

Burn Awareness

Each year, thousands of Albertans suffer from burn injuries (scalds, flame, heat, sunburn, frostbite, chemical or electrical).

Burn basics

Very simply, a burn is damage to the skin and underlying tissue caused by heat, chemicals or electricity. All burns damage or destroy skin cells. Deeper burns may involve the fat, muscle or bone.

Children and older adults, by virtue of their thinner skin, sustain severe burns at lower temperatures and in less time than adults. Children, seniors and the disabled are less likely to survive burn injuries, usually spend longer in hospital, and have more difficulty recovering. Adults between the ages of 35 and 44 are the most frequently hospitalized for burn-related injuries (with males being three times more likely than females to experience burn-related hospitalizations), while children under six years of age are most frequently seen in the emergency ward. Up to 80 per cent of burn injuries happen in or around the home. The vast majority of burn injuries are preventable.

Types of burns

- First-degree (superficial) burns affect only the epidermis, or outer layer of skin. The burn site is red, painful, dry, and with no blisters. Long-term tissue damage is rare and usually consists of an increase or decrease in the skin color. Generally heals in three to five days with no scarring. (Examples: sunburn, minor scalds)
- Second-degree (partial thickness) burns involve damage to top two layers of the skin. The burn site appears red, blistered, and may be swollen and painful. Generally heals in 10 to 21 days.
- Third-degree (full thickness) burns destroy all layers of the skin and may also damage the underlying bones, muscles, and tendons. The burn site appears white or charred. There is no sensation in the area since the nerve endings are destroyed. Skin grafts are required.

Burn causes

Tap-water scalds

Scalds are the number one cause of burn injuries in Alberta. Scalds result when one or more layers of skin are destroyed by contact with hot liquid or steam. Tap-water scalds are 100 per cent preventable, but very common among young children, older adults and people with disabilities. They are often more severe than scalds related to cooking. The depth of injury depends on two things: the temperature to which the skin is exposed and the length of time the skin is exposed to the burning substance. The higher the temperature, the shorter the time required to inflict a burn injury.

Children are most often scalded by tap water when they are left unattended in the bathroom; are placed in water that is too hot; are bathed by an inexperienced caregiver (babysitter or older sibling); are in the tub when another child turns on the hot water; or fall into the tub.

Older adults and people with disabilities are most often scalded by tap water when they slip or fall in the tub or shower, a caregiver fails to recognize that the water is too hot; water temperature fluctuates

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due to running water in other parts of the home; or a faucet or plumbing fixture malfunctions and the person is unable to escape a sudden burst of scalding water.

Food and beverage scalds

Scalds from cooking or hot food and beverages are common in all age groups, but are especially serious for young children, older adults and people with disabilities. Although these burns may cover a smaller surface area than tap water scalds, they are often deeper because of the higher temperature. Children may get burned when they upset hot beverages, grab dangling appliance cords or pot handles, or pull on hanging tablecloths. Adults can receive cooking-related scalds from hot liquid spills and hot oil splatters while deep-frying. Microwaves can also cause burns from spills, splashes and the release of steam. These injuries usually occur both in kitchens and in dining areas of the home.

Flame burns

Burns can be sustained from contact with flames or hot objects, or through the inhalation of super-heated gases that can damage tissues in the airways and lungs. Flame burns can be caused by clothing catching fire from a stove burner, match, candle or exposure to an open flame. Seniors are a high-risk group for fire injuries due to illnesses and impairments such as blindness, deafness, or dementia that are associated with aging.

Chemical burns

A chemical burn occurs when living tissue is exposed to a reactive chemical substance such as a strong acid or base. Chemical burns follow standard burn classification and may cause extensive tissue damage. Chemical burns may occur through direct contact on body surfaces including skin and eyes, inhalation, and ingestion. The exact symptoms of a chemical burn depend on the chemical involved, but can include itching, bleaching or darkening of skin, burning sensations, trouble breathing, coughing blood, tissue necrosis, and death. Sparklers and other fireworks that give off sparks or flames can cause chemical burns as well as heat-induced burns. Other common sources of chemical burns include silver nitrate (AgNO₃), hydrochloric acid (HCl), lye (NaOH), and lime (CaO).

Electrical burns

Electrical burns occur when an electric current passes through the body. The electricity can burn the skin and may also cause internal damage. Electrical burns are particularly common among young children, and can be incurred in a number of ways, including sticking a knife into a plugged-in toaster, dropping a plugged-in appliance into water, sucking or chewing on an electrical cord, and sticking a foreign object into an electrical outlet.

Burn Prevention Tips

To prevent tap-water scalds:

- Fill the tub to desired level and turn the water off before getting in. Run cool water first and then add hot until the desired safe temperature is reached.

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- Mix the water thoroughly and check the temperature by moving your elbow, wrist or spread fingers through the water before allowing someone to get in. The water should feel warm to the touch. The safest temperature for bathing is about 37 C.
- Do not leave children unattended in the bathroom while hot water is running. If you must leave the bathroom, take children or dependent persons with you.
- Provide constant adult supervision of young children, anyone who may experience difficulty removing themselves from hot water, or people who may not recognize the danger in turning on the hot water.
- Seat children facing away from faucets and so they cannot reach the faucet. Turn the faucet to the COLD position.
- Install grab bars and non-slip flooring or mats in tubs and showers if someone is unsteady or weak. Use a shower chair or stool when bathing or showering if standing unassisted is a problem.
- Provide a way to call for help (bell or whistle) for individuals who may need assistance or may be unable to remove themselves from the tub or shower in case of emergency.
- Avoid flushing toilets, running water, or using the dishwasher or washing machine while anyone is showering to avoid sudden fluctuations in water temperature.
- Consider keeping the door closed when the bathroom is not in use.
- Reinforce these recommendations with babysitters and other care providers.
- Install anti-scald devices, anti-scald aerators, and scald guards. These are heat-sensitive devices that stop or interrupt the flow of water when it reaches a pre-determined safe temperature, preventing hot water from coming out of the tap before scalding occurs.

To prevent scalds from food and beverages:

- Establish a safe area in the kitchen, out of the traffic path between the stove and sink, where children can safely play but still be supervised. Place young children in high chairs or play pens at a safe distance from counter or stovetops, hot liquids, hot surfaces or other cooking hazards while preparing or serving food.
- Cook on back burners when children are present.
- Keep all pot handles turned back and away from the stove edge. Appliance cords must be kept coiled and away from counter edges. Check handles on appliances and cooking utensils to ensure they are secure.
- To prevent overheating and ignition of cooking oil, fry foods in a temperature controlled deep-fat fryer or skillet designed for a maximum temperature of 200 degrees Celsius.
- When removing lids from hot foods, remember that steam may have accumulated. Lift the lid away from your face and arm.
- Wear short sleeves or tight-fitting clothing while cooking.
- Always use oven mitts or potholders when moving pots of hot liquid or food.

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- Avoid using area rugs in cooking areas, especially near the stove. If area rugs are used, ensure they have non-slip backing to prevent falls and possible scalds.
- During mealtime, place hot items in the centre of the table, at least 25 centimetres from the table edge.
- Use non-slip placemats instead of tablecloths if toddlers are present. Young children may use the tablecloth to pull themselves up, causing hot food to spill down onto them. Tablecloths can also become tangled in crutches, walkers or wheelchairs, causing hot liquids to spill.
- Never drink or carry hot liquids while holding or carrying a child. Quick motions (reaching or grabbing) may cause the hot liquid to spill and cause a burn.
- Do not make hot coffee, tea or hot chocolate in a mug that a child normally uses. Consider using mugs with tight-fitting lids, like those used for travel, when children are present.
- Do not place hot liquids on low coffee or end tables where young children can reach them.
- Place microwaves at a safe height, within easy reach, for all users to avoid spills. All users should be tall enough to reach the microwave oven door, easily view the cooking area, and handle the food safely. Microwaves installed above counters or stoves can be a scald hazard for anyone.
- Children under seven should not operate the microwave unless they are closely supervised. Instruct and supervise older children.
- After heating formula or milk in baby bottles, mix well and test on the back of a hand or inner wrist before feeding.
- Steam builds rapidly in covered containers and can easily result in burns to the face, arms and hands. Puncture plastic wrap or use vented containers to allow steam to escape while cooking. Or, wait at least one minute before removing the cover. When removing covers, lift the corner farthest away from your face and arm.
- Steam in microwave popcorn bags can cause burns. Follow package directions, allow to stand one minute before opening, and open the bag away from the face.
- Foods heat unevenly in microwaves. Remember, jelly and cream fillings in pastries may be extremely hot, even though outer parts of the food feel only warm.
- Microwaved foods and liquids may reach temperatures greater than boiling without the appearance of bubbling. Stir and test food thoroughly before serving or eating.

Special considerations for individuals with mobility concerns:

- If it is necessary to move hot liquids while using a wheelchair, place a large, sturdy tray with a solid lip in your lap to decrease the risk of lap burns.
- A tray in the lap may also prevent burns from hot foods or beverages if someone is unsteady or shaky.
- Use a serving cart to transfer food from the stove to the table instead of carrying it.

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- Consider alternate cooking equipment (slow cookers, toaster ovens or microwaves) placed on lower counters or tables if the stove or oven is too high to reach safely. Be aware this may create a burn hazard if young children are present.

Other causes of scald burns and prevention tips:

- Place potpourri pots, especially those filled with oil, where they cannot be tipped and are out of the reach of children.
- Replace hot steam vapourizers with a cool mist humidifier or vapourizer. If you must use a steam vapourizer, place it on a level surface to prevent tipping and keep it out of the reach of children. Allow the water to cool before emptying the vapourizer.
- Car radiator scalds are common injuries, primarily to adult males. Do not remove the radiator cap when the engine is running. If radiator has overheated, do not remove cap until the engine has cooled.

To prevent flame burns:

- Prevent children from playing with matches, lighters, and open flames (e.g. candles, furnaces, and water heaters).
- Keep portable space heaters at least one metre (three feet) away from everything, including you. Do not use with extension cords.
- Do not overload electrical outlets and repair or replace frayed or worn-out electrical cords.
- Practice safety while smoking. Use large, deep ashtrays, and dispose of ashes in the toilet. Never smoke in bed or when impaired by medication or alcohol.
- Teach children to STOP, DROP, & ROLL if their clothes catch fire, and to cool a burn in water.
- Never leave cooking unattended. If flames erupt while deep-frying, smother the fire by carefully sliding a lid or larger pan over the deep fryer and then turn off the heat. Never carry the burning pot/pan or pour water on a cooking oil fire.
- Mount candles on non-combustible holders and keep away from other combustibles.
- Install at least one smoke alarm on every level of your home, preferably on the ceiling outside every sleeping area. Test smoke alarms once a month to ensure they are in working condition. Replace batteries once a year or when the alarm makes a low-battery "chirping" sound.
- Develop and practice a home fire escape plan with your family.

Burn Care

- **Immediately cool the burn with water.** Pour cool water on burns or soak them for at least three to five minutes (30-40 minutes for chemical injury). Do not use ice as it may cause more damage, stick to the burn and remove the skin.
- **Never use ointment or butter.** Use only cool water on burns. Ointment, butter, cream and salve cause the burn to retain heat, may cause infection, and may hinder medical evaluation.

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- **Cover the burn.** Apply a soft, clean, dry dressing, bandage or sheet to the burned area. Do not break blisters — this could lead to infection.
- **Seek medical help as necessary.** For adults, if the burn is larger than the size of a quarter, see a doctor. Infants, young children and the elderly are endangered by even small burns. The hands, feet, face (especially eyes) and genitalia are critical areas. Electricity, chemicals and smoke or toxic fumes complicate a burn injury. Certain existing conditions, such as diabetes, and mental and physical impairment, can also cause complications.
- **In the event of an electrical burn, DO NOT touch the injured person until the source of power has been disconnected.** Primary concerns are airway, breathing, circulation, and cervical spine immobilization. Electricity can cause the heart and breathing to stop. Assess for injuries and begin first aid. Internal injuries may not be evident as electricity can cause severe damage inside the body when it enters and exits. Call 9-1-1.
- **In the event of a chemical burn, gently brush any dry chemicals off the skin with a dry cloth.** Remove clothing and contact lenses, if necessary, before flushing the affected area with water for at least 20 minutes or until pain stops. Use caution not to flush chemicals on to other parts of the body. Read the container label or consult with the Poison Control Center before administering first aid.