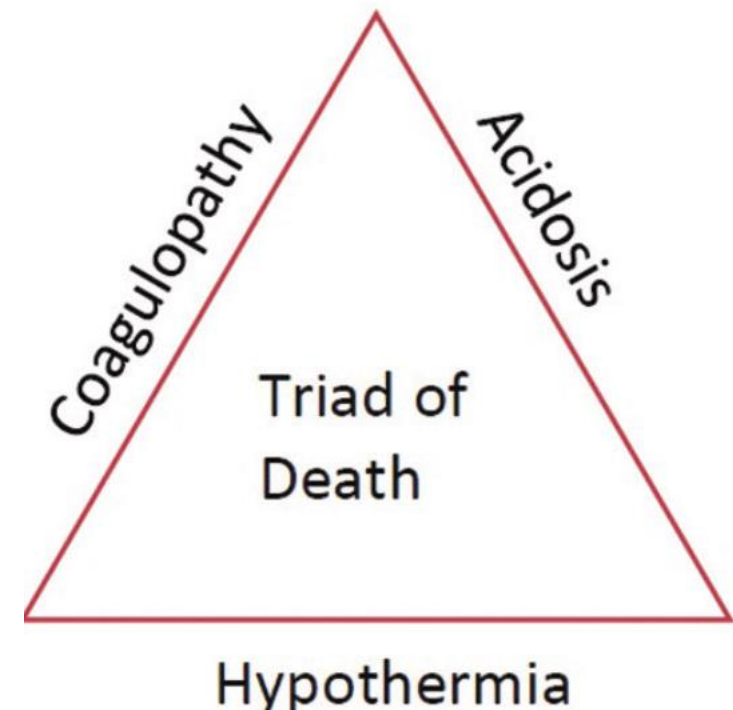


TRAUMA SERVICES- GMC

Hypothermic Trauma Patient Case Presentation

UNDERSTANDING HYPOTHERMIA IN TRAUMA

- Definition: Hypothermia core body temperature 97°F is a significant risk in trauma patients.
- Impact on Trauma Outcomes:
 - Coagulopathy: Impairs clotting factors and platelet function, worsening bleeding.
 - Acidosis: Shifts oxygen-hemoglobin dissociation curve, reducing oxygen delivery.
 - Cardiac Instability: Increases risk of arrhythmias and cardiac arrest.
 - Increased Mortality: Associated with a significant rise in morbidity and mortality in trauma patients.
- Prevention is critical for improving survival and outcomes.
- Rule of thumb: if the patient is hypotensive think **cold**



CASE 1 OVERVIEW

- 42-year-old male presenting as a trauma STAT for multiple GSWs to the sacrum and bilateral lower extremities
- Coded in the field, ROSC after 10 minutes of CPR
- Care from OSH consisted of
 - MTP initiated (4u pRBC, 4u FFP, 1u Plt) at the OSH and continued transfusion throughout flight
 - LLE tourniquet placed at 1400 on 3/17/25, right groin cordis placed
- Transferred to Level I trauma center for definitive care

INITIAL ASSESSMENT AND VITAL SIGNS

- Arrival Vitals: BP 57/47, HR 106, Temp 96.8°F
- No documentation of warming measures aside from warm blanket
- GCS 3T, intubated, on norepinephrine gtt, hypotensive with systolics in 70s-80s
- CXR/PXR: shrapnel over right hemi-pelvis

INITIAL MANAGEMENT AND SURGICAL PLANNING

- Immediate OR for exploratory laparotomy and LLE exploration with vascular surgery
- Temperature upon reaching OR was 90.5; OR was warmed, warm fluids infused, and Bair Hugger placed on upper body
 - No core temp was taken and w/ temp drastically dropping we can only assume he was hypothermic on arrival. No EMS run sheet due to flight team, awaiting run sheet.
- Continued MTP and SICU admission
- Planned post-op pan scan when stable
- Initial OR findings:
 - Complete transection of left superficial femoral artery (SFA)
 - Abthera placement and L SFA shunt placement

POSTOPERATIVE COURSE

- Increasingly coagulopathic despite aggressive resuscitation
- Returned to OR overnight 3/18/25 for high output from Abthera, no surgical bleeding identified
- SICU management: 3 pressors, ongoing blood product resuscitation via Quantra (hemostasis testing-some hospitals use TEG)
- Neurologically unresponsive, no brainstem reflexes
- Lowest documented core temperature post-OR was 89.2F; warming measures remained in place and patient slowly reached 99.9F at the time of death

FINAL OR AND FAMILY DISCUSSIONS

- 3/18/25: Taken back to OR for abdominal re-exploration for suspected jejunal branch aneurysm, successful control of intra-abdominal bleeding
 - Continued to decompensate postoperatively, DIC worsened
- Family meeting held, patient made DNR
- Patient pronounced deceased at 0609 on 3/19/25

CASE 2 OVERVIEW

- 61M STAT activation s/p autoped
 - Per EMS report: “The patient’s R leg was angulated with deformities noted to the R femur and R lower leg. The patient was noted to have a tourniquet in place on his R proximal femur. The patient was noted to have a tourniquet placed at proximal R humerus with avulsed skin to R forearm. Both tourniquets were placed at approximately 2345”
 - “The patient was stripped trauma naked, and injuries were assessed to be the following: closed fracture of R distal femur, closed fracture of R proximal tibia, closed fracture of L distal tibia, closed fracture of R clavicle.”
 - Initial thought process of bleeding due to ortho injuries
 - BP: 60/41 (hypotensive/vasodilated=cold), HR: 99- no temp documented
- 0008: BP 70/50, HR 95, GCS 3, temp 96.8F
- Intubated on arrival. FAST reported positive.
- MTP activated 0042 and prior to OR rec’d 4 RBC, 2 FFP, 1 Plt → improved hemodynamics.
- Upon leaving the ED to the OR temp was 93F
- Patient remained hypothermic through OR case despite warming measures in OR

INITIAL MANAGEMENT AND SURGICAL PLANNING

- Patient was taken emergently to OR where he was found to have 2.5 L hemoperitoneum. Multiple liver lacerations controlled with electrocautery and packing. Small splenic laceration controlled
- MTP in OR (10 PRBC, 7 FFP, 2 PLT, 1 CRYO). Pt became severely acidotic, hypothermic, and coagulopathic.
- Patient became difficult to ventilate with hypoxia and hypercarbia while in OR and was temporarily closed and taken to SICU with MTP in progress and levophed, epi, and vasopressin gtt.
- Temp on arrival to SICU 92.7F
- Pt continued to deteriorate with max pressor and ventilatory support. Pt coded in SICU w/ PEA on monitor and noted to have 3L of blood over 30 minutes into wound vac. Time of death called.

VIEW FROM EAST END OF RAC

- Christus St. Elizabeths
 - Director of Trauma- Kathy Rodgers, RN, MSN, CNS, TCRN, CEN, CCRN

TIME TO BE INTERACTIVE AND PROACTIVE

- How can EMS help?
- What are your barriers and how can we help?
- Do any EMS have a way to administer warm fluids?
- For those who are giving blood- what are you using to administer warm blood?
- How do you manage a hypothermic patient/what are your protocols?
 - What are protocols on taking temps?
- Regional PI Project after Lifeflow/Qinflow?