

# Understanding a Burn Injury

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[www.msktc.org/burn/factsheets](http://www.msktc.org/burn/factsheets)

BURN Fact Sheet

This fact sheet offers important details about burn injuries to burn patients who are admitted to hospitals. This content may also be helpful to the family members and friends of burn patients.

## What is a burn injury?

A **burn injury** most often damages layers of skin. Deeper burn injuries may damage tissue (fat and muscle), or even bone.

## What are the main causes of burn injuries?

Burn injuries can happen in many ways. Common examples are:

- **Flame:** contact with fire or flames
- **Flash:** resulting from the heat of an explosive blast
- **Scald:** contact with hot liquids or hot steam
- **Grease:** contact with hot grease
- **Contact:** prolonged contact with something hot
- **Electrical:** electricity passing through the body and heating the skin and underlying tissue
- **Chemical:** contact with chemicals, such as acid or alkalis

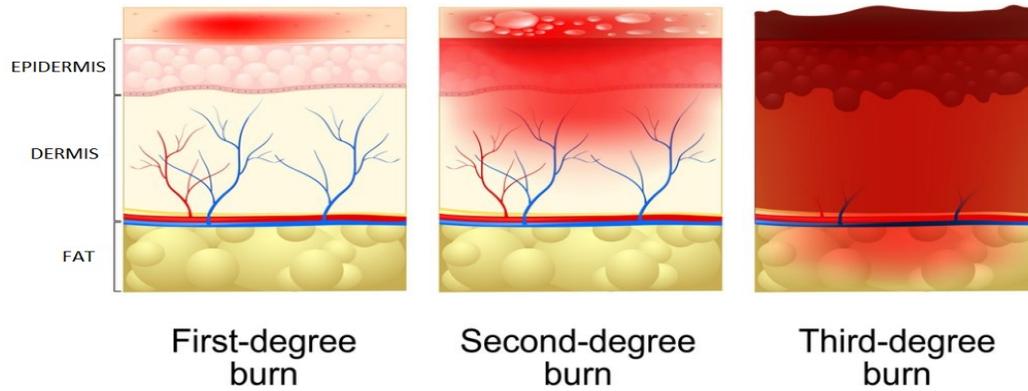
## What are the different degrees of burn injury?

Clinicians measure depth of burns in degrees:

- **First degree** burns are the mildest type of burn. They are also called superficial burns. First degree burns damage only the epidermis, which is the first layer of skin. First degree burns usually don't get infected or leave a scar. The skin may get red but won't break, and they heal within 3–5 days.
- **Second degree** burns are also called partial thickness burns. This type of burn damages the epidermis and the dermis. The dermis is the second layer of skin. Second degree burns are painful. The injured area can swell and appear red with blisters. The damaged skin usually grows back unless it becomes infected or the injury gets deeper.
- **Third degree** burns are also called full thickness burns. This type of burn goes through the epidermis and dermis and affects deeper tissues, which may also be damaged or destroyed. The injured area can appear charred and may be black, white, or deep red in color. This area is often numb to light touch. Third degree burns don't heal by themselves, so skin grafting is often necessary (discussed later).
- **Fourth degree and deeper** burns destroy the skin plus fat, muscle and sometimes bone.

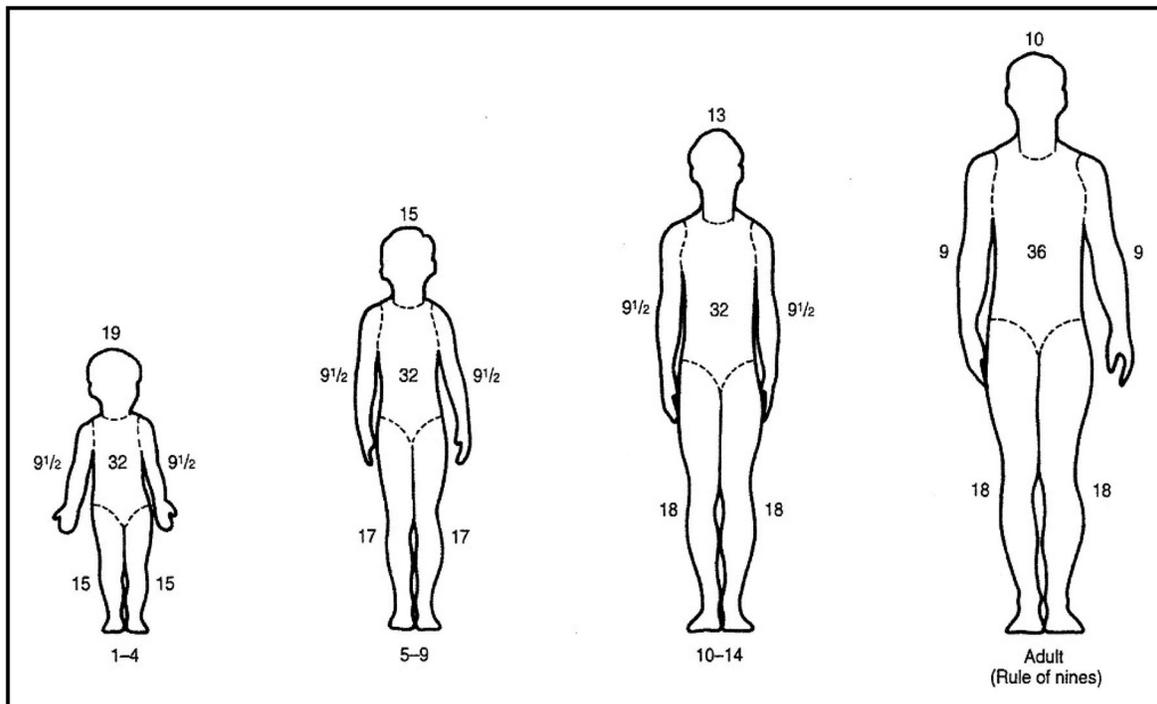
The Burn Model System is sponsored by the National Institute of Disability, Independent Living, and Rehabilitation Research, U.S. Department of Health and Human Services' Administration for Community Living. (See <http://www.msktc.org/burn/model-system-centers> for more information).





## How is the size of the skin burn estimated?

**Total body surface area (or TBSA)** burned is the percent (%) of the body that is burned. To estimate burn size, clinicians use a formula that considers the age of the injured person and a diagram called the Rule of Nines (shown below). This is the most common way to estimate burn size. First degree burns are not included in the calculation of percent TBSA burn.



## Can lungs be burned?

When breathed in, smoke or toxic gases can harm the lungs. Clinicians call this an **inhalation injury**. This type of injury often occurs when the injured person is trapped in an enclosed area for a long amount of time. Damage depends on the type of gas and smoke particles inhaled and on length of exposure.

## How is the severity of the burn assessed?

Clinicians consider many factors to determine the severity of a burn injury:

- **Degree** (depth) of the burn,
- **Size** (percentage) of the skin that is burned, and
- **Age** of the injured person
- **Other factors** include:
  - Location of the burn on the body,
  - Inhalation of toxic gases or smoke,
  - Type of burn,
  - Other traumatic injuries (bone fractures), and
  - Other health issues (such as diabetes, heart problems, or alcoholism).

## What are skin grafts and donor sites?

Skin grafts are thin layers of skin that surgeons take from an unburned area and then surgically place on the burned area. The area where the skin is taken from is called the donor site. Common donor sites are the thigh and the back but may be taken from any uninjured area of the body other than the face. The donor site generally takes about two weeks to heal.

## What are the different types of skin grafts?

Surgeons consider many factors when deciding what type of skin graft to use. They look at the condition, thickness, and size of the wound and where the injury is on the body.

- **Autografts** are permanent skin grafts that replace burned skin. With this graft, surgeons remove skin from one place on the body and place it on the burned area of the body. There are two types of autografts:
  - **Split-thickness skin graft** involves removing the epidermis and a shallow layer of the dermis and then placing it on the burned area.
  - **Full-thickness skin graft** involves removing the epidermis and dermis and placing it on the burned area.
- **Allografts and homografts** are temporary grafts to cover the wound. Donor skin comes from another person (usually a cadaver).
- **Xenografts** are temporary grafts to cover the wound. Donor skin comes from a pig.
- **Meshed grafts** are grafts in which donor skin is perforated with small slits or holes. Surgeons can then expand the mesh to cover a large burned area of the body. All four types of grafts can be meshed.
- **Sheet grafts** are grafts that are placed on the wound directly from the donor site without being meshed.

## What about infection?

Burned areas can get **infected**, at the time of the injury and during the healing process. To prevent infection, people with burn injuries should follow the treatment orders of their health care team. They should also follow the hospital's infection control guidelines, such as using gloves and gowns when recommended. Practicing good **hand hygiene** (clean hands) can help prevent infection. This applies to both the injured person and their family members, friends, and caregivers.

## What about nutritional needs?

Eating well is a key part of the recovery process. Healing from a burn injury requires more calories and protein than healing from other types of injury. **Nutritionists** may be available to provide information about a well-rounded diet.

## What about mental health?

It is common to feel anxious or upset after a traumatic injury. Burns can put tremendous stress on the patient and family. Burn teams include psychologists and psychiatrists who can help with feelings and concerns. **Psychiatric and psychological services** address issues like depression, anxiety, post-traumatic stress, addiction, and sleep problems. **Social services** can help families with managing housing, finances, and navigating the healthcare system.

## What about rehabilitation?

- **Rehabilitation** is the process of using education and therapy to help a patient reach his or her maximum potential for recovery after an injury. Rehabilitation may also include physical therapy or occupational therapy. **Physical therapy** treats physical impairments. It aims to improve a person's ability to walk and move, do daily tasks, and live independently. Treatment may include exercise, splinting, bandaging, medicine, and use of assistive devices (such as crutches or walkers), massage, and joint mobilization.
- **Occupational therapy** uses everyday activities and materials to help patients in their own recovery. For example, a patient could practice dressing, bathing, and feeding themselves or cooking.
- **Speech-Language Pathology** helps with swallowing, voice, cognitive issues, and communication.

Several types of facilities provide rehabilitation services to patients with burn injuries.

- **A burn center** often provides intensive physical and occupational therapy during acute hospitalization. The burn team will also follow the patient long-term, prescribing additional therapy if needed.
- **An inpatient rehabilitation facility** is a specially designed medical rehabilitation facility. Patients stay at the facility full-time after discharge from the burn center and must be able to do at least 3 hours of therapy per day.
- **A skilled nursing facility** is a place where patients may go after they leave the burn center. Patients live in these facilities and receive medical and nursing care to help them recover.
- **An outpatient rehabilitation center** is a medical facility that provides physical and occupational therapy services to people who are living at home.

## What should patients expect?

The recovery process differs for everyone. Most patients report feeling pain, fatigue, and itching during recovery and rehabilitation.

- **Pain** is common. Third degree burns are painful with deep pressure. Second degree burns are painful with air movement or changes in temperature. First degree burns are painful on the surface of the skin. Health care providers treat pain in different ways.
- **Fatigue** is common. The more severe the burn injury, the greater the level of fatigue.
- **Itching** is a common part of the healing process. Moisturizers and antihistamines can help make the burned area less itchy. Patients should never scratch their wounds.

Patients may have a tough time dealing with these symptoms. But health care providers can offer at least some relief. Patients should always let health care staff know how they feel. *Space is provided at the end of this fact sheet for patients and family members and friends to write down questions.*

## What can family and friends do when a loved one is injured and hospitalized?

In addition to care from medical staff, patients can also draw support from family and friends. Visitors and caregivers play an important role during the recovery process. It is important for family members and friends to also take care of themselves (for example, housing, food, and care of children). It can be helpful to coordinate visiting times amongst friends and family members.

Family members should also assign one person to be the main point of contact with medical staff. This person should be an adult who is available to talk with the burn team.

## What resources are available?

**Fact sheets** about burn injuries are a great source of information. Fact sheets from the Burn Model System discuss many topics related to burn injury, such as sleep problems, body image, social interactions, and nutrition. Fact sheets are available online (<http://www.msktc.org/burn/factsheets>) in English and Spanish. **Videos** are also available online (<http://www.msktc.org/burn/videos>). They cover exercise and employment after a burn injury.

Feeling anxious and afraid is common after a traumatic injury. Several local and national support systems offer support and suggestions about burn injuries. Patients and family members and friends should ask the health care team about options for support systems.

For example, the Phoenix Society for Burn Survivors (<https://www.phoenix-society.org/>) is a national **peer support** system. This group is made up of burn survivors and their family members. They are trained to offer support and can schedule a visit and share their recovery process. The Phoenix Society offers a support program in more than 60 hospitals and burn clinics throughout North America.

## Questions for the burn team

Use the space below to write down questions about the burn injury, treatment options, concerns about hospital care, and anything else to ask the health care team.

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## Authorship

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**Source:** Our health information content is based on research evidence and/or professional consensus and has been reviewed and approved by an editorial team of experts from the Burn Injury Model Systems.

**Disclaimer:** This information is not meant to replace the advice of a medical professional. You should consult your health care provider about specific medical concerns or treatment. The contents of this fact sheet were developed under a grant from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR grant number 90DP0082). The contents of this fact sheet do not necessarily represent the policy of the U.S. Department of Health and Human Services, and you should not assume endorsement by the federal government.

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