

Environmental emergencies

*** CME Version ***

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Loss of heat

- Four ways of losing heat:
- Conduction
 - Transfer of heat due to **direct contact** from warmer to cooler bodies/objects
- Convection
 - Currents of air or water pass over body carrying heat away
- Radiation
 - Heat that the body emits in waves usually lost from the head and neck
- Respiration
 - Loss of heat by expiring warm air



Hypothermia (“Cold Injuries”)

- Cold emergencies
- Generalized body cooling



Mild hypothermia

- Core temperature above 95 degrees
- Signs and Symptoms
 - **Shivering**
 - Stamping feet
 - Increased pulse and respiratory rate
 - Red skin → pale skin as temperature drops



Moderate hypothermia

- Core temperature above 90 degrees
- Signs and Symptoms
 - Rigidity
 - Decreases LOC
 - Skin becomes pale
 - Additional increase in pulse and respiratory rate
 - Lethargy



Severe hypothermia

- Unresponsive → Cardiac arrest



Cardiac arrest implications

- Not dead until **WARM and DEAD**
- Cardiac arrest patients in hypothermia can often preserve brain function for a much longer time
- → *Give them the benefit of doubt!*



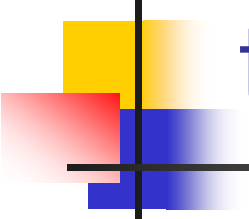
Frostbite – local cold injury

- Localized cooling with prolonged freezing resulting in gangrene or death of tissue
- Skin usually “blanched”
- ***Do not rewarm if there is a chance that it may become frozen again***



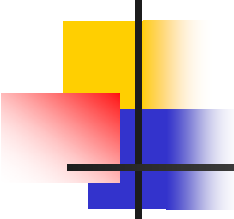
Localized Hypothermia -- treatment

- **Remove patient from cold environment**
- Protect affected areas
- Initial assessment
- Oxygen
- Remove clothing from affected areas



Localized Hypothermia – treatment - 2

- Superficial local cold injury?
 - Remove jewelry
 - Splint and cover extremity
 - Do not rub, massage or expose to cold
- Deep local cold injury?
 - Remove jewelry
 - Cover exposed areas with dry dressings
 - Do not break blisters, rub, massage, apply heat or allow patient to walk on affected areas



Localized Hypothermia – treatment - 3

- Transport – keep patient warm
- For transport time > 30 minutes – “active rewarming”
 - Immerse affected part in warm water – **not to exceed 105 degrees**
 - Dry sterile dressings – dress between affected fingers and toes
 - Protect against refreezing



Generalized hypothermia – treatment -- general

- Handle very gently, prevent cardiac arrest from “VFIB”
- Remove from cold
 - Remove wet clothing
 - Wrap in dry blankets
- Do not allow exertion
- ABCs
 - Oxygen
 - Allow 30-45 seconds for pulse check
 - CPR as needed



Generalized hypothermia – treatment

- Patient alert?
 - Actively rewarm patient
 - Heat packs to groin area, lateral chest and neck
- Patient unconscious or not responding appropriately?
 - Passively rewarm patient
 - Start CPR as needed
 - Do not allow eating or drinking
 - Transport immediately



Hyperthermia

- Heat exhaustion (“Patients presenting with moist, pale, and normal to cool temperature”)
- Heat stroke (“Patients presenting with hot, dry or moist skin”)
 - *Progression often occurs from heat exhaustion to heat stroke unless the situation is corrected*
- *Children and the elderly most at risk*
- Certain common medications can make hyperthermia more severe



Patients presenting with moist, pale, and normal to cool temperature

- Caused by prolonged heat exposure or extreme physical activity causing loss of body salts ("electrolytes")
- Signs and symptoms include
 - Cramps
 - Weakness
 - **Pale moist skin**
 - Nausea/vomiting
 - Weak pulse
 - **Dropping BP as patient becomes more dehydrated**



Patients presenting with moist, pale, and normal to cool temperature -- treatment

- ABCs -- Oxygen
- **Remove from heat to a cool environment – remove outer clothing**
- Place patient in shock position
- Transport immediately
 - During transport remove excess clothing and fan the patient
- Patient conscious, not nauseated, able to drink without assistance?
 - Have patient drink water
- Patient unconscious or vomiting?
 - Transport with patient in recovery position



Patients presenting with hot, dry or moist skin

- Body loses the ability to regulate its temperature – causing excess body heat that can not be removed
- S/S include:
 - **Hot most often dry skin**
 - AMS → Loss of consciousness
 - **Little or no perspiration**
 - Seizures
 - death



Patients presenting with hot, dry or moist skin -- treatment

- ABCs -- Oxygen
- Remove from heat to A/C environment
- Remove outer clothing
- Active cooling
 - Ice packs to groin, neck, armpits
 - Cool wet towels on body
 - Fan the patient aggressively
- Transport immediately



Heat emergencies – some common sense

- **Call for ALS!** – although NY State protocol does not mention it
- Do not dump the patient in a cold bath
- Why not?



S/S of dehydration/ Hypovolemia

- Poor skin “turgor” – tenting
- Extreme thirst
- Positive orthostatic changes – (positive tilt test)



Positive orthostatic changes

- When moving patient from supine position to sitting standing position:
- Systolic BP drops by at least 20 -- or
- Pulse rate increases by at least 10
- ***Must wait 1 – 2 minutes once position is changed***
- ***STOP if patient becomes distressed in any way***