

# WEST MICHIGAN REGIONAL PROTOCOL

## HYPOTHERMIA/FROSTBITE PROTOCOL

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**Purpose:** To provide for the process of assessment and management of the patient experiencing hypothermia or frostbite.

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### I. Assessment Information

#### A. History/Assessment

1. Past Medical History: drug use, (alcohol, tranquilizers, anticonvulsants, others), diabetes, epilepsy, alcoholism
2. Current History: trauma, length of exposure, air temperature, water temperature, winds, wet patient, timing of changes in mental status
  - a. With frostbite: history of thawing/refreezing.
3. Evidence of frostbite type injury: blanching, blistering, erythema of extremities, ears, and nose

### II. Initial Therapy for All Patients

- A. Remove wet garments
- B. Protect against heat loss and wind chill (use blankets and insulating equipment)
- C. Maintain horizontal position
- D. Avoid rough movement and excess activity
- E. Monitor core temperature
  - a. Axillary site for assessing temperature is acceptable but rectal measurement is preferred
- F. Monitor cardiac rhythm

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### III. Assess Responsiveness, Breathing, and Pulse

#### A. Pulse or breathing **ABSENT**

1. Start **CPR**
2. If **VF/VT**, give **1 shock**
  - a. Manual biphasic: device specific (typically 120-200 J); if unknown, use 200 J (2 J/kg for PEDIATRICS)
  - b. AED, device specific
  - c. Monophasic: 360 J (4 J/kg for PEDIATRICS)
3. **Resume CPR IMMEDIATELY**
4. Establish **advanced airway**
5. Ventilate
6. Establish **IV/IO access**
7. Infuse warm NS if available, avoid cold IV fluids
8. **Assess CORE TEMPERATURE** if not previously performed
  - a. Axillary site for assessing temperature is acceptable but rectal measurement is preferred: 4 minutes
  - b. If Core Temperature is **less than or equal to 86° F (30° C)**:
    - i. Continue **CPR**
    - ii. **Withhold IV medications**
    - iii. Limit to **1 shock for VF/VT**
    - iv. **Transport** to the hospital
  - c. If the Core Temperature is **greater than 86° F (30° C)**:
    - i. **Continue CPR**
    - ii. **Give IV medications** as indicated (but space at **longer intervals**)
    - iii. **Repeat defibrillation** for VF/VT as core temperature rises

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**B. Pulse and breathing PRESENT**

1. Assess Core Temperature
2. Passive rewarming (blankets, vehicle heaters on high, heat packs to armpits and groin areas, warm IV fluids if available)
3. Monitor patient closely and transport

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**IV. Management of Frostbite**

- A. Remove wet or constricting clothing. Keep skin dry and protected from wind.
- B. Do not allow the limb to thaw if there is a chance that limb may re-freeze before evacuation is complete or if patient must walk to transportation.
- C. Dress injured areas lightly in clean cloth to protect from pressure, trauma or friction. Do not rub. Do not break blisters.
- D. Maintain core temperature by keeping patient warm with blankets, warm fluids, etc.
- E. Frostbitten areas should be supported and elevated during transport.
- F. All patients with suspected frostbite should be evaluated by a physician
- G. Consider pain management per procedure.

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**V. Special Considerations**

- A. Hypothermia:
  1. Shivering does not occur below 90° F (32° C).
  2. The heart is most likely to fibrillate below 85-88° F (30° C). Prolonged CPR may be necessary until re-warming is complete.
  3. Excessive patient manipulation may induce ventricular fibrillation in the hypothermic patient.
  4. If patient has even a faint pulse, organized electrical rhythm and occasional respirations, CPR is currently felt to be unnecessary. In general, even very slow rates are probably sufficient for metabolic demands (Bradycardias are normal and are not treated). CPR is indicated for absence of pulse.
  5. Drugs should be used sparingly, since peripheral vasoconstriction may prevent entry into central circulation until temperature is restored. Additional drug administration should be approved by Medical Control.
  6. **Patients who appear dead after prolonged exposure to cold air or water will not be pronounced "dead" until they have been re-warmed in the hospital (unless submersion time greater than 2 hours).**
- B. Frostbite:
  1. Thawing is extremely painful and should be done under controlled conditions, preferably in the hospital. Careful monitoring, pain medication, prolonged re-warming and sterile handling are required.
  2. Partial re-warming, or re-warming followed by re-freezing, is far more injurious to tissues than delay in re-warming or walking on a frozen extremity to reach help. Do not re-warm prematurely. Indications for field re-warming are extremely rare.
  3. Warming with heaters or stoves, rubbing with snow, drinking alcohol and other methods of stimulating the circulation are dangerous and should not be used.

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