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| **Case Title** | Severe Hypothermia |
| **Scenario Name** |  |

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| **Learning Objectives -** [**Use action words**](http://ubccpd.ca/sites/ubccpd.ca/files/Accreditation_Learning%20Objectives_%20Verbs.pdf) | |
| **Knowledge:**   1. Recognize severe hypothermia 2. Understand indications for active internal rewarming 3. Understand management of VF in the hypothermic patient | |
| **Skills:**   1. Lead resuscitation 2. Intubation 3. IO/central line placement 4. Chest tube placement for thoracic lavage | |
| **Attitude/Behaviours**   1. Demonstrate Team skills 2. Demonstrate Situational awareness 3. Demonstrate Graded Assertiveness | |
| **Scenario Environment** | |
| **Location** | Emergency Department |
| **Monitors** | Telemetry, crash cart |
| **Props/Equipment** | RSI meds, intubation equipment, vasopressors, vascular access supplies, IO supplies, chest tubes, OG/Foley |
| **Make-up/Moulage** | Nil |
| **Potential Distractors** | None |

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| **Case Introduction:** |
| Prehospital Notification:  30-something male, found down in snowbank outside a bar. Unknown duration of cold exposure. Minimally responsive/GCS 7 (E1-M4-V2). EHS unable to get a temperature. Bradycardic/hypotensive. Unable to obtain vascular access. |

| **Patient Parameters** | **Effective Management** | **Notes** |
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| **Phase 1: Severe hypothermia**  **Condition:** Unstable  Minimally responsive with ++ airway secretions  **Initial Assessment**   * **Heart Rhythm:** Sinus bradycardia with J waves * **HR:** 45 * **BP:** 85/45 * **RR:** 14 * **SP02:** unobtainable * **Temp:** 27 C (core) | 1. **Take a focused history** (see Notes column) 2. **Medical Management** 3. **Temp monitoring** – obtain a core temp (rectal or esophageal) and blood glucose 4. **Airway intervention** – Recognize need for intubation/RSI. Etomidate, Ketamine, Succinylcholine and Rocuronium are OK. Recognize the need to minimize jostling. 5. **Hypotension** – Vascular access and initial crystalloid infusion. Peripheral IV access is unsuccessful…will require IO vs central line (caution with SC/IJ and inducing dysrhythmia.) 6. **Active rewarming** – should begin with warmed humidified O2 and warmed IV fluids (40-42 C). Should consider gastric/bladder irrigation, peritoneal irrigation, and thoracic irrigation. ECMO is unavailable for 1 hour (surgeon/perfusionist in the OR) | 1. **Focused history**   Unknown.  **PMHx**   * Unknown   **Meds**   * Unknown   **Allergies**   * Unknown |
| **Phase 2: VF Arrest**  **Condition:** Unresponsive  Progress to this phase following intubation.  **Physical Examination**   * **Heart Rhythm:** VF * **HR:** - * **BP:** -/- * **RR:** 12 (vent) * **Temp:** 27 C (core) * **CNS:** Unresponsive | 1. **Patient Reassessment**   *Recognizes change in condition to pulseless VF*   1. **Medical Management:**  * Should attempt 1 defibrillation (unsuccessful), then wait until rewarmed to > 30 C. * CPR * Medications not indicated * Order labs/portable CXR * Should consider alternative/competing causes for hypothermia (metabolic/infectious/drugs/traumatic/etc) |  |
| **Phase 3: Active Internal Rewarming**  **Condition:** Unstable  **Physical Examination**   * **Heart Rhythm:** VF * **HR: -** * **BP: -/-** * **Temp:** 28 C | 1. **Medical Management:**  * Continue CPR and rewarming techniques * Recognize that patient should be temporized with all measures possible until ECMO available | * Can “jump ahead” in timeline 30 minutes and bring temp up to 30 C to allow repeat defibrillation (successful)…after which ECMO team arrives to take over care. |

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| **Expected Patient Management** | **Debriefing Points** |
| 1. **Student** 2. **Junior Resident** 3. **Senior IM resident** |  |

**References:**

**EKGs**

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