



सत्यमेव जयते

Government of India

Ministry of Health and Family Welfare



**TRAINING MANUAL FOR COMMUNITY
MEMBERS- RECOGNISING AND PREVENTING
HEAT-RELATED ILLNESSES**



**National Programme
on Climate Change
and Human Health**



Ministry of Health
and Family Welfare

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1. INTRODUCTION TO CLIMATE CHANGE

In modern times, the environment around us has degraded to a large extent. Green cover in the form of trees with large canopies has reduced, as have surface water reservoirs such as lakes, ponds, etc. This is particularly true in urban areas. At the same time, due to industrial activity and vehicular pollution, there has been a very large increase in carbon dioxide emissions in the atmosphere in the past few years. Due to this, heat that is absorbed from the sun, and that which is released due to human activity does not dissipate. This leads to extreme heat and disruptions in the climate. There are several natural disasters that have become a common phenomenon because of climate change. These include floods, droughts, forest fires, and hurricanes. Extremely hot summers are also a common result of climate change. This extreme heat poses a large risk to human health that needs special attention.

2. INTRODUCTION TO HEAT WAVES

In extremely hot temperatures, the human body is unable to cope and often displays signs such as rashes, cramps in the limbs, fainting, fatigue, abnormal changes in heartbeat, and even high fever. Thermoregulation is the ability of the body to maintain its temperature. During climatic conditions such as heat waves, this ability is under a lot of stress.

Heat illness is a medical condition resulting from the body's inability to cope with a particular heat load, and includes, but is not limited to, heat cramps, heat rash, heat exhaustion, fainting, and heat stroke. Prolonged or intense exposure to hot conditions and heavy physical work even in cooler conditions can lead to the overheating of the body. Symptoms of heat illness may not be recognized initially and can quickly progress.

Heat stress, heat tiredness, heat cramps, heat exhaustion, and heat stroke are all forms of hyperthermia. This is the general name for a range of heat-related illnesses. Symptoms may include:

- Headache
- Nausea
- Heavy sweating
- Skin that is dry (no sweating), hot, and red
- Muscle spasms
- Extreme tiredness after exposure to heat

3. VULNERABLE GROUPS DURING A HEAT WAVE

Pregnant and lactating persons

The body of a pregnant person has to maintain body temperature for itself as well as the foetus. This puts more strain on the body, especially during extreme heat. Heat causes the mother's blood vessels to contract in order to cool down, which then reduces the amount of nutrients that reach the foetus. Further, an increase in blood volume during pregnancy makes it more difficult to distribute fluids through the body. Low blood pressure and high temperature during the pregnancy are exacerbated by heat, leading to dehydration. Further, temperatures above 39°C can result in neural tube defects in the foetus. The following are some of the dangers of extreme heat for pregnant and lactating persons-

1. Dehydration due to loss of electrolytes from perspiration and irregular water intake
2. Increased painful constipation
3. Hormonal changes due to pregnancy and dehydration increase the risk of urinary tract infections
4. Heat Exhaustion
5. Decrease of amniotic fluid level
 - a. Birth defects
 - b. Miscarriage
 - c. Pre-term labour
6. Reduced milk volume in lactating mothers

The signs of heat stress among pregnant and lactating persons generally manifest as: -

1. Thirst, dry mouth, loss of appetite, chills, and fatigue
2. Heat cramps
3. Headache, dizziness, fast & weak pulse

Outdoor and physical labour workers

Extreme heat is a common threat faced by outdoor workers such as construction workers, agricultural workers, landscape workers, and street hawkers. In addition, factory workers, who may not work outdoors, but are exposed to poorly ventilated and high-heat environments are also at risk of heat stress and heat-related illness.

Many times, individuals themselves may not be able to identify the symptoms of heat stress, and believe that their exhaustion is due to regular fatigue. The following factors increase the risk of heat for outdoor and physical labour workers.

- Prolonged exposure to heat, either outdoors or near hot machinery
- Inadequate protection in the form of hats or appropriate clothing
- Inadequate hydration
- Nutritional inadequacy
- Consumption of tobacco or alcohol
- Chronic disease
- Advanced age

Older Adults, persons with chronic disease, routine medication

Each year, most people who die from hyperthermia are over 50 years old. Health problems that put you at greater risk include:

Risk factors for heat-related morbidity and mortality

- Heart or blood vessel problems
- Poorly working sweat glands or changes in your skin caused by normal aging
- Heart, lung, or kidney disease, as well as any illness that makes you feel weak all over or results in a fever
- Conditions treated by drugs, such as diuretics, sedatives, tranquilizers, and some heart and high blood pressure medicines (they may make it harder for the body to cool itself)
- Taking several prescription drugs; ask your doctor if any of your medications make you more likely to become overheated.
- Being very overweight or underweight
- Drinking alcoholic beverages

Those who suffer from chronic disease already have a reduced level of good health. In addition, certain lifestyle factors enhance susceptibility to heat-related illness. Risk factors of heat-related illness common among those suffering from the chronic disease include: -

- Poor circulation, inefficient sweat glands, and changes in the skin caused by normal aging
- Heart, lung, and kidney diseases, as well as any illness that causes weakness or fever
- High blood pressure or other conditions that need changes in diet. For example, people on low-salt diets may face an added risk (but don't use salt pills without asking your healthcare provider).
- The inability to sweat caused by some medicines. These include water pills (diuretics), sedatives, tranquilizers, and some heart and blood pressure medicines

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- Taking several medicines at once for different conditions. Don't just stop taking them. Always talk with your healthcare provider.
 - Being substantially overweight or underweight
 - Drinking alcohol
 - Limited mobility, such as problems with walking that can make it hard to move out of hot environments

4. PRECAUTIONARY GUIDELINES DURING HEAT WAVES

General Precautions

Inside the home

1. Use fans to move air around in the home. Put a bowl of ice in front of a fan to help cool the air
2. Open windows in the early morning and the evenings.
3. Close windows and curtains during the day to keep the cool air inside, especially on the sides of the house that get the most sun
4. Use curtains that are white on the side facing the window to help heat from coming into the home
5. Use a fan to pull cool air inside during the morning and blow warm air out during the evening.
6. Hang a damp sheet in an open window when the air outside is dry and cooler than the air inside
7. Breeze coming into the home are cooled by the evaporating water from the sheet
8. Cook outside the house if using solid fuels, when possible

Outside the home

1. Find or make a shade in the yard. Making shade does not have to be expensive. A simple sunshade can be made with a tarp and a PVC pipe
2. Use a grill or outside stove for cooking
3. Fill a kiddie pool or use a sprinkler to keep kids cool. Supervise kids using the pool
4. Find places to go where there is shade, water, or air conditioning

Cool yourself

1. Shower or bathe with cool not cold water
2. Keep a spray bottle with water in the refrigerator and spray yourself when you are hot
3. Fill a plastic bottle with water and put it in the freezer the day before going out in the heat. The ice in the bottle will melt and the water will stay cool longer

Heat stroke is the most dangerous form of heat-related illness. Following are some of the signs and symptoms that may indicate heat stroke in an individual.

- Headache
- Dizziness
- Confusion or agitation
- Sluggishness or extreme tiredness
- Seizure
- Hot, dry skin that is flushed but not sweaty
- High body temperature
- Very fast heartbeat
- Hallucinations
- Fainting (loss of consciousness)

Heat Stroke First Aid

1. Move the victim to a cool place. Monitor temperature. Remove heavy clothing. Light clothing can be left in place
2. Cool the victim right away by any available means, such as placing ice packs in the areas with abundant blood supply (neck, armpits, and groin)
3. Wet towels or sheets are also effective. The clothes should be kept wet with cool water
4. To prevent hypothermia, continue cooling the victim until his/her temperature drops to 102°F
5. Keep the victim's head and shoulders slightly elevated
6. Seek medical attention right away. All heat stroke victims need hospitalization
7. Care for seizures if they occur
8. Do not use aspirin or acetaminophen

Pregnant persons

1. Drink water regularly and carry a bottle when going outside
2. Take your folic acid supplements regularly
3. Regulate salt intake to reduce ankle swelling
4. Shower or bathe in lukewarm water. Cool water can chill the body too much
5. Avoid hard physical work
6. Take adequate rest

Outdoor Workers

If an individual shows signs of heat-related illness, do the following: -

1. At the construction site, notify the supervisor and the site Medical Officer

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2. Arrange for immediate medical attention and call emergency services 108/104
 3. Move the person to cool off in the shade
 4. Loosen clothing
 5. Fan the person and put ice packs on the groin and underarms, or soak the clothing with cool water
 6. Little by little, give water (as long as there is no vomiting)
 7. Start providing first aid while you wait for the ambulance to arrive

Older Adults and persons with chronic disease, routine medication

To maintain a healthy body temperature, and prevent heat-related illness, carry out the following activities: -

1. Regularly drink water and other liquids that maintain electrolyte balance such as buttermilk and fresh fruit and vegetable juices, unless advised by a physician to reduce fluid intake
2. Find out if any routine medication interacts with extreme heat and poses a risk for dehydration or other heat stresses
3. Do not wait to drink only when thirsty. Older adults often feel a reduced sensation of thirst
4. Avoid caffeinated and sugary drinks
5. Do not consume alcohol
6. If possible dampen clothing and skin by spraying cool water and sit in the breeze from a fan, especially during peak heat hours
7. Utilise community resources to identify cool spaces
8. Pay close attention to heat-related news and weather updates