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# Wound Assessment Part 2

R. B. TURNBULL JR. MD WOC NURSING EDUCATION PROGRAM

*"Treat the whole patient, not just the hole in the patient."*

Part two

Welcome to part two of wound assessment. This module will build upon the concepts in part 1.

# Learning Objectives

- Use assessment findings to optimize wound healing
- Differentiate between partial vs. full-thickness damage
- Compare options for wound measurement
- Describe the steps to preparing the wound for healing
- Summarize assessment findings for documentation to the medical record

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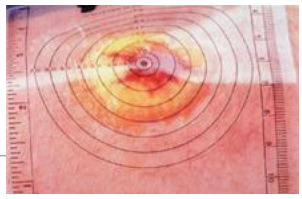
Our specific learning objectives for this lesson include using assessment findings to optimize a holistic wound management plan, discuss wound classifications, compare wound measurement options, and summarize assessment findings for medical record documentation.

# Wound measurement



**2 D MEASUREMENT**

- Linear measurement of length and width of the wound
- Useful for completing the PUSH Tool (pressure ulcer scale for healing)

**3 D MEASUREMENT**

- Measures length, width, & depth
- Includes any undermining or tunneling
- Provides more precision in the assessment process

- Measurements are generally expressed in centimeters (cm); check policy
- To ensure precision and consistency, use the same tool each time the wound is measured
- Competency consideration – inter-rater reliability in assessment

(Baranoski et al., 2020)

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Wound measurement is one of the fundamental parameters that is used to judge healing and resolution of a wound (Baranoski, Ayello, & Niezgoda et al., 2020). Wounds can be evaluated with either a two- or three-dimensional measurement, and usually expressed in centimeters.

*Two-dimensional* measurements include linear measurements of length and width. *Three-dimensional* measurements include linear measurements of length, width, and depth, and where indicated, undermining and tunneling. It is critical to use as much accuracy and precision as possible in obtaining the readings as well as consistency with each reading. All nurses should follow the same policies and methods or the measurements will be unreliable. Interrater reliability between clinicians provides consistent and reliable information in determining wound progress or lack of progress (Bates-Jensen, 2022). Policies and annual competencies are recommended to develop nurse expertise and are an important quality of care metric for wound management.

# Two dimensional

- Evaluates only length and width of the wound
- Useful for partial thickness wounds, or some healing trajectory tools (e.g. PUSH tool)
- Is simple and quick
- Does not consider all depth, undermining, or tunneling that can be found in a full-thickness wound
- Many disposable measuring tools available


(Nix, 2024)

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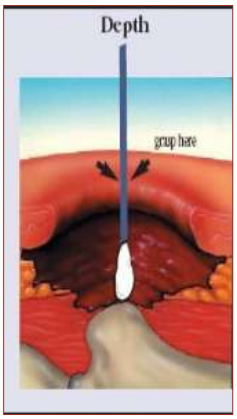
Two dimensional linear measurements evaluate the length and width of the wound, but do not include depth. This method is one of th***e simplest and fastest*** methods to evaluate a wound. Linear measurements should be documented in centimeters, not inches, and be performed in a consistent manner to increase reliability and validity of the readings. Various disposable plastic and paper measuring devices are available. Wound assessment instruments such as the Pressure Ulcer Scale for Healing (PUSH Tool), only include two dimensional measurements in the scoring *(*Bates-Jensen*,* 2022*)*. The actual steps in linear measurement are discussed in the section on three-dimensional measurement, because that type of measurement is used more often.

## Three dimensional

- Includes length, width, depth, as well as any undermining, tunneling involved from a full-thickness wound
- More detailed description of the wound
- Use the clock analogy with patient head at 12 o'clock, & feet at 6 o'clock (for consistency between assessments)
- Measure depth at deepest part of wound

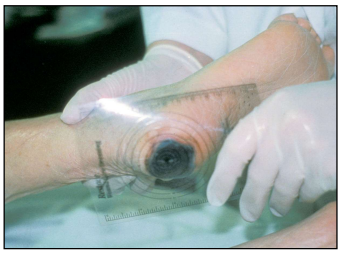



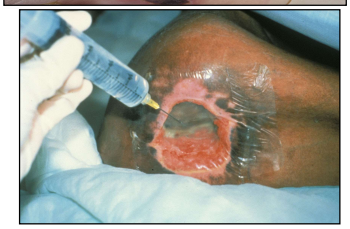
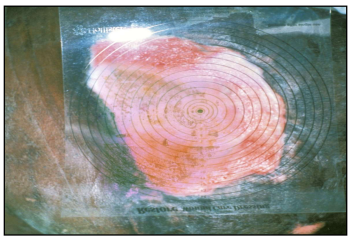

(Nix, 2024).

Three dimensional measurements include length, width, and depth, and is the method most often used because it provides a more detailed description of the wound. To obtain these measurements, begin by envisioning the wound bed as a clock with the patient's head being at 12 o'clock, and the patient's feet at 6 o'clock. Three o'clock is at the patient's left side, and 9 o'clock is at the patient's right side. The length readings should be obtained by aligning the measurement guide by the wound and reading the measurements from the long axis of the body (head to toe). A second measurement is made of the greatest width (left to right). The depth of the wound is gauged by placing a cotton-tipped applicator into the deepest area of the wound and then holding the applicator with a gloved finger at the area where it becomes flush with the skin. The cotton-tipped applicator is then removed from the wound and held in place with the gloved finger (marking where the applicator became flush with the skin) along the measuring guide to obtain a reading. The complete three-dimensional linear reading should be recorded as length × width × depth and the reading should be in centimeters for uniformity (Baranoski, Ayello, & Niezgoda et al., 2020; Bates-Jensen, 2022; Nix, 2024)

# Measuring Guides

- Paper
- Acetate
- 3-dimensional



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Measuring is the cornerstone to the size of the wound. Size alone does not determine depth of tissue destruction. However, it does tell us where the wound is now and how well the healing process is progressing over time through serial measurements. Generally speaking you will measure longest length, widest width, and deepest depth. There are several approaches that can be used, however, the standard measurement is in cm.

Determining the depth of tissue destruction is of course determined by physiologic markers such as the presence of bone or muscle fiber in a deep wound, or the red islets of a wound extending to the basement membrane of the epidermal-dermal boarder. The presence of necrotic tissue in the wound bed suggests damage to at least the subcutaneous tissue.

# Types of measuring guides & methods

| Method | Description |
|---|---|
| Ruler-linear | Disposable, 3D with LxWxD options |
| Kundin gauge | Disposable, 3D, plastic coated paper |
| Digital photo | 2D, non-contact, requires camera and software |
| Planimetry | 2D, wound tracings determine the square Cm |
| Wound tracings | 2D tracing then compared serial assessments |
| Stereophotogrammetry | 2D, combines video & software for computer measurement |
| Wound molds | 3D, using foam or alginate to create the mold |
| Fluid instillation | Fluid instilled to wound then extracted & measured |
| Structured light | 3D – wound illuminated then projected with camera |

(Nix, 2016)

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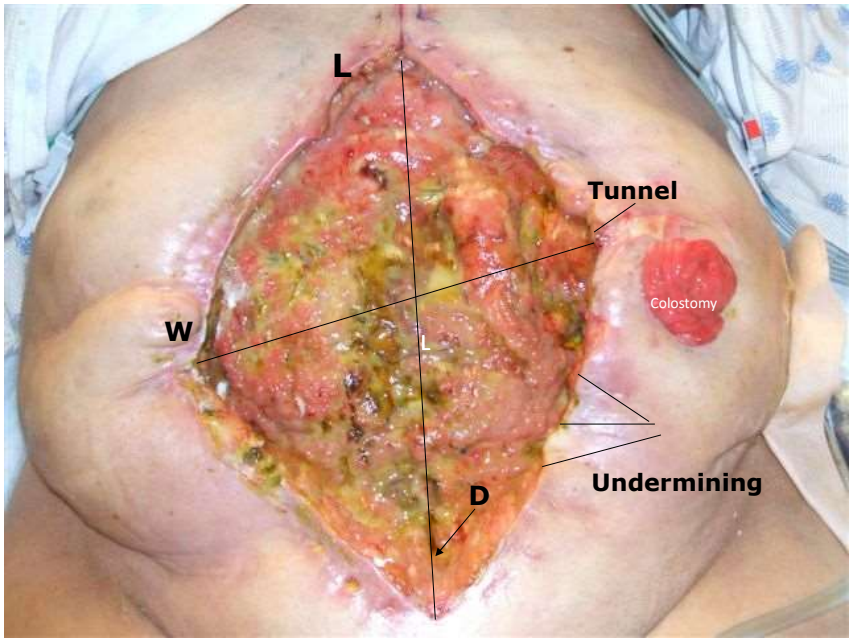
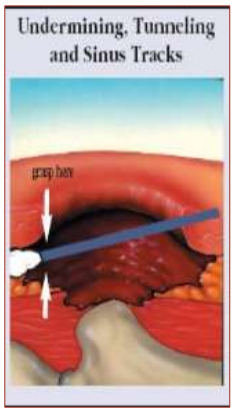
This slide shows several measurement methods. Some are more practical than others and some more complicated than others. In general, the clinical setting will have influence on what option is used. In a more focused wound clinic setting, more complex methods can be afforded and used for complex wounds. In a general setting such as a medical-surgical unit, or home care, disposable measuring guides will be more cost effective




In this photo of a full thickness and chronic abdominal wound complicated by a fistula, you can see how the length (L), width (W), and depth (D) is determined. We can also see the areas of undermining which need to be measured. The beefy red tissue to your right of the wound (patient's left) is a colostomy. Note that the length is determined by the head to toe trajectory while the width is determined by the side to side trajectory. Depth is considered from the deepest point of the wound. Use a clean disposable ruler such as acetate or paper and measure these parameters. A clean or sterile cotton tipped applicator may also be used to gauge length and width in a similar fashion to gauging depth. Use a clean or sterile cotton tipped applicator to approximate the depth, place your thumb at the wound edges and measure with the ruler.

## Measuring undermining & tunneling

- Full-thickness wounds
- Measure each time
- Use clock face for reference and documentation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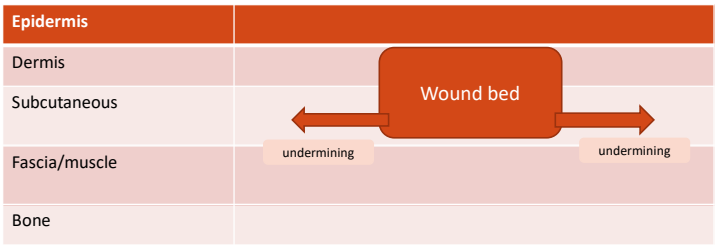
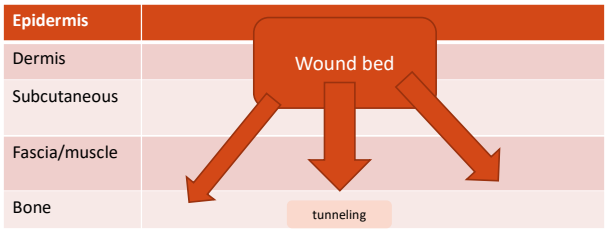
In assessing full-thickness wounds, other assessment parameters to look for are tunneling and undermining (Baranoski, Ayello, & Niezgoda et al., 2020). These wounds often have undermined epidermis and/or tunneling past the surface wound margins. The terms *tunneling* and *sinus tract* often are used interchangeably to describe a narrow passage of tissue destruction within the wound. There is tissue destruction of deep tissue layers Whereas, *undermining* is an area of tissue destruction extending under the intact skin along the periphery of the wound. Think of it as being similar to creating a lip in the wound. Tunneling and undermining can give the clinician an idea of how well the wound is progressing through serial measurements (Bates-Jensen, 2022). It is also important to be precise when measuring for tunneling and undermining. To measure for these assessment parameters, a clock face will be used with the patient's head at 12 o'clock and the feet at 6 o'clock. Measure the tunneling and/or undermining in relation to the patient's positioning. For example, undermining from 1 to 3 o'clock of 2cm deep. These areas need to be filled when providing topical care and provide important clues to healing.

# Undermining




Undermining is the destruction of the underlying tissue surrounding some or all of wound margins and may extend into one or many directions underneath the wound edges. To check for undermining, insert a sterile cotton-tipped applicator into each "hour" of the clock. Measure the extent of undermining by grasping the cotton tipped applicator at the wound edge. Then, measure the length in cm against a ruler. An example of documenting undermining in the same abdominal wound described in the previous example would be: "3 cm of undermining from 12 to 2 o'clock and 6 cm of undermining from 6 to 9 o'clock." As with all measurements, accuracy and consistency are of utmost importance.

# Tunneling

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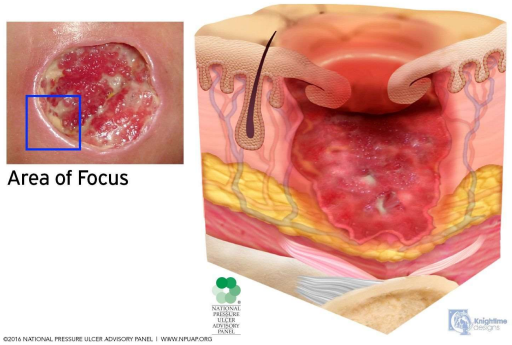
Tunneling is a narrow opening or passage extending in any direction through soft tissue & results in dead space. Some will use the term sinus tract. Tunneling can result in abscess formation.

To measure tunneling, place a cotton-tipped applicator into the wound and gently probe until the end of the tunnel has been located. Place a gloved finger on the cotton-tipped applicator at the point where the applicator is flush with the skin and then measure this area in centimeters. Two ways to subjectively document tunneling are: 1) place a different cotton-tipped applicator over the skin on top of the one inside the wound and mark the skin at the interface between the applicator and the skin, and 2) photograph the applicators. Two centimeters of tunneling at the top margin of a mid-abdominal wound would be described and documented as “2 cm of tunneling at 12 o’clock” or “a 2 cm tunnel is noted at 12 o’clock.”

# What is epibole?

- Wound edges are rolled over
- Characterized by thick, fibrotic skin
- Signals need to adjust the treatment plan

Stage 3 Pressure Injury with Epibole



Area of Focus



Courtesy NPUAP.org

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Wound margins or edges can let the clinician know if healing is progressing. Wound edges can be noted as connected to the wound, not connected to the wound (undermined) or rolled under. Rolled wound edges are also called epibole. Epibole is defined as rolled over wound edges and is characterized by thickened, fibrotic skin sometimes seen in chronic wounds (Bates-Jensen, 2022). New pink epithelium on the wound edges indicates progress toward wound healing. Absence of pink epithelial tissue as the wound is healing is an indication of a non-healing wound and signals the need to adjust treatment (Baranoski, Ayello, & Levine et al., 2020).

# Exudate: amount, color, odor

- Subjective
- Drives choice of dressing and frequency of dressing changes
- Describe color
- Odor –
  - Could be from the dressing
  - Could signal infectious process

- The etiology of the wound can also effect/predict the type of exudate

| Wound Etiology | Exudate Description |
|---|---|
| Arterial Ulcer | Often dry or has scant/small amount of serous exudate |
| Neuropathic Ulcers | Usually minimal serous or sero-sang exudate |
| Venous Ulcers | Often highly exudating– serous or sero-sang |
| Pressure Ulcers | If partial-thickness, exudate likely to be serous or sero-sang in minimal to moderate amounts.<br>If full-thickness, exudate may be serous → purulent in moderate to large amounts |

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Exudate, also known as drainage, is evaluated for many characteristics; including amount, color, odor, and consistency. The amount of exudate is subjective and is usually described as a percentage of the dressing that is being saturated or by the frequency of dressing changes (Baranoski, Ayello, & Levine et al., 2020). The terms scant, minimal, moderate, and large amount or copious are also general terms one might use to describe exudate. A description of the color should be stated For example, color terms include serosanguineous, bloody, tan, light green, or yellow. Odor can be described as foul, malodorous, or absent. To truly assess wound odor, the dressing should be removed form the wound, discarded, and removed from the area. The wound cleaned and flushed. Then, one can assess for odor. Finally, the consistency of the exudate should be described using terms such as thin, watery, or creamy.

The characteristics of the exudate lets the clinician know if the wound is progressing normally or if complications, such as infection, are present (Bates-Jensen, 2022). The color of the exudate is generally consistent with the wound bed. For example, a red granulating wound bed will exude clear serosanguineous exudate, whereas a

wound bed with slough will have thick yellow exudate. Exudate volume is an important consideration in determining topical treatment selection (Bates-Jensen, 2022). The clinician should “match” the dressing absorbency capabilities with the type of exudate needing to be managed.

## Maceration

- White or grey appearance of epithelium immediately adjacent to the wound bed
- Signals increase drainage, or dressing is not absorbing/managing the drainage effectively
- Increased wound damage could signal infectious process
- Consider topical treatment options

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The condition of the surrounding skin is also an excellent indicator of whether the current treatment regimen is working. The surrounding skin, or periwound, should be assessed for redness, warmth and induration. Does it show signs of infection? Is the skin macerated or dry and flaking. Periwound skin condition can help to identify the level of moisture retention. The periwound assessment should also include the identification of any lesions; papules, pustules, vesicles, rashes, ecchymotic areas, or other discolorations.

These assessments provide a wealth of information on the status of the wound and the general condition of the patient which, in turn, guides the clinician in the selection of the correct topical treatment option (Bates-Jensen, 2022). In the presence of maceration, the clinician should consider topical treatment options to better manage drainage. Consideration should also be given to the underlying causes and disease states. Are these being well managed? Is infection present and how does it need to be managed?

# Wound infection

- Clinical signs
  - Erythema,
  - Purulent drainage
  - Induration
  - Color changes
  - Pain
  - Odor
  - Fever

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Due to the loss of the epidermal integrity, all wounds can be considered contaminated. In a healthy immune response, macrophages and neutrophils will manage this situation. In the case of a wound infection, however, there is the presence of colonized bacterial growth greater than 10 to the 5$^{th}$ per gram of tissue and can extend into the periwound skin. Clinically you will see erythema, purulent drainage, induration, color changes, pain, odor, and fever. Note the photo in this slide and the marked erythema coupled with dense necrotic tissue. In this case, removal of the necrotic tissue along with local care may be enough to manage the infection and move the wound from stalled inflammation to proliferation.

# Wound Infection: Other Signs

- Delayed healing
- Discoloration/dull appearance
- Friable granulation tissue
- Unexpected or change in pain
- Increase in wound drainage
- leukocytosis

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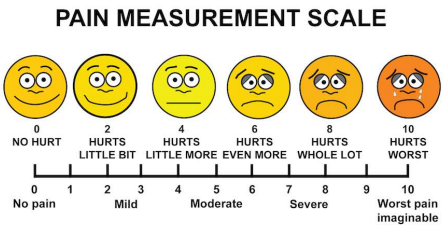
There are other, and sometimes more subtle, signs of infection. Your serial assessments should help to identify these. For example, assessments may identify the wound has stalled, the color of the wound bed has changed from a more healthy granular appearance to a dull appearance. You may see friable or fragile granulation tissue and changes in the pain level. Increased drainage is also an indicator of potential complications. In patients with immunosuppression, such as the patient with diabetes or on corticosteroids, these symptoms can be quite subtle.

# Wound pain

- What is the cause of the pain?
- Affects quality of life, compliance
- Is subjective based on patient perception




(Baranoski, Ayello, & Levine et al., 2020; ; Beitz, 2022)

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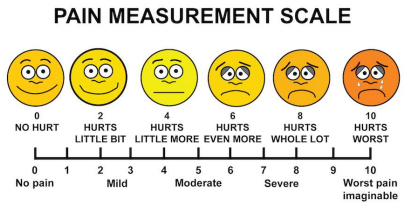
Pain is another factor that can have a profound impact on wound healing. Pain can be related to the wound itself or to the type of dressing that is being used. Dressing removal during dressing changes can also cause pain. As mentioned previously, infection can cause pain or a change in pain. Continued skin injuries can also result in pain.

Pain fibers, when stimulated, release neuropeptides that activate immunoreactive cells, ultimately triggering the release of proinflammatory cytokines ((Baranoski, Ayello, & Levine et al., 2020; Beitz, 2022). Additionally, the stress response associated with pain will trigger release of glucocorticoid hormones and cortisol which can reduce signaling for and production of growth factors needed for healing. ((Baranoski, Ayello, & Levine et al., 2020; Beitz, 2022) Wound pain can be debilitating, affecting the patient's quality of life and general well-being. It is a subjective measure and there are a variety of pain scales that the clinician can utilize to document the patient's pain associated with a wound (Baranoski, Ayello, & Levine et al., 2020). Pain scales are used on a routine basis to assist the clinician in evaluating the treatment plan and patient response to care.

## Assessing the pain

- Use validated pain scale
- Assess for and determine source of the pain
- Evaluate for infection
- Consider options to reduce wound pain
- Consider psychological impact




(Beitz, 2022; Bates-Jensen, 2022)

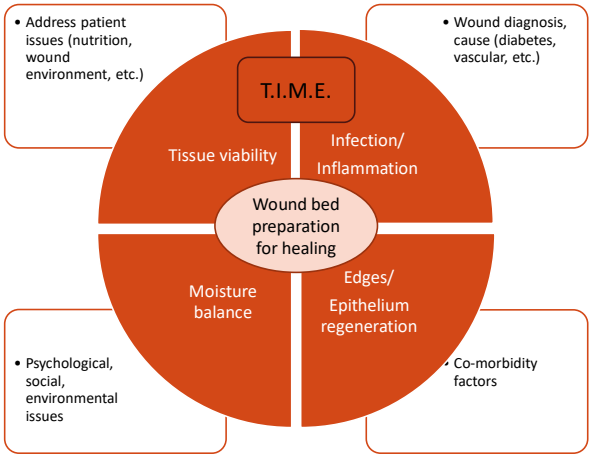
Some general principles can help guide the clinician in pain management. First, the clinician should assess all patients for wound pain using a validated pain scale for consistency. The source of the pain should be eliminated or controlled using various techniques of pain management. One technique would be the use of analgesics. Other techniques include deep breathing, time outs, and distraction. The wound should also be evaluated the wound for infection.

Clinicians can also reduce wound care pain by having a gentle hand when changing the dressings. Moist wound healing principles apply during the dressing change so the wound bed is disrupted as little as possible. If the dressing is dry at time of removal, the dressing should be moistened. Additional topical treatments can be instituted to spare the periwound skin from mechanical and moisture damage. These measures should help the patient obtain a greater level of comfort during the wound repair phase.

The effect of psychological health on wound healing also deserves the attention of the clinician. Known psychological influences on wound healing include stress, coping style, positive affect, environmental enrichment, and social support. Psychological factors exert physiologic effects on conditions such as vessel size and leukocyte distribution through mediators such as oxytocin, vasopressin, epinephrine, and cortisol. (Beitz, 2022; Bates-Jensen, 2022) Chronic stress in particular has been shown to have immunosuppressive

effects and to compromise wound healing. Studies do show a faster healing trajectory when pain intervention techniques are included with the plan of care.

# What are the barriers to healing?




(Ermer-Seltun & Rolstad, 2022; Moore, et al., 2019)

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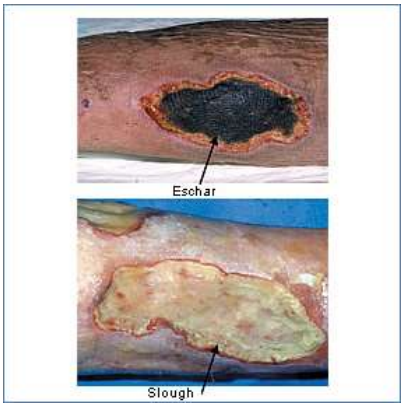
Another way of looking at assessment is determining whether the wound is healable and what should occur in order to prepare the wound for healing, or wound bed preparation. By using the acronym of T.I.M.E., you can cover these issues in a comprehensive manner. TIME refers to assessing the tissue, for infection, for moisture balance in the wound, and the edges of the wound. T.I.M.E is another way of adding consistency to your wound assessment process. As you can see in this model, you are considering whether the tissue in the wound bed is viable or necrotic, infection is present, drainage amount, and what the wound edges appearance. In addition to T.I.M.E., you should also consider a combination of psychosocial issues, the specific wound diagnosis, and any co-morbid factors. The other function this provides is the ability to assess and prepare the wound bed for a healing environment.

# "T" - Tissue: Non-Viable

Eschar – black

Slough
- Color
- Texture

Debridement
- Contraindications




(Ermer-Seltun & Rolstad, 2022; Moore, et al., 2019)

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Evaluating the tissue type or types in the wound provides valuable clues to viability and even causation. Viability refers to the health and vascularization of the wound bed. The main tissue types seen in viable wounds are depicted as beefy red and moist. Eschar, appearing as dry, black, and leathery is always indicative of full-thickness tissue loss. While the depth of damage cannot be determined at this point, it does point to problems in the wound bed. Whether or not the eschar should or could be debrided depends on several factors including the overall tissue perfusion through arterial blood supply, infection, and location of the wound. Slough is also nonviable tissue, however, instead of the hard, dry, leathery appearance of eschar, slough is moist and yellow. The texture can be stringy or dense. Again, when, how, or if debridement should occur depends on many factors. Poor blood supply is a contraindication to debridement. On the other hand, necrotic tissue in general will leave the wound vulnerable to infection, prolonged inflammation, and delayed healing, which means in most cases debridement is an important part of wound bed preparation. The issue of debridement will be further explored in the debridement lesson.

# "I" - Infection or Inflammation

- Contamination
- Colonization
- Infection
  - Acute s/s
  - Chronic s/s
- Risk Factors

(Ermer-Seltun & Rolstad, 2022; Moore, et al., 2019)

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All wounds are contaminated by virtue of the fact that the epidermis has been damaged thus leaving that area of skin unprotected from pathogen invasion. You can see the marked erythema and slough in the photo on this slide. This should be evaluated to determine if infection is present. If infection is present, the clinician needs to determine at what point should the infection be treated? How should it be treated? How involved is the infection? A number of factors should be considered to help answer these questions, including how localized or systemic the problem is. Other risk factors such as diabetes or etiological factors should also be considered. Consider any risk factors associated with antibiotic therapy. In the lesson on managing infection, this multifactorial issue will be explored more.

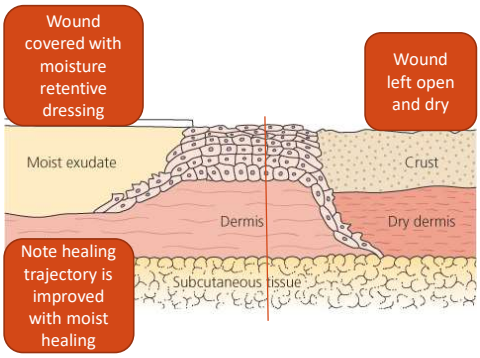
# “M” - Moisture Balance

“Moist Wound Healing”

Tissue Hydration
- Promote granulation
- Fibroblast survival

Temperature control

pH level
- Urine
- Stool
- Fistula drainage




(Ermer-Seltun & Rolstad, 2022; Moore, et al., 2019)

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Determining the moisture level or tissue hydration in the wound bed is one of the most significant factors in selecting a topical treatment. Hydrated tissue in the wound bed is critical to the survival of the fibroblasts in recruiting growth factors and substances for rebuilding tissue This means maintaining balanced moisture in the wound bed is an important function of topical care. In wounds with heavy exudate, the topical choice needs to absorb enough exudate without at the same time dehydrating the wound. In wounds that are moist or have minimal exudate, the wound may need a topical that will add or maintain moisture. The judicial use of dressings can prevent wound dehydration or absorb excessive fluid and prevent tissue maceration and the associated increase infection potential. Basically, the more exudate, the higher risk for complications. Wounds lacking moisture are vulnerable to cell death. Maintaining normal temperature in the wound bed is also important. Most dressings will also provide enough covering to maintain normal temperature. It must however, be remembered that anything touching the wound bed (including cleansers) should be within normal body temperature. Normal skin pH is about 5.5. Contamination of the wound bed, just as with intact skin, with UI/FI/ or fistula drainage can alter the pH and effectively delay healing. Again, it is part of the role of wound care nurse specialist to manage these conditions.

# “E” - Edges and Epithelialization

Attached

Unattached

Rolled (Epibole)

Periwound
- Macerated
- Infected
- Dry
- Erythematous


(Ermer-Seltun & Rolstad, 2022; Moore, et al., 2019)

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Finally, we consider the conditions of the wound edges. Are they attached? Unattached? Rolled? This provides clues to the ability of the wound to achieve reepithelialization. In the full thickness wound, epithelialization will occur from the wound edges because there are no dermal appendages with epithelial cells from which to assist the process. Ideally, the edges of the wound should be attached, moist, and flush with the wound bed which facilitates the epithelial cells to migrate across the wound surface. Unattached edges are consistent with undermining between the dermis and subcutaneous tissue. In this case, topical treatment will include filling in the spaces with a moist product while connective tissue fills the space. In some situations, the edges become thickened and rolled, which means there is a premature closure of the wound edge. It is a common complication in full thickness chronic wounds but also effectively stops the healing process. This rolling is called epibole and results from squamous cells migrating into the wound edge preventing migration of the new epitheleal cells. When this happens, a surgical consult is needed to debride the epibole and open up the wound edges. Other considerations include the periwound skin, maceration, infection, erythema, excessive exudate, pathogen proliferation and prolonged inflammation. Assess for these parameters and document both assessment of such and the intervention plan.

## How do you know the wound is healing?

- Is the wound smaller?
- What is happening with the exudate?
- Is the wound bed better prepared for healing?

(Bates-Jensen, 2022; Beitz, 2022)

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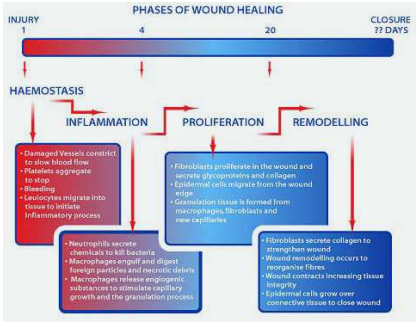
Wound repair evaluation provides important information on healing. The wound is considered to be improving when the size is smaller, the exudate is decreasing and without odor, there is less necrotic tissue in the wound bed, and undermining and tunneling is resolving (Bates-Jensen, 2022). Consider the phases of healing and how the partial and full thickness wound progresses. Partial thickness wounds will demonstrate reepithelialization while the full thickness wound fills in with granulation tissue and contracts to a smaller size to form scar tissue (Beitz, 2022).

# Wound assessment tools

- It is not always easy to see from measurements whether the wound is progressing or degressing

- For chronic wounds, consider using a tool to guide interpretation of healing
  - Barbara Bates Jenson Tool*
  - PUSH Tool*

  *Can be found in the course handouts folder

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Wound assessment tools are a way of providing consistency in evaluating and documenting wound parameters as well as healing trajectory over time (Bates-Jensen, 2022). There are many instruments available for this purpose. However, the full detail of assessment situations cannot be obtained by using only one of these tools. The clinician may need to utilize a combination of tools and documentation methods to reach the desired outcome. Two commonly used options include the PUSH tool and the Bates-Jensen Wound Assessment Tool (Bates-Jensen, 2022). Both of these were developed to incorporate the wound size and condition into a linear representation of wound healing progress, or lack of progress. The information obtained can be used by nurses to determine whether the current plan of care can continue, or if treatment changes and referrals should be considered for adjunctive healing strategies. Additional documentation needs to include the head-to-toe assessment, laboratory and diagnostic imaging data, plan of care, and patient response to care information (Baranoski, Ayello, & Niezgoda et al., 2020).

# PUSH Tool

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Length X Width (in CM2) | 0 | 1 <0.3 | 2 0.3 – 0.6 | 3 0.7 – 1.0 | 4 1.1 – 2.0 | 5 2.1 – 3.0 | Sub-score |
| | | 6 3.1 – 4.0 | 7 4.1 – 8.0 | 8 8.1 – 12.0 | 9 12.1 – 24.0 | 10 >24.0 | |
| Exudate Amount | 0 None | 1 Light | 2 Moderate | 3 Heavy | | | Sub-score |
| Tissue Type | 0 Closed | 1 Epithelial Tissue | 2 Granulation Tissue | 3 Slough | 4 Necrotic Tissue | | Sub-score |
| | | | | | | | Total Score |

Bates-Jensen, 2022; Haesler, 2019)

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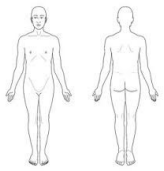
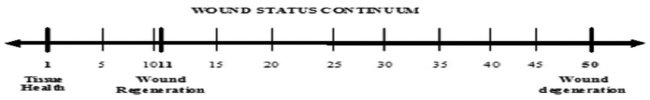
The PUSH Tool was developed by the NPUAP (now known as the NPIAP) as a means to consistently measure wound size and healing. The information gathered can also be used to evaluate status and progress of other chronic wounds such as venous insufficiency and neuropathic ulcers. The surface area of the wound is calculated by multiplying the length and width of the wound in centimeters. This generates a sub-score. Exudate and tissue type (e.g. closed, epithelial, granulation, slough, or necrotic tissue) is assessed and each assigned another sub-score. The three sub-scores are added together for a total score. The total score is plotted onto a graph. This information is collected weekly then added to the graph to form a linear representation to determine healing or lack of healing (Bates-Jensen, 2022; Haesler, 2019).

## Bates-Jensen Wound Assessment Tool

- Size
- Depth
- Edges
- Undermining
- Necrotic tissue type
- Necrotic tissue amount
- Exudate type



- Exudate amount
- Skin color surrounding the wound
- Peripheral tissue edema
- Peripheral tissue induration
- Granulation tissue
- Epithelialization




Bates-Jensen, 2022)

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Originally appearing in 1990 as the Pressure Sore Status Tool, the Bates-Jensen Wound Assessment Tool (BWAT) includes elements from the PUSH Tool as well as a more detailed approach to data collection. The BWAT uses 13 different wound assessment considerations to assign a numerical sub-set rating based on no problem to varying degrees of a problem for each element (Bates-Jensen, 2022). The sub-set scores are added for a total score that is plotted on a linear graph. This liner graph demonstrates wound improvement or degeneration based on the score; the lower the score, the more improvement in the wound. Elements evaluated include the surface area, depth, condition of wound edges, undermining, necrotic tissue, exudate type and amount, color and edema of surrounding skin, induration, granulation tissue, and evidence of epithelization in the wound (Bates-Jensen, 2022). While serial assessments can be considered over time, an individual assessment provides immediate feedback to the wound condition.


Baseline documentation includes wound etiology (if known), duration of the wound, any previous wounds, co-morbid conditions, and medications. Initial and serial assessments need to include interventions, measurements, tissue type, exudate amount, condition of the wound edges, and patient response to care. Documentation of the wound assessment and progress is a critical component of wound management. The information forms a historical representation of the situation, communicates treatment strategies and topical care used, and potential need for referrals when the wound is not progressing. Thorough and consistent documentation is a nurse responsibility. Documentation demonstrates adherence to policies, standards of care, and licensed independent practitioner written care orders. This documentation also forms the basis for insurance and regulatory compliance as well as for any potential record review for legal concerns. Accurate and detailed documentation of assessment and care provided is also an important component to reimbursement. The ICD-10 coding of diseases, injuries, and procedures offers a more detailed description of what is happening in the individual patient situation, reduces billing denials, and promotes future research into wound care. Wound assessment instruments only include specific wound information. The medical record documentation should include the head to toe systems assessment,

laboratory and diagnostic imaging data, and the plan of care details including patient response (Baranoski, Ayello, & Niezgoda et al., 2020).

## What about wound photography?

- Establish/review organization policies
- Supplements medical record and wound healing instruments
- Frequency of photos
  - On admission
  - When the wound changes
  - At predetermined intervals
  - On discharge

Depending on the healthcare agency's policy and procedure guidelines, photographic documentation can be used to supplement the medical record and wound healing instruments. Photographic documentation frequency is determined by the organization's policies. Basically, photography of the wound is taken upon admission, whenever the wound changes, at predetermined intervals, and upon discharge (Baranoski, Ayello, & Niezgoda et al., 2020). The legal implications associated with photo documentation must be considered by the facility's administrators and legal counsel when deciding the facility's policy regarding the use of photos. However when used, photographs can enhance the medical record description of the wound.

## Frequency of assessment

- Establish/review policies
- Setting considerations
- Be as objective and precise as possible
- Documentation should “paint an accurate picture”
- Evaluate the plan and make any needed changes

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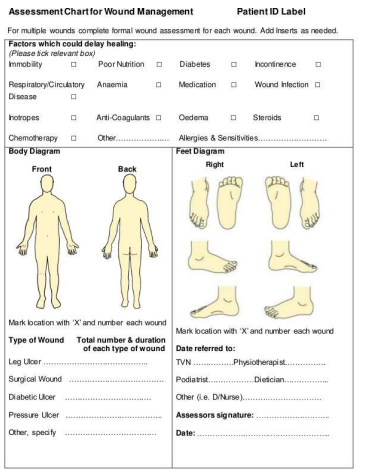
Assessment and documentation schedules are usually set by the policy of a healthcare facility or agency. In the acute setting, wound assessment may be necessary on a daily basis or with each dressing change. Whereas in the long-term care or home health setting, wound assessment one to two times a week may be sufficient. The goal for wound assessment and documentation is that it be done at the dictated frequency and that it be as precise as possible, allowing for the best information to be obtained to evaluate the stated outcomes (Baranoski, Ayello, & Niezgoda et al., 2020; Bates-Jensen, 2022). Documentation should be an objective picture of what the clinician sees. Based on the wound documentation, colleagues should be able to get an excellent picture in their minds of what the wound looked like, and should be able to evaluate the treatment regimen for any needed adjustments in therapy.

# Serial assessment

- Serial assessments provide important information on wound progress, & point to early clues if there is a problem
- Wounds not progressing within the first few weeks of care should be considered stalled and further assessed for complications



**Assessment Chart for Wound Management** **Patient ID Label**

For multiple wounds complete formal wound assessment for each wound. Add Inserts as needed.

**Factors which could delay healing:**
*(Please tick relevant box)*

Immobility ☐ Poor Nutrition ☐ Diabetes ☐ Incontinence ☐
Respiratory/Circulatory Disease ☐ Anaemia ☐ Medication ☐ Wound Infection ☐
Inotropes ☐ Anti-Coagulants ☐ Oedema ☐ Steroids ☐
Chemotherapy ☐ Other..... Allergies & Sensitivities.....

**Body Diagram**

Front Back

Mark location with 'X' and number each wound

| Type of Wound | Total number & duration of each type of wound |
|---|---|
| Leg Ulcer | |
| Surgical Wound | |
| Diabetic Ulcer | |
| Pressure Ulcer | |
| Other, specify | |

**Feet Diagram**

Right Left

Mark location with 'X' and number each wound

**Date referred to:**
TVN .....Physiotherapist.....
Podiatrist.....Dietician.....
Other (i.e. D/Nurse).....
**Assessors signature:** .....
**Date:** .....

(Baranoski, Ayello, Niezgoda et al.; Bates-Jensen 2022)

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To be consistent for each wound, a holistic and standardized approach ensures consistency in assessment (Baranoski, Ayello, & Niezgoda et al., 2020). Serial assessments can signal problems in the healing process and supports clinical judgment on the repair process as well as the need to change treatment strategies and address barriers to healing. Measurement of wound size, tissue type in the wound, presence of undermining, amount and quality of exudate (drainage), and condition of the surrounding skin form the basis of wound assessment (Bates-Jensen, 2022). Following that, the ability of a wound to heal can be considered through adequate blood supply to the wound, nutritional status of the patient, management or correction of co-morbid conditions, and optimization of the wound bed through topical care (Baranoski, Ayello, & Niezgoda et al., 2020). Wounds which do not show progress within the first few weeks of care should be considered stalled and referred to a wound specialist for additional evaluation and management options.

# Summary

- Essential to establish etiology first.
- Recognize barriers to healing.
- Establish treatment goals.
- Documentation:
  - Assessment
  - Treatment choices
  - Changes along the way


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The importance of wound assessment and documentation cannot be overstated. Accurate and frequent assessments, which may signal needed adjustments to the plan of care, guide the wound management team in making appropriate decisions for wound care. In summary, the assessment of the wound is critical in all phases of the healing process. A baseline needs to be established followed by serial assessments to determine progress or problems. Assessment begins with a medical record review and determining the cause or causative factors of the wound. True or potential barriers to healing should be identified. Other co-morbid factors including malnutrition, altered lab values, and infection should also be identified. All of these need to be incorporated into the plan of care and establishing goals of care. A thorough wound assessment not only establishes the baseline and the healing progression, it also determines what wound bed preparation needs to occur such as debridement, infection management, and exudate control. Document the assessment and interventions as well as responses. In the next module, there will be more of a focus on assessment as it relates to the nursing management of wounds.

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This ends part two of wound assessment. For more detailed information, refer to the references on this slide. Thank you for your attention.

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