

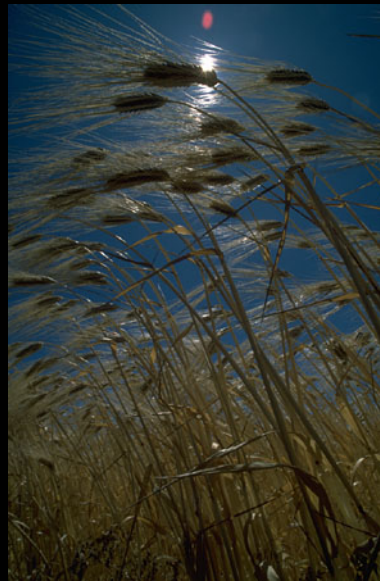
# Heat Related Injuries

What Everyone Should Know.



# Introduction

- How to identify, treat and prevent heat related illness/injury.
- Stephen T. Hewitt, D.O.



# Topics of Discussion

- Statistics
- Factors
- Heat exhaustion vs. heat stroke
  - diagnosis
  - treatment
  - prevention

# Statistics

- Uncommon occurrence in silos  
-under reported?
- To date, approximately 20 reported cases of heat related injury/illness in Riley county

# Statistics

- Agricultural work fatalities by source of injury, 21 states, 1997
  - 36% tractor
  - 25% all other
  - 19% agricultural machines
  - 7% other vehicle
  - 5% animal
  - 4% truck
  - 4% ground/floor

# Factors

- Body's response to heat is comparative to the cooling system of an automobile:
  - Coolant (blood) is circulated by a pump (heart) from the hot inner core to a radiator (skin cooled by the evaporation of sweat).
  - Increased temperature is sensed and coolant flow altered by a system of pipes, valves and reservoirs.

# Factors

- Increased heat production
  - exercise, exertion
  - infection, fever
  - agitation
  - drugs (amphetamines, LSD, cocaine, caffeine)
  - hyperthyroidism
- Impaired heat dissipation
  - lack of acclimatization

# Factors

- high ambient temperature
- high ambient humidity
- obesity
- heavy clothing
- dehydration
- cardiovascular disease
- extremes of age
- drugs (diuretics, anticholinergics, sweat gland dysfunction)



# Heat Exhaustion vs. Heat Stroke



# Heat Exhaustion

- Clinical syndrome characterized by volume depletion that occurs under conditions of heat stress.
- Most common form of heat illness
- Less severe than heat stroke

# Heat exhaustion

- Signs:
  - vague malaise, fatigue, headache
  - core temperature often normal, if elevated, less than 104 degrees F.
  - mental function normal
  - fast heart rate, low blood pressure
  - dizziness, nausea/vomiting
  - sweating persists and may be profuse

# Heat Exhaustion

- Treatment
  - move to cooler environment (shade, air conditioning)
  - replace fluids (cooled)
    - electrolyte solutions i.e., Gatorade
    - water
  - seek medical advice

# Heat Exhaustion

- Prevention
  - Work during cooler hours of the day
  - Adequate hydration
    - should urinate every 2-3 hours
  - Regular rest periods

# Heat Stroke

- Thermoregulatory failure after exposure to high environmental temperatures and humidity
- Catastrophic life-threatening medical emergency with high mortality rate
- Accounts for 4000 deaths annually in the United States
- Most likely to occur in young, healthy persons involved in strenuous physical activity

# Heat Stroke

- Signs (in addition to signs of heat exhaustion)
  - Coma, seizures, confusion
  - Core temperature 105.8 F or higher
  - Dry, hot skin (sweat may be present)

# Heat stroke

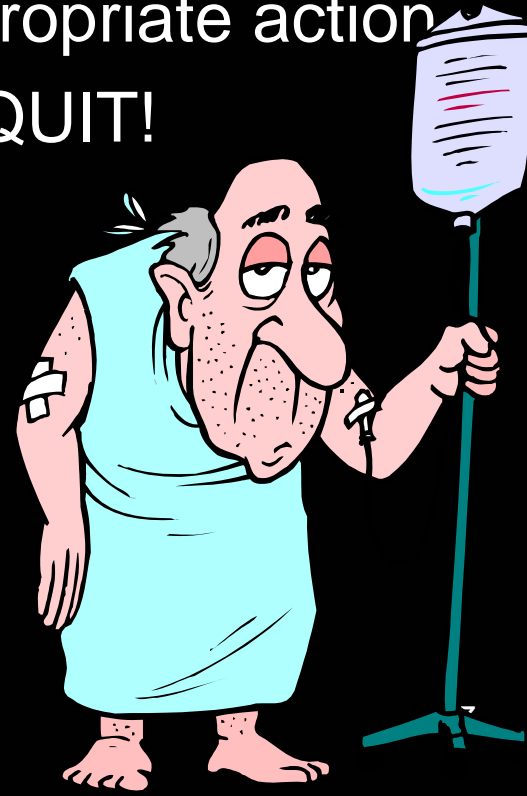
- Treatment
  - CALL 911 IMMEDIATELY!
  - Immediate cooling
    - bathe in cool/cold water
    - move to shaded area or air conditioning



# Heat Stroke

- Prevention

- Early recognition of heat exhaustion and appropriate action
- **KNOW WHEN TO QUIT!**



# Heat stroke

- In 80% of cases, onset of heat stroke is sudden and the patient becomes confused or comatose.
- Seizures occur in 70% of cases

# Real Life

- July 2001 in Riley county, a man was treated at local E.D. for heat stroke
  - he had been welding/working inside an emptied fuel tanker
- Comparable to work/extremes of temperature inside silos

# What This Means

- When heat and humidity are extreme, exertion is not necessary to produce heat related problems.
- Microclimates conducive to heat illness are produced in the interiors of enclosed areas, i.e., silos, tanks, food processing facilities, etc.

# Summary

- Early recognition and treatment prevents hospitalization and death!

