



## **Dehydration and Heat Stroke**

### **The danger of dehydration and heat stroke:**

Dehydration and heat stroke are two very common heat-related diseases that can be life threatening if left untreated.

### **What is dehydration?**

Dehydration can be a serious heat-related disease, as well as being a dangerous side effect of diarrhea, vomiting, and fever. Children and persons over the age of 60 are particularly susceptible to dehydration.

### **What causes dehydration?**

Under normal conditions, we all lose body water daily through sweat, tears, urine, and stool. In a healthy person, this water is replaced by drinking fluids and eating foods that contain water. When a person becomes so sick with fever, diarrhea, or vomiting, or if an individual is overexposed to the sun, dehydration occurs. This is caused when the body loses water content and essential body salts such as sodium, potassium, calcium bicarbonate, and phosphate.

Occasionally, dehydration can be caused by drugs, such as diuretics, which deplete body fluids and electrolytes. Whatever the cause, dehydration should be treated as soon as possible.

### **What are the symptoms of dehydration?**

The following are the most common symptoms of dehydration. However, each individual may experience symptoms differently. Symptoms may include:

- thirst
- less-frequent urination
- dry skin
- fatigue
- light-headedness
- dizziness
- confusion

- dry mouth with mucous membrane
- increased heart rate and breathing

In children, additional symptoms may include:

- dry mouth and tongue
- no tears when crying
- no wet diapers for more than three hours
- sunken abdomen, eyes, or cheeks
- high fever
- listlessness
- irritability
- skin that does not flatten when pinched and released

The symptoms of dehydration may resemble other medical conditions or problems. Always consult your physician for a diagnosis.

### **Treatment for dehydration:**

If caught early, dehydration can often be treated at home under a physician's guidance. In children, directions for giving food and fluids will differ according to the cause of the dehydration, so it is important to consult your child's physician.

In cases of mild dehydration, simple rehydration is recommended by drinking fluids. Many sports drinks on the market effectively restore body fluids, electrolytes, and salt balance.

For moderate dehydration, intravenous (IV) fluids may be required, although, if caught early enough, simple rehydration may be effective. Cases of serious dehydration should be treated as a medical emergency, and hospitalization, along with intravenous fluids, is necessary. Immediate action should be taken.

### **How can dehydration be prevented?**

Take precautionary measures to avoid the harmful effects of dehydration, including the following:

- Drink plenty of fluids, especially when working or playing in the sun.
- Make sure you are taking in more fluid than you are losing.
- Try to schedule physical outdoor activities for the cooler parts of the day.
- Drink appropriate sports drinks to help maintain electrolyte balance.
- For infants and young children, solutions such as Pedialyte® will help maintain electrolyte balance during illness or heat exposure. Do not try to make fluid and salt solutions at home for children.

## **What is heat stroke?**

Heat stroke is the most severe form of heat illness and is a life-threatening emergency. It is the result of long, extreme exposure to the sun, in which a person does not sweat enough to lower body temperature. The elderly, infants, persons who work outdoors, and those on certain types of medications are most susceptible to heat stroke. It is a condition that develops rapidly and requires immediate medical treatment.

## **What causes heat stroke?**

Our bodies produce a tremendous amount of internal heat and we normally cool ourselves by sweating and radiating heat through the skin. However, in certain circumstances, such as extreme heat, high humidity, or vigorous activity in the hot sun, this cooling system may begin to fail, allowing heat to build up to dangerous levels.

If a person becomes dehydrated and cannot sweat enough to cool their body, their internal temperature may rise to dangerously high levels, causing heat stroke.

## **What are the symptoms of heat stroke?**

The following are the most common symptoms of heat stroke. However, each individual may experience symptoms differently. Symptoms may include:

- headache
- dizziness
- disorientation, agitation, or confusion
- sluggishness or fatigue
- seizure
- hot, dry skin that is flushed but not sweaty
- a high body temperature
- loss of consciousness
- rapid heartbeat
- hallucinations

The symptoms of a heat stroke may resemble other medical conditions or problems. Always consult your physician for a diagnosis.

## **Treatment for heat stroke:**

It is important for the person to be treated immediately as heat stroke can cause permanent damage or death. There are some immediate first-aid measures you can take while waiting for help to arrive, including the following:

- Get the person indoors.
- Remove clothing and gently apply cool water to the skin followed by fanning

- to stimulate sweating.
- Apply ice packs to the groin and armpits.
- Have the person lie down in a cool area with their feet slightly elevated.

Intravenous (IV) fluids are often necessary to compensate for fluid or electrolyte loss. Bed rest is generally advised and body temperature may fluctuate abnormally for weeks after heat stroke.

### **How can heat stroke be prevented?**

There are precautions that can help protect you against the adverse effects of heat stroke. These include the following:

- Drink plenty of fluids during outdoor activities, especially on hot days. Water and sports drinks are the drinks of choice. Avoid tea, coffee, soda, and alcohol, as these can lead to dehydration.
- Wear lightweight, tightly woven, loose-fitting clothing in light colors.
- Schedule vigorous activity and sports for cooler times of the day.
- Protect yourself from the sun by wearing a hat, sunglasses and using an umbrella.
- Increase time spent outdoors gradually to get your body used to the heat.
- During outdoor activities, take frequent drink breaks and mist yourself with a spray bottle to avoid becoming overheated.
- Try to spend as much time indoors as possible on very hot and humid days.

If you live in a hot climate and have a chronic condition, talk to your physician about extra precautions you can take to protect yourself against heat stroke.

Click here to view the [Online Resources](#) of Orthopaedic Center

# **Heat-Related Illnesses (Heat Cramps, Heat Exhaustion, Heat Stroke)**

## **What are heat-related illnesses?**

Exposure to abnormal or prolonged amounts of heat and humidity without relief or adequate fluid intake can cause various types of heat-related illness. Children adjust more slowly than adults do to changes in environmental heat. They also produce more heat with activity than adults, and sweat less. Sweating is one of the body's normal cooling mechanisms. Children often do not think to rest when having fun and may not drink enough fluids when playing, exercising, or participating in sports.

Children with chronic health problems, or those who take certain medicines, may be more susceptible to heat-related illnesses. Children who are overweight or wear heavy clothing during exertion, such as marching band or football uniforms, are also more susceptible.

There are three types of heat-related illnesses:

- heat cramps
- heat exhaustion
- heat stroke

## **What are heat cramps?**

Heat cramps are the mildest form of heat injury and consist of painful muscle cramps and spasms that occur during or after intense exercise and sweating in high heat.

## **What is heat exhaustion?**

Heat exhaustion is more severe than heat cramps and results from a loss of water and salt in the body. It occurs in conditions of extreme heat and excessive sweating without adequate fluid and salt replacement. Heat exhaustion occurs when the body is unable to cool itself properly and, if left untreated, can progress to heat stroke.

## **What is heat stroke?**

Heat stroke, the most severe form of heat illness, occurs when the body's heat-regulating system is overwhelmed by excessive heat. It is a life-threatening emergency and requires immediate medical attention.

## **Symptoms and first-aid measures for heat injuries:**

The following chart contains the most common symptoms of heat-related injuries. However, each child may experience symptoms differently. In addition specific treatment will be determined by your child's physician and may include some, or more, of the following:

Condition	Symptoms	First-aid and treatment
<b>Heat cramps</b>	<ul style="list-style-type: none"> <li>• painful cramps, especially in the legs</li> <li>• flushed, moist skin</li> <li>• mild fever, usually less than 102° F</li> </ul>	<ul style="list-style-type: none"> <li>• Move to a cool place and rest.</li> <li>• Remove excess clothing and place cool cloths on skin; fan skin.</li> <li>• Give cool sports drinks containing salt and sugar such as Gatorade®.</li> <li>• Stretch cramped muscles slowly and gently.</li> </ul>
<b>Heat exhaustion</b>	<ul style="list-style-type: none"> <li>• muscle cramps</li> <li>• pale, moist skin</li> <li>• usually has a fever over 102° F</li> <li>• nausea</li> <li>• vomiting</li> <li>• diarrhea</li> <li>• headache</li> <li>• fatigue</li> <li>• weakness</li> <li>• anxiety, and faint feeling</li> </ul>	<ul style="list-style-type: none"> <li>• Move to a cool place and rest.</li> <li>• Remove excess clothing and place cool cloths on skin; fan skin.</li> <li>• Give cool sports drinks containing salt and sugar such as Gatorade®.</li> <li>• If no improvement or unable to take fluids, call your child's physician or take your child to an emergency department immediately. IV (intravenous) fluids may be needed.</li> </ul>
<b>Heat stroke</b>	<ul style="list-style-type: none"> <li>• warm, dry skin</li> <li>• high fever, usually over 104° F</li> <li>• rapid heart rate</li> <li>• loss of appetite</li> <li>• nausea</li> <li>• vomiting</li> <li>• headache</li> <li>• fatigue</li> <li>• confusion</li> <li>• agitation</li> <li>• lethargy</li> <li>• stupor</li> <li>• seizures, coma,</li> </ul>	<ul style="list-style-type: none"> <li>• Move to a cool place and rest.</li> <li>• Call 911 or your local emergency medical service. Heat stroke is a life-threatening medical emergency and needs to be treated by a physician.</li> <li>• Remove excess clothing and drench skin with cool water; fan skin.</li> <li>• Place ice bags on the armpits and groin areas.</li> <li>• Offer cool fluids if alert and able to drink.</li> </ul>

	and death are possible	
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## How can heat stroke be prevented?

Some general guidelines to help protect your child from heat-related illnesses include the following:

- Drink plenty of fluids during vigorous or outdoor activities (including sunbathing), especially on hot days. Drinks of choice include water and sports drinks; avoid alcohol and fluids with caffeine such as tea, coffee, and cola, as these can lead to dehydration.
- Dress your child in light colored, lightweight, tightly-woven, loose-fitting clothing on hot days.
- Schedule vigorous activity and sports for cooler times of the day. Take rest periods in shady or cool areas.
- Protect children from the sun by having them wear a hat and sunglasses and by using an umbrella. Use a sunscreen that is at least SPF (sun protection factor) 15.
- Increase time spent outdoors gradually to get your child's body used to the heat.
- Teach children to take frequent drink breaks and "wet down" or mist themselves with a spray bottle to avoid becoming overheated.
- Try to spend as much time indoors as possible on very hot and humid days.
- Do not leave children unattended in a hot automobile.
- Teach children to warm-up and cool-down before and after exercising.
- If your child has a medical condition or is taking medication, consult your child's physician for further advice for preventing heat-related illnesses.

Click here to view the [Online Resources](#) of Common Childhood Injuries & Poisonings