

# Preventing and Caring for Pressure Ulcers

## For Nursing Assistants and Family Caregivers

### What is a pressure ulcer?

A pressure ulcer is an injury to skin and tissue that usually occurs when a person remains in one position without moving or shifting his/her weight. Patients who are immobile (e.g., those confined to a bed or wheelchair) or who cannot move certain parts of their bodies are at high risk of developing pressure ulcers. Pressure ulcers usually form on bony areas, such as the tailbone, back, buttocks, head, ears, elbows, heels, hips, and shoulders.



### What causes pressure ulcers?

It is not completely understood why pressure ulcers form, but there are a few theories. One theory argues that a pressure ulcer begins in deep tissue near the bone. The tissue near the bone begins to die and continues to deteriorate, working its way to the outer layer of the skin. Another theory, called the **top-to-bottom** model, argues that the injury begins at the surface of the skin and eventually reaches the deeper tissues. Regardless of which theory is more accurate, constant pressure is the main culprit because it reduces the blood supply to the affected area and causes cells to die. As cells die, the skin breaks down and forms an open sore. Without proper treatment,

deep tissues, such as the muscle, tendon, or bone, become exposed.

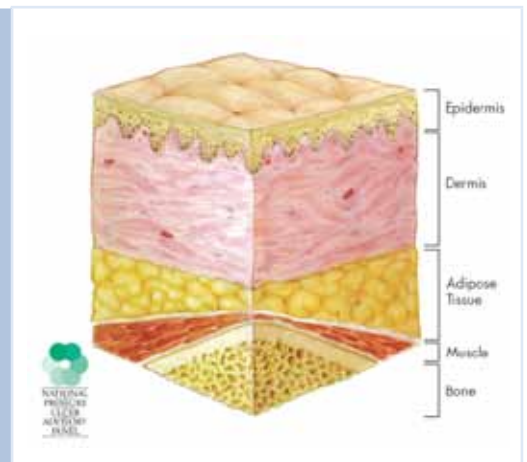
**Friction** and **shear** are important causes of pressure ulcers. Friction is the rubbing of one surface against the other (e.g., rubbing a patient's skin across the bed linen while moving the patient). Friction occurs on top of the skin, and its damage can be seen when looking at the skin. Shear is the force, caused by the interaction of gravity and friction, which can stretch and damage blood vessels under the dermis, resulting in skin breakdown. (E.g.: When the head of the patient's bed is elevated at an angle beyond 30 degrees, gravity can cause the patient's body to slide down while the skin remains pressed against the mattress.) Shear occurs underneath the skin, and its damage cannot be seen from looking at the skin.

### Staging (or Classifying) Pressure Ulcers

Pressure ulcers are graded based on the degree of damage to the tissue. The National Pressure Ulcer Advisory Panel classifies pressure ulcers based on the depth of the wound. In addition to the original four classifications (Category/Stage I through IV), two others—unstageable pressure ulcers and deep tissue injury—have been defined (EPUAP/NPUAP, 2009; NPUAP, 2007).

#### Normal Skin:

The skin is made up of two layers: the epidermis and the dermis. The epidermis is the thin, tough outer layer. This layer has no blood vessels and renews itself about every month. The dermis is the thick, inner layer that attaches to the tissue that is beneath it. The dermis gives the skin strength and flexibility. The dermis contains blood vessels, hair follicles, oil glands, sweat glands, as well as nerve endings. Underneath the dermis, are fatty tissue, muscle, blood vessels, nerves, and bone.



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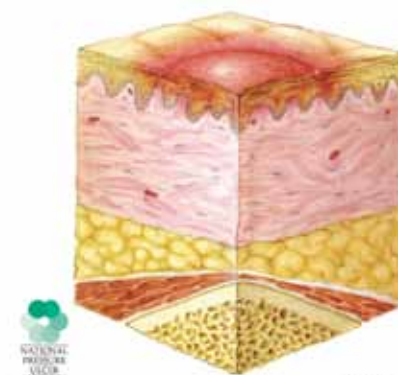
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### Category/Stage I:

In people with lighter skin tones, the area over a bony body part may look red. When you press the area with your fingers, the skin does not turn white.

In people with darker skin tones, this area may look red, blue, or purple.

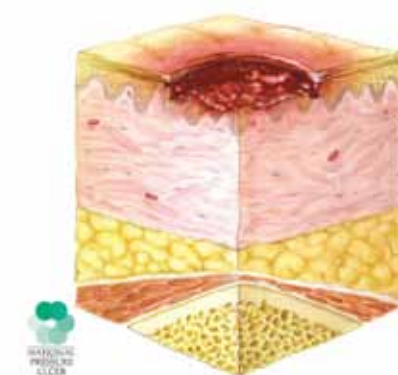
The area may be painful and feel warmer or cooler than the skin around it. At this point, the skin is not broken.



STAGE 1

### Category/Stage II:

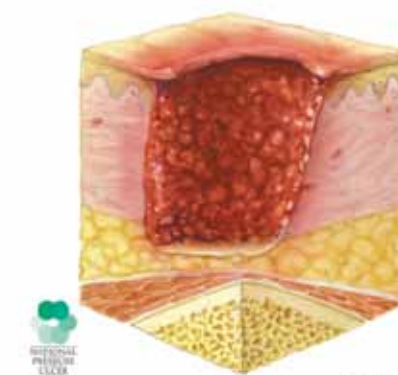
There is partial thickness loss of the dermis. The outer layer of skin blisters or forms a shallow open sore with a red pink wound bed but without slough or bruising. May also look like an intact or open/ruptured blister.



STAGE 2

### Category/Stage III:

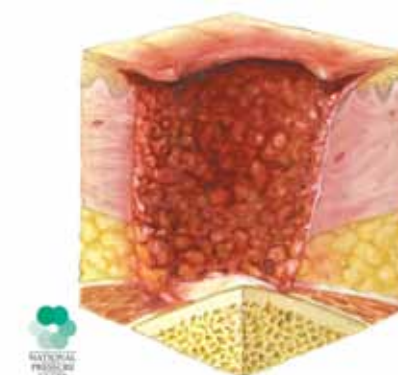
There is full-thickness skin loss. The tissue below the skin is damaged and the sore looks like a shallow crater. Subcutaneous fat might be visible, but bone, tendon, and muscle are not.



STAGE 3

### Category/Stage IV:

There is full-thickness skin loss with extensive damage to the tissue. The crater becomes deep enough that bone, tendon, or muscle may be seen.



STAGE 4

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### **Unstageable/Unclassified:**

There is full thickness tissue loss and the base of the ulcer is covered by slough (yellow, tan, gray, green or brown tissue that sticks to the pressure ulcer bed) and/or eschar (tan, brown, or black scab). Until the slough or eschar is removed (by a doctor or wound specialist), the depth of the pressure ulcer cannot be determined.

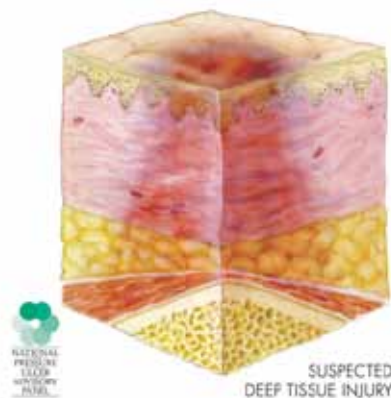
Stable eschar on the heel should not be removed as it serves as the body's natural cover.



### **Suspected Deep Tissue Injury:**

A deep tissue injury, not to be confused with a Stage I pressure ulcer, is a purple or maroon area of damaged tissue under intact skin, or a blood-filled blister due to damage of underlying soft tissue from pressure and/or shear. It looks like a deep bruise.

A suspected deep tissue injury needs to be examined by a doctor or wound specialist as it can quickly become a Stage III or Stage IV pressure ulcer.



*Illustrations presented with permission from the NPUAP*

Pressure ulcers show redness differently based on the patient's skin tone. A Stage I pressure ulcer in patients with light skin may look red, but in patients with darker skin may look red, blue, or purple. Therefore, special attention should be given to patients with dark skin as pressure ulcers may be more difficult to detect. A natural or halogen source of light should be used to assess pressure ulcers.

As pressure ulcers heal, they are not staged in reverse; e.g., a pressure ulcer that was previously classified as Stage IV is not upgraded to Stage III, II, and so on, as it improves.

For more information, please visit the **NPUAP's website**, [www.npuap.org](http://www.npuap.org).

### Can you distinguish pressure ulcers from other skin problems?

Pressure ulcers must be distinguished from other types of wounds so that the correct treatment

methods may be used to help heal them. Pressure ulcers are usually located over a bony body area, but they can also occur on skin located under tight braces, casts or tubes that put pressure on a body part. The location of the wound is one way to tell that the wound is a pressure ulcer. Features of pressure ulcers vary depending on the stage.

**Incontinence-related dermatitis** can consist of multiple skin lesions that are relatively shallow, but these moisture lesions are not to be confused with Stage II pressure ulcers. Other signs of incontinence-related dermatitis include area redness (see photo), swelling, oozing, crusting or scaling. Incontinence-related dermatitis may or may not occur over a bony prominence. Skin that has been exposed to bowel or bladder



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incontinence for an extended period may also show signs of **maceration** (softening of the tissue due to prolonged wetting), which appears as a white, waterlogged area.

### Determining the Patient's Pressure Ulcer Risk: Performing an Assessment

Nurses use a special scale to evaluate the patient's pressure ulcer risk. The most common is called the Braden Scale for Predicting Pressure Sore Risk<sup>®</sup>.

**The Braden Scale** is the most preferred tool for assessing risk of pressure ulcers and consists of the following six categories:

1. **Sensory perception** (how the patient responds to pressure-related discomfort),
2. **Moisture** (how exposed skin is to moisture),
3. **Activity** (how physically active the patient is),
4. **Mobility** (whether the patient can change and control body position),
5. **Nutrition** (what the patient normally eats), and
6. **Friction/shear** (friction occurs when the skin rubs against a surface, e.g., the bed sheet; shear occurs when blood vessels beneath the skin are stretched or damaged, causing skin breakdown).

The total score can range from 6 to 23 with a lower score indicating a higher risk. Patients with a Braden Scale score below 18 require intervention and the care team should be consulted. The level of risk dictates the intervention strategies that should be used.

#### **At risk** (Braden score 15 – 18)

- Turn the patient on a regular schedule.
- Help the patient to be as active as possible (e.g., walk or get up from bed).
- Protect the patient's heels.
- Use pressure-redistribution surfaces.
- Manage moisture, nutrition, friction, and shear.
- Advance to a higher level of risk if other major risk factors are present.

#### **Moderate risk** (Braden score 13 – 14)

- Use same protocol as for 'at risk' patients.
- Position patient at 30° lateral incline using foam wedges.

#### **High risk** (Braden score 10 – 12)

- Use same protocol as for 'moderate risk' patients.
- In addition to turning the patient on a regular schedule, make small shifts in their position.

#### **Very high risk** (Braden score ≤ 9)

- Use same protocol as for 'high risk' patients.
- Add a pressure-redistribution surface (e.g., low-air-loss bed) for patients with severe pain or with additional risk factors (e.g., immobility, malnutrition).

A patient who is at risk of a pressure ulcer should be getting a well-balanced diet that includes fluids, protein (i.e., poultry, fish, dairy, or soy products), vitamins, and minerals. A dietitian is an important part of the healthcare team who can help make sure that the patient is receiving adequate nutrition. The goals for nutrition, which the dietitian will help with, are to make sure the patient is receiving enough fluids; to make sure that any reasons for poor intake are identified and treated; to monitor the weight of the patient so that any unexpected weight loss does not occur; and to suggest nutrition interventions that will help or maintain the patient's nutritional status. It is also important to make sure the patient is receiving plenty of fluid (unless otherwise indicated) and that the skin does not become too dry.

The total Braden score can range from 6 to 23—the lower the score, the higher the patient's risk.

There are other risk factors related to the integrity of the patient's skin and to the general health of the patient. Skin that is damaged is more likely to develop a pressure ulcer than healthy skin. Skin that is too dry or that is exposed to too much

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develop a pressure ulcer than healthy skin. Skin that is too dry or that is exposed to too much moisture (e.g., urine or perspiration) is more likely to develop a pressure ulcer. Skin with a fungal rash or other condition is also more susceptible to pressure ulcers. An older person's skin is at increased

risk because it is thinner and more fragile than a younger person's skin. Certain diseases can increase the risk of pressure ulcers, such as those that reduce blood circulation (e.g., diabetes, vascular disease); chronic illnesses, such as renal disease and anemia; edema or infection; mental impairment, such as Alzheimer's disease; and low body weight, dehydration, and malnutrition.

The Agency for Health Care Policy and Research (AHCP; now the AHRQ) recommends that the risk for pressure ulcers be assessed when a patient is admitted to a healthcare facility and at regular intervals thereafter (e.g., once a week). The risk should also be assessed if the patient's condition changes.

### How can caregivers help prevent pressure ulcers?

Because pressure ulcers are very difficult to treat once they have developed, every measure should be taken to prevent them from occurring. The following interventions should be put in place:

#### **Skin hygiene (for intact or normal skin)**

- Wash skin with warm (not hot) water and use a mild soap to reduce irritation and dryness.

The risk for developing pressure ulcers should be assessed when a patient is admitted to a healthcare facility and at regular intervals thereafter.

- Apply moisturizer to prevent the skin from becoming too dry.
- Keep clothing and bedding dry and protect the skin from sweat and urinary or fecal incontinence.
- Check for new pressure ulcers or other irritation every day, especially over bony areas.
- Gently massaging intact skin may help with circulation and comfort. Avoid massaging bony areas.

#### **Moving and positioning**

Moving and changing the patient's position is very important because it can relieve or reduce pressure on an area and can reduce friction and shear.

- Encourage the patient to be as active as possible. Patients who are able should move from a bed to a chair and stand and walk. Range-of-motion exercises should be performed on a patient who is confined to a bed or wheelchair.
- Change the position of bedbound patients as often as possible (at least every 2 hours).
- Change the position of patients who are confined to a wheelchair each hour and instruct them to shift their weight every 15 minutes. (E.g., if a patient is watching TV, ask him to shift his weight with each commercial break.)
- Elevate the head of the bed as little as possible (30 degrees or less) so that the patient does not 'slide' downward in the bed.
- Use soft materials (e.g., pillows, special foam cushions, medically approved sheepskin) to reduce pressure and keep bony areas from touching each other. Do NOT use 'donut' cushions.



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- Use proper techniques when moving, turning, or changing the patient's position. Bed sheets or lifting devices should be used to lift patients rather than dragging them across the bed.
- If the patient does not want to change position, try to determine the reason. The patient may not understand the importance of repositioning or may have discomfort when moving. The doctor or nurse can help find a solution.

### **Appropriate pressure redistribution surfaces**

Special mattresses, pads, and other support surfaces can be used to help reduce pressure. These are available from medical supply stores and vary in cost and in ease of use (e.g., from simple foam pads to cushions filled with gel, fluid, or air). The doctor or nurse can help select the best surface for the patient's needs. At the very least, a patient who is at risk of pressure ulcers should use a foam mattress. There are several important things to consider when a support surface is being used:

- The height of a special bed or mattress pad may make it more difficult to move, position, and turn the patient. If this is a problem, contact the doctor or nurse.
- Some mattresses warm the patient. Make sure the patient is getting enough fluids and that he or she is not getting too warm.
- Make sure to properly clean and maintain the devices because cross-infection can occur.
- Make sure the devices are being used properly (e.g., proper inflation of some mattresses, placing the proper side of the support surface toward the patient, minimally elevating the head and shoulders, no more than 30 degrees, on a pillow or foam wedge to minimize shear).
- Make sure the bedding is not wrinkled or irritating the person's skin.

- Remember: Support surfaces do not completely eliminate pressure; therefore, the patient's position must be changed regularly.

### **Caring for Patients with Pressure Ulcers**

The healthcare provider will examine the ulcer and develop a treatment plan for the patient based on the stage of the ulcer. A pressure ulcer care plan includes the following treatment strategies:

#### **Pressure redistribution**

When treating a pressure ulcer, it is very important to relieve pressure on the area near the ulcer. Do not allow the person to lie or sit on a pressure ulcer. Move and reposition the person regularly. Use bed-positioning devices (e.g., pillows, special foam cushions, and medically approved sheepskin) and support surfaces to take pressure off the sore. Do not use donut-shaped devices.

#### **Dressings**

Many types of dressings are used for pressure ulcers to absorb drainage and promote healing. The doctor or nurse will select the proper dressing to be used based on characteristics of the pressure ulcer. As the pressure ulcer heals, the type of dressing used may be changed. It is important that the dressing be changed on the schedule set by the doctor or nurse. Some dressings must be changed at least once a day; other dressings are designed to stay on for several days at a time.

The healthcare provider will examine the pressure ulcer and develop a treatment plan for the patient based on the stage of the ulcer.

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### ***Pain from Pressure Ulcers***

Patients with pressure ulcers commonly have pain to some degree. Pain can be caused by several factors including the pressure ulcer itself (e.g., inflammation, damage to nerve endings, and infection), pressure ulcer treatments (e.g., repositioning, wound cleansing, debridement, or dressing changes); and other health conditions (e.g., immobility, cancer, arthritis).

Report the patient's pain to the doctor or nurse. Once the pain has been properly assessed, the doctor or nurse will develop a treatment plan to control the pain (e.g., change the type of wound dressing, adjust support surfaces). Some patients may need pain medication prior to repositioning or dressing changes.

### ***Pruritus (Itching)***

Pruritus can be caused by dry skin, allergies, and side effects of medications and treatments. Bathing the patient in cool water may help. Baking soda can be added to the bath water. A cool, moist cloth applied to the skin may also be helpful. Bed linens should be washed with a mild laundry detergent; harsh laundry detergents should be avoided. The doctor may prescribe medication that can be applied to the skin to reduce itching.

### ***Odor***

Odor from pressure ulcers can be caused by dead tissue, infection, and/or other problems. It can be very distressing for patients, their families, and caregivers.

Make sure pressure ulcers are carefully cleansed to remove pus and debrided to remove as much dead or infected tissue as possible. A warm shower or spray may be useful for cleansing wounds. If the pressure ulcer appears to be infected, contact the doctor or nurse immediately. A topical medicine might be prescribed to target bacteria causing the odor.

Essential oils in diffusers may help to eliminate odor. They are longer-acting and stronger than regular air freshener sprays. These should never be applied directly to the patient's skin because they can cause irritation. Make sure the patient's room is well ventilated by opening windows or running a fan on low speed. A tray of kitty litter or activated charcoal placed under the patient's bed may reduce odor.

### ***Excessive exudate (drainage)***

The fluid that is secreted by a pressure ulcer can be substantial. Excessive drainage can cause psychological and emotional stress for the patient. Highly absorptive dressings are usually used for pressure ulcers with a lot of drainage. These dressings may cause breakdown to the surrounding skin; therefore, creams, ointments, or sprays should be used to protect the skin around the wounds. Dressings should be changed when the fluid begins to leak through the dressing. If the dressing does not adequately absorb the exudate, the doctor may consider using a drainage stoma.

### ***Patient's body image and psychosocial issues***

The location, appearance, or odor of a wound may be distressing to patients and their family and friends. Patients may feel isolated, depressed, or anxious, and may develop problems in their relationships with others. If possible, the patient's preferences should be considered when selecting a dressing. Odor and excessive exudate should be effectively managed. Do NOT wear a mask when entering the room; this is offensive to the patient and family.

### ***Nutrition***

Good nutrition is necessary for the patient with a pressure ulcer because the body requires proper nourishment to heal. The dietitian is an important

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part of the pressure ulcer care team and should be involved in the care plan for the pressure ulcer. The dietitian will do a nutrition assessment, which may include a food- and nutrition-related history, height, weight, biochemical data, medical tests and procedures, nutrition-related physical examination findings, and the patient's medical history.

The goals for nutrition, which the dietitian will help with, are to make sure the patient is receiving enough fluids; make sure that any reasons for poor intake are identified and treated; monitor the weight of the patient so that any unexpected weight loss does not occur; and suggest nutrition interventions that will help the patient improve their nutritional status. The dietitian can give specific advice about a healthful diet. Protein and calorie supplements may be helpful for patients who are malnourished. Vitamin supplements and zinc might also help pressure ulcers to heal more rapidly. Report any weight loss or gain to the healthcare provider.



### Infection control

Cleansing the pressure ulcer and applying a topical antibacterial product may be all that is needed for a superficial infection that does not have much redness around it. An antibiotic (given by mouth or injection) may be necessary if the infection is more severe or if it is delaying the healing of the pressure ulcer. If you believe a pressure ulcer is becoming infected (pain, redness of surrounding skin, foul odor, increased drainage that looks like pus, fever, weakness or confusion), call the healthcare provider immediately.

### Monitoring Pressure Ulcer Healing

Check the patient's skin every day for new pressure ulcers—especially the bony areas. The nurse will use a log (or chart) to track the healing of each pressure ulcer (i.e., the wound

should be getting smaller, have healthier tissue, less drainage, etc.). This log helps the doctor or wound care specialist to prescribe the best treatments for the patient.

There are special tools or forms that are used to monitor the healing of a pressure ulcer. The NPUAP developed the Pressure Ulcer Scale for Healing or **PUSH tool** to monitor the change of pressure ulcer status over time. The tool rates three factors that reflect the degree of healing:

1. **length and width of the ulcer** (score ranges from 0 cm<sup>2</sup> through greater than 24.0 cm<sup>2</sup>),
2. **exudate amount** (score ranges from none through heavy), and
3. **tissue type** (score ranges from closed wound to necrotic, or dead, tissue).

The total score is recorded at regular intervals to monitor improvement or deterioration of pressure healing over time. The Pressure Sore Status Tool (PSST) is another tool that might be useful for monitoring pressure ulcer healing.

### When to contact the healthcare provider

Contact the nurse or doctor if...

- a dressing is loose or soiled and needs to be changed
- you discover a new pressure ulcer
- an existing pressure ulcer gets worse
- a pressure ulcer gets larger
- the patient's skin becomes very rough, red, or painful
- a rash or hives appear, or
- the patient reports severe itching

Call the healthcare provider or wound care specialist **immediately** if you think a pressure ulcer is becoming infected (pain, redness of surrounding skin, foul odor, and increased drainage that looks like pus, fever, weakness, or confusion).

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### **Being Alert Can Make a Difference**

Pressure ulcers are very hard to treat and can be painful for patients. They can cause infections that may require or extend a hospital stay.

Work closely with the nurse or doctor to make sure that everything is being done to care for patients with pressure ulcers and to prevent new pressure ulcers from developing.

### Preventing and Caring for Pressure Ulcers: Review

#### **Can you answer the following?**

- What causes pressure ulcers?
- What are some risk factors for developing pressure ulcers?
- How can you help to prevent pressure ulcers?
- How are pressure ulcers classified? Can you identify the various stages of pressure ulcers?
- What complications can occur in the patient with pressure ulcers?
- When should you contact a nurse or doctor?

### Pressure Ulcer Websites:

#### **AHRQ: Treatment of Pressure Ulcers**

<http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=hsahcpr&part=A5124>

#### **Emedicine: Pressure Ulcers and Wound Care**

<http://emedicine.medscape.com/article/319284-overview>

#### **Merck Manual: Pressure Ulcers**

<http://www.merck.com/mkgr/mmg/sec15/ch124/ch124a.jsp>

#### **National Center for Healthcare Statistics Data Brief: Pressure Ulcers Among Nursing Home Residents: United States, 2004**

<http://www.cdc.gov/nchs/data/databriefs/db14.htm>

#### **EPUAP/NPUAP Quick Reference Guides for Prevention and Treatment of Pressure Ulcers, 2009 Update**

[http://www.npuap.org/Final\\_Quick\\_Prevention\\_for\\_web.pdf](http://www.npuap.org/Final_Quick_Prevention_for_web.pdf)

[http://www.npuap.org/Final\\_Quick\\_Treatment\\_for\\_web.pdf](http://www.npuap.org/Final_Quick_Treatment_for_web.pdf)

#### **NetofCare.org: Symptom Management - Skin Problems**

[http://www.netofcare.org/content/symptom\\_management/skin.asp](http://www.netofcare.org/content/symptom_management/skin.asp)

#### **Pressure Ulcer Guidelines**

<http://www.pressureulcerguidelines.org/>

#### **Wound Ostomy, and Continence Nurses Society**

<http://www.wocn.org>

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