

**What's New in the 2014
Pressure Ulcer
Prevention Guidelines?**

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Ranking of Recommendations

- ▶ A = direct evidence from well designed controlled trials
 - N = 6
- ▶ B = direct evidence from clinical series
 - N = 71
- ▶ C = indirect evidence (other wounds, healthy humans, animal models) and or expert opinion
 - N = 498

 Strong positive recommendation N = 247	
 Weak positive recommendation N = 294	
 No specific recommendation N = 34	

Strength of Evidence-
Labeled A, B, C here

Strength of Recommendation
Labeled 2, 1, 0 here

Incidence and Prevalence

- ▶ Use a rigorous method to conduct P&I studies
 - Be clear on which patients (C/2)
 - Educate the assessors and check reliability
 - Two assessments per skin inspection
- ▶ Compare findings to data sets using similar methods (C/1)
 - Many studies of P&I included in guideline
- ▶ Use facility acquired rates rather than prevalence rates to evaluate pressure ulcer prevention programs (C/1)

Reporting Incidence and Prevalence

- ▶ Be clear on whether Stage 1 was included
- ▶ Present data by level of risk for risk adjustment
 - Braden Score
 - Unit ulcer acquired
 - 1000 patient days (C/1)
- ▶ Report by common anatomical locations
- ▶ Include data on *medical device ulcers* and mucous membrane ulcers
- ▶ Perform *root cause analysis to determine avoidability*
 - Identify unavoidable ulcers

Risk Assessments

- ▶ Conduct structured risk assessment as soon as possible, but within a maximum of 8 hours (C/2)
 - Repeat based on acuity or change in condition (C/1)
 - *Several comments on this statement*
 - *Why wait 8 hours? What about 12 hour shifts?*
- ▶ Do not rely on total risk assessment score alone, use subscales to plan preventive care (C/2)
- ▶ Use clinical judgement to refine risk assessment
 - No risk scale is perfect (C/2)

Risk Assessment Scales

- ▶ Braden, Norton and Waterlow most common
- ▶ Key Risk Factors of mobility/activity limitations and skin status
 - Braden has mobility, activity and friction/shear
 - Norton has mobility and activity
 - Waterlow has mobility
 - All 3 have nutrition and moisture risk factors

- Only Waterlow has a partial measure of skin status
- Only Waterlow has a partial measure of perfusion

Risk from Immobility

- ▶ Consider bedfast or chair-fast patients to be at risk (B/1)
 - This statement was in 2009 guideline
 - Powerful, crucial message for all providers
- ▶ Consider these aspects of immobility (B/2)
 - Mobility related ADLs
 - Factors affecting mobility
 - Friction and shear within mobility
 - Interface pressures

Risk from Prior Skin Injury

- ▶ Consider Stage 1 pressure ulcers to be a risk factor for progression to higher stages or development of new ulcers (B/1)
- ▶ Consider existing pressure ulcers to be a risk factor (B/2)
- ▶ Consider the general status of the skin (B/1)
 - ? Scar formation over prior healed full thickness ulcer
 - Injury from incontinence



Risk from Impaired Perfusion

- ▶ Consider the impact of *impaired* perfusion and oxygenation on risk (C/1)
- ▶ Use *proxy variables to indicate risk*
 - Peripheral arterial disease
 - Diabetic neuropathy
 - Stroke
 - Renal disease
 - History of smoking



Risk from Impaired Nutrition

- ▶ Food intake
- ▶ Low weight/Low body mass index
- ▶ Arm measurements
- ▶ Malnutrition diagnosis
- ▶ Weight loss
- ▶ Nutrition screening / dietician referral
- ▶ Nutrition assessment scale scores

- ▶ *Albumin and prealbumin are not predictive*
 - *In the acutely ill, these proteins are low when inflammation is present*

Risk from Excessively Moist Skin

- ▶ Dual urinary and fecal incontinence.
- ▶ Skin moisture.
- ▶ Moisture subscale of a risk assessment tool.
- ▶ Fecal incontinence.
- ▶ Urinary catheter in use
- ▶ Urinary incontinence.

Lots of skin issues
IAD, Pressure ulcer, candidiasis



Other Risk Factors (C/1)

- ▶ Increased body temperature
- ▶ Advanced age
- ▶ Sensory perception
- ▶ Hematological measures
 - Abnormal urea and electrolytes
 - Low WBC, albumin, hemoglobin
 - Elevated C-reactive protein (inflammatory marker)
- ▶ General health status
 - Dependent in ADLs
 - DNR status
 - ASA score in surgical patients
 - APACHE score in ICU patients

Skin Assessment

- ▶ In individuals at risk of pressure ulcers, conduct a comprehensive skin assessment:
 - as soon as possible but within eight hours of admission (or first visit in community settings)
 - as part of every risk assessment,
 - ongoing based on the clinical setting and the individual's degree of risk, and
 - prior to the individual's discharge (C/1)

Skin Erythema

- ▶ Use the finger or disc method to assess (C/1)
- ▶ Differentiate the cause and extent of erythema –blanchable or nonblanchable? (C/2)
 - Blanchable erythema
 - normal reactive hyperemia and should disappear in several hours
 - May be inflammatory erythema
 - Nonblanchable erythema
 - indicates structural damage to the capillary bed/microcirculation
 - nonblanching erythema shown to be an independent predictor of Stage 2 pressure ulcer development

Skin assessment with medical devices

- ▶ Inspect the skin under and around medical devices at least twice daily (C/2)
 - *Include skin assessment in handoff*
- ▶ Conduct more frequent skin assessments at the skin-device interface in individuals vulnerable to fluid shifts and/or exhibiting signs of localized/generalized edema (C/2)



Lip ulceration after a 45 minute intubation with tube taped in place

Preventing Medical Device Pressure Ulcers

- ▶ Result from the use of devices designed and applied for diagnostic or therapeutic purposes
 - ulcer generally closely conforms to the pattern or shape of the device
- ▶ Mucous membrane is very vulnerable to pressure from medical devices
 - These ulcers are not staged

MDR-PrU Prevention

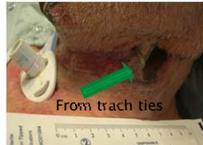
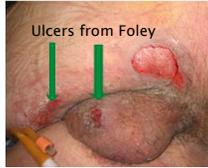
- ▶ Consider adults with medical devices to be at risk for MDR-pressure ulcers. (B/2)
 - 34.5% of ulcers in ICU were from Medical Devices
- ▶ Consider children with medical devices to be at risk for pressure ulcers. (B/2)
 - Rates vary by type of device and age of child
- ▶ Review and select medical devices based on the devices' ability to induce the least degree of damage from the forces of pressure and/or shear. (B/2)
 - *A root cause analysis will identify the device and changes in device or practice may be needed*

MDR-PrU Prevention

- ▶ Ensure that medical devices are correctly sized and fit appropriately (C/2)
 - *Edema post application increases pressure*
- ▶ Apply all medical devices following manufacturer's specifications. (C/2)
 - Return faulty devices
 - *How can you, if you aren't tracking them?*
- ▶ Ensure that medical devices are sufficiently secured to prevent dislodgement without creating additional pressure. (C/2)
 - Dressings may be needed for padding

Daily care for prevention

- ▶ Reposition or rotate and support device to change pressure points (C/2)
- ▶ Remove device as soon as feasible (C/2)
- ▶ Keep skin clean and dry under device (C/2)



Preventive Skin Care

- ▶ Avoid positioning the individual on an area of erythema whenever possible (C/2)
 - *A carry over from 2009, but a crucial message*
- ▶ Keep the skin clean and dry (C/2)
 - *Yes, this is new to the 2014 guideline!*
- ▶ Use a pH balanced skin cleanser (C/2)
 - *Yes, this is new to the guideline!*
- ▶ Cleanse the skin promptly following episodes of incontinence (C/2)
 - *Yes, this is new to the 2014 guideline!*

Emerging Therapies for Prevention – Microclimate Control

- ▶ Microclimate is local tissue temperature and moisture at body/support surface interface
 - Metabolic rate rises with increased temperature and without increased perfusion due to pressure tissue will die
- ▶ Consider the need for additional features such as ability to control moisture and temperature when selecting a support surface and or surface cover (C/1)
- ▶ Do not apply heating devices directly on skin surfaces or pressure ulcers (C/1)

Emerging Therapies for Prevention – Prophylactic Dressings

- ▶ Consider applying a polyurethane foam dressing to bony prominences (e.g., heels, sacrum) for the prevention of pressure ulcers in anatomical areas frequently subjected to friction and shear (B/1)
- ▶ *Lack of clarity in discussion about actual structure of dressing*
 - *Not all studies cited used polyurethane foam*
 - *Many polyurethane foam dressings on the market*
 - *Important to know how they work and if they can reduce pressure, shear or microclimate*
- ▶ Dressings do not replace the rest of prevention!
(C/1)

When selecting a prophylactic dressing consider (C/1)

- ▶ ability to manage microclimate
- ▶ ease of application and removal
- ▶ ability to regularly assess the skin
- ▶ anatomical location where the dressing will be applied
- ▶ the correct dressing size
 - Must be larger than area at risk
 - Pressure and shear forces are transmitted through the dressing

Fabrics

- ▶ Consider using silk-like fabrics rather than cotton or cotton-blend fabrics to reduce shear and friction (B/1)
 - Four studies examining effect of reduced friction from linen on pressure ulcer formation

Electrical Stimulation

- ▶ For muscle contraction in SCI patients (C/0)
 - Subjects used shorts with ES in them to cause contraction of gluteus and hamstrings
 - *May have gotten a neutral response due to respondents not focusing on SCI*



Nutritional Assessment

- ▶ Assess the weight status of each individual to determine weight history and identify significant weight loss
 - $\geq 5\%$ in 30 days or $\geq 10\%$ in 180 day (C/1)
- ▶ Assess the individual's ability to eat independently (C/2)
- ▶ Assess the adequacy of total nutrient intake
 - Food, fluid, oral supplements and enteral/parenteral feeds (C/2)

Provision of calories

- ▶ Adjust energy intake based on weight change or level of obesity. Adults who are underweight or who have had significant unintended weight loss may need additional energy intake (C/2)
- ▶ Revise and modify/liberalize dietary restrictions when limitations result in decreased food and fluid intake (C/1)

Provision of Protein/Micronutrients

- ▶ 1.25 to 1.5 grams protein/Kg per day for both patients at risk and with ulcers (B-C/1)
- ▶ Assess renal function to ensure that high levels of protein are appropriate (C/2)
- ▶ Provide/encourage consumption of a balanced diet that includes good sources of vitamins and minerals. (C/2)
- ▶ Provide/encourage vitamin and mineral supplements when dietary intake is poor or deficiencies are confirmed or suspected. (C/1)

Provision of Fluids

- ▶ Provide and encourage adequate daily fluid intake for hydration consistent with the individual's comorbid conditions and goals. (C/2)
- ▶ Monitor for signs and symptoms of dehydration (C/1)
- ▶ Provide additional fluid for individuals with dehydration, elevated temperature, vomiting, profuse sweating, diarrhea, or heavily exuding wounds. (C/2)

Repositioning

- ▶ Reposition all individuals at risk of pressure ulcers, unless contra-indicated. (A/2)
 - 3 RCTs discussed in the guideline
 - Bergstrom's RCT was after the cut off date
 - A repeat from the 2009 guideline with changed wording, 2009 addressed duration and magnitude
- ▶ Consider the condition of the individual and the pressure redistribution support surface in use when deciding if repositioning should be implemented as a prevention strategy. (C/1)
 - *When patients cannot be moved, change the mattress*

Repositioning Frequency

- ▶ Consider the pressure redistribution support surface in use when determining the frequency of repositioning. (A/1)
 - Appeared in 2009 guideline stated differently
- ▶ Establish pressure relief schedules that prescribe the frequency and duration of weight shifts. (C/1)
 - Teach individuals to do 'pressure relief lifts' or other pressure relieving maneuvers as appropriate. (C/2)
- ▶ Do not leave the individual on a bedpan longer than necessary. (C/2)
 - Yes, this statement is in the guidelines!

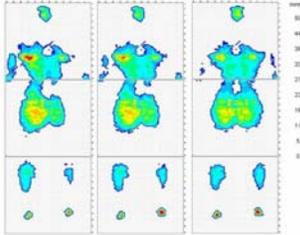
Repositioning Techniques

- ▶ Use a split leg sling mechanical lift when available to transfer an individual into a wheelchair or bedside chair when the individual needs total assistance to transfer. Remove the sling immediately after transfer. (C/1)
- ▶ Do not leave moving and handling equipment under the individual after use, unless the equipment is specifically designed for this purpose. (C/2)
 - *New NPUAP position on the breathability of slings*

The angle of turns and HOBs

- ▶ Use the 30° tilted side-lying position (C/1)
 - *No discussion of the efficacy of this position in bariatric patients*
- ▶ Encourage patients who can reposition themselves to sleep in a 30° to 40° side-lying position or flat in bed (C/1)
 - *Be certain the patient is actually turning*
- ▶ Avoid HOB elevation that places patient in a slouched position
 - *Maximal shear forces at 45 HOB elevation*

Support surfaces and repositioning

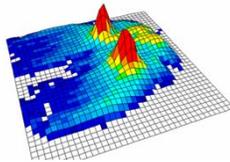


When turned to left side be certain that the sacrum clears the bed. Move patient off of shoulder

- ▶ No support surface replaces turning/repositioning
 - They may help with "turn assist" features
 - They may lengthen the time interval

Repositioning in a Chair

- ▶ Use a pressure redistributing seat cushion for individuals sitting in a chair whose mobility is reduced. (B/2)
 - ▶ *Examine your hospital bedside chairs for pressure redistribution and use chair cushions*
- ▶ Limit time sitting in a chair without pressure relief (B/2)
 - *Not a new statement, but very important now with progressive mobility programs*



Interface pressures on ischial tuberosities can become very high in the chair

Mobilization and chair

- ▶ Early mobility programs call for extended sitting
- ▶ **Guideline:**
 - **Position patient for stability and ability to perform usual activities** (SoE= C; SoR = ⓈⓈ)
 - Tilt the seat back to prevent sliding
 - Place feet on foot rest or foot stool



This patient is not safe in this chair, nor is he sitting on the chair cushion

Selecting Seating Surfaces

- ▶ Individualize the selection and periodic re-evaluation based on: (C/1)
 - body size and configuration;
 - the effects of posture and deformity on pressure distribution; and
 - mobility and lifestyle needs.
- ▶ Select a stretchable/breathable cushion cover that fits loosely on the top surface to dissipate heat and moisture (C/1)
- ▶ Inspect seating surface daily for wear

Chair cushion options



Wheelchair seating

- ▶ Individualize the selection and periodic re-evaluation of a wheelchair/seating support surface and associated equipment for posture and pressure redistribution with consideration to:
 - body size and configuration;
 - the effects of posture and deformity on pressure distribution; and
 - mobility and lifestyle needs. (C/2)
- ▶ Refer individuals to a seating professional for evaluation. (C/1)

Wheelchair seating

- ▶ Select a pressure redistribution cushion that:
 - provides contour, uniform pressure distribution, high immersion or offloading;
 - promotes adequate posture and stability;
 - permits air exchange to minimize temperature and moisture at the buttock interface; and
 - has a stretchable cover that fits loosely on the top cushion surface and is capable of conforming to the body contours (C/2)
- ▶ Assess other seating surfaces commonly used by the individual and minimize the risk they may pose to skin. (C/1)

Repositioning in Wheelchair

- ▶ Encourage the individual to reposition regularly while in bed and seated. (C/1)
 - Provide appropriate assistive devices to promote bed and seated mobility. (C/2)
- ▶ Establish pressure relief schedules that prescribe the frequency and duration of weight shifts. (C/1)
 - Teach patient to do 'pressure relief lifts' or other pressure relieving maneuvers as appropriate and consistent with the ability of the individual. (C/1)
- ▶ Promote and facilitate self-management for individuals with SCI. (C/2)

Repositioning After SCI

- ▶ Maintain proper positioning and postural control. (C/2)
 - Provide adequate seat tilt to prevent sliding forward in the wheelchair/chair, and adjust footrests and armrests to maintain proper posture and pressure redistribution. (C/2)
 - Avoid the use of elevating leg rests if the individual has inadequate hamstring length. (C/1)
- ▶ Use variable-position seating (tilt-in-space, recline, and standing) in manual or power wheelchairs to redistribute load off of the seat surface. (C/1)
 - Tilt the wheelchair before reclining. (C/1)

Mobilization

- ▶ Develop a schedule for progressive sitting according to the individual's tolerance and pressure ulcer response. (C/1)
 - *Commonly done after flap repair, this statement appears in the general guidelines*
- ▶ Increase activity as rapidly as tolerated. (C/1)
 - One study found increased PrU with progressive mobility program that included HOB elevation to 45 degrees as part of the mobility intervention

Prevention of Heel Ulcers

- ▶ *Risk factors for heel ulcers are not clearly identified*
- ▶ Apply heel suspension devices per manufacturers instructions (C/1)
- ▶ Remove heel suspension device periodically to assess skin integrity (C/1)
 - Check skin more frequently in patients at higher risk due to PVD and neuropathy
- ▶ Do not use IV bags to float heels (C/2)

Support Surfaces

- ▶ Select a support surface that meets the individual's needs, based on: (C/2)
 - level of immobility and inactivity;
 - need for microclimate control and shear reduction;
 - size and weight of the individual;
 - risk for development of new pressure ulcers
- ▶ Identify and prevent potential complications of support surface use. (C/1)
 - Entrapment
 - Falling with an overlay higher than side rails
 - High air loss leading to fluid loss

Choosing a support surface

- ▶ Review the characteristics of foam mattresses to ensure they are high specification. (C/2)
 - Depth = 6 inches thick
 - Density = 35-130 density hardness
 - Support factor = Inflection Density: (IFD) 1.75 to 2.4
 - Cover MVTR = minimum 300 g/m²/24hrs
- ▶ Other features to consider
 - Multi layering alters the design
 - Memory foam may increase skin temperature
 - Cross cut foam may reduce shear
 - Stiffer side walls can facilitate transfers
 - Concave shape may prevent falls, but difficult to lift patient
 - Hinging system may improve ability to sit up in bed without shearing

Support Surfaces, Continued

- ▶ Choose positioning devices and incontinence pads, clothing and bed linen that are compatible with the support surface. Limit the amount of linen and pads placed on the bed. (C/2)

General Aspects of Care in Bariatric Patients

- ▶ Organizational Level
 - Provide safe, respectful care and avoid injuries to both the individual and health professionals. (C/2)
 - Maximize workplace safety by implementing organization-wide bariatric management strategies that address manual handling techniques. (C/2)
 - Provide pressure redistribution support surfaces and equipment appropriate to the size and weight of the individual. (C/2)
- ▶ Calculate BMI and classify obesity (C/1)
- ▶ Refer bariatric individuals to a registered dietitian (C/2)

Skin Assessment/Care in Bariatrics

- ▶ Assess all skin folds regularly. (C/2)
 - Assess adequate assistance (C/2)
- ▶ Differentiate intertriginous dermatitis from Stage 1 and 2 pressure ulcers. (C/1)
- ▶ Ensure the individual is provided with a bed of appropriate size (width) and weight capacity specifications. (C/2)
- ▶ Consider enhanced pressure redistribution, shear reduction and microclimate control (C/1)

Repositioning in Bariatrics

- ▶ Avoid pressure on skin from tubes, other medical devices and foreign objects. (C/2)
- ▶ Use pillows or other positioning devices to offload the pannus or other large skin folds and prevent skin-on-skin pressure. (C/1)
- ▶ Check the bed for foreign objects. (C/1)

Prevention in Elders

- ▶ Assessments and Care Planning
 - Consider the individual's cognitive status when conducting a comprehensive assessment and developing prevention or treatment plan. (C/2)
 - Incorporate the individual's cognitive ability into the selection of a pain assessment tool. (C/2)
 - Differentiate from other skin injuries, particularly incontinence-associated dermatitis or skin tears. (C/1)
- ▶ Set goals consistent with the values and goals (C/1)
 - Engage the family or legal guardian when establishing goals of care and validate their understanding of these goals. (C/1)
- ▶ Educate the individual and his or her significant others regarding skin changes in aging and at end of life. (C/2)

Care of Aged Skin

- ▶ Protect aged skin from skin injury associated with pressure and shear forces. (C/2)
- ▶ Use a barrier product to protect aged skin from exposure to excessive moisture in order to reduce the risk of pressure damage. (C/1)
- ▶ Select atraumatic wound dressings to reduce further injury to frail older skin. (C/1)
- ▶ Develop and implement an individualized continence management plan. (C/1)

Repositioning Elders

- ▶ Regularly reposition the older adult who is unable to reposition independently. (A/2)
 - Same evidence as was used for repositioning
- ▶ Exercise caution in position selection and manual handling technique when repositioning. (C/1)
- ▶ Frequently reposition the head of older adults who are sedated, ventilated or immobile. (C/1)

Prevention in Palliative Care

- ▶ This section was in the treatment component of the 2009 guideline
- ▶ No new recommendations
 - Rewording of some of them

Implementing the Guideline

- Facilitators, Barriers (C/2)
 - Knowledge and attitudes of professional staff
 - Available equipment and access to it
 - Awareness of medical devices leading to pressure ulcers
 - Staffing levels/staff cohesion
- Implementation Strategy (C/1)
 - Conduct regular monitoring of FAPU rates/Inform staff
 - Optimize work procedures
 - Tailored staff education
 - Wound care champions
 - Nurse led QI programs
 - Cues to perform preventive care
 - Awareness campaign
 - Improved documentation systems

Summary

- ▶ Two prevention recommendations are an A level
 - Consider support surface when planning
 - Repositioning using data from European studies
- ▶ Using Electrical stimulation for prevention was the lowest rated item at C/0
- ▶ Greater majority of statements are C/1 level