Hypothermia: Killer of the Unprepared

January, 1999
Keith Conover, M.D., FACEP
Departments of Emergency Medicine
Mercy Hospital and University of Pittsburgh
Allegheny Mountain Rescue Group
Appalachian Search and Rescue Conference

This document available at: http://archive.asrc.net/ASRC-Training/One-Pagers/Hypothermia-Basics-ASRC-1.0.pdf

- Hypothermia = low (hypo-) temperature (-therm-) condition (ia)
- Hypothermia is when the body gets chilled; not just the skin and muscles, but deep inside.
- Heat Balance:
  - The body produces heat continuously; this production of heat must be balanced by an equal heat loss to keep the body temperature from going up or down.
  - The body temperature must be kept within a narrow range for vital chemical processes to work.
  - Use clothing and knowledge to keep your body core near 99°F, even in hypothermia weather.
- You lose heat from your body several ways
  - Cold Temperature: radiation (like you feel heat radiating from a hot stove) and conduction (like when you sit down on a cold rock).
  - Windchill: convection, as the air your body warms is blown away.
  - Wetchill: you lose heat when you are wet. By conduction into and through the cold water in your clothes, and by evaporation. (Like...
when you rub alcohol on your arm and it cools by evaporating).

- Hypothermia is a particular problem at temperatures around freezing (32°F) with wind and rain. Cold temperature, windchill, and wetchill combined. This is called hypothermia weather, because so many underestimate it. Even in the summer, sudden storms with the combination of wind and rain may cause hypothermia at temperatures as warm as 60°F.

- In bad weather, proper clothing is your life-support system.

- Waterproof raingear protects you (somewhat) from wetchill.

- But even in truly waterproof raingear you will get wet. We all perspire, and clothes get wet from condensation.

- Most clothing, when it's wet, conducts heat like water. How many times faster does water conduct heat than dry air? 240x! Therefore your clothes must be warm when wet!

- And, as nice as down parkas may seem, called "waterproof" down; they are flat and cold when wet; and cotton clothes (such as blue jeans and flannel shirts) are even worse; not only are they useless as insulation when wet, but they wick water; only wool and some synthetics (Capilene etc.) retain some warmth when wet.

- So, when going out, remember the Three W's:

  - Waterproof Clothing
  - Warm -When -Wet Clothing
  - Windproof Clothing

- We suggest that you always carry with you two large plastic leaf bags. These are light, cheap, and provide quick and simple protection against wind and rain. Just stick them in your pocket.

- With what you have learned here, and with some simple and inexpensive clothing, you can be comfortable even in hypothermia weather.

In wet and cold, Cotton Kills!

The Three W's:
Waterproof Clothing
Warm -When -Wet Clothing
Windproof Clothing