

Post Rescue Collapse Also known as **Circum-rescue Collapse**, or **Afterdrop**. 20% of immersion deaths occur during extraction from cold water, or within hours after rescue. During World War II the Germans and Allies noted that ditched aircrew who had been conscious in the water and aided in their own rescue, became unconscious and died shortly afterwards. Sixteen Norwegian fishermen pulled alive from the North Atlantic, all 16 died shortly afterwards, possibly as a result of exercise (moving/walking) induced core temperature afterdrop. When a body gets chilled the arteries on the extremities which first encounter the cold constrict [narrow] (vasoconstriction) forcing blood to instead circulate around the core of the body keeping the heat around the vital organs to keep them working. If a person is at this stage of hypothermia where the blood has been diverted to keep the vital organs warm; and the victim's arms or legs are stimulated or rewarmed, causing the peripheral vessels in the arms and legs to dilate, sending the very cold, stagnate blood from the periphery to the core further decreasing core temperature which can lead to death. In addition, this blood is very acetic which may lead to cardiac dysrhythmia (also known as arrhythmia or irregular heartbeat) and can cause cardiac arrest (heart

First Aid (Severe Hypothermia):

Hypothermia Wrap - the idea is to provide a shell of total insulation for the patient. No matter how cold, patients need to be warmed from the inside, not rewarming the periphery. Make sure the patient is dry and protected from any moisture in the environment. Use multiple sleeping bags, wool blankets, wool clothing, to wrap the patient, and Ensolite pads between the patient and the ground. If someone is severely hypothermic, do not put him/her naked in a sleeping bag with another person. Do not touch or stimulate the victims arms or legs in any way. Keep the victim in a horizontal position at all times.

Warm Sugar Water - for people in severe hypothermia, the stomach has shut down and will not digest solid food but can absorb water and sugars. Give a dilute mixture of warm water with sugar every 15 minutes. Dilute Jello™ works best since it is part sugar and part protein. This will be absorbed directly into the blood stream providing the necessary calories to allow the person to rewarm themselves.

Urination - people will have to urinate from cold diuresis. Vasoconstriction creates greater volume pressure in the blood stream. The kidneys pull off excess fluid to reduce the pressure. A full bladder results in body heat being used to keep urine warm rather than vital organs. Once the person has urinated, it precious body heat will be used to maintain the temperature of vital organs.

Rescue breathing - can increase oxygen and provide internal heat. Respiratory heat loss accounts for 10% to 30% of the body's heat loss. This is particularly important in rescue situations where the ambient air is cold (cooling of the core through respiration). Upon ambulance arrival EMTs need to provide heat directly to the head, neck, and thoracic core through inhalation of warm, water-saturated air at (107 - 122°F). This method also warms the pothalemus (temperature regulation, respiratory, cardiac center) at the base of the brainstem and improves the level of consciousness.

Handle victim gently - a cold heart is susceptible. Some victims may suffer fatal ventriculation when jolted about, during initial handling or transportation.

Stabilize before transportation to the hospital - preventing respiratory heat loss and progressive cooling of the heart through the tissues is essential. This cooling if not arrested, can lead to ventricular fibrillation of the heart. Patients who are unconscious, with a body temperature below 80°F may not respond to defibrillation. Thermally stabilizing a patient is necessary, before transportation and en route to the hospital to prevent cardiac complications.

Get the patient to the Emergency Room. The core needs to be warmed as rapidly as possible, using internal methods such as warm steam inhalation/ventilation, peritoneal lavage, warm gastric/bladder lavage, warm IV's, chest lavage via chest tubes, and preferably cardiopulmonary bypass, if available.

Paradoxical Undressing 20% to 50% percent of hypothermia deaths are associated with paradoxical undressing.

When a body gets chilled the arteries on the extremities which first encounter the cold constrict [narrow] (vasoconstriction) forcing blood to instead circulate around the core of the body keeping the heat around the vital organs to keep them working. The extremities of the fingers and the toes lose their heat. As the body continues to chill further, eventually the muscles around the blood vessels on the extremities get tired and relax (plus cold-induced paralysis of the nerves in the vessel walls) and the blood vessels open up (vasodilation) allowing the blood in the core of the body to be pumped back into the extremities. This now allows the warm core-blood to re-perfuse the skin, causing a sensation of warmth; so the victim feeling overheated begins to shed layers of clothes. The victim's core temperature begins to plummet which accelerates the process of complete body shutdown and hence, death from hypothermia.

Symptoms (Severe Hypothermia):

A person in an advanced stage of hypothermia may take all their clothes of despite it being cold outside. Paradoxical Undressing often precedes Terminal Burrowing and it represents the last effort of the victim and is followed almost immediately by unconsciousness and death.

First Aid (Severe Hypothermia):

If the victim's clothes aren't wet, try to keep the clothes on the victim, or wrap the victim in a blanket. Follow the First Aid described for Terminal Burrowing below. If emergency responders cannot get to the scene within a few minutes, try to get the victim to the Emergency Room of a Hospital immediately.

Terminal Burrowing An apparent self-protective behavior known as terminal burrowing, or hide-and-die syndrome, occurs in the final stages of hypothermia. The afflicted will enter small, enclosed spaces, such as underneath beds or behind wardrobes. It is often associated with paradoxical undressing. Researchers in Germany claim this is "obviously an autonomous process of the brain stem, which is triggered in the final state of hypothermia and produces a primitive and burrowing-like behavior of protection, as seen in hibernating animals." This happens mostly in cases where temperature drops slowly.

Symptoms (Severe Hypothermia):

At 90°F body temperature the body tries to move into hibernation, shutting down all peripheral blood flow and reducing breathing rate and heart rate. Shivering stops, exposed skin blue or puffy, inability to walk, confusion, incoherent, and irrational. At 86°F muscle rigidity, semiconscious, possible heart fibrillation. The person may be curled up in a fetal position. Try to open their arm up, if it curls back up, the person is alive. Dead muscles won't contract only live muscles.

First Aid (Severe Hypothermia):

During severe hypothermia the heart is hyperexcitable and mechanical stimulation (such as CPR, moving them or Afterdrop) may result in fibrillation leading to death. As a result CPR may be contraindicated for severe hypothermia situations. Do not to attempt to provide care. Do not touch or stimulate her arms or legs in any way. Keep them in a horizontal position. Moving them into a vertical position could cause blood leave the body core. Gently place them on a rescue stretcher and get them to the Emergency