

Developed by the BC Provincial Interprofessional Skin & Wound Committee in collaboration with Occupational Therapists, Physiotherapists, and Wound Clinicians from:



Title	Guideline: Prevention of Skin Breakdown due to Pressure, Friction / Shear and Moisture in Adults & Children
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Practice Level	<ul style="list-style-type: none"> Health care professionals in accordance with health authority/agency policy. Clients (see definition) at risk for developing pressure injuries and moisture associated skin damage require an interprofessional approach to provide comprehensive, evidence-based assessment and treatment. This clinical practice guideline focuses on the interprofessional team providing client care.
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Background	<ul style="list-style-type: none"> In 2016, the National Pressure Ulcer Advisory Panel (NPUAP) redefined the definition of a pressure ulcer to pressure injury; this guideline is based upon the NPUAP's current pressure injury staging definitions and prevention interventions,^{63,64} the 2014 NPUAP updated <i>Prevention and Treatment of Pressure Ulcers</i>^{60,61} recommendations, and current literature and expert opinion. In Canada, pressure injuries remain an ongoing concern for clinicians and clients. The Canadian Institute for Health Information (2013) revealed that Stage 1 pressure ulcers are underreported in acute care, and many pressure ulcers are never reported.¹² In Canada (2004), the overall prevalence of pressure ulcers is 26% (25.1% - acute care; 29.9% - non-acute care; 22.1% - mixed health care settings, & 15.1% in community care).⁹⁰ More research is needed in Canada to fully document the prevalence and incidence of pressure injuries. Pressure injuries are "localized damage to the skin and/or underlying tissue usually over a bony prominence or related to a medical or other device. The injury can present as intact skin or an open ulcer and may be painful. The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear. The tolerance of soft tissue for pressure and shear may also be affected by microclimate, nutrition, perfusion, co-morbidities and condition of the soft tissue"; these injuries are staged.^{64,p.3} <ul style="list-style-type: none"> Medical Device Related Pressure Injuries (describes an etiology) are staged and are related to use of devices for diagnostic or therapeutic purposes.^{63,p.1} Mucosal Membrane Pressure Injuries are not staged due to the anatomy of the tissue in these ulcers. These injuries are found on mucous membranes with a history of a medical device in use at the location of the injury.^{64,p.1} Contributing factors that are associated with pressure injury development include pressure, friction, shear, and moisture. Common pressure injury locations include the sacrum, heels, ischial tuberosities, hips, elbows, spinal protrusions, shoulder blades, and the occiput and ears.⁶⁰ Pressure injuries arise in clients who are seriously ill, neurologically compromised, have impaired mobility, impaired nutrition, poor posture, and/or use equipment such as seating or beds that do not provide appropriate pressure redistribution. Neonates, infants, children, youth, adults and older adults may all potentially be at risk.⁶⁰ Pain is a crucial element of pressure injury assessment. Pain is a protective physiological mechanism that is defined as an unpleasant sensory and emotional experience associated with actual or potential skin damage in clients of all ages.⁶⁸ Critically ill clients (a highly vulnerable population) experience the highest incidence of pressure injuries in hospitalized clients (sacrum) (Incidence 5-56%, Prevalence 49-82%).²³ Pressure injuries (75%) occur in the pelvic girdle - ischium, coccyx, greater trochanter and sacrum depending if the person is lying or sitting.⁸² Heel injuries are the 2nd most common type of pressure injuries in acute care; the overall incidence of all heel injuries is 19-32% (US).²⁴ Heel injuries are caused by extrinsic factors e.g., pressure, friction/shear; and intrinsic factors e.g., advanced age, decreased mobility, loss of sensation and level of consciousness, malnutrition and/or dehydration, and/or vascular disease.^{39,83} Forty-five percent (45%) of hospital-acquired pressure injuries occur 72 hours after an Operating Room (OR) period.^{9,60} These injuries typically appear within 72 hours after surgery and present in tissues that were subjected to pressure during the operation (Incidence 5-53.4% / Prevalence 9-21%).¹⁰ In the OR, determining the risk status preoperatively is based on the Braden Scale score and surgical-related risk factors.¹⁰ Bariatric clients with a Body Mass Index (BMI) of greater than 40.0kg/m² have a pressure injury
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prevalence of 26%; this is complicated by panniculus, large and/or deep skin folds that are at risk for maceration, inflammation, and tissue/skin necrosis.^{13,30,38}

- Pediatric intensive care unit (PICU) pressure injury prevalence rate is approximately 27%, and in neonatal intensive care units (NICU) is 23%.⁴
- Children with medical devices are at increased risk for pressure injuries, especially those undergoing endotracheal intubation, tracheostomy, continuous positive airway pressure (CPAP) or nasal direction positive airway pressure (DPAP), or mechanical ventilation.⁶¹
- For clients receiving palliative care/end-of-life care, preventative and treatment interventions must be in accordance with the client's wishes and with consideration to overall quality of life. The goal of palliative skin/wound care is to prevent/minimize the development of a pressure injury, without the overt intent of healing any injury that may develop.⁶⁰ Kennedy Terminal Ulcer(s) may occur.⁸⁰⁰
- In some cases unavoidable pressure injuries occur.⁹ Unavoidable pressure injuries may occur even though the clinicians (health authority/agency) has evaluated the client's clinical condition and pressure injury risk factors; defined and implemented interventions consistent with individualized goals and treatment/prevention strategies; and consistently reassessed client's needs. Potential contributing factors to unavoidable pressure injuries include: mobility/activity limitations; perfusion/hemodynamic instability; critical illness; skin and tissue failure; and/or malnourishment e.g., in clients receiving supportive palliative care /end-of-life care.
- Skin damage from incontinence associated dermatitis (IAD) places clients at greater risk for developing sacral/coccyx pressure injuries. IAD is skin damage associated with exposure to urine, feces, or both, as a change in pH occurs.^{28,93} In a recent study, 43% of acute care patients (n=791) had IAD.²⁷
- The client's level of risk for developing pressure injuries is determined using a combination of assessment data, clinical judgement and a reliable and valid risk assessment tool such as:
 - Braden Scale (ages 6 and up),
 - Braden Q Scale: Modified (age 1-5 years),
 - Braden Q Scale: Neonatal/Infant (less than 1 year).^{17,60}
- In the Province of British Columbia (BC) consensus was reached to use the Braden Q Scale for all clients, birth to 17 years. This simplifies the available risk assessment tools in pediatric settings.
- Preventive management encompasses the modification or elimination of risk factors that predispose clients to skin breakdown, in addition to addressing pressure, shearing force, moisture, and friction. Although it may not be possible to prevent all skin breakdown, most can be avoided through evidence-based preventive interventions.⁶⁰
- In all settings, research shows that pressure injuries occur most often in clients at risk soon after admission, therefore completing and communicating the results of the initial comprehensive risk assessment on admission is necessary.^{41,60,74}
- Current literature provides direction for the utilization, as a starting point for care planning, of an every 2 hour turning/repositioning schedule to support the reduction of the incidence of pressure injuries. The turning schedule is to be adjusted to meet the client's multiple care needs. The literature further indicates that more research is needed to fully understand the optimal turning/repositioning schedules for all client populations, care settings, and contexts.^{2,7,9,18,23,32,33,36,41,43,44,47,65}
- An every 2 hour (q2h) turning/repositioning schedule is to be used as the starting point for determining a client's individualized schedule. The turning/repositioning frequency (e.g., q2h, q3h, or q4h) is determined based upon documented clinical judgement of the client's:
 - clinical condition (*See Assessment #2 – detailed list of risk factors*),
 - Braden Risk subscale scores, primarily focused on sensory perception, moisture, activity, mobility, and friction/shear; Braden Q subscales also assess tissue perfusion and oxygenation,
 - head-to-toe skin assessment,
 - sleep cycles and patterns,
 - mattress, (e.g., standard hospital bed mattress versus a therapeutic support surface),^{7,18,47} and/or the
 - number of turning surfaces available, e.g., the presence of a pressure injury, incisional line, devices/splints.

Use the turning/repositioning of the client as an opportunity to provide additional care e.g., reassess skin, offer fluids, provide mouth care, manage incontinence, offer emotional reassurance, and assess overall condition. Small shifts in position can be used to relieve pressure between a full turn/repositioning.

<p>Indications</p>	<p>For use with clients who are at risk for developing or who currently have skin breakdown associated with pressure, friction/shear, and/or moisture.</p> <ul style="list-style-type: none"> • Skin tears are not pressure injuries. • Incontinence Associated Dermatitis (IAD) is not a pressure injury, though both may co-exist.
<p>Definitions</p>	<p>Active Support Surface - An externally powered therapeutic support surface that can change its load-distribution properties with, or without, applied load. These surfaces reduce the pressure against the client's skin regardless of their mobility status. Examples include alternating pressure mattress and lateral rotation mattresses.</p> <p>Autonomic Dysreflexia - A potentially dangerous syndrome affecting persons with a spinal cord injury above the mid-thoracic level. It is characterized by uncontrolled hypertension, bradycardia, severe headaches, pallor below and flushing above the cord lesions, and convulsions; may occur as a result of bowel or bladder distension, pain or pressure injuries</p> <p>Blanchable Erythema - A visible reddened area that becomes white when pressure is applied and reddens when pressure is relieved. It may result from normal reactive hyperemia that should disappear within several hours, or it may result from inflammatory erythema with an intact capillary bed. For darkly pigmented skin erythema may cause hyperpigmentation with no redness visible. It may appear as a dark bluish-purple tint.</p> <p>Body Mass Index (BMI) - A BMI is the measure of body fat based on height and weight that applies to adults and children. A BMI can be calculated online for adults and for children. For obese clients the following BMI's place clients at risk for pressure injuries (Obese class I: 30.0-34.9 kg/m²; Obese class II: 35.0- 39.9 kg/m²; Obese class III: greater than 40.0 kg/m²).</p> <p>Bottoming out - Occurs when a reactive or an active support surface provides insufficient support to adequately distribute pressure due to excessive immersion; the client presents as sitting or lying on the underlying structure of the bed or chair.</p> <p>Braden Scale - Risk assessment scale that gathers information on 6 subscales: sensory perception, skin exposure to moisture, the client's level of activity, the client's ability to change positions, nutritional intake and presence of friction/shearing force. Total Braden Scale scores range from 6 to 23; a score of less than or equal to 18 indicates some degree of risk unless preventive measures are implemented; lower scores indicate greater risk. For clients at risk, Braden Scale subscale scores may direct referrals to the interprofessional team.</p> <p>Braden Q Scale - A modification of the adult Braden Scale designed for use with children aged 1-5 years although many pediatric centres use it to assess all pediatric age groups. The assessment parameters consist of mobility, activity, sensory perception, moisture, friction/shear, nutrition, and tissue perfusion and oxygenation. Scores range from 7 to 28 with lower scores indicating greater risk.¹⁶ A score of 16 or less identifies the client at risk.</p> <p>Children - Clients are considered children if they are 17 years and under.</p> <p>Client - Recipients of care; in the community - client, residential care - resident, and acute care - patient.</p> <p>Client/Family - Family is two or more individuals who come together for mutual aid. Families are self-defined, and family is 'who the client says their family is'; this is individualized.⁹⁴</p> <p>Friction - The resistance to motion in a parallel direction relative to the common boundary of two surfaces. For example the loss of protective layers of skin when repeated movements occur over surfaces such as bedding, causing friction with localized heat and abrasions.</p> <p>Hematoma - A collection of blood outside of the blood vessels that seeps into the surrounding tissues. The injury may be to an artery, vein, or small capillary. Hematomas are called bruises and may appear as a bluish/purplish area of varying sizes.</p> <p>Hemodynamic instability - A state requiring pharmacologic or mechanical support to maintain normal organ function. For critically ill patients consider turning and repositioning using slow, gradual turns allowing sufficient time for stabilization of hemodynamic and oxygenation status</p> <p>Incontinence Associated Dermatitis (IAD) - Skin damage associated with exposure to urine, feces, or both. IAD is a type of irritant contact dermatitis (inflammation of the skin) found in clients with fecal and/or urinary incontinence. In clients with light skin IAD presents as erythema (pink to red). In clients with darker skin tones, skin may be paler, darker, purple, dark red, or yellow. The affected IAD area usually has poorly defined edges and may be patchy or continuous over large areas. Clients with IAD are prone to secondary skin infections candidiasis – fungal infection.</p> <p>interRAI Pressure Ulcer Risk Scale (PURS) - The PURS scale is a section of the interRAI Minimum Data Set (MDS) assessment typically completed at predetermined intervals after admission and then on predetermined intervals. The PURS identifies seven areas of pressure injury risk with a high score indicating a high risk for pressure injury development.</p>

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<p>Intertriginous Dermatitis (Intertrigo) - Inflammation resulting from moisture trapped in skin folds subjected to moisture, warmth, friction, and/or infectious agents. It may present as itching, burning, redness and possibly open areas where opposing skin surfaces touch and rub, such as the groin, axilla, breasts (especially if large & pendulous) and between the toes. It is more common in those with hyperhidrosis, diabetes mellitus, obesity, increased bacterial burden on the skin surface, or those with a compromised immunity.</p> <p>Intervention Bundle - A pressure injury/ulcer intervention bundle incorporates those best practices, which if done in combination, are likely to lead to better client outcomes. A bundle includes a comprehensive skin assessment, documented standardized pressure injury risk assessment, specific care planning for the population (e.g., intensive care unit-ICU / critical care units - CCU) and specific implementation strategies to address areas of risk.</p> <p>Kennedy Terminal Ulcer/Injury - A pressure injury that some clients develop as they are dying. It is usually shaped like a pear, butterfly, horseshoe, usually on the coccyx or sacrum (but has been reported on other anatomical areas), has colors of red, yellow or black, is sudden in onset, and usually associated with imminent death. More research is needed on this specific pressure injury type.</p> <p>Knee gatch - A bed that has an adjustable joint under the knees allowing the legs to be flexed and raised. The legs are fully supported by the bed when raised.</p> <p>Maceration - An over-hydration and softening of the skin caused by prolonged exposure to moisture. Macerated skin tends to be paler than surrounding skin and visibly moist with a wrinkled appearance. It is not usually associated with denudation/erosion.</p> <p>Malnutrition/Undernutrition - An imbalance of either an insufficient or an excessive consumption of energy, protein and nutrients and/or impaired nutrient absorption/utilization, which may result in micronutrient deficiencies and/or loss of fat and muscles stores.</p> <p>Microclimate Manager - This is a water resistant vapor - permeable mattress cover. These devices come into “contact with the skin and may be able to alter the microclimate by changing the rate of evaporation of moisture and the rate at which heat dissipates from the skin”.</p> <p>Moisture Associated Skin Damage (MASD) - Diffuse or irregular areas of skin irritation, inflammation and erosion from repeated or sustained exposure to moisture from incontinence (urinary, fecal or both), wound exudates, fistula or ostomy effluent, and perspiration. Moisture related lesions are partial thickness wounds and may be free from necrosis as opposed to pressure damage.</p> <p>Moisture wicking fabric - Knitted polyurethane-coated polyester textile impregnated with a silver compound. Used to assist in absorption and translocation of moisture, or wicking of moisture. The textile translocates excess moisture from the skin fold to keep the skin dry. The silver-impregnated formulation provides effective antimicrobial action for up to 5 days.</p> <p>Non-blanchable erythema - An indication of the early signs of pressure injury damage that can lead to further tissue hypoxia and breakdown if the cause is not treated. Using the ‘finger pressure method’ assess a reddened area (reactive hyperemia) for non-blanching when pressed for 3 seconds. Non-blanchable erythema is harder to assess in clients with dark skin tones therefore assess for areas over bony prominences that appear different from normal skin tones or that feel swollen or warm to touch.</p> <p>Offloading - The redistribution of pressure from any area of the body that is at risk for skin breakdown or has existing skin breakdown. Examples of offloading devices include therapeutic surface, heel suspension devices, and foot or shoe orthotics for offloading pressure around an ulcer, and removable casts. Pillows and foam wedges may be used to support offloading pressure.</p> <p>Pain Scales - Pain is a multidimensional assessment, including physical, emotional, and functional domains. Pain assessment tools have been designed for various age groups and conditions:</p> <ul style="list-style-type: none">• CRIES Pain Scale – Used by the neonatal clinician to rate the client’s pain by assessing crying, if the client requires oxygen greater than 95% (percent), noting increasing vital signs, facial expression, and sleeplessness.• FLACC - Face, Legs, Arms, Cry, and Consolability is a behavioral pain scale used for the newborn to age 3 year old client (based on nursing judgment).• Non-Communicative Patient’s Pain Assessment Instrument (NOPPAIN) - Used to record the clinician’s observations and rating of pain behaviors in the client with dementia.• Numeric Rating Scale (NRS) - Involves asking the client to rate their pain from 0-10 (0 = being no pain and 10 = worst possible pain).• Pain Assessment in the Advanced Dementia Scale (PAINAD) - Used to rate pain for the client living with advanced dementia; rates the client’s pain after clinician observation of five minutes before scoring; the client may be observed at rest, during a pleasant activity, during

care-giving, or after administration of pain medication.

- **Visual Analog Scale (VAS)** - Consists of a scale with face images depicting extremes of pain from no-pain to worst pain.
- **Wong-Baker FACES Pain Rating Scale** - A visual rating scale that asks the client to choose the face on the scale that best depicts the pain they are experiencing. The client rate their pain from 0 = does not hurt, to 10 = hurts as much as you can imagine.

Panniculus (pannus) - Excess adipose skin, especially in the lower abdominal region commonly occurs in association with morbid obesity and may be significantly increased following successful massive weight reduction.

Positioning/Repositioning - Any change in body position that relieves pressure from tissue overlaying bony prominences. Periodic repositioning of chair-bound and bedfast individuals is one of the most basic and frequently used methods of redistributing pressure. The overall goal of repositioning is to allow tissue perfusion and thus prevent ischemic tissue changes. The term repositioning implies a sustained redistribution of pressure, not just a temporary shift. Specific repositioning techniques and the frequency of repositioning should be individualized according to the client's level of risk and goals of care (AHCPR, 1994).⁵¹

Pressure - Interferes with blood flow when tissue is compressed between a bony prominence and an external surface. When tissue pressure exceeds 'capillary closing pressure' cell death occurs leading to skin breakdown.

Pressure redistribution - The ability of a support surface or device to distribute load over the contact areas of the body.

Pressure Injury - A "localized damage to the skin and/or underlying soft tissue usually over a bony prominence or related to a medical or other device. The injury can present as intact skin or an open ulcer and may be painful. The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear. The tolerance of soft tissue for pressure and shear may also be affected by microclimate, nutrition, perfusion, co-morbidities and condition of the soft tissue".^{64 p.1}

- **Pressure Injury Stage 1: Non-blanchable erythema of intact skin** - Intact skin with a localized area of "non-blanchable erythema, which may appear differently in darkly pigmented skin. Presence of blanchable erythema or changes in sensation, temperature, or firmness may precede visual changes. Color changes do not include purple or maroon discoloration; these may indicate deep tissue pressure injury".^{64 p.1} The area may be painful, firm, soft, warmer or cooler as compared to adjacent tissues. Stage 1 injuries may be difficult to detect in persons with dark skin tones.⁶⁰
- **Pressure Injury Stage 2: Partial thickness skin loss with exposed dermis** - Partial thickness loss of skin with exposed dermis. The wound bed is "viable, pink or red, moist, and may also present as an intact or ruptured serum-filled blister. Adipose (fat) is not visible and deeper tissues are not visible. Granulation tissue, slough and eschar are not present. These injuries commonly result from adverse microclimate and shear in the skin over the pelvis and shear in the heel".^{64,p.1} Stage 2 injuries should not be used to describe MASD, IAD, intertrigo, or adhesive/tape related skin injuries, or traumatic wounds such as skin tears, burns, or abrasions.
- **Pressure Injury Stage 3: Full thickness skin loss** - Full-thickness loss of skin, in which "adipose (fat) is visible in the ulcer and granulation tissue and epibole (rolled wound edges) are often present. Slough and/or eschar may be visible. The depth of tissue damage varies by anatomical location; areas of significant adiposity can develop deep wounds. Undermining and tunneling may occur. Fascia, muscle, tendon, ligament, cartilage and/or bone are not exposed. If slough or eschar obscures the extent of tissue loss this is an Unstageable Pressure Injury".^{64,p.1}
- **Pressure Injury Stage 4: Full thickness skin and tissue loss** - Full-thickness skin and tissue loss with "exposed or directly palpable fascia, muscle, tendon, ligament, cartilage or bone in the ulcer. Slough and/or eschar may be visible. Epibole (rolled edges), undermining and/or tunneling often occur. Depth varies by anatomical location. If slough or eschar obscures the extent of tissue loss this is an Unstageable Pressure Injury".^{64,p.1}
- **Unstageable Pressure Injury: Obscured full-thickness skin and tissue loss** - Full-thickness skin and tissue loss in which the "extent of tissue damage within the ulcer cannot be confirmed because it is obscured by slough or eschar. If slough or eschar is removed, a Stage 3 or Stage 4 pressure injury will be revealed. Stable eschar (e.g., dry, adherent, intact without erythema or fluctuance) on an ischemic limb or the heel(s) should not be removed".^{64,p.1}

	<ul style="list-style-type: none"> • Deep Tissue Pressure Injury (DTPI): Persistent non-blanchable deep red, maroon, or purple discoloration - Intact or non-intact skin with “localized area of persistent non-blanchable deep red, maroon, purple discoloration or epidermal separation revealing a dark wound bed or blood filled blister. Pain and temperature change often precede skin color changes. Discoloration may appear differently in darkly pigmented skin. This injury results from intense and/or prolonged pressure and shear forces at the bone-muscle interface. The wound may evolve rapidly to reveal the actual extent of tissue injury, or may resolve without tissue loss. If necrotic tissue, subcutaneous tissue, granulation tissue, fascia, muscle or other underlying structures are visible, this indicates a full thickness pressure injury (Unstageable, Stage 3 or Stage 4). Do not use DTPI to describe vascular, traumatic, neuropathic, or dermatologic conditions”.^{64,p.1} These may be difficult to detect in individuals with dark skin tones”.⁶⁰ • Medical Device Related Pressure Injury - This describes the etiology of the injury. Use the staging system to stage these injuries. Medical device related pressure injury result from the use of “devices designed and applied for diagnostic or therapeutic purposes. The resultant pressure injury generally conforms the pattern or shape of the device; the injury should be staged using the staging system”.^{64,p.1} • Mucosal Membrane Pressure Injury - Mucosal membrane pressure injury is “found on mucous membranes with a history of a medical device in use at the location of the injury; due to the anatomy of the tissue these injuries cannot be staged”.^{64,p.1} <p>Product Information Sheet (PISheet) - Product Information Sheet(s) are developed by the Provincial Nursing and/or Interprofessional Skin & Wound Committee. PISheets are found on the British Columbia Patient Safety and Quality Council’s Connecting Learners With Knowledge website https://clwk.ca</p> <p>Pressure Ulcer Risk Score (PURS) - See interRAI MDS.</p> <p>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.</p> <p>Reactive hyperemia - The transient increase in organ blood flow that occurs following a brief period of ischemia. This compensates for the shortage of oxygen and a build-up of metabolic waste when blood flow is occluded.</p> <p>Shear - Mechanical force that moves bony structures in an opposite direction to overlying tissue; can lead to tissue ischemia and ulceration or tunnelling and deep sinus tracts beneath an ulcer.⁵⁷</p> <p>Therapeutic Support Surface (TSS) - A device for pressure redistribution that is used to manage pressure loads in order to prevent or promote healing of pressure injuries; includes mattresses, integrated bed systems, overlays, seating cushions, pillows and seating cushion overlays and offloading devices such as foam supports and heel boots.</p> <p>Trunk Release Maneuver (TRM) - A maneuver used when clients are required to remain in a bed, in an upright sitting position e.g., High Fowler’s, or when they need assistance to sit up or reposition themselves. The TRM is a standardized protocol that consists of pulling the trunk forward and away from the support surface of the bed without lifting the buttocks. The trunk can be pulled forward using either a positioning sling or a slider sheet. The TRM can be performed by 1 or 2 health care professionals.</p>
<p>Related Documents www.clwk.ca</p>	<p>Procedure: Braden Scale and Braden Q Scale for Predicting Pressure Ulcer Risk in Adults & Children E-Learning Module: Pressure Ulcer Prevention (Braden Scale) Flow Sheet: Braden Risk and Skin Assessment Flow Sheet (BRSAFS) Algorithm: Braden Scale Interventions for Adults Algorithm: Braden Q Scale Interventions for Children Guideline: Assessment and Treatment of Pressure Injuries in Adults & Children Educational Resource: Braden Risk Assessment Educational Resource: Head-to-Toe Skin Assessment Body Chart Algorithm: Selection of Therapeutic Support Surfaces Guideline: Assessment, Prevention and Treatment of Moisture Associated Skin Damage(MASD) in Adults & Children</p>

Assessment and Determination of Prevention Strategies

Assessment

1. Assess for Client Concerns
 - a. Social and financial issues and availability of support systems to address concerns.
 - b. Emotional, cognitive, behavioural, or mental health concerns and availability of support systems to address concerns e.g., depression, dementia, or delirium.
 - c. Quality of life issues that may impact treatment (e.g., supportive palliative/end-of-life care).
 - d. Effect of client's current environment on care.
 - e. Client/family goals of care and preferences for prevention, treatment and management of risk factors.
 - f. Acknowledge culture and traditions.
 - g. Client/family ability and motivation to comprehend and participate in the prevention care plan.

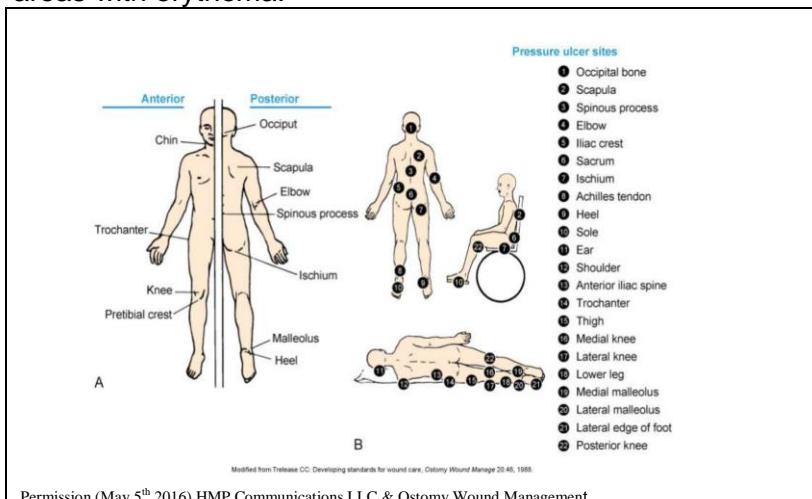
2. Assess for Risk Factors for Skin Breakdown
 - a. Medical conditions that increase the risk for skin fragility, may lead to skin breakdown and/or pressure injury development e.g., hemodynamic instability, peripheral vascular disease, lower leg edema, cardiac disease, renal disease, liver disease, cancer, diabetes mellitus, hypotension, autoimmune disease and neuromuscular disorders (e.g., Multiple Sclerosis, Parkinson's disease, spinal cord injury, cardiovascular accident, cerebral palsy, meningomyelocele), or post-surgical debility.
 - b. Impaired oxygenation status of skin and underlying tissues, e.g., chronic obstructive lung diseases, heart failure (HF), anemia.
 - c. Conditions that increase risk for skin breakdown including radiation therapy, prolonged surgical procedures (3 hours or longer), lower extremity orthopaedic surgery and peri-operative analgesia (e.g., surgical incision in a weight-bearing area).
 - d. Conditions requiring a medical device (e.g., external medical devices-splints, halo vest, braces, or endotracheal tubes, tracheostomy, continuous [CPAP] or nasal direction positive airway pressure [DPAP]).
 - e. Medications that may predispose to skin breakdown, e.g., non-steroidal anti-inflammatory drugs (NSAIDs), anti-neoplastics, systemic corticosteroids, anticoagulants, and vasopressors.
 - f. Clients receiving supportive palliative/end-of-life care.
 - g. Clients living with a spinal cord injury.
 - h. Clients with eclampsia/pregnancy.
 - i. Clients with generalized edema e.g., trunk, pelvic and lower leg edema.
 - j. Lifestyle factors such as smoking and substance use; assess history of and motivation to quit.
 - k. History of previous skin breakdown, pressure injuries, surgical flaps/grafts, and/or burns.
 - l. Bariatric/obese clients with/without panniculus, and/or large and deep skin folds; due to the increased tissue weight of skin fold.
 - m. Extremes of age due to the fragility of the skin (prematurity/advanced age).
 - n. Impaired sensation:
 - i. Assess the lower extremities and feet for diminished sensation:
 - Peripheral neuropathy - Test the feet of a adults and children living with diabetes using 5.07 - 10 gram monofilament testing over 10 points. Do not test over a callous area. [Monofilament Testing for LOPS in Adults & Children](#)
 - For clients with neurological problems such as spinal cord injury or cerebral vascular accident, test areas other than the foot using light touch with a cotton ball or cotton tipped swab (forearm). Pain sensation may be tested using a tongue depressor. To test for temperature sensation an ice-cube may be used.
 - o. Moisture/Incontinence:
 - i. Urinary or fecal incontinence, or both.
 - ii. Areas of excessive perspiration and evidence of moisture or maceration in perianal area, skin folds or panniculus.
 - iii. Heavily exudating skin conditions or wound exudate.

- iv. Excessive edema causing weeping skin.
- v. Excessive drooling (lower face and neck) with evidence of moisture or maceration of the skin.
- vi. Limited ability to manage own hygiene needs.
- vii. Layers of briefs/inserts, underpads and linen, non-breathable clothing/mattress covers, and/or plastic pillow coverings.
- p. Impaired activity/mobility:
 - i. Need for assistance to transfer or mobilize; note if client is routinely immobilized for 2 hours or longer.
 - ii. Ability to shift position independently when sitting, lying & transferring; the need for assistive equipment and help to reposition (e.g., contractures, spasms).
 - iii. Use of slings for standing or transferring.
- q. Impaired nutritional status (use an nutritional assessment tool e.g. Mini Nutritional Assessment or Malnutrition Screening Tool)
 - i. Inadequate oral intake (e.g., poor appetite, prolonged NPO, clear fluid or full fluid diet).
 - ii. Inadequate enteral or parenteral nutrition infusion.
 - iii. Inadequate fluid intake (e.g., dehydration as evidenced by poor skin turgor, decrease in urinary output, dark urine output or lab values).
 - iv. Underweight status, unintended weight loss or overweight/ obesity; complete a malnutrition screening tool as per agency policy.
 - v. Difficulty swallowing, biting/ chewing or self-feeding.
 - vi. Altered gastrointestinal function as evidenced by nausea, vomiting, diarrhea or constipation.
 - vii. Altered nutrition related lab values (e.g., lowered albumin levels, poorly controlled blood glucose).
 - viii. Undesirable food choices related to psychosocial/cultural factors.
 - ix. In the palliative/end-of-life population provide nutrition as per client preferences.
- r. Presence of pressure, friction or shear:
 - i. Assess for factors that may contribute to pressure: friction/shear, head of bed (HOB) greater than 30° degrees, sliding forward when lying or sitting, slouched positions, spasms, contractures, multiple layers of positioning/transfer slings, incontinence briefs, agitation, restlessness, and/or restraints.
 - ii. Presence and effectiveness of pressure redistribution surfaces, equipment and devices.
 - iii. Presence of medical devices (endotracheal tubes, tracheostomy, CPAP, DPAP)

3. Assess for Pain

- a. Type, location (especially in areas of the body exposed to pressure such as bony prominences and in skin folds), frequency, and quality of pain.⁶⁵
- b. Pain associated with a medical condition (e.g., palliative/end-of-life care), movement or repositioning or with dressing change, anticipatory pain.
- c. Assess for surgical and procedural and post-procedural pain.
- d. Rate severity using client self-report, observation of non-verbal cues and/or a pain scale, e.g.,
 - i. CRIES Pain Scale,
 - ii. Face, Legs, Activity, Cry, Consolability Behavioral Tool (FLACC),
 - iii. Non-Communicative Patient's Pain Assessment Instrument (NOPPAIN),
 - iv. Numeric Rating Scale,
 - v. Pain Assessment in the Advanced Dementia Scale (PAINAD),
 - vi. Visual Analog Scale, or the
 - vii. Wong-Baker FACES Pain Rating Scale.
- e. Onset and duration of pain and precipitating/alleviating factors.
- f. Impact of pain on activity/mobility, sleep and mood and rate overall quality of life (e.g., Rate 1-10, 1 is poor quality of life, and 10 is healthy).
- g. Autonomic dysreflexia and/or increased spasticity in clients with a spinal cord injury.³⁰
- h. Current pharmacological and non-pharmacological interventions for pain management and their effectiveness.

4. Assess the blood flow of the Lower Extremities
 - a. Assess palpable pedal pulses, capillary refill, colour, edema, and temperature and appearance of both extremities that might indicate arterial compromise or venous insufficiency.
5. Assess for the Pressure Risk status using the age appropriate assessment tool: Braden Scale for adults 18 years and older, and the Braden Q Risk Assessment scale for children up to 17 years as per the schedule below, or as per agency policy.
 - a. Adult ICU/CCU: As part of the admission process, within 8 hours of admission.
 - b. Pediatrics ICU/Neonatal ICU (NICU): As part of the admission process, within 8 hours of admission.
 - c. Operating Room (OR):
 - i. The OR team needs to be knowledgeable of the pre-operative Braden Scale risk score. Then, positioning in the OR can be based on:
 - duration of time immobilized while waiting for surgery, and
 - length of surgery - greater than 3 hours, and
 - type of surgical procedure.
 - ii. Postoperative:
 - The OR staff must communicate to the post-anaesthetic recovery room post-anesthesia care unit (PACU) or the post anaesthetic recovery room the client's length of surgery, medically-treated hypotensive episodes, intraoperative skin events, and communicate any other pertinent information to post-anaesthetic recovery room (PARR) and post-anesthesia care unit (PACU) staff following surgery.
 - d. Acute Medical/Surgical Units: As part of the admission process, within 8 hours of admission, and upon return from the OR.
 - e. Pediatric Medical/Surgical Units: As part of the admission process, within 8 hours of admission, and upon return from the OR.
 - f. Sub-Acute/Rehabilitation Units: As part of the admission process, within 8 hours of admission.
 - g. Community Care (Clinic or Home): As part of the admission process, within the first 2 visits.
 - h. Residential Care:
 - i. Within 24 hours of admission a Braden Scale Risk assessment must be completed to determine and communicate to the team immediate prevention strategies required for the client.
 - ii. The PURS will be completed as part of the overall admission MDS-RAI assessment.
6. Assess the skin using a Head-to-Toe Skin Assessment - see Appendix A for full page version
 - a. In order to assess and visualize skin and bony prominences, it is required to remove clothing (including socks) and assess for evidence of blanchable/non-blanchable erythema, pressure injuries, and deep tissue injuries (DTI). Use finger pressure method to assess for blanching in areas with erythema.



- b. Assess large and deep skin folds for bariatric (obese) clients at risk for maceration, inflammation and/or, as a result of increased tissue weight, pressure damage. Assess behind the neck, mid-back, under arms/breasts, under panniculus, buttocks, sacral and perineal areas, upper and lower thighs/calves, ankles, and heels and other areas of high adipose tissue concentration.
- c. Assess mucosal membranes for Mucosal Membrane Pressure Injury.
- d. Assess for Medical Device Related Pressure Injury by lifting medical device at least 2 times per shift e.g., endotracheal tubes, tracheostomy, masks, splints or braces to assess the underlying skin.
- e. Assess for evidence of healed wounds.
- f. Assess for evidence of candidiasis/bacterial infection.
- g. Assess for evidence of contact dermatitis (e.g., itching or burning in areas corresponding to use of a product, device, lotion, cream).
- h. Assess for changes in skin texture/turgor (e.g., dryness, thickness). Assess for changes in skin temperature (warmth, heat) when compared to the surrounding skin (use back of fingers to test).
- i. Assess for consistency of any reddened areas, such as boggy (soft) or induration (hard).
- j. Assess areas such as bruises or discoloration of the skin caused by blood leaking into the subcutaneous tissues, hematomas, blisters, excoriation or rashes.

Determine Prevention Strategies

1. Prevention strategies/interventions are determined and initiated based upon:
 - a. The client's overall assessment data, the age-appropriate Braden Scale risk score, and individual Braden Subscale scores. If the client's Braden Scale score is 18 or less, or the Braden Q score is 16 or less, the client is at risk and interventions must be put in place.
 - b. Use the Braden Scale and Braden Q subscale scores to determine individualized interventions.
 - c. Established pressure injury prevention 'intervention bundles' may be used in some settings, as per agency policy.
 - d. Validate the client/family willingness and ability to participate in the care plan.

Interventions

1. For clients **not currently at risk** (Braden Scale **19 or greater**; Braden Q score **17 or greater**) continue to conduct a head-to-toe skin assessment as per the following schedule or as per the agency policy.
 - a. Adult ICU/CCU: Every shift.
 - b. Pediatrics ICU/Neonatal ICU (NICU): Every shift.
 - c. Acute Medical/Surgical Units: Daily or according to agency policy and standards.
 - d. Pediatric Medical/Surgical Units: Daily.
 - e. Sub-Acute/Rehabilitation Units: With bathing.
 - f. Community Care: With any deterioration and/or change in client's condition.
 - g. Residential Care: With bathing.

Complete a Braden Scale or Braden Q Scale risk assessment if the following occurs:

- i. If the client condition has changed,⁶⁴
 - ii. If the client has been transferred to/from another care setting, or
 - iii. If the client has been hospitalized (e.g., day surgery/day procedures).
2. For clients **at risk** (Braden Scale **18 or less**; Braden Q Scale **16 or less**) develop a care plan with the client/family based upon the following:
 - a. Manage Client Concerns (see detailed interventions below, Appendix B: Braden Scale Interventions Algorithm (Adult) and Appendix C: Braden Q Scale Interventions Algorithm (Children) still to come)
 - i. Address client concerns
 - ii. Determine and document risk factors associated with clinical conditions

- iii. Repeat pressure risk assessment
 - iv. Repeat head-to-toe skin assessment
 - v. Manage and provide pain relief
 - vi. Provide skin care
 - vii. Prevent/Manage moisture associated skin damage
 - viii. Promote activity/mobility
 - ix. Support nutritional therapy
 - x. Reduce or eliminate shear & friction
 - xi. Alleviate pressure
 - xii. Promote pressure redistribution through positioning/repositioning
- b. Client education and resources
 - c. Client discharge planning
3. Refer to the interdisciplinary team members as needed.
4. Refer to PISheet for information regarding devices, prophylactic dressings, and support surfaces.

Client Care Management

1. Address Client Concerns
 - a. The plan of care should take into account client/family abilities, cultural considerations, concerns, preferences and motivation related to goals of care and treatment.
 - b. Develop strategies to address any lack of client and family participation in an injury prevention plan of care. Educate client/family about pressure injury prevention strategies.
 - c. Refer the client to the appropriate professionals to support improved health and wound healing, e.g., improved diet, pressure reduction/redistribution, exercise plans, lower leg vascular assessment, diabetic foot assessment.
 - d. Refer to Social Work, Counsellor, or Aboriginal Health Representative if available for financial or psychosocial concerns and for emotional support and counselling as needed.
2. Manage Risk Factors associated with Clinical Conditions
 - a. Support the client to manage any pre-existing illnesses such as stroke, neuromuscular disorders, diabetes mellitus, peripheral vascular disease, carcinomas, renal or cardiac disease. Consult a Physician/NP if changes occur.
 - b. Peripheral neuropathy (e.g., diabetes mellitus) or peripheral arterial or venous insufficiency put the client at higher risk for lower limb skin breakdown and pressure injury. Consult a Wound Clinician if the client has peripheral neuropathy, peripheral artery disease, venous insufficiency or a wound.
 - c. Educate client/family about taking medication(s) as prescribed. Consult a Pharmacist as needed.
 - d. Support the client in strategies for chronic disease self-management. Refer to Chronic Disease Self-Management Program (where available).
 - e. Support the client to stop smoking and discuss referral to a smoking cessation program.
 - f. Support the client with harm/substance use management, discuss referral to substance use program.
3. Repeat **for those at risk** the Braden Scale or Braden Q Pressure Risk assessment as per the following provincial schedule, or as per the agency policy.^{2,9,18,23,32,33,36,41,43,44,61,64}
 - a. Adult ICU/CCU: At least every 12 hours.⁶⁴
 - b. Pediatrics ICU/NICU: At least every 12 hours.⁶⁴
 - c. Adult Acute Medical/Surgical Units: At least every 12 hours.⁶⁴
 - d. Pediatrics Acute Medical/Surgical Units: At least every 12 hours.⁶⁴
 - e. Adult Sub-Acute/Rehabilitation Units: At least every 48 hours.
 - f. Pediatric Rehabilitation Units: At least every 48 hours.

- g. Community Care: At every visit within the first 3 weeks, then transition to quarterly based on documented clinical assessment.⁶⁴
- h. Residential Care: Once weekly for 4 weeks, then transition to interRAI PURS for scheduled monitoring.

Reassess all clients if the following occurs:

- i. If the client condition has changed,
- ii. If the client has been transferred to/from another care setting, or
- iii. If the client has been hospitalized (e.g., day surgery/day procedures).

- 4. Repeat **for those at risk** the Head-to-Toe skin assessment in conjunction with the Braden Scale re-assessment schedule:
 - a. For clients in all care settings complete a head-to-toe skin assessment with positioning/repositioning, and/or in conjunction with completion of the Braden Risk assessment. For community clients at risk, teach the family or caregiver to do a daily skin assessment and report skin issues identified.
 - i. Reassess for evidence of pressure on all bony prominences: occiput, scapula, vertebra, iliac crest, great trochanter or femur, sacrum, coccyx, lateral and medial malleolus (ankle), and calcaneus (heel).
 - ii. Reassess skin folds for evidence of moisture and/or pressure damage.
 - iii. Reassess twice daily for evidence of Medical Device Related Pressure Injury under any device (e.g., splints, halo vest, endotracheal tube, tracheostomy, heel boots).
 - iv. Reassess for evidence of a Mucosal Membrane Pressure Injury (do not stage).
 - v. Remove compression stockings, support hose, braces, offloading boots twice daily to assess skin on the lower extremities. Teach family or caregiver to assist with schedule and report skin issues identified.
 - b. Complete a head-to-toe skin assessment when the client transitions between units/healthcare settings e.g., OR to PARR/PACU and to the surgical unit, and following transition to any care setting e.g., hospitalization.
- 5. Manage/Provide Pain Relief
 - a. Administer analgesic medication regularly and in the appropriate dose to control pain; refer the client to a Physician/NP if pain is not well controlled.
 - b. Encourage repositioning as a means to reduce pain. Work with client, family and OT/PT to achieve positioning/repositioning that does not exacerbate pain.
 - c. Use therapeutic support surfaces and devices as appropriate and available to redistribute pressure away from painful areas when lying or sitting.
 - d. Organize care to coordinate with analgesic administration allowing sufficient time for the analgesic to take effect; monitor for sedating side effects.
 - e. Reassess pain at regular intervals and note any increase in pain severity.
- 6. Provide Skin Care
 - a. Cleanse skin gently with pH balanced, non-sensitizing skin cleansers and moisturize skin with lotions or creams; avoid moisturizers with allergens such as perfume, lanolin, preservatives, emulsifiers and stabilizers.
 - b. Avoid hot water and excessive scrubbing/friction during hygiene care; use a soft cleansing cloth and pat the skin dry.
 - c. Avoid massaging over bony prominences.
 - d. Gently cleanse skin folds and perineal area after each incontinent episode with a no-rinse skin cleanser. Do not rub the skin to dry. Gently pat skin dry as needed.
 - e. Apply a skin protectant/barrier product to protect skin from urine, feces and perspiration.
 - f. Avoid the use of powders and talc to reduce moisture.

7. Prevent/Manage Moisture Associated Skin Damage

- a. Avoid using incontinent briefs/pads unless the client is unable to toilet successfully.
- b. If using incontinent briefs/pads, check them when repositioning (e.g., every 2 hours) or if client positions independently then check every 4 hours and change briefs/pads when soiled or wet.
- c. If using containment products consider use of breathable products that support air circulation and water vapour evaporation, or a two-piece device (mesh panties and pad insert).
- d. Do not 'double pad' the client. If the client voids large amounts use a more absorbent product or change the continence product more frequently.
- e. Do not use soaker pads if the client is wearing incontinence briefs.
- f. Urinary management:
 - i. Establish toileting routine.
 - ii. Establish bladder retraining schedule if required.
 - iii. Consider male external/condom catheter with leg/night bag.
 - iv. Consider female urinary pouches (if available).
 - v. If appropriate consider an indwelling catheter, to protect the skin from feces and infected urine until the incontinence problem has been addressed.
- g. Fecal management:
 - i. Establish a toileting routine.
 - ii. Consider fecal containment device.
 - iii. Consider a fecal management system (FMS).
 - iv. Refer to Dietitian.
 - v. Consult with Pharmacy re: medication(s).
- h. Perspiration related skin damage:
 - i. Prevent/treat intertrigo in groins, axillae and under breasts by separating skin folds with a moisture wicking fabric to reduce friction and absorb/wick moisture ([Link to PISheet](#)).
 - ii. Consider use of a low air loss therapeutic surface.
 - iii. Consider use of a 'microclimate manager' (water resistant vapour-permeable mattress cover). This device supports a microclimate which changes moisture evaporation rate and helps dissipate heat from the skin.
 - iv. Remove transfer boards, slider sheets or lifting slings from under clients after use if they could potentially cause areas of moisture, friction, shear, or pressure. A sling may be left under the client if approved by OT/PT or the Wound Clinician.
- i. Refer to the Wound Clinician, Physician/NP and/or the OT/PT for unresolved urinary/fecal continence issues, intertrigo, IAD, MASD, or if a yeast/bacterial skin infection is suspected.
- j. Refer to the Wound Clinician and/or the OT/PT if the Braden subscale 'moisture' is 2 or less (often moist/constantly moist); or if the Braden Q subscale 'moisture' is 2 or less (very moist/constantly moist).
- k. Operating Room:
 - i. During surgical procedures, assess and avoid pooling of all surgical solutions and body fluids under the client.⁶⁰
 - ii. Ensure transfer boards, slider sheets or lifting slings are removed from under clients as they could potentially cause areas of moisture, friction/shear, or pressure.

8. Promote Activity/Mobility

- a. Assess functional capacity, particularly in regard to repositioning, posture, and the need for assistive equipment and personnel.
- b. Avoid the use of physical and chemical restraints to restrict mobility unless required to manage a medical condition (refer to Health Authority's Least Restraint policy).
- c. Consider the impact of sedation on activity and mobility.
- d. If the client can ambulate with assistance, provide assistance at regular intervals.
- e. Provide equipment and aids for safe lifts, transfers and mobility.
- f. Refer to OT/PT if the Braden subscale 'activity' is 2 or less (chairfast/bedfast)
- g. Refer to OT/PT if the Braden subscale 'mobility' is 2 or less (very limited/completely immobile).

- h. Refer to OT/PT or Wound Clinician if the Braden subscale or if the Braden Q subscale 'sensory perception' is 2 or less (very limited/completely limited).
9. Support Nutritional Therapy (Oral, Enteral & Parenteral)
- a. Maximize the client's nutritional status based on an individualized assessment of adequate protein and calorie intake, if compatible with goals of care. Assess for renal dysfunction if increased protein intake is indicated.
 - b. Offer fluids every 2 hours, especially for those with dehydration, fever, vomiting, profuse sweating, and/or diarrhea unless contraindicated, e.g., heart failure, renal failure. Assess for renal or liver dysfunction and heart failure if increased fluid intake is indicated.
 - c. For pediatric clients, assess fluid intake based on an appropriate weight-based calculation (100 mL/kg for the first 10 kg - 50 mL/kg, or for second 10 kg - 20 mL/kg for remainder) as per their clinical condition.
 - d. If client wears dentures (full/partial) ensure dentures are in place in preparation for meals/snacks. Provide assistance with meal set-up and/or feeding as required
 - e. Document food/fluid intake (percentage %) during meals and record issues with poor intake and dietary intolerances (e.g., swallowing or poor fitting dentures).
 - f. Refer to the appropriate professional Speech Language Pathologist (SLP) or Registered Dietitian (RD), if the client has difficulty swallowing, poor fitting dentures, or other problems eating or digesting food.
 - g. Weight client weekly, or according to agency policy, to determine weight loss/gain. Refer to the Dietitian if the client is losing more weight or excessively gaining weight that is not desired or not related to fluid changes.
 - h. Pediatric clients may require more frequent weight assessment as per agency policy.
 - i. Clients receiving supportive palliative/end-of-life care, consult client/family and RD to plan appropriate nutritional choices.
 - j. If the client is receiving enteral nutrition, maintain schedule.
 - k. If the client is receiving parenteral nutrition, maintain schedule.
 - l. Refer to the Dietitian if the Braden subscale 'nutrition' is 2 or less (probably inadequate/very poor); or if the Braden Q subscale 'nutritional' is 2 or less (inadequate/very poor). Dietitian to maximize the client's nutritional status based on assessment of adequate protein, calorie/fluid and micronutrient intake, if compatible with goals of care.
10. Reduce or Eliminate Friction/Shear
- a. When sitting, ensure client's feet are supported directly on the floor, on a foot stool or a foot rest so that the hips and knees are at 90 degrees to prevent sliding forward in the wheelchair or chair.⁵⁴
 - b. If the client is sitting in a tilting chair or wheelchair use the tilt feature regularly to redistribute the pressure. Adjust angle of tilt to redistribute pressure as per schedule developed with OT/PT.
 - c. When moving the client up in bed, ensure the bed is flat. Ensure the client is positioned such that the hip bones are aligned 10 cm above the point where the bedframe flexes. Then raise the knee gatch 10 - 20 degrees before the HOB is raised.
 - d. Elevating the head of the bed (HOB):
 - i. Elevate HOB less than or equal to 30 degrees ($\leq 30^{\circ}$) unless contraindicated (e.g., a medical condition, respiratory issues, or dysphagia).
 - ii. If HOB elevation greater than 30 degrees ($>30^{\circ}$) is needed e.g., when client is eating, is receiving an enteral/nasogastric feed or is at risk for aspiration pneumonia, develop a care strategy to minimize the risk of shear.
 - iii. Refer to OT/PT, Dietitian, Wound Clinician, and/or Physician/NP.
 - iv. Elevate head of bed first and then suspend the heels off the surface of the bed.
 - v. Consider doing the 'trunk release maneuver' (TRM) to ensure proper positioning in bed ([link to Sitting up in Bed video](#)). Consult OT/PT for TRM,
 - e. Clients who have had hip and knee surgery should **not** have the knee gatch raised to avoid flexion of these joints. Refer to post-operative orders. Assess heels and sacrum and provide therapeutic device as needed.

- f. Use an agency approved lift or transfer sheet to minimize friction and/or shear when repositioning; do not drag the client.
- g. For lateral transfers (e.g., bed to stretcher or stretcher to operating table) use sliding boards, roll boards or transfer sheets to minimize risk of skin injury.
- h. Use of patient handling equipment, such as positioning slings with ceiling lifts, to avoid shear and friction when repositioning.
- i. Use products such as elbow and heel protectors to minimize contact between the skin and bed linen.
- j. Do not leave client on a bedpan longer than necessary.
- k. For children, select a pressure redistribution device that prevents occipital pressure injuries.
- l. In critical care units, consider use of a prophylactic silicone dressing for prevention of shear in the sacral and coccyx area.
- m. Refer to OT/PT or the Wound Clinician when the Braden Subscale for friction/shear is 2 or less (potential problem/problem); or if the Braden Q subscale is 2 or less (problem/significant problem).

11. Alleviate Pressure

- a. Avoid multiple layers of bedding or padding, especially 'soaker pads' (folded in ½ or ¼'s), for therapeutic support surfaces; use only those coverings or pads that are recommended for specialty beds or seating surfaces.
- b. Ensure that bed linens beneath the client are smooth and unwrinkled.
- c. For children, high-specification pressure redistribution surfaces should be utilized to prevent occipital pressure injuries. Pediatric heads are at greater risk due greater size and weight; hands and feet are at risk due to very small skin surfaces.
- d. Suspend heels:
 - i. Suspend heels off the surface of the bed at all times even when using a therapeutic support surface; use pillows, therapeutic pressure offloading devices, heel suspension boots, or devices specifically designed for the client.⁵⁷
 - ii. Support the knees to avoid hyperextension when heels are suspended.
 - iii. Heel suspension in bed is especially important for clients with diabetes mellitus, peripheral vascular disease, neuropathy, and after surgery.
 - iv. Collaborate with an OT/PT or a Wound Clinician to determine the most appropriate heel off-loading device if necessary. Do not use rolled blankets, towels, incontinent pads, or intravenous bags to suspend heels.
 - v. Heel protectors provide protection from friction/shear, but not from pressure as they do not suspend heels off the bed.
- e. Minimize or relieve pressure from medical devices, such as oxygen tubing, catheter and intravenous tubing, casts and restraints. Lift or remove medical devices twice daily to assess for skin breakdown. Use a thin piece of foam or dressing to alleviate pressure under these devices.
- f. Do not use rings, donut-type devices or synthetic or natural sheepskin to redistribute pressure over bony prominences.
- g. Consider pressure redistribution devices, such as gel pads when using commode chairs and bath benches.
- h. Remove transfer boards from under the client after use.
- h. British Columbia's Safe Patient Handling guidelines recommend that a mechanical repositioning sling is to be left beneath the client after its use, but the NPUAP **does not** recommend leaving moving/handling repositioning slings beneath the client unless the sling is specifically designed to be left in place:
 - i. Ensure that the repositioning sling used is one designed to be left beneath the client.
 - ii. If the sling is not specifically designed to be left in place, then close monitoring of the skin is required as the sling can potentially cause areas of friction/shear, or pressure.
 - iii. Consult OT/PT/Wound Clinician if there is an anticipated skin breakdown concern for a client who requires a repositioning sling, regardless of whether the sling is designed to be left beneath the client or not.

- i. Upon transferring from bed to chair or from bed to toilet inspect skin for any new, or additional damage.
- j. If the client's current mattress does not provide enough pressure relief and/or the client has a pressure injury affecting more than one turning surface, consider a therapeutic support surface; use Selection Algorithm and/or consult with OT/PT or a Wound Clinician for appropriate support surface. Decisions regarding the use and type of therapeutic support surface is based on the client's:
 - skin moisture,
 - immobility,
 - presence of friction/shear,
 - bed positioning (lying, sitting),
 - transfers,
 - tissue perfusion,
 - body size and weight of the individual,
 - the impact on caregivers, and the
 - ease of use and benefits of the surface.
- k. Reassess the effectiveness of the therapeutic support surface/device and monitor the surface twice daily (acute & residential care) or with each home visit to ensure that it is properly inflated and is not 'bottoming out'.
 - i. Bottoming out occurs when a reactive or an active support surface provides insufficient support to adequately distribute pressure due to excessive immersion; the client presents as sitting or lying on the underlying structure of the bed or chair.
 - ii. To assess 'bottoming out' the clinician hand is placed between the bony prominence and support surface to determine if there is adequate cushioning.
 - iii. This is to be conducted on air mattress overlays and chair cushions, but not on a mattress replacement system or integrated bed system.⁶⁰

12. Promote Pressure Redistribution through Positioning/Repositioning

- a. Consult with an OT/PT or Wound Clinician as necessary to assess and recommend positioning techniques, patient handling equipment, seating adaptations, or devices for independent positioning and treatment for fixed or flexible deformities.
- b. For community clients engage family caregivers and/or Home Support Services regarding the client's need for positioning/repositioning.
- c. For children, pediatric clients, engage family in pressure redistribution strategies through holding and turning schedules.
- d. Provide clients with devices that will enable independent positioning and transfers, such as trapeze bars, transfer boards, transfer poles, and bed rails.
- e. For clients who are **bedbound**, or on **bedrest**:
 - i. An every 2 hour (q2h) turning/repositioning schedule is determined based upon documented clinical judgement of the client's:
 - clinical condition, (*See Assessment #2 for detailed list of risk factors*),
 - Braden Risk subscale scores, primarily focused on sensory perception, moisture, activity, mobility, and friction/shear; Braden Q subscales also assess tissue perfusion and oxygenation,
 - head-to-toe skin assessment,
 - sleep cycles and patterns,
 - mattress, (e.g., standard hospital bed mattress versus a therapeutic support surface), and/or
 - number of turning surfaces available, e.g., the presence of a pressure injury, incisional line, devices/splints.
 - ii. Use the turning/repositioning of the client as an opportunity to provide additional care e.g., reassess skin, offer fluids, provide mouth care, manage incontinence, offer

- reassurance, and assess overall condition. Small shifts in position can be used to relieve pressure between a full turn/repositioning.
- iii. Reposition (supine to lateral, or lateral to lateral) with each full turn/repositioning and avoid positioning the client onto any reddened area, pressure injury, or deep tissue injury. Small shifts of position e.g., adjustment of the pillow or wedge between a full turn/repositioning may be needed depending upon the client condition.
 - iv. When clients are side lying, use foam wedges or pillows to support a lateral position with a 15⁰-30⁰ degree tilt; use your hand to determine if the sacrum is off the bed.⁶⁴ Avoid contact between bony prominences such as knees and ankles.
 - v. If the client is on a rotation/tilt-bed, then use the tilt feature regularly to redistribute pressure. Consult with an OT/PT for degree of tilt and tilt schedule as necessary.
 - vi. Consider the use of patient handling equipment, such as positioning slings with ceiling lifts, to reduce friction/shear with repositioning.
 - vii. For those clients who cannot get up in a chair and who have a sacral/coccyx pressure injury, develop a care strategy to minimize the risk of when HOB elevation greater than 30 degrees (>30⁰) is needed e.g., meal time, enteral/nasogastric feeding or respiratory concerns. Consult Physician/NP/Dietitian and/or OT/PT.
- f. For clients who are **chair-bound**:
- i. The time the client sits 'up-in-chair' schedule is determined by their overall health, fatigue level, tissue tolerance, overall treatment objectives, comfort and whether or not a pressure injury is present. Weigh the risks and benefits of supported sitting against the benefits to the client's physical and emotional health - document the decision.
 - ii. The proper sitting position is with the client's weight evenly distributed on the ischia (ischial tuberosities). (*See Appendix A*)
 - iii. For clients who can move independently in their chair teach them to do 'pressure relief lifts' or other pressure relieving maneuvers as appropriate to shift their weight every 15 minutes, for a duration of 30-90 seconds (to promote blood flow to the tissues) by leaning side-to-side or leaning forward and backward.
 - iv. For those clients who cannot move independently while seated conduct small shifts in position every 1 hour (q1h).
 - v. Consult OT/PT for specific client seating needs e.g., for a seating assessment (wheelchair, geriatric-chair) if patient is sliding out of recommended seating position. A seat-tilt may be recommended to prevent sliding down in the wheelchair/geriatric-chair.
 - vi. Avoid elevating the leg-rests, unless clinically indicated (e.g., fracture of the foot, ankle, lower leg) as the elevation pulls the pelvis into a sacral sitting posture as opposed to an ischial tuberosity sitting posture, causing increased pressure on the coccyx and/or sacrum.
 - vii. Adjust foot rests and arm rests to support the proper posture and provide pressure redistribution. Support feet using a foot stool or footrests.
 - viii. If the client is seated in a tilt-wheelchair, then use the tilt feature to redistribute pressure. Consult with OT/PT for degree of tilt, and tilt schedule as necessary.
 - ix. If sitting in the chair is necessary for clients with ischial tuberosity pressure injuries, develop a care strategy to minimize the risk of a new pressure damage e.g., coordinate sitting periods with meal times. Consult a seating specialist and/or OT/PT.
- g. Operating Room Procedures:
- i. Intraoperative:
 - Position client in such a way as to reduce the risk of pressure injury development during surgery.^{60,65}
 - Pad elbows and place the palm facing the thigh and support the arm.
 - Ensure the feet and legs are not crossed.
 - Pad any part of the leg or foot that comes in contact with the stirrups. Ensure the legs do not come into contact with the post of the stirrup.

- Consider use of a high specification reactive foam or alternating pressure support (active) surface on the OR table for all individuals identified as at risk of developing a pressure injury.
 - Use additional support surfaces (e.g., facial pads) to offload points on the face and body while in the prone position.
 - Suspend heels free of the surface of the OR table (e.g., heel suspension devices distribute the weight of the leg along the calf without placing pressure on the Achilles tendon).
 - Prevent client from being positioned directly on a medical device unless it cannot be avoided.
 - OR staff to communicate operative positioning and areas of risk.
- ii. Postoperative:
- Lift the client; do not drag from stretcher to/from the operative table or recovery room bed.
 - Position client differently preoperatively and postoperatively than the position adopted during surgery.
 - Complete a head-to-toe skin assessment especially for those areas at risk during the operative period.
13. Notify a Wound Clinician, Physician/NP, and or OT/PT if the following are evident:
- a. A new or worsening pressure area/skin breakdown.
 - b. A new or worsening skin breakdown related to incontinence or moisture.

Client Education and Resources

1. Teach and educate client and/or family about:
 - a. Hand hygiene procedures.
 - b. Interdisciplinary wound care members' roles e.g., OT/PT, SW, RD, Physician, NP, and/or ETN/Wound Clinician.
 - c. Signs of pressure injury and/or skin breakdown.
 - d. The importance of proper positioning and strategies for pressure redistribution, including regular examination of the skin, especially over bony prominences.
 - e. Strategies for reducing or eliminating friction and shear, if indicated.
 - f. The need to:
 - i. Cleanse the skin with warm water and a mild unscented soap.
 - ii. Apply a moisturizer after cleansing and daily to dry skin.
 - iii. Use of a skin protectant/barrier on skin irritated by urine or stool.
 - iv. Apply moisture transfer textile (wicking materials) in skin folds to manage moisture.
 - g. Strategies for improving nutrition (e.g., meal preparation), if indicated.
 - h. Pain management strategies, if indicated.
 - i. If client is chair-bound, reinforce the importance of doing weight shifts.
 - j. The use of pressure redistribution devices, if indicated.
 - k. When to seek assistance from healthcare personnel.
 - l. Community support for obtaining equipment, supplies, and/or devices, as appropriate.
 - m. The benefits of smoking cessation.
2. Provide client/family with appropriate written materials that support and reinforce teaching. Document what specific written materials were discussed and given to the client/family.

Discharge Planning

1. Plan client discharge needs when a client who is at risk for, or currently experiencing pressure injuries or skin breakdown, is being transferred to another unit e.g., from the PACU to a surgical unit, or transitioning to or from another care setting - acute care, community care, or residential care. Ensure the receiving unit or facility is provided with a care plan that outlines the current client skin/wound care plan including strategies for reducing risk status and preventing pressure injuries and skin breakdown.
2. Advance notice should be given when transferring clients who need specialized pressure redistribution equipment to ensure it is in place at the time of transfer.
3. Plan the discharge planning process; if discharge is anticipated, processes should be started during the initial client encounter and should support timely discharge and optimal client independence.
4. Collaborate with OT/PT for equipment/surface planning prior to client transfer.
5. Communicate current Braden Scale or Braden Q Scale risk level and head-to-toe skin assessment findings to receiving care setting.

Client Clinical Outcomes

The intended client clinical outcomes are the goals of the care plan developed in collaboration with the interprofessional team, the client and family.

1. Intended
 - a. The client's skin remains intact.
 - b. There is early recognition of the risk of developing a pressure injury, use of the Braden Risk Assessment.
 - c. Interventions are implemented to prevent or limit skin breakdown.
 - d. If a pressure injury occurs, appropriate strategies are implemented to promote wound healing.
 - e. If a pressure injury occurs, strategies are in place to promote wound healing.
 - f. If a pressure injury occurs, the safety event is reported as per health authority/agency guidelines (BC Patient Safety Learning System).
2. Unintended
 - a. The client develops a pressure injury, Deep Tissue Injury, Medical Device Related Pressure Injury, or Mucosal Membrane Pressure Injury.
 - b. There was no early recognition of the risk of developing a pressure injury.
 - c. Interventions were not implemented to prevent or limit skin breakdown.
 - d. A pressure injury occurred, and appropriate strategies were not implemented to promote wound healing.
 - e. If a pressure injury occurs, the safety event is not reported as per health authority/agency guidelines (BC Patient Safety Learning System).

Documentation

1. Document initial and ongoing Braden Scale or Braden Q Scale assessment score and Head-to-Toe skin assessment, BRAIFS or BRAIFS-Q, care plan, client clinical outcomes, and care plan revisions as per agency policy.
2. Document client/family education and written materials discussed (e.g., prevention strategies).
3. If the client develops a pressure injury, deep tissue injury, medical device-related pressure injury, or mucosal membrane pressure injury, report the 'safety event' as per health authority/agency policy.

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Document Creation/Review

This guideline is based on the best information available at the time of its Provincial First Read and relies on evidence, expert consensus and avoids opinion-based statements where possible.

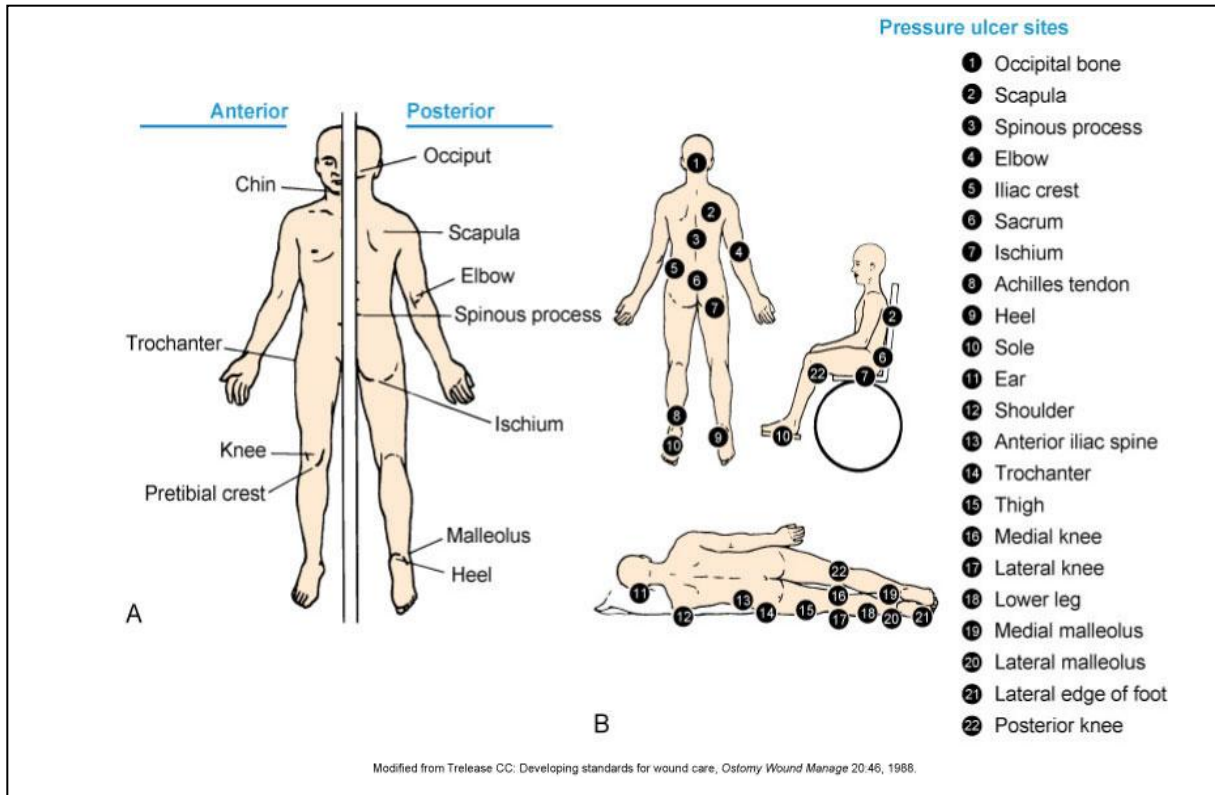
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Appendix A: Head-To-Toe Skin Assessment Body Chart

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Assess all pressure points



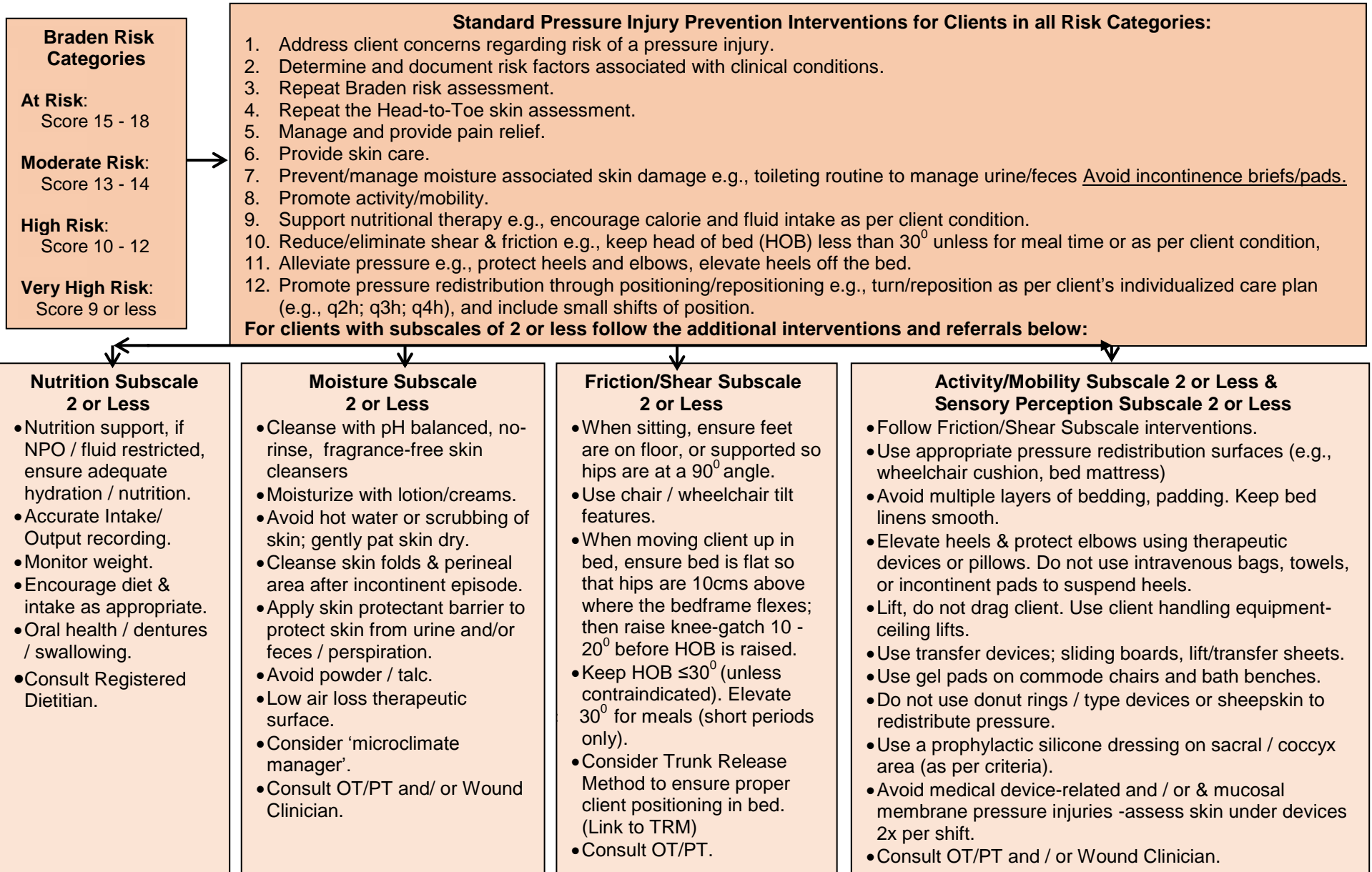
Assess the skin beneath any medical device (tubes, splints, etc)

&

Any significant skin folds

Appendix B: Braden Scale Intervention Algorithm – Adult

For those clients at risk; based on the overall Braden Scale risk assessment score & those Braden subscales which score 3 or less, use the interventions below to develop an individualized client care plan.



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