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SAR SAFETY NEWSLETTER – Issue 6, December, 2017

HYPOTHERMIA...There's a Nip in the Air!

In mid-March a party of snowmobilers departed the Coquihalla Summit area for some backcountry exploration; all were experienced sledders. Later that morning a member of the party flipped his snowmobile and suffered a fractured femur. He was in extreme pain, and one of the group began the long return trip to summon help (this incident occurred prior to the widespread availability of satellite phones, SPOT beacons, EPIRB's, etc.). B.C. Ambulance Service dispatched two paramedics by helicopter from Chilliwack, and they arrived in the afternoon. The paramedics were dropped off but the subject was not close to the LZ; the plan was to assess and package the subject, and then move him to a suitable LZ for pickup. While the paramedics were providing treatment the helicopter flew to a lower elevation to wait. Unfortunately, clouds descended and made it impossible for the helicopter to return to the accident scene. Outside air temperature was approximately -12 °C. and, with darkness falling and both paramedics dressed only in their regular uniforms, SAR was activated. A multi-team response was initiated and snowmobiles were used to move SAR personnel to the scene. It was apparent to responders that not only was the injured subject hypothermic but so too were both paramedics. The Team Leader, a veteran SAR member and advanced-care paramedic, decided to re-warm all 3 subjects on-scene rather than attempt snowmobile evacuation at night. At first light, the 3 subjects were moved to a nearby LZ and transported to hospital by helicopter; all subjects recovered.

The preceding vignette recounts actual events, and illustrates a situation where responders became hypothermic as a result of rapidly changing weather conditions.

HYPOTHERMIA...The Basics

- Hypothermia is cooling of the body's core organs (heart; lungs; brain) below 35 °C.
- Hypothermia occurs when body heat is lost faster than the body can rewarm itself. This is often the result of inadequate insulation (not enough clothing layers) or rapid loss of insulation (clothes become wet from perspiration, the environment, or immersion).
- Other factors contributing to hypothermia include inadequate fuel (not enough food); medical conditions (diabetes; hypothyroid; the elderly; babies; etc.); drug use (especially alcohol).
- The body loses heat in 4 ways: conduction; radiation; evaporation; convection. Wet clothing, from whatever cause, greatly increases all forms of heat loss.
- There are three stages of hypothermia: Mild (32-35 °C.); Moderate (28-32 °C.); Severe (< 28 °C.).
- **Mild:** severe shivering; able to converse and follow commands; muscles begin to stiffen. **Moderate:** shivering gradually ceases as muscles run out of fuel, become rigid; confusion followed by stupor or drowsiness; unable to follow commands well. **Severe:** person may appear dead; unresponsive; not moving; heart rate and respirations are slow or may be undetectable.

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HYPOTHERMIA...The SAR Perspective

- SAR personnel need to be aware of the risk of hypothermia during training or operational tasks. Hypothermia can occur in any season depending on the activity, weather conditions, clothing, etc.
- Weather and the environment increase the risk of hypothermia: most lakes, rivers, tidal waters are cold year-round; mountain environments can be harsh (sudden weather changes; glaciers; avalanches; etc.; SAR personnel often respond to adverse terrain and/or during poor weather.
- SAR members are often so focused on the subject we forget about ourselves, but hypothermia makes no distinction between subject and searcher. Remember the SAR mantra: **Self; Team;** Bystanders; Subject.

HYPOTHERMIA...Prevention

- Getting wet during a task is often unavoidable. Ensure you have plenty of dry clothes in your search pack. Do NOT wear any cotton...when it gets, wet cotton loses all insulating value. Many synthetic fibres (e.g. Primaloft; Coreloft; etc.) retain significant insulating value even when wet.
- Your body burns fuel to keep you warm; feed the furnace with plenty of nutritious food and fluids. Ensure you have enough food, water, clothing and shelter to sustain you for at least 24 hours.
- Over-exertion contributes to hypothermia; take frequent rest breaks if possible. Get out of the wind to decrease convective and evaporative heat loss...use a tent, tarp, poncho, bivy bag, etc. Sit on a bum-pad to decrease conductive heat loss into the ground (especially in snow).
- Some medical conditions and/or medications increase the risk of hypothermia; please check with your doctor. Alcohol and nicotine impair the body's ability to regulate temperature; avoid them.
- Difficulty keeping up with the team; uncontrolled shivering; mental slowing; goosebumps; complaints of feeling cold may all indicate cold stress or early symptoms of hypothermia. Monitor each other; remember, Team Leaders are not immune to hypothermia...monitor them too.
- If a SAR member becomes hypothermic, the treatment is aggressive rewarming using supplies your team will likely be carrying (sleeping bags; tarps; warm liquids; dry clothes; heat packs; etc.). Provide food. Erect shelter. Call for assistance.

HYPOTHERMIA...Additional Resources

- For a website that has excellent learning resources, visit "*Baby It's Cold Outside*". This website is geared to SAR responders, and is highly recommended: <https://bicorescue.com/>
- If you are a paramedic, nurse or physician you may want to have a look at these highly detailed hypothermia protocols:
<http://dhss.alaska.gov/dph/emergency/documents/ems/documents/alaska%20dhss%20ems%20cold%20injuries%20guidelines%20june%202014.pdf>

Remember, It's Not Just The Subject That Relies On You.