

Triage during Mass Casualty Incident by the layperson.

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May 8, 2025

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My name is Larry K7TME. I am in East Co. I have been with CARES for 7 years.

Brief background-

I was in the Marine Corps infantry, preceding and during the Gulf Wars. I became interested in medicine from the combat first aid training I received from our Corpsman , I have great respect our Navy Corpsman.

After the Marines I was a Volunteer Wildland Firefighter and EMT in Montana. My nursing history Oncology, Pediatric Intensive Care, and Adult and Pediatric Cardiology.

***Warning I have some pictures that may be disturbing for some you. I will try to give you a heads up before presenting them. Anyone overly squeamish? ***

Define some medical terms

Understand the importance of timely intervention

Introduce and focus on life saving measures that anyone can do.

Mass Casualty



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First what is a mass casualty?

A mass casualty incident describes an incident in which emergency medical services resources, such as personnel and equipment, are overwhelmed by the number and severity of casualties.

The initial amount of medical help available might be less than needed for the large numbers of patients.

Therefore, the affected community needs to be prepared to manage the incident during the early stages.

After a disaster occurs, emergency services need time to arrive at the incident scene. Which may be hours or in some cases days.

Mass Casualty



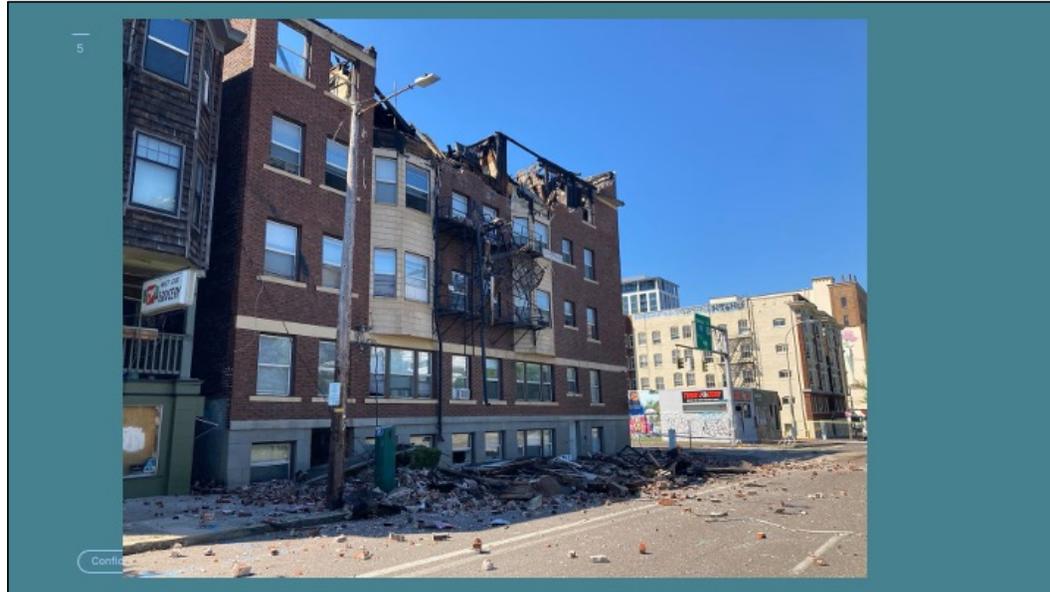
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How many from this one? When the earthquake hits who knows how many people will be injured?

A "simultaneous mass casualty incident" refers to multiple mass casualty events happening at the same time, overwhelming available resources and care. This can include natural disasters, terrorist attacks, or large-scale accidents occurring concurrently, placing a strain on healthcare systems and emergency response.



Apartment complex in SW Portland



This is a simulation of a Burnside bridge collapse.

7 T R I A G E



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When the big one hit this could be one scene of many across our County. How many victims do you think they could have from this scene? Old school bus around 75, City bus around 75.

Triage

'Treat first what kills first'

'do the most, for the most'

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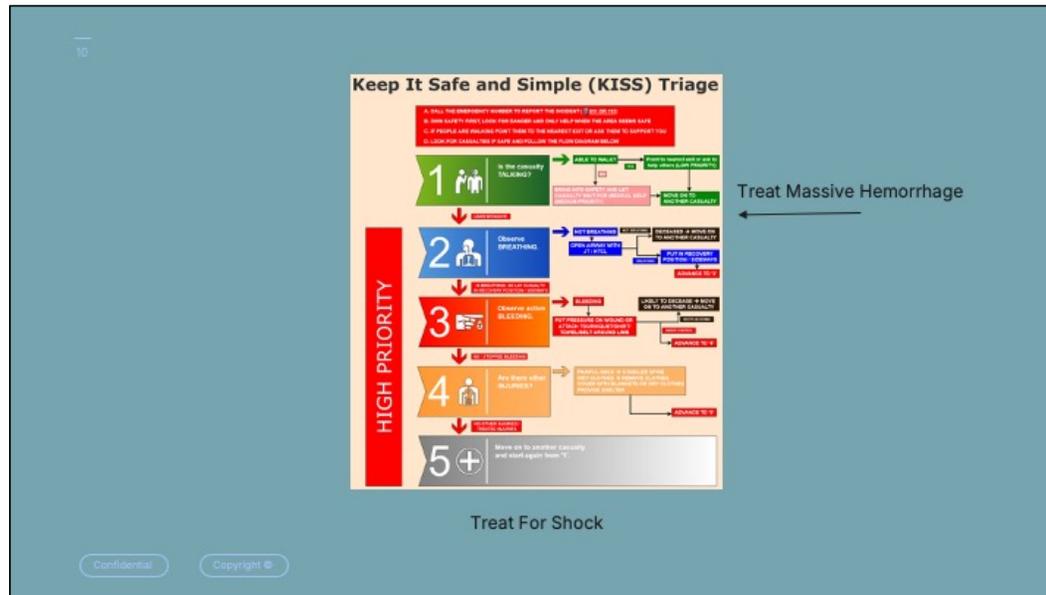
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Categorizing casualties by priority of medical needs until transport and evacuation are available, is called triage.

The idea behind triage is to use the available resources and treatments as efficient as possible and save the highest possible number of victims.

'treat first what kills first' and 'do the most, for the most.'

So we know what mass casualty and Triage mean.



This is the tool they came up with. Easy to use. Very simple.

Why? Because we 'treat first what kills first' and 'do the most, for the most.'

While I agree with it, it is from 2019, . From the Wildland First Responder course I am currently doing. I would only add two things First (click) Treat Massive Hemorrhage.

Traumatic brain injury (TBI) and Massive hemorrhage and are the leading cause of death in

trauma patients.

There is not a lot you can do about TBI, but massive hemorrhage can rapidly lead to hypovolemic shock and organ failure if left uncontrolled. Shock is where the body's organs are not receiving enough oxygen and nutrients.

Massive hemorrhage can also trigger a condition called coagulopathy, where the blood's ability to clot is impaired, further worsening the situation.

Any of you can save lives just by following this template.



Ok so how do we use this? First if you can activate EMS, do so.

Scene safety.

Scene safety: (Pics of unsafe scenes)

If three of four of you go running into a scene and you are injured now we have less people to help and more people that need help.

Don't become a victim.

What dangers can there be? How far away from powerlines? 50 feet or the length of a school bus

Falling debris, fire, unstable vehicle, traffic, do you smell gas? power lines down

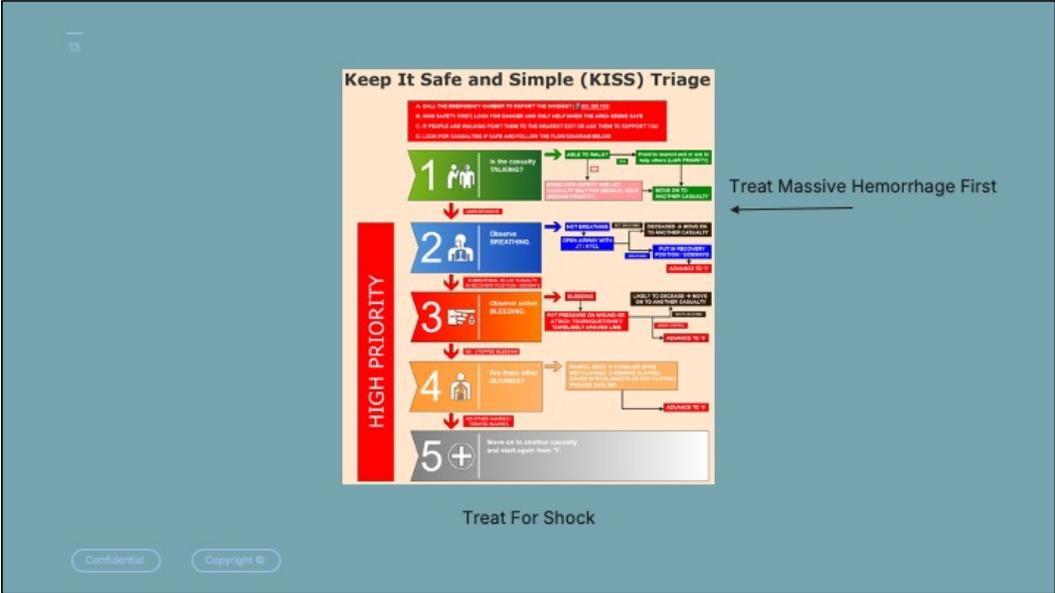
[With Philli plane pic-Wires are down. Vehicles and homes are on fire. Linemen are cutting power in area.

Med flight in Philadelphia Full fuel tanks and Oxygen tanks on board. Large debris field. 6 dead on the flight, 1 on the ground. 24 injuries..



I sure the scene was not like this only a few sec ago. Motorcycle with leaking fuel. This happens to be a high end racing bike with Aviation fuel.

It only takes a spark....



DON YOUR GLOVES.

Walking wounded is next



1) Walking wounded/Casualty: (Pics of walking wounded)

YES- Direct these people to a common area. They can help each other until help arrives. LOW PRIORITY.

Help with small wounds, distributing water, watching for degrading symptoms, emotional support.

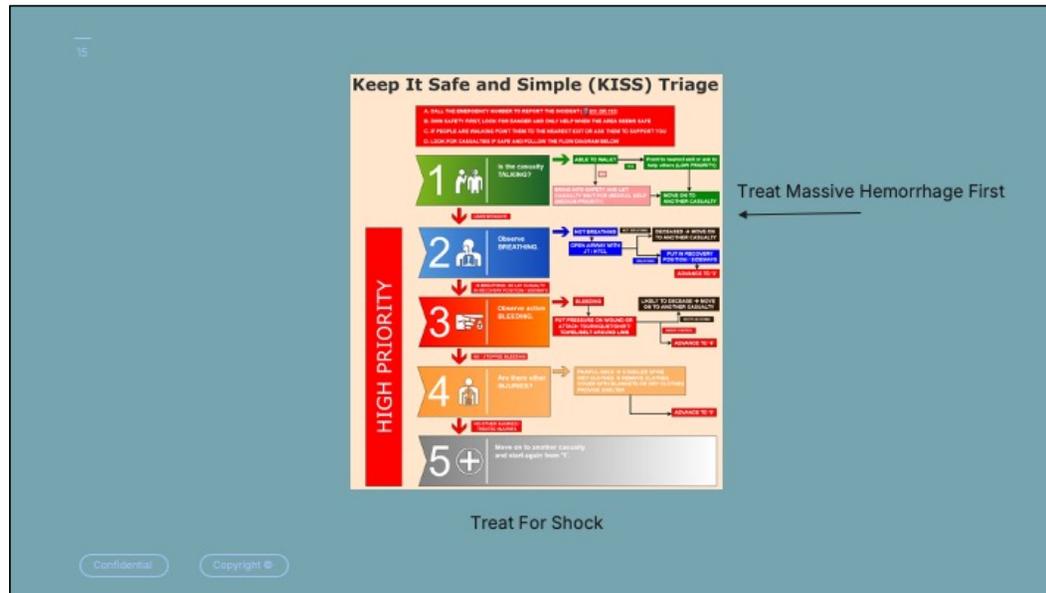
NO- Make sure they are in a safe area or move them to the closest safe area. MEDIUM PRIORITY

Do not spend much time moving; you might have

someone needing your immediate help.

You can always come back around after you have seen all the victims you can.

Move on to the next victim.

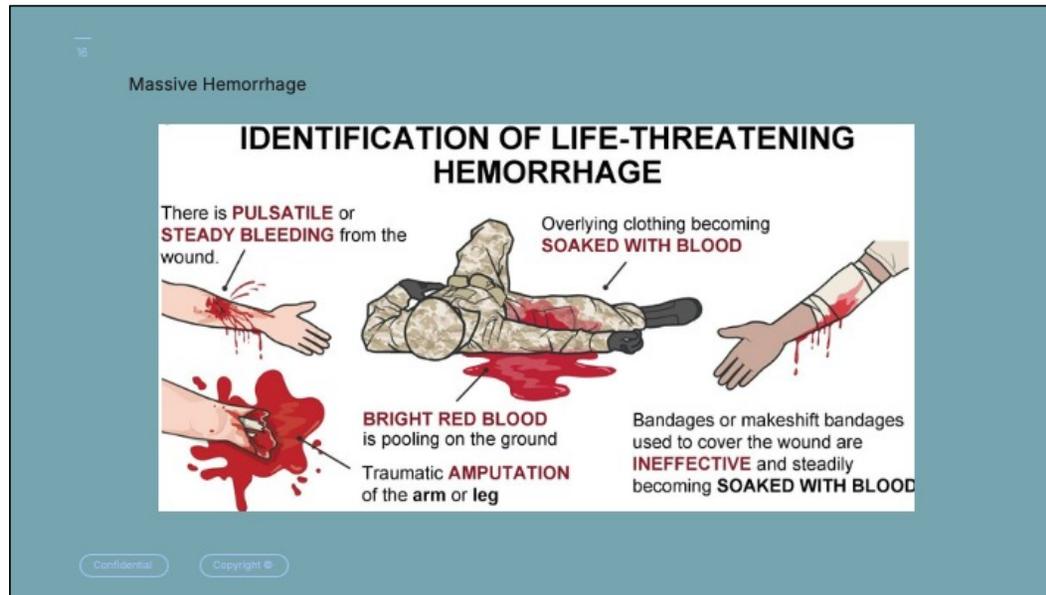


Now that we have studied the scene for unsafe situations and we have moved the walking wounded out of the area, we move on to the treatment phases. Again scan for people with massive hemorrhage.

‘treat first what kills first’ and ‘do the most, for the most.’

So let go through this thing. Are they are conscious? Ask if you can help them.

If their not conscious then it is implied that they would give consent for you to help them. Implied consent just means any reasonable person in this situation would want help.



What does Massive hemorrhage look like?

Massive Hemorrhage- HIGHEST PRIORITY FOR TREATMENT.

What does massive hemorrhage look like?

This victim is currently in the dying process.. Without blood it doesn't matter if their airway is open it doesn't matter if they are breathing. Direct pressure, wound packing, lots of gauze, early use of tourniquet.

'treat first what kills first' and 'do the most, for the most.'

Average adult has 5 liters of blood, or 1.2-1.5 gallons.

For those of you who have given a unit of blood the average adult has about 10 units of blood.

Loss of 20% can start to cause shock. Around 1000ml.

30-40% can cause syncope or passing out. 1500-2000ml.

Just about every time I have given blood my body gets a little shocky. So everyone is different.



Wound packing- Even if it slow venous bleeding this is a large wound and the victim could bleed out quickly.

Massive hemorrhage can induce clotting issues, a condition called trauma-induced coagulopathy (TIC). This occurs due to a combination of factors including blood loss, hemodilution, hypothermia, acidosis, and the trauma itself. TIC can manifest as either hypocoagulability (difficulty clotting) or hypercoagulability (excessive clotting).

Here's a more detailed explanation:

1. Mechanisms of TIC:

- **Factor Consumption:** Massive bleeding can deplete clotting factors, leading to hypocoagulability.
- **Hyperfibrinolysis:** Trauma can trigger the release of tissue plasminogen activator (tPA), which can break down clots, contributing to continued bleeding.
- **Hemodilution:** Transfusing large volumes of fluid can dilute the blood, reducing the concentration of clotting factors.
- **Hypothermia:** Lower body temperature can impair clotting factor function.
- **Acidosis:** Low blood pH can also negatively impact coagulation.

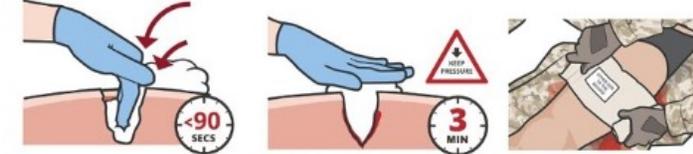
- **Platelet Dysfunction:** Platelets, which are essential for clot formation, can be impaired by various factors, including hypothermia and acidosis.

CMC
TCCC

Module 6: Massive Hemorrhage Control

DHA
DEFENSE HEALTH AGENCY
DEPARTMENT OF DEFENSE

WOUND PACKING



<90 SECS

Identify **exact source** of bleeding and **APPLY direct pressure UNTIL** gauze is placed

Pack the wound **maintaining CONSTANT** direct pressure within **90 SECONDS** to be effective

Fill and pack the wound tightly, ensuring gauze extends 1-2 inches above the skin

3 MIN

HOLD direct pressure for at least **3 MINS** (*this is necessary, even with the active ingredient in hemostatic gauze*)

When packing a large wound, more than one hemostatic gauze and/or **additional** gauze may be **needed**

Carefully observe to determine if bleeding has been **controlled**

Once you are sure the bleeding has **stopped**, apply a pressure bandage

960 x 540

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Hemostatic agents can include:

Gelatin based agents- These absorb fluid and promote clotting

Collagen based agents- They trigger platelet aggregation and reinforce the fibrin clot.

Other agents work differently, but I digress.....



Apply gauze or the cleanest cloth you can find. If it is deep pack it first the top with more. Press hard. Next go to a pressure dressing or a tourniquet.



ISRAELI BANDAGE - INTRO

I have a few short videos on this versatile bandage. I personally carry these in my pickup, jump kit and my saw box when I am out in the woods cutting firewood.



ISRAELI BANDAGE - HOW TO SELF-APPLY

I only have one thing to add. The end of this bandage has a loop you can put the arm or leg through to make it an easier application. He left that out.

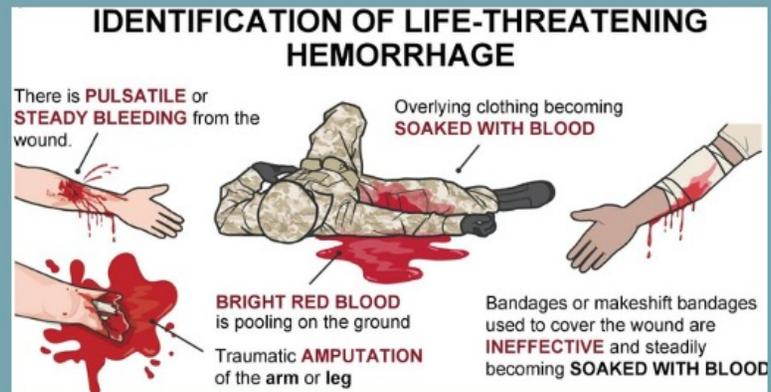


ISRAELI BANDAGE -

APPLY TO A NECK WOUND

I found this one could be helpful also.

Massive Hemorrhage



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So you have tried the previous treatments the blood is still coming.

Let's move on to Tourniquets

4 pack around \$30



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The windlass tourniquet is applied by:

- Sliding the tourniquet approximately 2 inches above the area of injury
- Tightening the tourniquet strap and attach the windlass
- Twist the windlass until bleeding stops

Improvised Tourniquet





Write the time on it for medical personnel to determine if it is safe to remove or not.



Cravat Triangular Bandage. Used as a Tourniquet. (CLICK)Toxins build up distal to the application site.

Around \$10 for 10 on Amazon.

The term "cravat" originates from the French word "cravate," which is a corruption of "croate," meaning "Croatian," referring to the neck scarves worn by Croatian soldiers in the French army during the 17th century.



What did he forget?? Write the time of application. Either on the tourniquet itself or on the victim's forehead. Have a sharpie in your kit.

Explain why the time. Medical personnel only.

Never remove a tourniquet.

- Metabolic changes
- Cardiac arrest
- Hypotension
- Pulmonary embolism
- Rhabdomyolysis
- Renal failure
- Compartment syndrome

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Here's a more detailed explanation of the dangers:

Metabolic:

- When a tourniquet is released, blood flow returns to the limb, which can cause a sudden surge of blood and metabolic waste products into the bloodstream. can lead to acidosis and hyperkalemia (high potassium levels).

Cardiac arrest:

In severe cases, particularly with prolonged tourniquet use, cardiac arrest can occur due to the systemic effects of reperfusion

Hypotension:

A decrease in blood pressure can occur as the blood volume shifts into the limb.

Pulmonary embolism:

In rare cases, blood clots can travel to the lungs, causing a pulmonary embolism.

Rhabdomyolysis:

Muscle breakdown can occur, releasing harmful substances into the bloodstream.

Renal failure:

Kidney function can be compromised due to the metabolic changes and reduced blood flow.

Compartment syndrome:

Increased pressure within a muscle compartment can lead to tissue damage and potential loss of limb function.

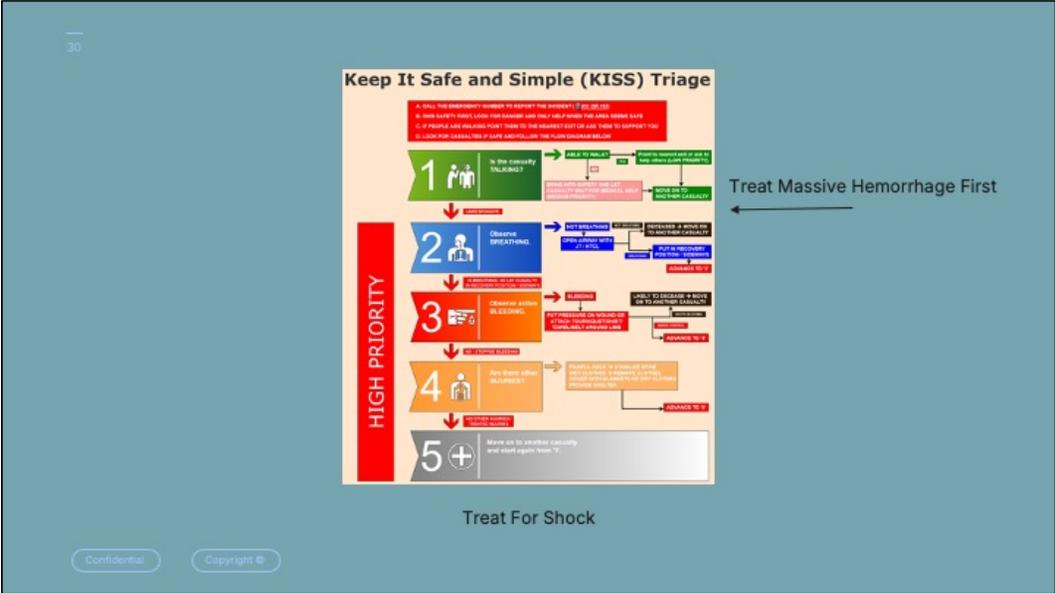
Hopefully I have talked you out of removing a tourniquet.



This is an example of a tourniquet being placed way too high. Where is the wound? See the bandage. Not sure why they did this.

If placed lower he could have had a large stump which they could fit a lower leg to. If this was hastily done it could be downgraded at the hospital. Applying a lower one then releasing the high one. **MEDICAL STAFF ONLY.**

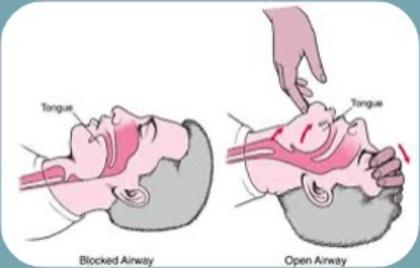
Unfortunately this tourniquet was on for four days, subsequently he lost the leg up to the tourniquet level, but he lived.



Notice how much time we have spent on bleeding.

Next step airway and breathing.

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Blocked Airway

Open Airway

Head Tilt-Chin Lift



Modified Jaw Thrust

If you suspect cervical spine injury.

Airway Breathing

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2) Airway/Breathing- (Jaw thrust and Modified Jaw thrust pics)

Not breathing? Open the airway with Jaw thrust or modified jaw thrust.. Breathing? Yes? Place into the recovery position.....

Recovery Position

Airway Breathing

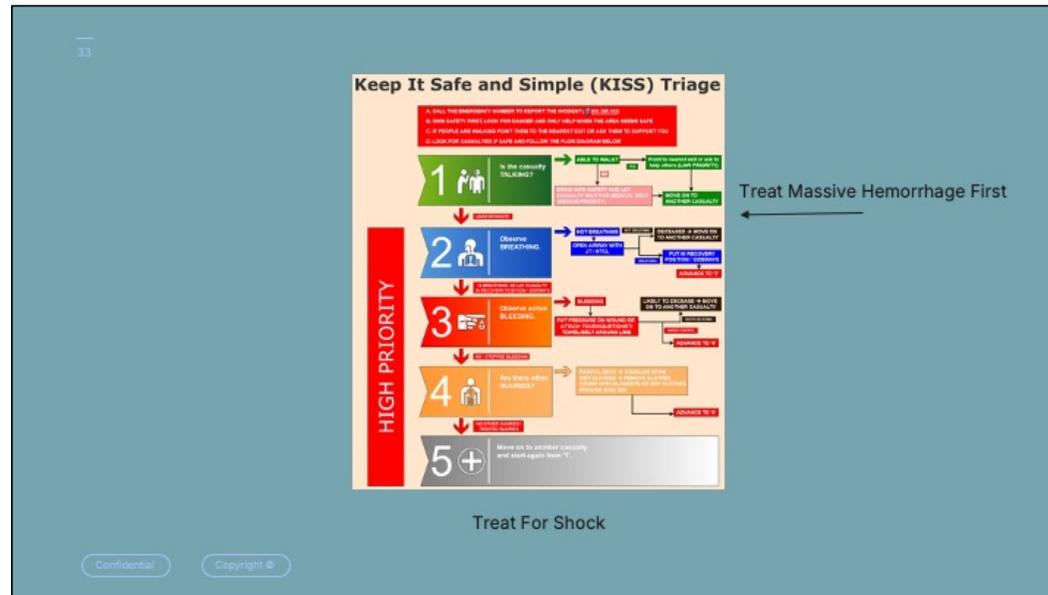


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.... then move to the next step. HIGH PRIORITY

No? They are dead. Move on to the next victim.



So massive bleeding is under control. The airway is open and the pt is breathing.

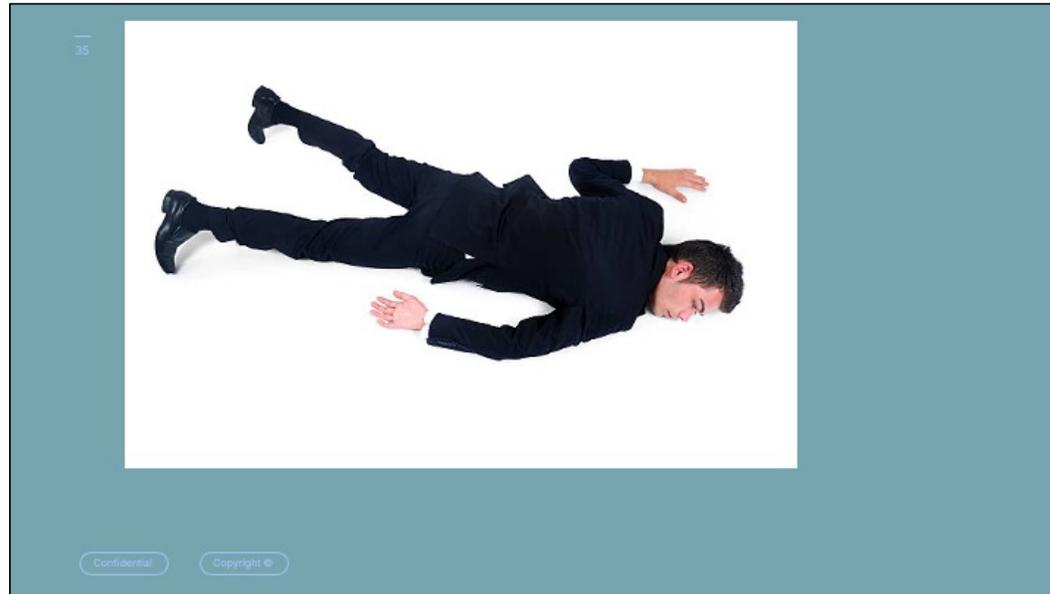
Let's check for hidden bleeding or minor bleeding. Lacerations. Crushing injuries that cause bleeding.

All bleeding will stop eventually.



3) Circulation- Where could he be bleeding from??

Check for smaller bleeding. Quickly check over the entire body for any signs of bleeding. Place pressure dressing or tourniquet to control bleeding.



Where could he be bleeding from???

Bleeding continues? Likely will die. Bleeding controlled? Move to the next step. HIGH PRIORITY



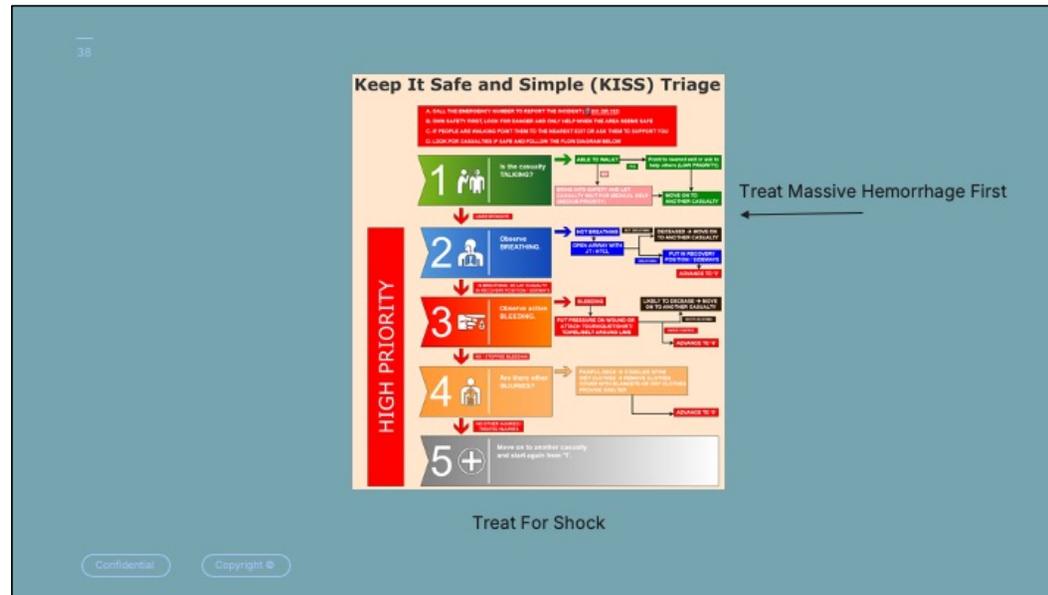
Most of the minor bleeding will be taken care of these types of bandages.

Curlex, gauze, small and large pads or trauma bandages like before.



I just liked this one. He looks like he is really pissed he got hurt.

Could be just a minor head wound, they do bleed alot or a bullet hole and he is now an angry zombie.



Other injuries.

The other leading causes of death in trauma patients are central nervous system (CNS) injury, particularly traumatic brain injury (TBI),

We have already treated for hemorrhage.

In a field setting, initial TBI treatment focuses on stabilizing the patient, ensuring adequate oxygen and blood flow to the brain, and preventing further injury, including managing airway, breathing, and circulation, while monitoring for signs of worsening condition.

Not much else we can do.



4) Other injuries: (Pics of head inj, Emergency blanket on pt)

Pain in neck or head immobilize. If you have a C collar and know how to apply it do so.

This is just wrong!!

HIGH PRIORITY



Full spinal immobilization. HIGH PRIORITY

Wet? get dry,
Immobilize broken bones?
Burns? Don't put anything on the burn other than water.
You can wrap them in gauze.
No other injuries?
Treat for shock.
Move on to the next victim and start over.

Wet? get dry, Treat for shock. Blanket. Immobilize broken bones? Burns. Don't put anything on the burn other than water.

No other injuries?

Move on to the next victim and start over.

Treat for shock

- *Cold, clammy or pale skin
- *Rapid, weak pulse.
- *Low blood pressure
- *Dizziness or lightheadedness
- *Confusion or disorientation
- *Anxiety or agitation.

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Treating for shock. He does look shocked but he does not look like he is in shock.

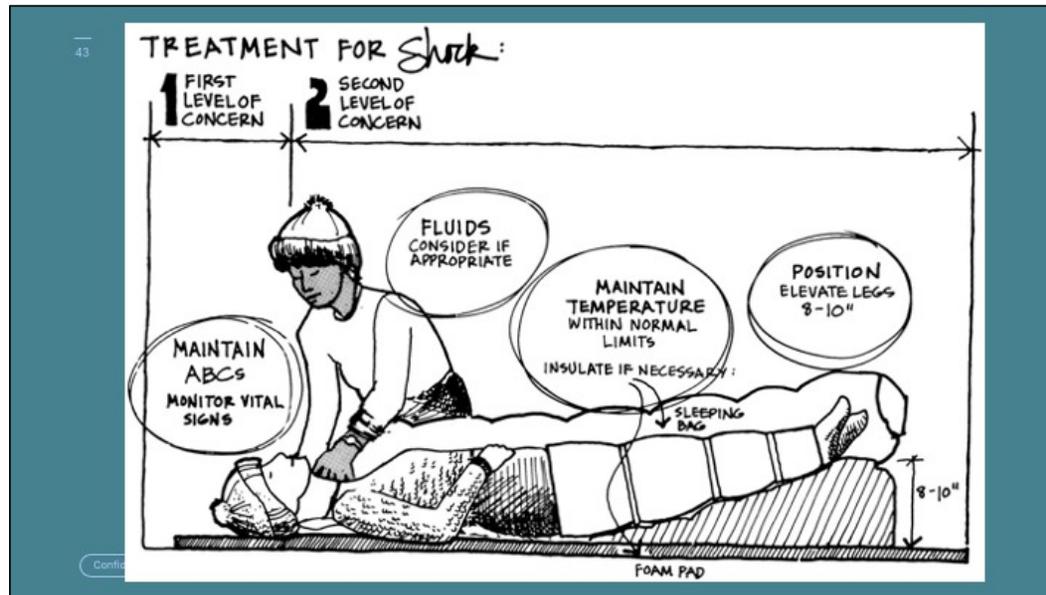
What does shock look like????

Signs of shock include:General Symptoms:

- Cold, clammy, or pale skin
- Rapid, weak pulse
- Low blood pressure
- Dizziness or lightheadedness
- Confusion or disorientation
- Anxiety or agitation

Other Symptoms:

- Nausea or vomiting
- Shortness of breath
- Chest pain
- Thirst
- Weakness or fatigue
- Seizures (in severe cases)



- Treat the cause of shock.

Lay the person down and elevate the legs and feet slightly, unless you think this may cause pain or further injury. Keep the person still. Loosen tight clothing and, if needed, cover the person with a blanket to prevent chilling.

- Lay them down on their back.
- Elevate their feet at least 12 inches above the ground. ...
- Cover them with a blanket or extra clothing to help keep them warm.
- Check their breathing and heart rate regularly for changes.

In general, providing oral fluids to an injured victim can be helpful, especially in situations where they are conscious, alert, and able to

swallow safely. However, it's crucial to assess the situation and the severity of the injury before offering fluids. For minor burns or injuries, oral fluids like water or an oral rehydration solution can help with rehydration. However, for severe injuries, shock, or if the person is unconscious or unable to swallow, intravenous fluids are usually necessary for proper resuscitation.



Emergency blankets can help to keep the heat in. Very cheap on Amazon.

Get them out of the cold and wet. Insulate from the ground.

Or get them out of the sun and heat.

Normotensive is the goal here.

That concludes my presentation.... I hope you learned something today.

Thank you
Questions or Critique?

Medical subjects you would
like to have presented?

Larry Bever K7TME

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Are there any other questions or have a
improvement I could have done?

This was my first google slides presentation so it
was fun to learn.

Are there any medical subject you would like to see
in this setting in the future?

Please let me or Steve know.