

## From Your Rider Educator Hypothermia

Last month we talked about winterizing your bike and storing it, however, for many we choose to continue to ride as long as snow, ice, and salt are not on the roads. Operating a motorcycle in the midst of frigid winter weather brings with it a number of new challenges including: **HYPOTHERMIA**.

We are tropical animals. Normal functioning of our bodies requires a temperature of 37° Celsius (98.6° Fahrenheit). We are equipped to deal with small upward or downward changes in temperature. We perspire when it gets hot so that water may evaporate from the skin carrying heat with it.

If the temperature of the body drops we shiver. This is the bodies attempt to generate heat by friction and the increased consumption of energy by the muscles.

Hypothermia is defined as a core temperature of less than 35°C. The body has been placed in a condition where it is no longer able generate sufficient heat to maintain normal functioning.

Many factors contribute to hypothermia: age, health, nutrition, body size, exhaustion, **exposure, wind, temperature, wetness**, medication, and **intoxicants** can all decrease heat production, increase heat loss, and interfere with thermostability.

Once hypothermia develops two body compartments, the shell and the core share the heat deficit. The shell is the 10% of your body mass represented by the 1.8 square meters of skin and the core is everything else. However in hypothermia it is the critical core of heart, lungs, and brain that we are most concerned with.

### **Recognition of Signs and Symptoms**

#### Impending Hypothermia

Core temperature has decreased to 36°C (96.8°F). Skin may become pale, numb, and waxy. Muscles become tense, shivering begins but can be overcome with activity. Fatigue and signs of weakness begin to show.

#### Mild Hypothermia

Core temperature has decreased to 35 – 34°C (93.2°F). Uncontrolled, intense shivering begins. The individual is still alert and able to help self, however movement is less coordinated and the coldness is creating pain and discomfort.

## Moderate Hypothermia

Core temperature has decreased to 33 – 31°C (87.8°F). Shivering slows and stops, muscles stiffen, mental confusion and apathy set in. Speech becomes slow, vague, and slurred, breathing is shallow and slow, drowsiness and strange behavior can occur.

## Severe Hypothermia

Core temperature has fallen below 31°C. Skin is cold, bluish-gray in color, eyes may be dilated. Person is very weak, marked lack of coordination, slurred speech, is exhausted, may even appear drunk, denies problem and may resist help. There is a gradual loss of consciousness, breathing may stop or become very shallow, muscles become rigid and the victim may appear dead.

## Treatment

### Impending Hypothermia

Find shelter and remove from the cold, wet, and/or windy environment. Provide warmth, fire, cookstove, etc. Give hot fluids (NO alcohol, coffee or tea). Insulate with blankets or extra clothes. Recovery should be rapid.

### Mild Hypothermia

Remove from the cold keeping the head and neck covered. Give hot, sweetened drinks (NO coffee, tea, or alcohol) and high-energy foods. Limited exercise may generate some internal heat but depletes energy reserves.

### Moderate Hypothermia

Remove from the cold keeping the head and neck covered. Apply mild heat (hot water bottles, Thermo-Pads, warm, moist towels) to the head, neck, chest, armpits, and groin. Give sips of warm, sweetened liquids (NO alcohol, coffee, or tea) if fully conscious, beginning to rewarm and is able to swallow. A physician should be seen as soon as possible.

## Severe Hypothermia

Remove from the cold keeping the head and neck covered. **CALL for Emergency Medical help.** Try to keep them awake, ignore pleas of “leave me alone, I’m OK”. Their condition is severe keep a close continuous watch. Apply mild heat, **DO NOT TRY TO REWARM**, just prevent further temperature drops. The core **MUST** be rewarmed **BEFORE** the shell or blood vessels will suddenly dilate dumping cold blood into the heart. This thermal shock to the heart can cause ventricular fibrillation. The individual should also be prevented from exercising or moving about. Muscular action can also cause cold blood to be pumped directly to the heart. Keep in mind that this person is in a “metabolic ice-box”. ANY sudden thawing will be disastrous to the cardiovascular system

## Conclusion

Treatment of cold injuries has long been controversial and depending upon where you are when you call for paramedic help, the responders themselves may not know how to treat severe hypothermia. People who were cold, stiff, cyanotic, with fixed pupils, no heart sounds, and no visible breathing movements have been successfully resuscitated. Some have even recovered completely in the morgue.

The only certain criterion for death in hypothermia is irreversible cardiac arrest **when the patient is warm.** Always remember *“no one is dead until warm and dead”*. Decisions regarding the reversibility of hypothermia must be withheld until the person is rewarmed, therefore resuscitation, including CPR must be continued until hospital rewarming to 35°C. Rewarming in the field must be done slowly, core first to avoid lethal side effects.