



Heat waves and hot weather

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Key facts

- A heatwave is an extended period of unusually high temperatures and can be combined with other factors such as humidity.
- Heatwaves typically have a noticeable start and end and tend to particularly affect urban areas.
- Heatwaves and hot weather events are exacerbated by climate change and are expected to become more frequent and more severe in the future, happening also in atypical seasons.
- The risk of extreme heat is often seasonal. Nevertheless, preparing for heatwaves should take place throughout the year.
- Hotter and drier conditions are drying out ecosystems and therefore increasing the risk of wildfires. The risk of wildfires increases where there is drought and during high winds. In turn, wildfires affect weather and the climate by releasing large quantities of carbon dioxide, carbon monoxide and fine particulate matter into the atmosphere. Resulting air pollution can cause respiratory and cardiovascular problems.
- Healthcare facilities may have challenges to store medicines sensitive to heat. It is also observed that during a heatwave there are increased hospital admissions, especially within the vulnerable populations (elderly, infants, pregnant women, outdoor workers etc.).
- Heat waves are also associated with an increase in vector populations and vector-borne diseases such as malaria and dengue fever. They may also influence vector activities – for example, high temperatures increase the biting rate of female mosquitoes, thereby leading to higher incidence of the disease.
- In addition to impacts on people's health, heatwaves have an important impact in other areas of society, such as reduced economic output due to loss of productive working hours and an overload of the power grid resulting in power outages.

Main health impacts

Health concern	Risk factors
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<p>Heat-related conditions:</p> <ul style="list-style-type: none"> • Dehydration: It happens when a person's body does not have enough water and other fluids to carry out normal functions. It results in feeling thirsty, dizzy, tired, having a dry mouth and eyes, and in a change in urination habits (less volume, darker colour). Dehydration can range from being mild to severe. • Heat cramps: Painful spasms of large muscle groups due to heat. • Heat exhaustion: Inability to continue activities due to exhaustion and weakness, nausea, sweat and thirst. • Heatstroke: This is the most serious heat-related condition. It results in severe overheating, with the core body temperature at or above 40°C (104F). Other symptoms may include disorientation, convulsions, altered mental status, absence of sweat despite feeling very hot. It is a medical emergency. <p>More information about heat-related illnesses can be found here and here.</p>	<ul style="list-style-type: none"> • Doing manual labour and/or working outdoors increase the risk of illness from heat. • Adults over 65, infants, pregnant and lactating women and people with chronic health conditions are at higher risk due to less efficient body thermoregulation (the ability to maintain a stable temperature) and faster dehydration in high temperatures. • Living in urban areas increase the risk because of faster temperature rises in urban settings. • People experiencing homelessness are at higher risk due to extended exposure to weather conditions. • Socio-economically disadvantaged groups may have less access to coping strategies; e.g., fewer possibilities to stay in cooler air-conditioned or shaded places, or to postpone work to a cooler period of the day or even after the end of a heatwave.
<p>Worsening of pre-existing chronic cardiovascular and respiratory diseases (e.g. coronary heart disease, asthma, chronic obstructive pulmonary disease)</p>	<ul style="list-style-type: none"> • The main causes of illness and death during a heatwave are pre-existing respiratory and heart-related diseases. Heat can further aggravate chronic lung conditions, heart conditions, kidney disorders and mental illness due to an insufficient water intake and a less efficient heat regulation of the body.
<p>Burns and occupational injuries</p>	<ul style="list-style-type: none"> • Occupational risks include unintentional injuries and accidents at work, as high temperatures can affect cognition, therefore increasing the risk of mistakes. • Young workers and male workers who may be more likely to work in sectors such as agriculture, forestry, fishing, construction and manufacturing industries may be at higher risk of occupational injuries. • In urban areas in high income countries, medical services often report an increase of burn injuries due to contact with hot surfaces (asphalt, sidewalks, sand) during hot weather.

<p>Increased transmission of water-, food- and vector-borne, and zoonotic diseases</p>	<ul style="list-style-type: none"> • In hot weather conditions where there is water scarcity, limited potable water may lead to the use of contaminated water for drinking and cooking. • Food safety is also compromised by hot weather as foodborne bacteria (e.g. salmonella) grows in hot temperatures and fast perishing food which cannot be kept cold can lead to food poisoning and diarrhoeal diseases. • Hot weather is one contributor to the increase of Harmful Algal Blooms (HAB), a risk factor for food and waterborne diseases. The algae produce biotoxins accumulated by shellfish and fish. Consumption of contaminated seafood leads to food poisoning, with people experiencing nausea and diarrhoea. Cooking or processing cannot destroy these odour- and taste-free biotoxins. For more information, see: Review of Climate Change Impact Studies on HABs, 2022 and study relating HABs to human health, 2015 • The risk of vector-borne and zoonotic diseases increases where there is a rise in hosts attracted by perishing food (e.g. rats). • A connection between temperature rise and the biting, survival and replication rate of vectors and pathogens that they carry (e.g. mosquitoes carrying <i>Plasmodium</i> parasites or dengue viruses) is likely. However, the complex interactions between vector, pathogen and heat still need to be fully understood (see study, 2015 and study, 2020).
<p>Burns and respiratory diseases during wildfires</p>	<ul style="list-style-type: none"> • Burns, external injuries and internal burns from the inhalation of smoke are a risk, particularly for firefighters and emergency response workers. • Smoke and ashes can also cause eye, nose, throat and lung irritation; coughing and wheezing; lung diseases such as bronchitis or exacerbation of asthma; as well as exacerbation of cardiovascular diseases like heart failure. • Wildfires release large amounts of mercury into the air, which can lead to impairment of speech, hearing and walking, vision problems and muscle weakness.

Priority actions for teams with community and public health response capacity

<p>Immediate steps</p>	<ul style="list-style-type: none"> • During heatwaves and hot weather, encourage people to: <ul style="list-style-type: none"> - Stay out of direct sunlight as much as possible. - Stay in an air-conditioned room, if possible. - If you have to be outdoors, wear loose-fitting clothing and a hat. - Never leave people or animals in a hot car. - Keep an eye on your neighbours, friends, family and pets. • For those experiencing heat stress: <ul style="list-style-type: none"> - Provide first aid and ensure ambulance transport for those experiencing heat stroke. See action cards “Recognizing heat stress (P.46)”, “Providing first aid for heat exhaustion (P.47)” and “Providing first aid for heatstroke (P.48)”. - Contact your local doctor for advice or in case of emergency, if someone else is experiencing heat-related symptoms. • Engage the support of veterinary and animal welfare professionals to ensure animals are not at risk of heat stroke. Animals should be placed in the appropriate housing with shades and cooling system, food and lots of cool drinking water.
<p>Surveillance</p>	<ul style="list-style-type: none"> • Monitor “high temperature” or “heat” warnings from Meteorological Services or your Ministry of Health (see 1.4 IFRC's Heatwave Guide for RCRC Branches)

Community-based action and social mobilization

- Identify and prioritize vulnerable populations in the community.
- Implement community engagement activities focusing on measures to prevent dehydration and heat exhaustion, supporting vulnerable groups.
- Conduct public awareness campaigns regarding heatwaves and their impact on health. These should include advice to keep the house cool (e.g. shading windows, closing windows during the hottest part of the day, opening them during nights) and the body cool (e.g. take cool showers, drink water regularly, keep out of the heat); as well as advice on what to do if someone feels sick. Find more information from WHO and IFRC Disaster and Crises.
- Community mapping:
 - Work with your community to identify shaded areas or other spaces for people to cool off during heat and power outages.
 - Points of drinking water in the community (where possible and if resources are available, volunteers may be able to run drinking water points).
 - In some settings, local authorities may set up “cooling centres” to serve as safe public locations for people to get relief in higher temperatures and therefore prevent heat-related illness. Red Cross Red Crescent teams should promote the locations and importance of such centres. If necessary, teams may evacuate vulnerable people from their homes to cooling centres.
- Promote (as far as possible) changes and/or adaptations to schedules of essential activities during a heat wave, in order to avoid exposure to direct sunlight. Some activities like harvesting might be possible to shift to early mornings or late afternoons for more tolerable temperatures. Consider promoting the use of a buddy system for manual labour when working in extreme heat to alternate.
- Assist the elderly, who lack thirst stimulus, to drink regularly. Take particular care of those living at home or in care homes by doing outreach visits.
- Encourage communities to wear convenient loose-fitting and light-coloured clothing.
- Raise public awareness about the importance to check on cattle and animals frequently to ensure that they are not suffering from the heat. It is important to provide enough water, food and shaded spaces for animals.
- In case of wildfires raise awareness to: remain indoors; keep windows closed; wear masks when going outside for protection against air pollution from fires.
- Red Cross Red Crescent volunteers and staff should encourage people to seek medical care if symptoms such as breathlessness, chest pain, confusion, weakness, dizziness or cramps get worse or do not go away.
- Ensure access to mental health and psychosocial support (MHPSS) services for community members and staff/volunteers which may include (but are not limited to): regularly assessing MHPSS needs; providing information on the situation regularly in cooperation with authorities; training volunteers on the provision of psychosocial support (PSS); using mobile teams providing a range of support; embedding PSS into evacuation centre/shelter facilities; providing special support to vulnerable groups; coordinating points for further care.
- Identification in the community of cases of high-risk diseases (see list of disease tools below) and referral to pre-identified health structures. This requires a prior elaboration of a referral pathway, that is, mapping of existing primary health facilities, and assessment of minimum quality care standards and accessibility (including geographic and cost-related barriers).
- Care for volunteers’ safety and wellbeing. Plan for sufficient drinking water and cooling spaces in the community for Red Cross Red Crescent volunteers and staff. If available, provide loose fitting t-shirts, water bottles and caps.

Note: When it is hot and there is also air pollution, commonly given heatwave advice may need to change (e.g. opening windows, ventilating rooms). See more information on ambient air pollution from WHO.

For teams with additional clinical capacity

Please refer to the appropriate local or international guidelines for clinical management. All clinical management including the administration of any treatment should be conducted by health professionals.

List of important primary health care interventions

Important primary health care interventions during heatwaves include the following:

- Treatment for heat stroke, which is a **medical emergency**. Symptoms like confusion, disorientation, unconsciousness, and core temperature exceeding 40°C should directly lead to first aid and medical treatment.
- Provide oral rehydration solutions, particularly when people suffer from muscle cramps and heat exhaustion.
- Specific primary care interventions for diarrhoeal diseases, respiratory tract infections, Hepatitis A, typhoid, skin infections, and insect bites.
- Care of burns and injuries.
- Tetanus vaccination.

A checklist to assess vulnerabilities in healthcare facilities and health workforces in the context of heatwaves can be found [here](#):

WHO (2021). *Checklists to assess vulnerabilities in health care facilities in the context of climate change: Heatwaves*

A checklist to assess vulnerabilities in health care facilities and health workforces in the context of wildfires can be found [here](#):

WHO (2021). *Checklists to assess vulnerabilities in health care facilities in the context of climate change: Wildfires*

Disease tools that may be relevant

- > Hepatitis A
- > Measles
- > Malaria
- > Cholera
- > Chikungunya
- > Dengue fever
- > Diarrhoeal diseases

- > Hantavirus Pulmonary Syndrome (HPS)
- > Hepatitis E
- > Meningococcal meningitis
- > Plague
- > Poliomyelitis (polio)
- > Typhoid fever