Occupational Therapy Skin Care Guideline

Best Practice for the Prevention and Treatment of Pressure Ulcers

Created by the Occupational Therapists in
Vancouver Coastal Health and Providence Health Care

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This guideline has benefited from the contributions of many occupational therapists.

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1.0 PURPOSE AND SCOPE

The development of a pressure ulcer significantly impacts the individual's ability to participate in activities of daily living (ADL). The occupational therapist's expertise can be used to identify causative factor(s) to skin breakdown, and to make recommendation(s) that protect the skin or promote wound healing while promoting participation in meaningful occupation.

The Occupational Therapy Skin Care Guideline was developed over several years (2005-2007) with the intention of:

- Supporting occupational therapy practice through the continuum of care including acute; rehabilitation, residential and community services;
- Providing evidence-based recommendations to direct occupational therapy practice;
- Providing tools and resources to facilitate clinical reasoning;
- Integrating recommendations into broader inter-professional practice.

An inter-professional team provides best practice for the prevention and treatment of pressure ulcers. As such, some aspects of the Occupational Therapy Skin Care Guideline may be completed by other disciplines depending on the individual practice environment. The interventions discussed focus on the occupational therapy contribution. The guideline includes a schematic summarizing the flow of care followed by evidenced-based recommendations applied to occupational therapy practice across the continuum of care. Furthermore, explanations of terms and concepts used throughout the Occupational Therapy Skin Care Guideline are included in Appendix 1 – Glossary of Terms.

In order to bring equal emphasis to the prevention of skin breakdown, it was elected to refer to a skin care guideline rather than a wound care guideline.

Please note: the Occupational Therapy Skin Care Guideline is not intended for venous leg ulcers, burns or arterial wounds.

2.0 LEVELS OF EVIDENCE

The Occupational Therapy Skin Care Guideline has been developed using:

- Existing nursing guidelines (see Appendix 9 – Practice Guideline References);
- Research evidence (see Appendix 10 – Search Strategies and Appendix 11 – Bibliography);
- Consensus from occupational therapists within Vancouver Coastal Health (VCH) and Providence Health Care (PHC) with expertise in pressure ulcer prevention and treatment where gaps in the current research evidence exist.

The table on the next page reflects the strength of evidence for specific recommendations within the Registered Nurses Association of Ontario (RNAO) guidelines. These are used to provide a summary of available evidence. In order to improve the readability and flow of this document, levels of evidence for individual recommendations in the Occupational Therapy Skin Care Guideline are not listed. Additional information is included in Appendix 2 – Grading Levels of Evidence.

TABLE 1: LEVELS OF EVIDENCE FOR INTERDISCIPLINARY PRACTICE RECOMMENDATIONS

Quick Reference Guide for the Treatment and Prevention of Pressure Ulcers

	Recommendations	RNAO Guidelines		Overall
		Prevention[a]	Management[a]	Level of Evidence
	Identify and Treat the Cause			
1	Complete a patient history and a targeted physical examination to determine general health and risk factors that may lead to pressure ulcer formation or that may affect healing of existing ulcers.	1.1, 1.2(IV)	1, 12, 21(C)	IV
2	Assess and modify situations where pressure may be increased.	3.1(IV), 3.5(Ia), 3.6(Ia), 3.7(IV), 3.8(IV)	11(C), 13(A), 14(B), 15(B), 16(B), 17(C), 18(C)	IV
3	Maximize nutritional status.	3.11(IV, Ib)	7(B), 8(C)	IV
4	Manage moisture and incontinence.	3.9(IV), 3.10(IV)	34(B)	IV
5	Maximize activity and mobility, reducing or eliminating friction and shear.	1.3(IV), 3.2(IV), 3.7(IV), 3.12(IV)		IV
	Address Patient-centred Concerns			
6	Assess and control pain.	3.3a(IV), 3.3b(IV), 3.3c(IV)	9(C), 10(B)	IV
7	Assess and assist with psychosocial needs.		2, 3	IV
	Provide Local Wound Care			
8	Stage, assess and treat the wound. Provide an optimal wound environment consistent with the principles of *Preparing the wound bed*.	1.4a(IV), 1.5(IV), 2.1(IV)	4(C), 5(C), 6(C), 19(C), 20(C), 22(C), 23(C), 24(B), 25(C), 26(B), 27(C), 28(C), 29(B), 30(A), 31(B/C), 32(A), 33(C), 34(B), 37(A), 38(B), 39(C), 40(A), 41(A), 42(C), 43(C), 44(B)	III
9	Introduce adjunctive modalities or biologically active dressings where appropriate.		35(A), 36(A/B/C)	Ia
10	Consider surgical intervention for deep non-healing ulcers (Stage III and Stage IV).		45	IV
	Provide Organizational Support			
11	Develop an interdisciplinary team specific to the needs of the patient.		57	IV
12	Educate patients, caregivers, and health-care providers on the prevention and treatment of pressure ulcers.	5.1(IV), 5.2(III) 6.2(IV)	48(C), 49(C), 50(C), 519(C), 52(C)	IV

Source: Keast, DH et al. (2006). Best Practice Recommendations for the prevention and treatment of pressure ulcers: Update 2006. *Wound Care Canada*, 4 (1), pp 31-43. Copied and used with permission publisher.

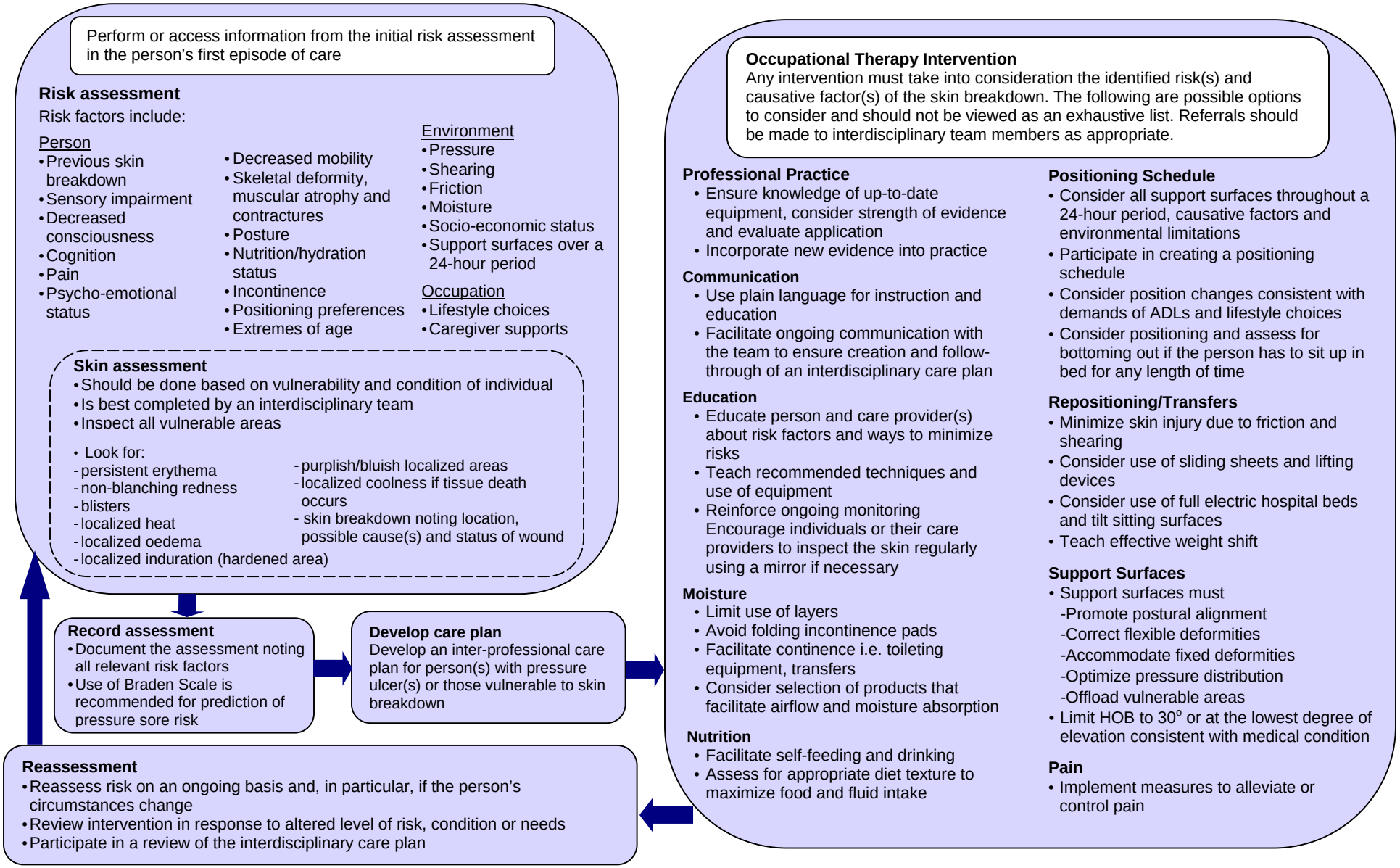
Registered Nurses Association of Ontario (RNAO). (2005). Risk assessment and prevention of pressure ulcers. Toronto ON. http://www.rnao.org/Page.asp?PageID=924&ContentID=816

3.0 SCHEMATIC OF BEST PRACTICE FOR THE PREVENTION AND TREATMENT OF PRESSURE ULCERS

The Schematic of Best Practice for the Prevention and Treatment of Pressure Ulcers included on the next page is designed to provide an overview of the process for assessment and intervention for occupational therapists. It emphasizes inter-professional responsibilities for risk assessment and skin assessment, and focuses on occupational therapy's contributions to the inter-professional care plan. The headings in the schematic are used throughout the Occupational Therapy Skin Care Guideline to provide more in-depth information.

DIAGRAM 1: SCHEMATIC OF BEST PRACTICE FOR THE PREVENTION AND TREATMENT OF PRESSURE ULCERS

Holistic assessment, management and intervention are the responsibility of the inter-professional team



4.0 BEST PRACTICE RECOMMENDATIONS FOR OCCUPATIONAL THERAPY

The best practice guidelines in this section follow the flow of practice shown in Diagram 1: Schematic of Best Practice for the Prevention and Treatment of Pressure Ulcers on the previous page. Tools and resources are included in the handbook under the headings shown in Diagram 1 and are intended to better enable occupational therapists to incorporate the recommendations into their own practice.

The role of the occupational therapist will differ depending on the clinical practice setting. Each practice area should develop a clear understanding of interdisciplinary roles for skin assessment, management and intervention.

Holistic assessment, management and intervention are the responsibility of the inter-professional team

4.1 PROFESSIONAL PRACTICE

Occupational therapists are responsible for ensuring that they are knowledgeable of the Occupational Therapy Skin Care Guideline and evaluating its application in clinical practice. They should consider the strength of new evidence before incorporating it into practice.

Knowledge of the following areas should be included:

- Etiology and risk factors predisposing to pressure ulcer development;
- Use of risk assessment tools, such as the Braden Scale for Predicting Pressure Sore Risk. Categories of the risk assessment should also be utilized to identify specific risks and ensure effective care planning;
- Skin assessment;
- Staging of pressure ulcers;
- Selection and/or use of support surfaces and other equipment;
- Development and implementation of an individualized skin care plan;
- Demonstration of positioning/transferring techniques to decrease risk of tissue breakdown;
- Instruction on accurate documentation of pertinent data;
- Roles and responsibilities of team members in relation to pressure ulcer risk assessment and prevention.

4.1.1 VCH/PHC Recommended Courses

The following are VCH/PHC courses recommended for occupational therapists:

Course Title:	**Introduction to Basic Wound Management**
Description:	This session provides an overview of the anatomy and physiology of the skin, phases of wound healing, factors affecting healing, wound assessment, types of wounds, wound products and treatment.

Course Title:	**Advanced Wound Management: Pressure**
Description:	This session covers the assessment of the four types of pressure, sources of pressure, pressure reduction versus pressure relief, anatomy and physiology, and management of pressure wounds. Prerequisites: Attendance at the Wound Management Introduction session. Minimum three months experience in the community.

4.1.2 Recommended External Courses

The following are courses offered by providers outside of VCH/PHC:

- Canadian Association of Wound Care, including S-Series courses and related pre-readings
  - http://www.cawc.net
- The Basic Principles of Wound Healing
  - http://www.cawc.net/open/conference/best-practice-series/Wound-Healing.pdf
- Best Practice Recommendations for the Prevention and Treatment of Pressure Ulcers: Update 2006 (PDF)
  - http://www.cawc.net/open/wcc/4-1/vol4no1-BP-PU.pdf

4.2 RISK ASSESSMENT

Occupational therapists should perform or access information from the initial risk assessment in the person's first episode of care. They should also perform a risk assessment on entry to a health care setting, and repeat on a regularly scheduled basis or when there is a significant change in the individual's condition.

Acute care:	Perform initial assessment at admission and reassess at least every 48 hours or whenever the patient's condition changes.
Long-term care:	Perform initial assessment at admission. Reassess weekly for the first four weeks, then quarterly after that, and whenever the resident's condition changes.
Home-health care:	Perform initial assessment at admission and, when there are risk factors, reassess every visit.

Risk assessment tools such as the Braden Scale are useful as an aid to structure assessment and documentation. The literature stresses the importance of using risk assessment tools and scales as an adjunct to, but not a replacement for, clinical judgment.

4.2.1 Braden Scale

The Braden Scale predicts the risk of pressure sores, but does not predict whether or not a client will develop a pressure sore. Research using the Braden Scale for Predicting Pressure Sore Risk has demonstrated reliability and validity in multiple clinical settings. Predictive validity of cut-off scores varies across different populations:

- 16 for acute care settings
- 18 for nursing home residents
- 19 for home health patients

When the frequency of monitoring is low, the risk will likely increase.

However, as with most screening tools, the Braden Scale cannot stand alone in predicting pressure ulcers in individual patients. Regular skin assessment for early signs of injury is an essential adjunct to risk assessment. See Appendix 3 – Braden Pressure Ulcer Risk Assessment for the Braden Scale tool and guidelines.

4.2.2 Risk Factors

Particular attention should be paid to vulnerable areas, especially over bony prominences. When skin breakdown is present, identify cause(s) – for example, bed versus chair acquired wound.

Clients who are restricted to bed and/or chair, or those experiencing surgical intervention, should be assessed for skin breakdown due to pressure, friction and shear in all positions and during lifting, turning and repositioning.

Assessment of mobility should include all aspects of independent movement including walking, ability to reposition (for example in bed or a chair), or transfer (for example from bed to chair).

Person
- Previous skin breakdown
- Sensory impairment
- Decreased consciousness
- Cognition
- Pain
- Psycho-emotional status
- Decreased mobility
- Deformity, muscular atrophy and contractures
- Posture
- Nutrition/hydration status
- Incontinence
- Positioning preferences
- Extremes of age

Environment
- Pressure
- Shearing
- Friction
- Moisture
- Socio-economic status
- Support surfaces during 24-hour period

Occupation
- Lifestyle choices
- Caregiver supports

4.2.3 Skin Assessment

The skin assessment should be done based on the vulnerability and condition of the individual. It is best completed by an interdisciplinary team. During the assessment, all vulnerable areas should be inspected. Look for:

- Persistent erythema
- Non-blanching redness
- Purplish/bluish localized areas (Note: if skin has dark pigmentation – black or brown skin tones – then redness or purplish/bluish colours will be difficult to identify.)
- Blisters
- Localized heat
- Localized oedema
- Localized induration (hardened area)
- Localized coolness if tissue death occurs
- Skin breakdown noting location, possible cause(s) and status of wound
- Use indicators of wound staging and wound healing
- Use assessment tools available
  Pixalere: (requires training and password) https://Pixalere.com/vcha
  Pixalere offers health care professionals online images of a client's pressure ulcers.
- Use VCH Interdisciplinary Decision Grid (refer to "description column"):
  http://policynet.vanhosp.bc.ca/Docs/S-135-DecisionGrid.pdf
  Refer to Appendix 4 – Skin Care Risk Assessment Form Guidelines and Template.

4.3 RECORD ASSESSMENT

Occupational therapists should record and document the assessment of risk, noting all relevant factors. All data should be documented at the time of assessment and reassessment. Please refer to Appendix 4 – Skin Care Risk Assessment Form Guidelines and Template.

4.4 DEVELOP A CARE PLAN

An individualized plan of care is based on assessment data, identified risk factors and the client's goals. The plan is developed in collaboration with the client, significant others and health care professionals.

The goals of treatment may change (through the continuum of prevention, treatment and palliation) based on ongoing assessment. A list of care planning considerations is provided in Appendix 5 – Care Planning Considerations.

4.5 OCCUPATIONAL THERAPY INTERVENTION

Any intervention must take into consideration the identified risk(s) and causative factor(s) of the skin breakdown. The following are possible options to consider and should not be viewed as an exhaustive list. Referrals should be made to interdisciplinary team members as appropriate.

Interventions must be evaluated for their effectiveness in preventing and treating pressure ulcers through such mechanisms as ongoing client monitoring and identifying client/equipment variables that may lead to best skin care outcomes. Quality assurance and audits may also be used to evaluate effectiveness of interventions.

4.5.1 Positioning Schedule

Occupational therapists should consider all support surfaces throughout the 24-hour period, causative factors and environmental limitations. They should participate in creating a 24-hour schedule for persons vulnerable to skin breakdown or with existing pressure ulcers.

When developing the schedule, changes consistent with activities of daily living (ADL) routines and lifestyle choices should be considered, as well as the acceptability and needs of the person and care provider.

In bed, the person should be turned at least every two or four hours on a pressure-redistributing mattress, or at least every two hours on a nonpressure-redistributing mattress. In chair, the person should be repositioned every 15 minutes if the client is independent with weight shifting or every hour if assistance is required.

For bed-acquired pressure ulcers, the time spent in bed (weight bearing on that skin surface) should be minimized. For chair-acquired pressure ulcers, the time spent sitting on the ulcer should be minimized.

4.5.2 Repositioning Transfers

Mobilizing, positioning and repositioning interventions should be determined by: general health status, location of ulcer, general skin assessment, comfort, and the needs of the persons and care provider(s).

Occupational therapists should:

- Maximize the person's preferred activities and mobility;
- Identify appropriate methods for repositioning to minimize skin injury due to friction and shearing;
- Use devices to enable independent or assisted positioning and transfers (e.g. sliding sheets, transfer board, bedrails).

In order to minimize shearing in a high Fowler's position in bed, clients should be moved up towards the head of the bed first, have their foot/knee section raised next and, lastly, the head of the bed should be elevated.

The use of mechanical lifting devices should be used to assist clients during transfer and position changes.

Equipment Considerations: Friction

Friction is the force that resists motion between two surfaces that are in contact with one another. Friction enables clients to remain seated or lying without risk of moving.

When there is a higher degree of friction, there is a higher tendency of an object not to move. Preventing movement around high-risk areas can lead to skin breakdown by limiting offloading and weight shifting.

Additionally, friction and shear go hand in hand. Higher coefficients of friction have potential to create high shear, exposing at-risk areas to skin breakdown.

How to manage friction
Friction is minimized by reducing the coefficient of friction (resistance) between the two surfaces in contact. Often this is accomplished by examining cover construction, materials used in support surface construction, and their interaction between the body and any additional layers.

Consider the cover, the support surface materials, additional layers and their interaction with each other and the person.

Equipment Considerations: Shear

Shear is a mechanical force that moves the overlying skin and soft tissue in an opposite direction to the underlying bony structures. This can result in breakdown of skin from the inside out.

A common example of shear strain occurs during raising/lowering of the head of the hospital bed. In this example, skin overlying the trunk and pelvis "sticks" to the mattress as deeper tissues and structures (e.g. spine and pelvic girdle) move in the opposite direction. In this scenario, it is common to see skin breakdown over the coccyx and sacrum.

A wound caused by shear forces can appear irregular or elongated in shape.

How to minimize shear
Shear is minimized by enabling skin and body structures to move in the same plane.

4.5.3 Support Surfaces

The use of full electric hospital beds and tilt-in-space sitting surfaces should be considered so that the person and caregiver can reposition for pressure redistribution and comfort. Reclining chairs and reclining wheelchairs increase the risk of friction and shearing, and so should be avoided.

For weight shifting in chair or wheelchair, unweighting using arms may be inadequate. Forward flexion or side-to-side distribution should be considered instead if balance is sufficient.

With regards to support surfaces equipment, current research rarely identifies specific makes or models.

Occupational therapists are advised not to use donut-type devices or products that concentrate pressure on another area.

Pressure mapping or tissue oxygenation (TcPO2) measurement using a radiometer electrode may be useful tools to determine if adequate pressure redistribution is achieved.

Clinical reasoning must be factored into the decision-making.

Equipment Considerations: Pressure

In terms of skin care, "pressure" refers to the force of gravity on the parts of a client's body in contact with a surface area. When a client remains in the same position for a long time, the constant pressure against the skin reduces the blood supply to that tissue area. Due to a lack of oxygen and nutrients, this can lead to cell death, tissue damage and, ultimately, wound development. A client is most likely to develop a wound at bony prominences where there is less soft tissue between a client's bony structures and the surface supporting them. A wound caused by direct pressure is usually round in shape with defined edges.

How to minimize pressure
In order to minimize pressure to a vulnerable skin area, use one of the following strategies:

1) Increasing the total support surface area in contact with the client's skin. This can be accomplished either through the principles of improved immersion and/or envelopment.
2) Completely removing the contact between the vulnerable skin area and the support surface (e.g. offloading and force isolation).
3) Reducing the contact between a vulnerable skin area and the support surface by shifting this contact pressure to other areas of a client's body.

Support surfaces must:

- Promote postural alignment
- Correct flexible deformities
- Accommodate fixed deformities
- Optimize pressure redistribution
- Offload vulnerable areas

Choose surfaces that:

- Allow immersion without resistance
- Conform to bony prominences
- Do not have significant memory
- Do not "bottom out"
- Relieve shear caused by person's movement
- Prevent skin maceration
- Maximize comfort

Consider the effect on transfers and mobility when selecting the support surfaces:

- Transfer technique
- Stability of the surface
- Surface to floor height

The skin should be closely observed for deterioration as ulcers can worsen within 24 hours.

Equipment Considerations: Functional Demands

Equipment selected must:

1) Promote maximum participation in the client's activities; and
2) Meet the client's requirements for use.

Skin integrity interventions and functional considerations are often not congruent, and striking a balance between the two is often a challenge. The therapist's role is to inform the client regarding available equipment options and assist them to make educated decisions around equipment provision.

How to manage functional demands
Prospective equipment needs to be evaluated in terms of its impact on a client's functional activities and routines. Examples include:

- Bed mobility
- Transfers
- Toileting
- Bathing
- Community mobility

To do so, the following process is recommended:

1) Identify all activities and routines that a client needs to perform; and
2) Identify the impact of prospective equipment on these activities and routines, as well as current and potential skin integrity issues.

Additionally, client requirements for use that need to be considered include:

- Effectiveness
- Affordability
- Operability
- Dependability
- Portability
- Compatibility
- Flexibility
- Ease of maintenance
- Securability
- Learnability
- Personal acceptability
- Physical comfort
- Supplier repairability
- Physical security
- Consumer repairability
- Ease of assembly surface (e.g. offloading and force isolation)

Positioning devices should be used, e.g. pillows or foam wedges, to avoid contact between bony prominences. Also, devices to totally relieve pressure on the heels and bony prominences of the feet should be used. A 30^{o} turn to either side is recommended to avoid positioning directly on the trochanter.

4.5.3.1. Bed

Shearing forces can be reduced by maintaining the head of the bed at the lowest elevation consistent with medical conditions and restrictions. A 30^{o} elevation or lower is recommended, but accommodate ADLs. For example, facilitate eating while sitting upright in bed.

All vulnerable persons should receive, as a minimum provision, a high specification foam mattress.

Please note that pressure redistribution support surfaces do not eliminate the need for a turning schedule.

4.5.3.2. Decision Trees

Three decision trees have been developed to assist occupational therapists in selecting equipment to address skin care needs. They address common interventions for skin breakdown. These include: the Mattress and Overlay Support Surface Decision Tree (Appendix 6), the Heel Protection Decision Tree (Appendix 7) and the Seating Decision Trees (Appendix 8). For other body parts at risk, such as occiput, ears and elbows, the same principles of pressure redistribution and shear reduction apply.

The decision trees do not refer to specific products. The intent is to generate equipment descriptions based on identified parameters. These allow the occupational therapists to explore the broad range of products available to best fit the person's level of risk.

To better understand what equipment matches the product parameters, it is suggested that the occupational therapists engage in a dialogue with a medical equipment vendor, view manufacturer's websites and critically analyze products available.

The Seating Decision Tree is comprised of three client profiles with low, moderate or high risk for skin breakdown. Based on the information collected in assessment, the profiles are intended to develop a clinical picture of an individual and to guide intervention strategies.

Some useful websites for wheelchair and seating equipment include:

- Seating Services product database
  http://www.assistive-technology.ca/ss.html
- Wheelchair Net
  http://www.wheelchairnet.org/
- Wheelchair cushion differences
  http://www.spinlife.com/spintips/details/k/Wheelchair-Cushion-Differences/a/107/c/89
- Sunnyhill Seating and Mobility Product Links
  http://www.seatingandmobility.ca/Equipment.aspx

For all persons vulnerable for skin breakdown or who have skin breakdown refer to Appendix 6 – Mattress and Overlay Support Surface Decision Tree and Appendix 7 – Heel Protection Decision Tree.

4.5.3.3. Seating

Postural alignment, distribution of weight, balance, stability, support of feet and pressure redistribution should all be considered when positioning individuals in chairs or wheelchairs.

Pressure-reducing devices for seating surfaces should be used – egg crate or basic foam is insufficient.

For all persons vulnerable for skin breakdown or who have skin breakdown, refer to the Seating Decision Trees in Appendix 8.

Equipment Considerations: Postural Needs

Positioning and posture impact tissue loading. The goal of positioning interventions is to provide sufficient external support to restore normal posture without restricting function and to maximize pressure distribution to prevent tissue trauma.

How to manage postural needs
The seating and positioning assessment is a complex process that may include:

- Pre-mat information gathering
- Assessment in wheelchair
- Mat assessment
- Anatomic measurements
- Simulation with equipment
- Development of targeted outcomes
- Fitting, training/education and follow-up

It is beyond the scope of this document to fully explain the seating and positioning process, and the reader is encourage to pursue additional resources and professional development opportunities to increase their knowledge on this topic.

Even pressure distribution over weight-bearing surfaces is especially important for clients who have increased risk of pressure problems. Individuals who fall into this category may demonstrate one or more of the following characteristics:

- Inability to shift weight independently
- Sensory impairment
- Emaciation
- Asymmetrical body alignment (e.g. pelvic obliquity and hip dislocation)

For these clients, seating and positioning interventions can often be categorized into three general aims. The first aim is prevention of abnormal postures, orthopaedic deformities, and/or pressure problems. This is often the focus in the first stages of treatment. The second aim is correction of abnormal postures, functional orthopaedic deformities and healing/correction of causes of pressure problems. The third aim is accommodation of abnormal postures and orthopaedic deformities, which are usually fixed.

4.5.4 Pain

Measures to alleviate or control pain should be implemented.

Occupational therapists should consider the impact of pain. Pain may decrease mobility and activity. Pain control measures may include combinations of: effective medication, therapeutic positioning, support surfaces and other non-pharmacological interventions.

The level of pain should be monitored on an ongoing basis, using a valid pain assessment tool. Pain assessment should include: whether the individual is experiencing pain, causes of pain, level of pain (using an appropriate tool) and, location and management interventions.

Occupational therapists should consider the client's risk of breakdown related to the loss of protective sensation or the ability to perceive pain and to respond in an effective manner (e.g. impact of analgesics, sedatives, neuropathy).

4.5.5 Moisture

The use of layers between the person and the pressure redistribution support surfaces should be limited as it reduces immersion into the surface.

The folding of incontinence pads should be avoided. Thin, disposable pads may be more conforming than cotton pads. Furthermore, continence should be facilitated, e.g. toileting equipment, transfers.

Occupational therapists should consider selection of products that facilitate airflow and moisture absorption. Moist skin (e.g. from incontinence and prolonged bathing) loses its protective oils and is more likely to abrade and blister.

Equipment Considerations: Moisture

Excessive moisture on a client's skin surfaces can also contribute to the development of wounds. Over time, this excess moisture may cause the bonds between epithelial cells to weaken, resulting in the maceration (or softening) of the epidermis. Perspiration, bowel and bladder incontinence can all be sources of excessive moisture on a client's skin.

Wound exudate often contains not only water but also cellular debris and enzymes. This cocktail can be corrosive to the intact skin surrounding the wound. Chronic urinary incontinence provides an excellent environment for the growth of bacteria, resulting in the production of ammonia. Ammonia increases the pH of the skin, reducing the protective capacity of a thin, oily film – the acid mantle – as a bacterial barrier. This barrier sits on the outermost layer of our skin, providing further opportunity for chemical irritation by urine, feces and excess moisture to cause skin breakdown. In terms of fecal incontinence, digestive enzymes are normally deactivated when feces passes through the gastrointestinal tract. When feces mix with urine on the skin, the elevated pH levels (as described previously) reactivate the digestive enzymes, further increasing the risk of skin breakdown and local bacterial infection.

How to manage moisture
Equipment can help minimize excess moisture on a client's skin by:

1) Allowing moisture to drain away from the skin surface;
2) Absorbing moisture away from the skin surface; and
3) Drying moisture on the skin surface.

Equipment Considerations: Heat

Heat is generated internally (via metabolism and activity) and absorbed externally (via sun and other sources such as heating blankets).

Higher temperatures increase metabolic demands and oxygen consumption. When combined with sustained pressure, high temperatures can have the net result of damaging tissue through ischemia and rapid reperfusion (when pressure is removed).

Also, elevated temperatures can lead to diaphoresis (or excessive sweating), as well as increased friction between sweaty (and somewhat macerated) skin areas and support surfaces.

How to minimize heat
Heat can be reduced in the following methods:

Conduction: Transfer of heat from a warmer object to a cooler object when the two objects are in direct contact with each other (i.e. direct cooling).

Convection: Heat loss that occurs in response to the movement of a fluid or gas. For example, heat can be carried away from a skin area via circulation of cooler air over that skin area.

4.5.6 Nutrition

Self-feeding and drinking should be facilitated for optimal intake. Occupational therapists should also assess for appropriate diet texture to maximize safe food and fluid intake.

4.5.7 Communication

Occupational therapists should facilitate ongoing communication with the team to ensure creation and follow through of an interdisciplinary care plan.

When communicating, plain language for instruction and education should be used. Written materials for the person and caregivers should be at a grade four level of understanding.

4.5.8 Education

Occupational therapists should educate the person and care provider(s) about the causes and risk factors for pressure ulcer development and ways to minimize risks. This would include teaching recommended techniques and the use of equipment. Written information about maintenance and servicing of equipment is required for the person and their care provider(s).

Ongoing monitoring needs to be reinforced. Occupational therapists should encourage individuals or their care provider(s) to inspect the skin regularly using a mirror if necessary.

The person and care provider(s) should be educated about the fact that after the wound heals, the area does not heal to its previous strength, i.e. once a pressure sore, always a pressure sore. It is prone to re-injury and a prevention plan must be created.

Client education resources include:

- VCH: Client information pamphlet entitled “Preventing Pressure Ulcers” (Catalogue # FO.650.P928) http://vch.eduhealth.ca/PDFs/FO/FO.650.P928.pdf
- Client information pamphlet entitled “Treating Pressure Sores” (Catalogue # FO.650.T711) http://vch.eduhealth.ca/PDFs/FO/FO.650.T711.pdf
- Client information pamphlet entitled “Wound Care Program for People with Spinal Cord Injuries” (Catalogue # GN.890.P212) http://vch.eduhealth.ca/PDFs/GN/GN.890.P212.pdf
- RNAO: Taking the Pressure Off: Preventing Pressure Ulcers http://www.rnao.org/Storage/12/641_Press_Ulcer_Fact_Sheet.pdf

4.6 REASSESSMENT

Occupational therapists should reassess risk on an ongoing basis and, in particular, if the person’s circumstances change. Intervention should be reviewed in response to an altered level of risk, condition or needs. Occupational therapists should also participate in a review of the interdisciplinary care plan.

Monitoring/Follow-up

Monitoring is the action of observing a situation for any changes, positive or negative, which may occur over time. The greater the risk for skin breakdown, the severity of the wound and/or the complexity of intervention(s), the more monitoring will be required.

How is the occupational therapist involved in monitoring?
The occupational therapist has active involvement in the implementation phase. Catching and solving problems early can prevent serious setbacks.

Once the intervention is seen to be effective, there is greater reliance on the person and/or primary care provider(s) to continue monitoring. The occupational therapist must ensure that the person and care provider(s) clearly understand expectations.

Who will blow the whistle if the situation shows no improvement or starts to deteriorate?

When identifying team member(s) and/or care provider(s) responsible for monitoring, consider the following:

- The individual’s level of risk and the complexity of the intervention.
- The experience and level of comfort of the person and care provider(s) to carry out the care plan.
- The success of the intervention and the care plan implemented.

A monitoring plan should be made explicit in the care plan and responsibilities assigned for each component. It should be reviewed to reflect changes along the continuum of provision of care to a person in order to prevent skin breakdown and/or to promote wound healing.

When providing a new piece of equipment, the occupational therapist is responsible for ensuring the appropriate selection and setup. This may involve a daily check to troubleshoot and demonstrate the use of equipment.

APPENDIX 1 – GLOSSARY OF TERMS

Knowledge of terminology is essential for occupational therapists to effectively communicate with team members. The following tables provide explanations of terms and concepts used throughout the Occupational Therapy Skin Care Guideline.

Pressure Ulcer Definitions and Stages defines the extent of damage to the skin and underlying tissues.

The first two columns of the Interdisciplinary Decision Grid for Topical Treatment of Wounds illustrate wound healing. This information can be used to evaluate the effectiveness of an intervention.

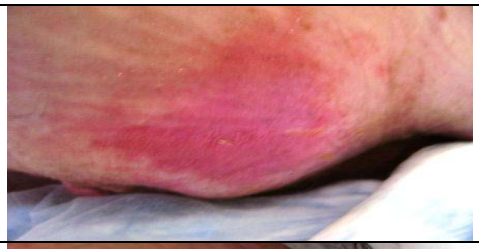
The Physical Concepts Related to Support Surfaces, Categories of Support Surfaces and Features of Support Surfaces documents were developed by the National Pressure Ulcer Advisory Panel (NPUAP) to provide a common understanding of terms that refer to basic physical concepts, design considerations and product characteristics.

Please note: In January 2007, NPUAP identified the term “pressure redistribution” to supersede the terms “pressure reduction” and “pressure relief.” However, these terms may still be found in the guidelines as they are referenced from earlier sources.

APPENDIX 1A – PRESSURE ULCER DEFINITION AND STAGES

Pressure Ulcer Definition
A pressure ulcer is localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear and/or friction. A number of contributing or confounding factors are also associated with pressure ulcers; the significance of these factors is yet to be elucidated.

Suspected Deep Tissue Injury:
Purple or maroon localized area of discoloured intact skin or blood-filled blister due to damage of underlying soft tissue from pressure and/or shear. The area may be preceded by tissue that is painful, firm, mushy, boggy, warmer or cooler as compared to adjacent tissue.
Further description: Deep tissue injury may be difficult to detect in individuals with dark skin tones. Evolution may include a thin blister over a dark wound bed. The wound may further evolve and become covered by thin eschar. Evolution may be rapid exposing additional layers of tissue even with optimal treatment.

Stage I:		Intact skin with non-blanchable redness of a localized area usually over a bony prominence. Darkly pigmented skin may not have visible blanching; its color may differ from the surrounding area. **Further description:** The area may be painful, firm, soft, warmer or cooler as compared to adjacent tissue. Stage I may be difficult to detect in individuals with dark skin tones. May indicate "at risk" persons (a heralding sign of risk).
Stage II:		Partial thickness loss of dermis presenting as a shallow open ulcer with a red pink wound bed, without slough. May also present as an intact or open/ruptured serum-filled blister. **Further description:** Presents as a shiny or dry shallow ulcer without slough or bruising.* This stage should not be used to describe skin tears, tape burns, perineal dermatitis, maceration or excoriation. *Bruising indicates suspected deep tissue injury
Stage III:		Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunnelling. **Further description:** The depth of a stage III pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and stage III ulcers can be shallow. In contrast, areas of significant adiposity can develop extremely deep stage III pressure ulcers. Bone/tendon is not visible or directly palpable.
Stage IV:		Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often include undermining and tunnelling. **Further description:** The depth of a stage IV pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and these ulcers can be shallow. Stage IV ulcers can extend into muscle and/or supporting structures (e.g., fascia, tendon or joint capsule) making osteomyelitis possible. Exposed bone/tendon is visible or directly palpable.

Unstageable:
Full thickness tissue loss in which the base of the ulcer is covered by slough (yellow, tan, grey, green or brown) and/or eschar (tan, brown or black) in the wound bed.
Further description: Until enough slough and/or eschar is removed to expose the base of the wound, the true depth, and therefore stage, cannot be determined. Stable (dry, adherent, intact without erythema or fluctuance) eschar on the heels serves as "the body's natural (biological) cover" and should not be removed.

Reverse staging does not accurately characterize what is physiologically occurring in the ulcer. The progress of a healing pressure ulcer can only be documented using ulcer characteristics or by improvement in wound characteristics using a validated pressure ulcer healing tool.[3]
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APPENDIX 1B – INTERDISCIPLINARY DECISION GRID FOR TOPICAL TREATMENT OF WOUNDS (EXCLUDING BURNS AND MALIGNANT WOUNDS)

NOTE: THESE GUIDELINES ARE PROVIDED TO ENABLE HEALTH CARE PROFESSIONALS TO INITIATE WOUND TREATMENT IN A UNIFORM MANNER. NORMAL SALINE COMPRESSES ARE NOT CONSIDERED BEST PRACTICE FOR WOUND CARE. THEY MAY BE USED AS AN INTERIM MEASURE UNTIL APPROPRIATE DRESSINGS ARE AVAILABLE.

DESCRIPTION	CLINICAL PRESENTATION	TREATMENT OBJECTIVE	TOPICAL TREATMENT OPTIONS	
			SHALLOW WOUND	CAVITY WOUND
REDDENED AREA ▪ over bony prominence  click here to enlarged picture	• Intact skin • Non or slightly blanchable red area or for darker skin an area of colour change • Induration, warmth Soft tissue swelling	• RELIEVE Pressure/friction and shearing: • **Refer to Prevention of Pressure Ulcer Guidelines** • PROTECT skin from further trauma	• No dressing OR • Transparent film • Monitor area daily for further breakdown	Not applicable
NECROTIC(Eschar) ▪ nil or scant exudate  click here to enlarged picture	• Wound bed covered completely by thick leathery black, brown, yellow, gray (eschar) • Minimal exudate may be present at the wound edges • May have odour • Surrounding skin may be erythematous and indurated	• DEBRIDE eschar • IDENTIFY treat infection if present • ADD moisture **Exception: Do not debride dry black leg ulcers below the knee** • **Refer to Diabetic Neuropathic or Arterial ulcer care guidelines** • **Goal: Keep dry & prevent Infection**	•Hydrogel •Hypertonic saline gel •Hydrocolloid **For arterial or diabetic ulcers paint dry eschar OD with Providine sol. 10% and leave open to air**	•Hydrogel impregnated gauze packing
NECROTIC(Slough) ▪ moderate to large exudate  click here to enlarged picture	•Wound bed covered by stringy, necrotic debris (slough) often yellow, green or gray in colour •Wound has moderate to large amounts of yellow, brown exudate •Usually odourous •May have clinical signs of infection	•DEBRIDE slough •IDENTIFY and treat infection if present •MANAGE exudate •PROTECT from maceration •LIGHTLY fill dead space	•Hydrofiber •Alginate •Hypertonic saline gauze •Antimicrobial dressings (silver, cadexomer iodine) •Foam •Composite dressing	•Hypertonic saline gauze •Alginate •Hydrofiber •Antimicrobial dressings (silver, cadexomer iodine) •Foam cavity
GRANULATION ▪ moderate to large exudate  click here to enlarged picture	•Wound bed is clean with new granulation tissue •Moderate to large amount of exudate yellow or pink •No odour	•MANAGE exudate •PROTECT from infection / trauma •PROTECT from maceration •LIGHTLY fill dead space	•Hydrofiber •Alginate •Foam •Composite dressing	•Hydrofiber •Alginate •Hypertonic saline gauze •Foam cavity
GRANULATION / EPITHILIZATION ▪ scant exudate  click here to enlarged picture	•Wound is pale-pink to beefy red granulation tissue •Pink epithelial tissue at edges •Scant amount of pink / yellow exudate	•MAINTAIN moisture balance •PROTECT from infection/ trauma	•Hydrogel •Hydrocolloid •Composite dressing •Foam	Not applicable
MATURATION ▪ epithiliazed  click here to enlarged picture	•Intact skin •Blanchable red or darker tissue of newly formed scar •No exudate •Maturation process will take six months to two years to complete	•PROTECT skin from trauma •Avoid pressure/friction and shearing	•No dressing OR •Transparent film •Moisturize to enhance skin resilience and integrity	Not applicable

This grid can be found at:
http://vchconnect.vch.ca/policies_manuals/adult_older_adult/wound_care/_docs/section4_topical_treatment/binary_18855.pdf

APPENDIX 1C – PHYSICAL CONCEPTS RELATED TO SUPPORT SURFACES

Term	Definition
FRICTION (FRICTIONAL FORCE)	The resistance to motion in a parallel direction relative to the common boundary of two surfaces.
COEFFICIENT OF FRICTION	A measurement of the amount of friction existing between two surfaces.
ENVELOPMENT	The ability of a support surface to conform, so to fit or mold around irregularities in the body.
FATIGUE	The reduced capacity of a surface or its components to perform as specified. This change may be the result of intended or unintended use and/or prolonged exposure to chemical, thermal, or physical forces.
FORCE	A push-pull vector with magnitude (quantity) and direction (pressure, shear) that is capable of maintaining or altering the position of a body.
IMMERSION	Depth of penetration (sinking) into a support surface.
LIFE EXPECTANCY	The defined period of time during which a product is able to effectively fulfill its designated purpose.
MECHANICAL LOAD	Force distribution acting on a surface.
PRESSURE	The force per unit area exerted perpendicular to the plane of interest.
PRESSURE REDISTRIBUTION	The ability of a support surface to distribute load over the contact areas of the human body. This term replaces prior terminology of pressure reduction and pressure relief surfaces.
PRESSURE REDUCTION	This term is no longer used to describe classes of support surfaces. The term is pressure redistribution; see above.
PRESSURE RELIEF	This term is no longer used to describe classes of support surfaces. The term is pressure redistribution; see above.
SHEAR (SHEAR STRESS)	The force per unit area exerted parallel to the plane of interest.
SHEAR STRAIN	Distortion or deformation of tissue as a result of shear stress.

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Support Surface Standards Initiative
Terms and Definitions
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APPENDIX 1D – CATEGORIES OF SUPPORT SURFACES

Note: Components of any support surface may be used alone or in combination.

Terms	Definition
AIR	A low-density fluid with minimal resistance to flow.
CELL/BLADDER	A means of encapsulating a support medium.
VISCOELASTIC FOAM	A type of porous polymer material that conforms in proportion to the applied weight. The air exists and enters the foam cells slowly, which allows the material to respond slower than a standard elastic foam (memory foam).
ELASTIC FOAM	A type of porous polymer material that conforms in proportion to the applied weight. Air enters and exits the foam cells more rapidly, due to greater density (non-memory).
CLOSED CELL FOAM	A non-permeable structure in which there is a barrier between cells, preventing gases or liquids from passing through the foam.
OPEN CELL FOAM	A permeable structure in which there is no barrier between cells, and gases or liquids can pass through the foam.
GEL	A semisolid system consisting of a network of solid aggregates, colloidal dispersions or polymers, which may exhibit elastic properties (can range from a hard gel to soft gel).
PAD	A cushion-like mass of soft material used for comfort, protection or positioning.
VISCOUS FLUID	A fluid with a relatively high resistance to flow of the fluid.
ELASTOMER	Any material that can be repeatedly stretched to at least twice its original length. Upon release, the stretch will return to approximately its original length.
SOLID	A substance that does not flow perceptibly under stress. Under ordinary conditions retains its size and shape.
WATER	A moderate density fluid with moderate resistance to flow.

National Pressure Ulcer Advisory Panel

Support Surface Standards Initiative
Terms and Definitions
Ver. 01/29/2007

APPENDIX 1E – FEATURES OF SUPPORT SURFACES

A feature is a functional component of a support surface that can be used alone or in combination with other features.

Terms	Definition
AIR FLUIDIZED	A feature of a support surface that provides pressure redistribution via a fluid-like medium created by forcing air through beads as characterized by immersion and envelopment.
ALTERNATING PRESSURE	A feature of a support surface that provides pressure redistribution via cyclic changes in loading and unloading as characterized by frequency, duration, amplitude, and rate of change parameters.
LATERAL ROTATION	A feature of a support surface that provides rotation about a longitudinal axis as characterized by degree of patient turn, duration, and frequency.
LOW AIR LOSS	A feature of a support surface that provides a flow of air to assist in managing the heat and humidity (microclimate) of the skin.
ZONE	A segment with a single pressure redistribution capability.
MULTI-ZONED SURFACE	A surface in which different segments can have different pressure redistribution capabilities.

CATEGORIES OF SUPPORT SURFACES

Terms	Definition
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.
ACTIVE SUPPORT SURFACE	A powered support surface, with the capability to change its load distribution properties, with or without applied load.
INTEGRATED BED SYSTEM	A bed frame and support surface that are combined into a single unit whereby the surface is unable to function separately.
NON-POWERED	Any support surface not requiring or using external sources of energy for operation. (Energy=D/C or A/C)
POWERED	Any support surface requiring or using external sources of energy to operate. (Energy=D/C or A/C)
OVERLAY	An additional support surface designed to be placed directly on top of an existing surface.
MATTRESS	A support surface designed to be placed directly on the existing bed frame.

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APPENDIX 2 – GRADING LEVELS OF EVIDENCE

Oxford Centre for Evidence Based Medicine
(Grading scale for individual articles)

1a: Systematic reviews (with homogeneity) of randomized controlled trials
1b: Individual randomized controlled trials (with narrow confidence interval)
1c: All or none randomized controlled trials
2a: Systematic reviews (with homogeneity) of cohort studies
2b-: Individual cohort study or low quality randomized controlled trials (<80% follow-up / wide confidence interval)
2c: 'Outcomes' Research; ecological studies
3a: Systematic review (with homogeneity) of case-control studies
3b: Individual case-control study
4: Case-series (and poor quality cohort and case-control studies)
5: Expert opinion without explicit critical appraisal, or based on physiology, bench research or 'first principles'

Recommended Grading Scale for Guidelines

A At least one meta-analyses, systematic review, or RCT rated as 1++, and directly applicable to the target population or A systematic review of RCTs or a body of evidence consisting principally of studies rated as 1+, directly applicable to the target population and demonstrating overall consistency of results Evidence drawn from a NICE technology appraisal

B A body of evidence including studies rated as 2++, directly applicable to the target population and demonstrating overall consistency of results or Extrapolated evidence from studies rated as 1++ or 1+

C A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results, or Extrapolated evidence from studies rated as 2++

D Evidence level 3 or 4, or Extrapolated evidence from studies rated as 2+, or Formal consensus D (GPP) A good practice point (GPP) is a recommendation for best practice based on the experience of the Guideline Development Group

APPENDIX 3 – BRADEN PRESSURE ULCER RISK ASSESSMENT

Instructions:

Client Identifier Info

Circle the appropriate # for each risk category
Mark score in column on right side of page for each risk category.
Add scores from each risk category and mark total in space provided.

SENSORY PERCEPTION Ability to respond meaningfully to pressure-related discomfort	**1. COMPLETELY LIMITED:** Unresponsive (does not moan, flinch or grasp) to painful stimuli, due to diminished level of consciousness or sedation OR limited ability to feel pain over most of body surface.	**2. VERY LIMITED:** Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness OR has a sensory impairment which limits the ability to feel pain or discomfort over ½ of body.	**3. SLIGHTLY LIMITED:** Responds to verbal commands, but cannot always communicate discomfort or need to be turned OR Has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.	**4. NO IMPAIRMENT:** Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort.	Score: _____
MOISTURE Degree to which skin is exposed to moisture	**1. CONSTANTLY MOIST:** Skin Is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.	**2. MOIST:** Skin is often, but not always moist. Linen must be changed at least once a shift.	**3. OCCASIONALLY MOIST:** Skin is occasionally moist requiring an extra linen change once a day.	**4. RARELY MOIST:** Skin is usually dry. Linen requires changing only at routine intervals.	Score: _____
ACTIVITY Degree of physical activity	**1. BEDFAST:** Confined to bed. Completely immobile. Does not make even slight changes in body or extremity position without assistance.	**2. CHAIRFAST:** Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair.	**3. WALKS OCCASIONALLY** Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair.	**4. WALKS FREQUENTLY:** Walks outside the room at least twice a day and inside room at least once every 2 hours during waking hours.	Score: _____
MOBILITY Ability to change and control body position	**1. COMPLETELY IMMOBILE:** Does not make even slight changes in body or extremity position without assistance.	**2. VERY LIMITED:** Makes occasional slight changes in body or extremity position, but unable to make frequent or significant changes independently.	**3. SLIGHTLY LIMITED:** Makes frequent though slight changes in body or extremity position independently.	**4. NO LIMITATIONS:** Makes major and frequent changes in position without assistance.	Score: _____
NUTRITION Usual food intake pattern	**1. VERY POOR:** Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement OR is NPO and/or maintained on clear fluids or IV's for more than 5 days.	**2. PROBABLY INADEQUATE:** Rarely eats a complete meal and generally eats only about ½ of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement OR receives less than optimum amount of liquid diet or tube feeding.	**3. ADEQUATE:** Eats over half of most meals. Eats a total of four servings of protein (meat, dairy products) each day. Occasionally will refuse a meal, but will usually take a supplement if offered OR is on tube feeding or TPN regimen, which probably meets most of nutritional needs.	**4. EXCELLENT:** Eats most of every meal. Never refuses a meal. Usually eats a total of four or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.	Score: _____
FRICTION / SHEAR	**1. PROBLEM:** Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity contractures or agitation lead to almost constant friction.	**2. POTENTIAL PROBLEM:** Moves feebly or requires minimum assistance. During a move, skin probably slides to some extent against sheets, chair, restraints or other devices. Maintains relatively good position in chair or bed most of the time, but occasionally slides down.	**3. NO APPARENT PROBLEM** Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair at all times.		Score: _____ _____

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Initials: _____ Date: _____ TOTAL SCORE _____

Braden BI, Bergstrom N. Clinical Utility of the Braden Scale for Predicting Pressure Sore Risk. *Decubitus*. 1989; 2:44-51

AT RISK (15-18)* FREQUENT TURNING MAXIMAL REMOBILIZATION PROTECT HEELS MANAGE MOISTURE, NUTRITION AND FRICTION AND SHEAR PRESSURE-REDUCTION SUPPORT SURFACE IF BED- OR CHAIR-BOUND * If other major risk factors are present *(advanced age, fever, poor dietary intake of protein, diastolic pressure below 60, hemodynamic instability)* advance to next level of risk		**MANAGE MOISTURE** USE COMMERCIAL MOISTURE BARRIER USE ABSORBANT PADS OR DIAPERS THAT WICK & HOLD MOISTURE ADDRESS CAUSE IF POSIBLE OFFER BEDPAN/URINAL AND GLASS OF WATER IN CONJUNCTION WITH TURNING SCHEDULES
MODERATE RISK (13-14)* TURNING SCHEDULE USE FOAM WEDGES FOR 30E LATERAL POSITIONING PRESSURE-REDUCTION SUPPORT SURFACE MAXIMAL REMOBILIZATION PROTECT HEELS MANAGE MOISTURE, NUTRITION AND FRICTION AND SHEAR * If other major risk factors present, advance to next level of risk		**MANAGE NUTRITION** INCREASE PROTEIN INTAKE INCREASE CALORIE INTAKE TO SPARE PROTEINS. SUPPLEMENT WITH MULTI-VITAMIN (SHOULD HAVE VIT A, C & E) ACT QUICKLY TO ALLEVIATE DEFICITS CONSULT DIETITIAN
HIGH RISK (10-12) INCREASE FREQUENCY OF TURNING SUPPLEMENT WITH SMALL SHIFTS PRESSURE REDUCTION SUPPORT SURFACE USE FOAM WEDGES FOR 30E LATERAL POSITIONIING MAXIMAL REMOBILIZATION PROTECT HEELS MANAGE MOISTURE, NUTRITION AND FRICTION AND SHEAR		**MANAGE FRICTION & SHEAR** ELEVATE HOB NO MORE THAN 30E USE TRAPEZE WHEN INDICATED USE LIFT SHEET TO MOVE PATIENT PROTECT ELBOWS & HEELS IF BEING EXPOSED TO FRICTION
VERY HIGH RISK (9 or below) ALL OF THE ABOVE + USE PRESSURE-RELIEVING SURFACE IF PATIENT HAS INTRACTABLE PAIN OR SEVERE PAIN EXACERBATED BY TURNING OR ADDITIONAL RISK FACTORS *low air loss beds do not substitute for turning schedules		**OTHER GENERAL CARE ISSUES** NO MASSAGE OF REDDENED BONY PROMINENCES NO DO-NUT TYPE DEVICES MAINTAIN GOOD HYDRATION AVOID DRYING THE SKIN

© Barbara Braden, 2001

Note: A trapeze should only be used with individuals who can fully clear at risk areas from the surface.

Note: The cut-off score for levels of risk changes depending on the care setting. See page 10. Individual risk factors (e.g. lifestyle choices) influence risk level.

APPENDIX 4 – SKIN CARE RISK ASSESSMENT FORM GUIDELINES AND TEMPLATE

The assessment form can be used as is, or as a template to be used at any site to develop an assessment form that will meet the needs of the individual population and the requirements of the interdisciplinary documentation system. The risk assessment form can be used by therapists to help identify factors contributing to risk of skin breakdown and help the therapist develop intervention strategies for prevention and treatment.

The first column of the form lists risk factors identified in the Occupational Therapy Skin Care Best Practice Guideline.

Use the prompts and the questions in this assessment form guideline to identify the specific factors that place the individual at risk for skin breakdown or contribute to wound development. Document this information in the second column.

The third column is used to identify factors that require occupational therapy intervention. In your setting, this information may be documented in an occupational therapy or interdisciplinary progress note or care plan. Tick yes if OT will intervene or will refer to another discipline for intervention. Tick no if no occupational therapist action is required. Where the care plan is triggered, the interdisciplinary team will need to develop and follow steps to address the associated risk factors, as related to goals of care.

In the fourth column, initial and date when the corresponding risk factor has been assessed.

Previous skin breakdown

- Identify bony prominence(s) involved
- Cause(s) of the wound
- Stage number
- Acute, chronic, recurrent
- Date of occurrence
- Describe healing course
- Surgical intervention
- Management strategies. For example, mattress, bed rest

Current skin breakdown

- Identify bony prominence(s) involved
- Stage number
- Acute, chronic, recurrent
- Date of occurrence
- Healing course
- Cause
- Appearance: Round, even (pressure)
  Elongated, irregular (friction, shear)
  Macerated, mottled, cracks on the skin (moisture, incontinence)
  Skin tear

Sensory impairment

- Sensory impairment? Where?
- Client awareness of impairment
- Does the client compensate during functional activities? For example, uses hand to check for rough surfaces before putting on shoe.
- Does the client/caregiver regularly check the skin visually?

Decreased consciousness
- Decreased level of consciousness
- Pattern of consciousness

Cognition
- Does the client:
  - Understand recommendations
  - Follow and initiate them independently (sequencing, memory, planning, organization)
  - Understand risks and consequences

Pain
- Is the person experiencing pain? Type, location, severity
- Is the pain limiting the person's ability to change or sustain a position?
- Pain management
- How is pain communicated (verbal, grimace withdrawal)?

Psycho-emotional status
- Impact of the person's psycho-emotional status with skin care and wound healing (depression limits intake and activity)

Decreased mobility
- Can the client independently:
  - Change position in bed
  - Change position in sitting
  - Move from one surface to another?
- If assistance is required, is it available and adequate?

Skeletal deformity / Contractures / Posture
- Skin breakdown due to postural deformities or contractures
- Location of the deformity
- Deformity fixed or flexible
- Current deformity management

Muscular atrophy
- Reduced padding on any weight bearing surfaces/bony prominences

Nutrition/hydration status
- Is the client's weight stable?
- Independence - level of assistance needed and available
- Dysphagia
- Awareness of nutrition requirements for health and wound healing
- Resources for meal preparation

Incontinence
- Toileting
  - Independence/assistance required
  - Routine established
  - Equipment/Incontinence product(s) used

Positioning preferences

- What are the client's preferred positions:
  - During the day/night
  - During meals
  - For bathing and toileting
  - For preferred daily activities

Lifestyle choices

- What is the impact of lifestyle choices on skin care? For example, smoking, drinking, activity preferences

Extremes of age

- Is the client elderly or very young?

Pressure

- Identify support surfaces throughout a 24hrs period. For example, mattress, seat cushion, commode, couch, car.
- Are pressure distribution surfaces adequate? Also consider fit of devices – e.g. splints and collars

Shearing and friction

- Potential for shearing and friction? In all positions, position changes and activities. For example, prolonged sitting up in bed, transfer technique

Moisture

- Is excessive moisture present due to:
  - Perspiration
  - Bowel or bladder incontinence?

Socio-economic status

- Socio-economic factors affecting skin care. For example, limited social supports, financial resources, access to education materials, transportation

Braden Scale Score

- Very high risk (9 or below)
- High risk (10-12)
- Moderate risk (13-14)*
- At risk (15-18)*

*If other major risk factors are present, advance to next level of risk. See Appendix 3 re: Braden Scale cut-off points which vary depending on the clinical setting and resources present.

Perform risk assessment on entry to a health care setting and repeat on a regularly scheduled basis or when there is a significant change in the individual's condition.
Acute care: Perform initial assessment at admission and reassess at least every 48 hours or whenever the patient's condition changes.
Long-term care: Perform initial assessment at admission. Reassess weekly for the first 4 weeks, then quarterly after that, and whenever the resident's condition changes.
Home-health care: Perform initial assessment at admission and where there are risk factors, reassess every visit.

APPENDIX 4A – OCCUPATIONAL THERAPY SKIN CARE RISK ASSESSMENT FORM TEMPLATE

Client Identifier Info

Risk factors	Comments	Care Plan Triggered?	Date/ Initials
Previous skin breakdown		□ Yes □ No	
Current skin breakdown		□ Yes □ No	
Sensory impairment		□ Yes □ No	
Decreased consciousness		□ Yes □ No	
Cognition		□ Yes □ No	
Pain		□ Yes □ No	
Psycho-emotional status		□ Yes □ No	
Decreased mobility		□ Yes □ No	
Skeletal deformity / Posture/Contractures		□ Yes □ No	
Muscular atrophy		□ Yes □ No	
Nutrition/hydration status		□ Yes □ No	

Risk factors	Comments	Care Plan Triggered?	Date/ Initials
Incontinence		□ Yes □ No	
Positioning preferences		□ Yes □ No	
Lifestyle choices		□ Yes □ No	
Extremes of age		□ Yes □ No	
Pressure		□ Yes □ No	
Shearing and Friction		□ Yes □ No	
Moisture		□ Yes □ No	
Socio-economic status		□ Yes □ No	
Braden Scale Score	Sensory Perception /4 Moisture /4 Activity /4 Mobility /4 Nutrition /4 Friction/Shear /3 Total Score		

Reassessment Date: _____

Date: _____ Signature: _____

APPENDIX 5 – CARE PLANNING CONSIDERATIONS

Risk factors	Please note: this is NOT an exhaustive list. Refer to complete document.
Previous skin breakdown	• Ensure previous wound areas are protected • Incorporate previous successful strategies into current plan • Educate caregivers and family and ensure they can assist • Note: Areas of compromise remain vulnerable for up to three years after the wound has healed. Tissues in these areas only regain 80% of their full strength.
Sensory impairment	• Teach client to visually check • Teach effective weight shifting • Create a positioning schedule • Provide equipment or teach techniques to compensate for sensory impairment during functional activities • Teach the consequences of skin breakdown
Decreased consciousness	See Appendix 6 – Mattress and Overlay Support Surfaces Decision Tree • Consider an alternate mattress, cushion or overlay with increased pressure relief • Develop a turning schedule • Skin assessment should be completed at least once every 48 hours
Cognition	• Post recommendations for client and caregivers • Ensure adequate assistance/resources • Educate caregivers and family, and ensure they can assist
Pain	• Record and document how the client expresses pain • Record the level of pain, based on a pain assessment scale/tool and re-assess to ensure interventions improve the levels of pain • Educate client regarding self-management of pain • Match activity and position changes to pain tolerance • Liaise with nurse or physician regarding pain management medications
Psycho-emotional status	• Enable and facilitate client participation in skincare • Provide resources and supports for the client's psycho-emotional state • Liaise with appropriate discipline(s) and community resources
Decreased mobility	• Trial equipment that may improve mobility • Educate client and family/caregivers about importance of turning/repositioning • Consider an alternate mattress, cushion or overlay with increased pressure relief
Skeletal deformity / Posture/ Contractures	Consider support surfaces that: • Promote postural alignment • Accommodate or compensate for fixed deformities • Correct flexible deformities, as tolerated • Optimize pressure distribution • Offload vulnerable areas

Muscular atrophy	Consider support surfaces that: • Ensure adequate pressure distribution • Offload vulnerable areas
Nutrition/ hydration status	• Facilitate self-feeding and drinking • Assess for appropriate diet texture and/or assistive devices to maximize food and fluid intake • Provide education regarding the correlation between wound healing and proper nutrition • Provide information on meal support/grocery and meal delivery services • Refer the client to a dietician as required
Incontinence	• Facilitate continence by developing toileting routines and providing equipment to maximize independence and ease/timeliness of transfers (sliding boards, commodes) • Avoid folding of incontinence pads to maximize immersion into cushion and to minimize wrinkles/edges that the person is sitting on • Limit the use of layers • Consider products that facilitate airflow and moisture absorption
Positioning preferences	• Consider all surfaces over a 24-hour period (e.g. seat cushion, mattress, commode, bath bench) • Create a positioning schedule • Consider position changes that are consistent with the client's ADLs and activity choices • Identify appropriate methods and equipment for repositioning • Teach effective weight shift • In wheelchair use side-to-side and/or forward flexion of trunk to weight shift if sitting balance allows – using arms to unload is often insufficient • Consider use of high quality cushion (e.g. air or memory foam) for the client that cannot weight shift independently • Distribute pressure over a large area • Offload bony prominences
Lifestyle choices	• Assess risk factors within the client's activity choices – get collateral information if possible • Work with team to provide supports and resources for lifestyle choices which impact skin care • Educate client and caregivers regarding risk factors, likely consequences and ways to mitigate them • Document process and decisions
Extremes of age	Because risk level/vulnerability increases: • Be more conservative regarding prevention precautions • Monitor risk and interventions more frequently

Pressure	• Learn how pressure area was acquired; unload (potential) pressure area
	• Redistribute weight over as wide an area as possible
	• Plan a 24-hour positioning schedule with team and client:
	  • To spend maximal time off the causative surface(s).
	  • To include position changes on same surface.
	• Maintain head of bed at the lowest elevation consistent with medical conditions and restrictions; 30° elevation or lower is recommended
	• Prescribe support surfaces that reduce pressure forces

Shearing	• Use transfer aids (e.g. mechanical lifts, repositioning slings, turning sheets) to avoid dragging/sliding across surfaces during transfers and position changes • Prescribe support surfaces which reduce shearing forces, considering the design and material of the surface of and the cover • Maintain appropriate wheelchair seating and positioning; address sliding • Consider additional supports/devices (e.g. chest strap) to prevent shear during high risk activities
Friction	• Do not massage over bony prominences • Use transfer aids (e.g. mechanical lifts, repositioning slings, turning sheets, sliding sheets) to avoid dragging/sliding across surfaces during transfers and position changes • Prescribe support surfaces which reduce friction, considering the design and material of the surface and of the cover • Maintain appropriate wheelchair seating and positioning

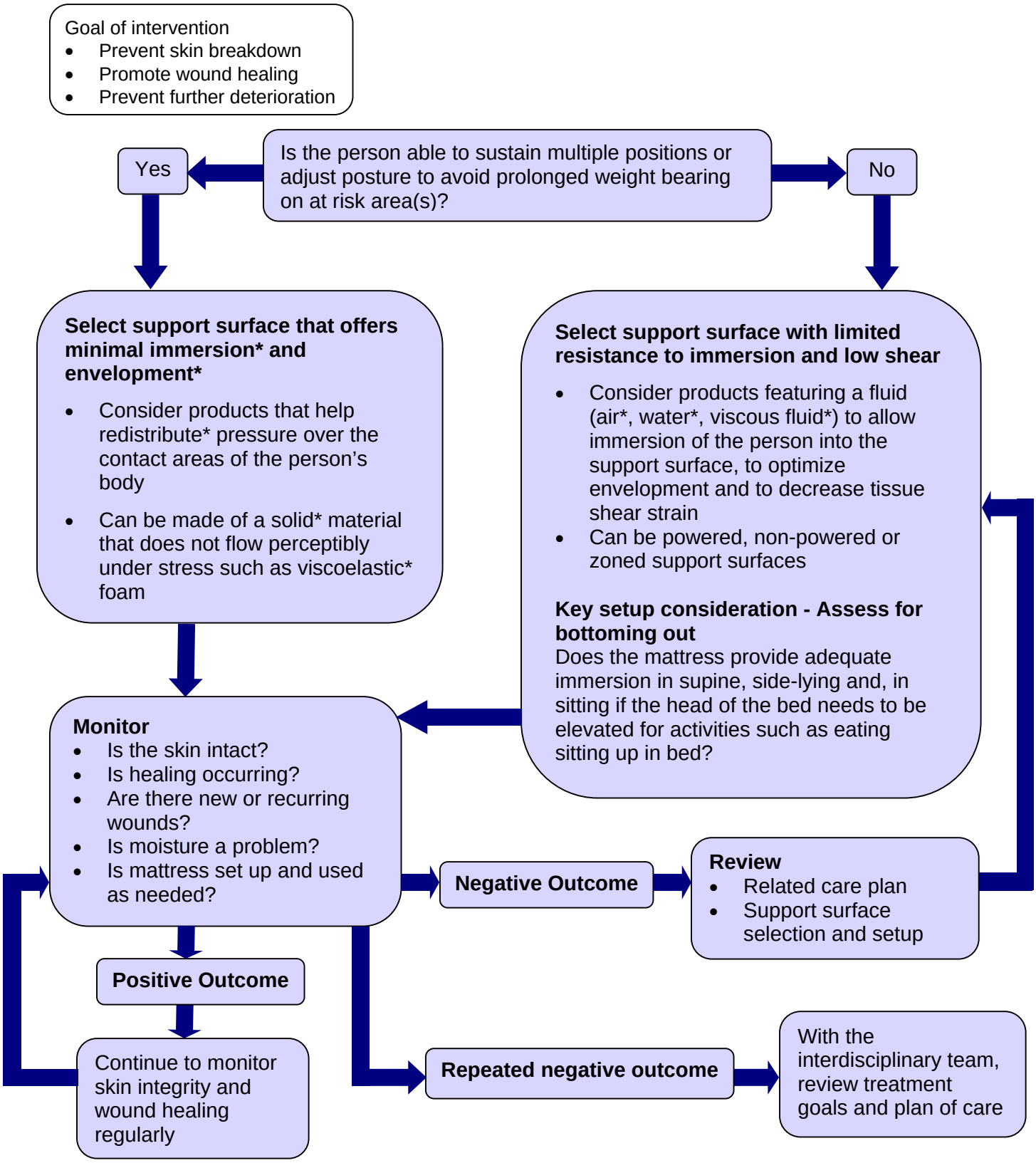
Moisture	• Address source of moisture
	  • Facilitate continence
	  • Choose breathable clothing
	  • Liaise with registered nurse or wound care nurse regarding wound dressings
	• Consider selection of products/materials that facilitate airflow, wick away moisture and moisture absorption

Socio-economic status	• Aid in procurement of supplies and equipment through community resources/support agencies • Liaise with team members regarding socioeconomic factors of skin care, e.g. social support, body image, self-esteem, quality of life, dignity, independence

Perform risk assessment on entry to a health care setting and repeat on a regularly scheduled basis or when there is a significant change in the individual's condition.

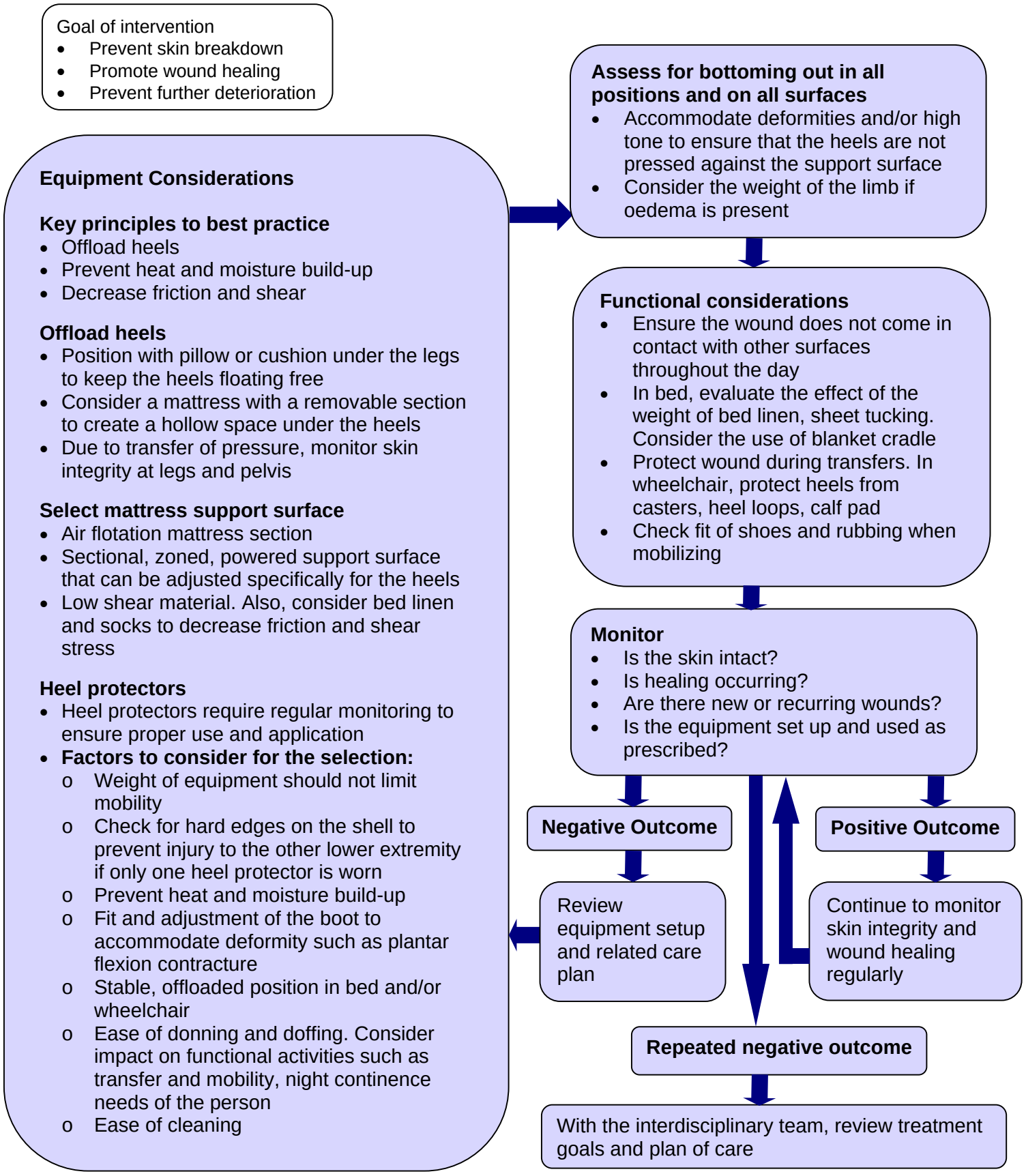
Acute care: Perform initial assessment at admission and reassess at least every 48 hours or whenever the patient's condition changes.
Long-term care: Perform initial assessment at admission. Reassess weekly for the first four weeks, then quarterly after that, and whenever the resident's condition changes.
Home-health care: Perform initial assessment at admission and where there are risk factors, reassess every visit.

APPENDIX 6 – MATTRESS AND OVERLAY SUPPORT SURFACES DECISION TREE FOR PERSONS AT RISK OR WITH EXISTING WOUND(S)

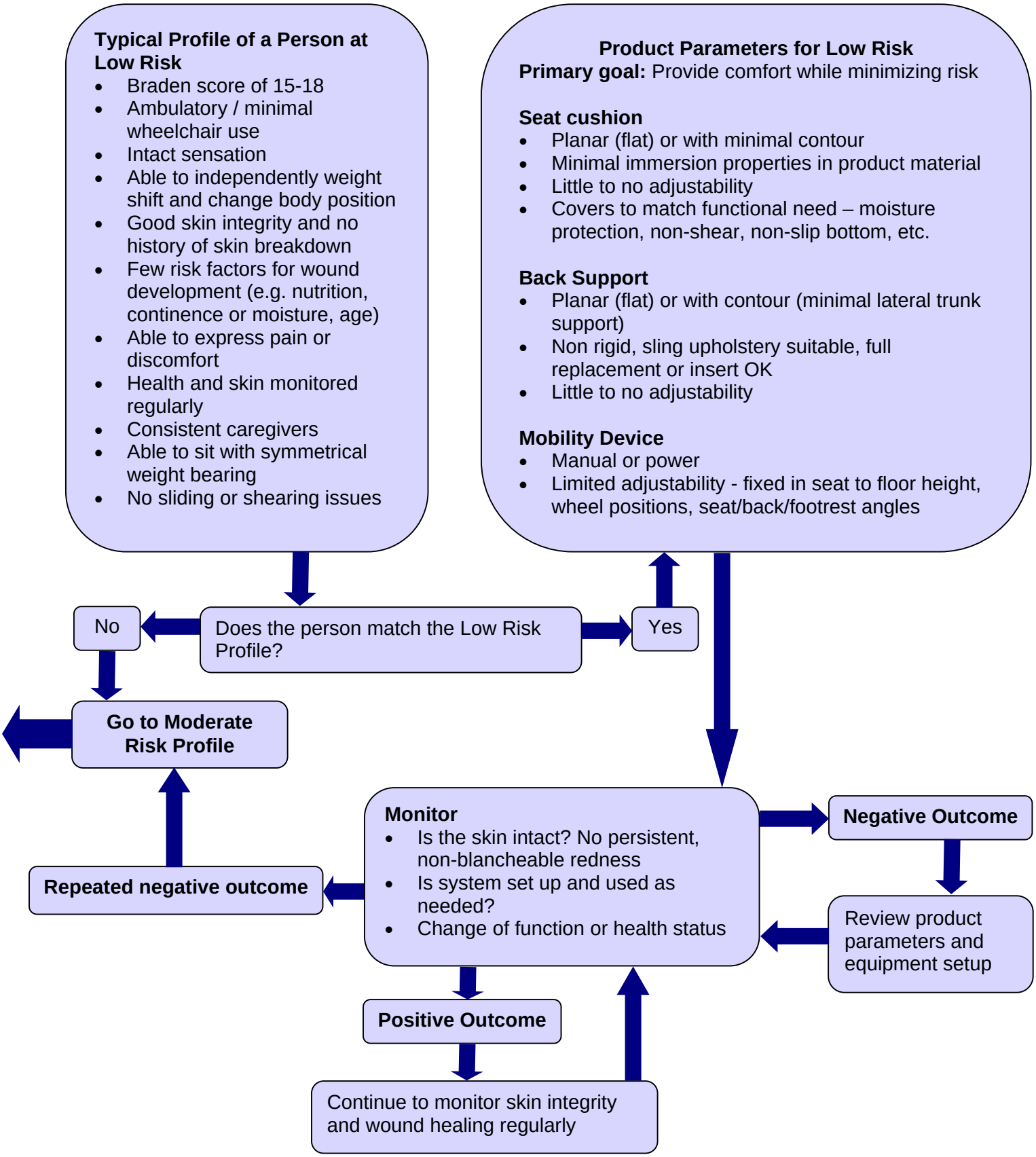


* Please refer to Appendix 1 – Glossary of Terms for definitions

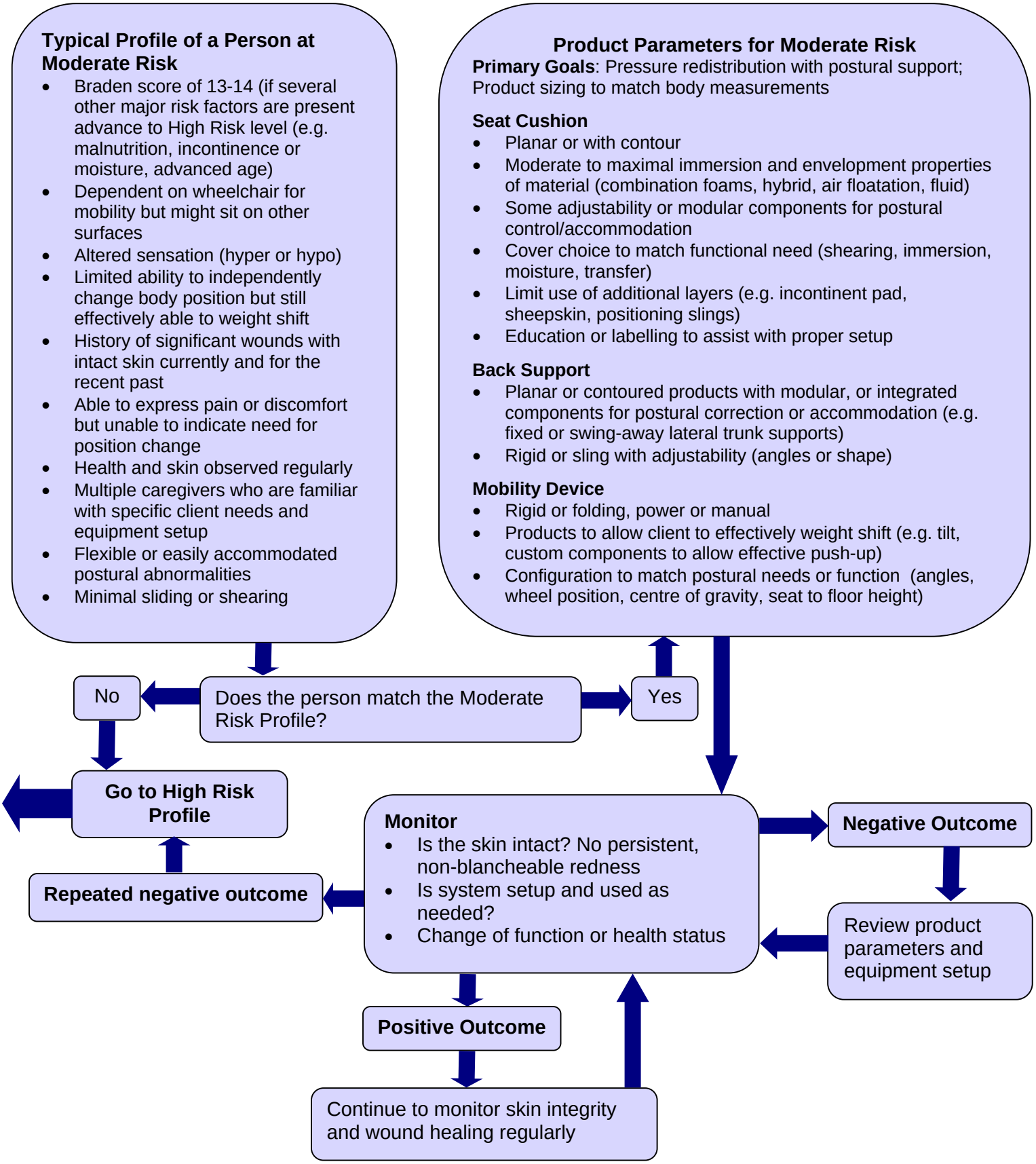
APPENDIX 7 – HEEL PROTECTION DECISION TREE



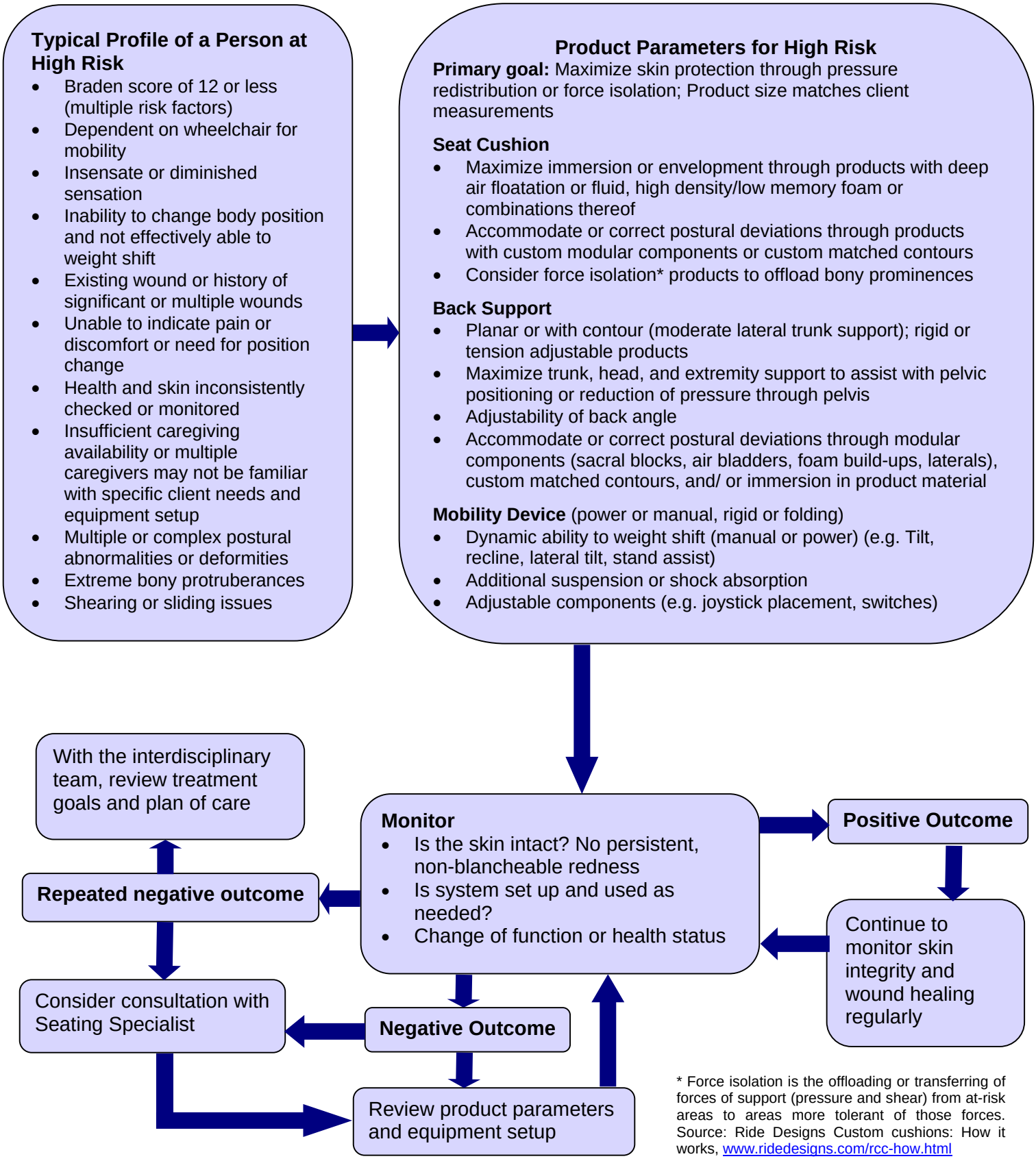
APPENDIX 8A – SEATING DECISION TREE (LOW RISK)



APPENDIX 8B – SEATING DECISION TREE (MODERATE RISK)



APPENDIX 8C – SEATING DECISION TREE (HIGH RISK)



* Force isolation is the offloading or transferring of forces of support (pressure and shear) from at-risk areas to areas more tolerant of those forces. Source: Ride Designs Custom cushions: How it works, www.ridedesigns.com/rcc-how.html

APPENDIX 9 – PRACTICE GUIDELINE REFERENCES

Practice guidelines references used as a development framework for guideline:

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http://www.nice.org.uk/guidance/CG29/quickrefguide/pdf/English

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National Pressure Ulcer Advisory Panel Terms and Definitions: http://www.npuap.org/

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APPENDIX 10 – SEARCH STRATEGIES

Database: Ovid MEDLINE(R) <1966 to August Week 3 2005>
Initial Search Strategy:

---

1 exp *skin ulcer/pc (2133)
2 exp *"Equipment and Supplies"/ (366750)
3 1 and 2 (730)
4 limit 3 to (humans and english language and yr="2000 - 2005") (163)
5 from 4 keep 1,4,16,26,34,39,42,45-46,79,81,88-89,94,97,112 (16)
6 from 5 keep 1-16 (16)

Database: CINAHL - Cumulative Index to Nursing & Allied Health Literature <1982 to August Week 3 2005>
Search Strategy:

---

1 exp *Skin Ulcer/ (6226)
2 exp *Skin Ulcer/pc (1591)
3 limit 2 to (english and yr="2000 - 2005") (614)
4 exp *"Equipment and Supplies"/ (38467)
5 3 and 4 (212)
6 from 5 keep 2,8,10,14-15,21-23,29,36,39,50,56-57,64,66,70,73,75,79,99,101,106,113,118-119,125,129-130,133,142,144,159,165,169,180,184,206 (38)
7 from 6 keep 1-38 (38)
8 Occupational Therapy/ (6189)
9 Occupational Therapists/ (1760)
10 8 or 9 (7631)
11 1 and 10 (10)
12 from 11 keep 1,4 (2)
13 6 or 12 (40)
14 from 13 keep 1-40 (40)

CINAHL and MEDLINE databases searched

Literature Search Terms:	Search parameters:
wound prevention	peer reviewed
skin care	research articles (incl. systematic reviews)
decubitus ulcers	2000-2006
pressure sores	? adult/older adult
pressure ulcer	any setting (community, hospital, residential)
pressure relief	? English only
pressure distribution	all disciplines
skin assessment	
wound healing	

Search History Results Display

1 Pressure ulcer$.mp. or Pressure Ulcer/ 3205 DISPLAY
2 Wound Healing/ or Education, Nursing/ or Surgical Wound Infection/ or wound prevention.mp. 28143 DISPLAY
3 1 and 2 562 DISPLAY
4 Remove duplicates from 3 562 DISPLAY
5 (best practices or guidelines).mp. [mp=title, original title, abstract, name of substance word, subject heading word] 80989 DISPLAY
6 4 and 5 38 DISPLAY

APPENDIX 11 – BIBLIOGRAPHY

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Additional Electronic Resources

http://205.207.146.54/bestpratices/PDF/BPG_Pressure_Ulcers_v2.pdf

http://gacguidelines.ca/articlepl?=05/04/07/14441257

http://nursingyale.edu/Research/PACWC/resources.html

http://www.amda.com/info/cpg/pressureulcer.htm

www.cawc.net

http://www.cmri-ca.org/nursinghomes/resources/pressureulcer/index.asp

http://www.decubitus.org

http://www.npuap.org

http://www.hcmarketplace.com/prod-776.html

http://www.ncbi.nlm.nih.gov/books/bv.fcgi?call=bv.View..ShowSection&rid=hstat2.chapter.4409

http://www.npuap.org

http://www.nursing.upenn.edu/centers/hcgne/gero_tips/TLC/2_Pressure_Ulcers.htm

http://www.rcn.org.uk/resources/guidelines.php#other

http://www.rnao.org/bestpractices/index.asp

http://www.smtl.co.uk/WMPRC/index.html

http://www.umanitoba.ca/libraries/units/health/deerlodge/dlclibcat.html

http://www.wocn.org

http://www.worldwidewounds.com/2001/july/Butcher/NICE-pressure-ulcer-review.html

http://www.woundheal.com/dealing/clinicalIndex.htm

http://www2.rnao.org/bestpractices/completed_guidelines/bestPractice_firstCycle.asp

http://www.assistive-technology.ca/ss.html

http://www.wheelchairnet.org/

http://www.spinlife.com/spintips/details/k/Wheelchair-Cushion-Differences/a/107/c/89

http://www.seatingandmobility.ca/Equipment.aspx

THIS GUIDE IS ALSO AVAILABLE ON THE FOLLOWING LINKS:

VANCOUVER COASTAL HEALTH

http://vchconnect.vch.ca/policies_manuals/reg_policy_clinical/clinical_care/skin_wound_care/page_20122.htm

PROVIDENCE HEALTH CARE

http://phcconnect/programs_services/occupational_therapy/care_processes/page_6241.htm