

WHW Race Medical Information

Introduction

The WHW is a non-stop 95 mile footrace crossing remote terrain and including 14760 feet of ascent. As such it is a challenging event which poses certain specific risks to participants health.

The purpose of this guidance is to highlight to participants and their support crew, the *significant* medical conditions which, as a medical team, we have encountered at this race and other ultramarathon races over the years. Our aim is to collectively minimise the risk of these conditions occurring and then recognise and treat them early if they do arise during or after the race.

For each of the conditions below there are symptoms and signs for runners and crew to be aware of to aid prompt **recognition** and early referral to the medical team.

As you will see there is considerable overlap and several of the symptoms and signs could be due to a number of different conditions, therefore if there is any doubt or concerns about a runner then please report to a member of the medical team for advice.

Also included is some brief information regarding the **assessment** and **management** of these conditions by the medical team.

This guidance is not exhaustive and does not cover all medical problems encountered during ultramarathons.

General advice

1. Please declare any medical conditions and medication you are taking during the race entry process. Please provide an update prior to the event taking place if something new arises. This enables the race medical team to contact you pre-race, where appropriate, to clarify any risks or concerns and provide advice. This collected medical history is then a useful reference for the medical team during the race if a runner requires assessment or treatment.
2. If you are under the care of a doctor it is important you discuss your race participation with them. The WHW race medical team to do not screen or clear any runner as fit to take part in the race.
3. Ensure that you are well prepared, rested and nourished.
4. Do not start the race if you are feeling unwell, have a fever or any kind of infection.
5. Do NOT, in any circumstances, be tempted to take non-steroidal anti-inflammatory drugs (NSAIDs e.g. ibuprofen, naproxen, diclofenac, indomethacin, mefenamic acid etc) either before, during or after the race. These drugs cause kidney distress and can exacerbate some of the conditions detailed below.
6. Be prepared to self-manage minor conditions such as blisters but ask for help if needed.
7. Ticks - in view of the risk of Lyme disease please check for ticks during and after the race. Remove them safely with a tick-removal tool, a video on how to do this is on the NHS Inform website. [Self-help guide: Tick bites | NHS inform](#)

1. Exercise-Associated Hyponatraemia (EAH)

This term refers to a low level of sodium (a salt) in the blood that develops during or just after exercise.

The primary cause of this is fluid overload due to drinking too much fluid and the body inappropriately retaining fluid. The ultimate consequence of this is water-logging in the brain leading to seizures and death.

Prevention:

Understandably runners are concerned about becoming dehydrated during a race, especially in warmer temperatures but the real risk for this race (which occurs over a long period of time with often cool temperatures especially overnight and at lower exercise intensities) is over-drinking and subsequent fluid overload leading to hyponatraemia.

The currently advised and safest fluid intake strategy to use during the WHW race is to **“DRINK TO THIRST”**. By drinking to thirst you will prevent significant dehydration and also reduce your risk of over-drinking and hyponatraemia. Current thinking suggests that the body can tolerate moderate dehydration of around 3% loss (of body mass) and that drinking above thirst does not reduce fatigue, muscle cramps or the risk of heat illness. By drinking to thirst you are unlikely to become significantly dehydrated beyond this acceptable level.

The role of sodium supplements is controversial with no consensus that their use helps reduce the risk of hyponatraemia. It is advised that salt intake should come from “normal eating”. Whilst drinking electrolyte containing fluids does not prevent hyponatraemia they may be slightly more beneficial for sodium levels than plain water overall.

Certain commonly taken medications promote water-retention and can exacerbate hyponatraemia and therefore it is imperative any medications are disclosed to the medical team pre-race and if you are assessed during the race.

Recognition:

Symptoms of a low sodium level can be non-specific so if there is any doubt please discuss with a member of the medical team.

Early signs and symptoms:

- Weight gain during the race
- Dizziness, light-headedness
- Fatigue
- Nausea
- Bloating feeling
- Puffiness of hands and feet.

Later more worrying symptoms:

- Headache
- Vomiting
- Confusion
- Agitation
- Difficulty breathing
- Seizure (fit).

Medical team assessment and treatment:

- History including medication and fluid and food intake
- Examination including weight
- Blood testing if available
- Treatment on scene as determined by symptoms
- Transfer for onward care

2. Exertional Rhabdomyolysis and Acute Kidney Injury (AKI)

This refers to the condition where there is muscle breakdown in response to strenuous exercise. This breakdown of muscle can then lead to a build up of protein inside the kidneys which then cannot function leading to kidney failure (AKI).

In any long distance running event a small amount of muscle breakdown is to be expected but in rhabdomyolysis it is the amount of breakdown that causes the problem. The WHW race includes a large amount of downhill running which puts prolonged stress on the legs requiring repeated eccentric muscle contractions making rhabdomyolysis a specific risk. NSAIDs increase the risk of AKI, therefore, as stated above please do not take them.

Recognition:

Symptoms and signs can develop *during* the race or many hours *afterwards*.

If any of the following occur then please report to the race medical team or NHS medical services if you are back home:

- Muscle pain - your training should inform you of what is a “usual” amount of muscle soreness during a race, anything above this should be reported
- Muscle swelling
- Generalised weakness
- Urine discolouration - red/brown/coca-cola. BUT Rhabdo often occurs without this so the absence of this feature is NOT reassuring if you have other symptoms
- Nausea and vomiting
- Fever

Medical team assessment and treatment:

- History covering above symptoms and including medication, fluid intake
- Examination including weight if available, analysis of urine
- Blood test if available - to look at muscle enzyme levels and kidney function
- Transfer for onward care - this will occur in all suspected cases

3. Hypothermia

The risk of hypothermia is significant due to the length of race and weather conditions and has been encountered on several occasions. The runner’s crew have an important role in the early recognition and prompt treatment of this condition.

Recognition:

Mild - core body temp 32-35°C. Shivering, confusion, slurred speech, incoordination

Moderate - 28-31°C. Reduced shivering, lethargy, weakness, drowsiness

Severe - <28°C. Inappropriate behaviour, total loss of shivering, reduced consciousness

Initial treatment by crew or medical team at check point/finish:

- Move to warm environment
- Remove wet clothes gently
- Use dry blankets to cover
- No excessive or unnecessary movement of the runner
- Medical assessment including history, examination where appropriate and obs monitoring
- Decision regarding need for transfer for onward care

4. Heat illness

Heat exhaustion - raised core body temperature and difficulty continuing with exercise but with no alteration in mental state.

Exertional heatstroke - This is defined as the combination of elevated core temperature (>40°C) with an altered mental state (e.g. confusion/drowsiness or seizure).

Heat illness is less likely to occur during the WHW race due to the temperatures encountered and lower intensity of exertion compared to shorter races in warmer climates. However, cases of heat illness have been encountered at shorter Scottish Ultramarathons during the Summer.

Heat is produced when we exercise and so our core temperature increases and this is extenuated with warmer climatic conditions and higher humidity which prevents effective sweating. The bigger you are the more heat you produce as well. Provided there are no symptoms then a core temperature of up to 39.5°C is considered acceptable.

Recognition:

- Dizziness
- Nausea
- Absence of sweating
- Muscle rigidity
- Seizure and coma
- Weakness
- Headache
- Exhaustion
- Confusion, disorientation, combative behaviour, drowsiness

Medical assessment and treatment:

- History including medication which can increase risks, previous episodes
- Examination - temperature, hypotension and tachycardia
- Immediate cooling with sponging, spraying, fan, ice packs
- Transfer for onward care

5. Exercise-associated postural hypotension (EAPH) and collapse (EAC)

This section refers to collapses that occur **AFTER** stopping prolonged exercise which usually resolve with minimal treatment.

When you are exercising your blood is diverted to the skeletal muscles where it is needed and away from the heart. The leg muscles effectively become a “second heart” and help pump blood back to the body so it can be recirculated. When you suddenly stop moving at the end of the race the legs are no longer contracting and are therefore not helping to pump the blood back to the heart. This then causes light-headedness, dizziness or fainting as blood is not ultimately arriving at the brain.

Recognition:

- Light-headedness or dizziness
- Pale, sweating
- Transient “fainting” episode or collapse that spontaneously recovers

Treatment:

- Lie down and elevate the legs above the heart to aid blood return
- Hx, examination and investigations/blood tests as deemed necessary
- Monitoring of heart rate and blood pressure

- Period of rest in the medical assessment area with observed fluid and food intake
- Transfer to hospital is not usually necessary depending on recovery unless a more sinister cause of collapse is suspected

IMPORTANT - any “fainting” or collapse that occurs **DURING** the race is a very different scenario to that referred to above and is a significant event with potentially life-threatening causes. Therefore, this must be reported immediately to allow timely treatment and assessment.

6. Compartment syndrome

A “compartment” is a group of muscles enclosed jointly within a covering of rigid sinew or fascia with its own blood vessels and nerve. Compartment syndrome occurs in the event of a fracture, bruising or overuse which causes the muscles to swell within the compartment. The compartment fascia is unyielding and so the pressure inside rises. This then leads to compression of the compartment’s blood supply making symptoms worse and risking the viability of the muscles. This process may occur in any group of enclosed muscles, but the lower leg is the commonest place.

Recognition

- Any significant injury
- Muscle pain which seems out of proportion to any injury or overuse
- Worse pain on stretching the area
- Tight feeling in the muscle compartment e.g. calf feels solid to touch or feels swollen or tight
- Reduced sensation, numbness or pins and needles
- Late signs - cold or pale skin

Treatment:

- Urgent treatment is required to ensure the muscles survive in addition to treating the underlying injury and so if the condition is suspected there will be immediate transfer to hospital
- Do not elevate the limb above the level of the heart