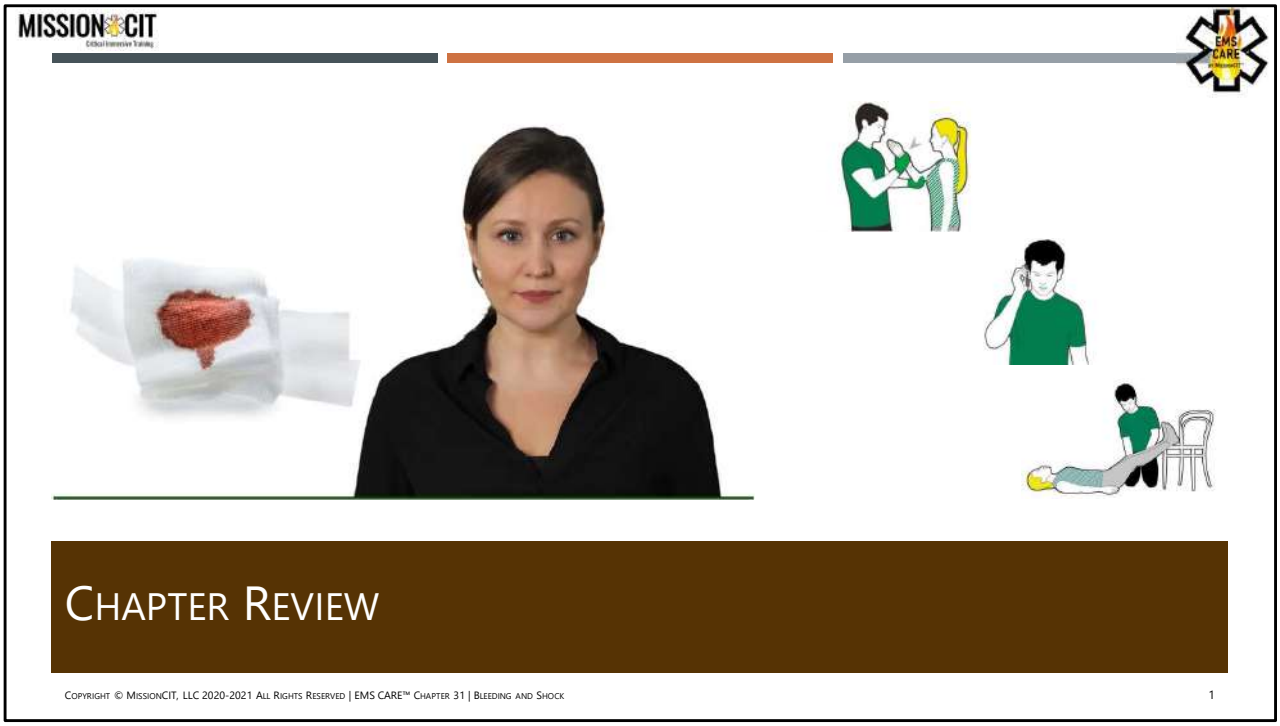


Thanks again Justin. And, now it's time for the review of this topic on Bleeding and Shock.

We began with the Circulatory System, and then continued with the various aspects of controlling bleeding. Then we discussed the causes, assessment and care of patients experiencing Hypoperfusion or shock. And, there are several core concepts we set out to understand in this topic including:

- How to recognize arterial, venous, and capillary bleeding,
- How to evaluate the severity of external bleeding,
- How to control external bleeding,
- Signs, symptoms, and care of a patient with internal bleeding, and finally
- Signs, symptoms, and care of a patient with shock.

Let's see how well you are doing.

Controlling External Bleeding

- Almost all external bleeding can be controlled by direct pressure and elevation.
- When these do not work, apply a tourniquet if bleeding is on an extremity or a hemostatic dressing if the bleeding is from the head or torso
- Emergency care for internal bleeding is based on prevention and treatment of shock



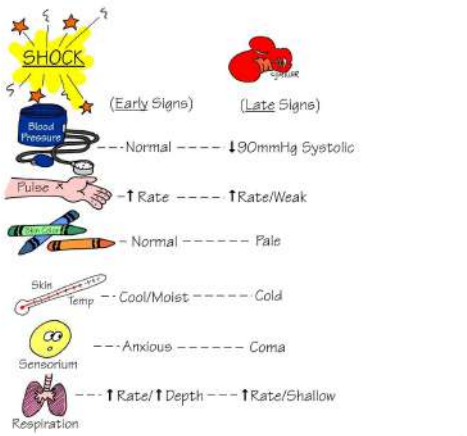
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Almost all external bleeding can be controlled by direct pressure and elevation. When these do not work, apply a tourniquet if bleeding is on an extremity, or a hemostatic dressing if the bleeding is from the head or torso.
We first discussed controlling bleeding only after a standard primary assessment, unless the patient is experiencing Exsanguinating hemorrhage.
Emergency care for internal bleeding, is based on prevention through rapid assessment and transport, and treatment to manage symptoms of shock.

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SHOCK | SIGNS AND SYMPTOMS

- Early signs of shock are often restlessness, anxiety, pale skin, rapid pulse, and respirations
- If shock is uncontrolled, the patient's blood pressure falls, late sign of shock
- Signs and symptoms may not be evident early in the call, so treatment based on MOI may be lifesaving



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Early signs of shock are often restlessness, anxiety, pale skin, rapid pulse and respiration.
If shock is uncontrolled, the patient's blood pressure falls, which is a late sign of shock.
Signs and symptoms may not be evident early in the call, so treatment based on a multiplicity of infection (MOI), may be lifesaving.
Generally, the Progression of the signs and symptoms of hypovolemic shock occur in the following order.

- Weakness & lightheadedness – caused by decreased blood volume
- Thirst – caused by hypovolemia
- Pallor – caused by catecholamine-induced vasoconstriction and/or loss of circulating red blood cells
- Tachycardia – caused by the effects of catecholamines on the heart as the brain increases the activity of the sympathetic nervous system
- Diaphoresis – caused by the effects of catecholamines on sweat glands
- Tachypnea – caused by brain elevating the respiratory rate under the influence of stress, catecholamines, acidosis, and hypoxia
- Decreased urinary output – caused by hypovolemia, hypoxia, and circulating catecholamines

- Weakened peripheral pulse – the “thready” pulse where the arteries actually shrink in width as intravascular volume is lost; caused by vasoconstriction, tachycardia, and loss of blood volume

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Treating Shock

- Maintaining the airway, administering high-concentration oxygen, controlling bleeding, and keeping the patient warm
- Important: Early recognition of shock and immediate transport to a hospital



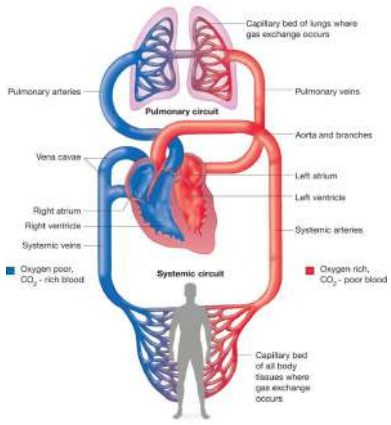
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Treat shock by maintaining the airway, administering high-concentration oxygen, controlling bleeding, and keeping the patient warm.
One of the most important treatments is early recognition of shock and immediate transport to a hospital.

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CIRCULATORY SYSTEM

- The circulatory system is designed to ensure adequate perfusion of body tissues
- The classification of hemorrhage is directly related to the type of vessel ruptured and the pressure within that vessel



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The circulatory system is designed to ensure adequate perfusion of body tissues. Note that there isn't only one blood circulatory system in the human body, but two, which are connected:

- The systemic circulation provides organs, tissues and cells with blood so that they get oxygen and other vital substances.
- The pulmonary circulation is where the fresh oxygen we breathe in, enters the blood. At the same time, carbon dioxide is released from the blood.

The classification of hemorrhage is directly related to the type of vessel ruptured and the pressure within that vessel.

We discussed that Hemorrhaging in the context of severe bleeding, is broken down into four classes by the American College of Surgeons' advanced trauma life support.

- Class 1 Hemorrhage involves up to 15% of blood volume. There is typically no change in vital signs and fluid resuscitation is not usually necessary.
- A Class 2 Hemorrhage involves 15-30% of total blood volume. A patient is often tachycardic with a reduction in the difference between the systolic and diastolic blood pressures.
- Next, a Class 3 Hemorrhage involves a loss of 30-40% of circulating blood volume. The patient's blood pressure drops, the heart rate increases, peripheral hypoperfusion with diminished capillary refill occurs, and the mental status

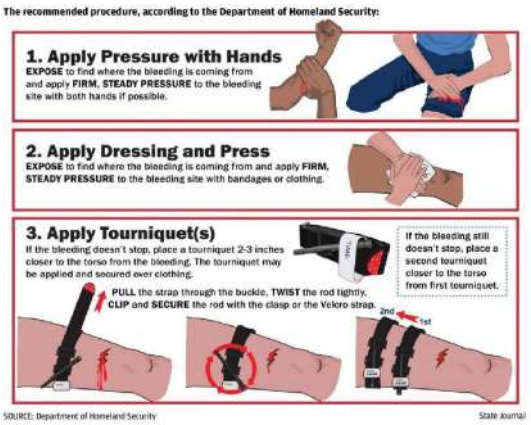
worsens.

- Finally, a Class 4 Hemorrhage involves a loss of more than 40% of the circulating blood volume. The limit of the body's compensation is reached and aggressive resuscitation is required to prevent death.

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PATIENT TREATMENT

- Treatment of external hemorrhage includes progression through the following steps: direct pressure, elevation, tourniquet application, use of hemostatic agents
- Internal bleeding is impossible to evaluate.
- The most appropriate treatment must be rapid transport to an appropriate facility



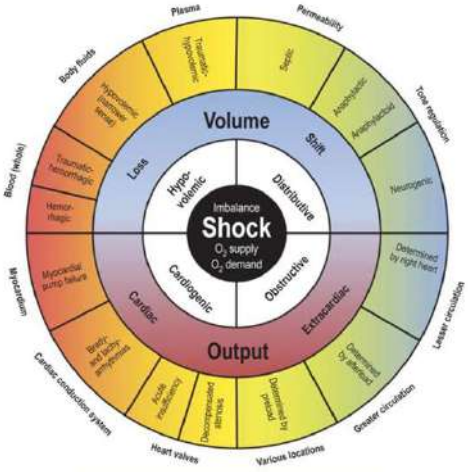
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Treatment of external hemorrhage includes progression through the following steps: direct pressure, elevation, tourniquet application, and use of hemostatic agents.
Internal bleeding is impossible to evaluate.
Symptoms and signs of internal bleeding depend on where the bleeding is coming from, but may include: Headache, Stiff neck, Confusion, Stroke symptoms, Lightheadedness, Shortness of breath, Low blood pressure, Blood in the stool, Rectal bleeding, and Blood in the urine.
The most appropriate treatment must be rapid transport to a suitable facility.

SHOCK

- Shock develops if the heart fails, blood volume is lost, or blood vessels dilate, resulting in inadequate perfusion
- Signs of shock reflect the body's attempts at compensating for inadequate perfusion



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Shock develops if the heart fails, blood volume is lost, or blood vessels dilate, resulting in inadequate perfusion.
Signs of shock reflect the body's attempts at compensating for inadequate perfusion.
Children have very efficient compensating mechanisms to maintain their blood pressure. That is until half of the blood volume is depleted. As a result, the potential for shock in children must be recognized and treated before tell-tale signs appear.

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Treatment for Shock

- The most significant treatment for the shock patient is early recognition
- Promptly transport to a hospital where the patient will receive definitive care



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The most significant treatment for the shock patient is early recognition and prompt transport to a hospital where the patient will receive definitive care.

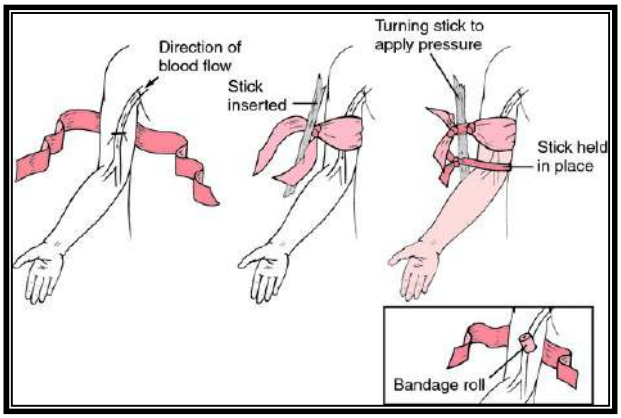
If you suspect the patient is in compensated shock, after standard ABCs,

- Lay the person down, if possible. Elevate the person's feet about 12 inches. That is unless you suspect the head, neck, or back is injured or you suspect broken hip or leg bones.
- Treat obvious injuries.
- Keep the patient warm and comfortable, and.
- Be prepared to quickly transport.

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Every Minute Counts

- What can I use for a tourniquet that will control bleeding but not damage tissue?
- When treating a patient with shock, what should I do at the scene and what should I do en route to the hospital?



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What can I use for a tourniquet that will control bleeding but not damage tissue? So we discussed the Mechanical Advantage Tourniquet which is great – if you have one. If not? Discuss alternatives and using what's on hand; Do this on the forum or with your instructor in the next scheduled video chat session.

When treating a patient with shock, what should I do at the scene and what should I do en route to the hospital? As we discussed, Transportation is an intervention. For a patient in compensated shock, Every minute between the time of injury and the patient's getting to an operating suite is like gold to the patient—and to the chances of survival. Your Goal is a platinum 10 minutes at the scene. Be sure to Prevent heat loss, coagulopathy, and further blood loss en route.

And be very realistic, that that the situations you may find yourself in as an EMT, will not necessarily follow the clear-cut order found in your textbooks.

Body's Basic 5 Steps

- Is a patient with pale, cool skin, tachycardia, and rapid, shallow respirations in shock or just under stress?
- How will continuing assessment help in making that decision?



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Remember the progression of how the body compensates to minimize or overcome the mismatch in supply and demand for oxygen and nutrients. The body's basic 5 steps include:

- Pulse increases to maintain cardiac output.
- Blood vessels constrict, causing pale, clammy skin.
- Respiration rate increases.
- Blood is shunted away from the gastrointestinal organs, causing nausea.
- Decreasing blood pressure is a late sign of shock.

Now think about a patient with pale, cool skin, tachycardia, and rapid, shallow respirations. Is the patient in shock or just under stress.

How will continuing assessment help in making that decision?

CRITICAL THINKING

- A patient has been involved in a motor-vehicle collision
- There is considerable damage to the vehicle. The steering column and wheel are badly deformed
- The patient complains of a "sore chest." You note no external bleeding



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Blunt impact to the body may result in a variety of injuries. Severity is related to both the mechanism of injury as well as the underlying comorbidities of the patient. Blunt impact injuries leading to internal bleeding, generally can be classified into four categories: contusion, abrasion, laceration, and fracture.
And we know that Internal bleeding is difficult to assess and can be massive. If dealing with a trauma patient, be aware of Sharp bone ends from a fractured extremity that can tear surrounding vessels and tissue, resulting in severe bleeding.
So, now you are dealing with a patient that has been involved in a motor-vehicle collision.
There is considerable damage to the vehicle. The steering column and wheel are badly deformed.
The patient complains of a "sore chest." You note no external bleeding.
We continue the discussion on the next slide.

Critical Thinking (Cont.)

- The patient's vital signs are pulse 116, respirations 20, blood pressure 106/70
- How would you proceed to assess and care for this patient?



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So, our motor-vehicle collision patient has the following vitals:
The patient's vital signs are pulse 116, respirations 20, blood pressure 106 over 70.
How would you proceed to assess and care for this patient?
You should take this discussion to your next scheduled video chat session and compare with other students. Offer your course of assessment and care; and have the instructor or others critique.
Now we have come to the end of the Chapter Review for Bleeding and Shock. Next up is a test for which you will need a score of 75% or better to pass and get credit for this topic.
By now, you know that you can go back to any lesson and replay and review.
Good studying and Good Testing. See you soon.