Dr. Apurba Kumar Borah, Consultant & HOD Critical Care Medicine

Abstract

In the high-stakes environment of competitive sports, the margin for error is non-existent While “The Golden Hour” is a familiar concept in general trauma medicine, sports emergency care operates on an even tighter timeline: **The Platinum Ten Minutes**. Whether it is a sudden cardiac arrest on the basketball court or exertional heat stroke on the football field, the decisions made in the first few moments determine survival and neurological outcome long before the ambulance wheels turn toward the hospital.

Introduction: The Sideline is an ICU

The modern sports medicine physician or athletic trainer must be more than an orthopedist or a rehab specialist; they must be a pre-hospital critical care provider. The sideline is a unique clinical environment—chaotic, public, and loud—where the pathology is often extreme.

The “Killer” conditions in sports medicine are well-documented, yet preventable deaths still occur. This article outlines the current consensus guidelines for the most critical pathologies encountered on the field: Sudden Cardiac Arrest (SCA), Exertional Heat Stroke (EHS), Cervical Spine Injury, and Exertional Sickling.

1. Sudden Cardiac Arrest (SCA): The “Drop” vs. The “Slump”

Sudden Cardiac Arrest remains the leading cause of non-traumatic death in young athletes. The etiology often differs from the older population—Hypertrophic Cardiomyopathy (HCM) or Coronary Artery Anomalies rather than atherosclerosis—but the management is universal.

Visual Recognition

A critical observational skill for the medical staff is distinguishing a cardiac collapse

from exhaustion.

- **The Slump (Exhaustion):** A gradual decline. The athlete stumbles, drops to knees, or collapses with protective reflexes intact (hands go out to break the fall).
- **The Drop (Cardiac):** Sudden and unprovoked. No protective reflexes. The athlete hits the ground "like a stone."

Clinical Pearl: Agonal breathing (gasping/snorting) occurs in up to 50% of SCA cases. It is frequently mistaken for a seizure or "getting the wind knocked out." **Assume SCA in any collapsed, unresponsive athlete until proven otherwise.**

The Protocol: Call, Push, Shock

Current consensus mandates a **<3 minute drop-to-shock interval**. Survival rates decrease by 10% for every minute defibrillation is delayed.

1. **Check:** No pulse/breathing for max 10 seconds.
2. **Compress:** High-quality CPR immediately.
3. **Shock:** Apply the AED as soon as it arrives.

2. Exertional Heat Stroke (EHS): Cool First, Transport Second

EHS is one of the rare medical emergencies where immediate transport to the hospital can be fatal. The axiom is distinct: **"Cool first, transport second."**

The Diagnostics

You cannot diagnose EHS with an oral, tympanic, or axillary thermometer, nor by touching the skin.

- **Gold Standard:** Rectal thermometry is the only accurate field measure of core temperature in an exercising athlete.
- **Threshold:** Core temp >40.5 C (104.9 F) combined with CNS dysfunction (confusion, combativeness, collapse).

The Intervention: Cold Water Immersion (CWI)

The goal is to lower core temperature to **39 C}$ (102F)** within 30 minutes. The most effective method is “Taco burritio” tarp assisted cooling or, ideally, full-body immersion in an ice-water tub (approx 10-15 C).

Do not transport the athlete until they have cooled to 39 C. The survival rate for EHS is 100% when aggressive cooling is initiated within 10 minutes of collapse.

3. The Cervical Spine: “Lift and Slide”

Management of potential spinal injuries has evolved to minimize motion at the C-spine. The traditional “log roll” is increasingly being replaced by the “Lift and Slide” (or 8-person lift) technique.

- **Lift and Slide:** Requires 6+ trained personnel. The athlete is lifted vertically 4–6 inches while a spine board is slid underneath. Studies show this produces significantly less lateral motion of the head/neck compared to the log roll.
- **Equipment Handling:** In American football and hockey, the general rule is to **leave the helmet and shoulder pads on**. Removing one without the other creates dangerous cervical flexion or extension. The facemask, however, must be removed immediately to access the airway.

4. The Metabolic Crisis: Exertional Sickling (ECAST)

Exertional Collapse Associated with Sickle Cell Trait (ECAST) is a “sickling” of red blood cells leading to massive rhabdomyolysis and ischemic acute renal failure. It is distinct from heat cramps or heat stroke.

Differential Diagnosis: ECAST vs. Heat Stroke

Feature	ECAST (Sickling)	Heat Stroke (EHS)
Collapse Nature	“Slump” (gradual)	“Slump” or CNS changes
Pain	Generalized weakness; pain is often absent or low-grade initially	Rigid, cramping muscles
Muscle Tone	**Flaccid / Weak**	**Rigid / Tense**

Temperature	Normal or slightly elevated	>40.5 C (105 F)
Consciousness	Often lucid initially, then deteriorates	Altered / Combative / Unconscious

Treatment: High-flow oxygen, aggressive IV fluid resuscitation, and immediate transport. Unlike EHS, ECAST requires immediate hospital management.

5. The Emergency Action Plan (EAP)

The EAP is not a document stored in a binder; it is a rehearsed behavior. Every venue must have a specific plan.

The “Medical Time-Out”

Before every game, the medical staff (home and away ATs, MDs) and EMS crew should meet for a Medical Time-Out. This 2-minute briefing covers:

1. **Role Designation:** Who runs the code? Who calls 911?
2. **Signals:** What is the hand signal for “Bring the backboard” vs. “Bring the AED”?
3. **Equipment:** Verification that the AED battery is charged and the ambulance has clear access to the field.

Conclusion

Sports medicine emergency care is defined by preparation. When a catastrophe occurs, there is no time to consult a textbook. By mastering the management of the “Big Four”—Cardiac Arrest, Heat Stroke, C-Spine, and Sickling—and by rehearsing the EAP, the sports medicine team transforms the sideline into a mobile critical care unit, ensuring the safety of the athlete in those platinum ten minutes.

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Author

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