The Importance of Skin Examination following Spinal Cord Injury

An individual who sustains a spinal cord injury (SCI) has a lifetime of increased susceptibility to skin problems, including pressure ulcers and/or wounds at areas of insensitivity or areas where excess pressure is applied during sitting, lying or transfers. It is estimated that as many as 85 percent of individuals who sustain a SCI will develop at least one pressure ulcer or wound following his/her injury.

Pressure ulcers are also known as pressure sores, bedsores, decubitus ulcers or decubiti and they occur for a variety of reasons.

**Why are individuals who sustain a spinal cord injury at greater risk for pressure ulcers?**

- **Lack of Mobility** – Decreased mobility without shifting weight or repositioning results in prolonged positioning in certain postures. This prolonged positioning does not allow blood to circulate past certain areas of increased pressure, resulting in decreased nutrients to these areas.
- **Lack of Sensation** - Decreased sensation in the area below the lesion means that individuals with spinal cord injuries are unable to sense when he/she needs to shift weight or reposition. In addition, altered sensation results in an increased susceptibility to burns as well as the ability to sense when the skin is bruised or cut.
- **Shear Forces** – Shear forces occur during any functional transfer or bed mobility and results in increased friction on the skin that can be damaging.
- **Spasticity/Spasms** – Can cause an extremity to run against another extremity or an object such as a bed or wheelchair.
- **Muscle Atrophy** – Because the musculature below the lesion is no longer fully innervated, it begins to waste. This atrophy increases the pressure at the skin-sitting surface interface.
- **Moisture on the skin** occur from bowel or bladder incontinence or a wheelchair cushion that holds sweat and moisture. Prolonged exposure to moisture can damage the skin.
- **Weight** – When an individual is *underweight*, there is increased pressure placed on the skin overlying bony prominences due to the decrease in “padding” from having less fatty tissue. When an individual is *overweight*, the same problem occurs due to the increased mass and weight pressing down on the skin when sitting or lying.

Skin wounds and pressure sores can be largely prevented with regular skin inspection as well as appropriate equipment (pressure-relieving cushions and mattresses, etc.) and a regular weight-shifting schedule.
Skin Inspection Guidelines:

- Skin, especially insensitive areas, should be examined at least once daily.
- Pay particular attention to bony prominences – areas that are at greater risk for skin breakdown:
  - The tailbone, Ischial Tuberosities (the “sitting bones”), greater trochanters of the hips, back of the heels, medial and lateral malleoli of the ankles, knees, shoulder blades, elbows.
- It is usually easiest to examine your skin or have a caregiver examine your skin while in bed. This allows you to roll in all directions and be thorough about your skin examination.
- If you are examining your own skin, you may need to use a regular or long-handle mirror to see all susceptible areas.

What to look for during skin examination:

- Red area on the skin that may feel warm or hardened
  - NOTE: Redness that is seen on the skin is not necessarily a cause for alarm. Redness that does not resolve within 30 minutes of removing the pressure or damaging force on the skin could be the beginning of skin breakdown and is an abnormal response.
- Cuts, scrapes, and bruises that require simple first aid care
- If pressure is not removed in an area where initial redness has occurred, a blister or scab may form over the redness. This is abnormal and you should contact your physician.
- If the area of increased pressure is still not managed, a crater or ulcer of varying depth may form. It may be small and extend only through the first layers of the skin or, if not immediately managed, may extend the whole way to the bone. Ulcers of any depth indicate damaged and/or dead tissue and a consult with your physician should occur immediately.

What should you do if you see the beginning of skin breakdown?

- If your skin inspection reveals areas of redness that do not resolve within 30 minutes, it is important to investigate its cause.
- Prolonged redness on the skin could be a problem with the wheelchair cushion or wheelchair fit, bed support surface, frequency of turning in bed and/or pressure relief schedule, orthotic fit, or method of transfers or mobility that causes excess shear on the skin.
Additional Resources for Patients and Families:

- The National Spinal Cord Injury Association – Skin Care Fact Sheet
- Christopher and Dana Reeve Foundation Paralysis Resource Center Website: Skin Care
  http://www.christopherreeve.org/site/c.mtKZKgMWKwG/b.4453427/k.F231/Skin_Care.htm
- Spinal Cord Injury Skin Management at Spinal Cord Injury Information Pages:
  http://www.sci-info-pages.com/skin_pres2.html
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Pressure Ulcer Staging:

From: National Pressure Ulcer Advisory Panel Website
Staging Illustrations: http://www.npuap.org/resources.htm

(A) Suspected Deep Tissue Injury:
Purple or maroon localized area of discolored intact skin or blood-filled blister due to damage of underlying soft tissue from pressure and/or shear. The area may be preceded by tissue that is painful, firm, mushy, boggy, warmer or cooler as compared to adjacent tissue.

Further description:
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 optimal treatment.

(B) Stage I:
Intact skin with non-blanchable redness of a localized area usually over a bony prominence. Darkly pigmented skin may not have visible blanching; its color may differ from the surrounding area.

Further description:
The area may be painful, firm, soft, warmer or cooler as compared to adjacent tissue. Stage I may be difficult to detect in individuals with dark skin tones. May indicate "at risk" persons (a heralding sign of risk).

(C) Stage II:
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 blister.

Further description:
Presents as a shiny or dry shallow ulcer without slough or bruising.* This stage should not be used to
describe skin tears, tape burns, perineal dermatitis, maceration or excoriation.
*Bruising indicates suspected deep tissue injury

(D) Stage III:
Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscle is not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling.

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

(E) Stage IV:
Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often include undermining and tunneling.

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

(F) Unstageable:
Full thickness tissue loss in which the base of the ulcer is covered by slough (yellow, tan, gray, green or brown) and/or eschar (tan, brown or black) in the wound bed.

Further description:
Until enough slough and/or eschar is removed to expose the base of the wound, the true depth, and therefore stage, cannot be determined. Stable (dry, adherent, intact without erythema or fluctuance) eschar on the heels serves as "the body's natural (biological) cover" and should not be removed.
Additional Research/Resources:

- Christopher and Dana Reeve Foundation Paralysis Resource Center Website:
  http://www.christopherreeve.org/site/c.mtKZKgMWKwG/b.4453427/k.F231/Skin_Care.htm

- Spinal Cord Injury Skin Management at Spinal Cord Injury Information Pages:


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