

## Smoking and Wound Healing

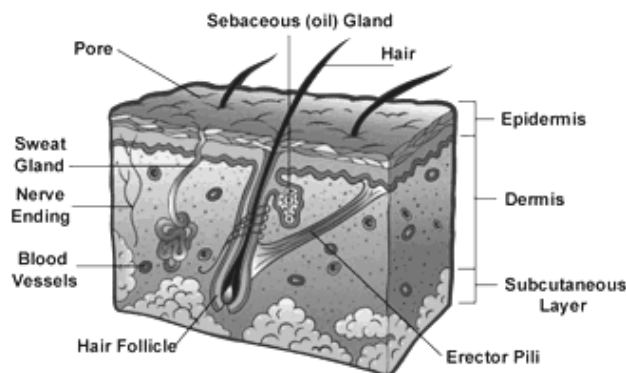
This handout explains how smoking slows wound healing and ways you can help your body heal faster.

### Skin System

Our skin system is made of 3 layers:

- Epidermis
- Dermis
- Subcutaneous

Hair, nails, and glands are part of the skin system. The skin is the largest organ of the body. It acts as a giant covering that protects the inside of our bodies from infection. This is what our skin looks like.



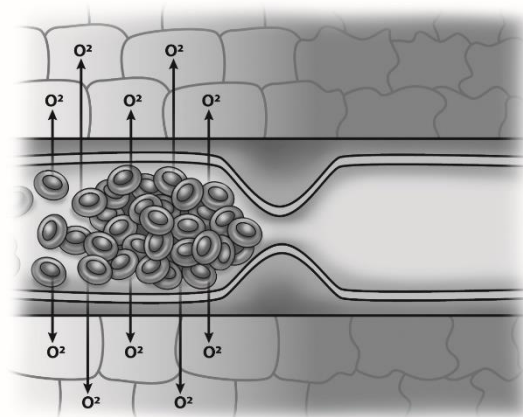
### Skin Wounds

Wounds result from many things such as burns, surgery, scraping your knee, or infections. No matter how big or small the wound is, your body follows a similar process to help it heal. When a wound occurs, the immune system sends out many healing factors through the blood vessels to the wound to help it heal. Oxygen we breathe is also sent to the wound through our blood vessels to help the wound heal. When the wound-healing process is complete. The new skin and/or scar tissue acts as a new covering to protect us from future injuries and infection.

### How Smoking Affects the Skin and Wound Healing

#### Right Away

Smoking narrows your blood vessels. The narrowed vessels have a hard time getting oxygen, nutrients, and healing factors to the wound. This can slow the wound healing process.



When you smoke, carbon monoxide enters your blood cells and lowers the level of oxygen in your blood. Oxygen is vital to healing. Smoking slows the healing process as less oxygen is delivered to your wound. It takes 3 full days of not smoking to get rid of all the carbon monoxide in your blood. It is vital to quit smoking for at least 3 days before your surgery, so the oxygen can build back up in your blood stream.

If you smoke, risk for infection after surgery may be higher due to reduced oxygen and neutrophils in the blood. Oxygen is the main energy source for healing. Neutrophils are the white blood cells that fight infection. Infection is always a concern because not only will your surgical site or wound not heal, but it can affect your entire body.

## **Long-Term**

The chance for heart disease increases if you smoke. This happens when cholesterol, cellular waste, calcium, and other fatty substances get stuck on the walls in our arteries. Another name for the combination of these deposits is plaque. When plaque is present and builds up, blood flow can't get through the arteries. If blood doesn't flow, a wound can't heal.

Smoking can increase platelet activation. Platelets exist within our blood. They are important because they are what help keep the blood within our blood vessels. Smoking can cause an increase in the number of platelets. If this occurs, your blood is at risk for clotting. When blood clots, the body is at a higher risk for stroke or a heart attack.

**Studies have shown that any amount of smoking can delay the wound healing process**, even if you only smoke once in a while. Cigars prevent wound healing in the same way.

## **Problems Caused by Smoking**

When you smoke, your wound(s) may still heal but it will take longer. There are many other reasons why you should stop smoking. Smoking can cause problems such as:

- Infection of your wound.
- A longer and more expensive hospital stay.
- If you have had a skin graft, it has a greater chance of not attaching as it should.
- Blood clots may form near the wound.
- Stitches may come apart, causing scarring.
- You are more likely to catch a cold or pneumonia due to more mucus in your lungs.

- Decreased vitamin C levels. Vitamin C is needed to help your skin heal.

## **Healing Wounds**

**Eat right and drink a lot of fluids.** Wound healing takes a lot of energy. It is a good idea to increase how much protein, calories, and vitamin C you eat. Meats, nuts, beans, and dairy products are great sources of protein. Citrus fruits and green leafy vegetables are sources of vitamin C. Try to drink eight (8 oz.) glasses of water a day and avoid drinks with caffeine. Caffeine causes the body to lose water. When the body does not have enough water, your skin can become dry, and your wound will not heal as well.

**Stay as active as possible.** Exercise will help keep you healthy. It will also help your immune system fight infections.

**Quit Smoking.** Quitting is the best possible choice you can make to help your wound(s) heal faster, safer, and with fewer problems. It is also the best way to start a healthy lifestyle. If you would like more info on quitting, please ask any member of your health care team.

## **When to Call**

Call your doctor if you have any signs of infection. These include:

- Increased redness (over 1 inch in width) and swelling around the wound.
- Foul smelling drainage or pus from the wound.
- Flu-like symptoms (fever, chills, nausea or vomiting, muscle aches) and/or increased pain.

**Who to Call**

University of Wisconsin  
Smoking Cessation and Prevention Clinic  
**(608) 263-0573**

Wisconsin Tobacco Quit Line  
**1-800-784-8669**

Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person's health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright © 10/2022. University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing HF#6150