# Support Surfaces in Prevention of Pressure Injuries

SKIN AND WOUND – QUICK REFERENCE GUIDE

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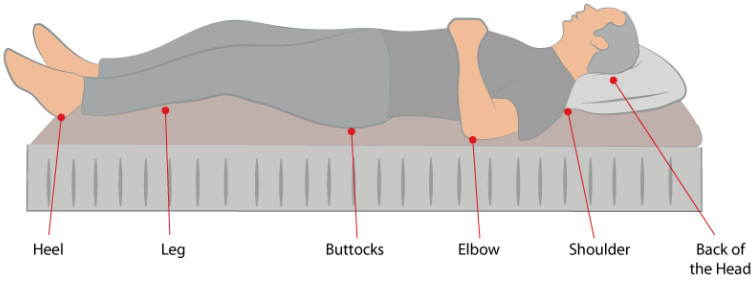
| Applies to: | LPNs, NPs, OTs, PTs, RAs, and RNs. |
| Purpose: | To support team members in applying **support surface principles and strategies** with clients and their families in the prevention of pressure injuries. |

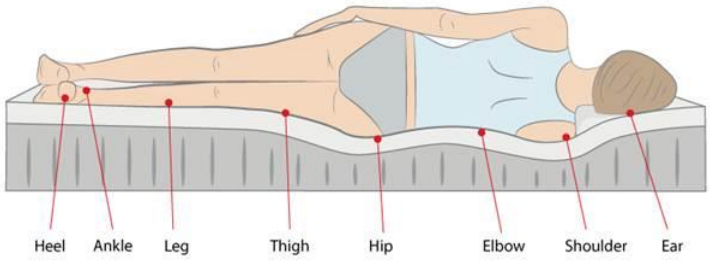
## Definition of a Support Surface

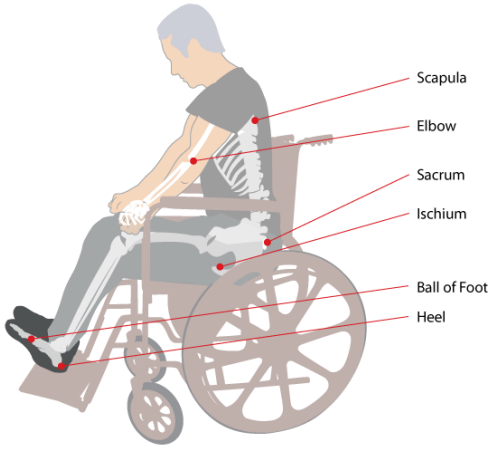
- A specialized device designed to prevent and promote healing of pressure injuries in the management of tissue loads, micro-climate, and/or other therapeutic functions.
- Some examples of support surfaces include: overlays; mattresses; integrated bed systems; seating cushions; backrests; and offloading devices such as foam supports and heel supports.

## Support Surface Considerations to Prevent Pressure Injuries

- Support surfaces do no eliminate the need for a client to be turned and repositioned.
- The forces of pressure, shear, friction and moisture increase susceptibility to pressure injuries on skin.
- It is vital to consider the vulnerable areas of the skin and postural alignment when considering support surfaces in the prevention of pressure injuries.
- The diagrams below illustrate areas of our skin that are most vulnerable to pressure injuries.




## Selecting a Support Surface

- An assessment by an Occupational Therapist or Physiotherapist helps identify the unique needs of the client, family and caregivers to select an appropriate support surface.
- A re-assessment is recommended if a client experiences a change in medical condition, mobility, continence, skin, caregiver support or other factors that impact pressure injury risk.

## Support Surface Terminology

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| **Reactive Support Surface** | A powered or non-powered support surface that provides pressure redistribution in response to the applied load of the client through immersion and envelopment. |
| **Active Support Surface** | A powered support surface with the capability to change its load distribution properties, with or without the applied load of the client. |
| **Standard Mattress** | A mattress not intended to prevent or heal pressure injuries. Commonly has closed cell foam that does not allow flow of air/gas/ liquid. |
| **High Specification Foam** | Foam with open cells for gas/air and liquid to flow that makes it permeable or breathable. |
| **Overlay** | A support surface that is placed directly on top of an existing surface, such as on top of a mattress. |
| **Integrated Bed System** | A bed frame and support surface that work together as a single unit. |
| **Zone Feature** | Refers to a segment, on a whole mattress, with single pressure redistribution capability. |
| **Multi-zone Feature** | Refers to a support surface with different segments that can have different pressure redistribution capabilities. |

## Assessing Effectiveness of Support Surfaces

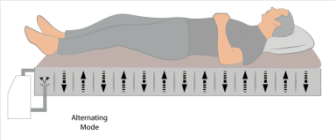
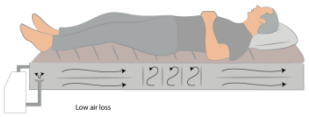
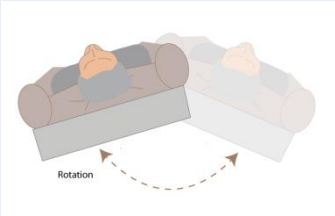
- Assessment methods and tools vary in accordance to products and clients.
- Clinicians commonly use a “hand check” method for air mattresses, overlays and seat cushions.
    - The “Hand check” method is **not** recommended to asses inflation or the effectiveness of a mattress replacement system or integrated bed system. Instead, follow manufacturer recommendations for how to assess for proper inflation of a mattress.
- A pressure mapping system, if available, can be used by therapists to help measure immersion and pressure interface between the air mattress, overlay or air seat cushion and the client.
- Re-assessment of the effectiveness of a support surface is recommended at least every 4 years or sooner if the client’s medical condition changes.

## Placing Materials on top of Support Surfaces

- Avoid using a soaker pad because it stops or significantly increases the pressure interfaces and changes the microclimate that lessens the therapeutic effect of the support surface.
- Avoid leaving handling equipment, such as a sling, under the client unless the manufacturer states the product can be left in place.
- Ultrasorb and dri-flo pads are products that are commonly used for incontinence and can be left under a client on a support surface.

## Overview of Support Surfaces

| Category | Type | Performance Characteristics | Applications |
|---|---|---|---|
| **Reactive**<br>Commonly used for clients who:<br>• Can or cannot move themselves<br>• Can be positioned without weight bearing on the pressure injury site | **High-Specification Foam**<br>• Mattresses<br>• Cushions<br>• Other | • Pressure redistribution<br>• Routine transfers | • Pressure injury prevention<br>• To treat uncomplicated pressure Injuries (high specific foam or static floatation) |
| | **Constant Air**<br>• Mattresses<br>• Overlays<br>• Footrest pads<br>• Other | • Pressure redistribution, shear reduction and some moisture management (via drainage holes)<br>• Easy to clean<br>• May impact transfers<br>• May require patch repair due to punctures from sharp objects or sticky debris between the cells | • Commonly used with clients who have Braden Mobility Subscale 1 or 2 (very limited mobility or immobile) |
| | **Gel**<br>• Integrated with foam in mattresses or overlays<br>• Cushion inserts<br>• Other | • Pressure redistribution and shear reduction<br>• Some supports may provide cooling effect on skin<br>• May impact transfers<br>• A heavier surface to move<br>• Requires kneading “up” of the gel each time client uses the surface | • Potential for prevention, treatment of uncomplicated pressure injury and/or with clients who have limited mobility |
| | **Fluid**<br>• Cushion inserts<br>• Other | • Pressure redistribution and shear reduction<br>• May impact transfers<br>• A heavier surface to move | • Potential for prevention, treatment of uncomplicated pressure injury and/or with clients who have limited mobility |

| Category | Type | Performance Characteristics | Applications |
|---|---|---|---|
| **Active**<br>Commonly used for clients who:<br>• Have limited mobility or are completely immobile (Braden Mobility Subscale 1 or 2)<br>• High risk of pressure injury<br>• Cannot be positioned without pressure on the pressure injury<br>• Have pressure injury that is not healing on a reactive support surface | **Alternating Air Pressure**<br>• Mattress, multi-zone<br>  <br> | • Pressure and shear reduction<br>• Greater pressure reduction than static air<br>• Sequential inflating and deflating air cells provide alternate loading and offloading of pressure to tissues, and thus enable blood flow to the areas<br>• Increases complexity of transfers | • Pressure Injuries on multiple areas<br>• Failure to heal on static support (e.g., Post-op pressure injury repair) |
| | **Low Air Loss**<br>• Mattress<br>• Mattress also available in combination with alternating pressure<br>  <br> | • Pressure and shear reduction<br>• Pumps air at low interface pressure<br>• Microclimate (heat and moisture) management<br>• Increases complexity of transfers | • Failure to heal on alternating air pressure<br>• Useful for clients who sweat in bed and get hot, or who have moisture trapped in the skin fold |
| | **Rotation**<br>• Mattress, multi-zone<br>  <br> | • Pressure and shear reduction<br>• Rotates side to side, which is good for offloading pressures and pressure reduction for respiratory function and drainage<br>• Increases complexity of transfers | • Pressure injury treatment after flap surgery or deterioration of multiple trunk pressure injury<br>• Support respiratory function and drainage |

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