Electrical injury

An electrical current is very damaging to the human body since the body is a very good conductor of electricity. An electrical current can cause damage to the body in several ways:

- Cardiac arrest due to the electrical effect on the heart
- Muscle destruction from a current passing through the body
- Thermal burns from contact with the electrical source

**Definition**

An electrical injury can occur to the skin or internal organs when a person is directly exposed to an electrical current.

**Considerations**

Direct contact with electrical current can be fatal. While some electrical burns look minor, there still may be serious internal damage, especially to the heart, muscles, or brain. About 1,000 people die of electric shock each year in the United States. The affect of an electric shock on an individual depends on the intensity of the voltage to which the person was exposed, the route the current took through the body, the person’s state of health, and the speed and type of first aid treatment. Electric current can cause injury in three main ways:

- Cardiac arrest due to the electrical effect on the heart
- Muscle, nerve, and tissue destruction from a current passing through the body
- Thermal burns from contact with the electrical source

**Causes**

- Accidental contact with exposed parts of electrical appliances or wiring
- Flashing of electric arcs from high-voltage power lines
- Lightning
- Machinery or occupational-related exposures
- Young children biting or chewing on electrical cords, or poking metal objects into an electrical outlet

**Symptoms**

- Altered level of consciousness
- Bone fractures
- Cardiac arrest
- Headache
- Impaired swallowing, vision, or hearing
- Irregular heartbeat
- Muscle contraction
- Muscular pain
- Numbness or tingling in the face, trunk, or arms and legs
- Respiratory distress or failure (complete stopping of breathing)
- Seizures
- Skin burns

**First Aid**

1. If safely possible, shut off the electrical current. Unplug the cord, remove the fuse from the fuse box, or turn off the circuit breakers. Simply turning off an appliance may NOT stop the flow of electricity.
2. Call for medical help.
3. If the current can't be turned off, use a non-conducting object, such as a broom, chair, rug, or rubber doormat to push the victim away from the source of the current. Do NOT use a wet or metal object. If possible, stand on something dry and non-conducting, such as a mat or folded newspapers. Do NOT attempt to rescue a victim near active high-voltage lines.
4. Once the victim is free from the source of electricity, check the victim's airway, breathing, and pulse. If either has stopped or seems dangerously slow or shallow, start first aid (CPR).
5. If the victim has a burn, remove any clothing that comes off easily, and rinse the burned area in cool running water until the pain subsides. Give first aid for burns.
6. If the victim is faint, pale, or shows other signs of shock, lay him or her down, with the head slightly lower than the trunk of the body and the legs elevated, and cover him or her with a warm blanket or a coat.
7. Stay with the victim until medical help arrives.
8. Electrical injury is frequently associated with explosions or falls that can cause additional traumatic injuries, including both obvious external injuries and concealed internal injuries. Avoid moving the victim's head or neck if a spinal injury is suspected. Administer appropriate first aid as needed for other wounds or fractures.

**DO NOT**

- DO NOT apply ice, butter, ointments, medications, fluffy cotton dressings, or adhesive bandages.
- DO NOT get within 20 feet of someone who is being electrocuted by high-voltage electrical current until the power is turned off.
- DO NOT move a victim of electrical injury unless there is immediate danger.
- DO NOT remove dead skin or break blisters if the victim has burns.
- DO NOT touch the victim while the person is still in contact with the source of electricity.
**Prevention**

- Avoid electrical hazards at home and at work. Always follow manufacturer's safety instructions when using electrical appliances.
- Avoid using electrical appliances while showering or wet.
- Keep children away from electrical devices, especially those that are plugged in.
- Keep electrical cords out of children's reach.
- Never touch electrical appliances while touching faucets or cold water pipes.
- Teach children about the dangers of electricity.
- Use child safety plugs in all outlets.

**References**
