What's New in Heat-Related Illnesses of Travel: Appraisal and Summary of the Updated Guidelines from the Wilderness Medical Society

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Introduction

- Global travel and adventure tourism have significantly increased, heightening travelers' exposure to environmental illnesses and emphasizing the need for travel specialists to develop expertise in prevention and treatment.
- The Wilderness Medicine Society (WMS) has recently updated practice guidelines for managing four key environmental illnesses: acute altitude sickness, frostbite, heat illness, and snow burial injuries.
- A summary of the updated heat illness guidelines is provided to support healthcare providers in advising at-risk patients, with guidance relevant to various specialties, including emergency medicine, pediatrics, and primary care.

Objective

- To highlight emerging evidence of clinical significance in wilderness medicine, for the purpose of updating and guiding travel medicine specialists caring for patients at risk of environmental exposures.

Methods

The practice guidelines and focus on research advancement for the Heat-related illness systematic reviews were summarized, with emphasis on updated literature. The Heat-related illness systematic review with updated guidelines4 was assessed for the quality of evidence giving rise to each practice recommendation. A summary of appraisal of preventive interventions is provided in overview tables and therapeutic interventions are synthesized and appraised in the text

Results

- Heat illness symptoms range from mild (e.g., cramps, lightheadedness) to severe (e.g., heat stroke), and elevated body temperature correlates with severity, though temperature thresholds alone aren't reliable for diagnosing asymptomatic individuals.
- Heatwaves can exacerbate chronic health conditions, such as hypertension and heart disease, and worsen other environmental hazards, including wildfires and poor air quality.

Table 1. Categories of heat illness and their relative severity.

Condition	Definition	Relative severity
Heat edema	Dependent extremity swelling due to interstitial fluid pooling.	Mild
Exertional muscle cramps	Exercise-associated painful involuntary muscle contractions during or immediately after exercise.	
Heat syncope	Transient loss of consciousness with spontaneous recovery associated with heat exposure.	Medium
Heat exhaustion	Heat illness due to exposure to high environmental heat or strenuous exercise; signs and symptoms include intense thirst, weakness, discomfort, anxiety, dizziness, syncope; core temperature may be normal or slightly elevated >37˚C (98.6˚F) but <40.5˚C (105˚F).	
Heat stroke	Heat illness characterized by a core temperature >40.5˚C (105˚F) and central nervous system abnormalities such as altered mental status, seizure, or coma. Causes can be categorized into passive exposure to environmental heat (classic heat stroke) or strenuous exercise (exertional heat stroke).	Severe

Results - continued

- The 2024 WMS guidelines provide recommendations to reduce heat illness risk, emphasizing the role of activity, clothing, and environmental factors like the wet-bulb globe temperature index for planning safe outdoor activities, reviewed in Table 2.

Table 2. Summary of WMS Heat Illness guidelines updated in 2024 and appraisal of evidence for preventive interventions.

Heat-related Illness Recommendation	Evidence Strength	Evidence Quality	Comments
INDIVIDUAL FACTORS			
Screen for pre-existing medical conditions	Strong	Moderate	Includes elevated body mass index (BMI)
Consider a personal medical history of heat injury	Strong	Low	As a risk factor for recurrence
Avoid medications that could impair thermoregulation	Strong	Low	Example: neuroleptics, antipsychotics, beta-blockers
Optimize aerobic fitness prior to heat exposure	Strong	Moderate	
Engage in one to two hours per day of heat-exposed exertion for at least one week	Strong	Low	For acclimatization to hot environment
Ensure normal hydration status prior to exertion	Strong	Moderate	
Adopt a "drink-to-thirst" approach to fluid replacement during heat exertion	Strong	Moderate	To replace fluids and avoid >2% loss of body weight
ENVIRONMENTAL FACTORS			
The wet-bulb globe temperature index (WGBT) is preferred method of establishing risk	Strong	High	Heat index is the second-line risk establishment metric
ACTIVITY FACTORS			
Modify environment and remove gear during periods of rest and breaks	Strong	Low	Optimize duration of rest and opportunities for cooling during rest periods
CLOTHING AND EQUIPMENT			
Select clothing and equipment that can: isolate the body from the heat source and optimize heat losses	Strong	Low	Evaporative, conductive, convective, and radiative mechanisms of heat loss should be optimized

Treatment:

- Heat injury treatment is divided into hospital and field methods, following an algorithm: remove from heat, stabilize, cool to 39°C (103°F), and transport for assessment.
- Mild cases (e.g., heat cramps) use oral hydration; moderate cases (e.g., heat syncope) involve supine positioning; severe cases (e.g., heat stroke) need aggressive cooling (preferably cold water immersion) and IV rehydration.
- Field cooling uses cold water immersion as the most effective; ice sheets or evaporative cooling are alternatives if immersion isn't available.
- Hospital treatments may use ice-water body bags; invasive methods like body-cavity lavage are not first-line. Target cooling is 38.3–38.8°C, with antipyretics and dantrolene generally ineffective for exercise-related heat illness.

Discussion

- Since 2010, the Wilderness Medical Society (WMS) has developed evidence-based guidelines for wilderness injury prevention and treatment.
- Recent updates to heat illness guidelines include new prevention and treatment strategies, summarized in an accompanying table.
- WMS calls for research to improve methods for simulating heat illness in trials and to explore advanced cooling techniques for critically ill patients.
- WMS emphasizes further research on the health impacts of climate-related events like air pollution, water damage, and humidity on travelers and environmental illnesses.

Conclusion

- In 2024, the Wilderness Medical Society (WMS) updated guidelines for the prevention, treatment, and long-term management of heat-related illness.
- These guidelines are evidence-based, graded by support level and risk-to-benefit ratio, and serve as structured medical recommendations.
- The WMS emphasizes the need for more research to address gaps in environmental medical science.
- Expanding research could enhance evidence-based practice in travel medicine and standardize medical guideline implementation.

References

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