

OUCH!

First Aid & Trauma Care for The Land Surveyor

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Trauma Services



Disclosures

- *No conflicts of interest*
- *No financial disclosures*



Trauma: The Basics

Trauma Facts & Figures

- The leading cause of death for all humans, age 0 – 45 years
- Fourth leading cause of death overall for all ages
 - *Estimated 79,000 deaths annually in the U.S. from trauma*
 - *An American dies every 3 ½ minutes from traumatic injury*
- 41 million Emergency Department visits each year in the U.S.



Injuries in Pennsylvania

2021 Data:

- Published November 2023
 - [Injury County Profiles 2021.pdf \(pa.gov\)](#)
- Total Injured: 137,492
 - Males (all ages): 67,548
 - Females (all ages): 69,927
- Mechanism
 - Falls: 79,482
 - Motor Vehicle Collisions: 6,350
 - Firearm: 2,326



Surveyors' Injuries – The DATA



Two Types of Trauma: Blunt & Penetrating

Types of Trauma: Blunt & Penetrating

- Blunt:

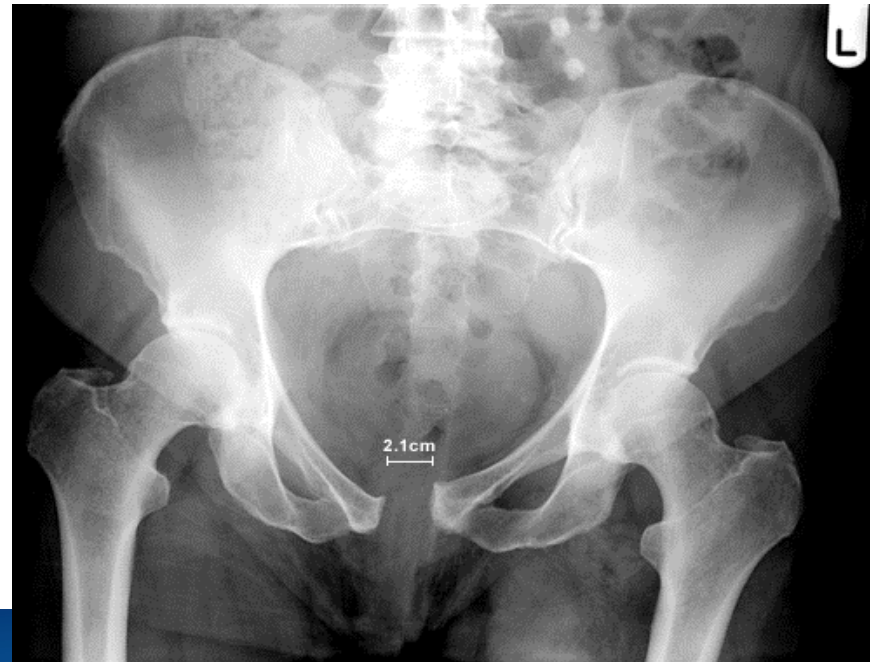
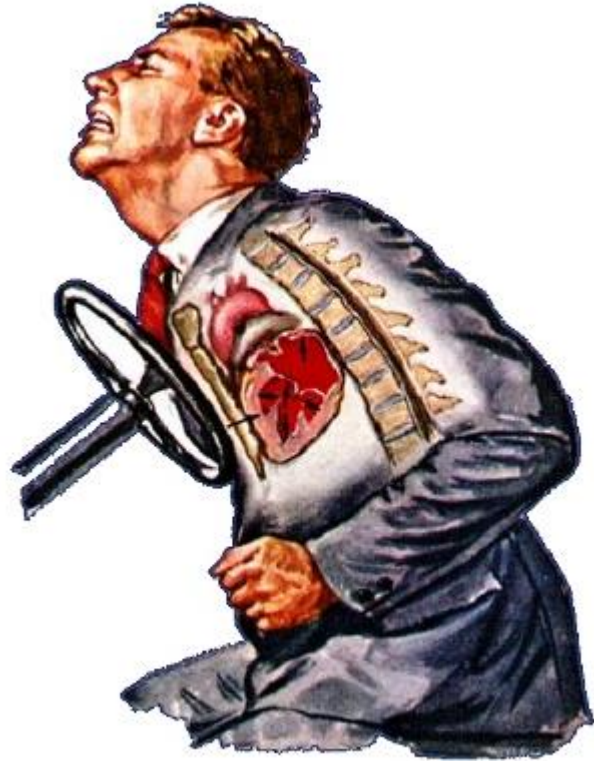
- “An injury to the body caused by forceful impact, injury, or physical attack with a dull object or surface”
 - *Ex: Fall out a second story window, landing on sidewalk below.*
 - *Ex: Motor vehicle collision, head on – driver hits the steering wheel*

- Penetrating:

- “Occurs when a foreign object pierces the skin and enters the body, creating a wound.”
 - *Ex: Fall out a second story window, impaled by iron fence on way down*
 - *Ex: Stabbed with a steak knife*



Blunt Trauma



Penetrating Trauma



How do Surveyors Get Hurt?

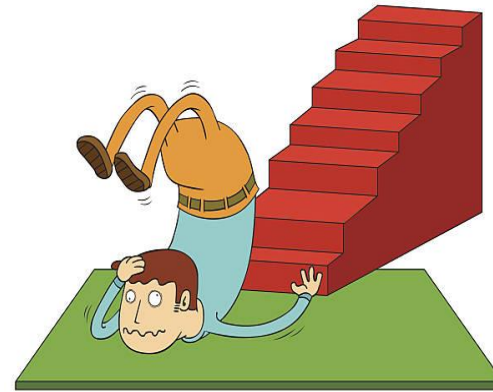
Motor Vehicle Crashes & Pedestrians

- Motor Vehicle Collisions to and from the Site
- Surveyor struck by a vehicle while working
- Distracted Driving/ Distracted “Pedestrian-ing”



Construction Sites

- Falls
 - Off of structures
 - Ground level falls
 - Uneven terrain
- Struck by Equipment
 - Construction vehicles
 - Many moving “parts and pieces” on a site



Animals, Critters, and “Nope Ropes”

- Insects
- Snakes
- Critters



Exposure to Cold Environments

- Frostbite
 - Freezing of the skin and underlying tissues
- Hypothermia
 - Medical emergency, body temp less than 95 degrees
- Trench Foot
 - Occurs when feet are wet and cold for prolonged period of time



Heat Related Illnesses

- **Heat Rash**

- Tiny, itchy bumps that develop on your body, when sweat gets trapped beneath your skin

- **Heat Cramps**

- Warning Sign!! – Your body is telling you that you need to cool down before you develop heat exhaustion / heat stroke

- **Heat Exhaustion**

- Body temperature is elevated, but below 104 degrees
- Happens when you lose too much water or sodium, usually from exertion in the heat
- Symptoms: nausea, dizziness, vomiting, headache

- **Heat Stroke**

- Life-Threatening heat illness
- Internal body temperature is above 104 degrees
- Symptoms: confusion, behavior changes, slurred speech



How Do I Treat the Injuries?

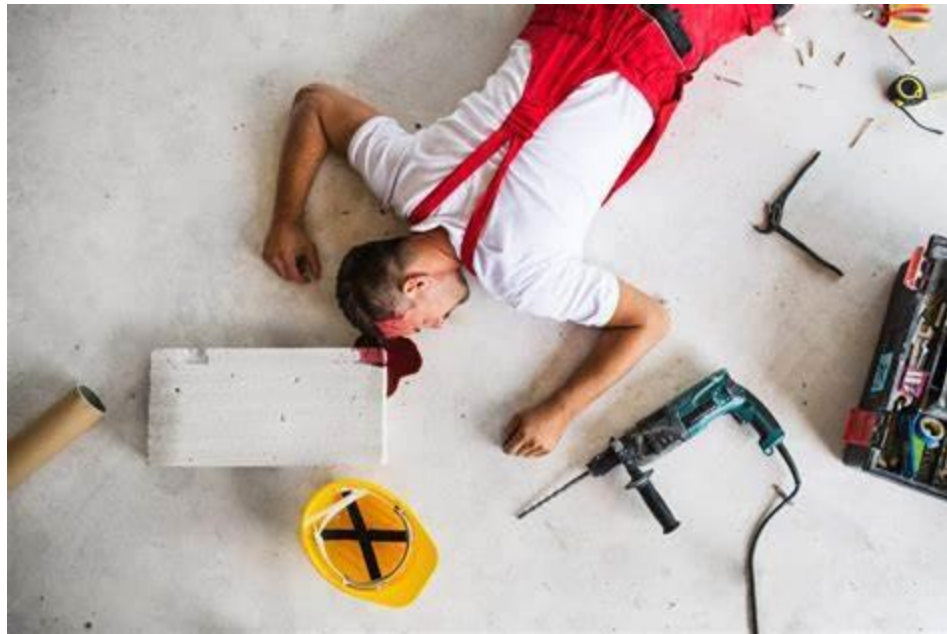
First Things First...

- Don't panic...
 - take a deep breath
- Scene Safety
- Call for Help



Trauma Basics

- MARCH
 - **M**assive Hemorrhage
 - **A**irway
 - **R**espiratory
 - **C**irculation
 - **H**ypothermia



M – Massive Bleeding

- Find the bleeding site
- Apply pressure, if able
 - Don't let up until relieved by a first responder
- Pack the wound if larger, then hold pressure
- If on an arm or leg, consider a tourniquet
 - Not a homemade one!!!
 - Holding pressure is much more effective than an improvised tourniquet...unless you've practiced repeatedly with this skill



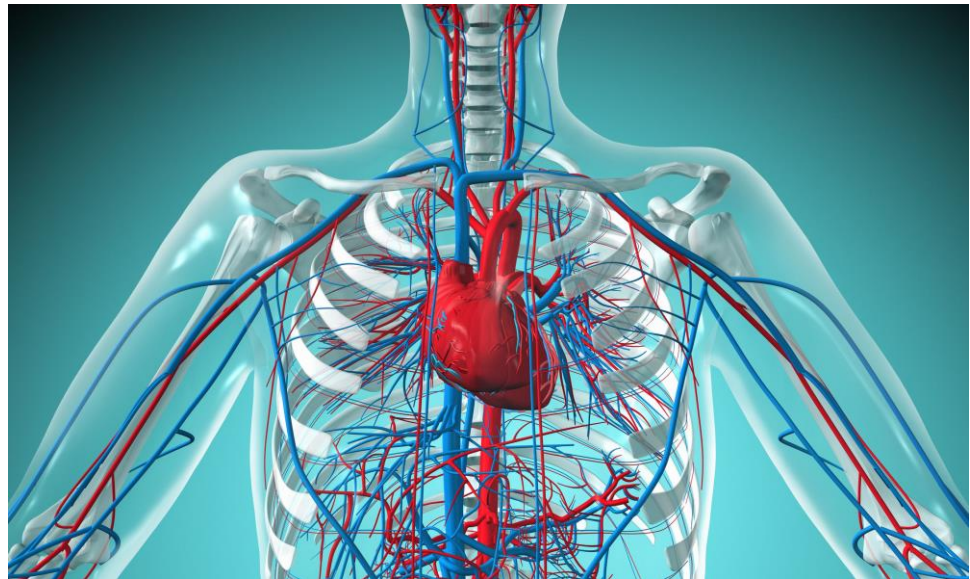
Airway/ Respiratory

- Is the injured person talking to you?
 - If yes, they have an “airway”...
- Visible injuries in the mouth?
- How is he / she breathing?
 - Fast? Slow?
 - Able to talk and breathe at the same time?



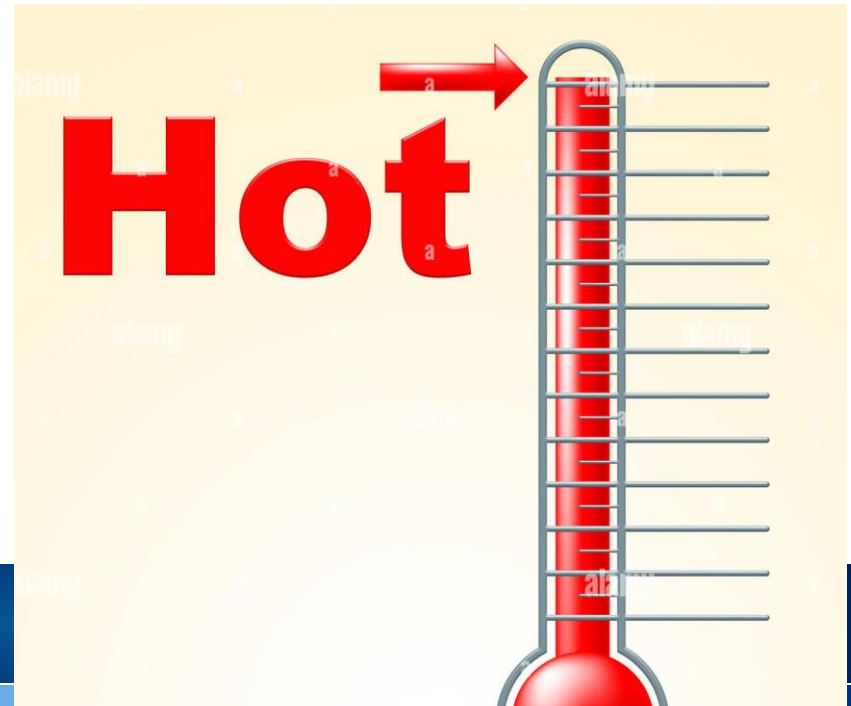
Circulation

- Color?
 - Pale? Ashen?
 - Gums white instead of pink?
- Skin temperature?
 - Cool to touch?
- Moisture?
 - Sweaty?
 - Clammy?



Hypothermia (prevention)

- Can an in person become “hypothermic” in July in PA, when it’s 106 degrees outside?
 - Let’s discuss....



Preventing Hypothermia

- Get them out of the elements
 - If raining/ snowing: seek cover
- Remove wet clothing
- Dry them off
- Cover them up with blankets, coats, etc
- If possible, put something between the ground and them (blanket, coats, etc)



Spine Immobilization



Twists, Sprains, & Fractures

- Look for Bleeding
 - Address any bleeding first
- Immobilization
 - First Aid Kits?
 - Ace wraps
 - Improvise...
- Splinting



Animal Bites

• Snake Bites

- Seek medical attention immediately (anti-venom is primary treatment)
- Move away from snake to prevent additional bites
- Move slowly
- Clean bite with soap and water
- Apply a clean, dry bandage
- Remove constricting clothing and jewelry
- Keep bite below heart if possible

• Animal Bites

- Control bleeding
- If not bleeding badly, wash wound with soap and water
- Rinse wound for at least 3-5 minutes
- Apply an antibiotic cream
- Seek medical care if:
 - *Deep puncture wound*
 - *Skin is badly torn or bleeding badly*
 - *You aren't sure if the animal has had rabies shots*



Bee Stings

- Move to a safe area to avoid additional stings
- Remove any stingers
- Wash with soap and water
- Apply cold – ice or colt, wet washcloth 10 to 20 minutes
- Treat any swelling:
 - Pain: ibuprofen (motrin) or acetaminophen (Tylenol)
 - Swelling: antihistamine (Benadryl, etc)
 - *Remember: Benadryl will make you drowsy!!*



Known Bee Sting Allergy

- Have your EpiPen with you!
- Know how to use it...



Exposure to Cold

- Early signs of hypothermia:
 - Shivering, fatigue, loss of coordination, confusion, disorientation
- Late signs of hypothermia:
 - No shivering, blue skin, dilated pupils, slowed pulse, slowed breathing, loss of consciousness
 - **CALL FOR HELP IMMEDIATELY**
- In the meantime:
 - Move the worker to a warm environment (warmed vehicle, warm room)
 - Remove any wet clothing & replace with warm, dry clothing or blankets
 - If victim is conscious, provide warm non-alcoholic fluid



Exposure to Heat

- Symptoms:

- Abnormal thinking
- Abnormal behavior
- Slurred speech
- Seizures
- Fainting
- Heavy sweating/ hot dry skin

- Treatment:

- *Call 911 immediately*
- *Cool worker with ice/ water*
- *Move victim to shade if possible*

- Symptoms:

- Headache, nausea
- Weakness
- Dizziness
- Thirst
- Decreased urine output

- Treatment:

- *Give cool water to drink*
- *Stay with the person*
- *Remove layers of clothes*
- *Cool with water, ice, fan*
- *Consider seeking medical care*



**How Can I Prevent The Injuries
In The First Place??**

Are Most Injuries Preventable?

- Let's discuss...



Preventing Injuries on the Job



Plan Ahead!

- *Know your role & responsibilities*
- *Your own health condition*
 - *May want to share it with your manager, coworker*
 - *Ex: allergic to bee stings, EpiPen*
- *Plan before you go – Safety Plan*
 - *“Worst Case Scenario”*
 - *Emergency action plan*
 - *Nearest hospital to you*
 - *Communication plan*
 - *Especially when working in a remote location!*



Clothing

- Wear the appropriate clothing for the job
 - Safety boots
 - Long pants/ shirts
 - Protect your HEAD!!
 - Gloves
 - Weather appropriate
 - Personal Protective Equipment
 - Eyes and Ears
 - Safety Vest/ High Vis Vest



What About your Equipment?

- Safety always comes first
 - Inspect equipment before use... every time
 - Follow the instruction manual
 - If it's broken, don't use it!
- Sharp tools
 - Gloves



Motor Vehicle Crashes

- SLOW DOWN & CHILL OUT!!
- Put. The. Phone. Down.
- Park vehicle off the road – Exit on the non-traffic side
- Do not assume that other drivers see you!
- Wear your seatbelt... EVERY TIME
 - Airbags are only ½ of the solution



Impaired Driving...

- What makes a person “impaired” behind the wheel?
 - Sleep deprivation
 - Alcohol
 - Drugs – recreational and prescription
 - Recreational
 - Marijuana – even if you have a medical marijuana card
 - Prescription
 - Pain meds
 - Sleep aids
 - Antihistamines / Allergy Medications
 - Anxiety meds
 - *If you have concerns, call your doctor and ask*



Pedestrian vs Car Crashes

- Don't assume that cars are watching for you
- Put your phone down so you can keep an eye on the other drivers
- Always wear your high visibility PPE
- Signage – do you post big signs that surveyors are in the area?



Preventing Falls

- What kinds of falls are we talking about?
 - Sides/ edges of any surface
 - High ground to lower ground
 - Through the roof
 - Through the floor to another surface below
 - On the same level
 - Uneven terrain
 - Slippery surfaces



Preventing Falls on the Job

- Wear proper footwear
- Know the terrain as best as you can
 - Did you do a risk assessment prior to this job?
- Slow down – Use caution
 - “Complacency Kills”



Cold Exposure – Preventing Cold Related Illness

- Dress properly for the cold
 - Inner layer, mid-layer, outer layer – *wool, thermal wear*
 - Hat (that covers ears), gloves, knit face covering over mouth/nose
 - Insulated, water proof boots
- Stay dry
 - Bring extra clothes to replace wet clothes, if needed
- Schedule repair jobs/ non essential jobs for warmer months
- Limit time spent outside on extremely cold days
- Have a way to communicate, especially in remote areas



Heat Exposure – Preventing Heat Related Illnesses

- Know Your Risk Factors
 - Medications
 - Antihistamines, diuretics, blood pressure meds
 - Health Factors
 - Diabetes, obesity, high blood pressure, heart disease
 - Physical Conditions
 - Older age, lower fitness ability, pregnancy, acclimatization concerns
 - Behaviors
 - Recent alcohol use, illicit drug use, cocaine, low intake of water



Heat Exposure – Preventing Problems

- Have a heat plan
 - Monitoring, acclimatization, work and rest, buddy system, protocols for first aid
- Provide training on heat illnesses
- Modify working hours to reduce heat exposure
 - Rotate workers, modify work hours
- Allow frequent rest breaks
 - Long enough to recover from environment, shade, cooler areas, tents/ canopies
- Encourage hydration
 - Balance between adequate hydration and overhydration
 - Caution with electrolyte replacements
- Be prepared for an emergency



Know safety, no injury. No safety, know injury.

(Anonymous)

izquotes.com

Thank You!



SESSION EVALUATION



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