



# Acute Care During Extreme Heat

## Recommendations and Information for Health Care Workers

### Recognize Heat Illnesses and Heat Sensitive Diseases

- **Heat exposure can result in direct illnesses including:** Heat Edema, Heat Rash, Heat Cramps, Heat Syncope (fainting) and Heat Exhaustion. These can be self-limiting, but should always be addressed with treatment.
- Exertional Heat Stroke and Classic Heat Stroke are **medical emergencies** and require immediate action from a health care worker and hospitalization.
- Exposure to heat may also present as exacerbation of Cardiovascular, Renal, Pulmonary or Psychiatric illnesses.

#### Key Actions

- Recognize and identify heat as a factor in illness or death.
- Recognize Heat Stroke, and activate emergency medical services.
- Record heat as a contributing factor to illness for improved recognition and monitoring.

### Signs and Symptoms of Heat Exhaustion and Heat Stroke

(Terms in bold are key diagnostic factors)

#### Heat Exhaustion

**Core temperature elevated but <40°C (104°F)**

- Anxiety and confusion
- Dizziness and light-headedness
- Headache

• Tachycardia

- Cutaneous flushing (hot, red skin)
- Sweating present

- Nausea, vomiting
- Hypotension

Untreated and with ongoing heat exposure, heat exhaustion can worsen and become heat stroke.

#### Heat Stroke

**Core temperature ≥ 40°C (104°F)**

##### Mental status changes:

- Delirium/hallucinations
- Ataxia (lack of coordination indicating neurological dysfunction)
- Confusion, irritability, emotional instability, aggressiveness, seizures
- Loss of consciousness

• Cardiac arrhythmias and tachycardia

- **Classic Heat Stroke: hot, red, dry skin** typically affects sedentary vulnerable people
- **Exertional Heat Stroke: profuse sweating** typically associated with high physical activity

- Shock
- Tachypnea

In later stages, pulmonary edema, hepatic failure, renal failure, rhabdomyolysis (muscle fibre breakdown), death

### Key Risk Factors Associated with Heat-Related Illnesses and Death in Extreme Heat

**Older adults** (especially >75 years)

#### Those having chronic diseases including:

**Cardiovascular disease** (hypertension, coronary artery disease, heart conduction disorders)

**Mental and behavioural disorders** (due to psychoactive substance use, alcoholism)

**Mental illness** (dementia, depression, schizophrenia, Alzheimer's)

**Living circumstances** (confined to bed, social isolation, reduced income, malnutrition, reduced access to cooling options)

**Neurological disease** (Parkinson's disease)

**Respiratory illness** (chronic obstructive pulmonary disease (COPD), asthma)

**Renal disease** (renal failure)

**Metabolic conditions** (diabetes, obesity)

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## Some Medications that Increase the Health Risks from Extreme Heat

Medication	Mechanism
<b>Antiadrenergics and <math>\beta</math>-Blockers</b> (e.g. Atenolol, Metoprolol)	Can decrease cardiac output, and therefore shunting of warm blood from body core to periphery, limiting cooling.
<b>Anticholinergics</b> (e.g. Scopolamine)	Can prevent sweat glands from functioning properly (i.e. inhibit rate of sweating and therefore rate of cooling).
<b>Antidepressants</b> (e.g. Prozac, Zoloft, other SSRIs)	Many have anticholinergic properties (see above) and some can raise the brain's thermal set-point decreasing centrally induced thermoregulation. SSRIs can increase the risk of hyponatremia.
<b>Antihistamines</b> (e.g. Brompheniramine)	Can inhibit the sweating mechanism.
<b>Anti-Parkinson's agents</b> (e.g. Benzotropine, Levodopa, Trihexyphenidyl)	Can inhibit the sweating mechanism.
<b>Antipsychotics</b> (e.g. Olanzapine)	Can inhibit the sweating mechanism. Can induce a hyperthermic syndrome (neuroleptic malignant syndrome) on their own, which would be compounded by the effects of heat.
<b>Sympathomimetics</b> (e.g. Pseudoephedrine)	Can prevent dilation of the blood vessels in the skin of the periphery (hands, feet, face) reducing the ability to dissipate heat by convection.
<b>Diuretics</b> (e.g. Lasix)	Can lead to dehydration and hyponatremia is a common side effect.
<b>Several drug classes</b> (e.g. cholinesterase inhibitors, antiarrhythmics, calcium blockers)	Can provoke diarrhea and/or vomiting, leading to dehydration.

### Key Actions to Address Risk Factors

- Educate and increase awareness of the risk factors, signs and symptoms and treatment for heat illnesses, both for patients, care givers and health care workers.
- Help patient assess their risk and discuss preventive actions they could take to reduce risks before and during extreme heat events. (*Refer to the Health Canada's Heat-Health Fact Sheet Series*)

## Treatment Priorities

### Cool and Hydrate

- Heat stroke is a medical emergency and requires hospitalization.
- **Cool the body early, monitor vital signs.** This can prevent later stage damage and death.
  - Exertional heat stroke** –cool quickly with ice-water baths.
  - Classic heat stroke** –more often occurs in people with other chronic conditions; cool gradually, as to not exacerbate these conditions.
- Treat dehydration.
- Check for over-hydration, hyponatremia, especially in athletes; assess patient's recent physical activity.

For additional information refer to Health Canada's Extreme Heat Events Guidelines: Technical Guide for Health Care Workers

For further information email: [Climatinfo@hc-sc.gc.ca](mailto:Climatinfo@hc-sc.gc.ca)

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