



## **Pressure Ulcers: Choosing the Right Treatment**

---

Nancy Morgan RN, BSN, MBA, WOC, WCC, CWCMS, OMS  
Wound Care Education Institute

Notes:

- I. What is Right?
  - A. In accordance with the standards of care
  - B. Wound progresses through healing phases
  - C. Individualized to the patient - No cookbook medicine!!
  - D. The objective in wound management is to heal the wound in the shortest time possible, with minimal pain, discomfort, and scarring to the patient.
- II. Assessment (EPUAP, NPUAP, 2009)
  - A. Complete an initial assessment of the individual with a pressure ulcer, to include:
    - 1. The individual's and family's goals of care. If the individual is unable to participate, consult with family and/or significant others.
    - 2. A complete health/medical and social history.
    - 3. A focused physical examination that includes:
    - 4. Factors that may affect healing (e.g., impaired perfusion, impaired sensation, systemic infection)
    - 5. Vascular assessment in the case of extremity ulcers (e.g., physical examination, history of claudication, and ankle-brachial index or toe pressure)
    - 6. Laboratory tests and x-rays as needed
    - 7. Nutritional assessment
    - 8. Pain related to pressure ulcers
    - 9. Risk for developing additional pressure ulcers
    - 10. Psychological health, behavior and cognition
    - 11. Social and financial support systems
    - 12. Functional capacity, particularly in regard to positioning, posture, and the need for assistive equipment and personnel.
    - 13. The employment of pressure-relieving maneuvers
    - 14. Adherence to pressure-relieving maneuvers
    - 15. Integrity of seating and bed surfaces (wear and tear)
    - 16. The individual's/family member's knowledge and belief about developing and healing pressure ulcers.
- III. Remove/ Treat the Cause
  - A. Positioning
    - 1. Repositioning frequency should be determined by the individual's tissue tolerance, his/her level of activity and mobility, his/her general medical condition, the overall treatment objectives, assessments of the individual's skin condition and the support surface used. (EPUAP, NPUAP, 2009)
    - 2. Bed bound patients, positioning devices such as pillows or foam wedges should be used to maintain position. These devices are also used to prevent bony prominences from direct contact with one another. Five pillow rule:
      - a. Pillow 1 under legs to elevate the heels
      - b. Pillow 2 between ankles
      - c. Pillow 3 between the knees
      - d. Pillow 4 behind the back
      - e. Pillow 5 under the head

3. Reduce pressure over bony prominences by positioning patients using the “Rule of 30”.
    - a. The Rule of 30 means the head of the bed is elevated at no more than 30 degrees from horizontal level and the body is placed in a 30 degree laterally inclined position, when repositioned to either side. If the head of the bed is raised higher than 30 degrees for eating, watching television, etc., the head should be returned to the original 30 degrees as soon as possible.
    - b. In the 30 degree laterally inclined position, the individual’s hips and shoulders are tilted 30 degrees from supine and pillows or foam wedges are used to keep the individual properly positioned without pressure over the trochanter or sacrum. If tolerated, the prone position may also be used. (EPUAP, NPUAP, 2009)
  4. Use Transfer/draw sheets/trapeze to decrease friction. (WOCN,2010)
  5. Avoid positioning patient directly on skin breakdown.
- B. Foot/Heel Positioning
1. Category/Stage I and II Pressure Ulcers of the Heel (EPUAP, NPUAP, 2009)
    - a. Relieve pressure under the heel(s) by placing legs on a pillow to “float the heels” off the bed or by using pressure reducing devices with heel suspension.
  2. Category/Stage III, IV, and Unstageable Pressure Ulcers of the Heel (EPUAP, NPUAP, 2009)
    - a. Place the leg in a device that elevates the heel from the surface of the bed, completely offloading the pressure ulcer.
    - b. Apply the device according to the manufacturer’s instructions.
    - c. Ensure that the device is not too tight and does not create additional pressure damage.
    - d. Check device placement more frequently in individuals with neuropathy, peripheral arterial disease, lower-extremity edema; or who are likely to develop edema.
    - e. Remove the device periodically to assess skin integrity.
  3. Heel Pressure Reduction Products
    - a. Heelift® Standard Suspension Boot [www.heelift.com](http://www.heelift.com)
    - b. Multi Podus® System [www.rcai.com](http://www.rcai.com)
    - c. PRAFO® [www.anatomicalconceptsinc.com](http://www.anatomicalconceptsinc.com)
    - d. WAFFLE® Heel Elevator [www.ehob.com](http://www.ehob.com)
    - e. Posey® PRO-heelX® [www.posey.com](http://www.posey.com)
    - f. ROHO® Heal Pads <http://www.therohogroup.com>
    - g. SkiL-Care™ Heels-Off <http://www.skil-care.com>
    - h. Gelbodies <http://www.medlogics.com>
- C. Seating Interventions
1. Teach patient to shift weight every 15 minutes, if unable reposition patient every hour. (WOCN, 2010)
  2. Use a pressure redistributing cushion while in chair - distribute load (weight of body) without hindering function or increasing the potential for skin damage. (EPUAP, NPUAP, 2009)

3. Ensure that the feet are properly supported either directly on the floor, on a footstool, or on footrests when sitting (upright) in a bedside chair or wheelchair. (EPUAP, NPUAP, 2009)
  4. If sitting in a chair is necessary for individuals with pressure ulcers on the sacrum/coccyx or ischia, limit sitting to three times a day in periods of 60 minutes or less. (EPUAP, NPUAP, 2009)
    - a. Consult a seating specialist to prescribe an appropriate seating surface and/or positioning techniques to avoid or minimize pressure on the ulcer.
  5. Correct size seating
    - a. A wheelchair seat should be as narrow as possible without squeezing the hips or causing discomfort. The width of a chair can be measured by having the patient sit in a wide chair and placing books on either side of the hips until the books are touching but not squeezing the hips. Measure the distance between the outer edge of the books and use this as a measurement for the required seat size.
  6. Cushion Manufacturers:
    - a. Sunrise Medical: <http://www.sunrisemedical.com>
    - b. Varilite: <http://www.varilite.com/>
    - c. Span America: <http://www.spanamerica.com>
    - d. Supracore: <http://www.supracor.com>
    - e. Roho Medical Products: <http://www.therohogroup.com>
    - f. Ride Designs (division of Aspen Seating): <http://www.ridedesigns.com/>
    - g. Otto Bock Rehab: <http://www.ottobockus.com/>
    - h. Skil-Care: <http://www.skil-care.com>
    - i. Invacare <http://www.invacare.com>
    - j. Waffle Cushion: <http://www.ehob.com/>
- D. Support Surfaces
1. Definitions
    - a. Support Surface - "A specialized device for pressure redistribution designed for management of tissue loads, microclimate, and/or other therapeutic functions (i.e., any mattresses, integrated bed system, mattress replacement, overlay, or seat cushion or seat cushion overlay)." (NPUAP, 2007)
      - 1) Mattress overlay is a general term to describe a support surface that is placed on top of a mattress.
      - 2) Mattress replacement – is a general term to describe a support surface that totally replaces the standard mattress.
      - 3) Integrated Bed System - is a general term to describe a bed frame and support surface that is combined into a single unit whereby the surface is unable to function separately.
    - b. Pressure Redistribution - The ability of a support surface to distribute load over the contact areas of load (human body/mannequin) resulting in the therapeutic benefit of preventing and/or managing pressure ulcers. (NOTE: The terms pressure relief and/or pressure reduction are no longer used) (NPUAP, 2007)
    - c. Micro-climate - temperature (of the skin or the soft tissues) and humidity or skin surface moisture at the interface between the skin and the support surface.

2. Types of Support Surfaces (NPUAP, 2007)
  - a. Reactive Support Surface - “a powered or non-powered support surface with the capability to change its load distribution properties only in response to applied load.”
  - b. Active Support Surface - “a powered surface with the capability to change its load distribution properties, with or without applied load.”
3. Features of Support Surfaces (NPUAP, 2007)
  - a. Air fluidized - provides pressure redistribution via a fluid-like medium created by forcing air through beads as characterized by immersion and envelopment.
  - b. Alternating pressure - provides pressure redistribution via cyclic changes in loading and unloading as characterized by frequency, duration, amplitude and rate of change parameters
  - c. Lateral rotation - provides rotation about a longitudinal axis as characterized by degree of patient turn, duration, and frequency.
  - d. Low air loss - provides a flow of air to assist in managing the heat and humidity of the skin.
  - e. Zone - a segment with single pressure redistribution capability
  - f. Multi zoned surfaces – a surface in which different segments can have different pressure redistribution capabilities
4. Support Surface Guidelines Pressure Ulcer Prevention (EPUAP, NPUAP, 2009)
  - a. Use higher-specification foam mattresses rather than standard hospital foam mattresses for all individuals assessed as being at risk for pressure ulcer development.
  - b. Use an active support surface (overlay or mattress) for patients at higher risk of pressure ulcer development where frequent manual repositioning is not possible.
  - c. Do not use small-cell (diameter <10 cm) alternating-pressure air mattresses or overlays.
  - d. Avoid use of synthetic sheepskin pads; cutout, ring, or donut-type devices; and water-filled gloves.
  - e. Use a pressure-redistributing mattress on the operating table for all individuals identified as being at risk of pressure ulcer development.
5. Support Surface Guidelines Pressure Ulcer Treatment (EPUAP, NPUAP, 2009)
  - a. Replace the existing mattress with a support surface that provides better pressure redistribution, shear reduction, and microclimate control for the individual if she or he: (EPUAP, NPUAP, 2009)
    - 1) Cannot be positioned off of the ulcer
    - 2) Has pressure ulcers on two or more turning surfaces (e.g., the sacrum and trochanter), limiting turning options
    - 3) Fails to heal or demonstrates ulcer deterioration despite appropriate comprehensive care
    - 4) Is at high risk for additional ulcers
    - 5) “Bottoms out” on the existing support surface

- b. Bottoming Out (WOCN,2010)
    - 1) To check for this: place your hand palm up with fingers outstretched, between the support surface and underlying surface or frame.
    - 2) The support surface should have about 1 inch of un-compressed support surface between the clinicians hand and the patients' body. Check at different head elevations.
  - c. Select a support surface that meets the individual's needs. Consider the following factors: (EPUAP, NPUAP, 2009)
    - 1) Number, severity, and location of the pressure ulcer(s);
    - 2) Risk for additional pressure ulcers;
    - 3) Need for additional features, such as ability to control moisture, temperature, and friction/shear;
    - 4) Care setting
  - d. Patients with large stage III or IV pressure ulcers or ulcers on multiple turning surfaces, consider a low-air-loss or air-fluidized surface. (Cullen et al. 2000; Whitney, et al. 2006; Hopper et al. 2006)
  - e. Turn and reposition on ALL support surfaces. (EPUAP, NPUAP, 2009)
- IV. Topical Treatment Plans
- A. Factors to Consider (EPUAP, NPUAP, 2009)
    - 1. Tissue types and characteristics in the ulcer bed
    - 2. Condition of peri-wound
    - 3. Patient's goals
  - B. Identify the purpose of principal aim of the proposed treatment
    - 1. Control odor or drainage
    - 2. Add moisture
    - 3. Reduce pain
    - 4. Combat infection
  - C. How often should a treatment be performed
    - 1. Varies individually for every wound
    - 2. Time frame based upon:
      - a. Wound characteristics
      - b. Type of dressing
      - c. Patient activity
      - d. Patient tolerance
    - 3. Less is best. The least amount of time a wound is uncovered, the faster wound healing will occur.
  - D. International Pressure Ulcer Guideline General Recommendations (EPUAP, NPUAP, 2009)
    - 1. Choose a dressing to keep the wound bed moist.
    - 2. Cleanse the wound with each dressing change using potable water (i.e., water suitable for drinking), normal saline, or a non-cytotoxic cleanser to minimize trauma to the wound and help control odor.
    - 3. Follow manufacturer recommendations, especially related to frequency of dressing change.

4. The plan of care should guide usual dressing wear times and contain provisional plans for dressing changes as needed (for family, the individual, and staff) due to soilage, loosening, etc.
  5. Assess pressure ulcers at every dressing change and confirm the appropriateness of the current dressing regimen; observe the pressure ulcer for developments that may indicate the need for a change in treatment (e.g., wound improvement, wound deterioration, more or less exudate, signs of infection, or other complications).
  6. Re-evaluate the pressure ulcer, the plan of care, and the individual if the pressure ulcer does not show progress toward healing within 2 weeks (or as expected given the individual's overall condition and ability to heal).
- E. Stable Eschar on Heel
1. Goal: Keep eschar dry and intact, do not debride.
  2. Rationale: low blood perfusion levels
  3. "Keep the Door Shut"
  4. Interventions
    - a. Assess wound daily for signs of erythema, tenderness, edema, purulence, fluctuance, crepitance, and/or malodor (i.e., signs of infection). (EPUAP, NPUAP, 2009)
      - 1) Consult a vascular surgeon urgently in the presence of the above symptoms.
      - 2) Debride urgently in the presence of the above symptoms if consistent with the individual's wishes and overall goals of care.
    - b. Topical Treatment
      - 1) Leave wound open to air
      - 2) Dry dressing for Protection
      - 3) Paint eschar with betadine or alcohol daily to keep dry. (Alvarez, et al. 2007)
- F. Unstable Necrotic Tissue
1. Goal: To promote debridement
  2. Rationale: Devitalized tissue impairs healing, provides a growth medium for bacteria, increasing the probability of infection
  3. Topical treatments
    - a. Hydrocolloid
    - b. Hydrogel sheet
    - c. Transparent dressings
    - d. Foams
    - e. Impregnated gauze
    - f. Hydrogel
    - g. Santyl® Enzymatic debriding ointment
  4. Adjunctive therapy
    - a. Whirlpool
    - b. Sharp debridement
    - c. Biologic debridement - Maggot debridement therapy
    - d. Pulsed lavage
    - e. Hydrotherapy
    - f. Electrical Stimulation



- G. Stage I Pressure Ulcer - Non-blanchable erythema of intact skin
  - 1. Goal: maintain skin integrity
  - 2. Rationale: any break in the skin integrity can lead to infection, pain, and complications
  - 3. Interventions
    - a. Remove the cause BEFORE further damage occurs
    - b. DO NOT massage (EPUAP, NPUAP, 2009)
  - 4. Topical treatments
    - a. Transparent dressing
    - b. Hydrocolloid
    - c. Liquid skin barrier prep
    - d. Thin foam
- H. Stage II to IV Pressure Ulcer with Dry Wound Bed
  - 1. Goal: Add moisture to wound bed
  - 2. Rationale: Dry cell is a dead cell (Bryan, 2004)
  - 3. Topical treatments
    - a. Hydrogel
    - b. Foams
    - c. Hydrocolloids
    - d. Transparent film
    - e. For deeper wounds pack loosely
- I. Stage III or IV Pressure Ulcer with Slough and Exudate (Drainage)
  - 1. Goal: Control exudate and debride necrotic tissue
  - 2. Rationale: Exudate can macerate surrounding tissues resulting in further skin breakdown, Exudate provides a growth medium for bacteria increasing risk of infection, Devitalized tissue impairs healing, provides a growth medium for bacteria, increasing the probability of infection
  - 3. Interventions
    - a. Determine& treat cause of exudate - high bacteria counts, necrotic tissue, edema, chronic wound status, debridement
    - b. Protect peri-wound
      - 1) Skin barriers
      - 2) Sealants
  - 4. Topical treatments
    - a. Sharp debridement
    - b. Santyl® Enzymatic debriding ointment
    - c. Moderate to Heavy exudate
      - 1) Calcium alginate dressing: form a gel in the wound base when they come in contact with and mix with the wound exudate, are moldable, absorbent, non-adhesive, provide moist wound healing environment, easy to use, and capacity to absorb up to 20 times its weight, which reduces the need for frequent dressing changes. (Lee, et al. 2007)
      - 2) Examples: Kaltostat®, Kalginate®, Sorbsan®, Curasorb®, Medihoney® Alginate
      - 3) Change as needed, usually 24 to 48 hrs.

- d. Heavy exudate
  - 1) Hydrofiber dressing - Carboxymethylcellulose fibers, which form a gel upon contact with wound fluid. Manufactured in rope or sheet dressings. Capacity to absorb up to 33% more than alginate dressings, which reduces the need for frequent dressing changes. (Lee, et al. 2007) Examples: Aquacel®, Aquacel® AG
  - 2) Wound drainage collector
- J. Stage II – IV Pressure Ulcer - Red Exudating Wound Bed
  - 1. Goal: Control exudate and promote healing
  - 2. Rationale: Exudate will macerate surrounding tissues tissue breakdown will occur
  - 3. Interventions
    - a. Determine & treat cause of exudate- high bacteria counts, edema, chronic wound
    - b. Protect peri-wound
      - 1) Skin barriers
      - 2) Sealants
  - 4. Topical treatments
    - a. Light to Moderate exudate
      - 1) Foam dressing - May be utilized as a primary or secondary dressing, used under compression wrap therapy, help create a moist environment, are moderately absorbent, and help insulate and protect the wound. They are nonadherent, making it easy to apply and remove them. Absorptive capabilities vary among brands.
      - 2) Polymeric membrane foam dressings are very absorptive, have a surfactant to help cleanse the wound, and have been shown to decrease pain. (EPUAP,NPUAP, 2009)
      - 3) Foam Examples: Allevyn®, Curafoam®, Flexzan®, Hydrasorb®, Lyofoam®, Mitraflex®, Polymem®, Tielle®, Mepilex®, Biatain®, 3M™ Heel Foam
      - 4) Change every 3 - 7 days or as necessary. Some of foam products require a secondary or cover dressing to hold in place.
    - b. Moderate to Heavy exudate
      - 1) Calcium alginate dressing: form a gel in the wound base when they come in contact with and mix with the wound exudate, are moldable, absorbent, non-adhesive, provide moist wound healing environment, easy to use, and capacity to absorb up to 20 times its weight, which reduces the need for frequent dressing changes. (Lee, et al. 2007)
      - 2) Examples: Kaltostat®, Kalginate®, Sorbsan®, Curasorb®, Medihoney® Alginate
      - 3) Change as needed, usually 24 to 48 hrs.
    - c. Heavy exudate
      - 1) Hydrofiber dressing - Carboxymethylcellulose fibers, which form a gel upon contact with wound fluid. Manufactured in rope or sheet dressings. Capacity to absorb up to 33% more than alginate dressings, which reduces the need for frequent dressing changes. (Lee, et al. 2007) Examples: Aquacel®, Aquacel® AG

- 2) Negative Pressure wound therapy
  - 3) Wound Drainage Collector
  - 4) “Gold Dust™” - high absorbent hydrophilic polymer powder capable of absorbing 100 times its own water weight. [www.elastogel.com](http://www.elastogel.com)
  - 5) Xtrasorb™ Classic - Absorbent core with super-absorbent polymer fibers that absorb large quantities of wound exudate, forming a gel that binds and locks the exudate away from the wound. [www.dermasciences.com](http://www.dermasciences.com)
- K. Infected- High Bio-Burden
1. Goal: Decrease bacterial levels
  2. Rationale: High bio-burden delays wound healing
  3. Interventions
    - a. Consider using cleansing solutions with surfactants and/or antimicrobials to clean pressure ulcers with debris, confirmed infection, suspected infection, or suspected high levels of bacterial colonization. (EPUAP, NPUAP, 2009)
      - 1) Anasept® Antimicrobial Skin & Wound Cleanser is non-cytotoxic with exceptionally rapid broad-spectrum bactericidal, fungicidal, sporicidal, and virucidal properties. [www.anacapa-tech.net](http://www.anacapa-tech.net)
      - 2) Irrisept® Wound Debridement and Cleansing System with Chlorhexidine Gluconate(CHG) - Manual bottle compression delivers 450mL of solution in less than 30 seconds to effectively dislodge and remove bacteria without harming underlying tissues. [www.irrisept.com](http://www.irrisept.com)
      - 3) Microcyn Skin and Wound Care - demonstrated rapid in-solution eradication of MRSA, VRE and other dangerous pathogens with 99.9999% kill in just under 30 seconds, yet is safe to use around eyes, ears and mouth. [www.oculusis.com](http://www.oculusis.com)
    - b. Use systemic antibiotics for individuals with clinical evidence of systemic infection such as positive blood cultures, cellulitis, fasciitis, osteomyelitis, systemic inflammatory response syndrome (SIRS), or sepsis, if consistent with the individual’s goals. (EPUAP, NPUAP, 2009)
  4. Topical antimicrobial dressings
    - a. Consider the use of topical antimicrobial silver or medical-grade honey dressings for pressure ulcers infected with multiple organisms, because these dressings offer broad antimicrobial coverage. However, before applying a honey dressing, make sure that the individual is not allergic to honey, bee products, or bee stings. (EPUAP, NPUAP, 2009)
      - 1) Examples Silver Dressings - Aquacel® Ag Hydrofiber® Dressing with Silver, Actisorb™, Arglaes™, SilvaSorb™, ActiCoat\*, Silverlon®
      - 2) Examples Honey Dressings - MANUKApli®, MediHoney® Paste, MediHoney® Adhesive Honeycolloid Dressing, MANUKAhd®
    - b. Methylene Blue
      - 1) Hydrofera Blue® - I constructed of polyvinyl alcohol (PVA) sponge complied with two organic pigments; Methylene Blue and Gentian Violet which provide broad-spectrum bacteriostatic protection. [www.hydrofera.com](http://www.hydrofera.com)

- c. Sodium Chloride
  - 1) Mesalt® - intended for the management of heavily discharging and discharging infected wounds and deep cavity wounds such as pressure sores and surgical wounds. How Mesalt® works: The discharge from the wound releases the sodium chloride from the dressing. Mesalt® effectively stimulates the cleansing of wounds by absorbing exudate, bacteria, and necrotic material from the wound, thereby facilitating the natural wound healing process. Made of an absorbent, viscose/polyester nonwoven impregnated with sodium chloride.
- d. Consider use of cadexomer iodine dressings in moderately to highly exudating pressure ulcers. (EPUAP, NPUAP, 2009)
- 5. Consider the use of topical antiseptics that are properly diluted and appropriate for pressure ulcers. Antiseptics should be used for a limited time period to control the bacterial bioburden. (EPUAP, NPUAP, 2009)
  - a. Anasept® Antimicrobial Skin and Wound Gel
    - 1) Topical hydrogel with exceptionally rapid broad spectrum bactericidal, including the antibiotic resistant strains MRSA & VRE, fungicidal and virucidal properties through the action of sodium hypochlorite.  
www.anacapa-tech.net
  - b. Dakins Solution (Hypochlorite solution - Bleach) 0.125% - ¼ strength. Effective against gram positive bacteria (example strep, staph) at dilute concentrations Na OCL is effective in killing virtually all microorganisms known to infect burn wounds. There has been no evidence that these microorganisms can develop a resistance to its action. It is easy to prepare and is less expensive than the other currently available topical agents.
  - c. Acetic Acid 0.25% - 0.5% (vinegar) - Low pH., bactericidal against many Gram-positive and Gram-negative organisms, especially Pseudomonas aeruginosa. Used TID for limited duration.
- 6. Topical antibiotics are not recommended for pressure ulcers. (EPUAP, NPUAP, 2009)
- L. Hypergranulation
  - 1. Goal: granulation tissue to the level of the wound margin
  - 2. Rationale: A wound will not heal if hypergranulation tissue is present
  - 3. Intervention
    - a. Silver nitrate application (Borkowski,2005)
    - b. Foam dressing with slight compression (Harris & Rolstad, 1994)
    - c. Conservative sharp debridement
- M. Epibole (Rolled/curled under edges)
  - 1. Goal: Remove epibole
  - 2. Rationale: No wound healing. The wound “thinks” its healed, the margins must be re-injured to “jump start” the healing process
  - 3. Intervention
    - a. Rub and rough up wound edges with dry cotton gauze.
    - b. Apply silver nitrate to affected area.
    - c. Surgical debridement

#### N. Odor

1. Goal: remove cause of odor and neutralize odor
2. Rationale: help with psycho/social & bacterial issues
3. Intervention
  - a. Debridement of necrotic tissue
  - b. Silver dressing
  - c. Cleansing products
  - d. Apply ostomy or wound collection appliance to prevent dispersion of odor.
  - e. Topical antiseptic
  - f. Charcoal dressings - Hollister™ Odor Absorbent Dressing®, ConvaTec CarboFLEX®
  - g. Application of 0.75% topical metronidazole gel also is effective with odors, as well as wound infections. The gel can be spread on all of the wound surfaces once or twice a day. (NPUAP, 2010; Kalinski et al. 2005; Newman et al. 1989)

#### O. Miscellaneous Wound Challenges

1. Moisture Associated Skin Damage where dressing will not adhere
  - a. Calmoseptine Ointment - physical moisture barrier, temporarily relieve discomfort and itching, menthol has been shown to cause vasodilation increase circulation and mild antiseptic ingredients .[www.calmoseptineointment.com](http://www.calmoseptineointment.com)
  - b. Triad™ Hydrophilic Wound Dressing - is a zinc oxide-based hydrophilic conforming paste that absorbs moderate levels of wound exudate, and adheres to moist, weeping wounds. [www.coloplast.com](http://www.coloplast.com)
  - c. Xenaderm ointment - Castor Oil; Peru Balsam; Trypsin topical ointment; no secondary dressing required. [www.healthpointbio.com](http://www.healthpointbio.com)
  - d. Granulex® Spray - topical aerosol which stimulates the vascular bed of chronic wounds [www.udllabs.com](http://www.udllabs.com)
  - e. Dermagran® BC Barrier Cream helps seal out wetness and protects against minor skin irritations due to moisture, urine, feces, and perspiration. Barrier contains zinc (20%) and bentonite oxide. [www.dermasciences.com](http://www.dermasciences.com)
  - f. Elta Dermavase™ is a waterproof skin ointment that functions as a waterproof, occlusive covering for superficial wounds. [www.steadmed.com](http://www.steadmed.com)
  - g. Liquid Film Barrier
2. Intact Heel Blister
  - a. Do not de-roof an intact blister.
  - b. An intact blister appears more comfortable and is less prone to infection (Read, 2001). Ramsey (1992) states that the best dressing for a blister is its own roof.

## Bibliography

Alvarez OM, Kalinski C, Nusbaum J, Hernandez L, Pappous E, Kyriannis C, Parker R, Chrzanowski G, Comfort CP. Incorporating wound healing strategies to improve palliation (symptom management) in patients with chronic wounds. *J Palliat Med.* 2007 Oct;10(5):1161-89.

American Medical Directors Association (AMDA). Pressure ulcers in the long-term care setting. Columbia (MD): American Medical Directors Association (AMDA); 2008.

Bonham PA. Swab cultures for diagnosing wound infections: A literature review and clinical guideline. *J Wound Ostomy Continence Nurs* 2009; 36: 389-95.

Borkowski, L. G tube care: managing hypergranulation tissue. *Nursing.*2005. Aug; 35(8):24

Bryan J. Moist wound healing: a concept that changed our practice, *Journal of Wound Care*, June 2004. 13(6): 227- 228.

Cullum, N., Deeks, J., Sheldon, T.A., Song, F., & Fletcher, A.W. Beds, mattresses and cushions for pressure sore prevention and treatment. *Cochrane Review, The Cochrane Library, Issue 3.* 2000.

Harris, A., Rolstad, B. S Hypergranulation tissue: a non-traumatic method of management. *Ostomy Wound Management.* 1994, 40(5): 20-30

Health Care Protocol: Pressure Ulcer Prevention and Treatment Protocol. Institute for Health Care Systems Improvement. Third Edition January 2012 accessed on line 5/23/12 at [http://www.icsi.org/pressure\\_ulcer\\_treatment\\_protocol\\_\\_review\\_and\\_comment\\_/pressure\\_ulcer\\_treatment\\_\\_protocol\\_\\_.html](http://www.icsi.org/pressure_ulcer_treatment_protocol__review_and_comment_/pressure_ulcer_treatment__protocol__.html)

Hopper, M. B. Wilson, W. McLean, J. Crabbe, C. Van Gilder, A Home Care View Of The "Clinitron Therapy Difference" Three Case Studies. *Remington Report.* 2006, (14)3; 9-12.

Kalinski C, Schnepf M, Laboy D, Hernandez L, Nusbaum J, McGrinder B, Comfort C, Alvarez OM: Effectiveness of a topical formation containing Metronidazole for wound odour and exudate control. *Wounds* 2005;17:84–90.

Kirman, CN, Vistnes, LM, Nonsurgical Treatment of Pressure Ulcers, updated January 11, 2012 accessed on line 5/23/12 at <http://emedicine.medscape.com/article/1293614-overview>

Lee K, Ennis W, Dunn G. Surgical palliative care of advanced wounds. *Am J Hosp Palliat Med.* 2007;24(2):154-160.

(NPUAP) National Pressure Ulcer Advisory Panel; Langemo DK, Black J. Pressure ulcers in individuals receiving palliative care: a National Pressure Ulcer Advisory Panel white paper. *Adv Skin Wound Care.* 2010 Feb;23(2):59-72.

National Pressure Ulcer Advisory Panel and the European Pressure Ulcer Advisory Panel. Prevention and treatment of pressure ulcers: clinical practice guideline. Washington DC: National Pressure Ulcer Advisory Panel, 2009.

National Pressure Ulcer Advisory Panel. Support Surface Standards Initiative: Terms and Definitions Version 01/29/2007. [www.npuap.org](http://www.npuap.org)

Newman V, Allwood M, Oakes RA. The use of metronidazole gel to control the smell of malodorous lesions. *Palliat Med* 1989;34:303-5.

Ramsey M. Managing friction blisters of the feet. *Phys Sports Med*. 1992; 20(1): 117–24

Read S. Treatment of a heel blister caused by pressure and friction. *Br J Nurs*. 2001; 10(1): 10–14

Registered Nurses' Association of Ontario (RNAO). Assessment and management of stage I to IV pressure ulcers. Toronto (ON): Registered Nurses' Association of Ontario (RNAO); 2007

Whitney J, Phillips L, Aslam R, Barbul A, Gottrup F, Gould L, Robson MC, Rodeheaver G, Thomas D, Stotts N. Guidelines for the treatment of pressure ulcers. *Wound Repair Regen*. 2006 Nov-Dec;14(6):663-79.

Wound, Ostomy, and Continence Nurses Society (WOCN). Guideline for prevention and management of pressure ulcers. Mount Laurel (NJ): Wound, Ostomy, and Continence Nurses Society (WOCN); 2010.

Notes:



## Topical Product Categories

Alginate	Absorb drainage, promote moist wound healing	AlgiSite <sup>®</sup> , Currasorb <sup>®</sup> , Kaltostat <sup>®</sup> , Sorbsan <sup>®</sup> , 3MTegagen <sup>™</sup>
Antimicrobials	Reduce bacterial levels	Amerigel <sup>®</sup> , Anasept <sup>®</sup> , Aquacel <sup>®</sup> Ag Hydrofiber <sup>®</sup> Dressing with Silver, Hydroferra Blue <sup>™</sup> , Actisorb <sup>™</sup> , Arglaes <sup>™</sup> , SilvaSorb <sup>™</sup> , ActiCoat <sup>*</sup> , Silverlon <sup>®</sup> , Iodosorb <sup>®</sup> , Kerlix <sup>®</sup> AMD <sup>™</sup> Antimicrobial Super Sponge
Antiseptics	Reduce bacterial levels	Betadine, Dakins Solution, Acetic Acid, Di-Dak-Sol <sup>®</sup> , Burrows Solution, Domboro Solution
Bio-synthetics	Derived from natural sources – advanced wound healing, burns, donor sites	Hyalofill <sup>®</sup> , Integra <sup>™</sup> , Biobrane <sup>®</sup> , Dermagraft <sup>*</sup> , Transcyte <sup>*</sup>
Collagen	Donate collagen to wound	Fibracol <sup>*</sup> , Prisma <sup>*</sup> , Promogran <sup>*</sup> , CellerateRx, Stimulen <sup>™</sup>
Composite	Provide cover by combining two physically distinct components	3M <sup>™</sup> Medipore <sup>®</sup> , Covaderm <sup>®</sup> , Alldress <sup>®</sup> , Coversite <sup>®</sup> , ThinSite <sup>®</sup>
Contact Layers	Non adherent, protect from direct contact with fragile tissues or wound agents	3M <sup>™</sup> Tegapore <sup>™</sup> , Dermanet <sup>®</sup> , Mepitel <sup>®</sup> , Conformant 2 <sup>*</sup> , Drynet <sup>®</sup>
Foam	Absorb small to moderate amounts of exudate, moist wound healing, thermal insulation, useful with hyper-granulation tissue	Allevyn <sup>®</sup> , Biatain <sup>®</sup> , Curafoam <sup>®</sup> , Polymem <sup>™</sup> , Flexzan <sup>®</sup> , Lyofoam <sup>®</sup> , Tegaderm <sup>™</sup> Foam, Tielle <sup>*</sup> , Mepilex <sup>®</sup> , Optifoam <sup>™</sup> , Versiva <sup>*</sup>
Gauze - Impregnated	Used for packing, cleaning, debridement	Adaptic, Dermagran <sup>®</sup> , XeroForm <sup>®</sup> , Mesalt <sup>®</sup> , Vaseline Gauze
Hydrocolloid	Occlusive, autolytic debridement, moist wound healing	3M Tegisorb <sup>™</sup> , Combiderm <sup>®</sup> , Comfeel <sup>®</sup> , Duoderm <sup>®</sup> , Hydrocol <sup>®</sup> , RepliCare <sup>®</sup> , Restore <sup>™</sup> , Ultec <sup>®</sup>
Hydrogel	Donate moisture, autolytic debridement, moist wound healing	AmeriGel <sup>®</sup> , Carrasyn <sup>®</sup> , Curafil <sup>®</sup> , Dermagran <sup>®</sup> , Elasto-Gel <sup>™</sup> , IntraSite <sup>*</sup> , Regenecare <sup>®</sup> Wound Care Gel, Saf-Gel <sup>®</sup> , Solosite <sup>®</sup>

Hydrogel Impregnated	Sponges, ropes, strips impregnated with hydrogel	AmeriGel <sup>®</sup> , Curasol <sup>®</sup> , Dermagran <sup>®</sup> , Etna <sup>®</sup> , TransiGel*
Hydrogel Sheets	Hydrophilic polymers that interact with aqueous solutions by swelling	AquaClear <sup>®</sup> , Curagel <sup>®</sup> , Derma-Gel <sup>®</sup> , Elasto-Gel™, FlexiGel <sup>®</sup> , Nu-Gel <sup>®</sup> , TenderWet™, Vigilon <sup>®</sup>
Honey	Medical Grade Active Leptospermum honey, Moist wound healing, lowering wound pH, debridement	MANUKApli <sup>®</sup> , MediHoney <sup>®</sup> Paste, MediHoney <sup>®</sup> Adhesive Honeycolloid Dressing, MANUKAhd <sup>®</sup>
Moisture Barriers	Protect skin from moisture, oil based (petroleum), thick consistency	AloeVesta <sup>®</sup> , Baza <sup>®</sup> , Boudreaux's Butt Paste <sup>®</sup> , Calmoseptine <sup>®</sup> , Cavilon <sup>®</sup> Cream, Critic-Aid <sup>®</sup> , Dermagran <sup>®</sup> , Elta <sup>®</sup> , ProSheild <sup>®</sup> , Secura™, Selan <sup>®</sup> , Sensi-Care <sup>®</sup> , Soothe & Cool <sup>®</sup> , Xenaderm <sup>®</sup> Ointment
Skin Sealants	Formulations to protect vulnerable areas, form transparent coating on skin	Cavilon™ No Sting Barrier, Skin Prep <sup>®</sup> , Preppies <sup>®</sup>
Transparent Films	Moisture vapor permeable, transparent, moist wound healing, autolytic debridement	3M Tegaderm <sup>®</sup> , Blisterfilm <sup>®</sup> , CarraFilm™, Comfeel <sup>®</sup> Film, Transeal <sup>®</sup> , Mefilm <sup>®</sup> , Opsite*, Polyskin <sup>®</sup>
Tapes	Adhesive used to secure dressings or other devices	3M <sup>®</sup> Cloth Adhesive Tape, Hy-Tape <sup>®</sup> , Hypa-Fix*, Medifix™, Medipore™, Omnifix, Sta-Fix™, Tenderfix™, Transpore™
Wound Fillers	Fill dead space, moist environment, promote debridement, require secondary dressing	Bard <sup>®</sup> Absorptive Dressing, Ferris Poly-Wic <sup>®</sup> Cavity, Flexigel <sup>®</sup> Strands, Hyalofill <sup>®</sup> Iodoflex <sup>®</sup> , Silverlon <sup>®</sup> , Gold Dust <sup>®</sup>