Goal & Objectives

Goal:
• To provide a description of the various dressing types, functions, and uses to optimize the wound environment to promote wound healing.

Objectives:
• The participant will understand the role of moist wound healing in the management of chronic wounds.
• The participant will describe the major categories of dressings including passive dressings, dynamic dressings, anti-infective dressings, and mechanical dressings.
• The participant will list the function(s) of each of the major dressing categories including gauzes, hydrogels, hydrocolloids, transparent films, alginates, silver, and iodine dressings.
• The participant will identify appropriate dressing selections based on wound characteristics.

Ulcer Healing Philosophy

“A chronic wound is a window to underlying disease. Each wound is a symptom of underlying infirmities that undermine the potential for healing.” – Dean Kane, MD

...in other words...

Treat the whole patient, not just the "hole" in the patient!
Ulcers Are Costly!

Between 1 and 2% of the developed world population experiences a non-healing or chronic ulcer. It is estimated that 2.4 million people may develop a foot ulcer at some point in their life.

Treating chronic ulcers costs the US healthcare system over $25 billion annually.

Ulcer Management History

Various products have been used throughout history to promote ulcer healing, manage moisture, and protect the body from infection.

- Cotton and wool have been used to absorb drainage
- Egyptians used gauzes soaked in wine vinegar or honey
- Greeks and Romans used metals as antiseptics
- Greeks used fig latex to decrease infection
- South American Indian tribes used ant mandibles as suture

Remember...

...Maalox and heat lamps? (dries out ulcer)
...‘Betadine fudge’? (cytotoxic and drying!!)

More recent, but still out-dated...

...Normal Saline wet-to-dry dressings! (drying, painful, contribute to ulcer infection)
...Dakin’s or Clorpactin-soaked gauze dressings! (cytotoxic, painful, drying)
Appropriate Dressing Selection

- Address requirements of the ulcer and the patient
  - Maintain appropriate hydration
  - Protect ulcer from external contamination
  - Control odor, bio-burden and ulcer pain
  - Promote debridement of necrotic tissue
- Meet goals and objectives of treatment
- Provide balance between cost and benefit

Dressings do not heal ulcers... they enhance the body’s ability to heal itself

Appropriate Dressing Selection

- Helps create the optimal ulcer healing environment
- Increases healing rates
- Reduces pain
- Decreases infection rates
- Provides cost effective care

Dressing Reference Guide
Inappropriate dressings can cause...

Compromised peri-ulcer integrity
- Maceration
- Contact dermatitis
- Tape tears

Inappropriate dressings can cause...
- Wound bed injury
- Tissue dehydration
- Hypertrophic granulation

- End Results:
  - Increased pain
  - Increased risk of infection
  - Delayed healing
  - Higher overall costs

Key to Success

*Accurate* and *frequent* assessment of the ulcer’s needs is a key component in appropriate dressing selection!
Ulcer Considerations

- Tissue type
- Exudate levels
- Bacteria levels
- Size and Depth

Ulcer Considerations

Granulation and Epithelium
- Protect
- Preserve Moisture

Healthy Granulation

VLU post application of Apigraf
Note the epithelial tissue throughout the wound base

Ulcer Considerations

Necrotic Devitalized Tissue
- Remove these tissues
- Promote autolysis
Ulcer Considerations

Dead Space
• Eliminate dead space
• Do not pack tightly

Ulcer Considerations

• No Exudate – add moisture
• Low Exudate – preserve moisture
• Moderate Exudate – absorb excess exudate
• Significant Exudate – absorb & manage exudate

Inappropriate Dressing: Heavily Exudative Ulcer

• Strikethrough of exudate
• Peri-ulcer maceration
• Skin stripping secondary to dressing adhesives

Photos – Courtesy of C. Broussard
Ulcer Considerations

- **Contaminated ulcers**
  - Cleanse with saline

- **Colonized ulcers**
  - Debridement
  - Control surface bacteria with antimicrobial dressings

- **Infected ulcers**
  - Debridement
  - Control surface bacteria with antimicrobial dressings
  - Manage odor with activated charcoal dressings

Grossly infected heel ulcer. Surgical Debridement Indicated, then consider topical management

Inappropriate vs. Appropriate Dressing Selection

Passive Dressings

Many dressings are referred to as passive dressings
- No active role interaction with wound tissues
- Maintain a moist wound environment
  - Lend moisture
  - Absorb exudate

Passive dressing categories should be the first selected to maintain a moist wound healing environment. Step up to active treatment modalities when passive dressings inadequate.
Moist Wound Healing Evidence

- Less intense, less prolonged inflammation (Rovee et al., 1972)
- More rapid keratinocyte proliferation and migration (Winter, 1982)
- Earlier differentiation of keratinocytes to restore cutaneous barrier function (Vogt et al., 1990)
- Increased fibroblast proliferation (Katz et al., 1991)
- Increased collagen synthesis (Lappriger et al., 1985)
- Earlier, less prolonged angiogenesis (Lydon et al., 1989)
- Earlier full-thickness wound contraction (Homme et al., 1986)


Hydrogel

- Maintains clean, moist ulcer environment (macerates if applied outside the ulcer margins)
- Non-adherent to ulcer base when applied correctly
- Cooling and soothing = decreased pain
- Promotes autolytic debridement

Indications

- Dry partial thickness or full thickness ulcers
- Minimally draining ulcers
Hydrocolloids

Characteristics
- Maintains a clean, moist ulcer environment
  - Reduces ulcer contamination
  - Promotes autolytic debridement
- May reduce pain and protect ulcer

Indications
- Partial or full thickness

Precautions
- Caution in acutely infected ulcers
- Contraindicated with dry eschar in presence of arterial insufficiency

Hydrocolloids: Special Considerations
- When applying dressing, extend 1½-2 inches past ulcer edges
- Peri-ulcer tissue must be intact
- Utilize a skin sealant under adhesive products to protect the peri-ulcer skin
- Hydrocolloid wear-time is typically 4-7 days; early removal contributes to peri-ulcer skin stripping.
- Wound may have a mild odor and tan exudate when hydrocolloid is removed; cleanse thoroughly before assessing for infection
Transparent Films

Characteristics
- Permeable to oxygen and water vapor
- Slow moisture loss through evaporation
- Maintains moisture
- Non-absorbent
- Protects from bacteria and other contaminants
- Creates a "second skin" to protect against friction

Indications
- Partial thickness ulcers with minimal ulcer drainage
- High shear areas

Transparent Films: Special considerations
- Peri-ulcer tissue must be intact
- Dressing should extend 1½ to 2 inches past ulcer edges
- Utilize a skin sealant to protect the peri-ulcer skin
- Avoid use of transparent dressings on patients with fragile epidermis
Alginates

Characteristics
- A natural seaweed polysaccharide
- Biodegradable, highly absorbent
- Converts into viscous, hydrophilic gel maintaining moist ulcer environment
- Some autolytic debridement and hemostatic properties

Indications
- Partial and full thickness ulcers
- Moderate to heavy ulcer drainage

Hydrofibers

Photograph downloaded from: http://www.kirudan.dk/seneste_nyheder/153.html on 11/20/08
**Hydrofiber**

**Characteristics**
- Carboxymethylcellulose
- Absorbs heavy exudate
- Converts to a gel
- Keeps ulcer base moist
- Promotes autolysis

**Indications**
- Partial and full thickness ulcers
- Moderate to heavy ulcer drainage

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**Foam Dressings**

**Characteristics**
- Insulating
- Absorptive
- Maintains moist ulcer environment
- Promotes some autolytic debridement
- Generally non-adherent to ulcer base
- Extremely versatile
  - May be used as “padding”
  - Spot compression

**Indications**
- Partial and full thickness ulcers
- Moderate to heavy drainage
Anti-Infective Dressings

- Cadexomer Iodine
- Silver Dressings
- Indications: Infected or Colonized Wounds
- Long term use of silver may inhibit cell proliferation

Characteristics
- Combined physically distinct components into a single dressing:
  - Antibacterial barrier
  - Absorptive layer
  - Semi-adherent or non-adherent property
  - Considered absorbent dressing

Indications
- Partial or full thickness ulcers
- Product selection based on ulcer characteristics
Non-Adherent Contact Layer

**Characteristics**
- No adherence to ulcer bed
- Protects the ulcer bed
- Decreases pain with dressing changes

**Indications**
- Healthy red granulated ulcer bed
- Pain with dressing changes
- Secure biologic product in place
- Skin tears
- As primary dressing under foam in negative pressure

Palliative Dressings

**Considerations**
- Product choice should be based on ulcer moisture characteristics
- Maintain peri-ulcer integrity
- Non-adherent to decrease pain

Charcoal Dressings

**Characteristics**
- Odor absorption
- Exudate absorption
- May also provide antimicrobial action if combined with silver
New Dressing Technology

• New dressing technology constantly developing to enhance cost effective wound healing

• Clinicians must weigh cost vs benefit

• Review of product’s clinical trials enables evidenced-based decision-making

Niche Dressings

There are a number of products that don’t fit into the “classic” dressing categories
For example:
- Honey dressings
  • Available in various formulations
  • Studies indicate may have anti-infective and autolytic debridement properties
- Sodium chloride impregnated dressings

Remember the Goal...

<table>
<thead>
<tr>
<th>Maintain Moisture</th>
<th>Absorb Moisture</th>
<th>Control Bacteria</th>
<th>Control Odor</th>
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<tbody>
<tr>
<td>Transparent film</td>
<td>Foam</td>
<td>Silver</td>
<td>Activated charcoal</td>
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<tr>
<td>Hydrocolloid</td>
<td>Alginate</td>
<td>Cadexomer Iodine</td>
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<tr>
<td>Hydrogel Sheet</td>
<td>Hydrofiber</td>
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<td></td>
<td>Composite dressing</td>
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<tr>
<td>Add Moisture</td>
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<tr>
<td>Amorphous hydrogel</td>
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<td>Impregnated hydrogel gauze</td>
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<tr>
<td>Protect ulcer surface</td>
<td>Control Bacteria</td>
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<td>Contact layer</td>
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<td>Impregnated hydrogel gauze</td>
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Dressing selection should manage exudate and maintain a moist wound healing environment
How Important is Moisture Maintenance?

Complex Ulcers Often Require Active Treatment Modalities

Summary: Appropriate dressings...

**Achieve Desired Goal:**
- Enhance ulcer healing process as part of a comprehensive multidisciplinary ulcer healing plan of care.

**Outcomes:**
- Rapid healing
- Decreased morbidity
- Decreased recurrence
- Decreased costs
Dressing Reference Guide

References


