

Pressure ulcers

The European Pressure Ulcer Advisory Panel (EPUAP 2014) define a pressure ulcer as 'a 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. A number of contributing or confounding factors are also associated with pressure ulcers; the significance of these factors is yet to be elucidated'. It is important to note that pressure ulcers are largely preventable.

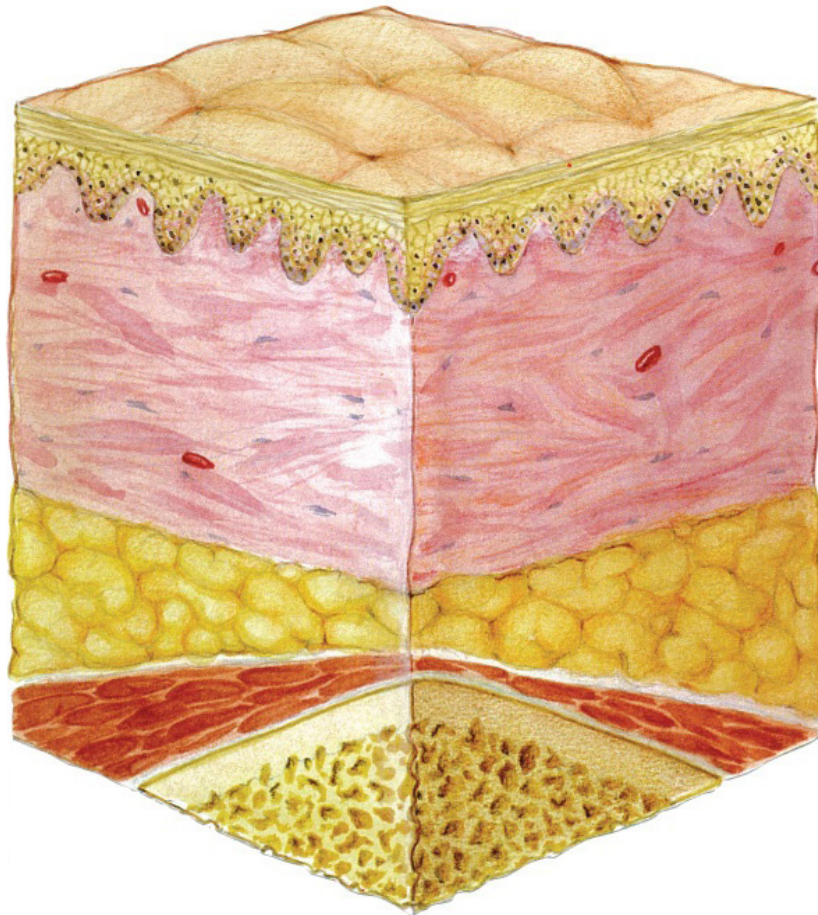
What causes it?

Intrinsic factors include but are not limited to:

- Reduced mobility or immobility
- Sensory impairment
- Acute illness
- Level of consciousness
- Age
- Malnutrition and obesity
- Dehydration
- Incontinence

Extrinsic factors:

- Pressure
- Shear
- Friction
- Microclimate



Knowledge bank

The impact of pressure

Pressure is a vertical force that occurs at a 90° angle. When sitting, pressure compresses the skin and tissue between the supporting surface and the bony parts of the body, causing occlusion of the blood capillaries. This restricts delivery of oxygen and other vital nutrients to the tissues which can lead to tissue cell death and result in skin breakdown.

Pressure is calculated by force (weight) divided by area: $P=F/A$. The greater the support area, the lower the pressure. When seated, peak pressure can be reduced by increasing surface contact area and/ or redistributing forces from bony prominences (ischial tuberosity's/ sacral areas) to areas that can withstand higher forces, such as the hips and thighs.

Impact of shear

Shear forces are parallel forces, sometimes described as stretching forces, caused by the effects of gravity. Static shear occurs when the pelvis has migrated down within the seat surface, and is often associated with a posteriorly tilted position.

Dynamic shear can occur during short range reciprocal movements, such as leaning, reaching and wheelchair propulsion. In these cases, movement of the skeleton against the inner layers of the skin and tissue creates excessive strain, causing the upper layers of the skin to be pulled away from the deeper layers.

Impact of friction

Friction is the resistance that arises when one surface rubs against another. The rubbing of a material against the skin can cause abrasions to the superficial layers of the skin or even a blister. Skin damage due to friction may occur during transfers or other movement across a surface.

Microclimate

Heat and moisture levels may increase over areas of the body in contact with a support surface (bed or chair) when an individual remains in a static position in for extended periods of time. Higher temperatures can lead to the build-up of moisture, and when moisture is trapped against the skin for prolonged periods of time. The skin can turn white and become softer and more vulnerable to breakdown. This is known as maceration. Sweating and incontinence affects skin texture, making it more vulnerable to the potentially damaging effects of pressure, shear and friction. It is believed that a 1°C increase in body temperature can increase metabolic demand by up to 10%. In other words, the body is required to work harder in cases where a decrease in oxygen supply and other vital nutrients may already be present, thus accelerating skin breakdown.

Risk assessment

The European Pressure Ulcer Advisory Panel (EPUAP) recommends the use of a structured approach to risk assessment that is refined through the use of clinical judgement and informed by knowledge of relevant risk factors. Examples of widely used risk assessment tools are 'Norton Scale', 'Braden Scale' and 'Waterlow Scale'. Skin and tissue assessment is important in pressure ulcer prevention, classification, diagnosis and treatment. Regular repositioning schedules, good skin care and regular skin inspection is essential for the prevention of pressure ulcers.

Category/Stage I: Non-blanchable redness of intact skin

Intact skin with non-blanchable erythema of a localized area usually over a bony prominence. Discoloration of the skin, warmth, edema, hardness or pain may also be present. This may be difficult to see on darkly pigmented skin. Further description: The area may be painful, firm, soft, warmer or cooler as compared to adjacent tissue.

Category/Stage II: Partial thickness skin loss or blister

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 or sero-sanguinous filled blister.

Further description: Presents as a shiny or dry shallow ulcer without slough or bruising.

Category/Stage III: Full thickness skin loss (fat visible)

Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. Some slough may be present. May include undermining and tunnelling.

Further description: The depth of a Category/Stage III pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have (adipose) subcutaneous tissue and Category/Stage III ulcers can be shallow. In contrast, areas of significant adiposity can develop extremely deep Category/Stage III pressure ulcers. Bone/tendon is not visible or directly palpable.

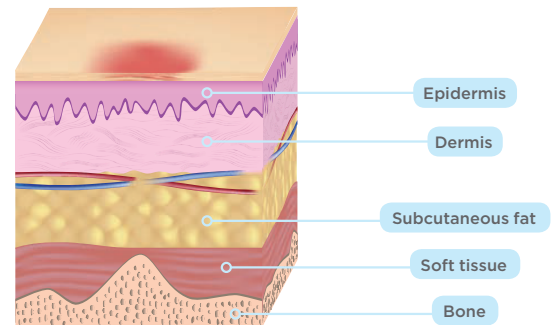
Category/Stage IV: Full thickness tissue loss (muscle/bone visible)

Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present. Often include undermining and tunnelling.

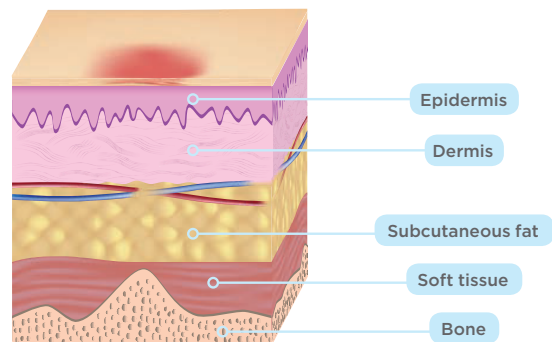
Further description: The depth of a Category/Stage IV pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have (adipose) subcutaneous tissue and these ulcers can be shallow. Category/Stage IV ulcers can extend into muscle and/or supporting structures (e.g., fascia, tendon or joint capsule) making osteomyelitis or osteitis likely to occur. Exposed bone/muscle is visible or directly palpable.

Signs, symptoms and stages

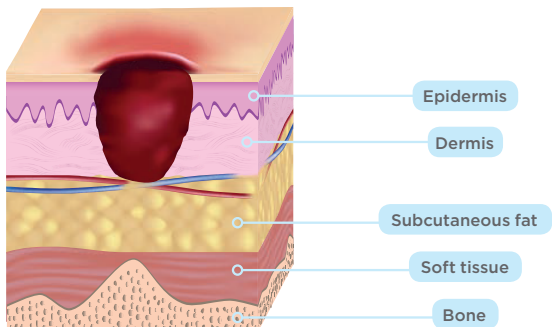
The International NPUAP- EPUAP pressure ulcer classification system is as follows:



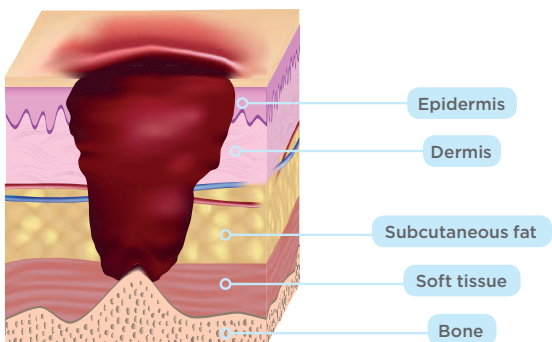
Category/Stage I
Non-blanchable redness of intact skin



Category/Stage II
Partial thickness skin loss or blister



Category/Stage III
Full thickness skin loss (fat visible)



Category/Stage IV
Full thickness tissue loss (muscle/bone visible)

Symptoms and/or stages

Additional Categories

Unstageable/ Unclassified: Full thickness skin or tissue loss – depth unknown

Full thickness tissue loss in which actual depth of the ulcer is completely obscured 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 are removed to expose the base of the wound, the true depth cannot be determined; but it will be either Category/Stage III or IV. Stable (dry, adherent, intact without erythema or fluctuance).

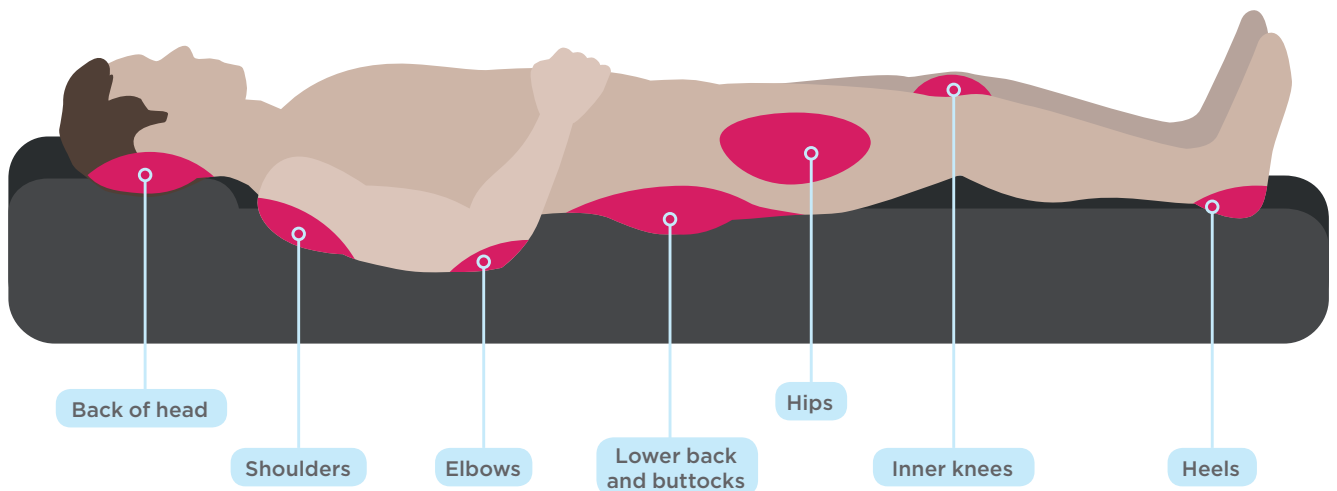
Suspected Deep Tissue Injury-depth unknown

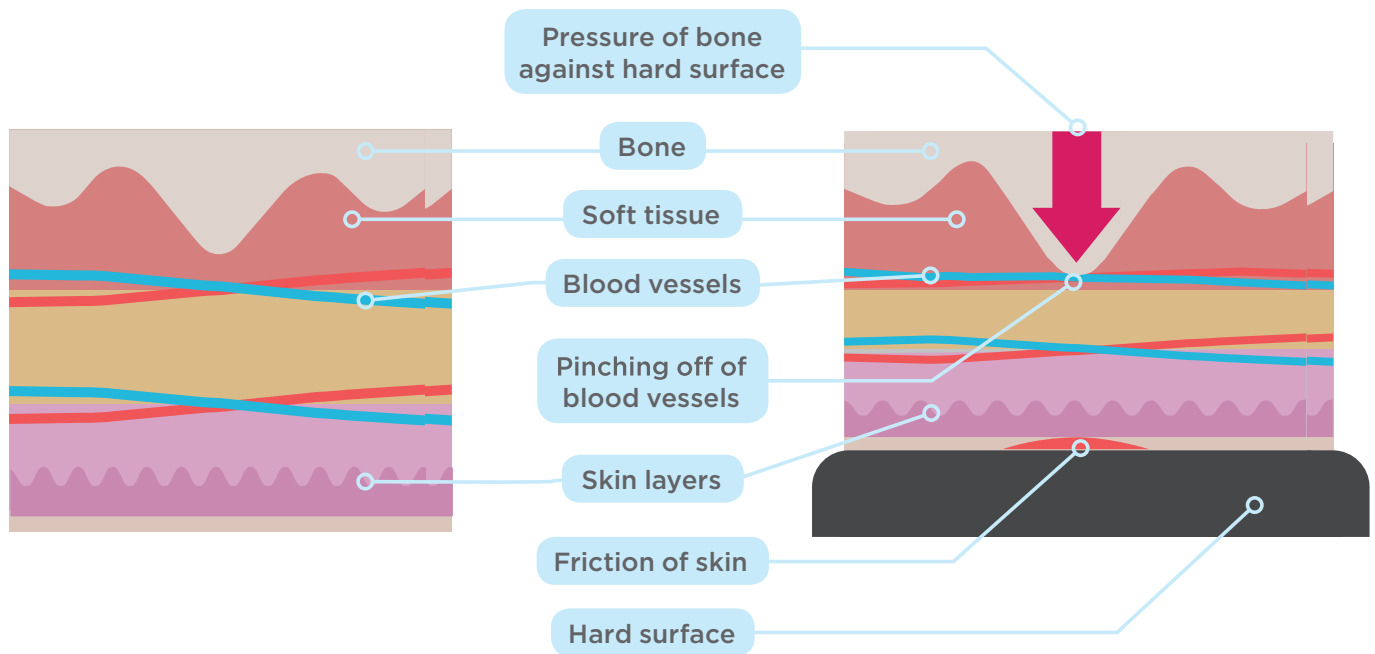
Purple or maroon localized area of discoloured intact skin or blood-filled blister due to damage of underlying soft tissue from pressure and/or shear.

Further description: The area may be preceded by tissue that is painful, firm, mushy, boggy, warmer or cooler as compared to adjacent tissue. 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 treatment.

Moisture lesions are often misclassified as pressure ulcers. A moisture lesion occurs when the skin is left moist for a period of time and, as a result, can lead to skin damage, which can go on to become a pressure ulcer when pressure or shear forces are applied. Moisture lesions are not usually over a bony prominence and skin damage is scattered and irregular in shape. They only occur in the presence of moisture and are often located around the buttock area. Skin folds are also common places for moisture lesions to develop.

At risk areas





Facts

- It is estimated that 1 in 10 patients across Europe have a pressure ulcer and 50% of those are Grade 3 and 4 (EPUAP, 2014)
- People over 70 years old are particularly vulnerable to pressure ulcers, as they are more likely to have mobility problems and ageing

References

European Pressure Ulcer Advisory Panel Guidelines
www.epuap.org