

# SURGICAL PATIENT EDUCATION PROGRAM

Prepare for the Best Recovery



## Wound Home Skills Kit: Pressure Ulcers



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## SURGICAL PATIENT EDUCATION PROGRAM

Prepare for the Best Recovery

### Welcome

You are an important member of your health care team. We want to help you learn as much as possible about how to care for your pressure injury or ulcer. The American College of Surgeons Wound Program was developed by members of your health care team: surgeons, nurses, wound care specialists, and patients. It will help you learn and practice the skills you need to take care of slow healing or chronic pressure ulcers, watch for improvements, and learn how to prevent other pressure ulcers.

This booklet includes:

Your Pressure Ulcer ..... 3-12

Treatment ..... 13-20

Wound Care ..... 21-34

Negative Pressure  
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Watch the accompanying skills videos included online at [facs.org/woundcare](https://facs.org/woundcare)



# Your Pressure Ulcer

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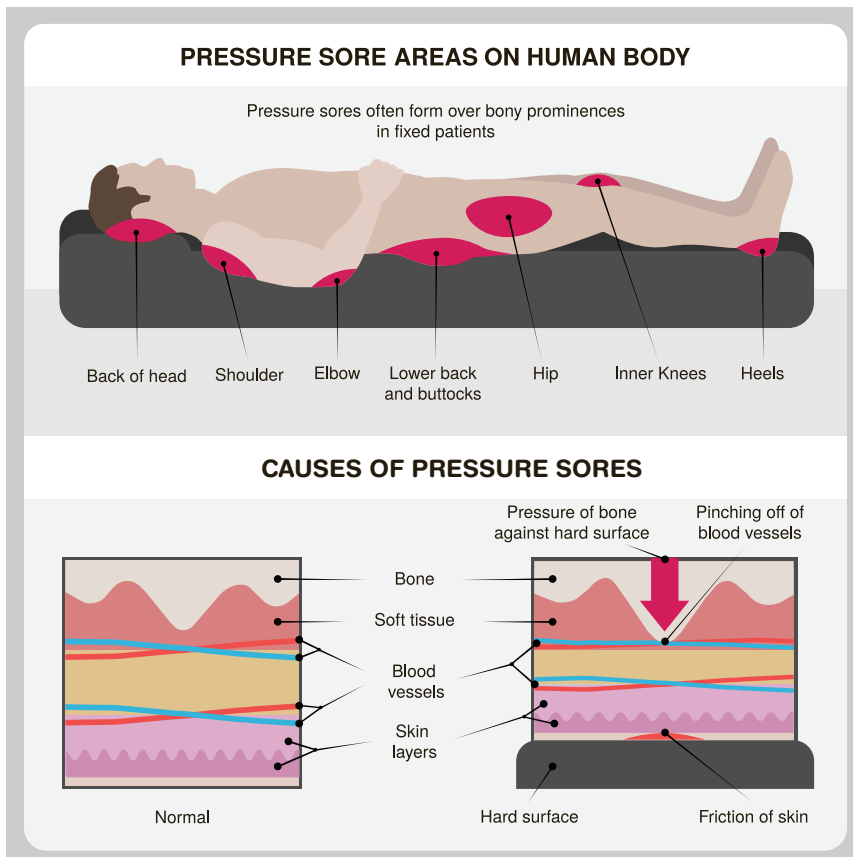
# Definition and Causes

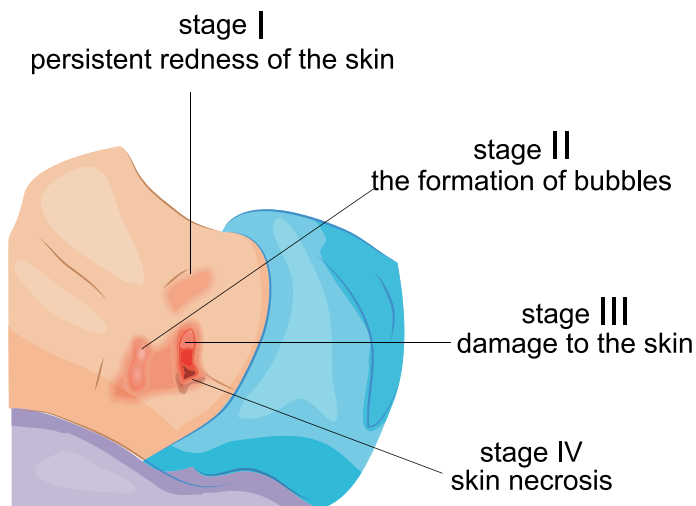
## What Is a Pressure Ulcer?

Pressure ulcers are wounds caused by the pressure of body weight on your skin covering bony areas.<sup>1</sup> Pressure ulcers first appear as redness that doesn't go away when pressed upon. They may also cause itching, blistering, warmth, swelling, and skin color change around the wound.

After long periods in bed, pressure ulcers can form on your shoulders, on your back below your waist, on your hip bone, and your heels. For people in chairs or wheelchairs, your buttocks and sides of your arms and legs may be affected. Pressure ulcers may also occur on your knees, ankles, shoulder blades, back of your head, ears, and spine.

Pressure on the same area over time can cause blood vessels to be squeezed between your skin and your bones. The muscles and tissues near your bones suffer the greatest damage. Even a small pressure sore on your skin may be serious because of the possible unseen damage below your skin's surface.





Pressure ulcer staging

Pressure ulcers may also be called:

- Bedsores
- Decubitus (de-KU-bi-tus) ulcers
- Pressure injuries
- Pressure sores

## Risks for Pressure Ulcers

You may be at risk for a pressure ulcer if you have:

- Reduced activity or are on bed rest, especially if you slide down in bed (sliding causes friction that may tear your skin)
- Reduced feeling in your skin (sense of touch)
- Medical problems, such as diabetes, obesity, poor circulation, spinal cord injury, or if you are a smoker
- Increased skin moisture from a lack of bowel or bladder control
- Poor nutrition, especially if you don't eat enough protein
- You are an older adult

Your health care provider will tell you the stage of your pressure ulcer.

# Staging and Testing

## The Four Stages

Pressure ulcers are staged based on the amount of skin and tissue damage:<sup>2</sup>

**Stage 1: Your skin has persistent redness.** It is the first sign that your skin and tissue are starting to break down and may worsen.

**Stage 2:** Your skin is bubbling and blistering.

**Stage 3:** Your ulcer is deeper, with more layers of skin, muscle, and fat breaking down.

**Stage 4:** Your ulcer extends to your muscle or bone.

There are two types of pressure ulcers that don't fit into these four stages.

**Suspected deep tissue injury and unstageable** ulcers may require treatments such as debridement (removing necrotic or dead tissue) and possible surgery.

## Stage 1

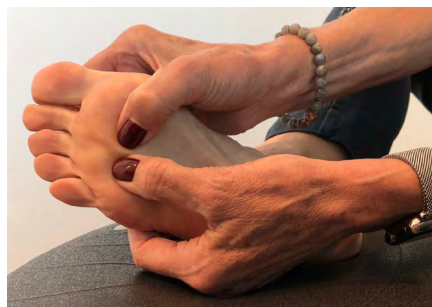
**First signs:** The skin looks intact but red, discolored, or darkened at the site of pressure. Dark skin may look purple, bluish, or shiny. It may feel hard and warm or cool to the touch. You may also feel burning, aching, or itching at the site.

### How to check if it is a pressure ulcer:

- **Test your skin with the blanching test.** Press on any red, pink or darkened area with your finger. The area should turn white. Remove your finger and watch to see if the area returns to red, pink or a darkened color within a few seconds. This indicates a good blood flow. If the area stays white, then blood flow is reduced and damage has begun.
- **Dark skin** may not blanch, even when it's healthy, so you will need to look for other signs of damage such as color changes or hardness.<sup>3</sup>



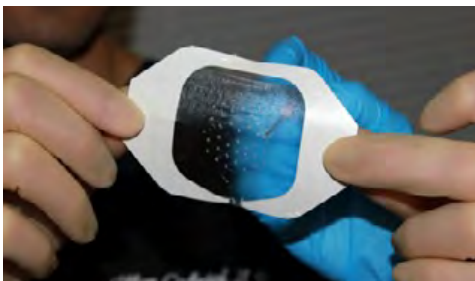
Stage 1 ulcer



Blanching test

**What to do:**

- **Stay off the area and remove all pressure.**
- **For all stages of pressure ulcers, stop smoking if you are a smoker.** The chemicals in cigarettes may interfere with your blood flow and skin healing. For help, you can view The American College of Surgeons Quit Smoking resources and Quit Plan online at [facs.org/quitsmoking](https://facs.org/quitsmoking).
- Clean the area with a mild skin cleanser and water (see **Wound Cleaning** on page 22).
  - Dry all skin areas thoroughly.
  - Use a barrier cream on skin around the wound. A barrier cream is used to keep the healthy skin around the wound moist and clean.
  - Use a clear film dressing to protect the wound.
  - Eat foods high in:
    - Protein—meat, fish, and beans
    - Vitamins—especially vitamin A (carrots, sweet potatoes, greens) and vitamin C (citrus fruits and vegetables)
    - Minerals—iron and zinc (see **Nutrition Guide** on page 17)
- Drink 8 full glasses of water daily (unless you have a fluid restriction).
- Inspect the area at least twice a day.
- Call your health care provider if the redness has not gone away in 2 to 3 days.



Clear film dressing

## Stage 2

**Signs:** The skin is broken. The ulcer is pink or red at the center. The skin may be shiny, dry, or have a blister that is draining.

### What to do:

- **Stay off the area and remove all pressure. Contact your health care provider right away.**
- Follow the steps in Stage 1:
  - Stop smoking
  - Clean your wound
  - Eat foods high in protein, vitamins, and minerals
  - Drink water
- If the wound has minimal drainage, you may use a clear film dressing.
- If the wound has moderate drainage, you may use an alginate or hydrocolloid dressing.
- For heavy drainage, an alginate or foam dressing may be needed.



Stage 2 ulcer

## Stage 3

**Signs:** The ulcer goes down to the subcutaneous (fat) layer of the skin on the body. The depth will vary by location. The bridge of your nose, ears and ankles do not have a fat layer, so ulcers in these places may be shallow. Areas such as your back and buttocks have a large fat layer and may have very deep ulcers.



Stage 3 ulcer

### What to do:

- **Stay off the area and remove all pressure. Contact your health care provider right away.**
- Follow the steps in Stage 1:
  - Stop smoking
  - Eat foods high in protein, vitamins, and minerals
  - Clean your wound
  - Drink water



- You may need to pack your wound ([see Wound Packing on page 29](#)).
- You may need a special bed or alternating pressure air mattress that can be ordered by your health care provider.<sup>4</sup>
- You may need to use an alginate or foam dressing if there is moderate-to-heavy drainage.

## Stage 4

**Signs:** The ulcer goes through to the bone, tendon, and/or muscle. Dead tissue separated from skin (slough) or dark scabs (eschar) may be present. There may be tunneling (open tracts) under the skin.



Stage 4 ulcer

### What to do:

- **Stay off the area and remove all pressure. Contact your health care provider right away.**
- Follow the steps in Stage 1:
  - Stop smoking
  - Clean your wound
  - Eat foods high in protein, vitamins, and minerals
  - Drink water
- You may need to pack your wound ([see Wound Packing on page 29](#)).
- Your wound may need debridement (a surgical procedure to remove dead tissue).
- You may also need a special bed or alternating pressure air mattress that can be ordered by your health care provider.
- You may need to use a hydrogel, alginate, or foam dressing if there is moderate-to-heavy drainage.
- Surgery is frequently required for this type of wound.

## Deep Tissue Injury

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**Signs:** The skin is intact but there is purple or maroon skin or a blood-filled blister. The area around the ulcer may feel painful, firm, mushy, warmer, or cooler. It may worsen and become covered by a thin scab (eschar). If the wound deepens, more layers of tissue and bone may be exposed.

### What to do:

- **Stay off the area and remove all pressure. Contact your health care provider right away.**
- **Follow all of the steps for Stage 4.**



Deep tissue injury

## Unstageable Ulcers

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**Signs:** The ulcer is covered by dead tissue separated from living tissue (slough) of yellow, tan, gray, green, or brown color. There may be a scab (eschar) of tan, brown, or black color in the wound.

### What to do:

- **Stay off the area and remove all pressure. Contact your health care provider right away.**
- **Follow all of the steps for Stage 4.**
- Some stable eschar (dry and intact without abnormal redness) on the heels serves as a natural cover, and your health care provider will decide if it should be removed.

**Treat skin breakdown as soon as possible. An unstageable ulcer that worsens can result in these complications:**

- **Infection**—can spread to your blood, heart, and bones and be life-threatening
- **Amputation**—removal of the ulcer site (toe, foot, lower leg)
- **Prolonged bed rest**—can keep you out of work, school, and social activities for months
- **Respiratory problems or urinary tract infections (UTIs)**—if you are less active while healing
- **Costly treatment and lost wages**—a social worker can help with resources for the cost of treatment, medical equipment, home assistance, and mobility



Unstageable ulcer

## Tests and Exams

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Your tests and exams may include:

- **Complete physical exam:** includes checking circulation (blood flow), sensation (feeling), and leg pain while moving (claudication)
- **Review of all medications, illnesses, or conditions;** allergies to drugs and dressings; and reactions to anesthesia
- **Vascular (blood vessel) assessment** may include:
  - **Doppler study:** Uses a handheld wand to hear the sound of blood flowing through the blood vessels.
  - **Ankle-brachial index (ABI) or toe pressure:** Compares the blood pressure at your ankle to the blood pressure in your upper arm.<sup>5</sup> The test is just like having your blood pressure checked in your arm. A blood pressure cuff is placed on your thigh, calf, foot, and toes. You may feel a little pressure for only about 60 seconds for each measurement. Lower blood pressure in the leg (an ABI less than 0.9) may indicate a narrowing or blockage in the arteries in your legs (peripheral artery disease or PAD).
- **Laboratory tests and x-rays** as needed
- **A complete examination of the ulcer and wound measurements** is always taken in the same position.<sup>6</sup> The following questions are asked:
  - Where is the wound located?
  - What is the size and depth?
  - What is the color/status of the wound?
    - Black: death of cells in tissue (necrosis)?
    - Yellow, red, or pink?
  - Is there a foul odor or drainage?
  - What is the condition of the skin around the wound (periwound condition)?
- Review of your diet, nutrition, and fluid intake



# Treatment

## Treatment Options

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## Nutrition

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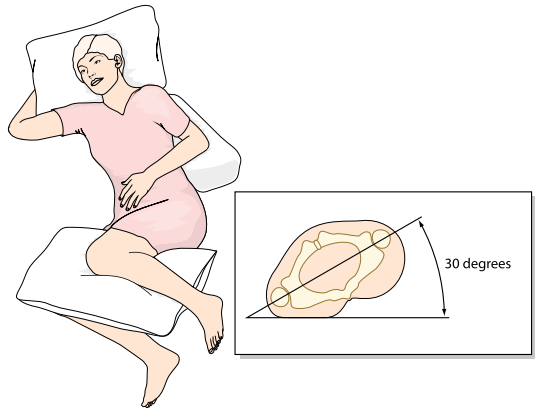
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# Treatment Options

## Removing Pressure

- If you have any stage of a pressure ulcer, remove all pressure from the site. This is called offloading.
- Change your position every 1 to 2 hours to keep the pressure off any one spot.
- If you can't turn yourself due to a medical condition or injury, a special bed or alternating pressure air, foam, or gel mattress may be needed.

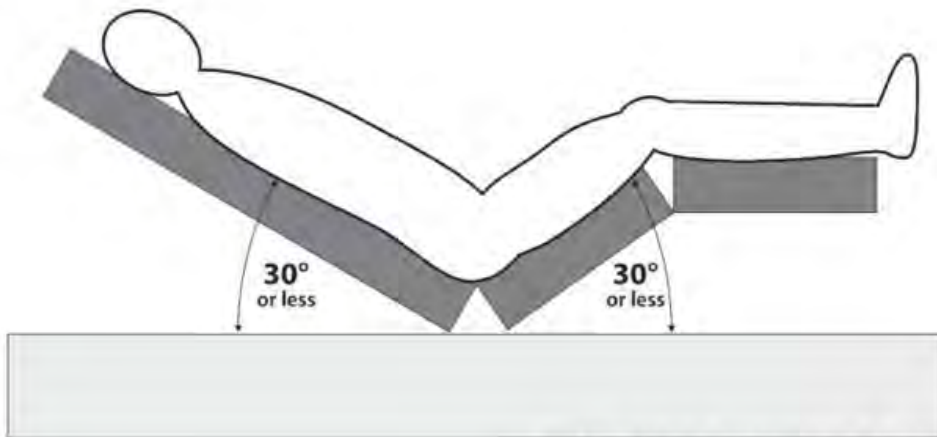


## When You Are in Bed<sup>7</sup>

- Use an air mattress or one that is filled with foam or gel.
- Place pads under your bottom to absorb wetness to help keep your skin dry.
- Change any wet clothing or sheets right away.
- When you are lying on your side, put a pillow or foam between your knees and ankles.
- When you are lying on your back, put a pillow or foam:
  - Under your heels
  - Under your calves to lift up your heels
  - Under your tailbone area
  - Under your shoulders and between shoulder blades
  - Under your elbows



- **DO NOT** put a pillow under your knees. It puts pressure on your heels.
- **DO NOT** drag yourself or slide to get in or out of bed. Dragging causes skin breakdown. Get help if you need moving in bed or getting in or out of bed.
- If someone else moves you, they should lift you or use a draw sheet (an extra sheet placed under your midsection) to move you.
- Sheets and clothing should be dry and smooth, with no wrinkles.
- Remove any objects such as pins, pencils or pens, or coins from your bed.
- Deep breathing and routine exercises can help prevent bed rest complications, such as pneumonia, blood clots, and urinary tract infections.
- **DO NOT** raise the head of your bed to more than a 30-degree angle. Being flatter keeps your body from sliding down.



## If You Use a Wheelchair:

- Have your doctor or physical therapist check the fit once or twice a year.
- If you gain weight, ask your doctor or physical therapist to check how you fit your wheelchair.
- Sit on an air, foam, or gel seat cushion that fits your wheelchair. Natural sheepskin pads also help to reduce pressure on the skin. **DO NOT** sit on a donut-shaped cushion.
- If you feel pressure anywhere, have your doctor or physical therapist check your wheelchair.

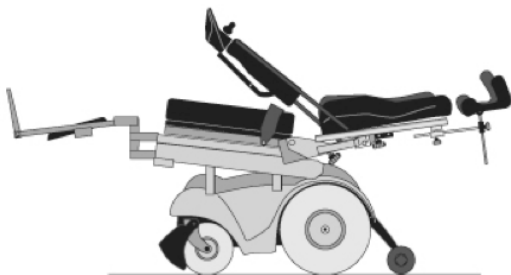
The positions below are examples of how you or a caretaker can help relieve the pressure on certain areas while you are sitting in a wheelchair. Rotate through these positions to relieve pressure every **15 to 20 minutes**. **Make sure the chair is locked in place before repositioning.**



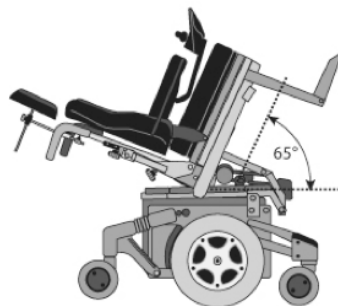
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Side to side



Recline system



Tilt system



## Chair Transfers

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- Lift your body up with your arms. DO NOT drag yourself.
- Ask your physical therapist to show you the best way to move from a chair to bed, toilet, and bath or shower.
- If your caregiver transfers you, make sure they know how to properly move you.
- You also may need physical therapy to help promote wound healing and learn how to decrease pressure at the area.

## Nutrition

Eating right can help. You can use this form to find out if you are eating a healthy diet: [mna-elderly.com/forms/Self\\_MNA\\_English\\_Imperial.pdf](http://mna-elderly.com/forms/Self_MNA_English_Imperial.pdf).

## What to Eat

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**A healthy diet can also promote wound healing and should include:**<sup>8</sup>

- **Protein and iron**—important for tissue repair and can be found in meats, poultry, eggs, fish, and nuts
- **Some meatless sources of protein, including:**
  - **Beans**
  - **Quinoa**—a grain substitute for rice
  - **Soy**—a vegetarian option that often comes in the form of tofu
  - **Peanut butter**—also provides healthy fats and essential amino acids
  - **Buckwheat**—can be ground into flour and also eaten as oatmeal
- **Calcium**—dairy products and leafy greens are generally high in calcium
- **Vitamins A, C, E, and K**—important for skin repair and can be found in lean meats, fruits, vegetables, dairy, and whole grains
- **Drinking 8 cups of water or other beverages each day**—it is important to make sure you're getting enough fluids

## How Much to Eat

A healthy diet should include **30 to 35 calories (energy intake) for every kilogram (kg) of your body weight**. You can find out how many calories you need each day by using the calculation tool below.

### Daily Calorie Calculation Tool

Your Weight (lbs.)	
Divide by 2.2	
Multiply by 30	
<b>Total</b>	

### Example

$$\frac{150 \text{ lbs.}}{2.2} = 68 \text{ kg} \times 30 \text{ cal.} = \mathbf{2,040 \text{ calories/day}}$$

Weigh yourself daily and adjust your calories if you gain or lose weight. Your health care provider can request that you have a consult with a dietitian if you have difficulty managing your weight, eating, have dietary restrictions, or have any medical conditions with special diets.

## Pain Control

Pressure ulcers may be painful due to loss of oxygen and blood flow to the site. Below is a list of pain control options.

### Non-Medication Strategies for Pain

- Position off the pressure ulcer whenever possible (offloading).
- Use a lift or transfer sheet to minimize friction and/or shear when repositioning an individual.
- Avoid long periods in positions that increase pressure, such as a sitting at a 30-, 45-, or 90-degree angle or lying in a side position.
- Keep bed linens smooth and unwrinkled.
- Request a time out during wound care or any procedure that causes pain.

- Keep your ulcer covered and moist, and use a non-stick dressing.
- Use pain-relieving dressings such as hydrocolloids, hydrogels, alginates, foam, and soft silicone.
- Distraction (music, games) and guided imagery can direct your focus away from your pain.<sup>9</sup>
- Organize your care around the timing for your pain medication.
- Topical anesthetics may also help to reduce or eliminate your pressure ulcer pain.

If you are having pain after a surgical procedure, please visit [facs.org/safepaincontrol](https://www.facs.org/safepaincontrol) for more information on how to safely manage your pain.



Distraction



Guided imagery

## Medication for Mild-to-Moderate Pain

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- Nonsteroidal anti-inflammatory drugs (NSAIDs) such as aspirin, ibuprofen (Advil<sup>®</sup>, Motrin<sup>®</sup>), and naproxen (Aleve<sup>®</sup>) are used to treat mild-to-moderate pain.
- Plan to take your pain medication 30 minutes before your wound care.
- Possible side effects include stomach upset, bleeding in the digestive tract, and fluid retention.

## Medication for Nerve Pain

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- Medications such as gabapentin (Neurontin<sup>®</sup>) and pregabalin (Lyrica<sup>®</sup>) are used to prevent nerve pain by calming over-active nerves.
- Possible side effects include dizziness, drowsiness, suicidal thoughts, and swelling of your hands and feet.

## Narcotics or Opioids for Severe Pain

- Severe pain means you can't focus or sleep because you can't take your mind off your pain.
- Tramadol (Ultram®) is a mild opioid.
- Stronger opioids include codeine with acetaminophen (Tylenol® #3 or 4), hydrocodone (Norco®, Vicodin®, Lorcet®), oxycodone (OxyContin®), and oxycodone with acetaminophen (Percocet®, Endocet®).
- Side effects include sleepiness; lowered blood pressure, heart and breathing rates; skin rash and itching; nausea; constipation; and difficulty urinating. You may also become physically dependent or addicted to opioids.
- If you have pain lasting for several weeks or longer, a treatment plan will be developed to help ensure best pain management practices.

## Pain Management Guide

### How Intense Is My Pain?

- I hardly notice my pain, and it does not interfere with my activities.
- I notice my pain and it distracts me, but I can still do activities (sitting up, walking, standing).

### What Can I Take to Feel Better?

#### Non-medication therapies

+

#### Non-opioid, oral medications

You may take these to control mild-to-moderate pain when needed

- My pain is hard to ignore and is more noticeable even when I rest.
- My pain interferes with my usual activities.

#### Non-medication therapies

+

#### Non-opioid medications

You may be told to take them regularly throughout the day rather than as needed

- I am focused on my pain, and I am not doing my daily activities.
- I am groaning in pain, and I cannot sleep. I am unable to do anything.
- My pain is as bad as it could be, and nothing else matters.

#### Non-medication therapies

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#### Around-the-clock non-opioid medications

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#### Short-acting opioids (for a few days)

Call your surgeon if your pain continues



# Wound Care

## **Wound Cleaning**

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# Wound Cleaning

- Most wounds should be cleaned at least once each day. Follow the instructions of your wound care provider. Some dressings are designed to stay in place for 2 to 3 days. Clean all of your skin in the shower daily if allowed by your health care provider.
- A bandage or dressing should be applied if the wound is draining or needs protection.
- Your health care provider will determine if unhealthy tissue should be removed (debrided) from your wound.
- Wounds should be debrided only by a health care provider using special tools. You should not try to debride your wound, as you can cause harm and make the wound larger.
- There are also bandages and dressings treated with medications that promote debridement when applied directly to the wound.



Debriding an ulcer

## Goals of Cleaning

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- Remove unhealthy tissue and bacteria from the wound surface
- Inspect the wound
- Protect the healing wound

## Cleaning Your Wound Skills

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- These are general instructions for cleaning a wound. Follow any special instructions you may also receive from your health care provider for cleaning your wound.
- **Watch the Cleaning Your Wound video online at [facs.org/woundcare](https://facs.org/woundcare), and then follow each of the steps.**

**SKILL** Gathering Your Supplies

- Drinking (tap) water or normal saline 0.9%
- A mild cleansing solution, if advised, such as Dove® or Ivory®<sup>10</sup>
- Clean gloves
- A clean bowl
- Dressing material
- Tape or a bandage
- Clean gauze or a clean towel
- Scissors

**SKILL** Preparing Your Work Area

- Clean the area where you will set out your supplies.
- If your hands are visibly dirty, wash your hands with soap and water for 15 to 30 seconds. If your hands are not visibly dirty, you may use a 60% alcohol-based hand gel.
- Put a clean towel over your work area and set a clean bowl on it.
- Pour water or saline into the bowl.
- Place gauze or a clean towel and dressing materials on the work area.



## SKILL

## Removing Your Old Dressing

- If the dressing is dry or stuck to your wound, moisten it with normal saline to loosen it before removing.
- Loosen the tape on the dressing but don't remove the dressing yet.
- Put on a medical glove or use a plastic bag over your hand to grasp and remove the dressing.
- Examine the color and amount of the drainage.
- Place the dressing and the glove/bag in a second sealed plastic bag and discard.



Moisten your wound with saline to remove all pieces of an old dressing



**SKILL****Cleaning Your Wound**

- Use a 60% alcohol-based hand gel to clean your hands again.
- Put on clean gloves.
- Soak the gauze or clean towel with water or saline and apply a topical antiseptic cleanser, if advised.<sup>11</sup>
- Starting at the center of the wound, work in a circular pattern and clean toward the edges. Do not return to the wound center after cleansing to avoid recontamination of the wound.
- Remove any loose tissue with the gauze pad.
- Do not press hard or scrub a clean wound because this can damage the tissue and slow healing.<sup>12</sup>
- Wet a new gauze or towel to rinse off the disinfectant. Start at the center and work out to the edges.
- Use a new gauze or towel and a mild skin cleanser and water to clean periwound maceration (skin around the wound broken down by moisture).<sup>13</sup>
- Use a dry gauze or towel to pat gently around the wound to dry completely.



Clean toward the edges



Skin around the wound broken down by moisture

**Warning: Use these products only if advised by your health care provider.**<sup>14</sup>

- Hydrogen peroxide can be harmful to tissues even at low concentrations.<sup>15</sup>
- Iodine products should be used with caution if you have renal (kidney) failure, history of thyroid disorders, or known iodine sensitivity.
- Sodium hypochlorite (Dakin's solution) may be harmful to cells at all concentrations. A solution labeled no greater than 0.025% may be advised for short periods only when no other option is available.

# Dressings and Bandages

Wound dressings are used to:

- Keep your wound moist
- Protect you from infection
- Remove drainage
- Help your wound heal

The correct dressing depends on the type, stage, and size of your wound and your health condition. As your wound heals, you may need to change to a different type of dressing. If you have complications, your health care provider can help you choose the right dressing.

## Gauze Dressings

- Avoid using dry gauze directly over open wounds. It can dry and stick to the wound and cause pain and damage when removed.
- Do not pack wounds with multiple dressings. Gauze left in the ulcer may cause an infection. Use a single gauze strip/roll to pack deep ulcers.
- Gauze dressings may be used as the secondary (cover) dressing over a moist primary dressing.
- **Loosely woven gauze** may be packed into deep or highly draining ulcers.
- **Tightly woven gauze** is used for minimally draining ulcers.



Loosely woven gauze



Tightly woven gauze

## Dressings for Your Wound Type<sup>1</sup>

Your Ulcer	Goal	Dressing Type	Considerations/Precautions
<ul style="list-style-type: none"> <li>▪ Clean and red</li> <li>▪ Dry-to-low drainage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Keep your skin moist with lotion</li> <li>▪ Promote healthy tissue growth</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Hydrogel</b></li> <li>▪ <b>Silicone foam</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Avoid bandages and tape that cause occlusion, maceration (skin breakdown), or allergies</li> </ul>
<ul style="list-style-type: none"> <li>▪ Red and pink with new tissue growth</li> <li>▪ No-to-low drainage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Keep your skin moist with lotion</li> <li>▪ Protect new tissue growth and wound contraction</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Hydrogel</b></li> <li>▪ <b>Hydrocolloid</b></li> <li>▪ <b>Transparent film</b></li> <li>▪ <b>Silicone foam</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Use thin dressings that won't stick to or tear the wound when removed</li> <li>▪ Avoid bandages and tape that cause occlusion, maceration (skin breakdown), or allergies</li> </ul>
<ul style="list-style-type: none"> <li>▪ Clean and red</li> <li>▪ Moderate-to-high drainage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Keep your skin moist with lotion</li> <li>▪ Promote healthy tissue growth</li> <li>▪ Manage drainage</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Alginate</b></li> <li>▪ <b>Foam</b></li> <li>▪ <b>Silicone</b></li> <li>▪ <b>Manuka honey<sup>16</sup></b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Use an absorbent dressing</li> <li>▪ Avoid bandages and tape that cause occlusion, maceration (skin breakdown), or allergies</li> <li>▪ Be sure to remove all foam pieces during dressing changes</li> </ul>
<ul style="list-style-type: none"> <li>▪ Mixed yellow and red</li> <li>▪ Infected</li> <li>▪ Low-to-high drainage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reduce bacteria</li> <li>▪ Manage drainage</li> <li>▪ Control odor</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Alginate</b></li> <li>▪ <b>Silver</b></li> <li>▪ <b>Foam</b></li> <li>▪ <b>Manuka honey</b></li> <li>▪ <b>Iodine</b></li> <li>▪ <b>Hydrocolloid</b></li> <li>▪ <b>Hydrogel</b></li> <li>▪ <b>Hydrofiber</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Improve healing of chronic clinically infected venous ulcers</li> <li>▪ Use an absorbent dressing</li> <li>▪ Avoid bandages and tape that cause occlusion, maceration (skin breakdown), or allergies</li> <li>▪ Be sure to remove all foam pieces during dressing changes</li> </ul>
<ul style="list-style-type: none"> <li>▪ Slough (dead separating tissue)</li> <li>▪ Yellow</li> </ul>	<ul style="list-style-type: none"> <li>▪ Remove slough</li> <li>▪ Keep your wound moist</li> <li>▪ Manage drainage</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Alginate</b></li> <li>▪ <b>Manuka honey</b></li> <li>▪ <b>Hydrocolloid</b></li> <li>▪ <b>Hydrogel</b></li> <li>▪ <b>Hydrofiber</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Use a dressing that helps remove the slough and absorbs drainage</li> <li>▪ Avoid bandages and tape that cause occlusion, maceration (skin breakdown) or allergies</li> <li>▪ Be sure to remove all foam pieces during dressing changes</li> </ul>
<ul style="list-style-type: none"> <li>▪ Slough (dead separating tissue)</li> <li>▪ Brown, black, or gray</li> <li>▪ Dry-to-low drainage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Remove slough</li> <li>▪ Keep your wound moist</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Alginate</b></li> <li>▪ <b>Manuka honey</b></li> <li>▪ <b>Iodine</b></li> <li>▪ <b>Hydrocolloid</b></li> <li>▪ <b>Hydrogel</b></li> <li>▪ <b>Hydrofiber</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Cover with transparent film or silicone dressing</li> <li>▪ Avoid bandages and tape that cause occlusion, maceration (skin breakdown), or allergies</li> </ul>
<ul style="list-style-type: none"> <li>▪ Necrotic and black</li> <li>▪ Dry</li> </ul>	<ul style="list-style-type: none"> <li>▪ Professionally debride</li> <li>▪ Keep dry</li> </ul>	<p><b>Iodine paint (unless not recommended)</b></p>	<ul style="list-style-type: none"> <li>▪ Cover iodine with a gauze dressing</li> <li>▪ Avoid occlusive dressing</li> </ul>

In general, topical antibiotics are not recommended for treating pressure ulcers, except in special situations where the benefit outweighs the risk of antibiotic side effects and resistance.

## Dressings and Bandaging Skills

 Watch and Review

- Your health care provider may advise or prescribe a specific type of dressing for you to use. The chart on the previous page and the online video will help you understand the different types of dressings used for different wound conditions.
- **Watch the Dressings and Bandaging video online at [facs.org/woundcare](https://www.facs.org/woundcare), and then follow each of the steps.**

### SKILL Putting on a New Dressing

- A clean pressure ulcer is ready for a new dressing. First, clean your wound.
- After cleaning your wound, apply a dressing as the first layer to absorb drainage from the wound. This is called the primary dressing.
- Tape or wrap a secondary bandage, if needed, 1 inch past the primary dressing in all directions to make sure it is completely covered. The secondary dressing covers the primary to decrease moisture loss.

1



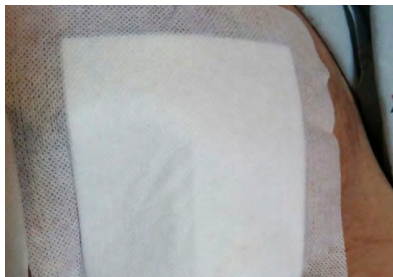
Clean ulcer ready for dressing

2



Apply a dressing

3



Apply a secondary dressing

## Packing Your Wound Skills



- If a wound is deep or tunnels under the skin, wound packing can absorb drainage and help it heal. Ask your doctor how to pack your wound and how to order wound packing supplies.
- Watch the Packing Your Wound video online at [facs.org/woundcare](https://facs.org/woundcare), and then follow each of the steps.

### SKILL

#### Gathering Your Supplies

- Packing material, water, or solution prescribed by your doctor
- Clean gloves
- A clean bowl
- Scissors
- Tweezers
- A clean towel
- Outer dressing material to use as a bandage
- Tape
- Cotton swabs (Q-tips®)
- A small plastic bag
- Alcohol wipes



Wound packing supplies

## SKILL

## Preparing Your Work Area

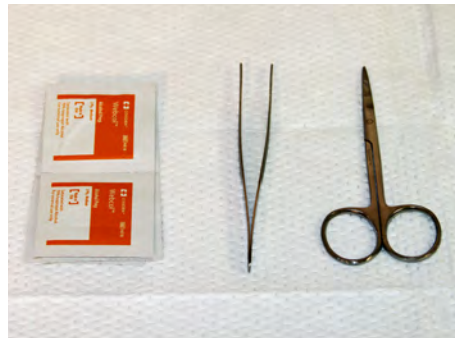
- Clean your work area.
- If your hands are visibly dirty, wash your hands with soap and water for 15 to 30 seconds; if your hands are not visibly dirty, use a 60% alcohol-based hand gel.
- Put a clean towel over your work area and set a clean bowl on it.
- Pour water or the solution prescribed by your doctor into the bowl to wet the packing material, or open your packaged material.
- Clean tweezers and scissors with alcohol or an alcohol wipe before using.



Always wash your hands before caring for a wound



Prepare your work area



Alcohol wipes, tweezers, and scissors



Clean your scissors with alcohol

**SKILL****Packing Your Wound**

- Cut pieces of tape longer than the length and width of the wound to secure the dressing. Hang one side of the tape from the edge of a table or workspace until needed.
- Carefully remove any tape or unwrap the bandage. Cover your hand with a plastic bag or a glove to remove the existing bandage. Check the bandage for drainage or odor, place in a second bag, and discard.
- Use a 60% alcohol-based gel for removing germs from your hands.
- Put on clean gloves.
- Use clean tweezers to lift the packing out of the container. Cut off the amount needed and place it on a clean piece of gauze.
- Gently push the packing material into the wound to fill the wound space. Use a cotton swab, if needed, to push the packing beneath any tunneled areas.
- You may also use a cotton swab to gently measure the depth of the wound and record it each day.
- Open the outer dressing material package and place the dressing over the packing and wound site.
- Tape the outer dressing in place or wrap a bandage around the wound area to hold the dressing in place.
- Remove your gloves and discard.
- Use a 60% alcohol-based hand gel to remove germs from your hands.

## SKILL

## Packing Your Wound (continued)

1



Remove the packing material from container

2



Cut some gauze packing



**SKILL**

**Packing Your Wound (continued)**

3



Pack your wound



Close-up of a packed wound

4



Tape the outer dressing over your packed wound

## Check Your Wound

---

Carefully check the wound during cleaning and dressing changes for any sign of worsening or a more serious infection, including:

- Redness extending from the ulcer edge
- Hardening around the ulcer
- New or increasing pain or warmth
- Pus or foul-smelling drainage
- Increase in size of your ulcer
- Fever, fatigue, confusion/delirium, or anorexia (lack of appetite, especially in older adults) are other warning signs
- **Osteomyelitis** (an infection of the bone) may be suspected if exposed bone is present, the bone feels rough or soft, or the ulcer has failed to heal with prior therapy; permanent healing of the pressure ulcer is unlikely until osteomyelitis is controlled

If there is heavy drainage and fluid pooling in the wound, a drain may be inserted. Negative pressure wound therapy may also help remove heavy drainage. If your wound is not healing, you may want to consult a wound care specialist.



# Negative Pressure Wound Therapy

## **Negative Pressure Wound Therapy (NPWT)**

Applying NPWT . . . . . 36

Home Management of NPWT . . . 37

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# Negative Pressure Wound Therapy

If your wound is infected or has a high amount of drainage, you may need to have a type of dressing called **negative pressure wound therapy (NPWT)**.<sup>17</sup> NPWT uses a sealed wound dressing connected to a vacuum pump. NPWT helps draw wound edges together and promotes the regrowth of healthy tissue. This helps increase blood flow to the area and removes excess fluid from the wound. NPWT can be used for a few days to several months.

A medical supply company will set up rental of the equipment and will usually deliver the vacuum pump supplies to your home. A health care provider will change the dressing on a scheduled basis.

## NPWT Supplies



Vacuum pump



Foam dressing  
and tubing

## Applying NPWT

1. The wound is cleaned and debrided, if needed.
2. A foam dressing or filler material is fitted to the shape of your wound. The foam can be many colors, including blue, gray, or white.
3. A protective dressing may be added to the healthy skin around your wound.
4. The foam is sealed with a clear film.
5. The drain tubing is connected to an opening in the film and attached to a canister.
6. The canister is then attached to a vacuum pump.



1

Open wound before NPWT



3

Tubing attached to a canister



2

Foam dressing fitted to your wound



4

Canister attached to vacuum pump

## Home Management of NPWT

**When your NPWT supplies are delivered, the supplier should tell you:**

- How to contact them for equipment problems through a support number available 24 hours a day/7 days a week
- How to access supplier staff for 24/7 technical product questions/information
- To call your health care provider or 911 if a medical emergency arises

**Things to know:**

- **The first time the pump is turned on**, you may feel a slight pulling sensation.
- **The dressing will pull down against your skin** when the therapy is working, and it will also be firm to the touch.
- **The dressing will be changed by a health care provider, usually every 3 to 7 days**, depending on the size, type, and amount of drainage.
- **You may experience some pain during dressing changes.** You may need to take pain medication 30 minutes before your dressing change.<sup>18</sup>
- **Most NPWT systems are portable so that you can move around**, so ask your health care provider how much activity you should be doing.
- **Make sure that the pump is positioned so it cannot be pulled off** onto the floor during sleep.

**Daily checks**

Check your dressing and NPWT daily to make sure:

- The negative pressure seal is not broken and leaks are at a minimum
  - There are no kinks in the tubing
  - The drainage chamber is filling and does not need to be changed
  - The skin around the dressing has not changed
  - The dressing is clean
  - The drainage level in the canister is not full
- 

**Low battery**

If the therapy pump is battery operated, change the batteries when the battery indicator flashes.

To change the batteries:

1. Press the button to pause the therapy.
  2. Take the battery cover off from the pump and put in new batteries.
  3. Put the cover back on and press the start button to continue your therapy.
- 

**Low vacuum alarm or light flash**

This means there may be an air leak around the dressing.

1. Smooth the dressing and strips to ensure there is no way for air to get in.
2. Press the button to restart the vacuum pump.
3. The alarm will also sound if the canister is full or if the tubing is kinked or blocked. Change the canister if it is full and you were trained to do so. The canister is usually changed with your dressing.
4. If the tubing is kinked or blocked, try to straighten it out.
5. Removing the kink or blockage should stop the alarm. Notify your supplier if the alarm does not stop.

**Disconnecting, shutting off, and restarting**

You will disconnect the pump to take a shower or use the toilet. If you feel more comfortable with assistance, you may want to organize your shower times around the days that you have a home health provider visit.

1. Press the button to pause the therapy. There should be a connector built into the tubing between the pump and dressing.
2. Holding the tubing pointing up, disconnect the two parts of the connector. Place the pump somewhere safe.
3. The dressing on top of the wound is water-resistant. You can shower or wash with the dressing in place, but do not soak the dressing or it may fall off. Point the end of the tubing attached to the dressing down so that water cannot enter the tube.
4. When you are ready to reconnect the pump, connect the two halves back together. Make sure the dressing is smoothed down and has no creases that could cause air leaks.
5. Press the button to restart the pump, and a light will flash to show that the pump is starting to apply therapy.

---

**Shutting Off**

- If the therapy off button is accidentally turned off, push the same button to turn the unit back on.
- The system should not be off for more than 2 hours each day.

## Risks and Safety Information

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### Bleeding

If you have recently had surgery on your heart or blood vessels, or are taking blood thinners, you may have a higher risk of bleeding, whether you are using NPWT or not.

If you see a sudden increase or a large amount of blood from your wound in the tubing or canister:

1. **Turn OFF the therapy unit right away.**
2. Do not remove your dressing.
3. Apply pressure over the area with gauze or a clean towel.



**Call 911 (or local emergency number) and then notify your health care provider.**

---

### Wound infection

Call your health care provider right away if you think your wound is infected or if you have any of the following symptoms:

- Fever of 101°F (38.3°C)
- Your wound is sore, red, or swollen
- Your skin itches or you have a rash
- The wound or the area around the wound feels very warm
- Your wound has pus or a bad smell
- Your wound has increased drainage
- You are diabetic and your blood sugar is elevated

---

### Serious infection

A wound infection can spread through the rest of your body. Call your health care provider right away if you have any of the following symptoms:

- Vomiting or diarrhea
- Headache
- Confusion
- Feeling faint or dizzy when you stand up
- Sore throat
- A fever of 102°F (39°C)
- Rash



### Allergic reaction

Therapy dressings, drapes, and canisters are latex-free and are delivered sterile. Use these items only once. At the end of therapy, follow directions for waste disposal or recycling. It is possible to have a sensitivity or allergic reaction to other wound care products. Call your health care provider right away at the following signs:

- Rash or hives
- Swelling
- Redness
- Severe itching



**If you have difficulty breathing, seek immediate emergency medical assistance. Call 911 (or your local emergency number).**

### Expiration date

Check the expiration date on all parts of the equipment. Do not use it if they are expired. Devices can degrade over time. If your equipment is expired, contact your medical supplier to request a replacement.







# Resources

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# Home Care Planning

To make sure you are ready to go home, you and anyone helping with your care should review the **Skills Checklist** and the **Discharge Checklist** with your health care provider. They are included in the pocket at the back of this booklet. You should be able to explain and demonstrate all parts of your care before you go home.

Wound care supplies may be ordered through a local medical equipment store, pharmacy, or online. Have any supplies you need ordered before you leave the hospital. It may take 1 to 2 days for them to arrive. Leave the hospital with several days of wound supplies in case there is a delay.

You may need to have prescriptions filled for medication or wound dressings. If you will have home health care, they may be assigned to order your supplies. Your hospital discharge planner can help with the specific details for the coverage of the supplies you need. They can also assist you with setting up delivery of supplies if you need negative pressure wound therapy (NPWT).

At any point in your care, you can refer to this booklet to review your instructions as well as your checklists and the videos for skill instructions at [facs.org/woundcare](https://www.facs.org/woundcare).

- **Lacerations and Abrasions**
- **Cleaning Your Wound**
- **Packing Your Wound**
- **Dressings and Bandaging**
- **Your Surgical Drain**
- **Negative Pressure Wound Therapy**

# Wound Care Resources

## Founding Organization

American College of Surgeons Surgical Patient Education Program  
800-621-4111  
[facs.org/patienteducation](https://facs.org/patienteducation)

## Collaborative Organizations

American Burn Association  
[ameriburn.org](https://ameriburn.org)

American College of Surgeons Advisory Council for General Surgery,  
Advisory Council for Pediatric Surgery, and Advisory Council for Plastic  
and Maxillofacial Surgery  
[facs.org](https://facs.org)

American College of Wound Healing and Tissue Repair  
[acwound.org/patients.php](https://acwound.org/patients.php)

American Association for the Surgery of Trauma  
[aast.org](https://aast.org)

American Society of Plastic Surgeons  
[plasticsurgery.org](https://plasticsurgery.org)

Association of periOperative Registered Nurses (AORN)  
[aorn.org](https://aorn.org)

Wound Healing Society  
[woundheal.org](https://woundheal.org)

Wound, Ostomy and Continence Nurses Society™ (WOCN®)  
[wocn.org](https://wocn.org)

## Additional Resources

Advanced Tissue  
[advancedtissue.com/the-best-and-worst-ideas-for-open-wounds](https://advancedtissue.com/the-best-and-worst-ideas-for-open-wounds)

Association for the Advancement of Wound Care (AAWC)  
Wound Patient/Caregiver Resources  
[aawconline.org/wound-patientcaregiver-resources](https://aawconline.org/wound-patientcaregiver-resources)

National Pressure Ulcer Advisory Panel (NPUAP)  
[npuap.org](https://npuap.org)

WOCN® Society™  
Patient Information section  
[wocn.org/?page=PatientResources](https://wocn.org/?page=PatientResources)

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# Check Your Knowledge

## Question 1

---

Which of these are other names for pressure ulcers?

- A. Bedsores
- B. Decubitus (de-KU-bi-tus) ulcers
- C. Pressure injuries
- D. Venous leg ulcers

## Question 2

---

Which of these is usually seen in a stage/grade 2 pressure ulcer?

- A. Bubbling and blistering of your skin
- B. Muscle and fat breaking down
- C. Necrotic or dead tissue
- D. A scab (eschar) of tan, brown, or black color in your wound

## Question 3

---

The most important thing you should do immediately if you identify any stage of pressure ulcer is:

- A. Sit on a donut-shaped cushion
- B. Recline in a chair on your back as much as possible
- C. Offload/remove all pressure from the site as often as possible
- D. Raise the head of your bed to more than a 30-degree angle

## Question 4

---

Which of these is the best way to pack a deep pressure ulcer with a dressing?

- A. Use a continuous roll of gauze so that there are no loose pieces
- B. Use gauze soaked in hydrogen peroxide
- C. Cover your ulcer with a clear plastic film dressing
- D. Pack your ulcer with small, individual pieces of gauze or foam

**Answers:** Question 1: A, B, and C Question 2: A Question 3: C Question 4: A



# Disclaimer

The information contained in this booklet and the patient education section of the American College of Surgeons (ACS) website does not constitute medical advice. This information is published as a communications vehicle: to inform and to educate the public about specific surgical procedures. It is not intended to take the place of a discussion with a qualified surgeon who is familiar with your situation. It is important to remember that each individual is different, and the reasons and outcomes of any operation depend upon the patient's specific diagnosis, disease state or other medical condition.

The ACS is a scientific and educational organization that is dedicated to the ethical and competent practice of surgery; it was founded to raise the standards of surgical practice and to improve the quality of care for the surgical patient. The ACS has endeavored to present information for prospective surgical patients based on current scientific information; there is no warranty on the timeliness, accuracy, or usefulness of this content. Under no circumstances will the ACS be liable for direct, indirect, incidental, special or punitive, or consequential damages that result in any way from your use of this resource.

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Director of Wound Care, Professor of Surgery,  
Chairman, Disaster Subcommittee,  
American Burn Association  
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Jacksonville, FL

**David M. Young, MD, FACS**  
Professor of Surgery  
University of California, San Francisco  
San Francisco, CA

# Evaluation Consent

## Your Input Is Valuable

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You and your family are important members of the health care team. In order to help you safely care for yourself or a family member or friend with a wound, you are being provided with the **American College of Surgeons Pressure Ulcers Home Skills Kit**.

We would like you to help us make sure that this skill kit prepared you to provide the best care for yourself or someone with a wound.

We are asking you to complete a short evaluation about your care. You should complete this evaluation after your first follow-up visit with a health care provider or surgeon. This visit usually happens 7 to 14 days after your procedure.

If you choose to complete the evaluation, you have two easy options:

- Mail: Fill out the printed evaluation included in this program and mail it back in the enclosed envelope provided.
- Online: Visit our website, [facs.org/woundcare](https://facs.org/woundcare). Look for the link to Complete the Wound Care Patient Evaluation: We Need Your Opinion!

## Some Information about the Evaluation:

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- It will take about 5 minutes of your time.
- Answering this evaluation may help someone with a wound in the future.
- All answers will be seen only by the study investigator at the American College of Surgeons.
- Only the group response will be reported (for example, the average time patients spent watching the videos was 20 minutes).
- The group responses will help your surgical team know what else can be done to help you or someone else care for a wound after an injury or operation.
- You may check the evaluation website for the updated summary of the responses.

### **Any questions should be directed to:**

Nancy Strand, MPH, RN  
American College of Surgeons  
312-202-5566 [nstrand@facs.org](mailto:nstrand@facs.org)

# SURGICAL PATIENT EDUCATION PROGRAM

Prepare for the Best Recovery

The Wound Management Home Skills Program, developed by the American College of Surgeons Division of Education, is made possible in part by the generous support of education grants from: Smith and Nephew Corp., Ethicon, and Acelity.



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