Heat Stroke

Heat stroke is the most dangerous heat-related illness, and it can be fatal.

Two characteristics define heat stroke: a core body temperature greater than 104°F (40°C) and neurological signs such as confusion, seizures, or loss of consciousness.

Some of the first cells in the body to be affected are in the brain. These cells are sensitive to temperature changes. The heart also must work harder to push blood to the skin. As a person's temperature gets closer to the air temperature, the rate of heat transferred to the skin decreases. Evaporation of sweat also decreases with higher humidity. Sweating leads to further dehydration and loss of electrolytes and minerals vital for muscle and nerve cell function. As the body is no longer able to cool itself by sweating, heart rate and breathing increase to compensate. This can be aggravated by medications that alter heart function or by chronic diseases.

Classic heat stroke is seen in people who are exposed to a hot environment, especially in young and elderly persons. Those with chronic diseases such as Parkinson disease, heart failure, or diabetes or who take medications can have a decreased response to dehydration. Exertional heat stroke is seen in healthy people who undergo strenuous activity in hot weather, such as marathon runners, military trainees, and football players.

Prevention

- Schedule outdoor activities during cool times of the day.
- Drink plenty of fluids. Avoid drinks with too much sugar or alcohol, which can cause dehydration.
- Wear loose-fitting, light-colored clothing.
- Acclimate to new hot environments, over many days if possible.
- Be aware of medication side effects. If taking medications, be aware of those that may cause fluid losses, decrease sweating, or slow the heart rate. Common medications include those used for depression, blood pressure and heart disease, and coughs and colds.
- Never leave an impaired adult or a child in a car unattended.

What to Do

If you see these signs of heat stroke, call 911 immediately: core body temperature over 104°F; rapid heart rate; rapid breathing; flushed, hot skin; nausea and vomiting; or mental status changes (headache, confusion, slurring of words, seizures, or coma).

Follow these steps while waiting for emergency personnel:

- Move the individual out of the heat.
- Remove clothing to promote cooling.
- Position the person on his or her side to minimize aspiration.
- Immerse the individual in cold water or apply cold, wet cloths or ice packs to the skin (neck, armpit, and groin areas, where large blood vessels are located) to lower the body temperature.
- Continue cooling the individual until the body temperature reaches 101°F to 102°F (38.4°C to 39°C).
- Do not give any fluids to the person because it is not safe to drink during an altered level of consciousness. If the person is alert and requests water, give small sips.
- Avoid aspirin and acetaminophen; they do not help with cooling.

Despite aggressive medical care, heat stroke can damage multiple organs in the body, including the brain, liver, kidneys, and muscles (muscle breakdown or rhabdomyolysis). It can leave affected individuals with permanent neurological damage and, if not treated early, can cause death.

FOR MORE INFORMATION

- Centers for Disease Control and Prevention
  https://www.cdc.gov/disasters/extremeheat/index.html
- MedlinePlus
  https://medlineplus.gov/ency/article/000056.htm

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