



## COLD STRESS

Exposing the body to severe cold can lead to lowering of the body's core temperature. This condition is known as hypothermia.

Moisture on the skin, such as sweating, leads to evaporation: the most potent source of cooling. Unlike heat exposure, the body has only limited ability to acclimatise to cold. Shivering is the only source of short-term protection so appropriate clothing is the main form of prevention.

## INCIDENCE

Most common in those least prepared to meet the possibility of cold stress.

## SYMPTOMS

### Mild

Core body temperature:

- 37°-35°C Sensation of chilliness, skin numbness, minor impairment in muscular performance particularly fine hand movements, shivering begins.
- 35°-34°C More obvious lack of muscle coordination and weakness, slow stumbling walk, mild confusion and apathy.
- 34°-32°C Gross loss of muscular coordination with frequent stumbling, inability to use hands, slow thought and speech.

### Severe

Core body temperature:

- 32°-30°C Shivering ceases, severe loss of muscular coordination with stiffness and inability to walk or stand, incoherent, confused, irrational behaviour.
- 30°-28°C Severe muscular rigidity, semiconscious state, pupils dilate, unapparent heart beat and breathing. Below 28°C
- Unconsciousness, death.

## PREVENTION

Hypothermia can be a gradual process and may take hold before you realise it. It's important to recognise when you might be a risk and take steps to prevent it.

- Know your environment and be prepared.
- Be attentive to yourself and your companions. Hypothermic individuals often behave inappropriately.
- Take wind and rain gear.
- Stay dry.
- Wear layers of clothing, taking off layers before sweating starts and adding them back before chilling occurs.
- Wear an inner layer such as polypropylene that will wick moisture away from the skin
- Buy high quality gloves and socks (layered to wick moisture away from the skin) to reduce the risk of frostbite.
- Heat is lost from radiation through your head; wear a warm hat that covers the ears.
- Ensure adequate hydration.
- Eat regularly - food generates heat.

## TREATMENT

- Recognise the early signs (fine motor shivering, apathy) and treat immediately.
- Change the environment if possible; find shelter.
- Replace wet clothing with dry clothing, add wind and waterproof layers.
- Add insulation under and around the patient; aim to stop further heat loss.
- Encourage exercise; give warm sweet non-caffeinated, non-alcoholic liquids and food.

## SHIVERING

The body can only increase heat production to a limited extent. Shivering is an involuntary muscle action that produces about the same amount of heat as fast walking. Using our larger muscles, especially those of the legs, generates heat. However there is a limit to how long this activity can be sustained. Avoiding potentially hazardous situations and ensuring adequate preparation are far more effective methods of staying warm.

## FROSTBITE

Frostbite is an injury produced by freezing of body tissues. It usually affects the hands, feet, face and ears. The early signs of frostbite are sensations of cold or pain and paleness of the skin. As the tissues begin to freeze the pain disappears. The tissue will increasingly become whiter and harder.

It is difficult to assess the severity of frostbite until some thawing has occurred. Rapid re-warming in a large water bath is the best treatment. This should be performed in a hospital.

Note: the greatest damage occurs when frost bitten tissues are thawed and then refrozen. It is best to avoid treatment by people unfamiliar with this situation.

## SEVERE HYPOTHERMIA TREATMENT

This is a complex and very serious condition. Warm the patient with dry clothes, blankets and body heat and seek urgent medical attention. Rubbing of extremities or applying heat is very dangerous. Avoid movement if possible as bumps and jolts can trigger a lethal irregularity of heartbeat. Heating of the central body (heart, lungs) is required and this can only be achieved in a hospital setting.

**More information on cold stress and related health risks will be available during your Travelvax consultation. Call 1300 360 164 for the location of your nearest clinic.**