

COLLABORATION

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Summer Heat Can Be Deadly for Outdoor Workers

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In the News: Heat Can Kill

Every summer we hear about them in the news -- children left in cars, elderly individuals living alone with no air conditioning, high school athletes at football practice, and scout leaders out camping -- individuals who become victims of extreme temperatures. According to a 2006 *Morbidity and Mortality Weekly Report*, 3442 heat-related deaths occurred in the United States between 1999 and 2003.^[1]

What about our outdoor working population? Although we often think of outdoor workers as relatively young and healthy, any worker is at risk for heat-related illness or death as a result of the circumstances or environments in which they perform their jobs. From 1992 to 2006, 423 workers in agricultural and other industries reportedly died from exposure to environmental heat.^[2] Outdoor workers are often at high risk for exposure to high temperatures and humidity. These workers include farmers, foresters, landscapers, groundskeepers, gardeners, painters, roofers, pavers, construction workers, laborers, mechanics, and any other individuals who work outdoors. Furthermore, some indoor workers may have duties in hot, confined spaces or may be performing arduous tasks that can raise body temperature and place them at risk for heat-related illnesses. Healthcare providers need to ask their patients about their working conditions to better assess whether a discussion about heat illnesses and prevention may be warranted.

Who Is Susceptible?

Many factors, in addition to the type of job, can increase a person's susceptibility to heat-related illness. Educating your patients about these risks is an important step in heat illness prevention. Reviewing their risks will help patients decide whether they need to slow down and take additional breaks or other precautionary measures while on the job. Risk factors include the following:

- High temperature and humidity;
- Direct sun exposure (with no shade);
- Indoor exposure to sources of radiant heat (oven, furnace);
- Limited air movement (no breeze);
- Low fluid consumption;
- Physical exertion;
- Heavy personal protective clothing and equipment;

- Poor existing physical condition or health problems;
- Certain medications;
- Pregnancy;
- Lack of acclimatization to working outdoors;
- Previous heat-related illness; and
- Advanced age (≥ 65 years)

Education: The Key to Prevention

Heat-related illnesses vary in severity and, if left untreated, a less severe form can quickly progress to a more serious and even deadly heat-related condition. Most workers have heard of "heat stroke," usually when a story about someone dying from heat stroke is on the news. However, short discussions and provision of basic information on the prevention and treatment of heat-related illnesses may help prevent heat illness emergencies in your patients.

Heat Rash

Heat rash is a skin irritation caused by excessive sweating during hot, humid weather. The rash may appear as clusters of red pimples or small blisters and is more likely to occur on the neck and upper chest, in the groin, under the breasts, and in elbow creases. Patients should try to keep affected areas dry in a cooler, less humid environment to give the rash time to heal. Also, inform workers that powders can be applied to increase comfort, but ointments and creams should be avoided on affected areas.

Heat Cramps

Much could be said about the physiology and events leading up to heat cramps; however, when discussing heat cramps with your patients, keep it simple. Heat cramps usually affect workers who sweat profusely during strenuous activity. This sweating depletes the body's sodium and fluid levels. Low sodium levels in muscles can cause painful cramps. Heat cramps, which usually occur in the abdomen, arms, and legs, can also be a symptom of heat exhaustion. Generally, a healthy worker can take a break, drink juice or a sports beverage containing electrolytes, and/or eat a snack with water and the cramps will subside. These workers should avoid strenuous work for the next few hours because heat exhaustion or heat stroke could still occur if the body hasn't had sufficient time to recover. However, if the worker has heart problems or is on a low sodium diet, or if the cramps do not subside within an hour, professional medical care is needed.

Heat Syncope

Heat syncope is an episode of dizziness or fainting that typically occurs with prolonged standing or from sudden rising from a sitting or lying position when overheated. Dehydration and lack of acclimatization to working outdoors can contribute to heat syncope. Inform patients that fainting can also be a precursor of heat exhaustion or heat stroke, and that they should take a break and slow down to give their body time to rehydrate and cool down.

Heat Exhaustion

Heat exhaustion is the body's response to an excessive loss of water and sodium, usually through excessive sweating. Symptoms of heat exhaustion can include headache, nausea, dizziness, weakness, irritability, thirst, heavy sweating, elevated body temperature, and decreased urine output. Workers experiencing symptoms of heat exhaustion should be medically evaluated at a clinic or emergency department as soon as possible. If a worker with heat exhaustion cannot be taken for treatment and must wait for help to arrive, coworkers should try to lower the

individual's body temperature by having him or her drink cool liquids in a cooler, more comfortable environment if possible. Heat exhaustion is an emergency that can quickly escalate to a life-threatening heat stroke.

Heat Stroke

Heat stroke (hyperthermia) is the most serious heat-related health problem. Heat stroke occurs when the body is no longer able to regulate its temperature. The body temperature rises rapidly and the body is unable to cool down. Symptoms of heat stroke include confusion, loss of consciousness, seizures, very high body temperature, and hot, dry skin or profuse sweating. This last set of symptoms has caused confusion over the years, because many people have been taught that sweating always stops when someone is experiencing heat stroke. This is not always true, particularly in those suffering from exertional heat stroke who may continue to produce sweat.^[3-5] Patients should be informed of the facts, because underestimating the severity of symptoms could delay the call for help. Emphasize with your patients that heat stroke can cause death or permanent disability if emergency treatment is not administered in a timely manner.

Preventive Guidance

Water Consumption

People who are outside working or playing often neglect to drink enough fluids and stay hydrated. Remind patients to drink small amounts of water frequently (before they become thirsty) to maintain hydration. Patients who are working moderately hard on a moderately hot day should drink about 1 cup (8 ounces) of liquid every 15-20 minutes. If they are well hydrated, their urine should be clear or light yellow. If you have access to a urine color chart, take a minute and show patients the difference between the color of urine in a well-hydrated vs a dehydrated individual.

Medications

Certain medications may affect the way a person's body responds to extreme temperatures by reducing sweating or vasodilation. Medications that can increase risk for heat-related illness include diuretics, antihypertensives, and anticholinergic agents. In a patient who is at increased risk as a result of medication, the body may heat up more quickly and may take longer to cool down. These patients should pay extra attention to how they feel and how much they are exerting.

Getting the Message Out

Individuals who work in hot environments, whether outside or inside, can benefit greatly from having these discussions with their healthcare providers. Education and awareness are the keys to heat illness prevention. Early and appropriate treatment is essential to prevent a heat illness emergency. Posters and training at work are not always available, and even with safety education, workers may still not know how their medications or other health-related factors could affect their body's individual response to heat stress. Take the time to find out about your patients' line of work, and share some tips for staying healthy and safe while on the job. Remind them that if they work safely, they will be able to work longer.

Web Resources

[National Institute for Occupational Safety and Health \(NIOSH\)](#)

[NIOSH Workplace Safety and Health Topics: Heat Stress](#)

[NIOSH Fast Facts: Protecting Yourself From Heat Stress](#)

[Occupational Safety and Health Administration \(OSHA\)-NIOSH Infosheet: Protecting Workers From Heat Illness](#)

Cal/OSHA: Water. Rest. Shade. Campaign to Protect Outdoor Workers From Heat Illness

CDC Emergency Preparedness and Response. Extreme Heat

References

1. Centers for Disease Control and Prevention. Heat related deaths -- United States, 1999-2003. *MMWR*. 2006;55:796-798. [Abstract](#)
2. Centers for Disease Control and Prevention. Heat-related deaths among crop workers--United States, 1992-2006. *MMWR*. 2008;57:649-653. [Abstract](#)
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