

# ENVIRONMENTAL EMERGENCIES REVIEW WITH CASE STUDIES

Justin Astafan, EMT-P, CIC

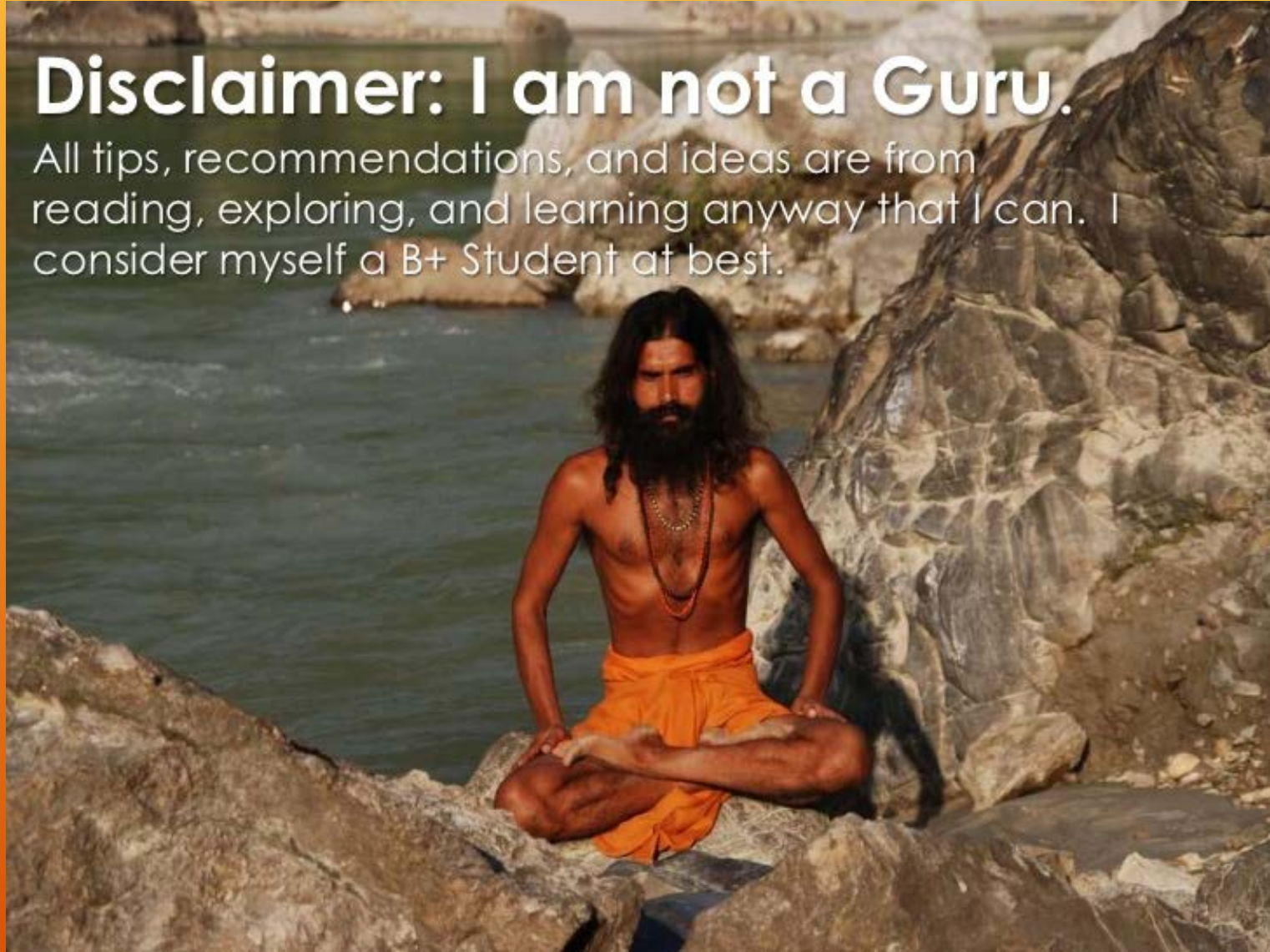




- ▶ NYS EMT-P
- ▶ NYS CIC
- ▶ 17 years in the fire and EMS profession
- ▶ Work both career and volunteer side
- ▶ Worked for commercial and not-for-profit companies
- ▶ Currently employed as the Chief of Operations at Lewis County Search & Rescue

# Disclaimer: I am not a Guru.

All tips, recommendations, and ideas are from reading, exploring, and learning anyway that I can. I consider myself a B+ Student at best.



COMPLAINT  
DEPARTMENT

*Sorry* WE'RE  
**CLOSED**



## WHAT IS AN ENVIRONMENTAL EMERGENCY?

Source: AAOS Critical Care Transport text



## WHAT IS AN ENVIRONMENTAL EMERGENCY?

Are medical conditions caused or worsened by the weather, terrain or unique atmospheric conditions.



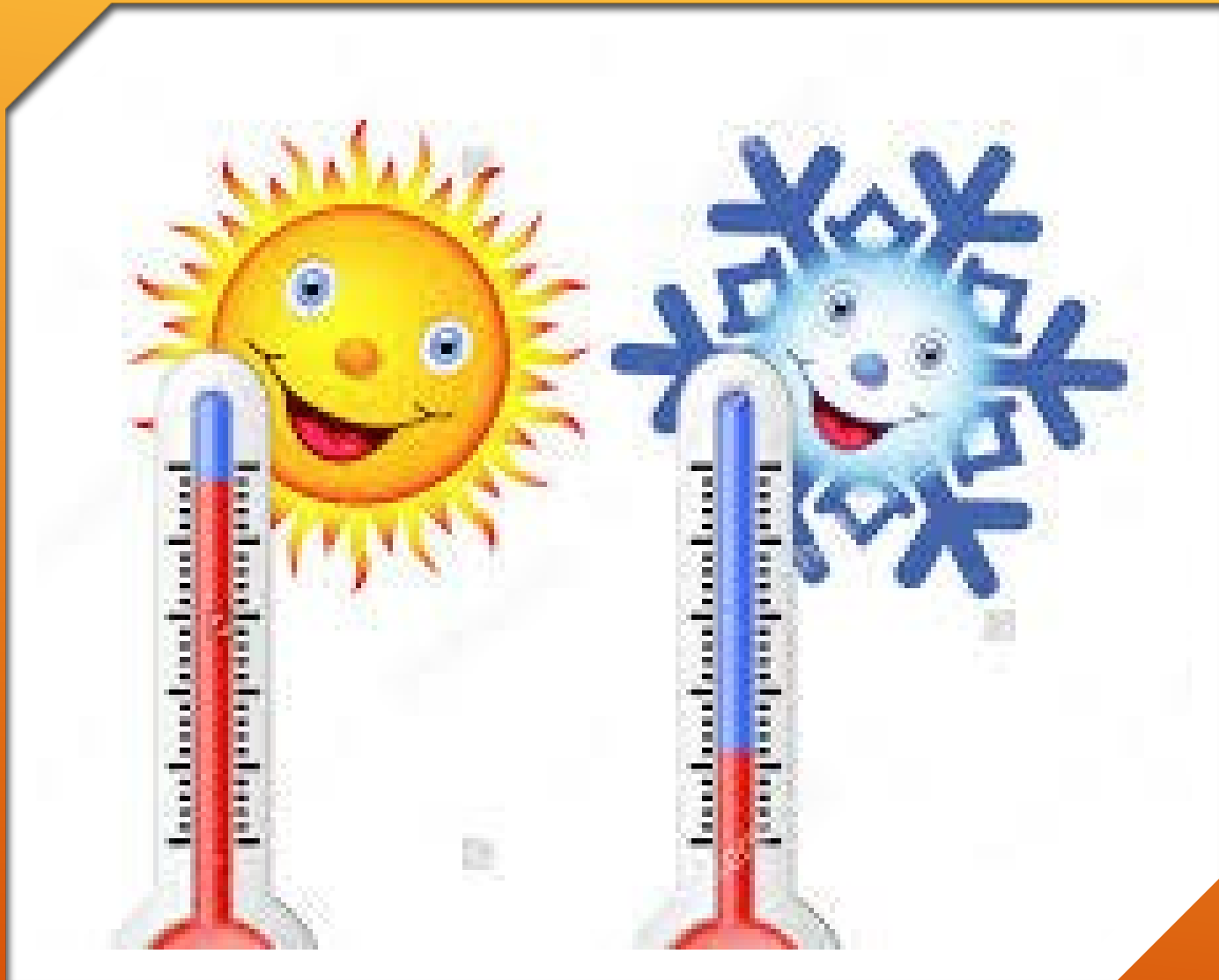
WHAT ARE TWO  
MAJOR  
ENVIRONMENTAL  
EMERGENCIES?



▶ Heat

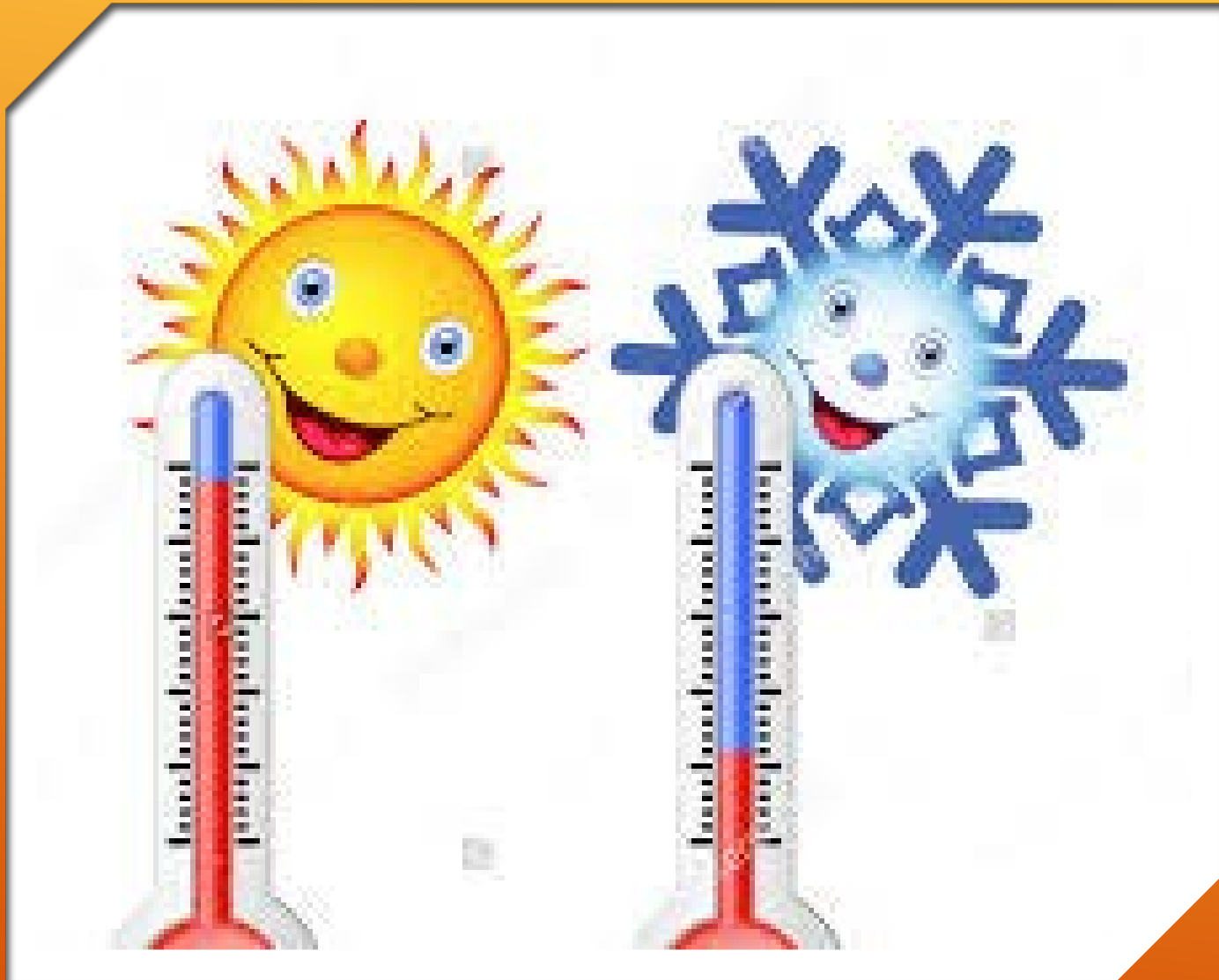
▶ Cold





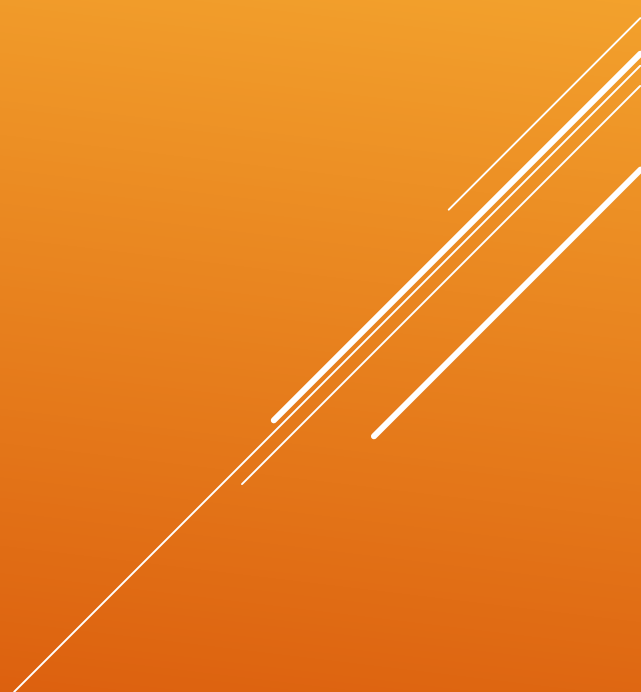
# THERMO REG ULA TIO N



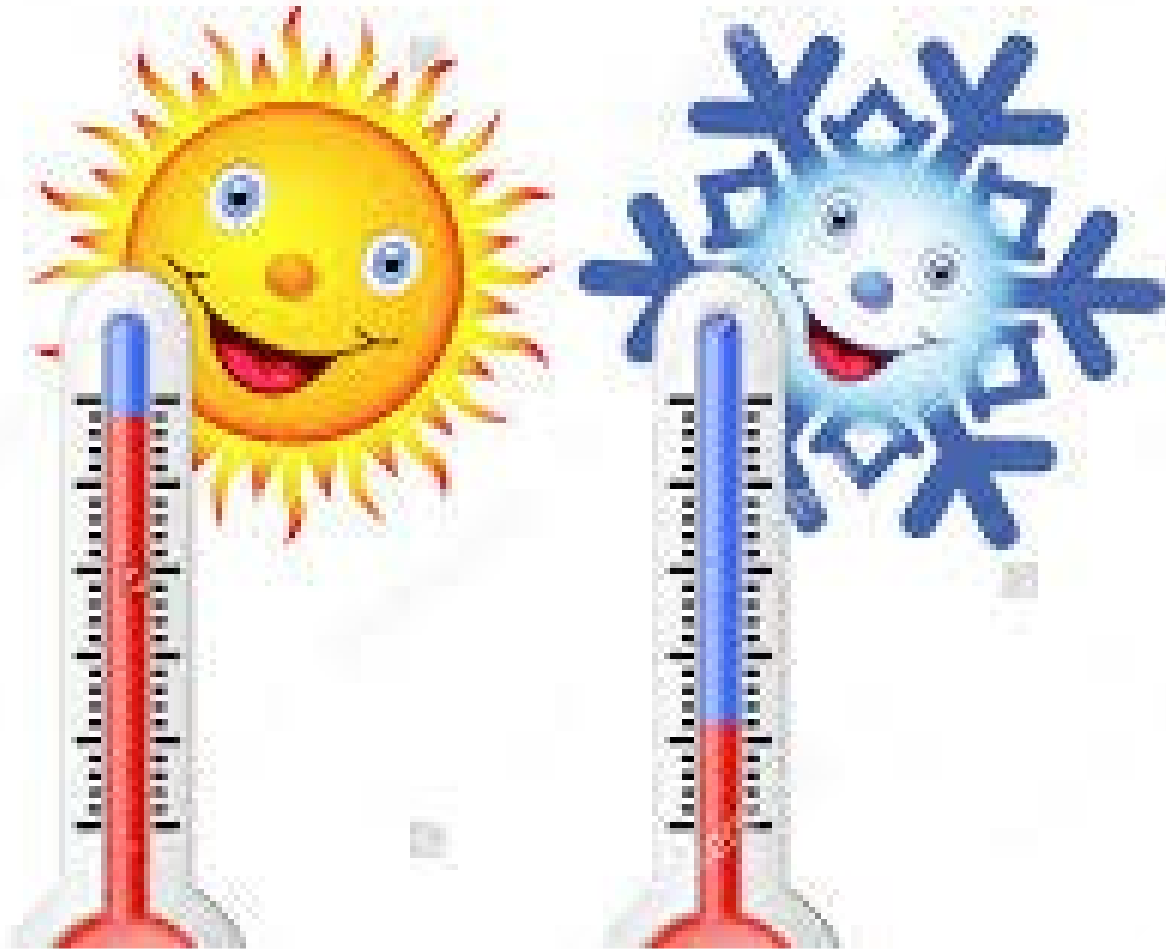


# THERMO REG ULA TIO N

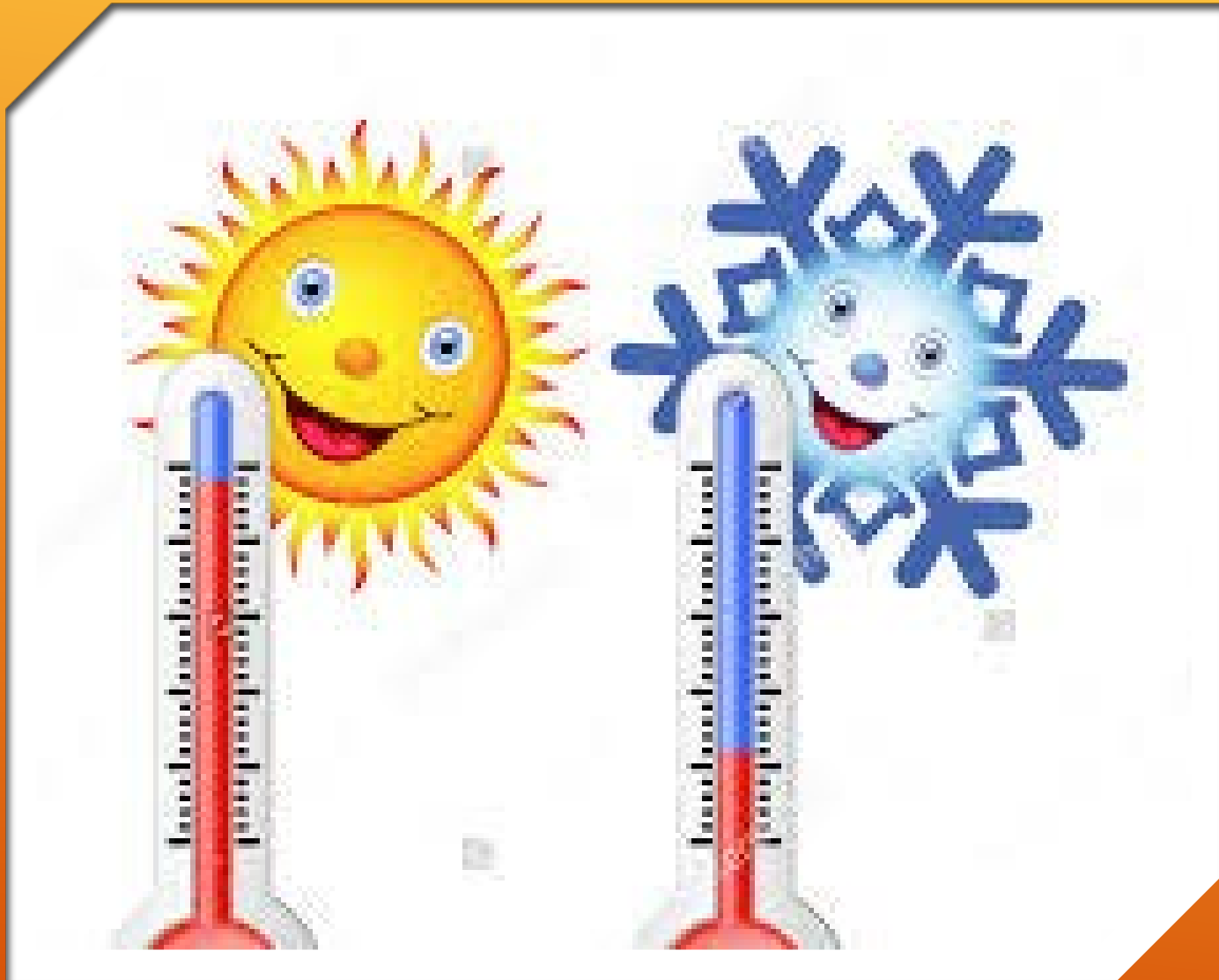
- ▶ A balance between heat production and elimination



## HEAT TRANSFER

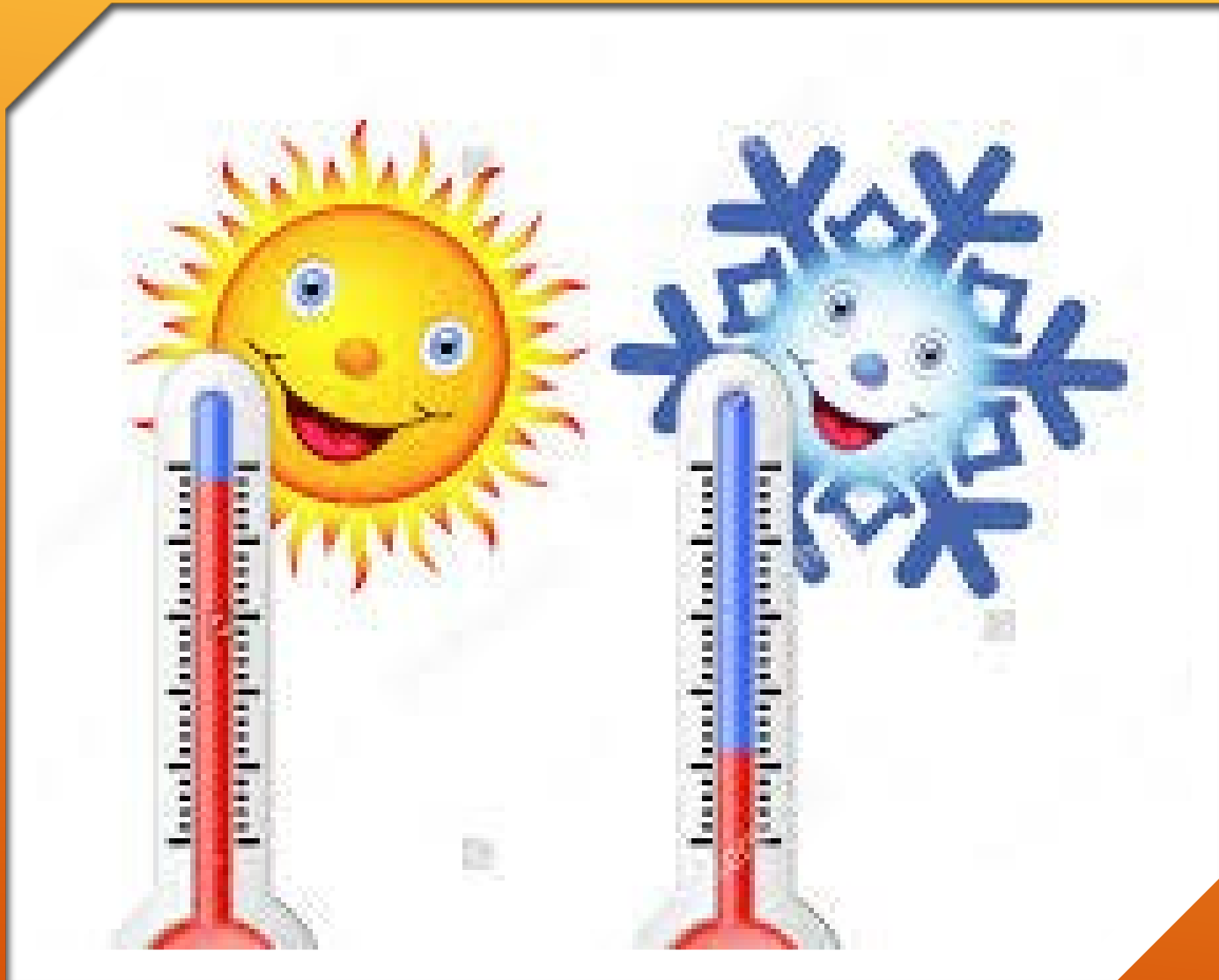


Source: AAOS Critical Care Transport text



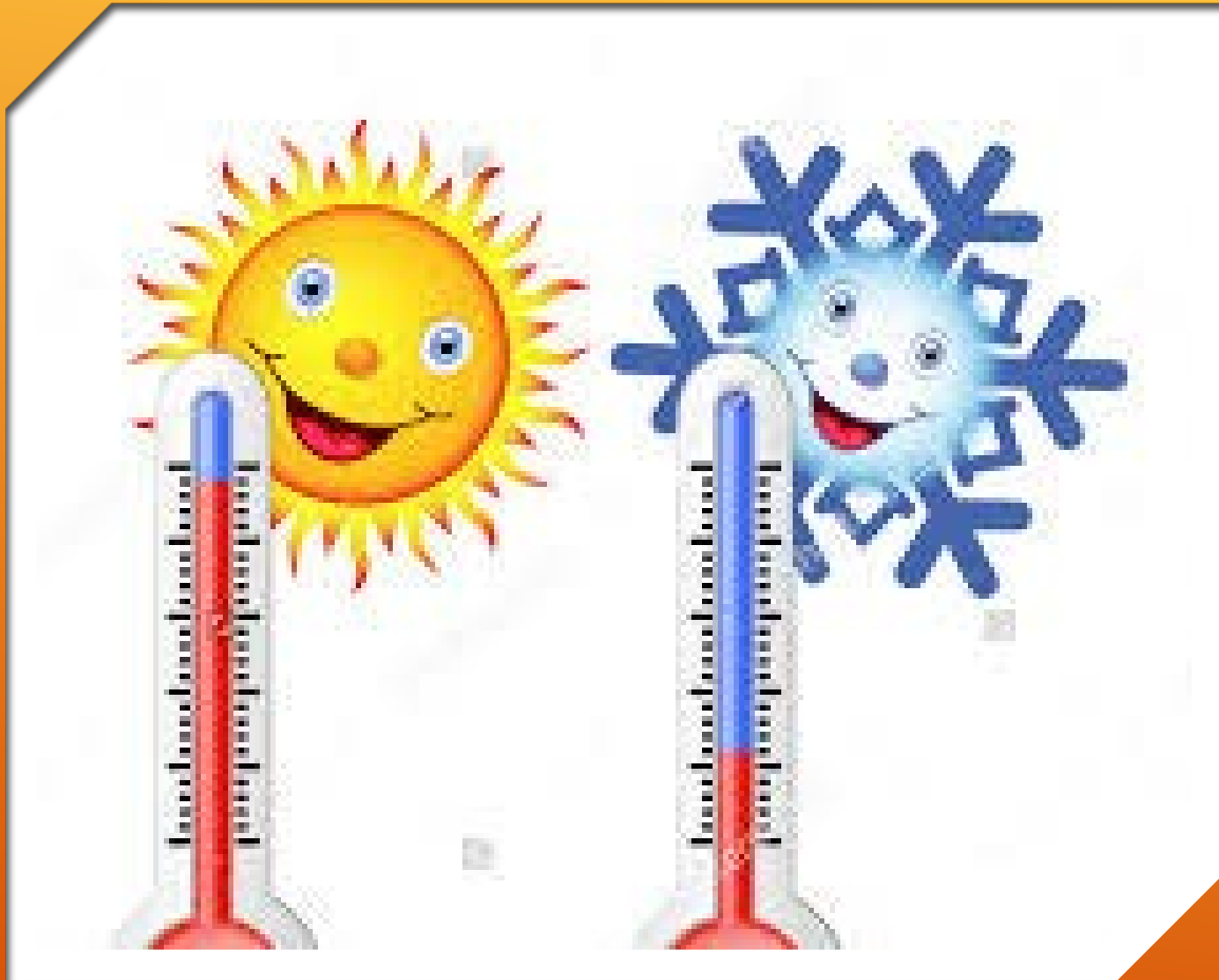
## HEAT TRANSFER

- Radiation  
Electromagnetic waves



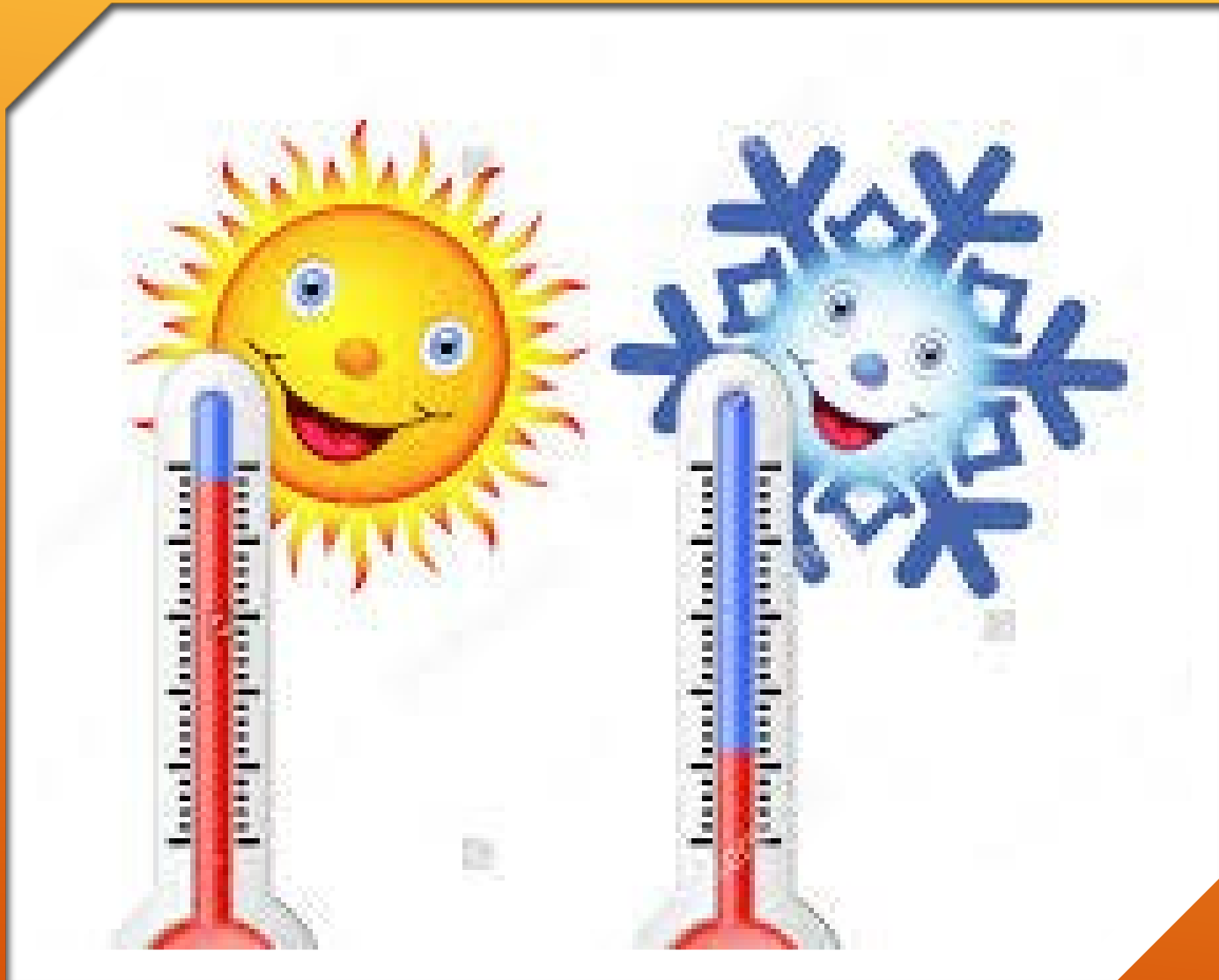
## HEAT TRANSFER

- Radiation  
Electromagnetic waves
- Conduction  
Direct contact



## HEAT TRANSFER

- Radiation  
Electromagnetic waves
- Conduction  
Direct contact
- Convection  
air or water



## HEAT TRANSFER

- Radiation  
Electromagnetic waves
- Conduction  
Direct contact
- Convection  
air or water
- Evaporation  
Liquid to Gas

# HEAT EMERGENCIES







## HEAT EMERGENCIES

Factors that contribute to Heat Emergencies:

- ▶ Physical Exertion
- ▶ Infection
- ▶ Drug Overdoses



# HEAT CRAMPS



# HEAT CRAMPS

- Signs and Symptoms
  - Muscle Pain
  - Profuse Sweating



# HEAT CRAMPS

- Treatment
  - Remove
  - Lie down
  - Consume Water
  - IV fluids

# HEAT EXHAUSTION



- Signs and Symptoms

Headache

Fatigue

dizziness

nausea

Vomiting

Abdominal cramps

Profuse Sweating

Pale, Clammy Skin

↑ Heart Rate & Resp

Carpopedal Spasm

Elevated Skin Temp

Low BP

Darker, Brown Urine



# HEAT EXHAUSTION

- Treatment
  - Remove
  - A/C
  - Lie down
  - IV fluids



# HEATSTROKE



# HEATSTROKE

- Signs and Symptoms
  - AMS
  - Bizarre Behavior
  - Combative
  - Hallucinations
  - ↑ core body temp
  - tachycardia
  - Seizure





# HEAT EXHAUSTION

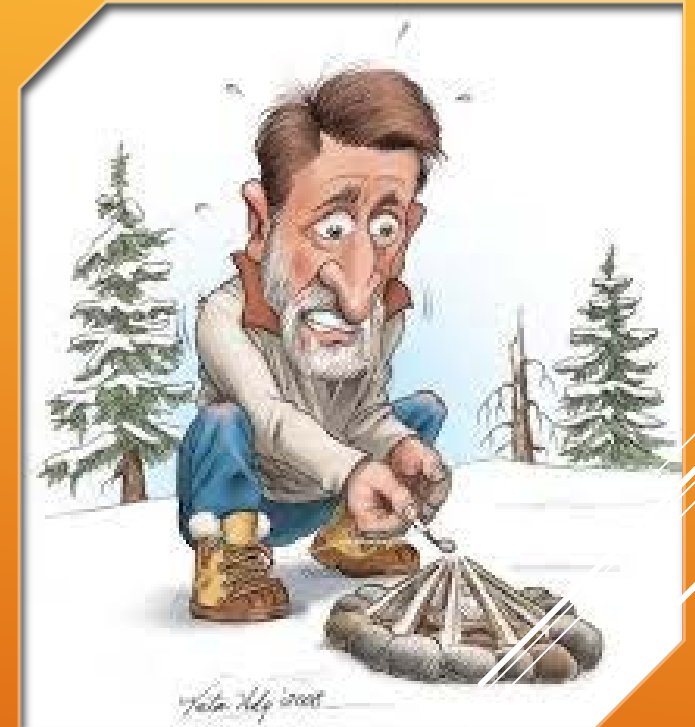
- Treatment
  - ABC's
  - Consider EII
  - Remove
  - IV NS
  - ECG

# COLD EMERGENCIES



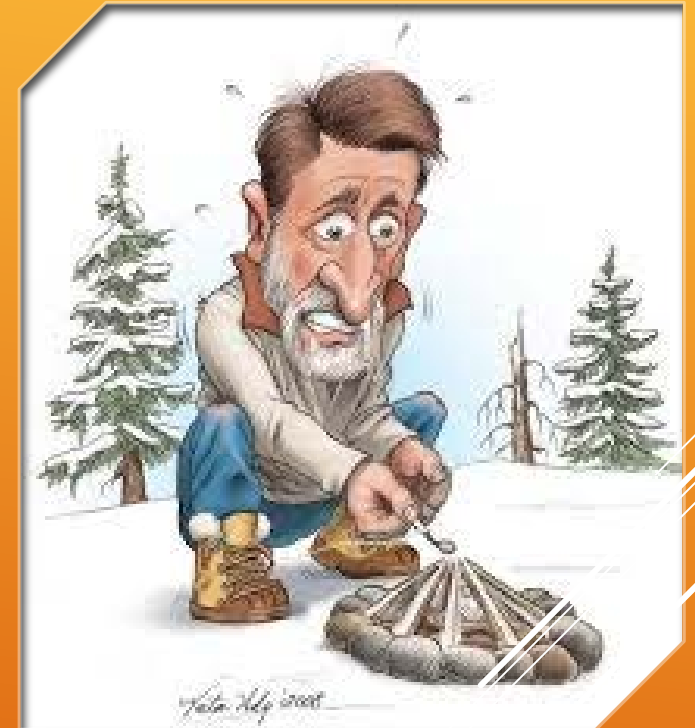
# FROSTBITE

- Signs and Symptoms
  - Hard, cold, waxy skin
  - Yellow-white or mottled blue-white

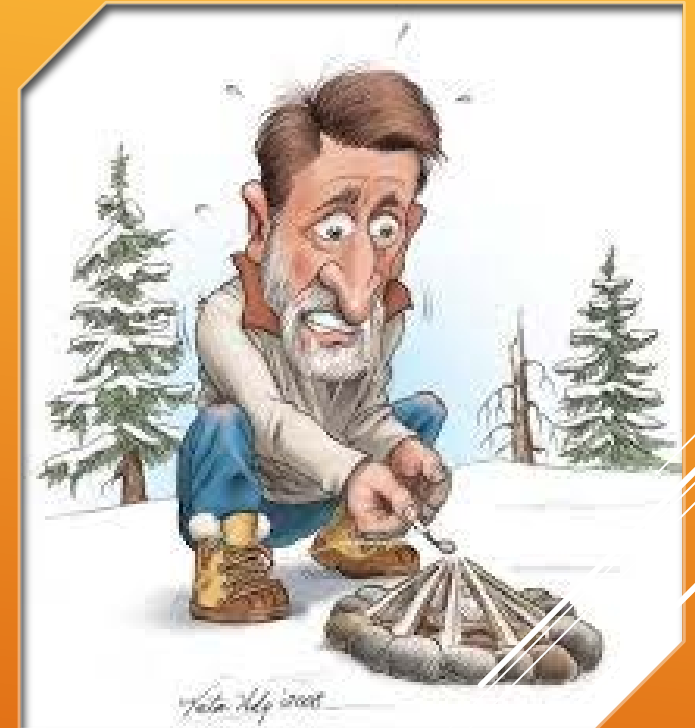


# FROSTBITE

- Treatment
  - If transport time is under 1 hr leave frozen
  - If transport time is greater than 1 hr contact medical control for possible field rewarming
  - DO NOT RUB OR MASSAGE THE AREA!!!!!!**

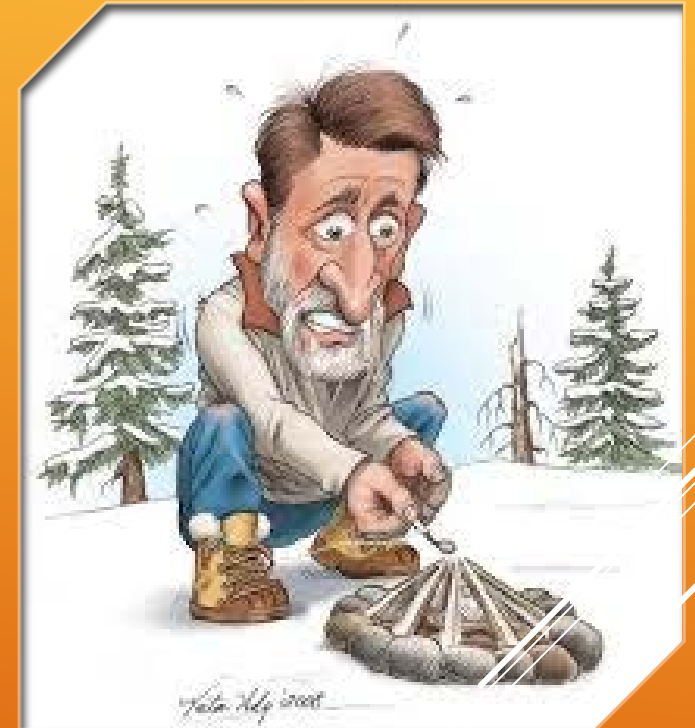


# HYPO THERMIA



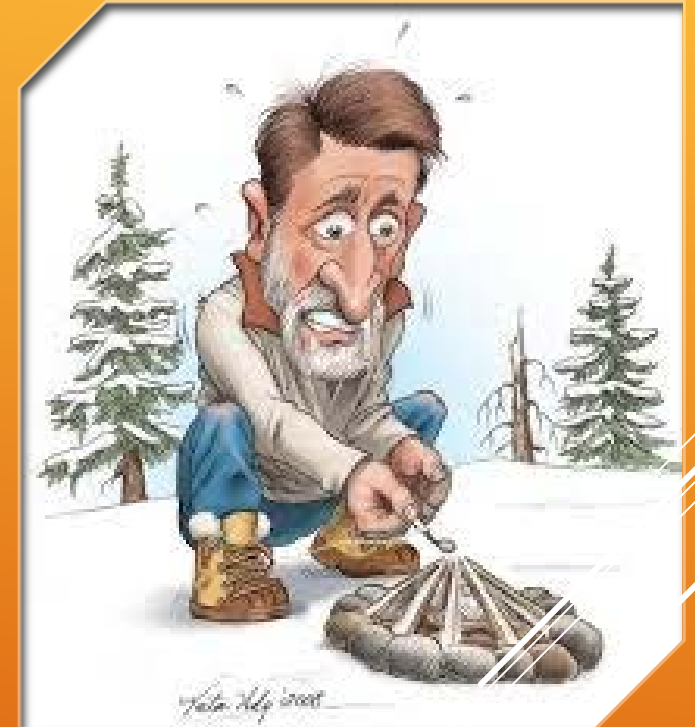
# FROSTBITE

- Signs and Symptoms
  - Body temp  $<95^{\circ}\text{F}$
  - shivering or lack of
  - Vital signs could be  $\uparrow\downarrow$
  - Arrhythmias
  - Osborne wave



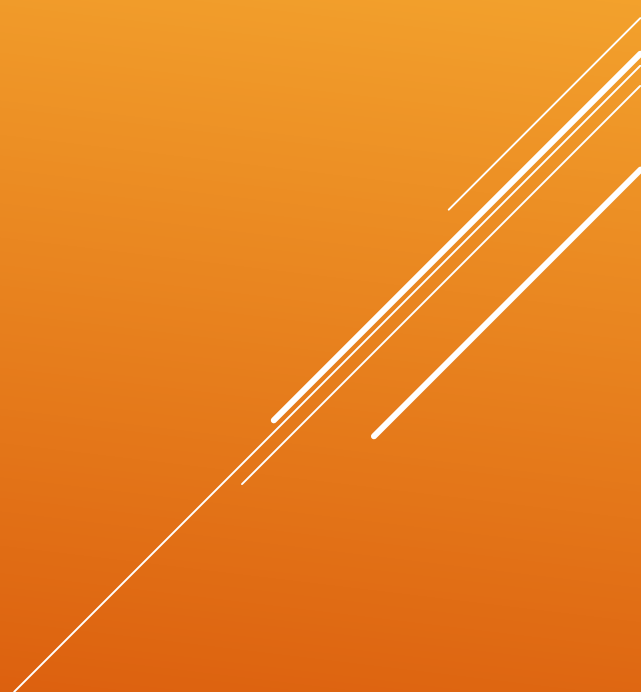
# FROSTBITE

- Treatment
  - Remove
  - Remove cold/wet clothing
  - Consider warm IV fluids





TIME FOR A CALL







## TIME FOR A CALL

Dispatched to stand by in the area for a 20's male who is hiding in the woods from Law Enforcement. It is the middle of January snow covered ground with the temperature in the single digits.



## TIME FOR A CALL

Dispatch advises you that the suspect has been found and is in custody. They state the subject is uncooperative. However he is detained by PD. They state that he has injuries to both of his feet.



## TIME FOR A CALL

Upon making contact with the patient you notice he is not wearing any footwear. He seems to be agitated and speaking extremely fast.

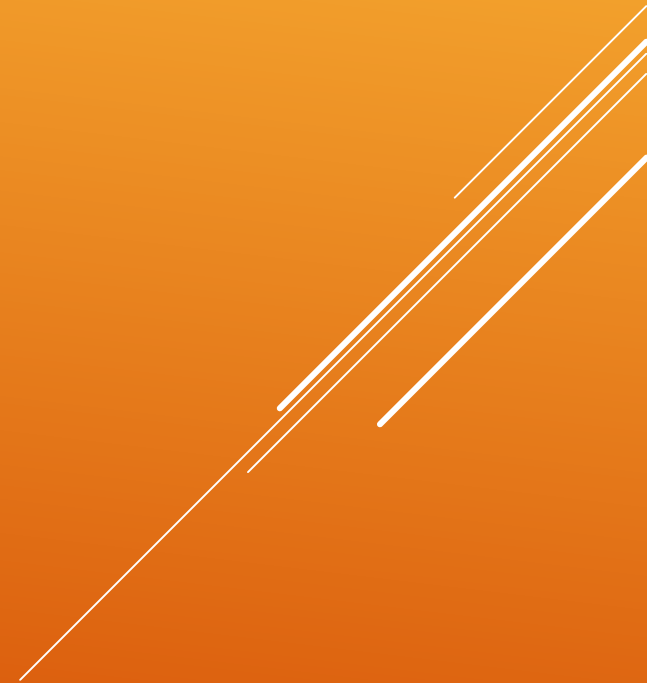
The patient denies any complaints....upon assessment you find that both of the patient's feet are red and the tips of his toes are slightly black.



# TIME FOR A CALL

Vital signs:

HR: 120





## TIME FOR A CALL

Vital signs:

HR: 120

BP: 148/88



## TIME FOR A CALL

Vital signs:

HR: 120

BP: 148/88

RESP: 20 labored

SPO<sub>2</sub>: 98%



## TIME FOR A CALL

Vital signs:

HR: 120

BP: 148/88

RESP: 20 labored

SPO<sub>2</sub>: 98%

BG: 120 mg/dL



## TIME FOR A CALL

Vital signs:

HR: 120

BP: 148/88

RESP: 20 labored

SPO<sub>2</sub>: 98%

BG: 120 mg/dL

ECG: Sinus Tachycardia





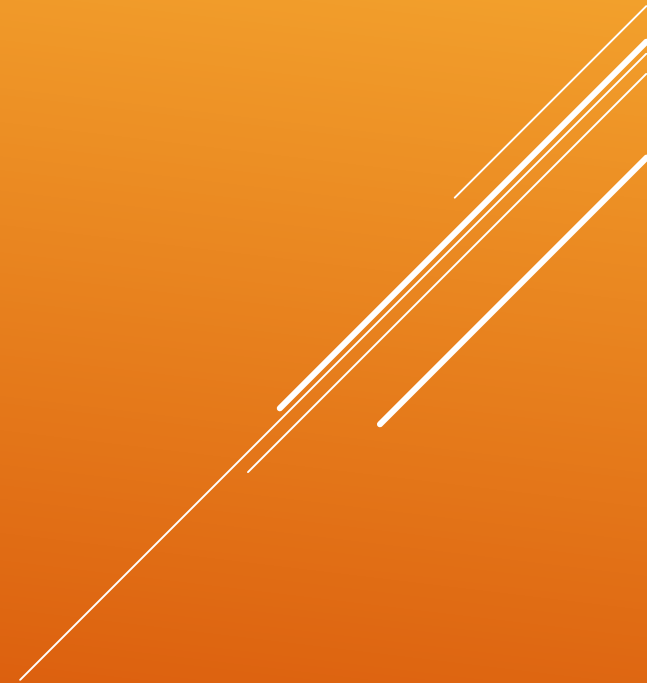
TREATMENT?



## OUTCOME

Patient had both feet bandaged.....Cardiac monitor, IV fluids and transported to the local ED. Patient admitted to smoking meth prior to being chased by Law Enforcement. He was later transported to the level 1 trauma center for further treatment and rewarming. He was discharged with both his feet intact.

**AND  
THE MORAL  
OF THE  
STORY IS...**



AND  
THE MORAL  
OF THE  
STORY IS...

ALWAYS  
WEAR SHOES  
WHEN YOU  
ARE RUNNING  
FROM THE  
COPS!!!

