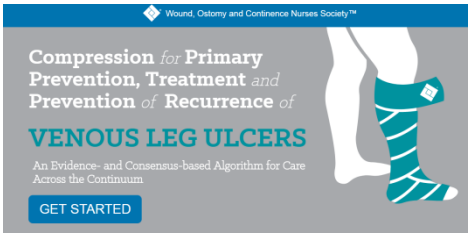
- Compression for Primary Prevention, Treatment and Prevention of Recurrence of Venous Leg Ulcers – An Evidence- and Consensus-based Algorithm for Care Across the Continuum (WOCN)




- Pocket Cards: Wound Management (HHQI)
  - Status Stasis Ulcers, PU/PI & Surgical Wounds
- Tobacco Cessation tools (BPIP page 55)

**Diabetic Wounds Interventions**

The American Diabetes Association (ADA) continues to refine national guidelines for patients with diabetes regularly. The ADA Standards of Medical Care in Diabetes - 2018 includes guidelines that focus on prevention, early detection, and interventions. [Please note: The ADA document will take a few minutes to open.] Below is an overview of key guidelines related to the care of diabetic ulcers.

**Key ADA Skin and Foot Care Recommendations**

- Comprehensive foot assessment by practitioner at least annually to include neurological and vascular assessments, risk for pressure areas/ulcers, and foot deformities. Assessment should include temperature or pinprick sensation and vibration sensation. Additionally an annual 10-g monofilament test to identify feet at risk for ulceration and amputation.
- Assessment of current neuropathy symptoms (e.g., pain, burning, numbness), vascular disease (e.g., leg fatigue, claudication), history of ulceration, amputation, Charcot foot, angioplasty or vascular surgery, cigarette smoking, retinopathy, and renal disease.
- A multidisciplinary approach is recommended for individuals at high-risk for foot complications (e.g., patients receiving dialysis, those with Charcot foot, prior ulcers, or amputation).
- Tobacco cessation intervention/referral for those patients currently using tobacco and for lifelong prevention and surveillance for those who have a history of prior lower extremity complications, loss of protective sensation, structural abnormalities, or peripheral arterial disease.
- The use of specialized therapeutic footwear is recommended for high-risk patients with diabetes including those with severe neuropathy, foot deformities, or history of amputation.
- General foot self-care education to all patients with diabetes and their caregivers.

*ADA Standards of Medical Care in Diabetes* – 2018 (pp. 119-126)



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Clinicians should assess the feet of patients with diabetes on every visit and educate the patient and caregiver on daily self-assessments. Communicate with the practitioner to develop a plan of care for any of these abnormal findings:

- Blisters, cuts, or bruises
- Bunions, hammertoes, plantar warts, ingrown toenails
- Change in shape of feet
- Calluses on the plantar tip of a hammertoe
- Corns or calluses causing increased pressure to feet
- Dry cracked feet, fissures, or tinea pedis (fungal infection)
- Heart disease leading to decreased vascularization of feet
- Inability to exercise
- Insensate feet
- Obesity or poor eyesight that restricts self-assessment
- Onychogryphosis (Ram's horn nails)
- Onychomycosis (fungus and malodorous feet)
- Pain, numbness, or tingling
- Poor glucose control
- Poorly fitting shoes
- Smoking

*(Foster*, 2017)

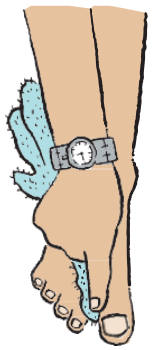
**Self-Management Skills**

Health literacy techniques and tools will increase the success of patient education especially with self-management skills (e.g., problem solving and prevention). **Teach-back** is a continuous technique for clinicians to ensure understanding or allow for re-clarification to improve accuracy of message being sent and received (*AHRQ*, 2015).

Check out IHI's 2-minute video – "*What is Teach-Back?* – for an overview or refresher.

**Clinician Tools:**

- Patient Self-Management Focused BPIP (HHQI) and Disease Management: Diabetes BPIP (HHQI) provides information, tools, and resources for diabetes self-management
- Actions to Improve Health Literacy (HHQI) course provides information and strategies address barriers that negatively impact patient understanding
- Evidence-Based Foot Care (HHQI) multimedia module (11-minute video)



**Patient Tools:**

- Diabetes Self-Care (HHQI) multimedia module (8-minute video)
- Diabetes Patient Tools (HHQI) variety of tools in multiple languages including Foot Care & Picking the Right Shoes (2-page)
- Diabetes ZONE Tool (HHQI) self-management tool (multiple languages)



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## Surgical Wounds

Most surgical wounds ideally heal by primary intention within four weeks but can take one to two years for the incision to complete the remodeling phase. Infection rates are reduced due to the sterile environment and wound edges being well approximated (*Sussman & Bates-Jensen*, 2012).

CMS' OASIS C-2 Guidance Manual Effective 01/01/18 (2017) provides the following information and guidance on primary intention healing:

> Surgical wounds healing by primary intention (approximated incisions) do not granulate, therefore the only appropriate [OASIS] responses would be Response 0 – "Newly epithelialized" or Response 3 – "Not healing". If the wound is healing solely by primary intention, observe if the incision line has reepithelialized. Epithelialization is regeneration of the epidermis across a wound surface. (If there is no interruption in the healing process, this generally takes within a matter of hours to three days postoperatively.) If there is not full epithelial resurfacing such as in the case of a scab adhering to underlying tissue, the correct response would be "Not healing" for the wound healing exclusively by primary intention. A surgical incision would not automatically be considered 3 – Not healing, solely due to the presence of staples. (Chapter 3 - OASIS Item M1342)

Wound healing rates in older adults are impacted by a diminished immune system response, chronic diseases, comorbidities, circulatory changes, and nutritional issues. This population can also experience a reduction of growth factors, collagen production, and cell division rates that may negatively affect the rate of wound healing. Additionally, a prolonged and intensified inflammatory phase of wound healing may occur due to the decline in several sex hormone levels (*Sussman & Bates-Jensen*, 2012).

**Tools:**

- Wound, Ostomy and Continence Nurses Society's Guidance on Integumentary Items: Best Practice for Clinicians includes guidance for surgical wound OASIS items
- Pocket Cards: Wound Management (HHQI)
  - Status Stasis Ulcers, PU/PI & Surgical Wounds and Surgical Wound Classification
- Tobacco Cessation tools (BPIP page 55)

**Surgical Site Infections (SSIs)** are the most common and costly incision related complication. Approximately 160,000-300,000 SSIs occur annually which is approximately 2-5 percent of all surgical procedures in the U.S. (*Ban, et al*., 2017). It is estimated that 50% of SSIs are preventable (*Berríos-Torres, Umscheid, Bratzler, Leas, Stone, Kelz,…Schecter*, 2017).



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The Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infections, 2017 provides evidence-based practices for preoperative, intraoperative, and postoperative periods. The following are key recommendations appropriate for pre-operative patient education and post-operative care:

- Preoperative
  - Patients to shower or bathe (full body) with soap (antimicrobial or nonmicrobial) or an antiseptic agent on at least the night before the operative day (some specific surgical procedure guidelines are several days)
  - Parenteral antimicrobials only if indicated in specific site guidelines (e.g., joint replacements)
- Postoperative
  - Do not apply antimicrobial agents (e.g., ointments, solutions, or powders) to the surgical incision as a preventive measure unless ordered by surgeon

(*Berríos-Torres,et al.,* 2017*)*

**Tools:**

- Healthcare-Associated Infection (HAI) Key Points: Surgical Site Infections (SSI) 1-page clinical fact sheet (HHQI)
- FAQs about "Surgical Site Infections" (CDC)
- Tobacco Cessation tools (BPIP page 55)

Nicotine causes vasoconstriction of tissue, increases risk of SSIs, and can delay wound healing. Therefore, patients using tobacco are recommended to cease 3-4 weeks before surgery and try to continue cessation post-operatively (*Sussman & Bates-Jensen*, 2012).

## Skin Tears

Research focus on evidence-based practices related to skin tear prevention, assessment, and management is expanding. The International Skin Tear Advisory Panel (ISTAP) was created to improve patient outcomes and care across the continuum through education, research, & advocacy.

ISTAP adopted the following skin tear definition: "a wound caused by shear, friction, and/or blunt force resulting in separation of skin layers. A skin tear can be partial-thickness (separation of the epidermis from the dermis) or full-thickness (separation of both the epidermis and dermis from underlying structures)"

(*LeBlanc, et al*., 2011)



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A trauma injury (e.g., a fall, tape removal) can cause an acute skin tear, but other coexisting conditions could lead to infection and delayed wound healing resulting in a chronic wound (*LeBlanc, et al.*, 2016). Ideally, a skin tear will heal by primary intention, however if the damage extends to deeper tissue levels, a simple skin tear may ultimately require grafting. No matter the cause or the timeliness of healing, a skin tear can result in a health burden for patients and requiring extra agency resources.

**Risk factors** for skin tears are classified by ISTAP into categories including:

- **General Health**
  - Chronic/critical disease
  - Polypharmacy
  - Impaired cognitive, sensory, visual, auditory, and/or nutritional status
- **Mobility**
  - History of falls
  - Impaired mobility
  - Dependent with activities of daily living (ADLs)
  - Mechanical trauma
- **Skin**
  - Extremes of age
  - Fragile skin
  - Previous skin tear

The Skin Tear Risk Reduction Program by ISTAP provides interventions for skin tear prevention in each of the three risk factor categories for individuals, caregivers, and providers.

Table 4 describes the Skin Tear Classification System that was developed and validated by ISTAP for identification and treatment of skin tears.

**Table 4: ISTAP Skin Tear Classifications**

| Classification | Description |
|---|---|
| **Type 1: No Skin Loss** | • Linear or flap tear that can be repositioned to cover the wound bed |
| **Type 2: Partial Flap Loss** | • Partial flap loss that cannot be positioned to cover the wound bed |
| **Type 3: Total Flap Loss** | • Total flap loss exposing entire wound bed |



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**Treatment of Skin Tear**:

- Stop bleeding
- Cleanse with noncytotoxic solutions such as clean water, normal saline, or nonionic surfactant cleansers at a low pressure
- Remove any congealed and dried blood from skin flap and reposition it into place with damp cotton applicator, gloved finger, or tweezers (even if it does not cover the entire wound bed)
    - If skin flap is difficult to align, apply a moistened non-woven gauze compress for 5-10 minutes to rehydrate and then reposition
    - Leave skin flap in place for at least five days to allow for adherence
- Utilize appropriate wound dressings that will enhance the wound-healing environment by maintaining optimal moisture levels while protecting the periwound area from maceration or damage
    - See the ISTAP Product Selection Guide
    - Follow the moist wound healing guidelines on BPIP page 49
    - Read more on the dressing recommendations in LeBlanc, et al., (2016) article: *The Art of Dressing Selection: A Consensus Statement on Skin Tears and Best Practice*
- Use care with dressing changes to not disturb the repositioned skin flap
- Consult wound care specialist if necrotic tissue is present; may require debridement
- Treat underlying cause of skin tear
- Implement skin tear prevention protocols
- Provide and teach infection prevention measures
- Manage wound pain and other injuries from any trauma event

(*LeBlanc, et al.,* 2016)

**ISTAP Evidence-Based Tools:**

- Skin Tear Risk Assessment Pathway (risk assessment pathway)
- Skin Tear Risk Reduction Program (clinical and caregiver/provider intervention strategies to reduce specific risk factors)
- Decision Algorithm (algorithm of treatment interventions and goals; as well as the ISTAP Skin Tear Classification with pictures)
- Pathway to Assessment/Treatment (clinical pathway for person with skin tear)
- Product Selection Guide (various product categories, indications, skin tear types, and considerations)
- Prevalence Study Data Collection Tool (tool to track skin tears by type, location, causes, etc. for inpatient setting that could be adapted for home health QAPI data collection)



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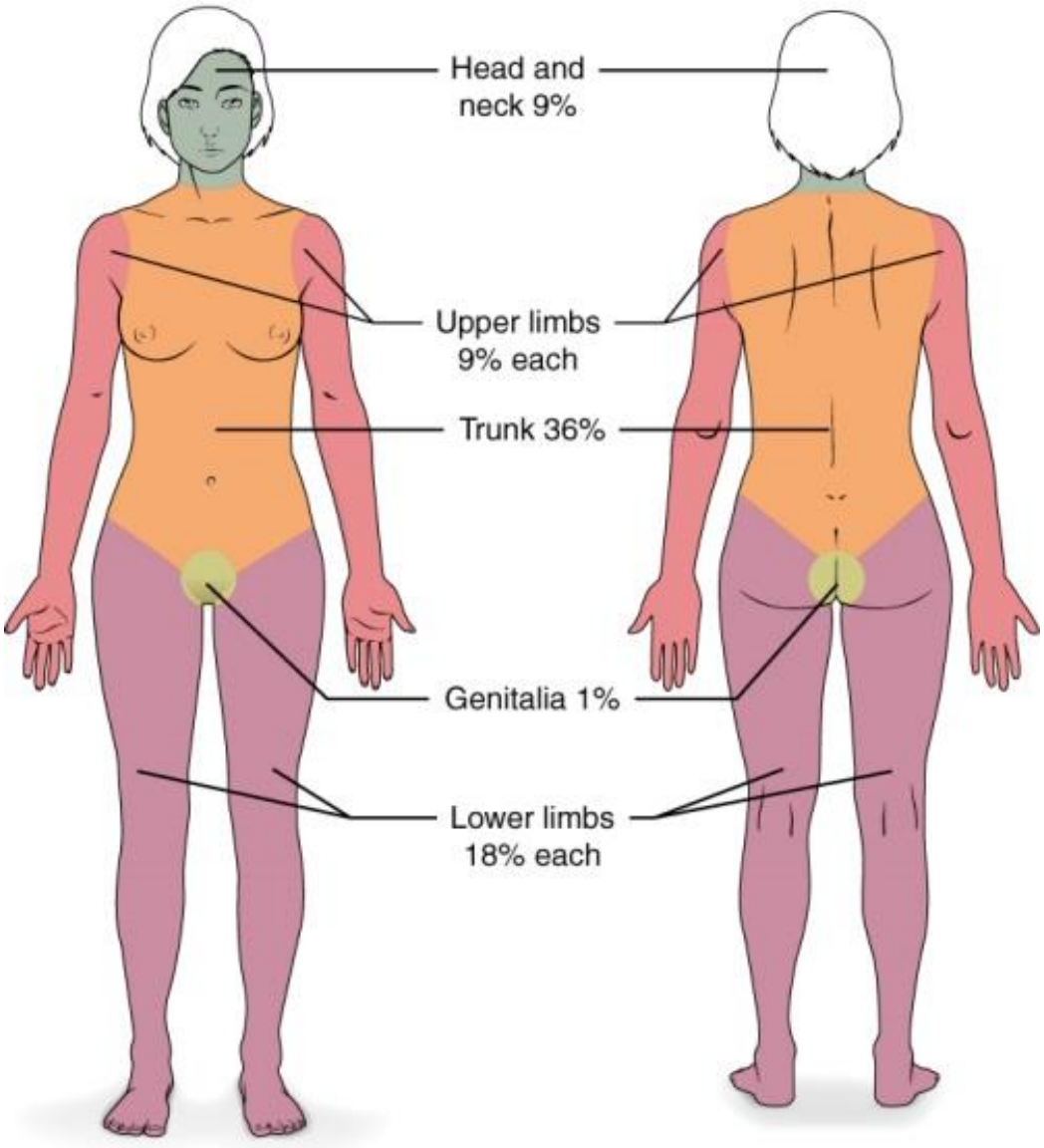
## Burns

The damage from intense heat, radiation, electricity, or chemicals results in burns. The death of skin cells can result in dehydration, electrolyte imbalance, renal and circulatory failure.

**Burn Descriptors:**

- **Rule of 9's** calculates surface area involvement (See Figure 2)

**Figure 2:** Rule of Nines
Source: *Betts, et al.*, n.d.



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- **Superficial Partial Thickness** (second degree)
  - Affects the epidermis and portions of the upper dermis. S/S: Mild to moderate swelling, redness, and pain that is relieved with application of cool covering. Clear fluid-filled blisters may be present. Healing usually occurs within days.
  - Example: blistering, sunburn, mild scald
- **Deep Partial-Thickness** (deep second-degree)
  - Affects the epidermis extends deep into the dermis. S/S: Severe swelling, painful mottled red base with blood-filled blisters or moist surface. Healing typically is within 2-4 weeks. Scarring, changes in pigmentation, and contractions can occur.
  - Examples: hot grease, flame, severe scalds, and contact (e.g., cigarette burns, radiant heaters, curling irons…)
- **Full-Thickness** (third & fourth-degree)
  - Involves the epidermal and dermal layers, often extending into subcutaneous tissue which can include muscle, tendon, and bone. Damage to nerve endings will alter sensory function resulting in the patient being pain free. Wounds appear dry, pale white, leathery, or charred. Fat may be exposed and edema is present. Wounds in this category almost always require debridement and/or amputation and skin grafts. Healing time is much longer and infection is a high-risk problem. Scarring, loss of contour and function, and contractions can occur.
  - Examples: prolonged exposure to flame or hot liquids, electric current, chemicals, and contact

(*Betts, et al*., n.d.; *Hinkle & Cheever*, 2018; & *Sussman et al.,* 2012)

**Treatment of Burns** – Wound Infections (Great Plains QIN) (BPIP pages 35-48)

## Ostomies

### Stomas

Stomas are mucous-lined inner surfaces surgically prepared for a specific function. The tissue will produce mucous, is vascular and will bleed easily, and has no sensory nerve endings. Stomas are typically moist, red or pink, and slightly protruding from the surrounding skin. WOCN identifies the most common stoma complications as: hernia, laceration, mucocutaneous separation, necrosis, prolapse, retraction, and stenosis.

Clinicians need to assess and measure the stoma frequently during the early post-op period to ensure the appliance continues to fit correctly. Assessment includes visual inspection of the stoma, including size, shape, centered lumen, moisture, bleeding, rods or bridges, surrounding



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areas, and inserted stents/tubes. The WOCN's *Stoma Complications: Best Practice for Clinicians* includes a description, assessment, and nursing interventions for common stoma complications.

**Tools:**

- Stoma Complications: Best Practice for Clinicians (WOCN)
- Basic Ostomy Skin Guide – A Guide for Patients and Health Care Providers (WOCN)

**Peristomal Areas**

The skin surrounding the stoma where the ostomy appliance wafer adheres is called the peristomal area. This area is vulnerable to irritation and breakdown due to exposure to drainage.

**Tool:** Peristomal Skin Complications: Clinical Resource Guide (WOCN)

**Clinical Considerations**

Educate the patient and/or caregiver on the following:

- Cleaning and drying the skin
  - Only use warm water since many soaps leave a residue
  - Baby wipes can be irritating and interfere with adherence of appliance
- Measuring and applying appliances
  - Offer tips for ill-fitting appliances
- Watch for signs and symptoms of infection and excoriation
  - Include intervention strategies
- Use an electric razor, if possible when hair removal is necessary
  - If using safety razor stokes should be away from stoma and use mild soap or shaving cream and rinse well
- Interventions that can reduce exposure to skin irritants (e.g., stool, urine, or drainage) include:
  - Measure and refit appliance
  - Try a convex barrier ring or an ostomy belt
  - Include dusting of stoma powder on denuded skin or wound products (e.g., calcium alginate, hydro-fiber, hydrocolloid, or foam) that can remain in place for several days especially on deeper trauma tissue to promote healing, if applicable
  - Use crusting procedure on weeping skin to protect denuded skin and assist with appliance adherence



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        - Apply skin barrier powder to denuded skin
        - Dust off excess powder
        - Apply skin barrier by blotting, if a pad or lightly spray (e.g., liquid polymer, cyanoacrylate-based product)
        - Let air dry well
        - Repeat until a "crust" is formed
        - Stop when skin has healed
    - Refer to ostomy specialist or dermatologist as needed
- Candidiasis skin infections can occur with prolonged exposure to moisture (e.g., sweating, denuded skin, leaking ostomy appliances). Additional risk factors include co-morbidities such as diabetes mellitus, immunosuppression, taking contraceptives, steroids, or antibiotics. A candidiasis skin infection will appear red or a darker pigmentation, and may have papules, pustules, and pruritus. Interventions can include:
    - Re-fit appliance
    - Use a pouch cover or pouch with cloth backing
    - Dry the appliance well after bathing or contact with water
    - Use crusting procedure with antifungal powder and liquid polymer skin

(*Armi*, 2016)

**Tools:**

- Peristomal Skin Assessment Guide (WOCN) is a clinical online tool to provide basic guidance with peristomal skin issues. This tool does not replace a wound/ostomy specialist. Note: There is an online **Definitions** tool included that describes peristomal issues with photos (after starting guide, look in upper right corner for the book icon).
- Crusting Around An Ostomy Stoma (Joy Hooper, 4-minute patient video)

**OASIS Data Collection**

Any wound that described by the name ending with "ostomy" should be considered an ostomy as it related to OASIS items and guidance. The function of ostomies is to remove body wastes/fluids from the body, with a few exceptions. Common ostomies include:

- Bowel: Colostomy, ileostomy
- Urine: Cystostomy, urostomies
- Drain: Cholecystectomy, nephrostomy, thoracostomy (chest tube)
- Feed: Gastrostomy, jejunostomy
- Airway: Tracheostomy

**Special OASIS considerations regarding ostomies:**

**M1340** Does this patient have a Surgical Wound?

Ostomies are excluded from this item except for a surgical take down of an ostomy.



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# WOUND ASSESSMENT & DOCUMENTATION

## Characteristics

A thorough wound assessment is important since the characteristics indicate the past, present, and future wound healing.

**Tool:** Wound Infections (Great Plains QIN) (BPIP pages 35-48) includes information on wound bed descriptions and measurement

## Documentation

As with any assessment, consistency and accuracy is critical with the best practice of completing documentation before leaving the patient's home. Documentation can impact:

- Patient outcomes
  - Right care to the right wound at the right time
- Quality measures
- Surveys
- Payment
  - Case mix miscalculation (e.g., venous vs. arterial vs. pressure)
  - Supply costs
- Authorizations
  - Validation for the need of more frequent clinical visits or appropriate preventative durable medical equipment
- Communication errors between clinicians and prescriber about wound changes and/or need for treatment changes

Measurement is important to track healing progress or decline in the wound. The method and terminology needs to be consistent within agency. Consider aligning policy and procedure with local wound care center.

**Tools:**

Wound Infections (Great Plains QIN) (BPIP pages 35-48) includes measurement information

Wound Measurement – Understanding Wound Care (Vohra Wound Physicians, 4-minute video)



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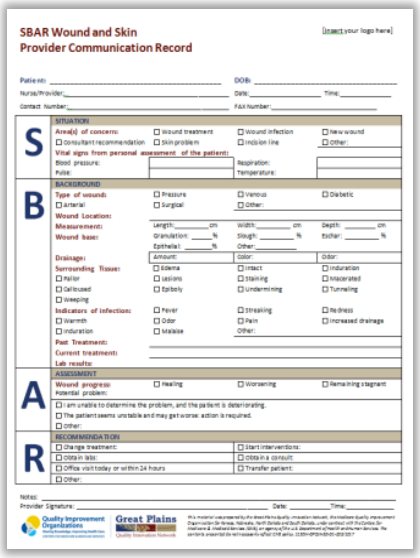
**S**ituation – **B**ackground – **A**ssessment – **R**ecommendation (**SBAR**) is a communication tool developed by naval nuclear submarines to communicate critical information in a standardized and efficient method. The healthcare industry currently uses SBAR across settings to convey important messages to all members of the health care team. SBAR can be used for both oral and written reports.


SBAR Wound and Skin
Provider Communication Record
[Insert your logo here]
S
B
A
R
Great Plains

**Tools:**

- Wound Infections (Great Plains QIN) (BPIP pages 35-48) includes information on using SBAR
- SBAR Wound Form (Great Plains QIN)

**Photography and Telemedicine**

Written by Jan Cuzzell, MSN, RN, CWS, VP Clinical Quality and Myra Varnado, BS, RN, CWON, CFCN, Director Clinician Services from Corstrata

The standard for wound documentation is rapidly changing with the availability of new technologies. Electronic medical record systems are now able to support the use of Health Insurance Portability and Accountability Act (HIPAA)-compliant photo documentation, an innovation that is leading to the emergence of state-of-the-art telewound programs.

**Photography**

Photography is a communication tool used by members of the healthcare team to monitor progress toward healing and detect signs of early wound deterioration. It has been said, *"A picture is worth a thousand words."* Photographs **do not** replace a narrative wound assessment but rather provide insight and detail that might otherwise be lost. Photo-documentation includes digital photography and video imaging.

A best practice is to photograph all wounds at a minimum:

1. On admission and with each recertification, and upon resumption of care
2. When wound deterioration is observed
3. Prior to and following wound debridement
4. Upon patient transfer to and from an alternate care setting
5. Upon patient discharge



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Home health agencies can utilize photographs to:

1. Increase productivity of wound specialists by allowing them to "see" and manage more wound patients via telewound consults
2. Strengthen clinical documentation and facilitate legal defense of delivered care
3. Support billing and reimbursement (i.e., validate the need for additional visits)
4. Provide staff education
5. Provide encouragement for patients or caregivers through progressive (serial) photographs as the wound healing process is often slow

(*Sussman & Bates-Jensen*, 2012)

A HIPAA-compliant system and patient consent is required when sharing patient photographs and documentation. Agencies should have policies and procedures for wound photo-documentation which are regularly updated and reviewed with staff as the technology changes. The following tools provide detailed information that should be included in the policy and procedures:

- Photography in Wound Documentation: Fact Sheet (WOCN)
- A Picture Can Be Worth A Thousand Words (*O'Connell-Gifford*, 2011)

**Telemedicine – Telewound Management**

Telemedicine allows health care professionals to evaluate, diagnose, and treat patients in remote locations using telecommunications technology. Given the visual nature of wound care, telewound care is a practical and efficient way to provide increased access to wound experts in the home health care setting. Telecommunication technologies include:

- **Store and Forward Photos Consultation:**
  Clinicians use a mobile smart device to photograph and document the patient's wound. The photo is stored securely in the Cloud and later accessed by a wound specialist (RN or PT). The wound specialist reviews the image and accompanying documentation to confirm wound type and stage (if appropriate) and recommends a treatment plan.
- **Live, Interactive Video Conferencing:**
  HIPAA-compliant video conferencing technology allows in-home visit clinicians to interact directly with a wound specialist. Asynchronous video allows for the wound specialist to "see" and interact with the patient and the in-home clinician. It is a particularly valuable technology for assessing complex wounds or wounds that are not responding to treatment. Additionally, videoconferencing can help the home care nurse problem-solve negative pressure wound therapy devices, ostomy appliances, application of wound dressings, and similar challenges encountered in a setting with limited access to resources.



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# INTERVENTIONS

Some specific wound care strategies have been addressed throughout the BPIP, including links to specific wound treatments. This section contains other wound treatment principles and techniques.

## Sterile vs. Clean Technique

There has been a longstanding question of clean vs. sterile technique for chronic wound care. In 2001, the Association of Professionals in Infection Control and Epidemiology, Inc. (APIC) and the Wound, Ostomy and Continence Nurses Society (WOCN) released a position statement on the management of chronic wounds. There are limited studies on this topic, but at this time there is no definitive research to validate the use of sterile dressings for chronic wounds in the community setting for infection prevention or wound healing (*WOCN*, 2018).

The following definitions cited in the position statement continue to be supported today related to wound care:

> **Sterile technique**. Sterile is generally defined as meaning free from microorganisms. Sterile technique involves strategies used in patient care to reduce exposure to microorganisms and maintain objects and areas as free from microorganisms as possible. Sterile technique involves meticulous hand washing, use of a sterile field, use of sterile gloves for application of a sterile dressing, and use of sterile instruments. "Sterile to sterile" rules involve the use of only sterile instruments and materials in dressing change procedures; and avoiding contact between sterile instruments or materials and any non-sterile surface or products. Sterile technique is considered most appropriate in acute care hospital settings, for patients at high risk for infection, and for certain procedures such as sharp instrumental wound debridement.
>
> **Clean technique**. Clean means free of dirt, marks, or stains. Clean technique involves strategies used in patient care to reduce the overall number of microorganisms or to prevent or reduce the risk of transmission of microorganisms from one person to another or from one place to another. Clean technique involves meticulous handwashing, maintaining a clean environment by preparing a clean field, using clean gloves and sterile instruments, and preventing direct contamination of materials and supplies. No "sterile to sterile" rules apply. This technique may also be referred to as non-sterile. Clean technique is considered most appropriate for long-term care, home care, and some clinic settings; for patients who are not at high risk for infection; and for



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patients receiving routine dressings for chronic wounds such as venous ulcers, or wounds healing by secondary intention with granulation tissue.

(*ACIP & WOCN*, 2001; *WOCN*, 2012)

There are some factors that should be considered according to the WOCN (2012) which include:

- Immune status of patient
- Type, depth, and location of wound
- Invasiveness of wound care procedures (e.g., debridement, extensive packing)
- Healthcare setting
- Supplies and instruments (e.g., staple remover, scissors, dressings)
- Solutions for cleansing/treatment

(*WOCN*, 2012)

**Table 5: Community-Based Settings**

| Settings or Situations | Sterile Technique | Clean Technique |
|---|---|---|
| **Home care** | | X |
| **Community clinics** | | X |
| **Physicians' offices** | | X |
| **Sharps debridement (all settings)** | X | |
| **Immunocompromised patients** | X | |

(*Sussman & Bates-Jensen*, 2012)

Patients' wound care supplies are often provided in smaller package sizes for single use in the home. At times there are some portions of the open-but-unused wound dressings that are being used for another dressing change to reduce waste and costs in the home. A recent small study found minimal incidences of microbial growth and did not increase the risk of the patient developing a wound infection. The study recommended the practice only for patients with low-risk clinical and environmental situations for patients in the home (*Templeton, Wong, Rando, Adamson, & Lynn,* 2018). Containers of solutions (e.g., saline, irrigation solutions) should be kept based upon the manufacturer's instructions or the agency's policy. This is another area with little research in wound care for home health patients.



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## Infection

Prevention of wound infections is essential. Infections can cause delayed wound healing, pain, sepsis, and death. It is the responsibility of healthcare clinicians to reduce the risk and identify signs of infection early.

**Tools:**

- Healthcare-Associated Infections (HAI) Key Points (HHQI)
  - Catheter Associated Urinary Tract Infections (CAUTI)
  - Clostridium difficile Infections (CDI)
  - Methicillin-Resistant Staphylococcus Aureus (MRSA)
  - Surgical Site Infections (SSI)
- ZONE Tool: Wound Management (HHQI) (BPIP page 48)
- Home Health Infection Prevention Toolkit (Great Plains QIN) includes information on:
  - Wound Infection
  - Wound Culture Competency
  - Sequence for Donning and Doffing PPE
  - Hand Hygiene Competency
  - Signs of Infection and Sepsis at Home

The Wound Infection tool from Great Plains QIN provides information on dressings including the appropriate types for various wounds, examples of products, and advanced wound dressings and treatments. **Please note that the tool contains some examples of products, but no specific products are being endorsed.** This tool is inserted into the BPIP beginning on the next page and can be downloaded separately for clinical reference.



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# Wound Infections

Given the complexity of wound healing and the multiple factors that affect healing, wound care in the home can be a challenge. Chronic health conditions and multiple co-morbidities, such as diabetes, cancer, or heart failure must all be taken into account. Home care nurses treat a variety of wounds. The plan of care must address the whole patient and must take into account any assistance the patient may need due to physical or mental deficits, nutritional needs, family support, wound care strategies, and reimbursement.

Wound Infection continues to be a challenging problem and represents a healthcare burden.

Most wounds contain micro-organisms; many heal successfully with proper cleansing and wound care. However, micro-organisms and bacteria, can multiply, invade and damage tissues that delay healing and cause systemic infections.

It is important to be aware of the normal healing process of wound care. The phases of full thickness wound healing are outlined below.

***Who is at risk of wound infection?***

The risk of infection is increased by any factor that debilitates the patient, impairs immune resistance or reduces tissue perfusion such as:

- co-morbidities (diabetes, immunocompromised states, hypoxia, poor tissue perfusion due to anemia, arterial, cardiac, respiratory, and renal impairment, malignancy, obesity and malnutrition.
- Medication including corticosteroids, cytotoxic agents, and immunosuppressant medications
- Psychosocial factors: hospitalizations, poor personal hygiene, unhealthy lifestyles and economics.

- **Phase 1 - Inflammation phase (0-3 days).** This is the body's normal response to injury. This phase activates vasodilation leading to increased blood flow causing heat, redness, pain, swelling, loss of function (example: arm swells and cannot bend). Wound oozing may be present and is a normal in phase 1.
- **Phase 2 - Proliferative phase (3-24 days).** This is the time when the wound is healing. The body makes new blood vessels, which cover the wound. This phase includes reconstruction and epithelization. The wound will gradually become smaller as it heals.
- **Phase 3 - Maturation Phase (24-365 days).** Final phase of healing, when scar tissue is formed. The wound at this stage is still at risk and should be protected where possible. (Bryant, Ruth. 2000. Acute and Chronic Wounds, 2nd Edition, Mosby.)

All healthcare providers have a role in prevention of wound infection. Using standardized evidence-based wound protocols and by recommending appropriate support surfaces and dressings, healing times can be shortened and additional wounds can be prevented, thereby reducing healthcare costs. Patient and caregiver education is vital in prevention of infection and reducing further wounds from occurring.

## OASIS C2-Integumentary System

The Wound, Ostomy, Continence Nurses Society has developed guidelines to facilitate the classification of wounds by home health clinicians in collaboration with the updated OASIS C2 changes in the integumentary system. For more information on OASIS and how to complete the skin assessment, please visit:
http://c.ymcdn.com/sites/www.wocn.org/resource/resmgr/publications/WOCN_Guidance_on_OASIS-C2_In.pdf

## Assessment

Diagnosis of wound infection is made mainly on clinical symptoms. Assessment should include evaluation of the patient, the tissues around the wound and the wound itself for signs and symptoms of infection. Routine wound assessment will aid in early detection of infection. An infection is defined as the presence of $10^6$ bacteria or other organisms in a gram of tissue. This can lead to a host of reactions from contamination, colonization, local infection, spreading infection, and progressing to systemic infection.

| Bioburden States | |
|---|---|
| Contamination | Bacteria are present on the surface but do not multiply and do not cause an immune response |
| Colonization | A normally healing wound will be colonized with bacteria. Colonization is a stable state where the growth and death of microorganisms within a wound is in balance with the patients' immune system. It does not interfere with healing nor damage wound tissue or trigger an immune response. |
| Critical Colonization | The presence of bacteria in the wound results in delayed healing. |
| Local Infection | Bacteria multiply, disrupt healing and result in damage to wound tissue. |

### Signs and Symptoms of Infection In Acute Wounds

- New or increasing pain
- Erythema
- Local warmth
- Swelling
- Purulent discharge
- Fever
- Delayed or stalled healing
- Malodor
- Wound breakdown or dehiscence
- Induration
- Elevated white blood cell count

### Signs and Symptoms of Infection Chronic Wounds

- New, increased or altered pain
- Erythema extending from wound edges
- Local warmth
- Swelling
- Increase or altered purulent exudate
- Delayed or stalled healing
- Distinctive malodor
- Wound breakdown or dehiscence
- Induration
- Elevated white blood cell count
- Peri-wound edema
- Bleeding or friable (easily damaged) granulation tissue
- Wound bed discoloration
- Pocketing/bridging

### Wound Bed

**Granulating:** Healthy red tissue which is deposited during the repair process of full thickness wounds; presents as pinkish/red colored moist tissue and comprises of newly formed collagen, elastin and capillary networks. The tissue is well vascularized and bleeds easily.


Granulating Healthy Tissue

**Epithelialization:** Process by which the wound surface is covered by new epithelium, this begins when the wound has filled with granulation tissue. The tissue is pink and occurs as the primary closure mechanism of partial thickness wounds and atop of healthy granulation tissue in a full thickness wound.


Slough

**Slough:** The presence of devitalized yellowish tissue. Slough is formed by an accumulation of dead cells and should not be confused with pus.

**Necrotic:** Wound containing dead tissue. It may appear hard, dry and black. Dead connective tissue may appear grey. The presence of dead tissue in a wound prevents healing.


Necrotic Ulcer of Heel

**Hyper-granulation:** Granulation tissue grows above the wound margin. This occurs when the proliferative phase of healing is prolonged and is usually the result of increased moisture.

## Wound Measurement

Wound measurements are an essential component of wound assessment. It should be done on the initial visit and at regular intervals. Various methods are available to measure wounds and it is important to use the same method each time, with the patient in the same position.

**Depth**: Measure in centimeters. Depth is most commonly measured by gently inserting a cotton tipped applicator into the deepest point of the wound bed. Place a gloved forefinger on the swab at skin level and holding the finger in place, remove the swab and place next to a centimeter ruler.


**Tunnelling or Undermining**: Clinicians should envision the face of a clock over the wound when the patients head is at the 12:00 o'clock position and the feet are at 6:00 o'clock position. Gently advance the cotton tipped applicator into the area of tunnelling or undermining, and measure the extent in centimeters.

**Length/Width**: There are a number of methods for measuring wounds, ranging from simple linear measurements with a paper ruler to more advanced methods using computer software. For more day-to-day practice, we will discuss the techniques used by most home care clinicians. The simplest is using a disposable paper ruler. Multiplying the length and width will give you the estimated surface area OR longest length x greatest width perpendicular to each other. The measurements are taken in head to toe orientation. Wounds change shape as they heal and the head to toe orientation ensures the length and width remain the same.Tracing is another method. It is easy and provides more information on the shape of the wound. http://www.wounds-uk.com/wound-essentials/wound-essentials-10-2-wound-assessment-part-1-how-to-measure-a-wound

## Exudate

Exudate is produced by all acute and chronic wounds as part of the natural healing process. It plays an essential part in the healing process. Exudate contains nutrients, energy and growth factors for metabolizing cells. It also contains high amounts of white blood cells and cleanses the wound. Exudate also maintains a moist wound environment and promotes epithelialization. It is usually amber or straw colored similar to plasma and is important to asses and document the type, amount and odour of exudate to identify any changes. Too much exudate leads to maceration of the skin and hypergranulation of the tissue, while too little can result in the wound bed becoming dry.

***One challenge in wound management is to find a dressing that manages exudate…neither too dry nor too wet.***

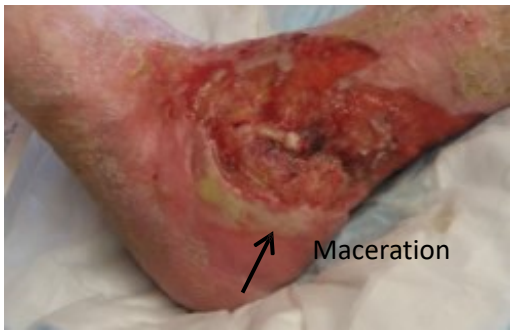
| Type | Color | Consistency | Significance |
|---|---|---|---|
| Serous | Clear, straw colored | Thin, watery | Normal. Increase volume may indicate infection |
| Serosanguinous | Clear pink | Thin, slightly thicker than water | Presence of red blood cells. May indicate capillary damage after surgery or traumatic dressing removal. |
| Sanguineous | Red, bloody | Watery | Trauma to blood vessels |
| Purulent | Opaque, milky, yellow or brown. Occasionally green. | Viscous, sticky | White blood cells, bacteria, slough or from enteric or urinary fistula.<br>Bacterial infection (Pseudomonas aeruginosa). |
| Haemopurulent | Reddish, milky | Viscous, thick | Established infection. May contain neutrophils, dying bacteria, inflammatory cells, blood leakage due to dermal capillaries. |

## Wound Edges

Healthy wound edges present as pink epithelium growing over mature granulated tissue.

- **Color** - pink edges indicate growth of new tissue; dusky edges indicate hypoxia; and erythema indicates physiological inflammatory response or cellulitis
- **Raised** - wound edges (where the wound margin is elevated above the surrounding skin) may indicate pressure, trauma or malignant changes
- **Rolled** - wound edges (rolled down towards the wound bed) may indicate mechanical damage, wound stagnation or wound chronicity
- **Contraction** -wound edges are coming together, signs of healing
- **Sensation** - increased pain or the absence of sensation should be noted

***Proper assessment of surrounding skin is crucial to wound care and treatment.***



### *Surrounding Skin*

The surrounding skin should be examined carefully. Tissue may present as:

- Healthy
- Macerated
- Dry/flaky
- Eczematous
- Black/blue discoloration
- Fragile
- Erythema
- Induration (hardening)
- Cellulitis

## Pain

Pain associated with chronic wounds can be underestimated. It is important that pain scores are captured accurately and regularly to ensure that patients have a more active role in dealing with their pain. Effective pain relief can be achieved, and documentation of pain interventions and patterns should be captured. Numerous evidenced based pain assessment tools are available including the 0-10 pain scale, Wong Baker faces, and the FLACC Scale. Pain scores should be clearly documented and reported to the provider. It is important to have an accurate assessment of pain before, during and after dressing changes and may provide vital information for further wound management.

In patients who are immunocompromised and/or who have motor or sensory neuropathies, symptoms may be less obvious. For example, a diabetic patient that has an infected foot ulcer and peripheral neuropathy, symptoms may be less obvious. In arterial ulcers, previously dry ulcers may become wet when infected and in Charcot's arthropathy, the patient may have inflammation that is not associated with infection.

# SBAR for Wound Care Management

**Purpose:** To facilitate effective communication and collaboration between the practitioner in the management of the patients wound. SBAR organizes essential elements of a conversation in the transfer from one to another and promotes completeness of information and helps prevent omissions.

**Goal:** To incorporate evidence based research on the science of wound management, and to integrate new understanding of the wound healing process into current practice. Research shows that advanced wound care products provide better outcome for patients and as such should be incorporated into practice. This tool will assist the practitioner to effectively communicate recommendations based on current research.

### How to use the SBAR tool:

**Before calling practitioner:** Complete a full assessment on the patient. Review patient chart. Note any changes, labs, recent falls/injuries/procedures, etc. Also, have answers to questions such as: *Is the wound healing? Is it moist? Is necrotic tissue present? What is the condition of peri-wound skin? What are the measurements and depth of the wound?* Be sure to have all necessary information to communicate effectively.

***Situation:*** Your name, patient's name and the current issue (what about the patient's condition warranted the call?)

***Background:*** Report information relevant to current issue, i.e. diagnosis, vital signs, lab results, physical assessment findings, skin/wound condition, etc.

***Assessment:*** Focus on current wound. If necessary, refer to previous assessments to highlight changes from the past. Take this time to use critical thinking skills to elaborate on details pertaining to current issue such as nutritional intake, wound deterioration/failure of wound healing, pre-albumin value, hydration. What has led you to the recommendation of a treatment option specific to THIS patient's needs at this time. Is it that the wound bed is dry? Does it have slough? Is there an odor? Is the peri-wound skin reddened?

***Recommendation:*** Use key phrases such as "I recommend…," "What I have available is...," or "As per our formulary, I suggest using…" AVOID phrases such as, "What do you think," "What would you like to do," and "I don't know." Back up your request with information such as "Wet-to-dry dressing causes tissue destruction and is traumatic to the patient." Use generic product names, rather than brand names. Ex: Hydrocolloid, not *Duoderm*.

Scripting can assist the healthcare provider when discussing recommendations with the ordering practitioner. Here are a few examples of how scripting can assist the healthcare provider:

"Based on my assessment of the patient and the condition of his/her wound, I recommend using_____"

"As per our formulary, I suggest using_____treatment on the patients wound, as it is most adequate at this point in the wound's healing process.

**OTHER LANGUAGE THAT MAY BE USEFUL:**

"Evidence-based research shows that wet-to-dry dressing is no longer considered the standard of care. It is non-selective and removes both infected AND healthy tissue. It is detrimental to the wound bed and causes pain upon removal. Wet-to-dry dressings also need to be changed much more frequently, interrupting the temperature of the wound bed, which is key in healing a wound."

"By treating the wound with a hydrocolloid dressing, the wound bed will remain covered and protected from bacterial penetration, and autolytic debridement will take place while maintaining a moist wound environment."

"Foam absorbs small to moderate amounts of drainage, promotes a moist wound environment, provides thermal insulation for the wound bed and aids in hyper-granulation of tissue."

"Hydrofibers or foams are ideal for wounds with moderate to excessive slough/drainage because they effectively debride the wound, while keeping it moist, and promote tissue granulation."

"Alginate dressings are an effective barrier to bacterial penetration in moderate to heavily draining wounds. Alginates absorb drainage and promote a moist wound environment."

"Monofilament cleansing pads are effective at cleansing wounds of biofilm and loosen necrotic debris on wound surfaces."

Please feel free to utilize the SBAR tool created by the Great Plains Quality Innovative Network. This can be adapted for your use and we encourage you to make this unique for your agency. This can be downloaded for your use or can be used electronically. A chart with various tools and resources are listed at the end of this document.

## *Wound Cultures*

Sampling techniques include wound swabbing, needle aspiration, and wound biopsy. Wound swabbing is most widely used, but may mislead by detecting surface colonization rather than more deeply sited pathogens. Wound biopsy provides the most accurate information about type and quantity of pathogenic bacteria, but is invasive and often reserved for wounds that fail to heal despite appropriate treatment. A wound culture competency tool is available for download and use at the end of the document.

### Indications for Wound Specimen Collection

- Acute Wound with signs of infection
- Chronic Wound with signs of spreading or systemic infection
- Infected chronic wound that have not responded to treatment or that are deteriorating despite antimicrobial treatment

The Levine technique may be the most useful swabbing technique. In general, sampling should take place after thorough wound cleansing (and if appropriate, debridement), and should concentrate on the areas of the wound of greatest clinical concern. A swab is rotated over a 1cm 2 area of the wound with sufficient pressure to express fluid from within the wound tissue.

Another technique is called the "Z" technique. This technique involves rotating the swab between the fingers in a zigzag fashion across the wound without touching its edge. Not validated as efficaciously as Levine.

Research suggests the Levine method detects significantly more organisms because it samples a greater concentration of microorganisms from both the surface and slightly below the surface of the wound. Angel ED, et al. The clinical efficacy of two semi-quantitative wound-swabbing techniques in identifying the causative organism(s) in infected cutaneous wounds. International Wound Journal (2011) 8: 176-185

Recommended basic principles from the Wound Ostomy and Continence Nursing Society exist for obtaining a wound culture and no single guideline is used universally. Whatever technique you decide to use, certain basic principles apply:

- Always obtain culture from thoroughly cleansed and prepared tissue to avoid obtaining only a culture of surface contamination.
- Collect culture before topical or systemic antibiotics are initiated.
- Obtain a swab culture from a viable wound bed. Don't culture avascular tissue. It is recommended that you irrigate the tissue with normal saline solution, moisten a swab with normal saline solution, and swab a 1cm2 area of viable tissue for 5 seconds with enough pressure to produce exudate.

Bacteria are usually identified using culture techniques. When rapid identification is required, such as in sepsis, a Gram Stain may be useful in guiding early antimicrobial therapy. Samples sent for analysis should be accompanied by full clinical details to ensure that the most appropriate staining, culture, and antibiotic susceptibility is performed.
To learn more about wound culture techniques, many different videos, journals, and publications are available such as the one listed here.


https://www.youtube.com/watch?v=n4Jp6jl3HWc

Clinical Connections-Wound Culture Techniques

## Types of Wound Treatments

- Advanced Dressings & Supplies
- Vacuum Assisted Closure
- Electrical Stimulation
- Ultrasound Wound
- Surgical Treatment and Debridement

**Advanced Dressings & Supplies**: Supplies such as calcium alginates, hydro fiber, foam dressings, hydrocolloids, and wound gels. These dressings provide antimicrobial activity, improved fit over difficult anatomical areas, faster healing, and improved patient comfort.

**Vacuum Assisted Closure**: While some agencies shy away from the advanced technologies to assist with wound healing, vacuum assisted closure therapy is a complex wound management system used in homecare settings that promotes angiogenesis while preparing the wound bed for closure

**Electrical Stimulation**: E-Stim is another edge in the treatment of difficult to heal wounds. This wound care modality is recommended by the Agency for Health Care Policy and Research and by Medicare for certain types of wounds. E-Stim has multiple effects on a wound site including increasing collagen tensile strength and increasing protein synthesis. This ultimately results in new tissue growth or granulation

**Ultrasonic Wound Therapy**: Ultrasound is also used to accelerate wound healing. Ultrasound can cause degranulation of mast cells, releasing histamine, and attracting neutrophils and monocytes. Ultrasound can also cause targeted heating that will improve circulation resulting in the progress of wound healing.

**Surgical Treatment and Debridement**: Debridement is the removal of foreign material and dead or damaged tissues. It is well demonstrated that wound healing cannot occur when necrotic material is present. Devitalized tissue is an excellent medium for infection. Debridement is needed in all types of wound, both acute and chronic. Necrotic tissue inhibits phagocytosis and prevents an accurate assessment. Debridement reduces the number of germs and toxins in the wound bed. There are many forms of debridement and factors to consider when debridement is necessary. There are 3 basic types of debridement:

- **Mechanical**- this includes surgical/sharp techniques, wet to dry techniques, pressure lavages, monolfilament pad cleansing, and negative pressure therapy (wound vacuum assisted closure).
- **Autolytic Debridement**- This principle is to use the body's own warmth and moisture to promote the breakdown of necrotic tissue. Autolysis is accomplished by maintaining the wound moist with retentive occlusive dressings, (hydrocolloids), foams, or non-occlusive (alginates), hydro-fibers, and hydrogels. This is a slower method of debridement and can be difficult to accomplish in immune-compromised patients.
- **Enzymatic**-This is removal of necrotic tissue through the application of prescription enzymatic debriding agents that break down the necrotic tissue through a chemical process.

The choice of whether or not to debride is done by the physician, Debridement should not be done when the wound is clean, non-infected, free of necrotic tissue, foreign matter or fibrin, when there is no tender fluctuation, erythema. A heel pressure ulcer presenting as a dry eschar, can be treated without debridement if there is no drainage, pain, or erythema. The eschar provides a natural protection until the edges begin to open. Stable heel eschar should be maintained intact until vascular status of the lower extremity can be determined.

## Types of Dressings

Wound care has become more advanced and a variety of wounds are treated in the home every day. A wound will require different management and treatment at various phases of healing. No dressing is suitable for all types of wounds; therefore, frequent assessment of the wound is necessary. An appropriate dressing should maintain a moist environment and manage exudate, while being cost effective. A moist environment is ideal for most wounds; however, a wet environment is not. The dressing should not stick to the wound, shed fibers, or cause trauma to the wound or surrounding skin on removal. Protecting the wound from the outside environment and providing a bacterial barrier is necessary in infection prevention. When appropriate, consider using dressings that have an antimicrobial incorporated into the dressing and one those that can stay in place for several days. The ideal dressing should adhere to the skin, aid in debridement, if there is necrotic debris or slough in the wound. Wounds need to be kept close to normal body temperature for adequate healing to occur. Advanced dressings offer more than just a covering for the wound. They are important in avoiding infections, improving comfort and safety, aid in reducing the length of stay in hospitals and at times delay daily dressing changes. This saves time and money. Although many of these products seem costly, when all factors are considered, they can prove to be a cost effective measure for agencies. We have a created a stand- alone tool for your convenience at the end of the document. Many organisms are now resistant to antimicrobials like silver, so use caution when selecting the proper dressing.

**Transparent film dressings:** Waterproof and impermeable to bacteria and contaminants. Provides a moist, healing environment, promotes autolytic debridement, and protects from mechanical trauma on intact skin and bacterial invasion of wound tissue. Applying a skin protectant to surrounding skin is advised. Visualization is possible with transparent dressings. They are flexible making them easy to conform to difficult locations like the heels and elbows. Not advised for wet wound as they do not absorb.

**Uses:** IV sites, donor sites, lacerations, abrasions, and select partial thickness wounds.

**Examples of products:** *Tegaderms, DermaView, Opsite, Polyskin, Hydrofilm, Repara, Bioclusive Plus and Select*

**Impregnated Dressings**: Gauzes and non-woven sponges, ropes, and strips that are saturated with a solution, hydrogel, emulsion, or oil. Commonly saline, zinc salts, oil, petrolatum, xerofoam and scarlet red. Not for use with dry wounds. DO NOT USE OVER EXPOSED BONE OR TENDON. Change daily.

**Uses:** Full –thickness chronic wounds such as stage II-IV pressure ulcers, tunneling wounds, and non-infected wounds.

**Examples of products:** *Curad oil emulsion gauze such as xerofoam non-occlusive, mesalt sodium chloride impregnated, and cuticell*

**Hydrogels:** Available in sheets or gels, water or glycerin based. Maintains moisture and provides autolytic debridement. Sheets protect wound borders.

**Uses:** Full or partial thickness wounds, necrotic wounds, non-exudating wounds, radiation damaged tissue. Easy application and removal. Requires secondary dressing.

**Examples of products:** *Normlgel, Dermagel, Clearsite*

**Collagens:** Interact with exudate to form a gel, requires secondary dressing.

**Uses:** Partial and full thickness pressure ulcers, venous ulcers, donor sites, surgical wounds, vascular ulcers, diabetic ulcers, second degree burns, abrasions, and traumatic wounds.

**Examples of products:** *Promogran Prisma Matrix, Promogran, Endoform*

**Calcium Alginates and Hydrofibers:** Dressings made from seaweed. Can absorb 15-30 times their weight. Easy and effective to use. Secondary dressing is required. Absorbs drainage while keeping wounds moist. Maceration may occur if extends onto skin. Cut to fit wound bed.
**Uses:** Moderate to highly exudating wounds, pressure ulcers, venous stasis ulcers, tunneling, venous ulcers, packing wounds, or use AG (silver impregnated) for infected wounds.

**Examples of products:** *Aquacel AG, Sorbion, Medihoney, Repara, Restore, Maxsorb, Silvervel, Kaltostat, Tegaderm, Sorbion, Medihoney, Calcium Alginate*

**Composites:** Wound covers that combine distinct components into a single product to provide multiple functions such as a bacterial barrier, absorption and adhesion. May function as a primary or secondary dressing on a variety of wounds.

**Uses:** Primary dressings over sutures and skin tears or as a secondary dressing with impregnated gauze or wound fillers.

**Examples of products:** *Opsite post-op, Stratasorb, Repel, Telfa, DremaDress, Mepore, Suresite*

**Contact layers:** thin, non-adherent sheets designed to protect the wound bed from direct contact with other dressings, conform to shape of wound, allows exudate to flow through to secondary dressings.

**Uses:** Partial and full thickness wounds, under compression wraps, donor sites, infected wounds, use with topical medications.

**Examples of products:** *Mepitel one, Profore WCL, Adaptic touch, DACC WCL*

**Elastic Bandages:** Stretch and conform to body contours, made of cotton, polyester, rayon, or nylon. Can provide absorption as a second layer or dressing, hold wound cover in place, apply pressure or cushion wound.

**Uses:** Secure IV's and dressings, splints, or provider mild compression for strains, sprains, and edema.

**Examples of products:** *Coban, ACE wraps, Co-flex, abdominal binders*

**Foam Dressings**: They are capable of absorbing exudate and can be used as primary or secondary dressings. Many foam dressings have silicone adhesives that are waterproof and have a silicone border that can be reapplied if needing to assess wound. It is important to keep foam inside the wound bed if using Negative pressure. If outside, this can cause maceration.

**Uses***:* Moderate to highly exudating wounds, infected wounds, protection of bony prominences, used under compression dressings. Not for use in dry; lite versions should be used in superficial wounds.

**Examples of products***: Mepilex & Lite, Allevyn & Lite, Restore, Polymen, Xtrasorb, Optifoam, Hydrofera Blue*

**Hydrocolloids:** Used for light to moderately exudating wound. Wafers made from cellulose, gelatin, pectin and elastomers. The wafer is fixed to a semipermeable sheet and applied directly to the skin. They are waterproof and wear time can be up to 7 days. Mold well. Comfortable for patients unless rolling occurs which requires a dressing change.

**Uses:** Partial thickness ulcers, bony prominences, necrotic wounds, under compression raps, pressure ulcers and venous ulcers

**Examples of products:** *Duoderm, Comfeel, Medihoney, Xtrasorb, Exderm, Nuderm, Restore*

**Wound Cavity Fillers:** Maintains moist environment and manages exudates.

**Uses:** Full and Partial thickness wounds, infected wounds, draining and deep wounds that require packing.

**Examples of products:** *Aquacel Ag, Polymen WIC, Curad plain packing strip, Mesalt ribbon*

*Disclaimer*
Reference in this publication to any specific commercial product is for general informational purposes only and does not constitute an endorsement or recommendation of any kind by Great Plains Quality Innovative Network. Persons using such products assume responsibility for their use in accordance with current directions of the manufacturer.

| Dry Wound | Minimal Exudate | Moderate Exudate | Heavy Exudate |
|---|---|---|---|
| Non adherent island dressing | Hydrogel | Calcium alginate | Hydrofiber |
| Hydrocolloid | Hydrocolloid | Hydrofiber | Foam |
| Films-Semi Permeable | Silicone absorbent | Foams | SupraAbsorbent dressings |
| | | Hydrocolloid: paste/powder | Ostomy bags/Wound Managersⁿ |
| | | | Negative Pressure Wound Therapy |

## Future of Wound Care

Early recognition along with prompt, appropriate and effective interventions in prevention of wound infections are more important than ever in reducing its economic and health consequences especially in the context of antibiotic resistance. Technology has changed and continues to evolve in the diagnosis and treatment of various conditions.

Telemedicine in wound care can be done utilizing a smart phone, video camera, webcam, and electronic medical records to exchange information. Home health agencies should be diligent in following their facility policy and procedures when using telemedicine and smart phones when assessing wounds and transferring data. The home health nurse can take pictures on her smart phone and transfer that data to the clinician for further guidance. The provider may be on a two-way cam, or can receive securely transmitted information. From there, a plan of care is developed, all done from the convenience of the patient's home. Wound care apps are available for use and many of these are free, while others require a paid subscription. Wound apps can be very helpful for guidance in the home health setting. Trying to find the correct resource may take some time, but well worth the time spent.

Apps are becoming more useful and pertinent in home care. The Wound Care app from Advanced Tissue displays the figure of a human body. You then select the part of body on which you have a wound. Once you click, filters are available to input the depth and moistness among other factors. The app then suggests a type and size of dressing with a description.

The Mobile Wound Analyzer, also from Advanced Tissue is designed for management of pressure and diabetic ulcers among other types of wounds. It is more in-depth and allows the user to learn about the wound type and how to care for it.

Smart bandages are also being developed and researched. These dressings are capable of gathering data and report wound healing to clinicians. This technology is still in its infancy but trials are slated to begin in 2018. These bandages work through microscopic sensors that have the ability to recognize complications, including infection and blood clots. When the dressings detect an issue, they send an alert to the clinician through a smartphone app.

## In summary

There are many obstacles to performing wound care in the home and much research is needed. Clinicians may be dealing with unsanitary conditions or dealing with patients who cannot pay for supplies and living unhealthy lifestyles. Health care providers typically use a clean versus sterile technique and carry their own supplies including soap, alcohol-based sanitizer, gloves and dressings. Soiled dressings should be double bagged and disposed of properly. Wet-to-dry dressings are rarely used and moist wound healing is recommended in most situations. The use of wet-to-dry dressings, except in rare cases where debridement may be necessary are not typically recommended. Advanced therapies now include the use of calcium alginates, foam dressings and gels, and negative pressure therapy. All of which reduce the frequency of visits and dressing changes. Physicians rely on the home health clinician to accurately report and assess possible infections as soon as observed. The use of telemedicine and new apps are being used to report to physicians and allows the physician the ability to directly observe the wound. Please follow your agency policy on wound procedures and documentation.

There are many resources available to assist clinicians in wound assessments and for patient use. We have listed just a few of these resources for clinicians to use in your practice.

**Tools/Resources**

| **Website:** | **Examples/Descriptions:** |
|---|---|
| https://www.cdc.gov/mrsa/pdf/SHEA-mrsa_tagged.pdf | Provides evidence-based clinical information/resources for MRSA.  |
| http://www.health.state.mn.us/divs/idepc/diseases/mrsa/bandages.html | Patient handout-MRSA Changing Bandages Easy to read with pictures  |
| http://www.health.state.mn.us/divs/idepc/diseases/mrsa/book.html | MRSA booklet for patients. Available in many languages.   |
| https://s3.amazonaws.com/aawc-new/memberclicks/AAWC-Infection-brochure_03.06.pdf | How to Prevent Infections-Patient Handout  |
| https://s3.amazonaws.com/aawc-new/memberclicks/ABC-brochure_03.30-for-Web1.pdf | ABC's of Wound Care-Patient Handout  |
| https://aawconline. org/resources/ | Association for Advancement of Wound Care provides |

| | |
|---|---|
| | education for healthcare providers and patients. |
| SBAR Communication Tool | SBAR Communication Tool-Staff |
| Wound Culture Competency | Wound Culture Competency-Staff |
| Wound Dressings Staff Handout | Wound Dressings-Staff |
| http://www.thewoundinstitute.com/twifile/MSPE-47-0616-UE%20Transitions%20of%20care%20resource%20guide%202-8.pdf | Transitions of Care –Smith and Nephew- Staff Discharge Planning and Wound Care Zone Tool |
| http://www.wocn.org/ | Professional nursing society promoting education and clinical guidance for wound, ostomy and incontinence. |
| http://www.presentwoc.com/ | Online medical education for Nurses and Therapists who treat wound. No charge. Multimedia online lectures that simulate the lecture hall experience, discussion forums, chat rooms, and email e-zine publications. |
| http://www.thewoundinstitute.com/resource_center/TheSENSESProgramMaterials.pdf?dl=1 | Nurse aide education on using your senses in looking for signs of pressure ulcer. |
| http://www.npuap.org/ | The National Pressure Ulcer Advisory Panel (NPUAP) serves as the authoritative voice for improved patient outcomes in pressure injury prevention and treatment through public policy, education and research. |

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6. http://www.health.state.mn.us/divs/idepc/diseases/mrsa/bandages.html
7. http://www.health.state.mn.us/divs/idepc/diseases/mrsa/book.html
8. http://www.thewoundinstitute.com/twifile/MSPE-47-0616-UE%20Transitions%20of%20care%20resource%20guide%202-8.pdf
9. http://www.woundcarenurses.org/
10. http://www.woundsource.com/blog/8-signs-wound-infection
11. http://www.wounds-uk.com/pdf/content_11794.pdf
12. https://aawconline.org/resources/
13. https://aawconline.org/wp-content/uploads/2015/11/ABC-brochure_03.30-for-Web1.pdf http://www.presentwoc.com/
14. https://aawconline.org/wp-content/uploads/2016/04/AAWC-Infection-brochure_03.06.pdf
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# Wound Management ZONES

| | | |
|---|---|---|
| **GREEN ZONE** | **ALL CLEAR (GOAL)**<br>• Wound is free of:<br>  ○ Swelling<br>  ○ Pain<br>  ○ Odor<br>• Skin around the wound is normal color or slightly red<br>• Drainage is clear, light yellow, or pink<br>• Temperature by mouth is 98.6° or lower | **Doing Great!**<br>• Your wound is healing well<br>• Actions:<br>  ○ Keep caring for wound as instructed<br>  ○ Take medicines as ordered<br>  ○ Keep all medical appointments<br>  ○ Eat foods high in protein and vitamin C, unless contraindicated<br>  ○ Drink plenty of fluids |
| **YELLOW ZONE** | **WARNING**<br>**If you have <u>any</u> of the following:**<br>• Wound has:<br>  ○ Swelling<br>  ○ Redness<br>  ○ Slight odor<br>  ○ Increased pain at wound site but not constant or severe<br>• Drainage is yellow, green, or looks like "pus" and soaking through bandage<br>• Temperature by mouth is between 98.7° and 100.4° | **Act Today!**<br>• Your treatment may need to be changed<br>• Actions:<br>  ○ **Call your home health clinician**<br>  _____<br>  *(agency's phone number)*<br>  ○ **Or call your doctor**<br>  _____<br>  *(doctor's phone number)* |
| **RED ZONE** | **EMERGENCY**<br>**If you have <u>any</u> of the following:**<br>• Swelling around the wound 1/8 inch or higher than the wound<br>• Wound pain is constant and severe<br>• Skin around wound is bright red<br>• Wound odor is strong and foul<br>• Temperature by mouth is 100.5° or higher | **Act NOW!**<br>• You need to be seen <u>right away</u><br>• Actions:<br>  ○ **Call your doctor**<br>  _____<br>  *(doctor's phone number)*<br>  ○ **Or call your home health clinician**<br>  _____<br>  *(agency's phone number)*<br>  ○ **Or call 911 if this is an emergency.** Notify your home health clinician if you go to the emergency room or are hospitalized. |

*This is a modified version of a tool from HomePlus in Elkins, WV. References: Baranoski & Ayello,* 2008*; Hinkle & Cheever,* 2018; *Sussman & Bates-Jensen,* 2010*; Wound Source,* 2016

HHQI Home Health Quality Improvement

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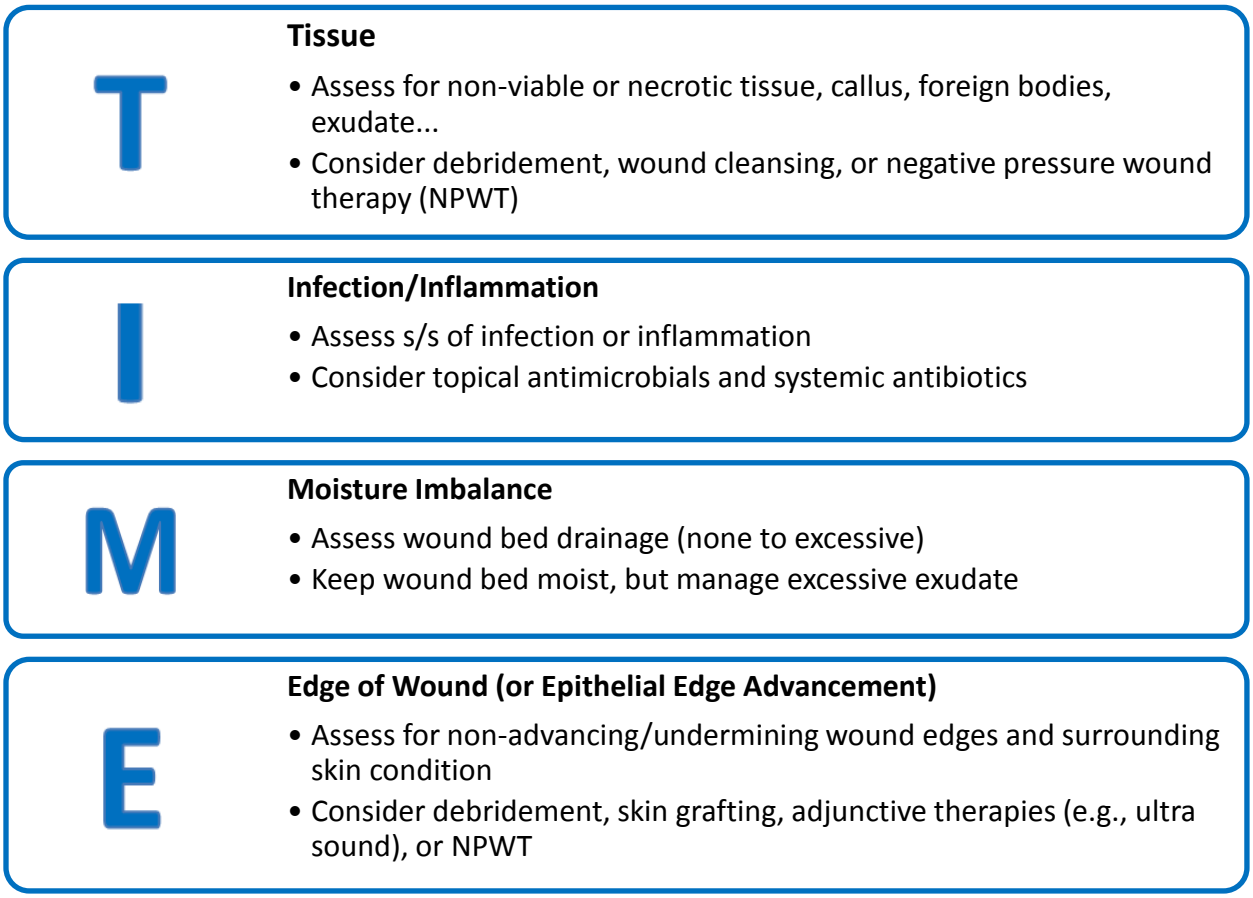
## Moist Wound Healing

A moist environment for wounds promotes a better microenvironment for healing, less complications (e.g., infections), and less scar formation. This evidence-based principle has been around for more than 40 years, but it did take time for some practitioners to stop ordering wet-to-dry dressings (*Junker, Kamel, Caterson, & Eriksson*, 2013). Wet-to-dry dressings can cause delays in wound healing and should be used only in specific wound situations.

**TIME** is an acronym that provides principles for wound bed healing in a systematic method for clinicians.

**Figure 3: Principles for Wound Bed Healing (TIME)**




(*Harries, Bosanquet, & Harding*, 2016)



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## Skin Grafts and Flaps

**Skin grafts** are used for deep partial-or full-thickness wounds with the purpose of reducing risk of infection and loss of protein, fluids, electrolytes, and heat. The graft tissue regenerates a vascular blood supply during the 7-14 day healing process. Harvested grafts produce partial thickness donor sites that are painful, making it more difficult to assess and differentiate surgical vs. infection pain (*Hinkle & Cheever*, 2018).

**Skin Flaps** are a portion of skin that is moved from area of the body to another. It is made up of all layers of the skin and some fatty tissue. In addition to wound coverage, flaps provide bulk to deeper wounds with exposed bone, tendon, blood vessels, and nerve tissue. Larger wounds may require multiple surgeries to advance the flap to cover more surface area. A major complication is necrosis related to impaired blood supply (*Hinkle & Cheever*, 2018).

**Types of grafts**
(used individually or in combination):

- **Autografts** or **homografts (patient)** reduce risk of tissue rejection.
  - **Cultured epidermal autografts** (grown from patient's epidermis in a culture and transferred to the wound as a permanent graft) are very fragile and can cause scarring.
- **Heterografts** or **xenografts** (pigs) and **allografts** (cadavers) are for temporary coverage only.
- **Synthetic skin coverings** (e.g., collagen-based replacement) are used to initially heal the dermal layer and then followed with an epidermal skin graft.

**Graft terms by thickness**:

- **Split-thickness skin graft** (most common) includes the entire epidermis and part of the dermis allowing the donor site to heal as a superficial-partial wound.
- **Full-thickness graft** (used with small areas) includes all layers of the skin, which leaves the donor site needing a graft.

*(Sussman & Bates-Jensen*, 2012)

## Pain Management

Wound pain involves both physiological and psychological components. Physical components include the underlying cause of the wound as well as the clinical interventions. A person's underlying psychological and wound history influence the perception of pain including anticipatory pain (*Bechert & Abraham*, 2009). Both components may be experienced simultaneously. Clinicians should perform pain assessments of the wound area before, during and after dressing changes.



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**Evidence-Based Pain Assessments:**

- Faces Pain Scale
- Numeric Rating Scale
- Pain Assessment IN Advanced Dementia (PAINAD)
- PQRST Method
- Universal Pain Assessment Tool (inclusive of multiple tools and in multiple languages)
- ZONE Tool: Pain Management (HHQI) available in multiple languages

The pain management care plan needs to be patient- and family- centered. Bechert and Abraham (2009) provide ideas for consideration: Treat underlying cause; utilize pain medications as ordered by practitioner, and educate on non-pharmacological interventions. Use opioids with caution – see CDC Guideline for Prescribing Opioids for Chronic Pain).

## Edema/Lymphedema Management

Edema, as a complication of wounds, occurs when excess fluid accumulates in the intracellular and extracellular spaces. Excess edema may compromise healing by decreasing circulation and increasing the risk of infection. All wounds and surrounding tissues should be assessed for edema at each encounter.

The most common methods for measuring edema in the home include a **severity scale for pitting edema: 0 = not present; 1+ = mild; 2+ = moderate; 3+ = severe; and 4+ = very severe** (*Sussman & Bates-Jensen*, 2012). Measurements should be consistent with all clinicians in centimeters, using the same landmarks (e.g., metatarsal to patella for lower extremities). A clinical tip is to mark landmarks for accurate measurement with a semi-permanent marker. Assess and document the skin color, signs/symptoms of inflammation, leakage, open areas (*Sussman & Bates-Jensen*, 2012).

The underlying cause of the edema needs to be treated, but if that is not possible or successful, there are measures to reduce edema (e.g., compression therapy, elevation, exercises, reducing sodium, etc.). Success of edema management depends on comorbidities that affect mobility, compliance, and availability of caregiver.

**Lymphatic massage** (complex decongestive physiotherapy) is an evidence-based practice performed by a trained and certified therapist. Patients receive both lymphatic massage and compression therapy. Compression dressings start with temporary short-stretch bandages and progress to a fitted garment. Lymphedema pumps are often used to move excessive fluid back to the venous system followed by compression wraps or stockings (*Sussman & Bates-Jensen*, 2012).



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**Lymphedema** is when the edema fluid contains large amounts of protein as the result of damage to the lymphatic channels. The most common causes for people over 35 years of age are tumor invasion, infection, or trauma. The skin surface appears brown in color, a woody hardness, superficial hyperkeratosis, and mushroom papules can be present. When lymphedema is present in the lower extremities, the girth of the leg is almost uniform from the ankle to the knee (*Sussman & Bates-Jensen*, 2012).

Since lymphedema is a chronic and incurable condition, the treatment goal is to stabilize the edema and equip the patient with self-management skills. The four components of treatment include: skin care; compression and support; exercise and elevation; and lymphatic massage. The compression therapy used for lymphedema is different than what is used for venous insufficiency.

**Tool:** Differences between Edema, Lymphedema, and Lipedema (WOCN)

## Nutrition & Hydration

Proper nutrition and hydration are required to maintain skin and tissue viability in order to support the wound healing process. Carbohydrates and fats are initially used for energy production. Proteins are needed for cell structure and collagen synthesis during all phases of wound healing. When the intake of carbohydrates and fat is below the required threshold, protein stores are broken down and amino acids stripped resulting in delayed healing.

Impaired nutritional status is a risk factor for both the development of a PU/PI and the delay in healing. Nutrition and hydration also effect healing for all wound types, not just pressure ulcers.

The 2014 Pressure Ulcer Prevention and Treatment Clinical Practice Guidelines included evidence-based nutritional guidelines for pressure ulcers that are supported by many organizations including the Wound, Ostomy and Continence Nurses Society (WOCN), the European Pressure Ulcer Advisory Panel, and the U.S. National Ulcer Advisory Panel (EPUAP/NPUAP). Figure 4 on the next page provides several evidence-based nutritional recommendations.



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**Figure 4: Key Nutritional Interventions for Pressure Ulcer Healing**

- Perform a validated nutritional screening assessment on admission and for patients at-risk of developing PU/PI.
- Collaborate with a registered dietitian or nutrition care team for a comprehensive nutritional assessment. If a dietitian is not available, integrate your interdisciplinary team (e.g., nurse, PT, OT, SLP, Social Worker, medical and dental practitioners).
- Encourage a balanced diet including good sources of calories, proteins, fluids, vitamins, and minerals.
- Recommend oral supplements, enhanced foods, and food fortifiers depending upon other comorbidities.
- Consider nutritional support (enteral or parental feeding), only if oral intake is inadequate.
- Offer palliative care as necessary.

(*Posthauer, Banks, Dorner, & Schols*, 2015)

**Tools:** Evidence-based nutritional screening tools and educational resources to address nutritional issues include:

- Mini Nutrition Assessment (MNA®) – Short form is available in numerous languages & free to use but cannot alter the form)
- Malnutrition Screening Tool (MST) – Simple two question screening tool
- Additional tools on Malnutrition Screening and Assessment Tools (National Council of Aging)

HHQI UP WEBINAR:
Learn how **Meals on Wheels** can help reduce hospitalizations by providing more than just meals. WATCH NOW

MyHHQI BLOG:
Stop the Cavities! Tips to Improved Oral Health for Seniors
*by Maria Eliopoulos, DMD, private practice family dentist*



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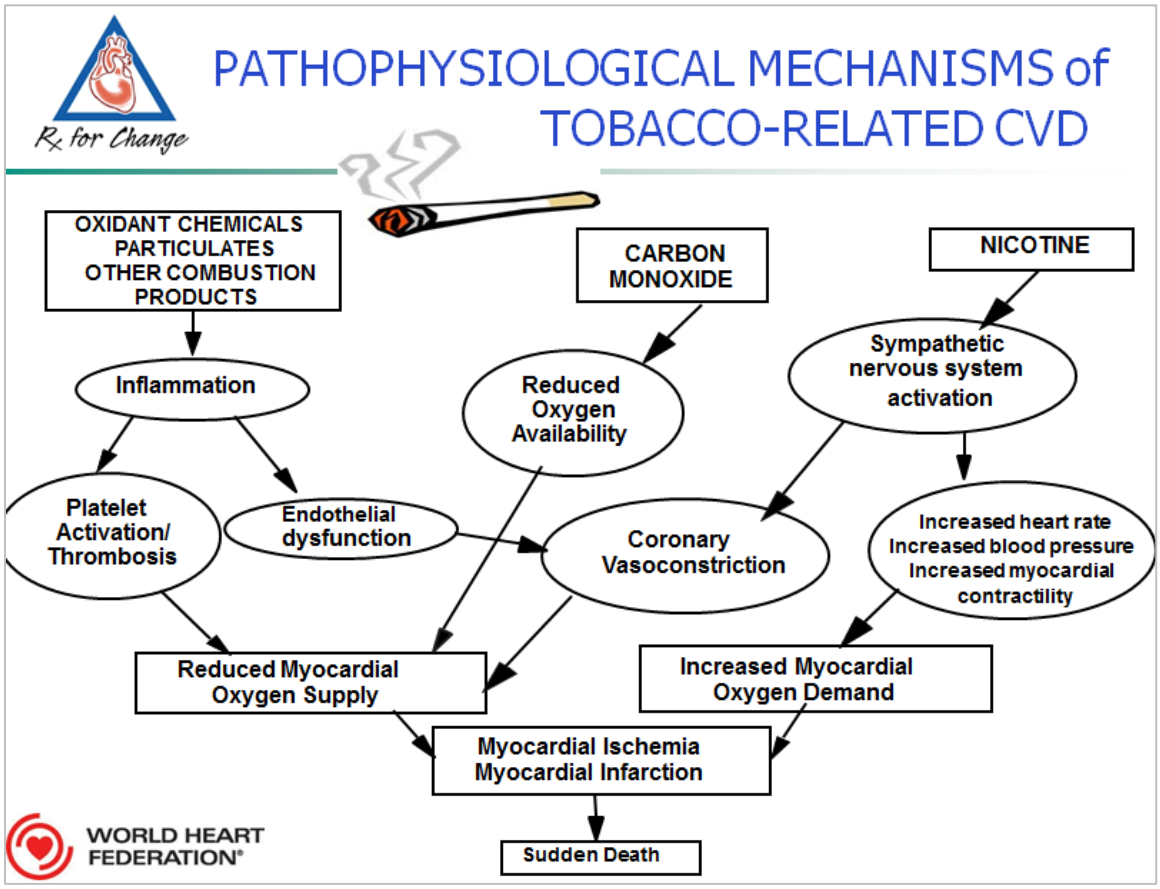
## Tobacco Cessation

A common behavioral risk factor for delayed wound healing is the use of tobacco, especially when smoked. People who smoke have a higher incidence of the following: prolonged healing time, dehiscence, tissue flap necrosis, anastomotic leakage, decreased wound tensile strength, and infection (*McDaniel & Browning*, 2014). Figure 5 diagrams the effects of nicotine, the smoke, and other chemicals/particles on the cardiovascular system (*Rx for Change*, 2009). Cigarette smoking reduces available oxygen, causes vasoconstriction, and increases platelet activation and can lead to surgical site infections. Smoking cessation is an evidence-based practice that should be included with all wound management (*McDaniel & Browning*, 2014). The wound needs an adequate blood supply to nourish and promote cell growth. It is long standing knowledge that nicotine acts as an appetite suppressant which can lead to a decreased amount of available calories that in turn delays or alters wound healing (*McDaniel & Browning*, 2014).

**Figure 5: Cardiovascular Effects of Tobacco Smoking**




([*Rx for Change*](), 2009)



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**Patient smoking (tobacco) cessation tools (HHQI)**

- How to Quit Smoking (8-minute video)
- Smoking and Your Heart (6-minute video)

**Clinician smoking (tobacco) cessation tools (HHQI)**

- Smoking Cessation with Your Patients (7-minute video)
- Cardiovascular Health Part 2 BPIP: Cholesterol management & Smoking cessation (many tools and resources)
- Fundamental Focus: Blood Pressure Control & Smoking Cessation BPIP (highlights key tools and resources)
- Tobacco Effects and Cessation Medications HHQI University course

# DATA

The Home Health Conditions of Participation (CoP) require agencies to have a Quality Assurance & Performance Improvement (QAPI) program. Agencies use data to identify a specific area in need of improvement or a problem area for which a specific Performance Improvement Project (PIP) can be designed and implemented. Many wound-related OASIS items provide information to assess, trend, analyze, monitor, and evaluate quality improvement activities. Below are some of the potential areas for data points:

- Wound (e.g., measures, OASIS items, numbers of wounds per type)
- Diabetic foot care (e.g., measures, OASIS items)
- Urinary/bowel incontinence (e.g., OASIS items)
- Diagnoses (e.g., wounds, diabetes with foot ulcer)
- Reason for emergent care/hospitalization (e.g., OASIS item, tracking log)

Wound Data Sources:

- Outcome-Based Quality Improvement (OBQI) & Outcome-Based Quality Monitoring (OBQM) Manuals
  - CASPER System
  - All wound OASIS items available
- HHQI Monthly Data Reports
  - Acute Care Hospitalization
  - Home Health Cardiovascular Data Registry (HHCDR) acts as a chart-audit tool on several topics, including Smoking Cessation
    - Tobacco use screening and if brief cessation counseling performed
    - Agency will receive monthly report to track progress
- Vendor Reports
- Additional agency tracking logs (e.g., infections)



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# LEADERSHIP & DISCIPLINE ACTIONS

Now it is time to pull the information from the BPIP together and put it into action. Use this section for potential topics and interventions to plan or update an interdisciplinary wound care team. There are discipline-specific actions to improve patient care, enhance care coordination, and reduce costs. Read each of the following sections and determine interventions that could be integrated into your organization.

This section could initiate a Quality Assurance & Performance Improvement (QAPI) Performance Improvement Project (PIP). Select one area (e.g., type of wound or expanding roles of disciplines with wound care) to develop a PIP including strategies to spread and sustain the changes. Click here for more information on QAPI and PIPs.

## Leadership Actions

**Goal:** To create the best interdisciplinary, cost-effective, and evidence-based wound care program possible.

- ☐ Review current agency policies and procedures
- ☐ Investigate and compare agency policies and procedures with discipline-specific state practice acts (including aides)
  - Identify areas to utilize disciplines within fullest scope of practice
- ☐ Evaluate current wound care management practices with standard best practices
  - Review, update, and educate on wound care policies and procedures
    - Write a sharps debridement policy, if allowed by state law

      **Tool**: Sample Conservative Sharp Debridement Non-Viable Tissue Policy
  - Perform a chart review of a percentage of wound care patients after education to assess adherence with standard practices
  - Ensure all disciplines (including home health aides) are being utilized in the interdisciplinary approach
- ☐ Trend and analyze wound data to identify areas for improvement or problem areas
  - See Data section for potential ideas for analysis
  - Conduct focused chart reviews for further investigation of accuracy and implementation
- ☐ Promote interdisciplinary approach
  - Evaluate current approach (nurse only vs. interdisciplinary team)



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- Leverage leadership influence to drive the organizational culture of team approach
- Recognize and reward team work

Abeln & Pitassi (2012) suggest the following key points to address at Interdisciplinary Team (IDT) meetings for wound patients:

- Wound status and management
- Underlying causes and/or contributing factors to the wound
- Current orders
- Frequency of home care visits
- Coordination of nursing and therapy visits for wound care
- Plan of care: progress/lack of progress
- Pain assessment and management
- Nutritional status
- Barriers to healing
- Status of pressure relieving equipment
- Discharge goals
- Patient/caregiver involvement
- Physician involvement
- Consultation with wound specialist

☐ Identify agency wound care specialist(s)

- Verify which staff have wound certifications and/or specialized wound training
  - Develop a financial plan for at least one person to attend certification training or add another person/discipline (e.g., therapist)
  - Consider selecting clinician(s) for specialized training without certifications
    - Wound Treatment Associate (WTA) for any discipline (WOCN) and Ostomy Care Associate (OCA) for nurses (WOCN) programs are facilitated by your WOCN for your staff

**Wound Care Certifications include:**

Certified Wound Care Nurse (CWCN) – RNs with baccalaureate degree; & Wound Treatment Associate- Certified (WTA-C) all disciplines including LPNs/LVNs (Wound, Ostomy, and Continence Nurses Society)

Certified Wound Specialist (CWS) or Certified Wound care Associate (CWCA) – any healthcare providers with a bachelors or higher degree with 3 years of clinical wound experience (American Board of Wound Management)

Wound Care Certified (WCC); Diabetic Wound Certified (DWC); Lymphedema Lower Extremity Certification; Ostomy Management Specialist (OMS) – RN, LPN, PTs, PTAs, OTs, OTA, MD, DO, PA, NP, & DPM (National Alliance of Wound Care and Ostomy)



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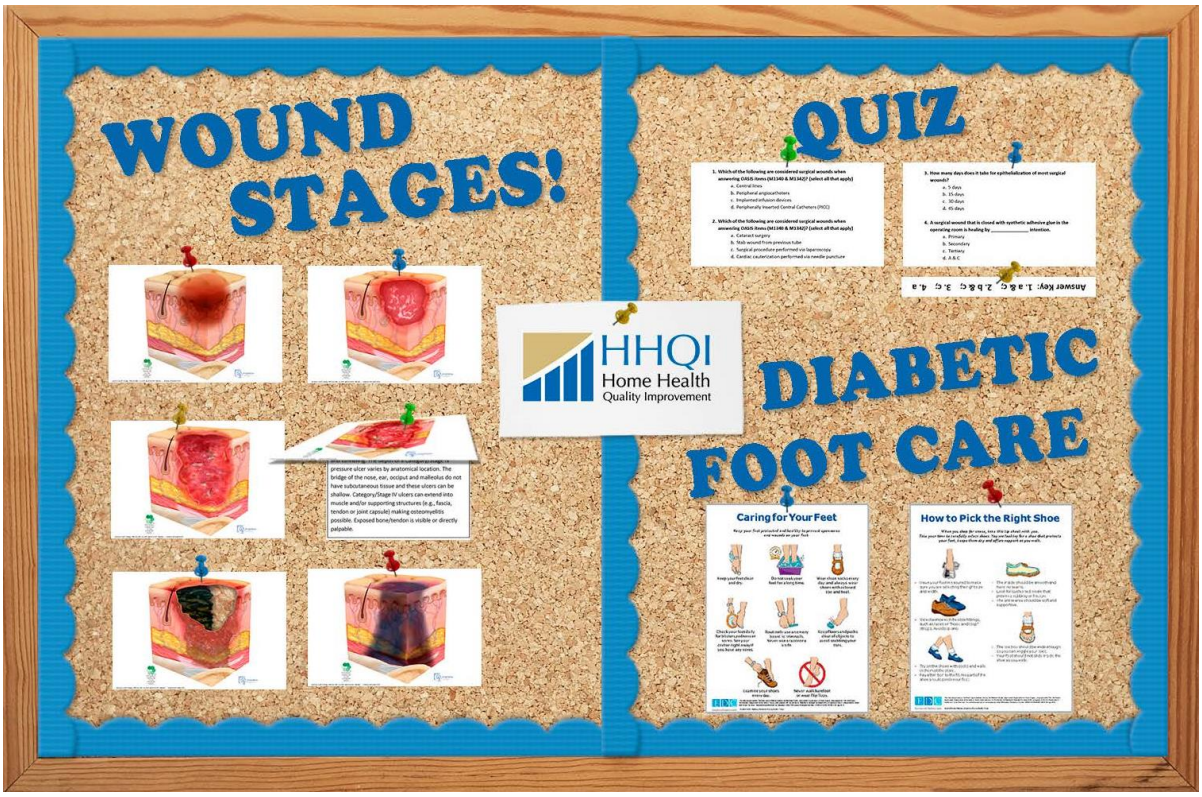
- Provide access to specialized training for other key staff to enhance their expertise
  - Also see BPIP page 66 for additional clinician education resources
  - Review internal referral processes for specialty consults
- Consider telemedicine consults by external certified wound specialists
- Develop strategies such as:
  - Case conferences or IDT meeting
  - Wound chart review
  - Clinician education including coordinating internal/external speakers
  - Continue evaluating and updating wound protocols and supply formularies

☐ Display key educational information on bulletin board (example and suggested content)



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☐ Conduct clinician skill level assessments and competencies on all staff annually and at orientation

- Provide a self-assessment checklist with a scoring grid (e.g., Independent, Need additional training, No experience…)
  - Designate key areas (e.g., higher level of care treatment) that require direct observation and schedule joint visits or mock demonstration

    **Tool**: Sample Clinical Wound Management Competency (HHQI)
- Perform annual (or more frequent) wound care competency assessments which can include:
  - Agency policies & procedures
  - Interdisciplinary team approach, referrals, and care coordination
  - Wound fundamentals, evidence-based wound care, agency protocols and supply formularies, and documentation (e.g., clinical notes, photography)
  - Pressure-redistributing surfaces
  - Specialized wound treatments, as allowed by state laws including:
    - Wound debridement
    - Negative pressure wound therapy
    - Lymphedema management
- Provide OASIS integumentary items guidance
  - Use the sample case scenarios, post-test questions, or actual case scenarios for education and discussion at team meetings
  - Utilize CMS OASIS guidance (scroll to bottom of page for current manual) and CMS OASIS Q & As
- Provide opportunities for clinicians to develop competencies through wound fairs, checklists, surveys, tests, case studies, chart reviews, joint visits, etc.
  - Use a wound model(s) or simulators for training and assessing competencies (i.e., buttock wound model)
    - Assess accuracy with various measurements, identifying staging and status, taking photographs, etc.
    - Select and perform appropriate wound care
    - Use clear photographs in lieu of a model, but there will be limitations



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- Review or test knowledge of wound policies and procedures (e.g., wound photograph)
- Evaluate topic knowledge after education with the Wound Management BPIP Comprehension Test (HHQI)
- Create games related to types of dressings
- Provide case studies

**Tool:** Wound Management Case Studies (HHQI)

☐ Incorporate the Recognizing and Reporting Changes in Skin Conditions (1-hour) aide course in HHQI University that aligns with the education requirement in the Home Health Conditions of Participation - §484.80(b)(3)

- Post-test is included and aide will receive certificate
- If your agency is interested in providing the course in a group setting, please send an email to HHQI@qualityinsights.org

☐ Plan ongoing wound management education

- Invite speakers (internally and externally)
- Provide group case scenarios to determine appropriate products and treatments
- Review types of pressure-redistributing surfaces and eligibility requirements
- Provide just-in-time education with case conferences/IDT meetings

☐ Perform a financial review of wound care program

- Review wound supply processes (e.g., ordering, excess of similar products, etc.) for standardization, cost control, storage, and rotation (e.g., expiration dates)
  - Update agency formularies as needed
  - Consider using a delivery service for supplies
    - Create process and test before going agency-wide
- Determine if billing practices are current with wound supplies including:
  - CMS Medicare Benefit Policy (2/24/17): Clarification of Payment Policy Changes for Negative Pressure Wound Therapy (NPWT) Using a Disposable Device and the Outlier Payment Methodology for Home Health Services

☐ Evaluate and monitor wound management program

- Conduct chart reviews to determine accuracy, adherence, and training needs



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## Clinician Actions (Nursing and Therapy)

- ☐ Review agency wound policies and procedures
- ☐ Identify and discuss with managers areas of wound management where you need more experience
- ☐ Access wound education regularly to advance personal knowledge and skill sets
  - See Additional Resources section for some websites with educational opportunities
- ☐ Coordinate wound management plan of care with practitioner and interdisciplinary team
  - Communicate changes in wound status and treatment to patients, representatives, and caregivers

**Nurses can earn 3.25 hours of free CEs for reading this BPIP!**

**Register at HHQI University and enroll in the Wound Management course in the Disease Management catalog.**

- ☐ Leverage an interdisciplinary approach to wound management
  - Discuss complex or chronic wounds during case conferences or interdisciplinary team (IDT) meetings
    - Update home health aide care plans regarding when to report skin changes and specific signs/symptoms, use pressure relieving measures, provide simple exercise programs, and utilize incontinence management, etc.
  - Provide sharp debridement when appropriate and within the state scope of practice (RN, LPN, PT, PTA, OT, and/or COTA)
    - Integrate wound care into PT visit when providing other skilled care
    - Sharp debridement is considered a skilled service
      - PT /OT can be ordered for a one-time visit for debridement of wound (billable)
  - Evaluate as a team, the most appropriate pressure-redistributing surfaces or pads
  - See discipline specific sections for ideas on referrals
- ☐ Read the OASIS Guidance (scroll to bottom of page for current manual) for the following items to improve accurate responses:
  - Integumentary Status
  - Elimination Status
  - Therapy Need & Plan of Care (POC)
  - Emergent Care



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- Discharge

☐ Perform an evidence-based PU/PI assessment on Start of Care/Resumption of Care and as needed

☐ Determine most appropriate method for positioning and offloading pressure and to promote edema control

☐ Perform accurate wound measurements
- See BPIP page 29 for measurement methods
- Position patient to expose wound, cleanse well, visualize area, and measure using disposable straight edge ruler or wound guide
- Use infection prevention measures with wound measurement process

☐ Assess feet of patients with diabetes carefully (see BPIP page 20)

☐ Measure and document edema using consistent method (see BPIP page 51)

☐ Consult wound care specialist as needed

☐ Utilize advanced therapies as needed

☐ Identify risk factors for delayed wound healing or chronic wounds

☐ Assess tobacco usage

☐ Increase knowledge of evidence-based tobacco cessation strategies (see BPIP pages 54-55)

☐ Provide patient education on:
- Wound healing process
- Wound care
- Wound infection prevention
- Foot care (see BPIP page 20)
- Positioning, weight shifting, and offloading to relieve pressure and to promote edema control
- Management of edema including exercises
- Lymphatic compression treatment which includes:
  - Purpose
  - How to don, doff, and cleanse compression dressings
  - How to use and clean compression leg pumps appropriately and the use of compression dressing after therapy (as ordered)
- Tobacco cessation (see BPIP pages 54-55)
- Nutrition and hydration



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- See Nutrition & Hydration section of BPIP
- Provide hydration tips: adding flavoring to water, favorite drink, sports bottle with fluid in reach, and water-rich foods
- Reduce caffeine to decrease dehydrating effects

☐ Address underlying issues or management of urinary/fecal incontinence

- Care and Management of Patents with Urinary Catheters: A Clinical Resource Guide (WOCN)
- Moisture and Skin Injury: Preventing Incontinence-Associated Dermatitis webinar (Wound Source)

☐ Educate on ostomy stoma and skin care (see BPIP pages 26-28)

☐ Consider palliative or hospice care based upon patient and family's wishes (see Palliative/Hospice section)

## Clinician-Specific Actions

Also review the Clinician Actions section.

**Wound Care Specialist**

☐ Assess complex wounds and collaborate with practitioner on plan of care
☐ Perform complex treatments

☐ Participate in all IDT meetings

☐ Provide/coordinate staff education

☐ Perform chart audits

☐ Assist with the leadership activities in Leadership Section

**Physical Therapist**

☐ Establish home exercise program (HEP) to increase:
  - Strength, endurance, balance, and mobility
  - Wound perfusion
  - Edema management

☐ Provide advanced wound care including ultrasound and electrical stimulation

☐ Manage scar formation

☐ Recommend and order orthotics including offloading equipment or shoe/boot



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- ☐ Initiate fall prevention interventions including education to prevent trauma or skin injuries
- ☐ Provide sharp debridement when appropriate and within the state scope of practice

**Occupational Therapist**

- ☐ Establish home exercise plan (HEP) to increase:
  - Strength, endurance
  - Wound perfusion of upper extremities (UE)
  - Management of edema
    - Provide lymphedema massage and management, if allowed by state law
- ☐ Assist patient to improve ability to inspect skin and perform wound care per state laws
- ☐ Construct splints to immobilize new skin grafts to promote graft adherence or prevent contracture pressure ulcers
- ☐ Recommend and order orthotics including offloading equipment or shoe/boot
- ☐ Provide sharp debridement when appropriate and within the state scope of practice

**Speech-Language-Pathologist**

- ☐ Assess and treat for chewing or swallowing issues
  - Recommend thickening agents (i.e., Thick-It) as needed to improve nutrition and hydration status
- ☐ Assist patient with cognitive skills for adherence with medications (e.g., antibiotics, anticoagulants) and treatments (e.g., skin or wound care, positioning, offloading)

**Medical Social Worker**

- ☐ Assist patient and family to address barriers with practitioner or wound clinic appointments (e.g., financial difficulties, transportation)
- ☐ Assist clinician to find willing, available, and able caregiver to assist with wound care
- ☐ Provide behavioral therapy to assist patients to focus on thoughts and feelings that lead to depression or anxiety, especially with chronic wound patients
- ☐ Provide counseling as needed to patients with traumatic burns



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**Dietitian/Nutritional Care Team**

- ☐ Perform complete nutritional assessment of wound patients who screen at-risk with screening tool
- ☐ Coordinate with practitioner on dietary regimen to improve wound healing
  - Recommended diet, supplements, or enhancements
  - Alterations with medical diet (e.g., less restrictive with diabetic or heart healthy diet)
- ☐ Evaluate nutritional status progress

(References: *Ablen & Pitassi,* 2012; *AHRQ,* 2014; *CMS*, 2017)

## Home Health Aide Actions

- ☐ Assess all skin on every visit
- ☐ Report any skin issues or changes to nurse, therapist, or manager
- ☐ Follow the patient care plan and report signs or symptoms (as instructed)
- ☐ Offer nutrition and fluids during visit if allowed
- ☐ Keep skin clean and dry and apply any moisturizers or protective barriers as ordered on aide care plan
- ☐ Reposition bed- and chair-bound patients before leaving
- ☐ Complete the HHQI University course – *Recognizing and Reporting Changes in Skin Conditions* (1-hour)
  - Visit the HHQI University Student Resources page to learn how to register and enroll in courses




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# ADDITIONAL RESOURCES

Key tools for various types of wounds were included at the end of each of their sections. The following are additional clinician and patient resources that can be utilized for education.

## Clinician Tools

- Annual Diabetic Foot Exam Demonstration, June 2017 (QIO Program, 9-minute video)
- Blueprint for Excellence – Reducing Pressure Ulcers (ElevatingHome/Visiting Nurses Association of America)
- Complimentary Educational webinars (NPUAP)
- WoundSource.com
  - Educational webinars
  - Expert Blogs
  - Patient Conditions and Product Categories educational information
- WoundEducators.com Wound Videos
  - Alginate Wound Dressings (4 min)
  - Characteristics of Venous Ulcers (4 min)
  - Composite Wound Dressings (4 min)
  - Hydrocolloid Wound Dressings (4 min)
  - Foam Wound Dressings (3 min)
  - Gauze Wound Dressings (5 min)
  - Hydrogel Wound Dressings (4 min)
  - Interactive Wound Dressings (6 min)
  - Moist Wound Healing (4 min)
  - Transparent Film Wound Dressings (3 min)
  - Wound Debridement (3 min)
- Wound Care ADVISOR
  - Educational Webinars
  - Wound Care ADVISOR e-books
  - Apple Bites (monthly tips and tricks)
- Wound Care Education Institute® Resources
  - Journal links to Wound Specific Resources
  - Staff Education (webinars and online trainings)
  - Patient Education Resources

## Patient Tools

- Fight Germs. Wash Your Hands (CDC, 3-min video)
- Learning About Diabetes videos
  - What is My A1C? (2 min, also available in Spanish)
  - What is Diabetes? (2 min)
  - Type 2 Diabetes (1 min)
  - Low Blood Sugar (2 min, also available in Spanish)



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