

Frequently asked questions about support surfaces

Support surfaces are a valuable tool in preventing pressure injuries. Here are answers to some commonly asked questions about them.

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The National Pressure Ulcer Advisory Panel (NPUAP) describes support surfaces as “specialized devices for pressure redistribution designed for management of tissue loads, microclimate, and/or other therapeutic functions.” These devices include specialized mattresses, mattress overlays, chair cushions, and pads used on transport stretchers, operating room (OR) tables, examination or procedure tables, and gurneys. Some support surfaces are part of an integrated bed system, which combines the bed frame and support surface into a single unit.

Support surfaces must be used in conjunction with other interventions, such as nutritional support, skin care, repositioning, pressure redistribution, risk identification, and patient and caregiver education. Although studies have shown that support surfaces can help decrease the incidence of pressure injuries (PIs), there is no evidence showing one brand or type of support surface is better than another.

What does it mean when a support surface is described as reactive or active?

Reactive surfaces, also called reactive/continuous low pressure, may be powered or not powered and can adjust pressure redistribution only when a load (such as the weight of a patient) is applied to it.

An active surface is always powered. Pressure distribution is adjusted mechani-



cally, even when there is no patient on the surface.

What materials are used in support surfaces?

Materials include foam, gel, fluid, and silicone beads. Australian medical-grade sheepskin is also used, but has limited availability in the United States. Some support surfaces have covers made of Gore-Tex® or another material that helps reduce friction.

What do the terms immersion, envelopment, and bottoming out mean?

Pressure redistribution with support surfaces is achieved through immersion and envelopment.

Immersion refers to the fact that as the body sinks into the surface, pressure is redistributed over the entire area of contact and not just the bony prominences. *Envelopment* is the ability of the support surface to conform evenly to irregularities, such as body contours, linens, and the patient's

clothing, without causing excessive pressure on the body.

Bottoming out refers to the patient's body sinking in so deeply on the support surface that it rests against the bed frame or another surface, such as a gurney, that lacks sufficient cushioning.

What is microclimate control?

Microclimate control (control of temperature and moisture) is achieved by:

- controlling the airflow against the skin by pumping air through minute perforations in the surface cover
- increasing the exchange of air between the skin and the surface through the use of porous covers that allow moisture evaporation and body heat dissipation.

This feature keeps the skin cool and dry.

Microclimate control is beneficial for patients who are constantly moist (for example, diaphoretic or incontinent). Excess moisture raises the risk of friction and shear, which can result in skin breakdown. The coolness feature helps avoid higher skin temperature, a risk factor for PIs.

What do the features lateral rotation, alternating pressure, low air loss, and air fluidized mean?

These features are the functional or therapeutic components of a support surface. They can be used singly or in combination.

With continuous lateral rotation, or simply *lateral rotation*, the surface provides rotation longitudinally (head-to-toe), turning the patient to a set degree, in a set duration, and at a set frequency. Rotation is limited to 40 degrees or less to each side. Lateral rotation does not replace repositioning the patient to address skin issues, nor does it provide pressure redistribution or offloading. Instead, surfaces with this feature help facilitate pulmonary hygiene among patients with acute respiratory conditions.

NPUAP defines *alternating pressure* as “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.” Surfaces with alternating pressure may be mattresses or overlays and are always powered. They can change distribution of load with or without applied load—even when no patient is in the bed. These surfaces have air cells that cyclically inflate and deflate, thus changing the areas of the body under pressure.

Low air loss means that the surface provides flow of air to help manage the microclimate of the patient's skin.

Air-fluidized surfaces provide pressure redistribution by immersion and envelopment, using a fluid-like medium created by forcing air through silicone beads. Air-fluidized surfaces are expensive and difficult to maintain; beds with these surfaces are usually rented instead of purchased. They are heavier than a standard bed, so are not always suitable to place in older homes.

Air-fluidized beds are often used for patients with multiple full-thickness wounds or who have undergone myocutaneous procedures. They are not typically recommended for a patient with an unstable spine or pulmonary disease. The fluid-like surface doesn't provide sufficient support for a patient with an unstable spine, and for patients with pulmonary disease, the lack of firm support makes it difficult for patients to cough effectively.

What are general considerations for matching patients to appropriate support surfaces?

It's important to base the choice of support surface on individual patient needs. (See *Determining type of support surface*.) For example, consider the patient's weight, height, and shape. (Bariatric patients must use bariatric surfaces; be aware of the weight limitation of the surfaces.)

Other considerations include:

- risk for new PIs
- number of current PIs, including severity

Determining type of support surface

The Wound, Ostomy and Continence Nurses Society developed an evidence- and consensus-based support surface algorithm, which is available at <http://algorithm.wocn.org/#home>. The algorithm notes that patients with large, or multiple stage 2, 3, or 4 pressure injuries on the trunk or pelvis involving more than one turning surface should be placed on a support surface with a low air loss or an air-fluidized feature. The algorithm also suggests that among patients with Braden moisture subscale scores of 2 or 1 (very moist or constantly moist), surfaces with a low air loss feature should be considered.

and location

- patient's activity, mobility (for example, avoid surfaces that might make it difficult to get a patient out of bed), and moisture
- risk for falls and entrapment in the bed
- appropriateness for the setting (for example, powered surfaces can't be used in a home without a reliable power source).

Consider contraindications when choosing a support surface. For example, reactive/constant low pressure, reactive/constant low pressure with low air loss, active surfaces with alternating pressure feature, and air-fluidized surfaces are contraindicated for patients with unstable cervical, thoracic, and lumbar spines, and patients with cervical or skeletal traction.

Assess the appropriateness of the choice on a regular basis. For example, a patient with multiple stage 3 PIs that have healed may no longer need the surface with low air loss but can now be placed on a reactive/constant low pressure surface. If a patient experiences pain or discomfort with a particular surface, consider alternatives.

What are important points to remember when using support surfaces?

Education is key to promote optimal use of these surfaces. Staff such as nurses, certified nursing assistants, and other team members who handle the surfaces, including house-keeping and maintenance staff, all need information on how to use the support surface correctly. Education should extend to families, caregivers, and patients in the home setting.

Although the manufacturer may state an

expected lifespan for a product, staff must be taught that the lifespan can be shorter, depending on use. Staff need to be aware of indicators of wear and tear; discoloration; any change in height or thickness of the surface; any break in the seams, cover, zippers, flaps; breakdown of internal components; or presence of foul odor. Deficient products must be repaired or replaced.

Other important points related to using support surfaces include the following:

- Ensure the appropriate type and number of linens or liners are used with the surfaces. For example, a liner with a plastic bottom is not ideal with low air loss surfaces because the non-breathable feature of the plastic will not allow the air from the support surface to go through.
- Clean surfaces as specified by the manufacturers. If the correct cleaning process is not used, the surface poses an infection risk. Incorrect use of agents, for example using products that destroy the integrity of the cover, also increases the risk of cross-infection.

Most importantly, remember that patients must still be repositioned even if they are in a support surface. An active support surface should be used when frequent manual repositioning is not possible. When possible, avoid positioning a patient with an existing PI on the affected area.

What should facilities use as support surfaces in the OR, ED, and procedure areas?

Support surface options for the OR include air, gel, and high-specification foam mattresses. Consider the patient position re-

quired for the procedure when making a selection. There are also pads with pressure redistribution properties that can be used for transport and on ED beds. More research is needed to determine the effectiveness and proper use of these support surfaces. When selecting products to use in these special situations, consider safety, care, and costs.

Understanding support surfaces

Support surfaces are an integral part of PI prevention and treatment. When selecting a surface, the patient's individual needs, including past experiences with the surfaces, must be taken into consideration. It's important for clinicians to continuously assess patients for the appropriateness and the functionality of the surface.

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"I don't have symptoms."

FACT: Colorectal cancer doesn't always cause symptoms, especially early on.



"It doesn't run in my family."

FACT: Most colorectal cancers occur in people with no family history.



"But that test..."

FACT: There are several kinds of screening tests for colorectal cancer.

"Why Should I Get Screened?"