Principals of Skin & Wound Management

The Skin

- Structure
- Function
- Assessment
  - Skin
  - Wound
  - Healing

Functions of the Skin

- Protection
  - Protects from physical and chemical injury
- Water Balance and Temperature Regulation
  - Evaporative fluid loss
  - Vascular responses to heat/cold
  - Maintain fluid within tissue compartments
  - Well moisturized skin essential to healthy skin
    - Avoid DRY or WET skin
- Sensation
  - Nerves that interact with the environment
  - Which patient’s may have decreased skin sensory function?
- Metabolic function
  - Vit D synthesis; essential for Ca reabsorption
- Cosmetic/Communication
  - Self image
Skin Care “Basics”

- Elements of good skin care
- Bathing fast facts
  - Science behind bathing products
  - Bath basins and bugs
  - CHG bathing
- Back to the basics

Bathing Products and Skin Health


- Skin pH is acidic (5.0 to 6.0)
- Cleansing products should be pH balanced or neutral (7)
- Soaps are alkaline →↑ dryness, irritation, breakdown, ↓ protective barrier
- Use pH balanced no-rinse cleansing products
  - Minimize friction from washclothes
- *Keep skin clean, dry, moisturized, protected*

Chorahexadine (CHG) Bathing Wipes

- CHG is an effective antimicrobial agent
- Provides quick and rapid kill of topical microbes
- Is very drying and may be damaging to the epidermis
- Some evidence suggests use of CHG wipes after a bath to reduce:
  - Central line and blood stream infections
  - Spread of contact infections: MRSA, VRE
- Few studies (1 of 6) evaluated the skin of patients after CHG bathing
- SO why are we using CHG?
  - “never events” and SCIP measures to prevent infections
    - [www.cms.gov](http://www.cms.gov)
Alterations in Skin

- Irritation
- Surgical wounds
- Traumatic wounds
- Pressure ulcers
- Incontinence-associated dermatitis (moisture-associated dermatitis)

Physiology of Wound Healing

- Injury
- Hemostasis and inflammation
- Proliferation
- Remodeling

Physiology of Wound Healing

- Hemostasis
  - Factors influencing
  - Cellular mediators
- Cell migration and proliferation
  - Optimizing the wound bed
  - Role of wound care products
  - Nutrition
- Remodeling
Basics of Skin Assessment

- General skin assessment
  - Color, vascularity turgor
  - Mobility
  - Presence absence of lesions, rashes, wounds
    - Note size, shape, color, and distribution
  - Condition of hair and nails
  - Medical history to include medications
    - Steroids
- Nutrition history/status

Factors Influencing Wound Healing

- Age
- Tissue oxygen tension
- Perfusion
- Severe anemia
- Infection
- Smoking
- Pain
- Stress
- Nutrition
- Electrolytes
- Past medical history

Wound History

- Physical examination
- Neurovascular assessment
- Perfusion and tissue oxygenation assessment
- Wound inspection
  - Wound photography
Basics of Wound Assessment

• Type (surgical, vascular, pressure, traumatic)
• Location
• Size
• Classification (e.g., full- or partial thickness)
  - Acute, Chronic
• % viable vs. non-viable in wound bed
• Drainage: amt and description
  - Serous: pale yellow, watery
  - Sanguineous: bloody
  - Serosanguineous: pale pink-yellow, thin
  - Purulent: yellow, green, tan; thick

Wound Assessment Language

• Size: Measure length, width and depth of ulcer base
  - Length: "head to toe"
  - Width: "hip to hip" at widest point
  - Depth: deepest point of the base
• Tunneling and Undermining: describe using a clock format with 12:00 at head and 6:00 at feet.
  - Tunneling and undermining
• Color of ulcer base: Red generally considered healthy tissue with yellow and black denoting necrotic tissue
  - Red, yellow, black in percentages
• Drainage
  - Amount, color, odor
• Use Standard Measurement Tools-AVOID using descriptions like "size of a dime" etc.
• Primary or Secondary Intention Healing

How to Measure a Wound
Objective Data:

- Wound assessment *(Red, Yellow, Black)*
  - Types of tissue found in wound bed
    - Granulation tissue
      - Red, moist, beefy: indicates progression to healing
    - Slough
      - Yellow, stringy substance attached to wound bed
      - Usually must be removed b/f wound can heal
    - Eschar (aka necrotic tissue)
      - Brown, black tissue
      - Indicates necrosis
      - Usually must be removed for healing to occur

Surrounding *(periwound)* Tissue

- Descriptors used to document the periwound
  - Intact
  - Erythema
  - Macerated
  - Blistered
  - Indurated

Wound Assessment (cont.)

- Presence of tubes/drains: patency, stabilization, amt and description of drainage
- Signs and symptoms of infection
  - Fever, elevated WBC count
  - Increased amount and type of wound drainage
  - Heat at wound site, increased pain
  - Regression of wound healing
  - May send specimen for C & S
- Pain: wound pain is often underestimated by healthcare professionals
Debridement options

- Options:
  - Autolytic
  - Sharp
  - Chemical
  - Mechanical and hydrotherapy
- Factors in choosing optimal method of debridement

How do you know the wound is healing well?

- Wound bed is “beefy red”
- Wound heals from edges (contracts)
- Decreasing pain, but patient may have more pain when wound is open (nerve endings)
- Free of signs/symptoms of infection

Products: Optimize Wound Bed for Healing

<table>
<thead>
<tr>
<th>Wound needs</th>
<th>Product categories</th>
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<tbody>
<tr>
<td>Wound location</td>
<td>Gauze</td>
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<tr>
<td>Assessment</td>
<td>Nonadhesive,</td>
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<tr>
<td>- Health of tissue bed</td>
<td>Film</td>
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<tr>
<td>- Exudate</td>
<td>Hydrocolloid</td>
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<tr>
<td>- Patient mobility/self care</td>
<td>Hydrogel</td>
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<td>- Provider skill</td>
<td>Foam</td>
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<td>Antimorbial</td>
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<td>Honey</td>
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<td>Other...</td>
</tr>
</tbody>
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Considerations for Wound Dressing Decisions

- Match wound dressing to wound healing needs
- As wound healing evolves, adapt dressing for optimal environment
- Creativity is often necessary

Negative Pressure Wound Therapy Systems

- Why use NPWT
- Types of NPWT available
  - AHRQ: NPWT technology assessment report
  - http://www.ahrq.gov/clinic/ta/negpresswtd/
- Advantages and disadvantages

Negative Pressure Wound Therapy (NPWT)

- Requires competence to manage device
- "Sponge" placed over open wound and drain attached
- Clear, occlusive dressing applied
- Negative pressure initiated
- Pull excessive fluid/edema from wound bed
- Negative pressure stimulates "angiogenesis"
- Use for acute and chronic wound healing
- Drainage: I/O
Hospital Acquired Pressure Ulcers (HAPU)

Never Event October 2008
Where are we today in preventing HAPU?

Pressure Ulcer Facts

• 4th leading preventable medical error in the United State
• 3 million patients are treated annually
• National acute care prevalence rates 7-15%
• ↑LOS – 4 to 14 days
• Cost to treat PU $43,000 per hospital stay

DEFINITION: Pressure Ulcers
• A pressure ulcer is a localized injury to the skin and / or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear and friction.
  • Pressure: Pressure compresses underlying tissue and small blood vessels against the surface below. Pressure is exerted vertically. Tissues become ischemic and die.
  • Shear/Friction: Friction is the resistance created when one surface moves horizontally against another (ie pulling a patient along bed linen). Shear occurs when one layer of tissue slides horizontally over another, deforming and destroying blood flow (ie when HOB is raised greater than 30 degrees). They both require the addition of pressure from a surface to cause the tissue injury.
  • Mucosal pressure ulcer: pressure ulcers found on a mucous membrane with a history of using a medical device; not staged

Adapted: NPUAP Guidelines for Staging 2007; www.npuap.org
Preventing Pressure Ulcers

- Documentation of POA
- Risk assessment
- Prevalence studies
- Documented interventions
- Provider “ownership”
  - Treatment algorithms that are based on best evidence and easy to follow

Intrinsic and Extrinsic Factors:
Increasing Risk

Intrinsic factors:
- advanced age
- cognitive deficit
- chronic illness (e.g.: diabetes mellitus, peripheral vascular disease),
- immobility
- poor nutrition (e.g: underweight or overweight)
- uncontrolled pain
- medications (eg:steroids, anti-hypertensives, sedatives)
- arterial pressure

Extrinsic factors:
- Pressure
- Friction
- Humidity
- Shear force.
Deep Tissue Injury (DTI)

- Deep Tissue Injury (DTI) was added as a category because this pressure related tissue injury is:
  - A prolonged pressure or positioning within a short period of time that compromises tissue perfusion and creates a wound deep in the dermis that initially presents superficially. (e.g. patient found down, unexpected prolonged operative cases, patients on multiple IV vasopressors, etc)
  - DTI is a wound category of pressure ulcer staging
  - Is of high concern because depth of tissue injury is frequently significant (e.g. stage III or IV)

- Key assessment variable is that a change in skin is “sudden” …DTI happens and progresses quickly.
**Skin Assessment:** Suspected Deep Tissue Injury

Incontinence-Associated Dermatitis (IAD)

- Moisture-associated dermatitis (MAD)
- Term used to describe perineal excoriation due to incontinence
- Moisture from urine and/or fecal material → inflammatory response → loss of moisture barrier
- Patients with fecal incontinence have a 22% greater chance of developing PU
- Immobility + fecal incontinence increase risk skin breakdown

Evidence-Based Management of IAD


- 1st identify the source of IAD
- Evaluate medications, infections, tube feeding
- Absorbent underpads (no diapers)
- Cleansing agents
- Fecal containment devices
- Low airloss bed
Evidence-Based Management of IAD


- Containment devices
  - What’s the evidence?
  - Rectal pouches
    - 1-2 days; 2 individuals to apply correctly
    - May still tear intact skin upon removal
  - Mushroom catheter or balloon tipped catheter “rectal tubes” = NO
  - EVIDENCE TO SUPPORT USE
  - Bowel Management Systems (BMS)

Incontinence-Associated Dermatitis (IAD)

- Anticipate incontinence (fecal and urine)
- Cleans patient frequently with pH balanced product
- Apply protective barrier with each cleansing (dimethicone, zinc, etc)
- Apply under pads to wick moisture away from skin
- Prevention is key
- Know the difference between incontinence associated skin breakdown and pressure related wounds
- Can a patient have both IAD and PU?
Clinical Assessment: Excoriation with Fungal Infection

- When you see:
  - Current moisture management treatment is not working, skin is getting worse
  - Skin looks more red and area of skin injury is extending
  - Assess patient for fungal infection
  - Obtain MD order for antifungal barrier cream

Yeast Infections

Causes:
- Excessive moisture
- Warm areas
- Skin folds, especially with obese patients

Treatment:
- Antifungal agents TO the area
- Optimal antifungal is also a protective barrier cream

What type of wound is this?
AND
What would you do?
Summary

• Wound healing is a dynamic process
• Evaluate patient variables, wound dynamics, and use products to match wound bed needs to optimize healing
• Prevent skin breakdown when patients are hospitalized
  – HAPU
  – IAD