Spinal Cord Injury and Skin Care

What is a pressure sore?
A pressure sore is also called a pressure ulcer, decubitus ulcer, decub or bedsore. When you have a pressure sore, you have an area of skin that is damaged due to a loss of blood flow to the area. Blood flow is necessary to keep skin healthy and skin dies if it does not get blood. Pressure sores can become infected and can be life threatening.

What causes skin breakdown?
Nerves send messages of pain to your brain to alert you to move so that you can relieve pressure, shift your weight or stay away from hot surfaces. With a spinal cord injury, these messages from the sensory nerves may not reach the brain. If there is no feeling you have no way of knowing that you have something pressing against your skin or that you have been in one position for too long. You can get a pressure sore by:

- Sitting for long periods of time without shifting weight.
- Lying too long without turning.
- Not having enough padding especially under bony areas like heels or bottom.
- Wearing clothes and shoes that fit too tightly.
- Sitting or lying on hard objects such as catheters, clamps, seams and buttons.
- Trauma such as abrasion, friction, bumps or falls.
- Shearing which is when the skin moves one way and the bone another.

Tissue Under Pressure
Risks for pressure sore development:
- Loss of muscle mass - paralysis causes muscles to shrink and decreases the protective cushion over the bone surfaces.
- Being underweight means you have less padding and overweight makes it harder for you to shift your weight to relieve pressure.
- Decreased circulation to the paralyzed limbs (due to lack of muscle movement), swelling in body parts that aren’t moved frequently, smoking, diabetes, high blood pressure, high cholesterol, and illness.
- Other causes are
  - Aging causing more fragile skin
  - Scar tissue from previous skin breakdown
  - Spasticity causing your arms or legs to bump into an object
  - Temperature extremes - hot or cold
  - Alcohol or drug use,
  - Depression
  - Incontinence or sweating leading to excessive moisture
  - Or dry skin that becomes inflamed and infected

Most pressure sores are preventable. How can you help to prevent pressure sores?
- Daily skin care with mild soap and warm water being sure to thoroughly rinse and dry.
- Be sure to keep the genital area and skin folds clean and dry.
- Pressure relief by moving or lifting yourself to take pressure off areas.
- Check your skin (or have your caregiver check your skin) at least 2 times per day.
- Look for changes in skin color, blisters, bruises, cracked or dry skin and feel for hardness, swelling or warmth which may be signs of skin breakdown.
- Pay special attention to the sacrum (lower back), coccyx (tailbone), heels, buttocks, hip, elbow, knee, ankle, toes and back of head.
- Pay attention to fingernails and toenails because an ingrown toenail may lead to an area that can easily become infected.
- If you notice a discolored area, stay off of it until the normal color returns.
- Develop a regular schedule for turning during the night. If you can’t turn yourself, be sure that you are lifted rather than slid across sheets.
- Use pillows and foam pads under bony areas.
- Don’t elevate the head of your bed (unless your doctor tells you to do it) because this can put too much pressure on your buttocks and lower back.
• Your health care provider may prescribe a special mattress if you are at the highest risk for pressure sore development.
• Immediately wash and dry skin if you have any leakage of urine or stool.
• Get a seating evaluation every 2 years or sooner if the condition of your skin changes.
• Be sure your wheelchair has the proper cushioning.
• Wear properly fitted clothing.
• Shoes should be 1-2 sizes longer and wider than your pre injury shoe size to allow for feet swelling during the day.
• Wear shoes with stiffer toes for protection in case you bump into objects with your feet.
• Don’t carry anything in your back pockets.
• Drink plenty of water daily to be sure your body gets the fluids it needs.
• Eat a balanced diet to ensure proper nutrition and help the body to stay healthy.
• Avoid getting sunburned and be aware of any medications you are taking can make your skin burn easily.
• Avoid temperature extremes.
• Quit smoking.
• Stay as active as possible.
• When sitting in your wheelchair, do pressure reliefs every 15 to 30 minutes for at least 30 to 90 seconds. Do pressure reliefs when sitting in the car or on any other surface.
• If you can’t do pressure relief by yourself, ask your caregiver to routinely move you and reduce pressure.

How to do Pressure Reliefs or Weight Shifts
The pressure relief technique that you use will depend on your injury, your type of wheelchair and how much movement and strength you have in your arms and shoulders.

Tilting and Reclining
If you can’t do independent pressure reliefs, you can use a power tilt wheelchair to regularly relieve pressure. Many wheelchairs have tilt, recline and elevating leg rests. It is very important that you receive proper training from your health care provider to be sure that you are getting enough pressure relief and are properly using these features.

Tilt system wheelchairs allow for changing the angle orientation to the ground. Angle tilts of 25 and 65 degrees have been shown to provide adequate relief but 15 degrees or less does not provide adequate pressure relief.

Recline system wheelchairs allow for a change in the seat to back angle while maintaining a constant seat angle with respect to the ground. Reclining affects the downward pressure (vertical) and horizontal pressure on the skin.

Elevating leg rests allow for changes in the angles of the legs and or footrests in relation to the seat while extending the knee. Use of this feature while reclining can help reduce pressure.
Leaning from Side to Side
- This helps relieve pressure over one buttock at a time.
- Lock the wheels on your wheelchair and swing one arm away from the wheelchair.
- Hold onto the remaining armrest and lean your body to the opposite side, taking the weight off one buttock for 30-90 seconds. If you can't grasp the armrest with your hand, you may be able to hook your wrist behind the wheelchair push handle or back rest.
- To again sit upright, you may need to use the wheelchair push handle or armrest for assistance. Pushing up on the push rims of the wheels may also help in regaining an upright position.
- You may use a table or other stationary object to lean against for assistance. Be sure that the weight is completely off the opposite buttock and hold the position for 30-90 seconds.
- Repeat on the other side.

Leaning Forward
- This can be done alone or with assistance.
- Move your wheelchair so that the front casters are turned forward, and then lock the wheels of your wheelchair.
- Bend forward and bring your chest to your knees. This lifts the weight of your bottom from the wheelchair. Stay in this position for 30-90 seconds.
- Return your body to the upright position. There are several techniques to regain an upright position depending on your equipment and the strength in your arms and trunk. You may:
  - Place your hand on your knees to push up.
  - Keep your hand on push handles and pull up.
  - Place your hand against the front of the armrest and push up.

Independent Push-ups
This can be used by individuals who can extend their elbows and lift their body weight (people with an injury at C7 and below). Grip your arm rests with your hands and lift up completely off our seat for 60 seconds. Since this method could harm your rotator cuff (part of the shoulder joint), it should only be used if you are unable to complete the other techniques.

Progression of Training
Early in your training it may be difficult for you to shift your weight from the center of your chair. You may also find it difficult to regain an upright position after shifting your weight. If so, you may try the following techniques.
- Position and lock your chair next to a stationary object. Perform the side lean as instructed, but use the object to push up as you regain the upright position.
- Position and lock your chair in front of a table. Learn forward onto the table and use it to push back up.
Alternate Techniques
Below are some techniques that you can do and are less obvious. These can be done when you are out in the community without attracting attention.

- Cross one leg over the other and lean back to one side while holding your knee in position, lifting the weight off one buttock. Repeat using the other leg.
- Cross your leg by putting one ankle over the other knee and lean forward, lifting the weight off your buttock. Repeat using the other leg.
- Spend some time “fixing” your shoe laces, your feet, and the hem of your pants to achieve the same position as the forward lean technique.
- Lean against tables as you speak to friends.

Building Skin Tolerance
Skin tolerance is the amount of time that your skin can stand to be under pressure before damage starts to occur. The amount of time varies between people but regardless of your skin pressure tolerance, you still need to relieve pressure periodically. You need to move yourself every 15 to 30 minutes.

Skin tolerance can change especially if you are sick, not eating well or have changes in the surface you are on or have changes in your posture. If any of these occur, remember to frequently inspect your skin.

The increase in redness of your skin after applying pressure (the first sign of a pressure sore) and the amount of time it takes for the redness to fade will help you determine what your skin can tolerate. This will help you to determine how much time you need between pressure reliefs.

How do I know if I can increase my sitting time or time in one position?
Building up skin tolerance is a gradual process but you can build skin tolerance by following these steps:

- Lie in one position for the amount of time directed by your health care provider
- Look at your skin. Touch the pink areas of your skin to see if they turn white.
- Stay off of the area until the pinkness or redness clears completely.
- If within 15-30 minutes the redness or pinkness clears, you may increase your time between pressure reliefs or turning by 30 minutes.
- If the redness or pinkness does not clear in 15-30 minutes, do not increase your time between pressure reliefs or turning.

Recognizing and Treating Pressure Sores

How Can I Tell If I Have a Pressure Sore?

- One of the first signs is a reddened, discolored or darkened area that may feel hard and warm to the touch. An African American’s skin may look purple, bluish or shiny.
- If you remove pressure from the reddened area for 10-30 minutes and the skin does not return to normal, a pressure sore has begun. Stay off of the area and follow the instructions below under Stage 1.
- Press on the red, pink or darkened area with your finger. The area should go white. Remove the pressure and the area should return to red, pink or a darkened color within
a few seconds which indicates a good blood flow. If the area says white, the blood flow has been impaired and damage has begun.

- Dark skin may not have visible blanching even when healthy so it’s important to look for other signs of damage like color changes or a feeling of hardness compared to surrounding areas.

What you see at the skin’s surface is often the smallest part of the sore. Don’t be fooled into thinking that you only have a little problem. The pressure is usually from blood vessels under the skin being squeezed between the surface and bone so muscles and tissues near the bone suffer the greatest damage. Every pressure sore seen on the skin should be considered serious because of the probable damaged that has occurred under the skin.

Stages of Pressure Sores

Stage 1
Skin is not broken but is red or discolored or may show changes in hardness or temperature compared to surrounding areas. When the area is pressed, it remains red and doesn’t lighten or turn white (blanch). The redness or color change does not fade within 30 minutes of removing pressure. A pressure sore at this stage can be reversed in about 3 days if all pressure is taken off the site.

What to do
Stay off the area and remove all pressure. Keep the area clean and dry; eat adequate calories high in protein, vitamins (especially A and C) and minerals (especially zinc). Increase the amount of water you normally drink and find and remove the cause. Inspect the area at least twice a day and call your health care provider if it is not gone in 2-3 days.

Stage 2
The top layer of skin (epidermis) is broken creating a shallow open sore. The second layer of skin (dermis) may also be open. Drainage of fluid may be present. Healing time is usually three days to three weeks.
What to do
Get pressure off of the area and follow the steps outlined in Stage 1. See your health care provider right away.

Stage 3
The wound extends through the second layer of skin (dermis) into the fatty subcutaneous (below the skin). Bone, tendons and muscles are not visible. **Inspect the area for signs of infection which include:** redness around the edge of the sore, pus, odor, fever, or greenish drainage from the sore and possible necrosis (black, dead tissue). Wounds at this stage often take 1 to 4 months to heal.

What to do
Get the pressure off the area and see your health care provider right away. Stage 3 wounds often need special wound care. You may also qualify for a special bed or pressure relieving mattress which can be ordered by your health care provider.

Stage 4
This type of wound extends into the muscle and can extend as far down as the bone. Usually you will see a lot of dead tissue and drainage. There is a great chance of an infection. These wounds can take anywhere from 3 months to 2 years to heal.
What to do
Get pressure off of the area and call your health care provider right away. Surgery is frequently needed for this type of wound.

Suspected deep tissue injury
You may see a purple or maroon area of discolored skin that is not broken. You may also see a blood filled blister caused by damage to underlying soft tissue from pressure or shearing. This area may be surrounded by tissue that is painful, firm, mushy, boggy and warmer or cooler than nearby tissue.
Deep tissue injury may be harder to identify in people who have darker skin tones. Progression may include a thin blister over a dark wound bed and the wound may evolve and become covered by a thin scab (eschar). The progression may be rapid and expose additional layers of tissue even if you receive optimal treatment.

Unstageable
An unstageable wound is one where there is full thickness tissue loss and the base of the ulcer is covered by slough (which is dead tissue separated from living tissue) of yellow, tan, gray, green or brown color and/or a scab of tan, brown or black color in the wound bed.

Possible complications of pressure sores
They can be life threatening!
- Infections can spread throughout the body to the blood, heart and bone.
- Amputations may be needed.
- You may need to be on prolonged bed rest that can keep you out of work, school and social activities for months.
- Autonomic dysreflexia (quick onset of excessively high blood pressure) can occur.
- You are at a higher risk of respiratory infections or urinary tract infections (UTIs) because you are less active.
- Treatment can be very costly related to lost wages and/or medical treatment.