

## Lightning strike :

Lightning strikes are weather-related medical emergencies. Lightning is consistently among the top five weather-related killers. In typical years past, lightning killed more people in the United States than any other natural disaster (with the exception of flash floods), including tornadoes. However, such deaths have decreased. In 2011, lightning-related deaths were low and were topped by tornadoes, heat, floods and rip currents.

Most people killed or injured by lightning are outside doing recreational activities such as fishing, boating, swimming, or playing sports. Others are working outdoors at construction jobs. Farmers are often struck, too.

## Lightning Strike Causes

**Injury from a lightning strike may occur in any of these ways:**

- **Direct strike:** Lightning directly strikes a person.
- **Contact strike:** A person is touching an object (such as a tree or pole) that has been struck by lightning.
- **Side splash:** Lightning jumps from the primary strike object on its way to the ground.
- **Ground strike:** Lightning strikes the ground and the current spreads out in a circle from that spot.
- **Blunt injury:** A person is thrown violently from the lightning strike or from the explosive force that occurs as surrounding air is superheated and rapidly cooled.
- **Upward streamer:** When a low-energy electrical charge streams upward to meet a downward leader, it may carry enough current to cause electrical injury even if it does not connect with the downward current to complete the lightning strike.

## Lightning Strike Symptoms

A person struck by lightning may have immediate cardiac arrest. In others, you may see no outward signs of injury. Some people may lose consciousness for varying periods. They may seem confused and not remember what happened. Lightning may even flash over the outside of a person, blow off their clothes, and leave few obvious signs of injury.

**Lightning may cause numerous other injuries:**

- Heart damage or cardiac arrest may occur.
- Up to two-thirds of the seriously injured people struck by lightning have keraunoparalysis - a temporary paralysis unique to lightning strike.
- Victims may experience superficial burns. Contrary to common belief, deep burns are rare. They occur in few lightning injuries.
- Various types of broken bones and dislocations may be caused by lightning.
- Skull fractures and cervical spine (neck) injuries may result from associated blunt trauma.
- Lungs may be damaged, causing shortness of breath.
- Eye injury may cause immediate visual problems or delayed cataract formation.
- The eardrum is commonly ruptured. This causes pain, hearing loss, and dizziness.

## When to Seek Medical Care

**Call emergency services to transport a person for any of these reasons:**

- Any period of unconsciousness
- Paralysis
- Chest pain
- Shortness of breath
- Back or neck pain
- Obvious deformity of an extremity such as an arm or leg indicating a possible broken bone
- Any noticeable burns

## Lightning Strike Treatment:

In general, if you have no symptoms and a normal ECG, you may be sent home with a referral to any specialists if needed.

The doctor will treat those injuries that are discovered on the physical examination.

- Head injury indicated by a loss of consciousness and or confusion is frequently treated by observation in the hospital.
- Possible injury to the heart that shows up on an abnormal ECG or in blood enzyme levels is usually managed in the hospital by observation and medicine if needed.
- Ear and eye injuries are treated as needed with referral to an appropriate specialist.
- Keraunoparalysis is usually temporary but may require observation in the hospital.

- Spine injuries usually require hospitalization for observation or surgical stabilization.
- Broken bones may be treated with splinting or may require surgery.
- Symptoms of nerve injury (numbness, tingling) can generally be monitored by a neurologist.

## Lightning Strike Prevention:

The following tips may help a person avoid being struck by lightning. Lightning may occur well in front of or behind a thunderstorm.

- Avoid being outside in open spaces during thunderstorms. If you hear thunder, you are in range for a lightning strike. You need to seek shelter immediately if you are outside. Lightning can travel 10-12 miles ahead of a storm and seem to come out of a clear blue sky.
- Take cover from storms, avoiding the highest elevation areas and tall objects.
- Do not carry or hold tall metal objects during thunderstorms. Drop any golf clubs, fishing poles, or baseball bats. Remove metal objects such as a baseball helmet.
- If lightning has struck the immediate area, remember that lightning can strike the same place twice.
- If you cannot find shelter, crouch down in a catcher's stance. Put your hands on your knees or place them over your ears to protect against hearing damage from thunder. If other people are with you, stay 15 feet apart.
- A fully enclosed metal vehicle such as a car or school bus can be a good shelter. Close all windows and do not touch anything metal connected to the vehicle. A golf cart is not a suitable shelter. Heavy equipment operators may stay inside the machine's closed canopy, but do not step out to seek shelter.
- Even if you are inside a building, close all windows and stay away from them. Do not use the land-line telephone or electrical appliances including computers. Lightning may strike outside lines and travel inside.
- Wait at least 30 minutes after the last observed lightning strike or thunder before you venture outside your sheltered area.
- The simple safety slogan of the National Lightning Safety Institute is this: If you can see it (lightning), flee it (take shelter). If you can hear it (thunder), clear it (stop your activities).



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