WOUND CARE: BEST PRACTICES SIMPLIFIED!

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SKIN ANATOMY AND FUNCTION

Describe layers of the skin, six major functions of skin, and identify age related changes in our skin.
SKIN LAYERS

- Epidermis
- Dermis
- Subcutaneous
FUNCTIONS OF THE SKIN

• Hydration
• Defense
• Metabolic
• Secretion
• Thermoregulation
• Sensation

(Whitney, 2016)
WOUND HEALING PATHOPHYSIOLOGY

Describe types of healing, major wound phases of healing, and cellular elements involved in the wound healing process. Identify the difference between acute and chronic wounds.
WOUND HEALING

Primary
Edges are approximated and supported while healing

Secondary
Edges are open and tissue has to form granulation and/or cross the wound through epithelialization

Tertiary
Wounds that are purposefully left open (usually due to infection so that they have the ability to drain) and then later they heal by secondary intention or surgical closure and primary healing

(Whitney, 2016)
Healing is complex.
We aim for skin restoration and tissue integrity/function.

There are 4 phases of wound healing:
• Hemostasis
• Inflammation
• Proliferation
• Remodeling
<table>
<thead>
<tr>
<th>Acute</th>
<th>Chronic</th>
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<tbody>
<tr>
<td>• Typically surgical or traumatic in origin</td>
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<td>• Surgical are classified by infection potential</td>
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<td>• Traumatic wounds are classified by force causing the trauma and are typically abrasions, incisions, sheering, punctures, lacerations, pressure</td>
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<td>Heals in expected time frame</td>
<td>• ALL chronic wounds were once acute.</td>
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<td>• Chronic wounds are wounds that do not heal in an expected time frame.</td>
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<td>• No improvement over several weeks</td>
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<td>• Time frames are not standardized but typically any wound over 3 months old is always classified chronic</td>
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WOUND PREVENTION

Basic techniques to prevent the most common wounds – pressure injuries and skin tears.
ASSESSMENT AND DOCUMENTATION

Determining wound etiology, complete assessment of patient and wound, and how to document the wound. Audience participation in pneumonic creation for documentation.
DETERMINING ETIOLOGY

• Common Wound Types:
  • Surgical
  • Pressure
  • Venous
  • Arterial
  • Skin tear
  • Trauma
  • Malignant fungating
  • Neuropathic/Diabetic Foot Ulcers

There are many atypical wounds and conditions that you may encounter as well that require specialized treatments so if you don’t know or cannot figure it out – it is best to refer to a specialist as some treatments can cause more damage than assistance!
SURGICAL

- What kind of surgery?
- What can influence healing? Are they a smoker, diabetic, malnourished etc
- What is the method of healing?

These are usually not wounds we typically see in hospice and palliative care.
PRESSURE

- Typically over a boney prominence
- Possibly caused by medical device
- REMOVE THE CAUSE TO HEAL THE WOUND
PREVALENCE OF PRESSURE WOUNDS IN HOSPICE IS HIGH – WITH 10% OF PATIENTS DEVELOPING NEW PRESSURE ULCERS JUST IN THE FIRST 90 DAYS WITH ALMOST 30% OF HOSPICE PATIENTS IN TOTAL HAVING PRESSURE ULCERS. OVER 50% OF HOSPICE PATIENTS WITH CENTRAL NERVOUS SYSTEM DISORDERS HAVE PRESSURE ULCERS. (REIFSNYDER & MAGEE, 2005) OTHER STUDIES HAVE FOUND PREVALENCE AS HIGH AS 47% FOR PRESSURE ULCERS IN PALLIATIVE CARE SETTINGS. PRESSURE ULCERS ARE THE MOST COMMON WOUNDS FOUND IN END OF LIFE SETTINGS. THIS MAY BE PARTIALLY DUE TO PHENOMENON KNOWN AS “SKIN FAILURE” WHERE SKIN BREAKS DOWN AND BECOMES NECROTIC REGARDLESS OF LEVEL OF SKIN CARE. THE SKIN, LIKE ALL OTHER ORGANS, HAS THE POTENTIAL TO FAIL IF THERE IS NOT ENOUGH PERFUSION OR IF OTHER BODY ORGANS ARE FAILING THAT THE SKIN RELIES UPON FOR OXYGENATION, NUTRIENTS, OR WASTE REMOVAL. (GRAVES & SUN, 2013)
APRIL 2016 NPUAP CHANGES

In April of 2016, the National Pressure Ulcer Advisory Panel released some major changes in naming and identifying pressure ulcers. They now are calling them PRESSURE INJURIES.

• Decubitus ulcers, bed sores, pressure ulcers... these are all names of the past!

• No more roman numerals! Just Arabic numbers now (1,2,3,4)

• Review NPUAP PDF available for download here: http://static1.1.sqspcdn.com/static/f/1049328/27131293/1467294072110/Pressure+Injury+Staging+2009-2016-Final-6-14-16.pdf?token=9qoWTgQa2825BM7AtnxaYbEjuA%3D
VENOUS INSUFFICIENCY

• Compression is the mainstay of venous insufficiency treatment. If they are supposed to wear compression stockings and are not – you will not heal these wounds.
• Remember – remove the cause to heal the wound. It is not likely we will heal these in a hospice or palliative care setting.

• Usually caused by valvular incompetence which causes reflux and venous hypertension.
• You will typically see pitting edema, varicosities, lipodermatosclerosis, and hemosiderin staining
• Wound location will usually be in gaiter area above medial malleolus
• Serpiginous edges present
• Often seen after a DVT
• Arterial ulcerations typically require surgical procedures to increase blood flow to heal.
• Found in individuals with atherosclerosis, Buerger Disease, Sickle Cell, Vasculitis, or arterial trauma (a few other more rare etiologies possible)
• New emerging research show it possibly caused by renal failure.
• Also often found concurrently with venous insufficiency. DO NOT COMPRESS these patients.
• Typically found at phalangeal heads, lateral malleolus, distal aspects of extremities or places of repeated trauma.
• Low exudate – expect infection if exudate is high. Also if faint halo of erythema
• Pale or necrotic wound bed is common
• These wounds are always extremely painful especially when in elevated position
• Punched out look to wound edges – typically smooth well defined boarders
• Loss of hair to lower legs, thick toe nails, purpura, shiny taunt skin
SKIN TEAR

• Fun fact – more common with females
• Other contributing factors are altered mental status, weakness, limb stiffness, corticosteroid use, inadequate nutrition, over bathing
• There is a staging system for skin tears (not many people use) called Payne-Martin
• Skin tears are the second most common wound found in end of life care. (Graves & Sun, 2013)
MALIGNANT FUNGATING

• These are cancerous wounds
• These are not wounds we will heal in a hospice or palliative setting
• Typically breast cancer, skin cancer, vaginal cancers and some rare instances of cancers surfacing through the skin layer
• 3rd most common wound in end of life care
NEUROPATHIC/DIABETIC FOOT ULCER

- Typically bottom of the foot
- Total offloading of pressure is best treatment
- Must control blood sugars to potentially heal
- Typically require debriding of callous to heal
- OFTEN lead to potentially fatal infections of foot and need to be monitored closely
Assessment of just the wound is never enough. A full patient assessment is required. Determine etiology. Now the most important step is determining YOUR PATIENT’S goal.
WOUND VOCABULARY

- Slough: Soft moist avascular (devitalized) tissue; may be white, yellow, tan, or gray, may be loose or firmly adherent.
- Eschar: Black or brown necrotic, devitalized tissue; tissue can be loose or firmly adherent, hard or soft, dry or wet.
- Granulation tissue: Pink/red, moist tissue composed of new blood vessels, connective tissue, fibroblasts, and inflammatory cells, which fills an open full-thickness wound when it starts to heal. Typically, appears deep pink to red with an irregular, "berry-like" surface.
- Nongranulating: Absence of granulation tissue; wound surface appears smooth and red as opposed to cobblestone or berry-like.
- Epithelialization: Regeneration of the epidermis across a wound surface. Pink, fragile-looking layer of new cells, may appear as islands.
- Maceration: Tissue bathed in fluid, need to focus on exudate management
- Induration: Firmness to palpation
- Undermining: Tissue destruction extending under intact skin along the periphery of a wound; commonly seen in shear injuries.
- Tunneling: Course or path of tissue destruction occurring in any direction from the wound surface or edge of the wound; results in dead space.
- Epibole: Edges of top layers of epidermis have rolled down to cover the lower edge of epidermis, including basement membrane, so epithelial cells cannot migrate from wound edges. Presents clinically as a sealed edge of mature epithelium. Wound edge may present clinically as hard/thickened and/or discolored (e.g., yellowish, gray, white). Also known as closed wound edges.
- Serous: clear fluid without blood, pus or debris
- Serosanguineous: thin, watery pale red to pink
- Sanguineous: bloody, bright red
- Purulent: thick, cloudy, yellow or tan
Let’s create a pneumonic to remember the basics of needed documentation.
• Location
• Size
• Classification
• Base
• Exudate
• Edges
• Infection
• Periwound
• Pain
• Little
• Snails
• Can
• Be
• Easily
• Eaten
• If
• Prepared
• Properly
NON-PRESSURE WOUNDS

Partial thickness

• Epidermal injury or loss – only damage to the skin and not structures below the skin.

Full thickness

• Deeper injury – damage is below the dermis (subcutaneous tissue, muscle, or bone). Total loss of skin protection and lower structures are visible.
HOLISTIC HEALING

What factors affect wound healing and what health and lifestyle changes increase wound healing?
NUTRITION

What nutritional needs should we address?
SIGNS AND SYMPTOMS OF INFECTION

When do we need systemic antibiotics? Audience participation in providing signs and symptoms.
WHEN A WOUND DOESN’T HEAL

Palliative wound care techniques and addressing this with the patient and family. Small group discussion – share with audience.
…PALLIATIVE DOES NOT MEAN NO CARE. THE INTENT OF PALLIATION IS TO PROVIDE COMPASSIONATE CARE.

-Aletha Tippett, MD

Over 50% of patients receiving palliative wound care achieve a fully healed wound. (Herbert, 2015)
Quality of life is our guiding principle – but who determines what is quality? The patient! All care is patient and family driven – they will decide - you guide.
If the patient and family chooses healing as their goal, but healing is unable to be achieved due to the patient’s condition or other patient choices, this should be discussed with the patient and family so that an appropriate goal, such as maintenance or comfort, can be made. Document all educational sessions and changes in goals.
Two types of wounds more commonly seen in end of life care more than other settings are Marjolin Ulcers, which are previously existing wounds that become malignant and occur in approximately 2% of all chronic wounds regardless of etiology (Bryant & Nix, 2016) as well as Kennedy Terminal Ulcers which are a rapidly developing type of pressure ulcer that appears suddenly and is a sign of impending death (Graves & Sun, 2013).
Debridement for wounds must be monitored on a case by case basis in palliative and hospice care. For some wounds, it is more beneficial for the eschar to be left intact if stable—especially in malignant fungating wounds. If there is a potential for excessive bleeding, large increases in exudate, or increased pain for the patient it may be best to not debride if the patient life expectancy is within a short time frame. You must assess what clinical gains will be achieved and if they will be of benefit to the patient. (Grocott, 2007)
WOUND MANAGEMENT

Principles and products used to manage wound healing.
PERIWOUND MANAGEMENT

- In patients with sensitive or fragile skin, special attention must be paid to avoid MARSIs (Medical Adhesive-Related Skin Injuries). Use non-adhesive dressings and reduce dressing change frequency (Bryant & Nix, 2016).

- Use skin prep liberally! Monitor for signs of bacterial and fungal infection and treat as needed. Do not place alginates where they touch the periwound skin. Monitor for maceration and change bandages or methods more frequently if macerated. (Bryant & Nix, 2016)
• Diphenhydramine and hydroxyzine can be taken orally for pruritus control. Moisturizers can also assist in reducing itching when used regularly. (Bryant & Nix, 2016)

• Tricyclic antidepressants are also used for pruritus control. (Grocott, 2007)
CONTROL OF MALODOR

• Malodor has been noted to be one of the most distressful issues that patients have with wounds and it is very important to address this for the psychosocial well-being of the patient. (Gethin, 2011)

• Odor should be assessed as a subjective item as well as objective—ask the patient if they are able to smell their wound! (Bryant & Nix, 2016)

• Malodor should first be addressed by trying to eliminate the cause. (Gethin, 2011)

• Wound cleansing by irrigation is preferred. Shower with water stream aimed directly above wound if possible. (Bryant & Nix, 2016)

• Medicinal honey is excellent odor reducer for use in wounds and impregnated in dressings. (Collier et al, 2013)

• Dakin’s solution (always rinse with NS after) for cleansing can be used if maintenance or comfort is the goal of treatment. (Collier et al, 2013)

• Charcoal dressings or sodium impregnated gauze are options for dressings to assist with odor. (Collier et al, 2013; Bryant & Nix, 2016)
CONTROL OF MALODOR CON’T

• Metronidazole can be crushed into a fine powder and mixed with a small amount of sterile water or gel if needed then applied to gauze and placed in the wound bed for odor control (Gethin, 2011). Metronidazole gel (0.75%) has been shown to have an odor reducing effect for as long as 2 weeks. (Gethin, 2011)

• Debride necrotic tissue as tolerated by patient – methods may need to be directed by patient comfort. (Grocott, 2007)

• Systemic antibiotics if odor is from infection. (Grocott, 2007; Bryant & Nix, 2016)

• Green tea bags as a secondary dressing have been used as a low cost option for some patients with positive results as well as placing essential oils (often lavender or wintergreen) on external dressings. (Gethin, 2011)

• Environmental control strategies include placing kitty litter under the bed of the patient or coffee grounds in open containers under the patient and have shown as positive odor control methods. (Gethin, 2011)
CONTROL OF BLEEDING

• Silver nitrate can be used to control small areas of bleeding. (Bryant & Nix, 2016)

• Pressure and ice are primary options for when hemorrhagic bleeding occurs and epinephrine is not available. Contact the primary care provider immediately. (Graves & Sun, 2013)

• Oxymetazoline hydrochloride (Afrin) works as a vasoconstrictor and can be used on bleeding wounds as off label usage in an urgent situation. (Graves & Sun, 2013)

• Very gentle cleansing with warm saline is what is recommended for bleeding wounds in palliative and hospice care. (Graves & Sun, 2013)
CONTROL OF EXUDATE

• In a low exudate wound, a hydrocolloid is preferred for comfort. (Graves & Sun, 2013; Collier et al, 2013)

Photo from: http://www.surgerysupplements.com/hydrocolloid-wound-dressings-reduce-incision-healing-time/
CONTROL OF EXUDATE CON’T

• In high exudate wounds, first look to control bioburden (next slide).
• Use alginates (silver or regular depending on need as determined by clinical expertise) in layers and foam dressings that allow for longest application times. (Graves & Sun, 2013)
• A maltodextrin powder can be added to a heavily exudating wound (Bryant & Nix, 2016)
• In cases of extremely large exudate than cannot be controlled by other methods, a container system (like a pouch) can be used if dressings are needed to be changed 2-3 times a day to prevent additional skin damage and provide odor control. (Bryant & Nix, 2016)
• NPWT (Negative pressure wound therapy) can be used in palliative and hospice care but is rarely covered in cost and is very expensive to the patient though patients do have the ability to provide for themselves if financially able. (Bryant & Nix, 2016)
CONTROL OF BIOBURDEN AND INFECTION

• Infections of a wound will require systemic antibiotics. (Bryant & Nix, 2016)
• Culturing the wound is the best option for determining pharmacologic treatment. (Graves & Sun, 2013)
• Critical colonization and bioburden, localized to the wound, may take several approaches to achieve resolution.
• Wound irrigation should occur with every dressing change:
  • Depending on needs of the wound –
    • An ionic cleanser may be used to remove debris (remember to always flush with normal saline after using a cleanser).
    • Dankins solution wash (then flush with normal saline) should be used if healing is not the focus and infection is causing odor. (Collier et al, 2013)
• Topical antibiotics/antimicrobials
• Silver impregnated dressings
• Medicinal honey
• Debridement if indicated
MINIMIZING PAIN

What can we do to provide the highest level of comfort for our patients?
PAIN CONTROL

• In hospice and palliative care, we also address emotional pain in addition to physical pain (Bryant & Nix, 2016) Sometimes the patient and family just need someone to be present, sit, and listen. Consult with specialists for symptom control if needed -including pharmacists to anesthesiology pain specialists. (Bryant & Nix, 2016)

• Use dressings that require the least amount of dressing changes as possible. (Woo et al, 2015)

• Topical anesthetics or ice can assist with pain reduction as well as non-pharmacologic pain reduction techniques such as deep breathing, healing touch, and mindful meditation. (Woo et al, 2015)

• Pain level should be monitored before, during, and after treatment. Evaluate on multiple fronts including need for emotional support. (Grocott, 2007)

• Inflamed peripheral tissues contain opioid receptors, so topical opioids and opioid compounds are useful in pain control in some wounds, especially malignant fungating wounds. (Grocott, 2007)

• A contact layer can be used for the wound base and changed just once a week for very painful wounds. (Bryant & Nix, 2016)


