



Patient Information

Heading Off Hypothermia

Humans are warm-blooded mammals, which means we're usually able to maintain a constant core body temperature despite changes in our environment. But while our bodies have developed very efficient ways to cool down when we become hot, our natural defenses against cold are more limited.

The body can conserve some heat by reducing blood flow to the skin and extremities, a process known as *vasoconstriction* (vay-zo-kun-**strik**-shun). On top of that, it can boost the amount of heat that's produced normally through *metabolism* (muh-**tab**-uh-liz-um), or chemical reactions within the cells. Muscle contractions increase metabolism and the heat it produces, so when the body gets too cold, the muscles start contracting rapidly and involuntarily—and you start shivering. While shivering generates a good amount of heat, it uses up energy very quickly, and so it can be maintained for only a short time.

After exposure to cold, water, or wind, your body may begin to lose heat faster than it can conserve or create it, and your core body temperature may fall below the normal range (97.6° F to 99.6° F). This condition, called *hypothermia* (hie-po-**ther**-meuh), causes a general slowing down of your body's functions. Your reaction time and mental reasoning are dulled, your heart beats slower, and you take in less oxygen. Hypothermia can become life threatening very rapidly. But it's usually reversible when

recognized and treated properly—and it's almost always preventable.

How do I know if I'm at risk?

Although the danger of hypothermia rises as the environmental temperature drops, the condition can develop even at mild temperatures when other factors are at work. Some of the most important of these are immersion in water, severe injury, and wind.

Elders, children, and infants face a higher risk of hypothermia—as do black, thin, inactive, or malnourished people and those from warmer climates. Some medications and diseases also can put you at risk by slowing your metabolism, impairing your body's ability to regulate temperature, or interfering with your mental capacities.

Drinking alcohol is doubly dangerous because, in addition to impairing judgment, it causes blood vessels to open wider, increasing heat loss. Risk also rises with exhaustion and inadequate intake of food and water, since nourishment supplies energy to keep up cold defenses.

What are the warning signs?

Hypothermia develops gradually, so it's essential to stay alert for its early signs. Symptoms of mild hypothermia include violent shivering; cold, pale, or numb skin; mild clumsiness and unsteadiness; slurred speech; and withdrawal. When the core temperature falls further, shivering may stop and the person may become tired,

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confused, irritable, or aggressive. As muscle coordination fails, the person may stumble or fall. As the mental state declines, he or she may become unresponsive, answer questions inappropriately, or begin to hallucinate. With severe hypothermia, the person's eyes may glaze over, and he or she may lose consciousness. The critical stage is marked by a cold body trunk, rigid muscles, and slow or undetectable heartbeat or breathing.

When do I need medical attention?

Mild hypothermia usually can be treated successfully in the field or at home. But since early symptoms can mimic fatigue, dehydration, or just plain grouching, it's often overlooked until it becomes serious. If you suspect severe hypothermia, call emergency medical services immediately.

How can I avoid the problem?

Hypothermia is almost always preventable by careful preparation and good judgment. If you must go out in cold, wet, or windy weather, dress in warm, loose fitting layers and be ready for sudden weather changes. Keep your feet, hands, and head covered and dry. Don't let yourself get too hot, since sweating lowers your body temperature and dampens your clothing.

Don't overexert yourself, but try to keep moving. Even though appetite and thirst decrease in cold weather, you need up to 40% more calories per day to provide your body with fuel to keep warm. Eat frequent, small meals and drink three to six quarts of water per day—but avoid eating ice or snow. Stay away from caffeine, alcohol, and foods high in sodium.

You don't have to be outside to develop hypothermia: It can happen indoors at temperatures as high as 65° F. If there's a chance your home may not be heated properly, because you can't afford the heating bills or your system is unreliable, look into local or state programs that provide utility assistance during cold weather.

How is it treated?

The earlier hypothermia is diagnosed and treated, the better. If you can't make it to a hospital, keep the hypothermic person as warm as possible: Replace wet clothing with dry, insulating layers; provide shelter from further exposure to cold temperatures, wind, or precipitation; and—as long as the person is fully conscious—give food and nonalcoholic, decaffeinated fluids.

Ideally, a severely hypothermic person should be rewarmed only under the care of medical professionals. If this is impossible, create a "hypothermia wrap" around the person—a total shell of layered insulation, kept dry and protected from the elements. Because the person won't be able to digest solid food at this stage, feed him or her warm sugar water (such as powdered flavored gelatin diluted with water). Wrap heating pads or hot water bottles in cloth and apply to the neck, armpits, or groin. Avoid rewarming frozen extremities until in a hospital setting—this sends chilled blood back to the heart and can lead to death. The cold heart is fragile, so handle the person gently and as little as possible. Even though a severely hypothermic person might have all the clinical signs of death, revival may be possible—but is best left to trained medical professionals. ●