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HYPERTHERMIA MANAGEMENT IN TRAUMA

DISCLOSURE STATEMENT



I have no actual, potential, or perceived conflicts of interest in relation to this program presentation.

I will not discuss off-label use or investigational use of pharmaceuticals or devices in my presentation.

GUIDELINE PURPOSE

OBJECTIVE

To provide a structured, evidence-based approach to managing hyperthermia in trauma patients.

Identify the most common non-infectious causes of hyperthermia in trauma patients and outlining appropriate diagnostic and therapeutic strategies.



RESPONSIBLE PERSONNEL

Essential personnel responsible for managing hyperthermia in trauma patients, ensuring accountability and coordination.

ROLE	RESPONSIBILITIES
Trauma Medical Director (TMD); Associate TMDs	Overall oversight and guideline development.
Emergency Department Staff (Physicians, Residents, ED Associates)	Immediate response and treatment.
Trauma Surgeons, Fellows, Residents, and APPs	Direct management of hyperthermia cases.
Trauma Department (Director, Manager, Trauma Service Coordinators)	Overall oversight and guideline development.

KEY DEFINITIONS

HEAT EXHAUSTION

Characterized by symptoms like fatigue, nausea, and profuse sweating. Mental status remains normal despite salt or water depletion. First signs often include headaches or dizziness.

HEAT STROKE

Identified by a core body temperature over 40°C. Critical signs include central nervous system dysfunction such as altered mental states, seizures, or potential coma risk.

TYPES OF HEAT STROKE

Classic Heat Stroke results from high environmental temperatures affecting the vulnerable. **Exertional Heat Stroke** arises from physical activity in heat, impacting generally healthy individuals.

How hot are
you?



INITIAL ASSESSMENT STEPS

INITIAL PATIENT EXAM

Prioritize airway, breathing, and circulation, which are critical in trauma resuscitation. Begin with assessing these basics to ensure patient stabilization while continuing with further assessments.

TEMPERATURE MEASUREMENT

Accurately measure core body temperature using reliable methods to assess hyperthermia severity. Early intervention depends on precise diagnostics. Continuous monitoring is essential to prevent complications, such as overshoot hypothermia.

- Rectal
- Bladder
- Esophageal





INTUBATION CRITERIA

AVOIDING SUCCINYLCHOLINE

Avoid succinylcholine in suspected malignant hyperthermia cases. Its use could complicate diagnosis and exacerbate hyperkalemia, posing additional risks to patient stability.

WHEN TO INTUBATE

Intubation may be necessary for diagnostic aid if the cause of hyperthermia is uncertain. Conditions like severe rigidity or ongoing seizures may also warrant intubation for patient protection.



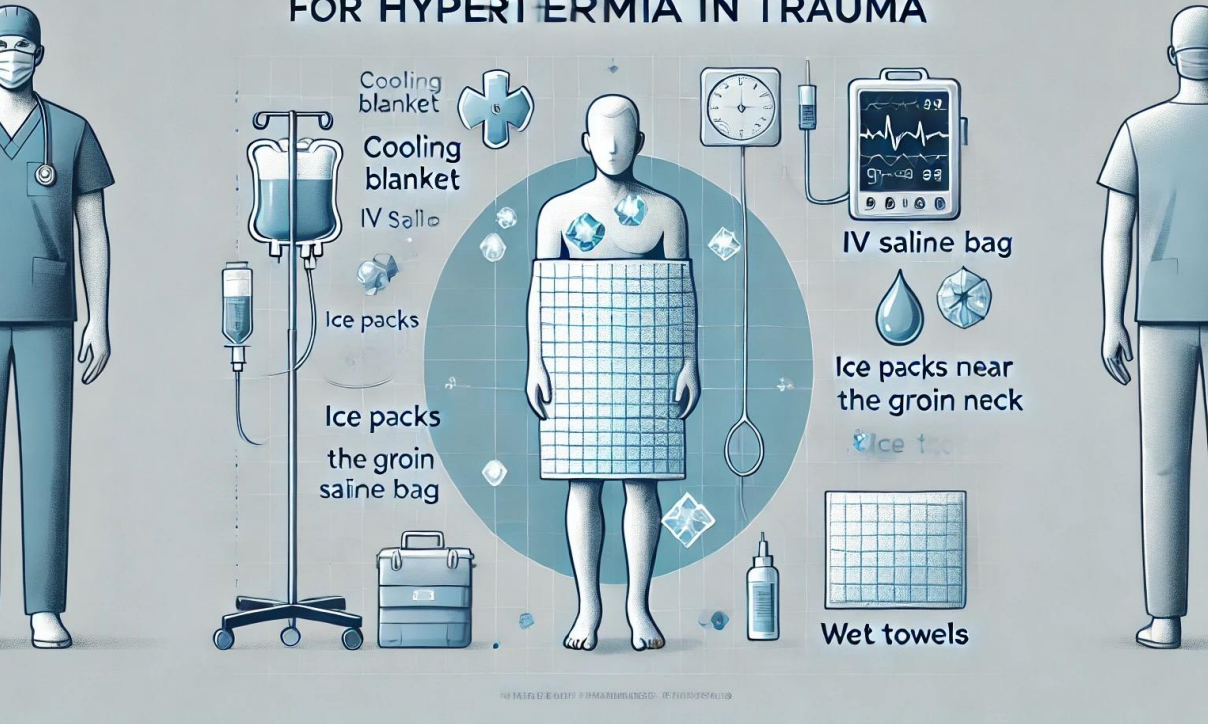
Contributing Factors

STEPS TO ASSESS HYPERTHERMIA

. Evaluating for potential causes such as:

- Traumatic Brain Injury
- Spinal Cord Injury
- Sepsis
- Prolonged environmental exposure
- Substance use or intoxication
- Burns
- Postoperative patients

RAPID COOLING IN PALS FOR HYPERTERMIA IN TRAUMA



COOLING TECHNIQUES

Initiate cooling measures if core temperature exceeds 40°C. Techniques include:

- Cooling blankets
- Ice packs to groin, axilla, and neck
- Introduce wet sheets or towels to boost evaporative cooling
- Insertion of a Foley catheter helps in monitoring urine, while ensuring effective fluid management throughout the process

RAPID COOLING MEASURES

FLUID RESUSCITATION

Obtain IV access for administering cold saline (1-2 L). This aids in volume resuscitation, particularly crucial in managing trauma-related hyperthermia.

LABORATORY STUDIES

Essential lab studies provide insight into physiologic responses. These tests help assess systemic involvement, guiding treatment measures.

TEST NAME	PURPOSE
Glucose	Monitors blood sugar stability
CBC	Evaluates overall health
CMP	Assess organ function
ABG/VBG	Assesses respiratory function and hydration
Coagulation Studies	Evaluates blood clotting
Creatinine Kinase & Serum Myoglobin	Checks for muscle damage
Toxicology	Identifies drug presence
Procalcitonin	Identify infections



MONITORING PROGRESS

TREATMENT MONITORING

Continuous monitoring of core temperature and vital signs is essential to evaluate the ongoing efficacy of cooling measures.

Watch closely for shivering, which can undermine cooling efforts, necessitating immediate intervention.

It's crucial to halt rapid cooling upon reaching 38°C to prevent the risk of hypothermia, ensuring patient safety at every stage.

POTENTIAL COMPLICATIONS

PHYSIOLOGICAL COMPLICATIONS

Rhabdomyolysis and acute hepatic failure are potential concerns. These conditions necessitate prompt detection and management to avoid further organ damage or critical health deterioration.

NEUROLOGICAL AND RESPIRATORY RISKS

Be vigilant for seizures and aspiration pneumonia. These complications can evolve into ARDS, requiring immediate medical intervention to sustain respiratory and neurological health.

METABOLIC AND HEMATOLOGIC ISSUES

Stress-induced cardiomyopathy, hypo/hyponatremia, and coagulation issues like DIC demand careful monitoring. Balancing systemic reactions is key in avoiding severe outcomes.

CARDIOVASCULAR AND COAGULATION

Complications like arrhythmias and DIC can be life-threatening. Proactive monitoring and interventions are crucial to prevent advancement of these severe cardiovascular and coagulation issues.

PITFALLS

COMMON MISTAKES

- Using antipyretic medications, such as acetaminophen, as these medications are ineffective.
- Using vasopressors, as they can cause cutaneous vasoconstriction limiting the body's ability to dissipate heat.
- Using non-core temperature measurements such as oral or tympanic thermometers.



WHAT DID YOU MAKE TODAY?



MISTAKES.

PERFORMANCE IMPROVEMENT TRIGGERS



GUIDELINE COMPLIANCE

Non-compliance with treatment protocols requires a thorough review of processes. Adhering to these protocols is essential for ensuring quality care.

Regular evaluation ensures that all care standards are met. Instances of non-adherence serve as triggers for policy review.

STANDARDS OF CARE ISSUES

Failure to adhere to established standards of care may initiate performance improvement processes.

Early identification of these lapses allows for swift corrective actions.

Such occurrences trigger urgent reviews and modifications to the current management strategies.

SUMMARY

RECAP OF HYPERTHERMIA

KEY INTERVENTIONS AND MANAGEMENT

Immediate management of hyperthermia involves reducing body temperature through external or internal cooling measures.

UNDERSTANDING HYPERTHERMIA

- Hyperthermia occurs when the body absorbs or generates more heat than it can dissipate.
- The body's ability to regulate temperature is compromised, leading to dangerous levels of heat stress. Recognizing symptoms such as elevated body temperature, dizziness, and dehydration is crucial for early intervention.
- This condition can affect anyone, but those with existing health issues are more prone to severe outcomes.

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Questions?

Thank you!

