



June 2009 (updated May 2015)

# ELDER CARE

## A Resource for Interprofessional Providers

### Pressure Ulcers in Older Adults

Ashkan Javaheri, MD, Stanford University School of Medicine  
Daniel Bluestein, MD, Eastern Virginia Medical School

A pressure ulcer is a localized injury that results from unrelieved pressure to the skin and underlying tissue. These ulcers usually occur over bony prominences such as the sacrum, ischial tuberosities, greater trochanters, heels and lateral malleoli. About 70% of pressure ulcers occur in people over age 65, and they are seen in 9-22% of nursing home residents and 5-32% of patients in hospitals.

The prognosis for successful treatment once pressure ulcers have formed is guarded at best. Although more than 70% of stage II ulcers heal after six months of appropriate treatment, only 50% of stage III ulcers and 30% of stage IV ulcers heal within this period. Management, therefore, should focus on prevention as well as treatment.

#### Prevention

Both extrinsic and intrinsic risk factors exist for pressure ulcer formation. Extrinsic risk factors include constant pressure from immobility, shear forces related to sliding, and the presence of moisture on the skin. Intrinsic risk factors include decreased sensory perception and malnutrition. The Braden scale is a frequently used, helpful adjunct for assessing risk in bedbound patients.

(<http://www.bradenscale.com/images/bradenscale.pdf>)

Preventive measures include pressure reduction via repositioning, avoidance of shear forces, and use of static pressure-reducing devices. The latter include foam, water, gel, and air mattresses or mattress overlays, foam wedges, and pads for joints and heels. Dynamic devices (e.g. alternating pressure mattresses) may be needed if a patient cannot reposition independently. Despite best efforts, however, some pressure ulcers are unavoidable.

#### Assessment

Once an ulcer is present, it should be assessed for location, size (length, width, depth), drainage, necrotic and granulation tissue, tunneling and undermining, wound margins, cellulitis, and most importantly, staging (Table 1).

Remember, pressure ulcers do not “progress through” stages and back-staging should be avoided. The Pressure Ulcer Status for Healing (PUSH) tool can help monitor progress (<http://www.npuap.org/wp-content/uploads/2012/02/push3.pdf>).

#### Treatment

Treatment of pressure ulcers is interdisciplinary and includes reducing or relieving pressure, wound cleansing, debriding necrotic tissue, using appropriate dressings and antibiotics, and ensuring good nutrition.

**Relieving Pressure** and preventing further ulcers is achieved with the techniques already discussed. Dynamic pressure-reducing devices are recommended for patients who cannot reposition independently, for those with multiple large ulcers or non-healing ulcers, and after flap surgeries.

**Wound Cleansing** should be performed, both initially and with each dressing change - preferably with saline or commercial wound cleanser. Antiseptics (e.g. Betadine) should be avoided.

**Debridement** of necrotic tissue until granulation tissue is visible is essential, with the exception of heel ulcers with a stable, dry eschar. Table 2 lists debridement methods.

**Dressings** that maintain a moist wound environment facilitate healing and can be used for autolytic debridement. Dressing selection is dictated by clinical judgment and wound characteristics (Table 3). No moist dressing has been shown superior to any other.

**Topical antibiotics**, such as silver sulfadiazine cream, should be used for up to two weeks on clean ulcers that are not healing properly, after two to four weeks of optimal wound care. Quantitative bacterial tissue cultures (needle aspiration or ulcer biopsy preferred) should be performed for non-healing ulcers after a trial of topical antibiotics or if there are overt signs of infection. Systemic antibiotics are not recommended unless there is evidence of advancing cellulitis, osteomyelitis, or bacteremia.

### TIPS FOR DEALING WITH PRESSURE ULCERS

- The best approach to pressure ulcers is prevention. Use dynamic devices to prevent ulcers in immobile patients.
- Clean and debride ulcers (except stable heel ulcers with dry eschar) until granulation tissue is seen.
- Use dressings that maintain a moist wound environment.
- Select appropriate dressings based on ulcer stage.
- Assure good fluid, calorie, and protein intake for patients who have pressure ulcers.

# ELDER CARE

Continued from front page

**Nutrition** is essential and starts with good oral intake. If PO intake becomes inadequate or impractical, enteral or parenteral feeding should be considered. The goal is to achieve positive nitrogen balance (approximately 30 to 35 calories/kg/day and 1.25-1.5 g of protein/kg/day). Protein, vitamin C, and zinc supplements can also be considered, although supporting data have been inconsistent thus far.

**Other Approaches** Growth factors (e.g., platelet-derived growth factor becaplermin [Regranex®]) and vacuum-assisted closure for recalcitrant stage III-IV ulcers are emerging management options. The roles of electromagnetic therapy, ultrasound, and hyperbaric oxygen therapy are unclear.

**Table 1. Characteristics of Pressure Ulcers, by Stage**

Stage I	Intact skin with non-blanchable redness
Stage II	Partial-thickness loss of dermis; no fat visible
Stage III	Full thickness loss, fat may be visible
Stage IV	Full thickness loss with exposed bone, tendon, or muscle
Unstageable*	Base is covered with slough or eschar. Debridement required to stage.

\*Deep tissue injury should be suspected when there is a blood-filled blister or a localized purple or maroon colored area. A more detailed pressure ulcer staging system is available at <http://www.npuap.org/pr2.htm>

**Table 2. Debridement Methods**

Method	Performed With	Comments
Sharp	Scalpel or scissors	Fastest method. Indicated when infection is present
Mechanical	Whirlpool Wet-to Dry Gauze	Saline-moistened wet-to-dry gauze can be used for debridement, but not for routine dressing changes
Enzymatic	Collagen-based	Santyl®:
	Papain-urea-chlorophyllin copper	Panafil®
Autolytics	Dressings	Some dressings are autolytic. See Table 3

**Table 3. Summary of Dressings for Pressure Ulcers**

Dressing	Suited for	Comments
Transparent film	Stages I-II	Retains moisture; facilitates autolytic debridement; not for infected wounds or fragile skin
Foam	Stages II-IV	Mostly nonadherent; absorbs light and heavy exudates; recommended for fragile skin
Hydrocolloid	Stages I-IV	Not for heavy exudate; molds easily
Hydrogel	Stages II-IV	Relieves pain; good for deep wounds (fills dead space) & infected wounds; not for dry eschar
Alginate	Stages II-IV	Absorbs moderate to heavy exudate; good for deep wounds (fills dead space) and infected wounds; not for dry eschar

## References and Resources

- Bluestein D, Javaheri A. Pressure ulcers: prevention, evaluation, and management. *Am Fam Physician*. 2008;78(10):1186-94.
- Bergstrom N, United States. Treatment of Pressure Ulcers Guideline Panel. *Treatment of pressure ulcers*. Rockville, Md: U.S. Dept. of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research; 1994.
- <http://books.google.com/books?hl=en&lr=&id=Ki9VMYD4zf8C&oi=fnd&pg=PP1&dq=Bergstrom+N+Treatment+of+Pressure+Ulcers&ots=B2heARNScT&sig=SJBeblee8G5cq97ruhNtqeL8RkU#v=onepage&q=Bergstrom%20N%20Treatment%20of%20Pressure%20Ulcers&f=false>
- National Pressure Ulcer Advisory Panel (NPUAP). Updated staging system (February 2007). <http://www.npuap.org/pr2.htm>

## Interprofessional care improves the outcomes of older adults with complex health problems

Editors: Mindy Fain, MD; Jane Mohler, NP-c, MPH, PhD; and Barry D. Weiss, MD

Interprofessional Associate Editors: Tracy Carroll, PT, CHT, MPH; David Coon, PhD; Jeannie Lee, PharmD, BCPS; Lisa O'Neill, MPH; Floribella Redondo; Laura Vitkus, BA

The University of Arizona, PO Box 245069, Tucson, AZ 85724-5069 | (520) 626-5800 | <http://aging.medicine.arizona.edu>

Supported by: Donald W. Reynolds Foundation, Arizona Geriatric Education Center and Arizona Center on Aging

This project was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number UB4HP19047, Arizona Geriatric Education Center. This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.