



Appointments at Mayo Clinic

Mayo Clinic offers appointments in Arizona, Florida and Minnesota and at Mayo Clinic Health System locations.

[Request Appointment](#)

First aid

[Print](#)

Heatstroke: First aid

Basics

Products and services

[By Mayo Clinic Staff](#)

The Mayo Clinic Diet

What is your weight-loss goal?

5-10 lbs »

11-25 lbs »

25+ lbs »

Overview

Heatstroke happens when body temperature rises quickly and a person can't cool down. It can be life-threatening by causing damage to the brain and other vital organs. It may be caused by doing strenuous activity in the heat or by being in a hot place for too long. Heatstroke can happen without having any previous heat-related condition, such as heat exhaustion.

When to seek emergency help

If you suspect heatstroke, **call 911 or your local emergency number**. Then move the person out of the heat right away.

Symptoms

Heatstroke symptoms include:

- Fever of 104 degrees Fahrenheit (40 degrees Celsius) or greater.
- Changes in mental status or behavior, such as confusion, agitation and slurred speech.
- Hot, dry skin or heavy sweating.
- Nausea and vomiting.
- Flushed skin.
- Rapid pulse.
- Rapid breathing.
- Headache.
- Fainting.
- Seizure.
- Coma.

Treatment

For heatstroke, cool the person through whatever means available. For example:

1. Put the person in a cool tub of water or a cool shower.
2. Spray the person with a garden hose.
3. Sponge the person with cool water.
4. Fan the person while misting with cool water.
5. Place ice packs or cool, wet towels on the neck, armpits and groin.
6. Cover the person with cool, damp sheets.
7. If the person is conscious, offer chilled water, a sports drink containing electrolytes or another nonalcoholic beverage without caffeine.
8. Begin CPR if the person loses consciousness and shows no signs of circulation, such as breathing, coughing or movement.

From Mayo Clinic to your inbox

Sign up for free and stay up to date on research advancements, health tips, current health topics, and expertise on managing health. [Click here for an email preview.](#)

Enter your email

[Learn more about Mayo Clinic's use of data.](#)



Subscribe!

[Share](#)

[Tweet](#)

May 29, 2024

[Show references](#)

[First aid](#) [Heatstroke: First aid](#) [Basics](#)

ART-20056655

Students



[Find a doctor](#)

[Explore careers](#)

[Sign up for free e-newsletters](#)

About Mayo Clinic

[About this Site](#)

[Contact Us](#)

[Locations](#)

[Health Information Policy](#)

[Medicare Accountable Care Organization \(ACO\)](#)

[Media Requests](#)

[News Network](#)

[Price Transparency](#)

Medical Professionals

[AskMayoExpert](#)

[Clinical Trials](#)

[Mayo Clinic Alumni Association](#)

[Refer a Patient](#)

Businesses

[Executive Health Program](#)

[International Business Collaborations](#)

[Facilities & Real Estate](#)

[Supplier Information](#)

[Degree Programs](#)

[Admissions Requirements](#)

[Student & Faculty Portal](#)

Researchers

[Research Faculty](#)

[Laboratories](#)

International Patients

[Appointments](#)

[Financial Services](#)

[International Locations & Offices](#)

Charitable Care & Financial Assistance

[Community Health Needs Assessment](#)

[Financial Assistance Documents – Arizona](#)

[Financial Assistance Documents – Florida](#)

[Financial Assistance Documents – Minnesota](#)

Follow Mayo Clinic

Get the Mayo Clinic app



[Terms & Conditions](#) [Privacy Policy](#) [Notice of Privacy Practices](#) [Accessibility Statement](#)
[Advertising & Sponsorship Policy](#) [Site Map](#)

Feedback

Heatstroke

[Request an Appointment](#)[Symptoms & causes](#)[Diagnosis & treatment](#)

Diagnosis

Healthcare professionals can often diagnose heatstroke without testing. However, laboratory tests can confirm the diagnosis, rule out other causes for symptoms and find out if there is any organ damage. These tests include:

- **Rectal temperature** to check core body temperature. A rectal temperature is the most accurate way of determining core body temperature and is more accurate than mouth or forehead temperatures.
- **A blood test** to check blood sodium and potassium and the content of gases in blood to see if there's been damage to the central nervous system.
- **A urine test** to check the color of urine because it's usually darker if someone has a heat-related condition. A urine test also checks kidney function, which can be affected by heatstroke.
- **Muscle damage tests** to check for serious damage to the muscle tissue, known as rhabdomyolysis.

- **X-rays and other imaging tests** to check for damage to the internal organs.

More Information

[Urinalysis](#)

[X-ray](#)

Treatment

Heatstroke treatment centers on cooling the body to a standard temperature to prevent or reduce damage to the brain and vital organs. To do this, a healthcare professional may take these steps:

- **Immersion in cold water.** A bath of cold or ice water has been proved to be the most effective way of quickly lowering the core body temperature. The quicker someone with heatstroke receives cold water immersion, the less risk of death and organ damage.
- **Use evaporation cooling techniques.** If cold water immersion is not available, healthcare professionals may try to lower body temperature using an evaporation method. Cool water is misted on the body while warm air is fanned over the person, causing the water to evaporate and cool the skin.
- **Packing with ice and cooling blankets.** Another method is to wrap a person in a special cooling blanket and apply ice packs to the groin, neck, back and armpits to lower temperature.
- **Give medicines to stop shivering.** If treatments to lower body temperature make you shiver, your doctor may give you a muscle relaxant, such as a benzodiazepine. Shivering increases your body temperature, making treatment less effective.

Lifestyle and home remedies

Home treatment isn't enough for heatstroke. If you have symptoms of heatstroke, seek emergency medical help. Others should take steps to cool you off while waiting for emergency help to arrive. Don't drink any fluids while waiting for medical assistance.

If you notice signs of heat-related illness, lower your body temperature and prevent your condition from progressing to heatstroke. In a lesser heat emergency, such as heat cramps or heat exhaustion, the following steps may lower your body temperature:

- **Get to a shady or air-conditioned place.** If you don't have air conditioning at home, go someplace with air conditioning, such as a mall, store or public library.
- **Cool off with damp sheets and a fan.** If you're with someone who's experiencing heat-related symptoms, cover the person with damp sheets or spray with cool water. Direct air onto the person with a fan.
- **Take a cool shower or bath.** If you're outdoors and not near shelter, soaking in a cool pond or stream can help bring your temperature down.
- **Rehydrate.** Drink plenty of fluids. Also, because you lose salt through sweating, you can replenish salt and water with some sports drinks. If your health professional has restricted your fluid or salt intake, check with your health professional to see how much you should drink and whether you should replace salt.
- **Don't drink sugary or alcoholic beverages to rehydrate.** These drinks may interfere with your body's ability to control your temperature. Also, very cold drinks can cause stomach cramps.

By Mayo Clinic Staff

[Request an appointment](#)

Symptoms & causes

Sept. 12, 2024

[Print](#)

[Show references](#)

Related

[Marathon and the Heat](#)

Associated Procedures

[Urinalysis](#)

[X-ray](#)

Feedback

Products & Services

[A Book: Mayo Clinic Guide to Home Remedies](#)

CON-20345860

Patient Care & Health Information

Diseases & Conditions

[Heatstroke](#)

[Find a doctor](#)

[Explore careers](#)

[Sign up for free e-newsletters](#)

About Mayo Clinic

[About this Site](#)

[Contact Us](#)

[Locations](#)

[Health Information Policy](#)

[Medicare Accountable Care Organization \(ACO\)](#)

Students

[Degree Programs](#)

[Admissions Requirements](#)

[Student & Faculty Portal](#)

Researchers

[Research Faculty](#)

[Laboratories](#)

International Patients

[Appointments](#)

[Financial Services](#)

[International Locations & Offices](#)

Charitable Care & Financial Assistance

Feedback

[Media Requests](#)

[News Network](#)

[Price Transparency](#)

Medical Professionals

[AskMayoExpert](#)

[Clinical Trials](#)

[Mayo Clinic Alumni Association](#)

[Refer a Patient](#)

Businesses

[Executive Health Program](#)

[International Business Collaborations](#)

[Facilities & Real Estate](#)

[Supplier Information](#)

[Community Health Needs Assessment](#)

[Financial Assistance Documents – Arizona](#)

[Financial Assistance Documents – Florida](#)

[Financial Assistance Documents – Minnesota](#)

Follow Mayo Clinic

Get the Mayo Clinic app



[Terms & Conditions](#) [Privacy Policy](#) [Notice of Privacy Practices](#) [Accessibility Statement](#)
[Advertising & Sponsorship Policy](#) [Site Map](#)

© 1998-2024 Mayo Foundation for Medical Education and Research (MFMER). All rights reserved.

Language: [English](#) ▼

Feedback



Appointments at Mayo Clinic

Mayo Clinic offers appointments in Arizona, Florida and Minnesota and at Mayo Clinic Health System locations.

[Request Appointment](#)

First aid

[Print](#)

Heat exhaustion: First aid

[Basics](#) [Resources](#)

Products and services

[By Mayo Clinic Staff](#)

The Mayo Clinic Diet

What is your weight-loss goal?

[5-10 lbs »](#)

[11-25 lbs »](#)

[25+ lbs »](#)

Overview

Heat exhaustion is one of the heat-related syndromes. These syndromes vary in seriousness, ranging from mild to possibly life-threatening. Other types of heat-related illnesses include heat rash, heat cramps, heat syncope and heatstroke.

Heat exhaustion can happen when the body loses too much water or salt — usually because of heavy sweating or dehydration. It can begin suddenly or happen over time, usually after working, exercising or playing in the heat.

When to seek emergency help

Call 911 or your local emergency number if the affected person:

- Faints.
- Becomes agitated.
- Is confused.
- Has a seizure.
- Is not able to drink.
- Has a core body temperature — measured with a rectal thermometer — of 104 degrees Fahrenheit (40 degrees Celsius), which indicates heatstroke.

Symptoms

Heat exhaustion symptoms include:

- Cool, moist skin with goose bumps when in the heat.
- Heavy sweating.
- Faintness.
- Dizziness.
- Fatigue.
- Weak, rapid pulse.
- Low blood pressure after standing up.
- Muscle cramps.

- Nausea or vomiting.
- Headache.
- Extreme thirst.
- Mild confusion.
- Decreased urine output.

Treatment

Untreated, heat exhaustion can lead to heatstroke, which is a life-threatening condition. If you suspect heat exhaustion, take these steps immediately:

- Move the person out of the heat and into a shady or air-conditioned place.
- Lay the person down and raise the legs and feet slightly.
- Remove tight or heavy clothing.
- Have the person sip chilled water, a sports drink containing electrolytes or another nonalcoholic beverage without caffeine.
- Cool the person by spraying or sponging with cool water and fanning.
- Monitor the person carefully.

Contact a healthcare professional if symptoms get worse or if the person doesn't improve after taking first-aid measures.

From Mayo Clinic to your inbox

Sign up for free and stay up to date on research advancements, health tips, current health topics, and expertise on managing health. [Click here for an email preview.](#)

Enter your email

[Learn more about Mayo Clinic's use of data.](#)



Subscribe!

[Share](#)

[Tweet](#)

April 16, 2024

[Show references](#)

Products and Services

Find a doctor

Explore careers

Sign up for free e-newsletters

About Mayo Clinic

About this Site

Contact Us

Locations

Health Information Policy

Medicare Accountable Care Organization (ACO)

Media Requests

News Network

Price Transparency

Medical Professionals

AskMayoExpert

Clinical Trials

Mayo Clinic Alumni Association

Refer a Patient

Businesses

Executive Health Program

International Business Collaborations

Students

Degree Programs

Admissions Requirements

Student & Faculty Portal

Researchers

Research Faculty

Laboratories

International Patients

Appointments

Financial Services

International Locations & Offices

Charitable Care & Financial Assistance

Community Health Needs Assessment

Financial Assistance Documents – Arizona

Financial Assistance Documents – Florida

Financial Assistance Documents – Minnesota

Feedback

[Facilities & Real Estate](#)

[Supplier Information](#)

Follow Mayo Clinic

Get the Mayo Clinic app



[Terms & Conditions](#) [Privacy Policy](#) [Notice of Privacy Practices](#) [Accessibility Statement](#)
[Advertising & Sponsorship Policy](#) [Site Map](#)

© 1998-2024 Mayo Foundation for Medical Education and Research
(MFMER). All rights reserved.

Language: [English](#) ▼

[Diseases & Conditions](#)

Heat exhaustion

[Request an Appointment](#)[Symptoms & causes](#)[Diagnosis & treatment](#)

Diagnosis

If you need medical attention due to heat exhaustion, the medical staff that may take your rectal temperature to confirm the diagnosis and rule out heatstroke. If your health care team suspects your heat exhaustion may have progressed to heatstroke, you could need further tests, including:

- **A blood test**, to check for low blood sodium or potassium and the content of gases in your blood.
- **A urine test**, to check the concentration and makeup of your urine. This test can also check your kidney function, which can be affected by heatstroke.
- **Muscle function tests**, to check for rhabdomyolysis — serious damage to your muscle tissue.
- **X-rays and other imaging**, to check for damage to your inner organs.

[More Information](#)[Feedback](#)

Treatment

In most cases, you can treat heat exhaustion yourself by doing the following:

- **Rest in a cool place.** Getting into an air-conditioned building is best. If that's not an option, find a shady spot or sit in front of a fan. Rest on your back with your legs raised higher than your heart level.
- **Drink cool fluids.** Stick to water or sports drinks. Don't drink any alcoholic beverages, which can add to dehydration.
- **Try cooling measures.** If possible, take a cool shower, soak in a cool bath or put towels soaked in cool water on your skin. If you're outdoors and not near shelter, soaking in a cool pond or stream can help bring your temperature down.
- **Loosen clothing.** Remove any unnecessary clothing and make sure your clothes are lightweight and nonbinding.

If you don't begin to feel better within one hour of using these treatment measures, seek prompt medical attention.

To cool your body to a normal temperature, your health care team may use these heatstroke treatment techniques:

- **Immerse you in cold water.** A bath of cold or ice water has proven to be the most effective way of quickly lowering the core body temperature. The quicker you can receive cold water immersion, the less risk of organ damage and death.
- **Use evaporation cooling techniques.** If cold water immersion is not an option, health care professionals may try to lower your body temperature using an evaporation method. Cool water is misted on your body while

warm air is fanned over you. This causes the water to evaporate and cool your skin.

- **Pack you with ice and cooling blankets.** Another method to lower your temperature is to wrap you in a special cooling blanket and apply ice packs to your groin, neck, back and armpits.
- **Give you medications to stop your shivering.** If treatments to lower your body temperature make you shiver, your doctor may give you a muscle relaxant, such as a benzodiazepine. Shivering increases your body temperature, making treatment less effective.

By Mayo Clinic Staff

[Request an appointment](#)

Symptoms & causes

April 06, 2023

[Print](#)

[Show references](#)

Related

Feedback

Associated Procedures

[Urinalysis](#)

News from Mayo Clinic

[Mayo Clinic Minute: Dangers of heat-related illnesses](#)

[Safety tips to prevent heat-related illness](#)

[Mayo Clinic Minute: Heat exhaustion and heatstroke](#)

Products & Services

[A Book: Mayo Clinic Family Health Book](#)

[Show more products and services from Mayo Clinic](#)

CON-20373234

Patient Care & Health Information

Diseases & Conditions

Heat exhaustion

[Find a doctor](#)

[Explore careers](#)

[Sign up for free e-newsletters](#)

About Mayo Clinic

[About this Site](#)

[Contact Us](#)

[Locations](#)

[Health Information Policy](#)

[Medicare Accountable Care Organization \(ACO\)](#)

[Media Requests](#)

[News Network](#)

[Price Transparency](#)

Medical Professionals

[AskMayoExpert](#)

[Clinical Trials](#)

[Mayo Clinic Alumni Association](#)

[Refer a Patient](#)

Businesses

[Executive Health Program](#)

[International Business Collaborations](#)

Students

[Degree Programs](#)

[Admissions Requirements](#)

[Student & Faculty Portal](#)

Researchers

[Research Faculty](#)

[Laboratories](#)

International Patients

[Appointments](#)

[Financial Services](#)

[International Locations & Offices](#)

Charitable Care & Financial Assistance

[Community Health Needs Assessment](#)

[Financial Assistance Documents – Arizona](#)

[Financial Assistance Documents – Florida](#)

[Financial Assistance Documents – Minnesota](#)

Feedback

[Facilities & Real Estate](#)

[Supplier Information](#)

Follow Mayo Clinic

Get the Mayo Clinic app



[Terms & Conditions](#) [Privacy Policy](#) [Notice of Privacy Practices](#) [Accessibility Statement](#)
[Advertising & Sponsorship Policy](#) [Site Map](#)

© 1998-2024 Mayo Foundation for Medical Education and
Research (MFMER). All rights reserved.

Language: [English](#) ▼

Feedback