



Support Surfaces

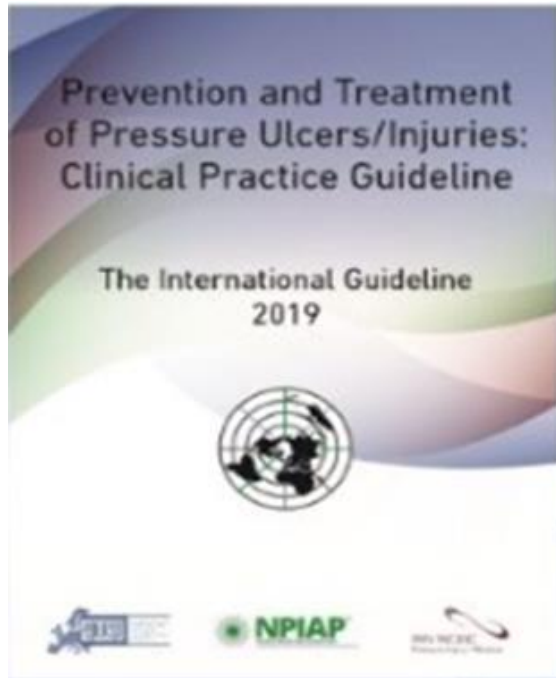
Wasana Kijpotjaneer ET Nurse

Unnecessary patient suffering



Pressure Injury Prevention

Support Surfaces



The Royal Children's Hospital Melbourne

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Health Professionals Patients and Families Departments and Services Research

Clinical Guidelines (Nursing)

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Pressure injury prevention and management

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- Factors associated with increased risk

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- Moisture control and skin care
- Mobility and positioning
- Friction and shear
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Pressure injury prevention strategies - information for clinicians

Prevention strategies are to be targeted care actions/interventions based on the risk factor identified.

Patients with risk factors for pressure injury, either with or without pressure injury, are to have:

- Evidence based prevention strategies implemented as a priority within two hours of risk identification
- Targeted interventions/strategies based on the risk factor(s) identified and reviewed regularly for their effectiveness.

Repositioning and/or early mobilisation schedule

Prompt or assist repositioning as clinically indicated and using appropriate manual handling techniques and equipment. Patients are to be educated and encouraged to perform independent, pressure relieving manoeuvres when able.

- A 30-degree side lying position is to be used when repositioning individuals in bed. Keep the head of the bed as flat as possible at no greater than 30-degrees elevation unless clinically necessary to facilitate breathing and/or prevent aspiration and ventilator-associated pneumonia.
- The knee break function is to be used to prevent the patient from sliding down the bed to reduce shear forces. The torso to thigh angle is to be no greater than 30-degrees.

Pressure redistribution

- Mattress support surfaces which meet individualised requirements (i.e. weight, moisture, temperature, width, static or active surface types) are to be considered and regularly reviewed
- Support surfaces (such as active and reactive) are to be used during care, including emergency departments, operating room, intensive care, dialysis units, and during transportation when clinically indicated and appropriate.

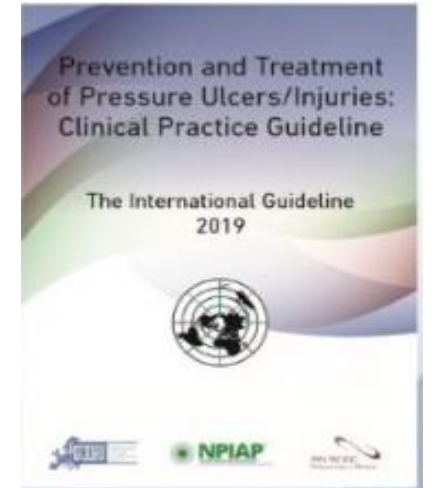
NB: In unstable spinal or pelvic fracture, active support surfaces are contra-indicated. This is regardless of the patient having identified risk factors for pressure injury or an existing pressure injury.

Patients with unstable spinal or pelvic fracture are to stay on the appropriate non-powered support surface and receive regular pressure relief through lifting, as per spinal and pelvic fracture protocols.

- Seating support surfaces which meet the individualised requirements are to be considered and regularly reviewed
- Other pressure redistribution and offloading equipment (e.g. repositioning devices or aids) are to be used according to individualised requirements and goals of care
- Heels, Achilles tendon and popliteal vein are to be offloaded completely to distribute the weight of the leg along the calf.

Support Surface are

“Specialized devices for pressure redistribution designed for management of tissue loads. Microclimate. and/or other therapeutic functions(i.e., any mattress, integrated bed system, mattress replacement, overlay, or seat cushion, or seat cushion cverlay).”



พื้นผิวแบบไหนที่ช่วยป้องกันการเกิด
แผลกดทับได้

แบบที่ 1



แบบที่ 2



How does active mattress help with pressure injuries?



การบาดเจ็บเกิดขึ้นจากแรงกดหรือแรงกดที่รุนแรงและ/หรือเป็นเวลานาน ร่วมกับแรงเฉือน ความทนทานต่อแรงกดและแรงเฉือนของเนื้อเยื่ออ่อนอาจได้รับผลกระทบจากสภาพภูมิอากาศขนาดเล็ก โภชนาการ การไหลเวียนของเลือด โรคร่วม และสภาพของเนื้อเยื่ออ่อน



Pressure redistribution



Intensity of

Duration
Time

Pressur

Tissue
Tolerance



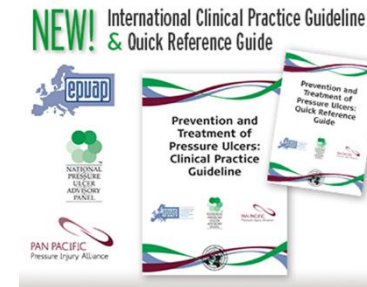
ถ้าลูกโป่งนี้มันเกินไป ไม่สามารถรองรับน้ำหนักได้ ดังนั้น ลูกโป่งต้องหนาขึ้นเพื่อรองรับน้ำหนัก



ความสูงของพื้นผิวมี
ความสำคัญ ยิ่งสูง ยิ่งป้องกัน



EPUAP/NPUAP/PPPIA guidelines



Mattress and Bed Support Surfaces for Pressure Ulcer Prevention

Pressure redistributing support surfaces are designed to either increase the body surface area that comes in contact with the support surface (to reduce interface pressure) or to sequentially alter the parts of the body that bear load, thus reducing the duration of loading at any given anatomical site.

- 1. Use a high specification reactive foam mattress rather than a non high specification reactive foam mattress for all individuals assessed as being at risk for pressure ulcer development. (Strength of Evidence = A; Strength of Recommendation = 👍)**

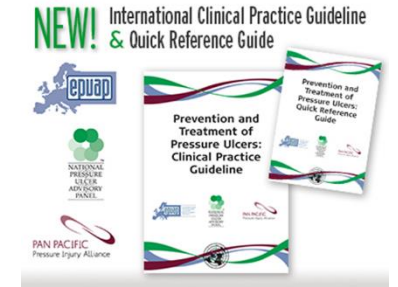
There is no evidence of the superiority of one higher specification foam mattress over any other higher specification foam mattresses.

- 1.1. Review the characteristics of foam mattresses used in the facility for pressure ulcer prevention to ensure they are high specification. (Strength of Evidence = C; Strength of Recommendation = 👍👍)**

Refer to the *Clinical Practice Guideline* for a consensus opinion on the minimum characteristics for a product to be considered a high specification foam mattress.

- 1.2. Consider using other reactive support surfaces for individuals assessed as being at risk for pressure ulcer development. (Strength of evidence = C; Strength of Recommendation = 👍)**

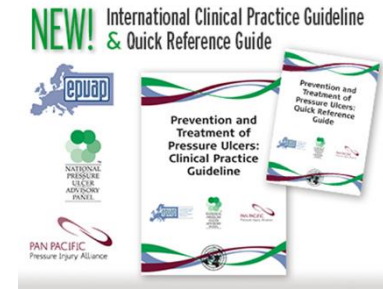
EPUAP/NPUAP/PPPIA guidelines



2. Use an active support surface (overlay or mattress) for individuals at higher risk of pressure ulcer development when frequent manual repositioning is not possible. (Strength of Evidence = B; Strength of Recommendation = 👍)

2.1. Do not use small cell alternating pressure air mattresses or overlays. (Strength of Evidence = B; Strength of Recommendation = 👍)

Alternating pressure air mattresses with small air cells (diameter < 10 cm) cannot be sufficiently inflated to ensure pressure relief over the deflated air cells.



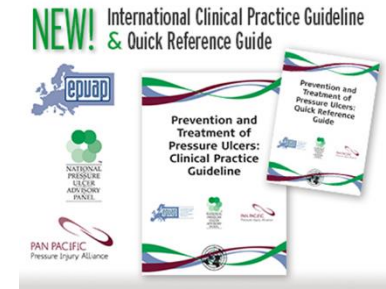
EPUAP/NPUAP/PPPIA guidelines

Mattress and Bed Support Surfaces for Individuals with Existing Pressure Ulcers

- 1. Wherever possible, do not position an individual on an existing pressure ulcer. (Strength of Evidence = C; Strength of Recommendation = 👍)**
- 2. Consider replacing the mattress with a support surface that provides more effective pressure redistribution, shear reduction, and microclimate control for the individual if he or she:**
 - cannot be positioned off the existing pressure ulcer;**
 - has pressure ulcers on two or more turning surfaces (e.g. the sacrum and trochanter) that limit turning options;**
 - fails to heal or demonstrates ulcer deterioration despite appropriate comprehensive care;**
 - is at high risk for additional pressure ulcers; and/or**
 - 'bottoms out' on the existing support surface. (Strength of Evidence = C; Strength of Recommendation = 👍)**

When pressure ulcers deteriorate or fail to heal, the clinician should consider replacing the existing support surface with one that will provide a properly matched support surface environment in terms of pressure, shear, and microclimate for the individual. Changing the support surface is only one of several strategies to consider. More frequent repositioning, preventive interventions and local wound care should also be intensified as needed.

EPUAP/NPUAP/PPPIA guidelines



3. Before replacing the existing mattress:

- evaluate the effectiveness of previous and current prevention and treatment plans; and
- set treatment goals consistent with the individual's goals, values, and lifestyle. (Strength of Evidence = C; Strength of Recommendation = 👍👍)

4. Consider using a high specification reactive foam mattress or nonpowered pressure redistribution support surface for individuals with Category/Stage I and II pressure ulcers. (Strength of Evidence = C; Strength of Recommendation = 👍)

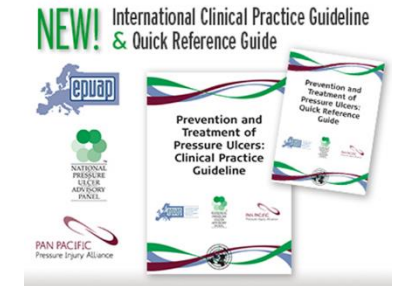
5. Select a support surface that provides enhanced pressure redistribution, shear reduction, and microclimate control for individuals with Category/Stage III, IV, and unstageable pressure ulcers. (Strength of Evidence = B; Strength of Recommendation = 👍)

There is insufficient evidence on which to base definitive recommendations for using one surface over another.

6. Select a support surface that provides enhanced pressure redistribution, shear reduction, and microclimate control for individuals with suspected deep tissue injury if pressure over the area cannot be relieved by repositioning. (Strength of Evidence = C; Strength of Recommendation = 👍)

For all practical purposes, evolving deep tissue injury should be provided the same level of pressure redistribution as a Category/Stage III or IV pressure ulcer. Offloading and pressure redistribution may allow reperfusion of ischemic and injured tissue, limiting the extent of infarcted or dead tissue. Once the ulcer has fully evolved, support surface needs can be re-evaluated.

EPUAP/NPUAP/PPPIA guidelines



Positioning Devices

1. **Do not use ring or donut-shaped devices.** (Strength of Evidence = C; Strength of Recommendation = 👍👍)

The edges of these devices create areas of high pressure that may damage tissue.

2. **The following 'devices' should not be used to elevate heels:**
 - synthetic sheepskin pads;
 - **cutout, ring, or donut-type devices;**
 - intravenous fluid bags; and
 - water-filled gloves. (Strength of Evidence = C; Strength of Recommendation = 👍👍)

All these products have been shown to have limitations.

3. **Natural sheepskin pads might assist in preventing pressure ulcers.** (Strength of Evidence = B; Strength of Recommendation = 👍)

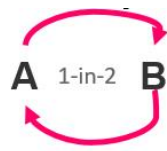
Supporting surfaces

Specialized devices for pressure redistribution designed for management of tissue loads, microclimate, and/or other therapeutic functions.

Examples are:

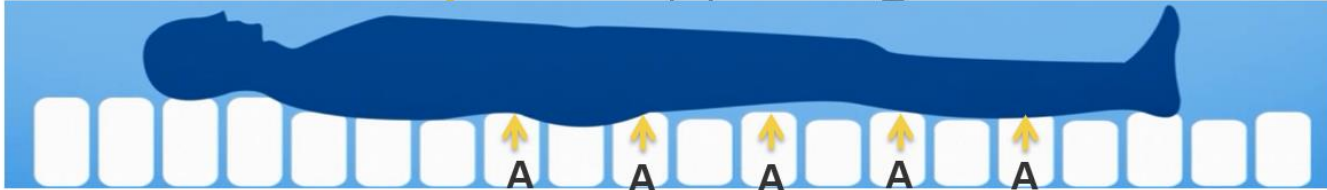
- any mattress,
- integrated bed system,
- mattress replacement,
- overlay, or seat cushion, or seat cushion overlay



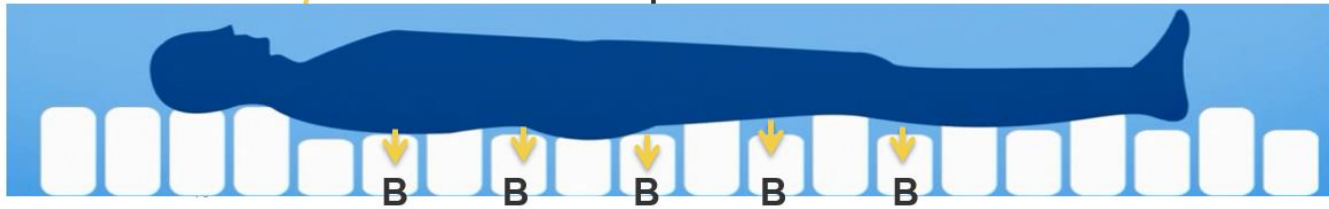


Cells grouped to A and B
Change repeatedly between inflating and deflating

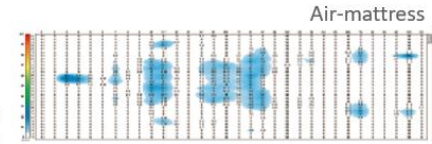
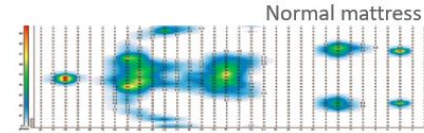
Inflating cell supporting



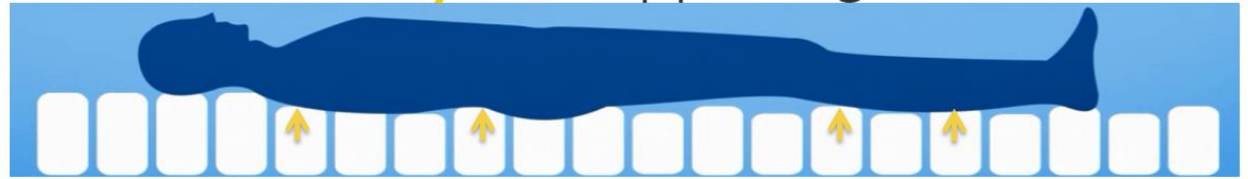
Deflating cell relief pressure



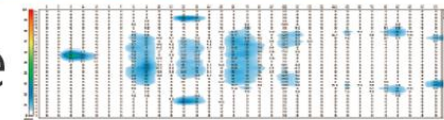
การทำงานของที่นอนลม



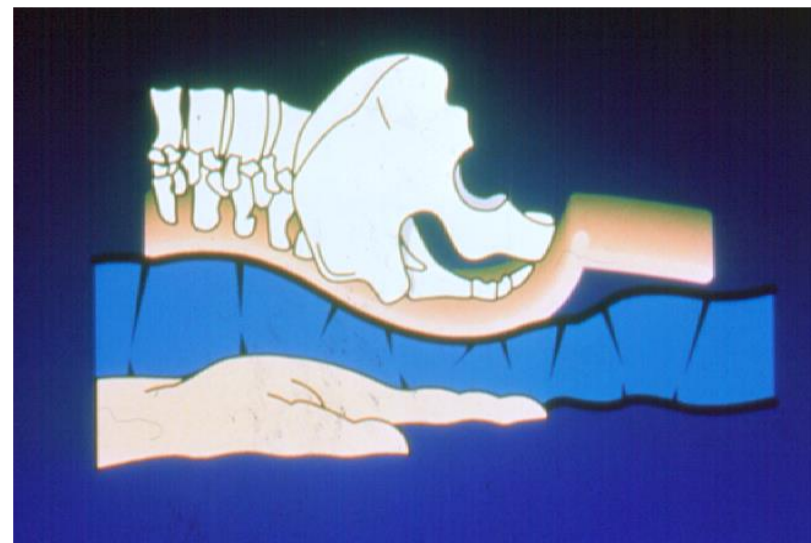
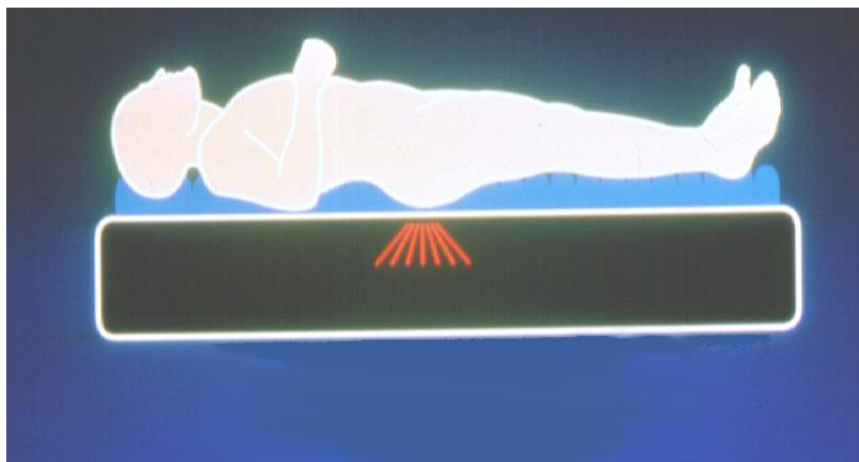
Inflating cell supporting



Deflating cell relief pressure

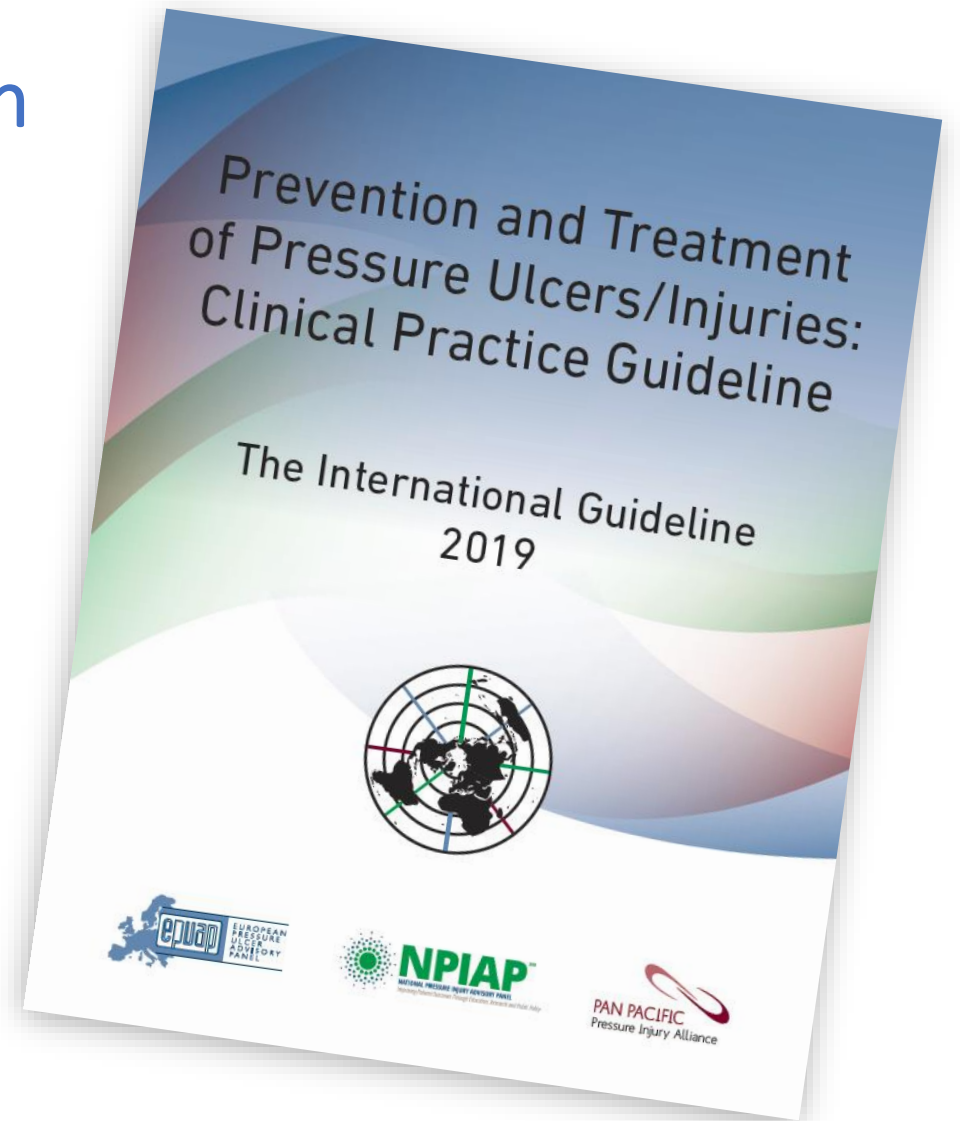


Prevent “Bottoming”



The 2019 International Guidelines Launch

What's new?



Prophylactic dressings

2014 under “Emerging technologies”

1. Consider applying a polyurethane foam dressing to bony prominences (e.g., heels, sacrum) for the prevention of pressure ulcers in anatomical areas frequently subjected to friction and shear. (Strength of Evidence = B; Strength of Recommendation = 👍)

2019 under “Preventive skin care”

3.5: Use a soft silicone multi-layered foam dressing to protect the skin for individuals at risk of pressure injuries. (Strength of Evidence = B1; Strength of Recommendation = ↑)

Heel pressure injuries

2014

- 1.1. Use heel suspension devices that elevate and offload the heel completely in such a way as to distribute the weight of the leg along the calf without placing pressure on the Achilles tendon.
(Strength of Evidence = B; Strength of Recommendation = 👍👍)

2019

6.2: For individuals at risk of heel pressure injuries and/or with Category/Stage I or II pressure injuries, elevate the heels using a specifically designed heel suspension device or a pillow/ foam cushion. Offload the heel completely in such a way as to distribute the weight of the leg along the calf without placing pressure on the Achilles tendon and the popliteal vein.
(Strength of Evidence = B1; Strength of Recommendation = ↑↑)

Heel pressure injuries

2019

Prophylactic Dressings for the Heels

Prophylactic dressings are dressings that are applied to intact skin over a pressure point with the aim of preventing a pressure injury. Use of prophylactic dressings should be an adjunct to, rather than a replacement for heel elevation. Different types of prophylactic dressings are available, including those designed specifically for application to the heel. In the laboratory setting, prophylactic dressings have been found to reduce the forces of pressure, friction and shear through multiple layer construction;³³⁻³⁵ protect fragile skin from shear with specially designed adhesives;³³ and influence microclimate.³⁶ A full discussion of specific characteristics of prophylactic dressings and the ways they protect pressure points is presented in the guideline chapter on *Preventive Skin Care*.

6.4: Use a prophylactic dressing as an adjunct to heel offloading and other strategies to prevent heel pressure injuries.

(Strength of Evidence = B1; Strength of Recommendation = ↑)

Thank you for your Attention

