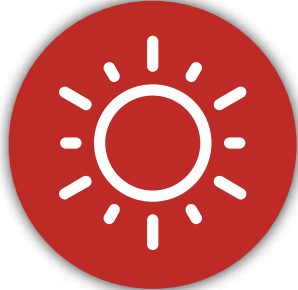


Table 4. Descriptions of heat-related illnesses, and their associated signs and symptoms, and pathways for acute treatment.

Description	Signs / Symptoms	First Aid
SUNBURN Burning of the skin due to too much exposure to the sun.	Red and painful skin, may be blistered or peeling. 	Applying an aloe or calamine lotion or a dampened towel to the area may be soothing. Use skin lotions to treat peeling skin. Cover affected area to prevent further burning, work in covered or shaded areas. If skin blisters, seek medical assistance.
HEAT EDEMA The pooling of fluid in the hands and legs by gravity due to heat induced expansion (dilation) and permeability of blood vessels. It can be exacerbated by an increase in salt due to heavy sweating (Gauer & Meyers, 2019; Khan, 2019; Sorensen & Hess, 2022).	Swelling of the soft-tissue, most notably in the ankles, and hands/fingers. 	Move to a cooler temperature area, and elevate the affected body part. Compression sleeves can be worn to promote drainage. Will resolve with acclimatization. Do not treat with diuretics.
HEAT RASH A rash on the skin due to inflammation of plugged sweat glands with prolonged exposure to humid heat and skin that is continuously wet with sweat (Jacklitsch et al., 2016; Khan, 2019; Sorensen & Hess, 2022).	Skin becomes reddened, with clusters of bumps or blisters, and may itch, feel prickly or hurt. Primarily occurs on the neck, upper extremities, trunk, and around the groin (Gauer & Meyers, 2019). 	Practice good personal hygiene, and keep skin clean and pores unclogged. Wear loose clothing to help increase ventilation, avoid direct heating of skin, and keep the rash area dry. See a doctor if the rash persists, or an infection occurs in the affected area.

Description	Signs / Symptoms	First Aid
HEAT CRAMPS (dehydration) Sharp muscle pains, spasms, or cramps that occur during high exertional work/exercise or working in hot and/or humid environments that cause the body to sweat heavily. Consequently, the body loses its salt (electrolyte) balance causing the muscles to jerk involuntarily (<i>Donoghue, 2004; Gauer & Meyers, 2019; Jacklitsch et al., 2016; Khan, 2019; MLITSD, 2021; Sorensen & Hess, 2022</i>). It may also occur with large amounts of water intake without sufficient salt (electrolyte) replacement. It often occurs early in the heat stress season when the worker is unacclimatized.	Sharp muscle cramps, pains, or spasms in either active (arms, legs) or involuntary (usually abdominal) muscles, or both. An elevated heart rate, and increased body temperature may occur in combination with muscle cramps (<i>Khan, 2019</i>). 	Move the worker to a cool area, loosen/remove excess clothing, have them drink water and have a snack, or drink fluids with electrolytes. Avoid salt tablets. Gently stretch the affected area. In heat stress conditions, workers need to drink about a cup of water every 20 minutes, more than just relying on satisfying your thirst. Stay away from caffeinated, carbonated, diet drinks, and alcohol.
HEAT SYNCOPE (fainting) Occurs when the body tries to cool itself through dilation of blood vessels when an individual is standing. Systemic vasodilation, combined with the effects of gravity, decrease the total supply of blood to the brain, which can cause light-headedness and syncope (fainting), particularly if dehydrated (<i>Bouchama & Knochel, 2002; Donoghue, 2004; Gauer & Meyers, 2019; Jacklitsch et al., 2016; Khan, 2019; Kenney et al., 2015; MLITSD, 2021; Sorensen & Hess, 2022</i>). It often occurs in unacclimatized individuals, or in combination with other risk factors such as: standing/sitting in one position for a long time; after eating; or in combination with other risk factors such as viral infection, or circulatory health conditions.	Cool moist skin, weak pulse, feelings of dizziness, headache, nausea, and light-headedness. Sudden loss of consciousness after at least two hours of work. 	Get medical aid immediately. Lay the individual down in a cool area, and assess breathing and heart rate. Loosen or remove tight or restrictive clothing. If the person regains consciousness, offer sips of cool water.

Description	Signs / Symptoms	First Aid
HEAT EXHAUSTION A medical emergency caused by prolonged exposure to, or heavy exertion in, high temperatures, causing the body to overheat. It causes extreme salt or water loss through heavy sweating and includes rapid heart rate associated with a reduced blood volume, resulting in dizziness, anxiety, intense thirst, pale and clammy skin, and fainting (<i>Bouchama & Knochel, 2002; Jacklitsch et al., 2016; Khan, 2019; McArdle et al., 2007; MLITSD, 2021; Sorensen & Hess, 2022</i>). Heat exhaustion can progress to heat stroke. A person who has experienced heat exhaustion or heat stroke previously will be more sensitive, and less tolerant to the heat. Recurrence of a second heat-stress event is common during this time.	Pale and clammy skin, heavy sweating, weakness, fatigue, dizziness, irritability, blurred vision, body temperature 38-40°C, intense thirst, decreased urine output, nausea, headache, vomiting, diarrhea, muscle cramps, breathlessness or fast/shallow breathing, heart palpitations, hypotension, numbness of hands and feet, and possible loss of consciousness. 	This is a MEDICAL EMERGENCY as heat exhaustion can progress to heat stroke and long-term illnesses. Move to a cooler or shaded location, and remove as much clothing as possible (e.g., layered PPE, socks, footwear). Apply cool, wet cloths, or ice, to the head, neck, armpits, and groin. Spray with water, and encourage fluid intake if the person is conscious.

Description	Signs / Symptoms	First Aid
HEAT STROKE The most serious type of heat illness. Heat stroke occurs at core temperatures greater than 40°C; at this level, the body's ability to dissipate heat will fail (<i>Donoghue, 2004; Khan, 2019; MLITSD, 2021; WSN, 2014</i>). Death can occur in minutes. Classical heat stroke: the increase in body temperature occurs as a result of high environmental temperatures. More commonly occurs among younger and older individuals (<i>Cheshire, 2016; Khan, 2019; Sorensen & Hess, 2022</i>). Exertional heat stroke: the increase in body temperature occurs as a result of a failure to dissipate excess heat gained through high metabolic heat production, due to heavy exertion, in high temperatures or in individuals with encapsulating clothing (e.g., PPE). Exertional heat stress more commonly affects healthy individuals performing high physical exertions (<i>Cheshire, 2016; Gifford et al., 2019; Khan, 2019; Sorensen & Hess, 2022</i>). A person who has experienced heat exhaustion or heat stroke previously will be more sensitive, and less tolerant to the heat. Recurrence of a second heat-stress event is common during this time.	Classical heat stroke: hot, dry, red skin with little to no sweating. Exertional heat stroke: sweating is usually present due to strenuous exercise or work. High/rapid heart rate, erratic breathing, core temperature greater than 40°C, confusion, upset or acting strangely, dizziness, weakness, slurred speech, seizures or convulsions, complete or partial loss of consciousness, and multi-organ failure (<i>Jacklitsch et al., 2016; Khan, 2019</i>). A worker heading into heat stroke will not realize what's happening to them. It's vital that co-workers be able to recognize what's happening quickly and intervene. Without quick attention, the worker may die!	This is a MEDICAL EMERGENCY, seek medical attention immediately. Follow first aid treatment for heat exhaustion, with immediate, aggressive cooling of the person's body, until medical team/first responders arrive. Apply cold to the person's head, neck, armpits, and groin; wet their skin and clothing with cool water; increase air circulation; do not try to force the person to drink liquids.