Wound Care at the End-of-Life: Comfort in Healing and Non-Healing Wounds

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Disclosure

- Speakers and planners have attested that they have no financial relationships with proprietary entities producing health care goods or services related to the content of this activity.
Objectives

- At the end of this presentation, the audience will be able to
  - Address comfort for patients and family for both healing and non-healing wounds
  - Recognize stages of pressure injuries
  - Recognize classification of burn wounds
  - Develop a plan of care that promotes comfort and is cost-effective
Challenging Situation

- 75 yo man with advanced lung cancer with metastases to the brain and bone, with poor oral intake, arrives on hospice with a 6x8cm² stage IV sacral wound. The wound has a foul odor with purulent discharge, no granulation tissue with 4cm undermining from 2 o'clock to 6 o'clock, residual slough canopy over parts of the wound bed, which is grey muscle with visible bone. How do we manage the patient's plan of care?
What Would You Do?

• A. Write a note to self to not be at the bedside next time
• B. Order the exact same wound products that were used in the aggressive care setting.
• C. Check the cupboard and see what wound care supplies there are and work with what you have.
• D. Develop a plan based on cost effective supplies that addresses the concerns for the patient and family.
Patient's Plan of Care

- Who has been taking care of the patient's wound care prior to hospice?
  - The patient and family

- Who will be taking care of the patient's wound care on hospice?
  - The patient and family as well as the nursing staff

- Who is ultimately responsible for the patient's plan of care?
  - Physician
Patient's Plan of Care

- All 3 will need to be part of the plan of care:
  - The patient and family
  - Nursing staff
  - Physician
Customizing the Plan of Care

• How do wound treatment goals differ at end of life?
• What are the challenges to “active” wound treatment and normal healing in a terminally ill patient?
• What potential impact does a wound treatment plan have on comfort of patient/family/caregiver?
Optimal Conditions for Wound Healing

- Moist wound bed
  - Thin soupy layer of exudate
- Wound bed at normal body temperature
  - Up to 4 hours to return to body temperature after dressing change.
- Oxygen
- Protein intake
Skin

- Outer layer shed and regrown every 27 days
  - Sebum and sweat → acid mantle with pH 4.5-5
  - Thermoregulation
  - Protection
Layers of Skin

- Epidermis
  - Mostly dead cells
  - Avascular
  - 5 layers: Stratum basale → stratum corneum

- Basement membrane: thins as we age

- Dermis
  - Highly vascularized
  - Nerves
  - Sweat glands
  - Sebaceous glands
  - Hair follicles
Underlying Structures

- Subcutaneous tissue
  - loose connective tissue and adipose tissue
- Fascia
  - viable is shiny, white; non-viable is grey
- Muscles
  - viable is dull, red, striated; non-viable is grey
- Bones
- Cartilage
- Ligaments: connecting bones and cartilage
- Tendons: connecting bones and muscle
Parts of a Wound

- Wound: open area only
  - Diameter is edge to edge
- Wound base
- Wound depth: vertical distance from the visible surface to the deepest area in wound bed
- Wound margin: rim
- Periwound: minimum of 4cm
- Tunneling
- Undermining
Location of Wound

- Boney prominence: pressure
- Folds of skin: friction, moisture
- Toes: friction from footwear, circulatory issue
- Bottom of foot: diabetes, pressure
- Shin or calf: trauma or circulatory
- Medial malleolus: veinous insufficiency
- Lateral malleolus: arterial insufficiency
Linear Measurements

- Anatomic L x W x D
- Wound as face of clock
  - Length: longest edge to edge
    - 12 o'clock head
    - 6 o'clock feet
  - Width: widest edge to edge
    - 9 o'clock to 3 o'clock
    - Perpendicular to length measurement
  - Depth: cotton-tipped applicator into wound and grasp applicator with thumb and forefinger at the wound margin, measure against a ruler
Depth
Undermining

- Depth and Direction
- Start at 12 o'clock and progress in clockwise direction
- Measure and document the beginning and ending of the deepest areas.
  - i.e. 4cm from 11 o'clock to 2 o'clock
  - i.e. more specific: Undermining along perimeter from 6 o'clock to 10 o'clock
    - 6 o'clock 3cm
    - 9 o'clock 2cm
    - 10 o'clock 2.8cm
Undermining
Tunneling

- Depth and direction
- Depth of the tunnel starts at skin surface
- Use cotton-tipped applicator
- If tunnel more horizontal, measure horizontal depth up to wound edge
- If tunnel more vertical, measure depth of tunnel to wound surface (not wound base)
Tunneling

12/09/2005
Wound on Foot

- Heel as 12 o'clock
- Toes as 6 o'clock
Tissue Types

- Necrotic tissue
- Epithelium
- Granulation tissue
- Muscle
- Tendon
- Fascia
- Bone/Cartilage
Necrotic Tissue

- Dead tissue
  - Eschar
    - Leathery, hard, black to brown
  - Slough
    - Hydrated
    - Yellow, grey, tan, brown
    - Thin and soft, fibrinous, stringy, mucinous

- Full thickness tissue damage
Epithelial Tissue

- Regenerates across the wound surface
- Deep pink or pearly pink
- Epithelial islands
- Epithelial bridges
Granulation Tissue

- From base of wound to fill wound
- New tissue
- Beefy deep red
- Irregular surface
Exudate

- Serous
- Sanguinous
- Serosanguinous
- Seropurulent
- Purulent

- None
- Scant
- Minimal/Small
- Moderate
- Copious/Large
Odor

- No odor
- Strong
- Foul
- Pungent
- Fecal
- Musty
- Sweet
Surrounding Tissue

- Erythema
- Edema
- Induration
- Fluctuance
- Crepitus
- Maceration
- Color changes - red, blue, pale, white, black
- Temperature
# Primary Lesions

<table>
<thead>
<tr>
<th>Size</th>
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<tr>
<td>&lt;1cm</td>
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<tr>
<td></td>
<td>macule</td>
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<tr>
<td></td>
<td>papule</td>
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<tr>
<td>&gt;1cm</td>
<td>bullae</td>
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<tr>
<td></td>
<td>patch</td>
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<tr>
<td></td>
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<tr>
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</table>
Vesicles
Bullae
Macule and Patch
Papule
Pustules
Secondary Lesions

- Scale
- Crust
- Fissure
- Erosion
- Ulcer

- Lichenification
- Atrophy
- Scar
- Excoriation
- Denudation
Cause of Pressure Wounds

- Highest point of pressure is where muscle and bone contact
- Subcutaneous tissue damage is more significant than skin damage
- Friction wound: partial thickness
- Shearing: gravity + friction; results in undermining and tunneling.
Prevention of Wounds

- Reposition every 2 hours or as tolerated
- 5 pillows:
  - Under both calves to float the heels
  - Between ankles
  - Between knees
  - Behind back
  - Under head
- Head of bed no more than 30 degrees
- Seated patients shift weight every 15 minutes
Skin Protectants

- Skin sealant
  - Thin layer of sealant placed on patient's skin to help protect area from tape
- Lanolin-based ointment with zinc
Pressure Injuries

- **Stage 1** Non-blanchable redness; intact skin
- **Stage 2** Partial thickness loss of dermis; shallow open ulcer; blister
- **Stage 3** Full thickness tissue loss; +/- undermining or tunneling
- **Stage 4** Full thickness tissue loss; exposed bone, tendon, muscle, or cartilage +/- undermining or tunneling
- **Unstageable** Eschar or slough obscures some parts of wound bed
- **Deep tissue injury** Purple or maroon area with intact skin or blood-filled blister
Pressure Injury: Stage 1

- Apply moisture barrier each shift and prn
- Relieve pressure from the area
Pressure Injury: Stage 2

- SurePrep No-Sting
- Dry to light drainage
  - Apply vaseline gauze
  - Covered with bordered gauze
Pressure Injury: Stage 3

- SurePrep No-Sting
- Dry to light drainage
  - Vaseline gauze
  - Bordered gauze
- Moderate to heavy drainage
  - Calcium alginate
  - Bordered gauze
Pressure Injury: Stage 4

- SurePrep No-Sting
- Dry to light drainage
  - Vaseline gauze
  - Bordered gauze
- Moderate to heavy drainage
  - Calcium alginate
  - Bordered gauze
Pressure Injury: Unstageable

- Dry
  - Bordered gauze

- Light drainage
  - Vaseline gauze
  - Bordered gauze

- Moderate to heavy drainage
  - Optifoam
  - Calcium alginate
  - Bordered gauze
Pressure Injury: Deep Tissue Injury

- Relieve the pressure
Pressure Injuries on Mucous Membranes

- Not staged using the pressure injury staging system.
  - GI tract
  - Tongue
  - Nasal passages
  - Urinary tract
  - Vaginal canal
  - Glans penis
  - Glans clitoris
  - Urethra
  - Foreskin
  - Clitoral head
Skin Injuries Not Resulting from Pressure

- Veinous insufficiency
- Arterial insufficiency
- Diabetic wounds
Veinous Injuries

- Medial malleolus, lower leg
- Irregular wound margins
- Superficial
- Wound bed
  - Granular, red
- Typically less painful
- Moderate to heavy exudate
- Surrounding scaling, weepy, firm edema, hemosiderin staining
Arterial Injuries

- Lateral malleolus, tips of toes, over phalangeal heads
- Even wound margins
- Crater-like appearance
- Wound bed
  - Pale
  - Deep
- Pain
- Scant exudate
- Associated with gangrene of extremities
Diabetic or Neuropathic Injuries

- Plantar of foot, heels, under toes, over bony prominences
- Even wound margins
- Rounded
- Wound bed
  - Deep
- Painless
- Surrounding callus, cellulitis, osteomyelitis
Wound Care Dressings

- Gauze
- Petrolatum gauze
- Iodoform gauze
- Petrolatum/Bismuth gauze
- Hydrocolloid gel
  - Contributes fluid to a dry wound
- Foams
  - Absorbs some fluid from the wound
- Calcium alginate
  - Pulls away excess fluid from the wound
Wound Care Dressings

- **Composite dressings**
  - Can be primary or secondary dressing
  - Self-adhesive borders
  - Allows exchange of oxygen while protecting from dirt and water.

- **Contact layers**
  - Porous to allow wound fluid to pass through for absorption
  - Protects wound base from trauma during dressing changes
Frequency of Dressing Change

The frequency of the dressing change depends on:

- The amount of wound exudate
  - Let the exudate determine the dressing
- The location of the wound
- The concerns of the patient and family
Veinous Injury

- Scant exudate
  - Hydrocolloid gel
  - Bordered gauze
- Moderate to heavy exudate
  - Polyurethane foam
  - Calcium alginate
  - Bordered gauze
Arterial Injury

- Hydrocolloid gel
- Bordered gauze
Diabetic or Neuropathic Injury

- Scant exudate
  - Hydrocolloid gel
  - Bordered gauze
- Moderate to heavy exudate
  - Polyurethane foam
  - Calcium alginate
  - Bordered gauze
Optimal Conditions for Wound Healing

- Moist wound bed
  - Thin soupy layer of exudate
- Wound bed at normal body temperature
  - Up to 4 hours to return to body temperature after dressing change.
- Oxygen
- Protein intake
Debridement

- Non-selective
  - Scrubbing
  - Irrigation: safe 4-15psi
    - Piston syringe 4.2psi
    - Saline squeeze bottle 6psi
    - Irrijet 8psi
  - Wet to dry gauze
Wet to Dry is a Procedure

- Mechanical debridement
- Non-selective
- Can be painful
- Place wet gauze in wound and remove after 4 hours
- Not as beneficial
Common Challenges on Hospice

- Pain with dressing change
- Infections in wounds
- Bleeding
- Wound prevention
Pain Management

- Pre-medicate the patient 30 minutes prior to dressing change
- Use of topical lidocaine dabbed onto a cotton swab gently
- Use non-stick dressings
- If copious exudate, use absorbent dressings that allow the less dressing change, the better.
Infections

- Redness
- Edema
- Pain
- Purulent drainage
- Foul odor
- Induration
- Discoloration of wound bed
Cleansing Solutions for Infections

- Dakin's solution: 0.125% bleach
- Acetic acid 0.5% vinegar
- Iodine

- Use for limited amount of time and re-assess weekly
- Hydrogen peroxide is not effective
Odor Management

- Lavender/eucalyptus oil/rosemary in the room
- Coffee grounds in the room
- Oral metronidazole
- Wound treatments
Wound Treatments for Odor Management

- Medical grade honey
- Metronidazole gel
- Metronidazole powder
  - Sprinkle lightly into the wound
  - Small wounds: ¼ tsp, ½ tsp
    - 1 tsp = 5 gm
    - About the amount in the cup (palm) of your hand
  - Large wounds: 1 tbsp = 3 tsp = 15 gm
Wound Care Compounded Creams #1 Through #4

Wound Care #1
- Phenytoin
- Misoprostol

Wound Care #2
- Phenytoin
- Misoprostol
- Metronidazole

Wound Care #3
- Phenytoin
- Misoprostol
- Lidocaine

Wound Care #4
- Phenytoin
- Misoprostol
- Lidocaine
- Metronidazole
Wound Care #4

- Phenytoin: Promotes granulation tissue
- Misoprostol: Synthetic prostaglandin that promotes wound healing
- Lidocaine: Addresses local pain
- Metronidazole: Controls growth of bacteria responsible for foul odor
- $60 for a 100 gm jar from pharmacy
- Spread a thin layer on wound
## Cost of Material and Dressings

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<th>Pharmacy</th>
<th>Medical Supplier</th>
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<tr>
<td><strong>Gauze</strong></td>
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<tr>
<td>Petrolatum gauze 3x9</td>
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<td>“ bismuth gauze 4x4</td>
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<td>Polyurethane foam 4x4</td>
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<tr>
<td>tube*</td>
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<tr>
<td>Ca alginate patch*</td>
<td>(10) $92.00</td>
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<td>Medical honey 44 gm</td>
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</table>

- *Should not use together*
- < Order from Medical Supplier when possible >
Bleeding

- Friable, fungating cancer
- Clotting factors
  - Liver failure
  - Hemophilia
  - Leukemia
  - Recently on blood thinners
- Nose bleed that never stops
Bleeding

- Apply pressure dressing when appropriate
- Parenteral glycopyrrolate: decreases GI bleeding and secretions
- Potassium ferrate/polymer powder: acts like an artificial scab
  - Sprinkle onto bleeding wound bed
  - $7 for 4 small packets
- Hemostatic gauze: cellulose fibers that gel in contact with bleeding site
  - $12 for 5 wafers
Classification of Burns

- **Superficial (First Degree)**
  - Pain, erythema, hyperemia

- **Superficial Partial Thickness (Second Degree)**
  - Through epidermis into superficial dermal
  - Extreme pain

- **Deep Partial Thickness (Deep Second Degree)**
  - Pain is less, since nerves destroyed
  - Presence of sensation to touch
  - Can not distinguish from full thickness visually

- **Full Thickness and Subdermal Burns (Third Degree)**
  - Painless and no sensation
Kennedy Terminal Ulcer

- Pressure wound as patients are dying
- Rapidly progressing, sudden onset
- Pear-shaped
- Irregular borders
- Red to yellow to black
- Larger at onset
- Prognosis hours to days
Kennedy Terminal Ulcer
Summary

- At the end of this presentation, the audience now may be able to
  - Address key issues that are concerning for patients and their families for both healing and non-healing wounds
  - Identify the 6 stages of pressure injuries
  - Recognize the classification of burn wounds
  - Provide cost-effective wound care products that address the needs of our hospice patients and their families