



Sick Call Screener Course

Environmental Injuries

(2.12)



Enabling Objectives

- 1.64 Discuss risk factors related to environmental injuries while assisting in the development of a patient treatment plan
- 1.65 Discuss types of environmental injuries while assisting in the development of a patient treatment plan
- 1.66 Perform an examination for signs of environmental injuries



Enabling Objectives (Cont.)

- 1.67 Discuss measures that help prevent environmental injuries while assisting in the development of a patient treatment plan
- 1.68 Discuss treatment protocols used for environmental injuries while assisting in the development of a patient treatment plan
- 1.69 Discuss the heat condition flag warning system while assisting in the development of a patient treatment plan
- 1.16 State Red Flag criteria



Introduction

- Can occur in any setting
- Exposure to both heat and cold
- Drownings and other water-related injuries
- Bites and stings from insects, spiders, snakes, and marine life



Risk Factors for Heat Illnesses

- Include:
 - Dehydration
 - Disease
 - Age
 - Obesity
 - Improper Clothing
 - Un-acclimatization
 - Prior heat Injuries



Hypothalamus

- Body's thermostat
- Common outcomes from environmental extremes
- Heat injuries range from mild case to life-threatening



Sunburn

- Overexposure to the sun's UV rays
- 1st degree burns
- 2nd degree burns



Sunburn Minor Emergencies. Buttaravoli, Philip, MD FACEP; Leffler, Stephen M., MD FACEP... © 2012.



Heat Edema

- Mild hand and foot swelling
- Appears within first few days of heat exposure
- Elevate affected areas
- Resolves spontaneously



Prickly Heat (Miliaria)

- Acute inflammation of sweat glands
- Itching is early symptom
- Can become infected
- Avoid strenuous activity



Miliaria Treatment of Skin Disease: Comprehensive Therapeutic Strategies. © 2018.



Heat Syncope

- Low blood pressure
- Remove victim from heat source
- Give fluids



Heat Cramps

- Painful, involuntary spasms
- Excessive water and salt/ electrolyte loss
- Fluid Replacement with IV NS or LR



Photo by Lance Cpl. Scott L. Tomaszyci II Marine Expeditionary Force



Heat Exhaustion

- Excessive water and salt/ electrolyte loss
- Non-specific symptoms
- May or may not lose consciousness
- Core temp
- Remove from heat
- Allow patient to rest
- Fluid Replacement



Heat Stroke

- Collapse of body's thermal regulatory
- True medical emergency
- Rapid assessment and initial resuscitation is critical



Photograph courtesy of the Korey Stringer Institute: ksi.uconn.edu . Used with permission, © 2014.



Heat Stroke (Cont.)

- Skin: hot, dry, red, unable to sweat
- Neurologic impairment
- Irritability, bizarre behavior, hallucinations
- Combativeness
- Coma



Treating Heat Stroke

- Activate EMS immediately
- Get others to assist
- Remove patient from heat exposure
- Maintain airway
- Oxygen by face mask



Treating Heat Stroke (Cont.)

- Put two 18g IV lines, one on each arm
- Serial vital signs - rectal temperature, BP, HR, RR, lung exam
- Rapidly Cool
- Transfer to the hospital ASAP



Types of Cold Stress Injuries

Four common types of cold stress injuries:

- Cold Shock
- Non-freezing Injuries
- Freezing Injuries
- Hypothermia



Photo by Pfc. Kasey Peacock III Marine Expeditionary Force



Cold Shock

- Not true “shock”
- Rapid loss of body heat



Non-Freezing Cold Injury

- Trench Foot
 - Cold, Numbness, Pallor, Swelling
 - May result in peripheral neuropathy
- Chilblain
 - Red or purple discoloration



Frostbite and Nonfreezing Cold Injuries Rosen's Emergency Medicine: Concepts and Clinical Practice. © 2018.



Freezing Cold Injuries

- Frostbite
 - Below freezing
 - Classified as:
 - 1st
 - 2nd
 - 3rd
 - 4th



Frostbite Auerbach's Wilderness Medicine. © 2017.



Hypothermia

- Cooling of the body's core temperature
- Mild: 94-97 F
- Moderate: 86-94 F
- Severe: 82.4-86 F
- Life threatening below 82.4 F



Underlying Conditions

- Exacerbate or unmask underlying conditions such as:
 - Rosacea
 - Neurosis
 - Cold Induced Urticaria
 - Vibration White-Finger

Rosacea Clinical Overview. © 2017..





Treatment of Freezing Injuries

- Treatment is crucial
- Steps must be followed and monitored to ensure the patient returns to health



Treatment of Hypothermia

- Serious condition
- Must be treated quickly
- Standard precautions
- Do not provide anything by mouth
- Do not massage extremities



Preventative Measures

- Conditioning and Acclimatization
- Adequate Fluid Intake
- Hydration
- Avoid excess caffeine and alcohol
- Clothing Awareness



Heat Condition Flag System

- Wet Bulb Globe Temperature (WBGT)
- Add 10 degrees F for full MOPP clothing, body armor and helmet



(U.S. Navy photo by Gary Nichols/Released)

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Relevant, Responsive, Requested

2.12-2-26



White Flag

- WBGT: less than 80 F
- Extreme intense exertion
- Use caution



Green Flag

- WBGT: 80 F to 84.9 F
- Heavy exercise for un-acclimatized personnel



Yellow Flag

- WBGT: 85 F to 87.9 F
- Strenuous exercises will be suspended for un-acclimatized troops
- Avoid outdoor classes in the sun



Red Flag

- WBGT: 88 F to 89.9 F
- All PT will be halted for un-acclimatized troops
- Acclimatized troops may carry on limited activity not to exceed six hours per day



Black Flag

- WBGT: 90 F and above
- All strenuous outdoor activity will be halted for all troops.



Anaphylactic Reactions

- Human body's natural response
- Allergic reaction
- Allergen causes allergic reaction
- Anaphylaxis, or anaphylactic shock, is a severe, life-threatening reaction



Causes of Allergic Reactions

- Insects
- Foods
- Plants
- Medications
- Latex
- Others



Ferri's Clinical Advisor, Published January 1, 2018. Pages 195-196.e1. © 2018.

R³

Relevant, Responsive, Requested

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Signs and Symptoms of Allergic Reaction

- Skin
 - Itching
 - Hives
- Respiratory
 - Cough
 - Stridor
- Cardiac
 - Increased Heart rate



Habif, Thomas P., MD. Published January 1, 2016. Pages 178-217. © 2016.



Signs and Symptoms of Allergic Reaction (Cont.)

- Generalized Findings
 - Itchy eyes
 - Headache
 - Runny nose



(From General Headache Without Cause. Patient Education. Mosby)

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Relevant, Responsive, Requested

2.12-2-35



Signs and Symptoms of Allergic Reaction (Cont.)

- Signs and Symptoms of Shock
 - Altered Mental Status
 - Flushed, dry skin or pale, cool, clammy skin
 - Nausea or Vomiting
 - Changes in Vital Signs



(From General Headache Without Cause. Patient Education. Mosby)

R³

Relevant, Responsive, Requested

2.12-2-36



Patient Assessment

- Take Standard Precautions
- Perform primary assessment
- Perform secondary assessment
- Assess baseline vital signs



Treating Anaphylactic Shock

- Take standard precautions
- Perform patient assessment
- Obtain vital signs
- Assess airway and breathing
- Epinephrine auto-injector determination
- Transport



Envenomation

- Injuries more common than generally realized
- Clinical manifestations associated with envenomization include:
 - Anaphylactic shock
 - Dermatologic manifestations



Arthropod Venom

- Mixtures of four toxic types
 - Vesicating
 - Neurotoxic
 - Cytolytic
 - Hemolytic



Bites by Venomous and Nonvenomous Reptiles Worldwide Auerbach's Wilderness Medicine. © 2017.

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Relevant, Responsive, Requested

2.12-2-40



Assess Insect Bites and Stings

- Gather information
- Assess for common signs and symptoms



(U.S. Navy photo by Mass Communication Specialist 2nd Class Mark Logico/Released

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Relevant, Responsive, Requested

2.12-2-41



Treat Insect Bites and Stings

- First aid for envenomation depends upon the nature of the venom.
 - Treat for Shock
 - Call Medical Direction



Allergic Reactions to Stinging and Biting Insects Clinical Immunology: Principles and Practice. © 2019.



Snakebites

- Gather Information
- Assess for common signs and symptoms



Bites by Venomous Reptiles in Canada, the United States, and Mexico Auerbach's Wilderness Medicine. Norris, Published January 1, 2017. Pages 729-760.e5. © 2017



Treating Snakebites

- Call medical direction
- Treat for Shock
- Keep Patient Calm



Wilderness & Environmental Medicine. Published June 1, 2016. Volume 27, Issue 2. Pages 266-270. © 2016.



Assess Scorpion Stings

- Graded on a scale of I-IV:

— I

— II

— III

— IV



Wilderness & Environmental Medicine. © 2017

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Relevant, Responsive, Requested

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Treating Scorpion Stings

- Monitor ABC's
- Supportive Therapy
- Ice
- Tetanus
- May require hospitalization and antivenom



Suresh, Saraswathivilasam S., MS Orth, et.al. © 2014



Summary and Review

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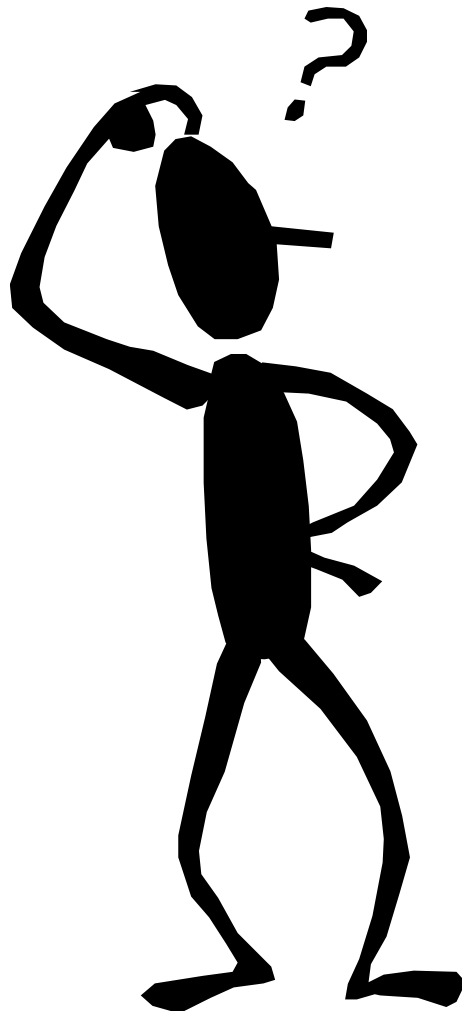


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Questions



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Relevant, Responsive, Requested

2.12-2-49



Application

- Job Sheet SCSC 2.12-3, Environmental Bites and Stings
- Job Sheet SCSC 2.12-4, Environmental Cold and Heat Injuries
- SCSC Performance Test 11
- SCSC Performance Test 12