

QUICK LINKS

Heat-Related Illness—TRAVELER INFORMATION

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Traveler Information

HEAT-RELATED ILLNESS

INTRODUCTION

Travelers visiting a country where temperatures or humidity exceed those at home or who plan to exercise vigorously should take extra precautions to guard against heat-related illnesses.

HEAT ADAPTATION

The body gains radiant heat from a hot environment and from sunlight, and generates heat through metabolism (physical activity, shivering, and digesting food). Heat is lost through radiation to a cool environment (air, air conditioning, or water), by evaporation of sweat or water from the skin, or by drinking cold fluids. Evaporation may be assisted by a breeze or a fan. Appropriate clothing can help to retain heat through insulation, prevent the absorption of radiant heat, or, if lightweight or scanty, permit evaporation of sweat.

HEAT-RELATED ILLNESS

Heat rash ("prickly heat") can appear as an area of raised spots or as patches of reddened, sensitive skin. It usually forms in body areas that are not exposed to air, such as underarms and groin. Sweat gland ducts may be blocked and become itchy.

Treatment of heat rash: Cool baths or compresses can help soothe irritated skin, and 1% hydrocortisone cream will decrease itching. See *Skin Diseases in Travelers*.

Heat exhaustion is the body's response to an excessive loss of water and salt. It commonly results from overexertion in a hot, moist environment, in which evaporation of sweat is impaired and fluid intake has not kept pace with fluid loss. Symptoms include exhaustion, weakness, dizziness, headache, nausea, thirst, rapid pulse, and low blood pressure.

Treatment of heat exhaustion: Treat victims immediately. Take the person to a cool, shady spot where they can rest and, if possible, have him or her take a cool shower. Give plenty of cool, non-alcoholic liquids. Muscular cramps may indicate salt depletion; if muscle cramps occur, give drinks with salt added: 1-2 level teaspoons of salt in each liter (about 4 cups) of fluid. If untreated, heat exhaustion can lead to heat stroke.

Heat stroke is the most serious heat-related disorder. It occurs when the body becomes unable to control its temperature: the core temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. Heat stroke occurs when the core temperature rises to 38-41°C (100-106°F). It may follow heat exhaustion or arise spontaneously in a very hot environment before the development of water and salt depletion. Symptoms include headache, confusion, irrational behavior, drowsiness, shortness of breath, and unconsciousness. The victim often complains of feeling cold and may shiver. The skin may be hot and dry or profusely sweaty. Heat stroke is serious and can be rapidly fatal. If the body temperature rises any higher, multiple organs fail.

Treatment of heat stroke: Cool victims as quickly as possible: remove their clothing, douse them with cool water, and fan them. Seek medical help immediately.

Heat syncope is fainting or dizziness associated with standing still for too long. This condition tends to improve with acclimatization. See "Prevention," below.

Treatment of heat syncope: Have the person lie down or sit and drink fluids.

Heat edema is swelling of the ankles due to vasodilatation.

Treatment of heat edema: Elevate the feet.

RISK FACTORS

- Elderly persons have a decreased ability to sweat and dissipate heat and thus are at increased risk for heat stroke, even while at rest.
- Certain medications interfere with heat regulation, notably barbiturates, phenothiazines, anticholinergic drugs, tricyclic antidepressants, and cocaine.
- Environmental temperatures above 35°C (95°F) inhibit heat loss through radiation.
- Long-distance swimming in water temperatures above 33°C (91°F) is a risk factor.
- Physical activity while wearing excessive, insulating, or impermeable clothing may cause body temperature to rise rapidly (e.g., during military exercises, or by laborers, or athletes when heat gain exceeds heat loss.
- Heat-related illnesses are a hazard for Hajj and Umra pilgrims. See *Hajj Travelers*.
- Heat waves in cities in temperate climates are also a risk factor.
 - In New York City, ~ 500 persons are treated annually for heat-related illness.
- Other risk factors included obesity, chronic diseases, mental health disorders, and lack of air-conditioning.

PREVENTION

Physiological acclimatization to a hot climate or work environment takes 7-10 days, after which time the risk of heat-related illness diminishes. Two hours or less is the maximum time of exercise-heat stress advised during the acclimatization period. Adaptation to wet heat conditions takes longer than adaptation to dry heat conditions.

Behavioral adaptation may also be necessary.

When outdoors, travelers should wear light-colored, lightweight clothing that covers as much skin as possible to prevent absorption of radiant heat. Fabrics such as cotton and linen are good choices. Avoid synthetic materials. Clothes should fit loosely for maximum comfort; this will also help prevent chafing and heat rash. In the sun, wear a loose-fitting, ventilated, light-colored hat with a wide brim.

In the heat of the day seek shade and a breeze.

When possible do sightseeing and other physical activities in the early morning or evening.

If physically active, or when the ambient temperature exceeds 35°C (95°F), wear minimal clothing to permit evaporation of sweat.

Maintain hydration by drinking enough water to keep the urine a pale yellow color or clearer.

A normal diet usually contains adequate salt; salt supplementation or the use of "sports drinks" is unnecessary.

- Sweat rates during exercise in the heat average 1-1.5 liters/hour (4-6 cups/hour), and supplementation need not be considered for losses of less than 8 liters.
- Increasing dietary sodium at meals should generally be sufficient on longer expeditions.
- The main benefit of sports drinks seems to be their enhanced palatability, which increases fluid consumption.

If a person feels too hot, he or she should seek shade or go indoors, cool off, and rehydrate.

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