

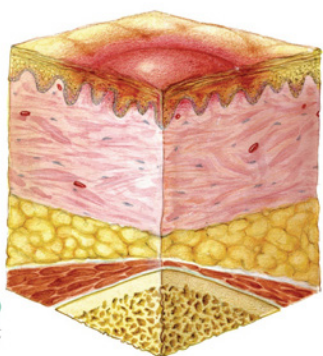


SMALL MOLECULE TECHNOLOGIES, INC.

# MOLECULES&HEALTH

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## Helping Prevent Pressure Ulcers



STAGE 1

According to the National Pressure Ulcer Advisory Panel (NPUAP), 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”.

Pressure ulcers (also known as bed sores or pressure sores) are a serious issue affecting the quality of life for many individuals with various health complications in different settings including living at home.

Pressure ulcers are a complex healthcare problem with multiple causes. They are not a new phenomenon since their occurrence was recorded beginning in 2050 BC. In addition, the early physician, Hippocrates, documented pressure ulcers in 400 BC. Today, pressure ulcers are a substantial

clinical, economic, regulatory and legal problem for healthcare providers and patients. In fact, it has been estimated that treating pressure ulcers cost the U.S. at least 11 billion dollars per year.

For high-risk populations including critically ill patients, a cumulative incidence of at least 15% has been reported for category 2 or higher pressure ulcers. There are also many factors that increase the risk for pressure ulcers including advanced age, malnutrition, immobility, loss of consciousness or cognitive abilities, inability to feel pain, decreased blood flow due to diabetes or peripheral arterial disease, as well as dry skin and skin maceration that makes skin more vulnerable to damage.

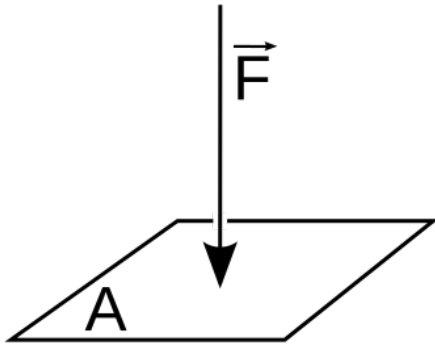
### **Increasing Hydration and Protecting Macerated Skin**

Small Molecule Technologies Renewal Moisturizer and Small Molecule Technologies SkinMineralZ contain important skin nutrients including antioxidants, amino acids and vitamins to strengthen vulnerable skin. Renewal Moisturizer increases skin hydration to help keep moisture in skin, as well as ensure proper nourishment of the epidermis. Each ingredient in Renewal Moisturizer

has been perfectly pH balanced. SkinMineralZ helps nourish macerated, inflamed skin while providing absorption of toxins. The micronized zinc oxide in SkinMineralZ is ideal for treating delicate skin that cannot tolerate abrasiveness.



Pressure is the amount of force applied perpendicular to a surface area. In addition, forces known as shear forces may be applied parallel to a skin surface. Shear forces are commonly applied when patients slide down a surface and they typically affects the sacrum and heel areas of skin. When pressure is applied to skin, especially over bony prominences, it distorts the skin and un-



derlying soft tissues. If constant pressure is maintained, soft tissue will change and mold itself to accommodate the external shape, referred to as tissue creep. Blood vessels within the distorted tissue become compressed, bent or stretched out of their normal shape such that blood cannot flow which results in the tissues supplied by these vessels becoming ischemic.

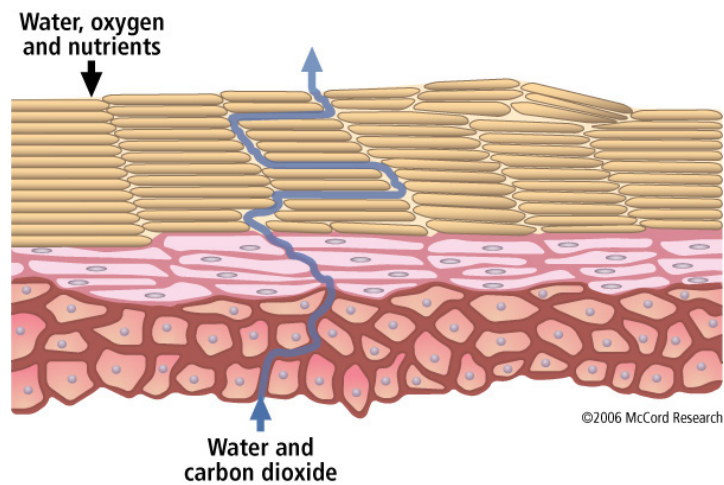
### Changing Positions and Strengthening the Skin Barrier

Normally, reflexive movements relieve tissue distortions, or the central nervous system is stimulated producing pain that causes



movement to relieve pressure and distortion before serious damage occurs. In fact, healthy individuals (that have normal sensation) change positions in their sleep every 11.6 minutes on average.

When the circulation is restored, local capillaries dilate and blood flow increases resulting in reactive hyperemia. This appears as a bright pink blanchable (capable of whitening) patch on the skin. When the erythema (redness) is unblanchable, that indicates tissue damage characteristic of category 1 pressure ulcers has occurred.



Therefore, there are 3 main causes of pressure ulcers: immobility, failure of reactive hyperemia and loss of sensation. Pain is an early warning sign for pressure damage and the use of strong pain medicines may delay triggers for movement. Distortion of soft tissues is particularly dangerous for paraplegic patients. If ischemia persists, pressure ulcers can occur within 2 hours. Patients who experience sudden drops in blood pressure due to events such as cardiac arrest may also be at risk for pressure ulcers. Prolonged pressure can result in skin atrophy and thinning of the protective skin barrier.

Small Molecule Technologies skincare products include ingredients that strengthen skin and improve the skin barrier. Quantitating transepidermal water loss (TEWL) is a way to assess the quality of the skin barrier and how well it functions. Oleuropein has been shown to reduce TEWL indicating its ability to increase skin barrier function. Evidence also demonstrates that melatonin has a stimulatory role in building and maintaining the epidermal barrier.

### Optimal Skin Care and Other Important Steps

Besides implementing optimal skin care provided by Small Molecule Technologies skin and wound care products, there are other steps that can be taken to reduce the risk of pressure ulcers. It's important to reposition patients that are immobilized. Pressure redistribution support surfaces are also useful. Patients that cannot move need to be advised to report pain to someone who can help them reposition. It's important to be aware of the fact that a

source of pain in another location may distract an individual from the pain associated with pressure, reducing the likelihood that the individual will respond to the pain trigger.

It's good to know that Small Molecule Technologies skincare products include ingredients to decrease inflammation, nourish and strengthen skin, and protect and hydrate skin. SkinMineralZ helps protect macerated skin to decrease the risk of pressure ulcers and Renewal Moisturizer helps eliminate dry skin, which also decreases the risk of pressure ulcers.

## References

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