

Guidance in the event of a heatwave

Specific guidance for doctors, nurses and other qualified staff

Heatwaves can lead to health problems and increased mortality

The changing climate means that we can expect average temperatures to rise and heatwaves to become more common. Because we are not very accustomed to high temperatures in Sweden, our health can be affected at a much lower temperature than in areas such as southern Europe.

High temperatures can be dangerous for everyone, but the following at-risk groups are particularly vulnerable: elderly people, those with chronic health conditions, people with disabilities, young children, pregnant women and people taking certain medication.

At-risk groups

- **Elderly people.** Elderly and very elderly people are generally more sensitive to heat because both their thermoregulation and their ability to feel thirst may be impaired. They are also more likely to have chronic health conditions, take medication and have a disability, which can increase the risk of health problems in a heatwave.
- **People with chronic health conditions.** Chronic health conditions such as cardiovascular diseases and pulmonary diseases such as asthma and COPD can be worsened by heat. Those with diseases of the renal system, diabetes, dementia or mental illness may also be at greater risk.
- **People with intellectual disabilities** may find it more difficult to recognise risks and their bodies' warning signals.
- **People with physical disabilities.** In people with physical disabilities, the body's signalling pathways may not work properly, and they may need practical assistance with things such as extra drinking, changing clothes and moving themselves to a cooler location.
- **Young children and pregnant women** can be particularly vulnerable in hot weather. Young children have often not yet developed the ability to sweat. They may also lack the ability or judgement to move themselves away from heat. Pregnant women are at some increased risk of giving birth prematurely.

- **People taking medication** may also be at greater risk. Some medication affects the body's ability to adjust thermoregulation processes and fluid balance. This applies for example to diuretics or anti-depressive medicines and antipsychotics.

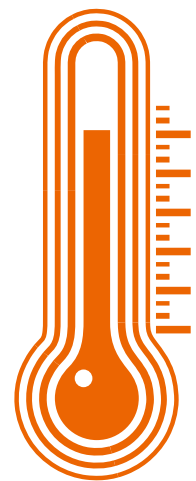
Heat warnings from SMHI

SMHI, the Swedish Meteorological and Hydrological Institute, issues notices and warnings about high temperatures so that measures can be put in place locally in time to assist vulnerable groups in the community. In the event of such a warning, you should aim to start getting help to service users as quickly as possible. The heat may also be stressful for you and your colleagues, so you may need additional staff.

SMHI will issue the following:

- a notice about high temperatures when the forecast indicates that the maximum temperature will be at least 26°C for three days in a row
- a Class 1 warning about very high temperatures when the forecast indicates that the maximum temperature will be at least 30°C for three days in a row
- a Class 2 warning about extremely high temperatures when the forecast indicates that the maximum temperature will be at least 30°C for five days in a row and/or the maximum temperature will be at least 33°C for three days in a row.

SMHI sends out notices and warnings via smhi.se, its mobile app, Twitter and on national radio station P1. The information is also available on krisinformation.se.



This guidance has been produced with the help of WHO's 'Advice on preventing health effects of heat' (2011) and the Public Health Agency of Sweden's report 'The health effects of high temperatures' (2015) [in Swedish].

Groups of medicines that can cause problems in heat

- Diuretics can cause electrolyte imbalance and reduced fluid volume. ACE inhibitors can also cause dehydration, but loop diuretics appear to be the most problematic in this respect.
- Anticholinergics can lead to dry mucous membranes and a reduced sweating response.
- Psychotropic products (particularly antipsychotics) reduce sweating by disturbing temperature regulation in the body, and medication for depression can also bring a greater risk of complications. This is partly due to an anticholinergic effect, but SSRIs combined with diuretics (thiazides or Furosemide) also increase the risk of hyponatraemia.
- In a heatwave, antihypertensives (including beta blockers), like diuretics, can be a cause of insufficient cardiac output. In addition, antihypertensives and antianginal drugs reduce arterial pressure, which can lead to defective thermoregulation due to diminished sweat gland function.
- Lithium, digoxin, anti-epileptic drugs and products for Parkinson's have a narrow therapeutic index and so dehydration can have serious side effects.
- NSAIDs can cause severe renal failure in elderly people with diminished renal function and a fluid deficit.

Specific reactions to heat

Most increased illness/mortality during heatwaves is due to cardiovascular diseases, pulmonary diseases and the effects of medication. However, it is important to note that there are a number of specific heat-related symptoms/conditions that can also affect younger and healthier individuals:

- Heat cramps (due to dehydration and loss of electrolytes). Seen mainly following strenuous sporting activity in high temperatures.
- Heat rash: small, red, itchy papules. Not dangerous, subsides without treatment.
- Heat oedema: usually presents as swollen ankles.
- Heat syncope: dizziness and fainting due to dehydration and vasodilatation (often in cases of cardiovascular disease and where medication is being taken).
- Heat exhaustion: nausea, vomiting and circulatory collapse. Can occur at a body temperature of 37-40 degrees. This is due to a lack of water or sodium and requires rapid action to cool and rehydrate the patient. Electrolytes may need to be given (as a drink or via a drip in accordance with local treatment procedures).

- Heatstroke can occur if heat exhaustion is not treated and is a hyperacute condition involving confusion, cramps, possible loss of consciousness, hot, dry skin and a body temperature of >40.6 degrees. Left untreated, it can result in organ failure, brain damage or death.
- No controlled studies have yet been carried out into the type of fluid treatment (with or without electrolytes) best able to alleviate the health effects of heat on elderly people.

In cases where specific rehydration treatment needs to be considered, an individual assessment must be made taking into account any primary condition and medication, and local treatment procedures must be followed.

Things to remember

- It may be a good idea to go through your list of service users and consider which of them may need individual advice or additional attention in the event of a heatwave. This will help staff who will be working during the summer holiday period.
- People with heart failure and/or being treated with diuretics may need to have their liquid intake recorded and be weighed more often than usual, and possibly have their electrolyte balance checked. Dehydration, overhydration and electrolyte imbalance can cause serious deterioration.
- Antipyretics should not be used to treat heat exhaustion or heatstroke as they can make these conditions worse. Take the person's temperature, cool them down and give them a drink if they are conscious; otherwise, put them on a drip, and call an ambulance.
- Tell healthcare staff and service users to store medication according to the instructions in the package insert.
- Give additional information to service users in at-risk groups during scheduled appointments before the summer. During a heatwave, they should be particularly on the watch for any deterioration in their primary condition and any signs of a severe reaction to heat. Make use of the documents and films produced by the Public Health Agency of Sweden for risk groups and their families.

More information about the health effects of heatwaves and guidance on action plans and advice for healthcare staff and at-risk groups can be found on the Public Health Agency of Sweden's website: [folkhalsomyndigheten.se/varmebolja](https://www.folkhalsomyndigheten.se/varmebolja)

