E-02 HYPOTHERMIA & COLD INJURY		First Responder EMT AEMT Paramedic

Universal Care 1-01

WARM!!! As soon as possible

- Remove the patient from the cold environment ASAP
- Remove wet clothing and cover with warm, dry blankets
- Warming Measures
  - Heat packs (groin, axillae, and neck)
  - Warm IV Fluids
  - *Consider early transport if active/internal warming may be needed*
- Handle patient gently *(aggressive movement may trigger V-Fib)*
- Do not allow patient to walk or exert themselves & do not massage extremities

Does the patient have a pulse?

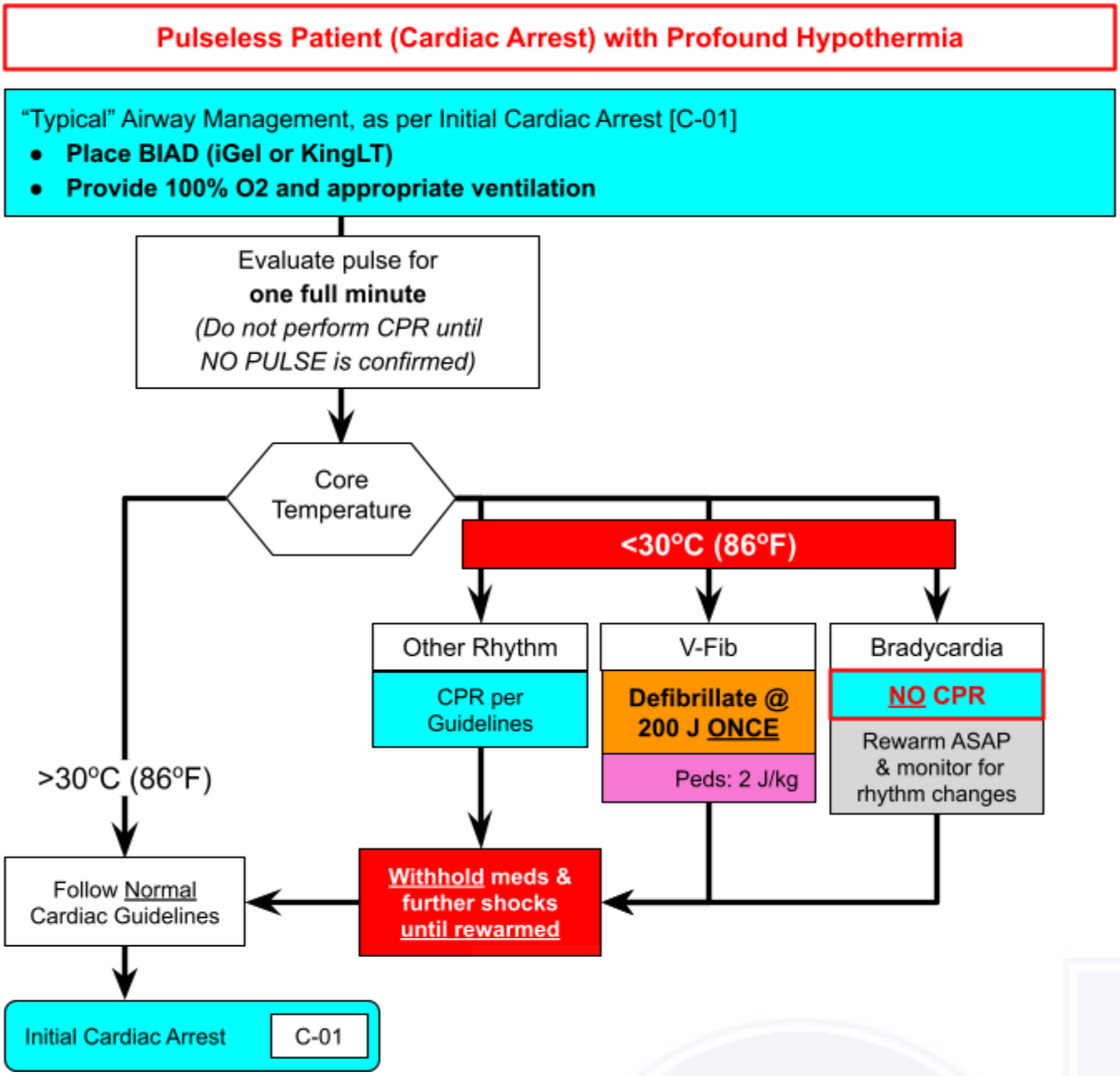
NO → **Go to "Pulseless Patient with Hypothermia"** *Next Page*

YES

Glucose Check/ Maintenance 1-04 AND Continuous ECG Monitoring/12-Lead 1-05

Provide Basic Respiratory & Hemodynamic Support:

- **100% Oxygen by Non-Rebreather**, as per Airway/O2 Maintenance [A-01]
- **IV/IO Access**, per IV Protocol [1-03]
- **Fluid Resuscitation and Vasopressors**, per Medical Shock [M-06]



E-02 HYPOTHERMIA & COLD INJURY		First Responder EMT AEMT Paramedic

TREATMENT PEARLS:

- The primary treatment of hypothermia is through aggressive rewarming.
- Handle patients gently → rough handling may precipitate dysrhythmias.
- Defibrillation is usually ineffective <30ºC (86ºF). If the initial defibrillation does not convert the cardiac dysrhythmia (usually v-fib), further shocks should be delayed until the patient's core temperature is >30ºC (86ºF).

NOTES:

- Definitions
  - Mild
    - 32-35ºC (89.6-95ºF)
    - Shivering, possible confusion or minor loss of coordination
  - Moderate
    - 29-32ºC (84.2-89.6ºF)
    - Progressive lethargy and delirium, bradycardia (possible J-waves or other dysrhythmias)
  - Severe
    - <29oC (84.2ºF)
    - Coma/unresponsiveness with metabolic and hemodynamic instability progressing to profound bradycardia and PEA/asystole.
- Loss of thermoregulatory ability occurs in a multitude of conditions:
  - Environmental exposure = homelessness, mental illness, wilderness activities
  - Loss of central thermoregulation (hypothalamus) = CNS lesions, medications/toxins (e.g. antihistamines)
  - Decreased heat production (metabolic disorders) = hypothyroidism, malnutrition
  - Increased heat loss (skin/vascular disorders) = burns, EtOH use
- Measurement of true core body temperature (*rectal* or via temperature catheter in the bladder or esophagus) is preferred when equipment is available.

PRESENTATIONS OF COLD-RELATED INJURY

- Frostbite:
  - Freezing of tissues (i.e. ice crystal formation) causing cellular injury/death. Thawing results in a reperfusion injury and inflammatory response.
  - Signs/symptoms: starts with vasoconstriction and minor symptoms (i.e. “Frostnip”, similar to chilblain/pernio) and progresses to frank necrosis (dry gangrene).

    - Treatment = rewarming ASAP
        - Tissues *should <u>not</u> be rewarmed if refreezing is possible* (i.e. in the wilderness).
- Chilblain/Pernio: prolonged vasospasm and microvascular injury from cold exposure (generally 1-3 days) leading to bluish-red (cyanotic and erythematous) patches on exposed skin.
- Trench Foot: prolonged exposure to non-freezing cool and wet environments. Initially with vasoconstriction and edema with progression to hemorrhagic blisters/bullae (similar to rewarmed frostbite injury).

QI Review Parameters:

1.
2.