



Environmental Emergencies



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Scenario 1: 32 YOF with pain and difficulty breathing

Primary assessment:

AxO x4

A - Completely patent airway

B - 27 breaths/minute, normal rhythm, labored (gasping for air). Normal lung sounds. SpO2 92%

C - Warm skin, under 2 seconds cap refill, pulse: 110 regular

General impression: 32 y/o F at the beach with muscle pain and difficulty breathing.

Field impression?



Decompression Sickness



Decompression sickness

Decompression sickness is commonly known as the bends, where dissolved gases bubble out of tissues during decompression, or when someone moves from a high pressure environment to a low pressure environment quickly.

This is most commonly found in scuba diving but can also be found when flying in an unpressurized airplane or in astronauts when they are away from the spacecraft.

Signs & Symptoms

The severity of these signs and symptoms can vary a lot based on the individual

- a) Individuals bent over in excruciating pain
 - i) This occurs because air bubbles released tend to concentrate in the major joints
- b) Itching or mottled skin around the shoulders, upper chest and abdomen

In more severe cases as compared to what we saw today:

- a) ALOC
- b) Seizures
- c) Incontinence due to spinal cord defects

Risk Factors:

- a) Increased depth in diving, previous decompression sickness incident, number of consecutive days diving



Treatments

In the field, it is best to give **100% oxygen** to patients to counteract the inert gases that are bubbling...however, there isn't much that we can do.

Instead, the only definitive treatment is to place the patient in a **hyperbaric oxygen treatment chamber** in the hospital where there is a higher concentration of oxygen pressure to force tissues to absorb more oxygen.

An emergency treatment that can be done at the site, although risky, would be to recompress the patient underwater with the appropriate personnel - but this is not in EMT scope

Note that there is no diagnostic way to check if patients have decompression sickness, it is mainly based on signs and symptoms



BMRC First Aid Protocol

Call 911 - Rapid Transport is necessary

Obtain OPQRST and SAMPLE

Place patient in a position of comfort

Monitor vital signs every 5 minutes



Scenario 2: 35 y/o M- hot and dizzy sitting outside a warehouse

Primary Assessment

A&O X 2 to person, and place (not sure about time/event)

A - Airway is patent

B - rapid and shallow

C - pulse is rapid and weak, skin is flushed, hot and moist

EMTs see a male sitting on the sidewalk outside a warehouse, bent over, sweating profusely and breathing hard.

Field Impression?



Heat Cramps/Heat Exhaustion



Heat Cramps/Heat Exhaustion

S&S

Symptoms can vary depending on severity of dehydration and heat exposure

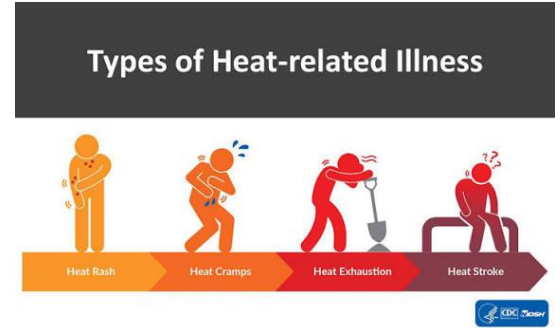
- Heavy sweating
- Muscle cramps (especially legs or abdomen)
- Dizziness or headache
- Weakness or fatigue
- Nausea or vomiting
- Rapid pulse

Treatment

- Move patient to a cool shaded area
- Loosen or remove excess clothing
- Provide cooling with water, mist, or ice packs
- Encourage oral fluids if patient is conscious
- Monitor vital signs
- Rapid transport if symptoms worsen

Prevention:

- Stay well hydrated
- Wear lightweight, breathable clothing
- Take frequent breaks in shaded or cool areas
- Avoid prolonged activity in extreme heat



Hyperthermia

S&S

- High body temperature
- Dizziness, headache, nausea
- Rapid weak pulse
- ALOC

Prevention

- Hydrate
- Wear lightweight clothing + sunscreen
- Take breaks

Treatment:

- Move patient into cooler area
- Mist patient with water to promote evaporative cooling
- Can be more active when cooling down when compared with hypothermia
- Rapid transport



Hypothermia

S&S

- Uncontrollable shivering
- Cold or pale skin
- Slurred speech with ALOC
- Shallow breathing
- Paradoxical undressing

Mild Hypothermia: **93.2°F < Temp < 98.0°F**

- Patient is alert, shivering, and responsive

Moderate (**86.0°F < Temp < 93.2°F**) or severe hypothermia (**Temp < 86.0°F**)

Prevention

- Keep body warm + dry
- Protect extremities
- Fuel yourself

Treatment

- Move to a warm dry place
- Remove wet clothing, give a blanket
- Humidified oxygen
- DO NOT rapidly rewarm pt.
- Rapid transport in supine

For mild hypothermia: Place the patient in a warm environment and remove wet clothing

Moderate to severe: Do not try to actively rewarm the patient

- Remove the patient from the cold environment
- Remove wet clothing, cover with a blanket, and transport



Temperature-Induced Shock

S&S

- AMS (confused, agitated)
- Hot, flushed skin
- Tachycardia & Hypotension
- N&V, Headache
- Potential Seizures

Prevention

- Maintain adequate hydration
- Avoid prolonged exposure to extreme heat
- Wear lightweight, breathable clothing
- Take breaks in cool/shaded areas

Treatment

- Move patient to cool environment
- Remove excess clothing
- Administer high-flow O2 if indicated
- Begin active cooling (ice packs, cool water, fan)
- **Rapid transport** & continuous monitoring every 5 minutes



Lightning Strikes / Electric Shocks

S&S

- Unresponsiveness
- Trouble breathing or lack of breathing
- Burn injuries
- Open wounds
- Confusion
- SOB
- Broken bones
- Weak/irregular/no pulse

Treatment

- First ensure the patient has been evacuated from the source
- Early O2 therapy with high flow oxygen



Altitude Related Emergencies

High Altitude Pulmonary Edema (HAPE)

- **S&S**
 - SOB
 - Cough with pink sputum
 - Cyanosis
- **Treatment**
 - Immediate descent
 - Oxygen

High-Altitude Cerebral Edema (HACE): swelling of the brain when one reaches high altitudes

- **S&S**
 - Severe, constant, throbbing headache, N&V
 - Extreme fatigue
 - LOC
- **Treatment**
 - Immediate descent
 - Supplemental O₂



Drowning

S&S: Wide range/presentation- depends on how long the patient was underwater

- Coughing
- Wheezing
- Fatigue
- Cyanosis

Treatment

- Provide rescue ventilations
- If patient is in cardiac arrest, **start CPR and get an AED**
 - Before shocking, dry the patient

Prevention

- Active supervision of kids
- Recognizing the symptoms of drowning



Alco Protocols

Patient Care Policy (General)

Modified On: December 1, 2011

HYPERTHERMIA / HEAT ILLNESS

- **Routine Medical Care**
- Protect patient from environment.
- If the patient is in extremis, begin treatment prior to secondary survey.
- Consider: the environment, patient age, and pre-existing conditions.

1. SIGNS AND SYMPTOMS OF A HEAT EMERGENCY

- Weakness or exhaustion
- Dizziness
- Headache
- Sweating may or may not be present
- Fainting or feeling faint
- Rapid heart rate
- Muscle cramps
- Altered mental status (coma, seizures, delirium)

2. PREEXISTING CONDITIONS THAT CAN CONTRIBUTE TO A HEAT EMERGENCY:

- ▶ **Psychiatric disorder** (both because of the medications taken and perhaps the patient's poor judgement)
- ▶ **Heart disease**
- ▶ **Diabetes**
- ▶ **Alcohol**
- ▶ **Fever**
- ▶ **Fatigue**
- ▶ **Obesity**
- ▶ **Dehydration** (either decreased fluid intake or sweating)
- ▶ **Medications**

3. TREATMENT:

3.1 If the patient is conscious:

- 3.1.1 Remove patient from hot environment
- 3.1.2 Loosen or remove clothing
- 3.1.3 Place in supine position with legs elevated
- 3.1.4 Administer O₂
- 3.1.5 Fan the patient
- 3.1.6 Water may be given if patient is alert, has a gag reflex, and is not nauseated

3.2 If altered mental status is present: (see above)

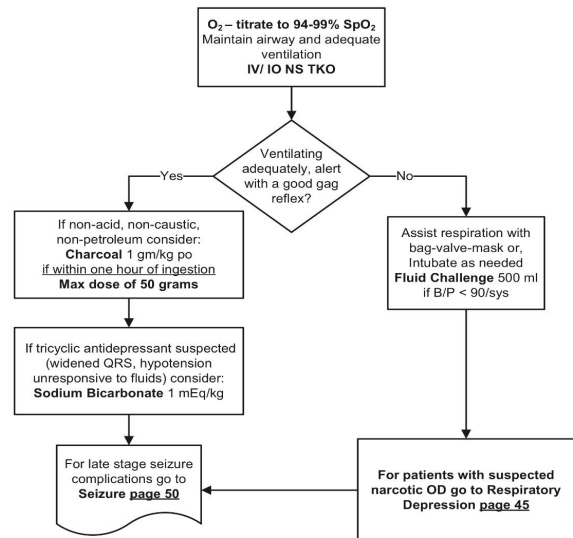
- 3.2.1 Place on left side and monitor airway
- 3.2.2 Wet the skin and fan aggressively
- 3.2.3 Apply cold packs to the axillae, groin and neck (if available)
- 3.2.4 Administer IV fluid challenge (250-500 mL NS)
- 3.2.5 Transport immediately

Patient Care Policy (Adult)

Modified On: August 1, 2016

POISONING | INGESTION | OVERDOSE

- **Routine Medical Care**
- **Protect Yourself!** - See Hazardous Materials Incidents - EMS Response [page 151](#)
- **Identify substance.** - Bring any containers, labels or a sample (if safe) into the hospital with the patient. Determine type, amount and time of the exposure.
- **Consult the Base Physician:**
 - If **organophosphate poisoning** suspected*
 - If **calcium channel or beta blocker OD** suspected*
 - For treatment options for specific exposures
- * Consider contacting Poison Control for other substances **800-222-1222**
- Remove contaminated clothing. Brush off powders, wash off liquids with copious amounts H₂O



Burns

Rule of 9s

- Tells you how much of the body got burned

Superficial: only affect the epidermis

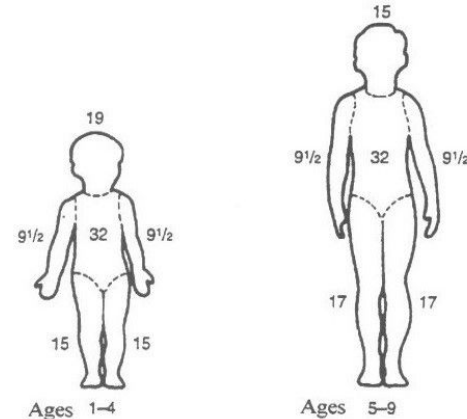
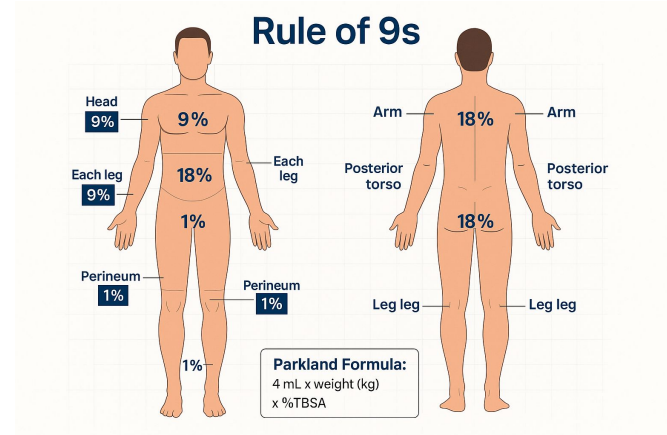
- Dry, red painful skin
- No blisters
- Example: sunburn
- Treatment: keep clean, run under cool water

Partial Thickness: affects epidermis and part of the dermis layer

- Severe pain, redness, blisters
- Due to hot liquids
- Treatment: wound care, run under cool water, prevent infections

Full Thickness: affects all layers of the skin and underlying fat

- Skin can appear white, black, or leathery
- Nerve damage
- Apply cool water, call 911
- Can cause shock



Crowd Syndrome

Crowd syndrome (also called compressive asphyxia) occurs when people in a dense crowd are pressed together so tightly that the chest cannot expand properly, preventing normal breathing.

S&S:

- Difficulty breathing / shortness of breath
- Cyanosis (bluish lips or skin)
- Chest pain or tightness
- Anxiety or agitation

Prevention

- Avoid overcrowded areas and unsafe crowd density
- Maintain clear exit routes at large events
- Crowd control and event safety planning

Treatment

- Remove the patient from the crowd / compressive environment
- ABCs, Provide high-flow oxygen if needed
- Treat for shock and monitor vital signs
- Rapid transport



Bites/Stings

Anaphylaxis

Snake bites

- Venomous
- Non-venomous

Spider bites

- Venomous
- Non-venomous
- Black Widow Spider

Rattlesnake bites

Tick bites → possible diseases such as

Lyme Disease and Rocky Mountain

Spotted Fever



Major Precautions

- Monitor for anaphylaxis and airway compromise
- Keep the patient calm and limit movement
- Immobilize the affected limb when possible
- Remove jewelry or tight clothing
- Do NOT cut the wound, suck venom, or apply ice
- Watch for rapid swelling or systemic symptoms

General Bite / Sting Care

- Ensure scene safety and PPE
- Assess airway, breathing, circulation
- Provide oxygen if needed
- Remove stingers or ticks when appropriate
- Transport for medical evaluation, especially for venomous bites or allergic reactions

**POISON CONTROL NUMBER:
800-222-1222**



Scene Safety In Environmental Emergencies

- Safety of you COMES first, and then your partner, and then your patient!
- Don't want to end up with two patients!



Kahoot Questions

