Summary of the Wilderness Medicine Society Practice Guidelines for Exercise-Associated Hyponatremia

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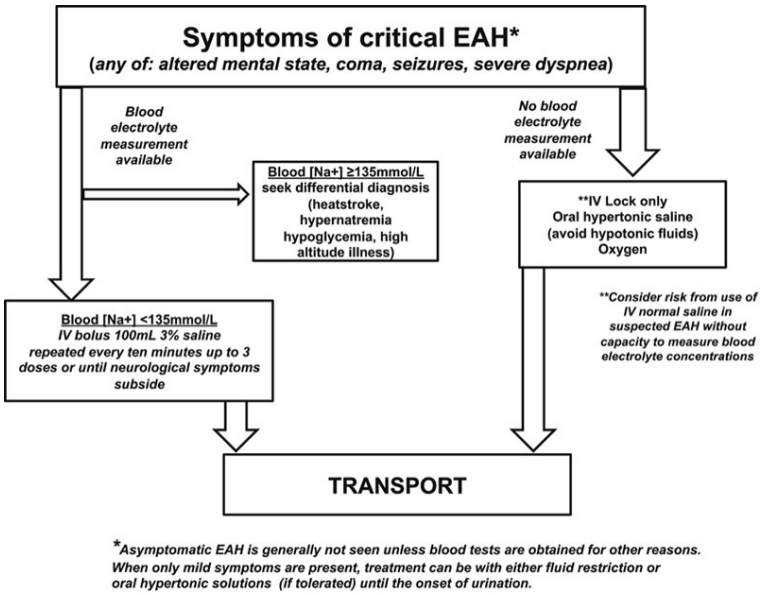
In 2014, subject matter experts composed of clinicians, researchers, and educators provided clinical recommendations for the prevention and treatment of exercise-associated hyponatremia (EAH) as published in *Wilderness & Environmental Medicine*, the journal of the Wilderness Medical Society. Treatment recommendations were made for situations when: 1) blood sodium concentration can be assessed with a point-of-care device; more commonly when 2) the capacity to measure blood sodium concentration is not available; and 3) the immediate medical treatment after arrival in the hospital. The recommendations under these three conditions were graded on the basis of the quality or strength of supporting evidence, and the balance between the benefits and risks to the patient. See the reference below by Bennett et al. (2014) for all detailed practice guideline recommendations. The algorithm for pre-hospital care is shown in Figure 1.



EAH, or low blood sodium (salt) level occurring during or shortly after exercise, is now recognized as a leading cause of preventable injury and death associated with exercise. EAH was first reported in the early 1980s in a small number of ultramarathon participants. It has now been observed to occur in athletes participating in a number of other long duration physical activities, such as marathons, triathlons, open water swimming, and cycling. Although reported less frequently, EAH can also occur in association with shorter duration activities like American football, yoga, hiking, and military unit physical training. The common link to EAH across these short and long duration physical activities is an excessive amount of fluid consumption (including electrolyte containing “sports” drinks) immediately preceding, during, or shortly after the activity.

For decades, athletes have been primarily concerned about maintaining adequate hydration before, during, and after training and competition for a number of reasons, but largely: 1) to avoid decreases in exercise capacity caused by dehydration, 2) to prevent the development of heat-related illness, such as heat exhaustion or the potentially life threatening outcome of heat stroke during activities done in warm to hot ambient temperatures, and 3) to prevent muscle cramping, presumed to be due to fluid and electrolyte imbalances.

We now know that excessive concern about dehydration resulting in over-hydration can be potentially dangerous.

The majority of EAH cases are reported in community based events, but when endurance activities are done by individuals or during organized events in austere locations, such as in the backcountry or wilderness settings, medical care is limited, or often not available, and patient evacuation to a hospital can be greatly delayed unlike in urban settings. The challenge in these remote settings is that severe EAH cases require rapid recognition and appropriate treatment to ensure that the patient survives. Failures to recognize EAH, or delays in provision of appropriate care, are known to cause unnecessary illness or fatality. Proper treatment includes fluid restriction and provision of concentrated salt solution (typically 100 ml of 3 percent saline) orally, if possible, or intravenously.

A key point relates to the prevention of EAH, or from progressing once present from mild symptoms of headache and nausea to severe symptoms of confusion and disorientation, seizure, coma, and death. Currently, there is no single recommendation that fits all individuals under all conditions for fluid and salt consumption during endurance events. However, a prudent general guideline is to allow thirst to drive the extent of drinking in order to avoid excessive fluid intake or serious dehydration. The guidelines also recommend avoidance of excessive sodium supplementation because there is no evidence that such will prevent EAH. Monitoring body weight is another potential prevention strategy in some environments. The expectation is that some weight should be lost with exercise, so if that is not happening then the individual is overhydrating. Finally, it should be recognized that reduced urine production could be present with EAH due to hormonal influences with this disorder, so one should be cautious to avoid confusing this sign with dehydration.

Reference:

Bennett BL, Hew-Butler T, Hoffman MD, et. al. Wilderness Medicine Society Practice Guidelines for Treatment of Exercise-Associated Hyponatremia: 2014 Update. *Wilderness & Environmental Medicine* 2014;25:S30-S42.