Zuku Review FlashNotes™  

**Heat stroke / Hyperthermia**  
Extended version

**Classic case:** Summer months, dog left in car with core body temperature over 105.8°F

**Presentation:**

**History and Signalment**
- Pediatric, geriatric
- **Genetic & breed dispositions**
  - Dark-colored, long-haired
  - Upper airway obstruction (brachycephalic breeds, laryngeal paralysis)
- Obesity, cardiovascular dz, previous Hx heat stroke
- **Excessive external heat / inadequate heat dissipation**
  - **Heat stroke**
  - Left in car, clothes dryer, strenuous activity
- **Excessive muscle fasciculations**
  - Seizures, garbage intoxication (mycotoxin), hypocalcemic tetany
- **Endogenous pyrogens**
  - Sepsis, febrile neoplastic syndrome
- **Medications**
  - Phenothiazines, opioids (cat), cardiac drugs
- **Seasonality**
  - Late Spring (before heat acclimation), Summer

**Clinical signs**
- Acute increase **core body temp** >105.8°F (41°C)
- Brick red mucous membranes
- Tachycardia
- Excessive panting
- Collapse (heat prostration)
- Respiratory distress, hypersalivation
- Diarrhea (bloody), vomiting
- Shock, petechiae
- Ataxia, muscle tremors
- Seizures, loss of consciousness, DEATH

**LIFE THREATENING, medical emergency**
ALL MAJOR ORGAN SYSTEMS VULNERABLE

**DDX:**
Fever, malignant hyperthermia, seizures, shock

*Image courtesy, Alex Guerrero, Wikimedia Commons (cropped)*

*Informational poster, My Dog is Cool website devoted to preventing heatstroke*
Heat stroke / Hyperthermia

Test(s) of choice: Usually history and presentation are clear

- Rectal Temperature - 105-110°F (41-43°C), anything higher = DEATH
- ECG – tachycardia, cardiac dysrhythmias
- CBC – increased PCV, TP due to dehydration, thrombocytopenia
- Biochemistry – increased BUN, Creatinine (prerenal or renal azotemia) increased CK due to muscle damage, hypoglycemia
- Blood gas – respiratory alkalosis from excessive panting or metabolic (lactic) acidosis due to decreased tissue perfusion
- Urinalysis – Oliguria, hemoglobinuria
- Coagulation panel – prolonged ACT, PT, PTT (poor prognostic indicator), FDP
- Blood pressure – hypotension due to shock and dehydration

Rx of choice: Stabilize

- O₂ supplementation
- IV fluids (lukewarm)
  - Isotonic crystalloids +/- colloids, Shock dose if required
  - Restore blood volume and dehydration

- Aggressive active cooling
  - Use tepid water, NEVER COLD WATER or ICE- Apply soaked towels, shallow bath, fans
  - Lower core body temperature to 103°F (39.4°C)
    - Monitor temp Q 5-10 min to avoid hypothermia
- Supportive care based on above findings
- Prophylactic broad-spectrum antibiotics – GI sloughing/bacterial translocation (common)

Prognosis:
- Good to Guarded Early Rx; usually no long term effects; risk reoccurrence
- Guarded to Good Obtundated patients, coagulopathy, renal failure, 2° organ damage
- Grave Severe heat stroke; death may occur w/in 24 hrs, If survive >24 hrs better Px

Prevention:

Client education for warm/hot weather

- Never leave an animal in a car
- Always provide access to shade and water
- Avoid prolonged exercise, esp. for dogs with upper airway obstruction

Informational poster, My Dog is Cool website devoted to preventing heatstroke
**Pearls:**

**Contraindications:**
- Cold water & ice bath cooling-
  - Causes extreme peripheral vasoconstriction
  - Inability to dissipate heat
- NSAIDs
  - Because of decreased renal perfusion
  - GI sloughing
- Jugular venipuncture - unknown or abnormal coagulation status


**My Notes:**