



Current
Red Cross



Protocol
for
Burns

*Reprinted from the "Mosby Year Book"
and "Courtesy of the American Red Cross"*

243 Veterans Boulevard, Carlstadt, NJ 07072
(201) 507-8300 / FAX (201) 507-8325 / TELEX 798217BDI USA

First Aid for Minor Open Wounds

A minor wound is one, such as an abrasion, in which damage is only superficial and bleeding is minimal. To care for a minor wound, follow these general guidelines:

- ♦ Wash the wound thoroughly with soap and water.
- ♦ Place a sterile dressing over the wound.
- ♦ Apply direct pressure for a few minutes to control any bleeding.
- ♦ Once bleeding is controlled, remove the dressing and apply an antibiotic ointment.
- ♦ Apply a new sterile dressing.
- ♦ Hold the dressing in place with a bandage (tape can also be used, or a Band-Aid-type bandage) (Fig. 8-23).

♦ Burns

Burns are another type of soft tissue injury, caused primarily by heat. Burns can also occur when the body is exposed to certain chemicals, electricity, or solar or other forms of radiation.

When burns occur, they first destroy the epidermis, the top layer of skin. If the burn progresses, the dermis, the second layer, is injured or destroyed. Burns break the skin and thus can cause infection, fluid loss, and loss of temperature control. Deep burns can damage underlying tissues. Burns can also damage the respiratory system and the eyes.

The severity of a burn depends on—

- ♦ The temperature of the object or gas causing the burn.
- ♦ The length of exposure to the source.
- ♦ The location of the burn.
- ♦ The extent of the burn.
- ♦ The victim's age and medical condition.

In general, people over age 60 have thinner skin than younger people and often burn more severely. Children under age five also may burn more severely. People with chronic medical problems also tend to have more severe burns, especially if they are not well-nour-



Figure 8-23 Minor wounds should be washed and then bandaged to prevent infection.

ished, have heart or kidney problems, or are exposed to the burn source for a prolonged period because they are unable to escape.

Types of Burns

Burns are classified by their source, such as heat, chemicals, electricity, or radiation. They are also classified by depth. The deeper the burn, the more severe it is. Generally, there are three depth classifications: superficial (first degree), partial-thickness (second degree), and full-thickness (third degree).

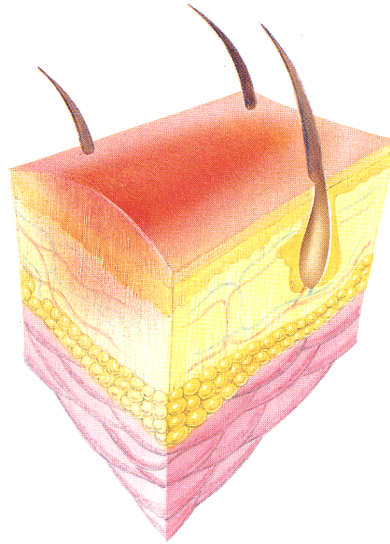
Superficial burns (first degree)

A superficial burn involves only the top layer of skin (Fig. 8-24). The skin is red and dry, and the burn is usually painful. The area may swell. Most sunburns are superficial burns. Superficial burns generally heal in five to six days without permanent scarring.

Partial-thickness burns (second degree)

A partial-thickness burn involves both the epidermis and the dermis (Fig. 8-25). These injuries are also red and have blisters that may open and weep clear fluid, making the skin appear wet. The burned skin may look mottled. These burns are usually painful, and the area

Figure 8-24 A superficial burn



often swells. The burn usually heals in three or four weeks. Scarring may occur.

Full-thickness burns (third degree)

A full-thickness burn destroys both layers of skin, as well as any or all of the underlying

structures—fat, muscles, bones, and nerves (Fig. 8-26). These burns look brown or charred (black), with the tissues underneath sometimes appearing white. They can be either extremely painful or relatively painless if the burn destroyed nerve endings in the skin.



Figure 8-25 A partial-thickness burn

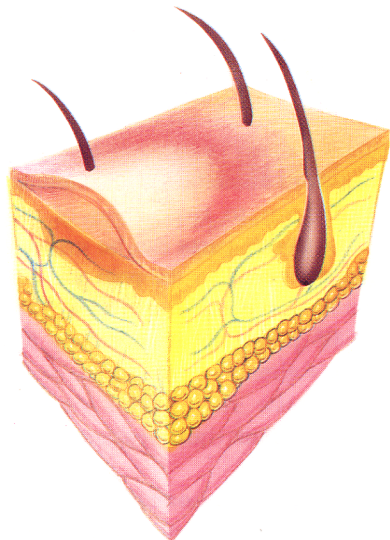
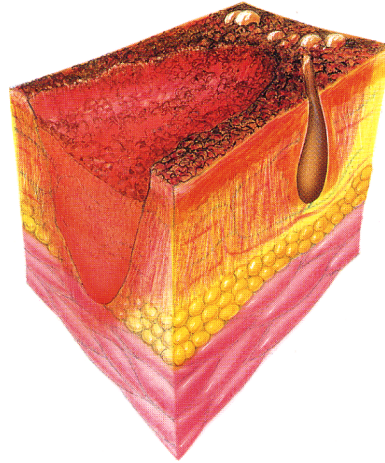


Figure 8-26 A full-thickness burn



Full-thickness burns are life-threatening. Because the burns are open, the body loses fluid, and shock is likely to occur. These burns also make the body highly prone to infection. Scarring occurs and may be severe. Many burn sites eventually require skin grafts.

Identifying Critical Burns

A **critical burn** is one that requires the attention of medical professionals. Critical burns are potentially life-threatening, disfiguring, or disabling. Knowing whether you should activate the EMS system for a burn injury is often hard. It is not always easy or possible to assess the severity of a burn immediately after injury. Even superficial burns to large areas of the body or to certain body parts can be critical. You cannot judge severity by the pain the victim feels because nerve endings may be destroyed. Call EMS personnel immediately for assistance for the following burns:

- ♦ Burns whose victims are experiencing breathing difficulty
- ♦ Burns covering more than one body part
- ♦ Burns to the head, neck, hands, feet, or genitals

- ♦ Any partial-thickness or full-thickness burn to a child or an elderly person
- ♦ Burns resulting from chemicals, explosions, or electricity

Expect that burns caused by flames or hot grease will require medical attention, especially if the victim is under 5 or over 65 years of age. Hot grease is slow to cool and difficult to remove from the skin. Burns that involve hot liquid or flames contacting clothing will also be serious, since the clothing prolongs the heat contact with the skin. Some synthetic fabrics melt and stick to the body. They may take longer to cool than the soft tissues. Although these burns may appear minor at first, they can continue to worsen for a short time.

♦ Care for Burns

As you approach the victim, decide if the scene is safe. Look for fire, smoke, downed electrical wires, and warning signs for chemicals or radiation. If the scene is unsafe, call your emergency number and wait for fire or EMS personnel to arrive.

If the scene is safe, approach cautiously. Do



Figure 8-27 Facial burns may signal that air passages or lungs have been burned.

a primary survey. Call EMS personnel. Pay close attention to the victim's airway. Note burns around the mouth or nose or the rest of the face that may signal that air passages or lungs have been burned (Fig. 8-27). If you suspect a burned airway or burned lungs, continually monitor breathing. Air passages may swell, impairing or stopping breathing.

As you do a secondary survey, look for additional signals of burn injuries. Look also for other injuries, especially if there was an explosion or electric shock.

If burns are present, follow these four basic care steps:

- ♦ Cool the burned area.
- ♦ Cover the burned area.
- ♦ Prevent infection.
- ♦ Minimize shock.

Even after the source of heat has been removed, soft tissue will continue to burn for minutes afterwards, causing more damage. Therefore, it is essential to cool any burned areas immediately with large amounts of cool water (Fig. 8-28, A). Do not use ice or ice water other than on small superficial burns. Ice causes critical body heat loss. Use whatever resources are available—a tub, shower, or garden hose is often handy. You can apply soaked towels, sheets, or other wet cloths to a burned face or other area that cannot be im-



A



B



C

Figure 8-28 A, Large amounts of cool water are essential to cool burned areas. B, Remove any clothing covering the burned area. C, Cover the burned area.

mersed. Be sure to keep these compresses cool by adding more water. Otherwise, they will quickly absorb the heat from the skin's surface.

Allow plenty of time for the burned area to cool. If pain continues or if the edges of the burned area are still warm to the touch when

the area is removed from the water, continue cooling. When the burn is cool, remove all clothing from the area by carefully pulling or cutting material away (Fig. 8-28, *B*). Do not try to remove any clothing that is sticking to skin.

Burns often expose sensitive nerve endings. Cover the burned area to keep out air and help reduce pain (Fig. 8-28, *C*). Use dry, sterile dressings if possible, and loosely bandage them in place. The bandage should not put pressure on the burn surface. If the burn covers a large area of the body, cover it with clean, dry sheets or other cloth.

Covering the burn also helps to prevent infection. Do not put ointments, butter, oil, or other commercial or home remedies on blisters or full-thickness burns or on any burn that will receive medical attention. Oils and ointments seal in heat and do not relieve pain well. Other home remedies can contaminate open skin areas, causing infection. Do not break blisters. Intact skin helps prevent infection.

For small superficial burns and burns with open blisters that are not sufficiently severe or extensive to require medical attention, care for the burned area as an open wound. Wash the area with soap and water and keep the area clean. Apply an antibiotic ointment and watch for signals of infection. Your pharmacist or doctor may be able to recommend products that are effective in caring for superficial burns such as sunburn.

Full-thickness burns can cause shock as a result of pain and loss of body fluids. Lay the victim down unless he or she is having difficulty breathing. Elevate burned areas above the level of the heart, if possible. Burn victims have a tendency to chill. Help the victim maintain body temperature by protecting him or her from drafts.

Special Situations

Chemical burns

Chemical burns are common in industrial settings, but also occur in the home. Cleaning

Table 8-2 Dos and Don'ts of Burn Care

Dos

- ♦ Do cool burns by flushing with cool water.
- ♦ Do cover the burn with a dry, sterile dressing.
- ♦ Do take steps to minimize shock.

Don'ts

- ♦ Don't apply ice directly to partial- or full-thickness burns.
- ♦ Don't touch burns with anything except sterile or clean dressings; do not use absorbent cotton or pull clothes over any burned area.
- ♦ Don't remove pieces of cloth that stick to a burned area.
- ♦ Don't try to clean a full-thickness burn.
- ♦ Don't break blisters.
- ♦ Don't use any kind of grease or ointment on severe burns.

solutions, such as household bleach, drain cleaners, toilet bowl cleaners; paint strippers; and lawn or garden chemicals are common sources of caustic chemicals. Caustic chemicals destroy tissues. Typically, burn injuries result from chemicals that are strong acids or alkalis. These substances can quickly injure the skin. As with heat burns, the stronger the chemical and the longer the contact, the more severe the burn. The chemical will continue to burn as long as it is on the skin. You must remove the chemical from the body as quickly as possible and call EMS personnel.

Flush the burn with large amounts of cool, running water (Fig. 8-29). Continue flushing until EMS personnel arrive. Do not use a forceful flow of water from a hose; the force may further damage burned skin. Have the victim remove contaminated clothes, if possible. Take steps to minimize shock. Do not forget the eyes. If an eye is burned by a chemical,



Figure 8-29 Flush a chemical burn with cool running water.



Figure 8-30 Flush the affected eye with cool water in the case of a chemical burn to the eye.

flush the affected eye until EMS personnel arrive (Fig. 8-30).

Electrical burns

The human body is a good conductor of electricity. When someone comes in contact with an electrical source, such as a power line, a malfunctioning household appliance, or lightning, he or she conducts the electricity through the body. Some body parts, such as the skin, resist the electrical current. Resistance produces heat, which can cause burn injuries (Fig. 8-31). The severity of an electrical

burn depends on the type and amount of contact, the current's path through the body, and how long the contact lasted. Electrical burns are often deep. The victim will have both an entrance and an exit wound. Although these wounds may look superficial, the tissues below may be severely damaged.

Electrical injuries cause problems in addition to burns. Electricity can make the heart beat erratically or even stop. Respiratory arrest may occur. Suspect a possible electrical injury if you hear a sudden loud pop or bang and/or see an unexpected flash.

The signals of electrical injury include—

- ♦ Unconsciousness.
- ♦ Dazed, confused behavior.
- ♦ Obvious burns on the skin surface.
- ♦ Breathing difficulty.
- ♦ Weak, irregular, or absent pulse.
- ♦ Burns both where the current entered and where it exited, often on the hand or foot.

Never approach a victim of an electrical injury until you are sure the power is turned off. If there is a downed power line, *wait for the fire department and the power company*. If people are in a car with a downed wire across it, tell them to stay in the vehicle.

To care for a victim of an electrical injury, make sure the scene is safe. Call EMS person-

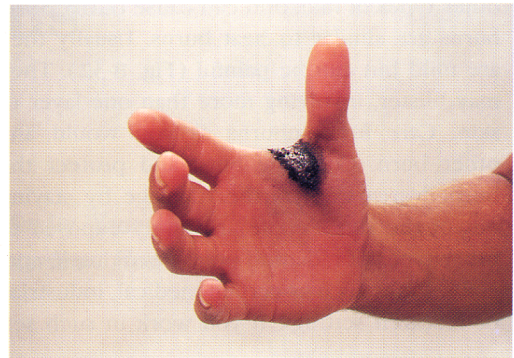


Figure 8-31 An electrical burn may severely damage underlying tissues.



Figure 8-32 Solar radiation burns can be painful.

nel immediately. Do a primary survey. The victim may have breathing difficulties or be in cardiac arrest. Give care for any life-threatening conditions.

In the secondary survey, look for two burn sites. Cover any burn injuries with a dry, sterile dressing, and give care for shock.

With a victim of lightning, look for life-threatening conditions such as respiratory or cardiac arrest. The victim may also have fractures, including spinal fracture, so do not move him or her. Any burns are a lesser problem.

Radiation burns

Both the solar radiation of the sun and other types of radiation can cause burns. Solar burns are similar to heat burns. Usually they are mild but can be painful (Fig. 8-32). They may blister, involving more than one layer of skin. Care for sunburns as you would any other burn. Cool the burn and protect the burned area from further damage by staying out of the sun. People are rarely exposed to other types of radiation unless working in special settings such as certain medical, industrial, or research settings. If you work in such set-

tings, you will be informed and will be required to take precautions to prevent overexposure. Training is also provided to teach you how to prevent and respond to such emergencies.

◆ **Summary**

Caring for wounds does not require a high degree of skill. You need only follow the basic guidelines to control bleeding and minimize the risk of infection. Remember that with minor wounds your primary concern is to cleanse the wound to prevent infection. With major wounds, you should control the bleeding quickly and seek medical attention. Dressings and bandages, when correctly applied, help control bleeding, reduce pain, and can minimize the danger of infection.

Burn injuries damage the layers of the skin and sometimes the internal structures as well. Heat, chemicals, electricity, and radiation all cause burns. When caring for a burn victim, always first ensure your personal safety. When the scene is safe, approach the victim and do a primary survey and a secondary survey if necessary. Follow the four steps for burn care: (1) Cool the burned area with water to minimize additional tissue destruction. (2) Keep air away from the burned area by covering it with dry, sterile dressings. Cover extensive burns with dry, clean sheets or other cloth. (3) Take appropriate measures to prevent infection. (4) Maintain the victim's body temperature to minimize shock. In addition, always check for inhalation injury if the person has a heat or chemical burn. With electrical burns, check carefully for additional problems such as breathing difficulty, cardiac problems, and fractures.

In the next chapter, you will learn how to provide care for injuries involving muscles and bones.