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Secondary Assessment | Physical Exams

- Patient instructions
- Systematic Examinations
  - Head to Toe
  - Full body
  - Region specific



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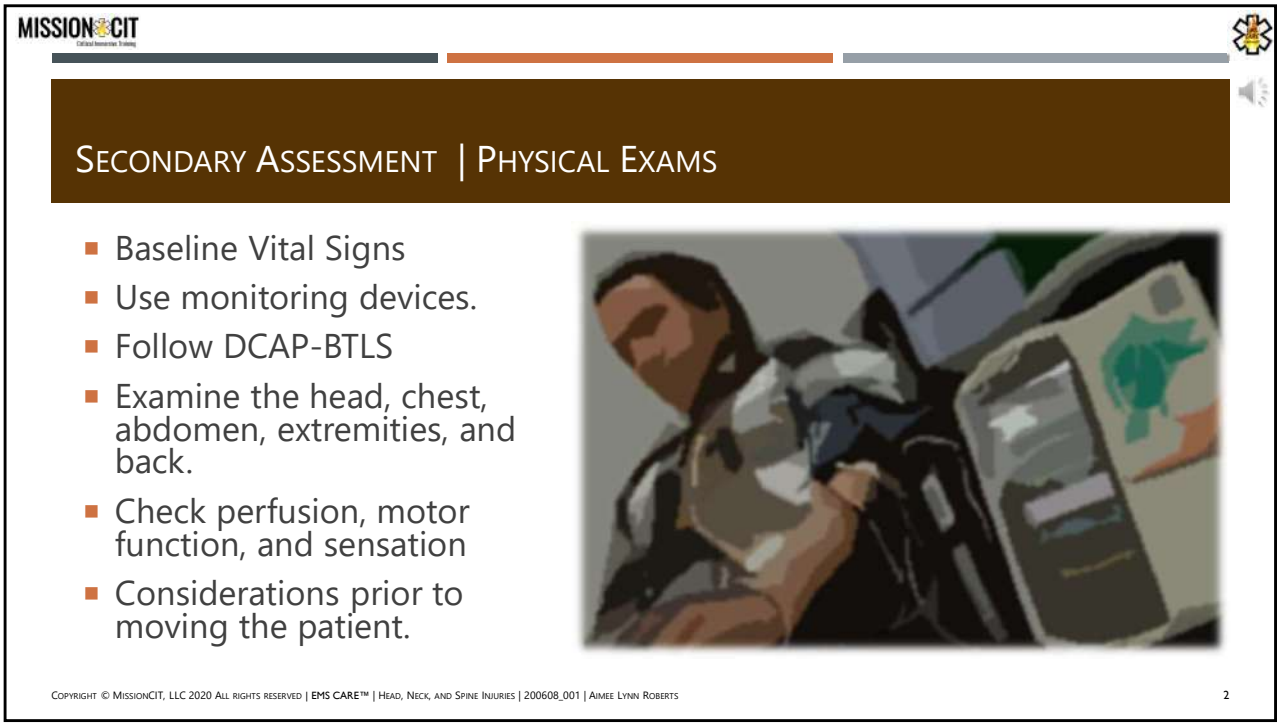
Welcome Back. Let's dive into Secondary assessment for Head, Neck and Spine Injuries.

Remember that the ability to walk, move the extremities, or feel sensation, as well as the absence of pain, does not necessarily rule out a spinal cord injury.

And don't forget to instruct the patient to keep still and not to move the head or neck.

When beginning your Physical examination, it may be a systematic head-to-toe, full-body scan or a systematic assessment that focuses on a certain area or region of

the body



So, with most head, neck and spine injuries, it's best to perform a secondary assessment while en route to the hospital. Remember to check perfusion, motor function, and sensation in all extremities prior to moving the patient.

Step 1 is to obtain a complete set of baseline of vital signs. Some things to keep in mind are:

- Significant head injuries may cause the pulse to slow and the blood pressure to rise.
- With neurogenic shock, the blood pressure may drop and the heart rate may increase to compensate.

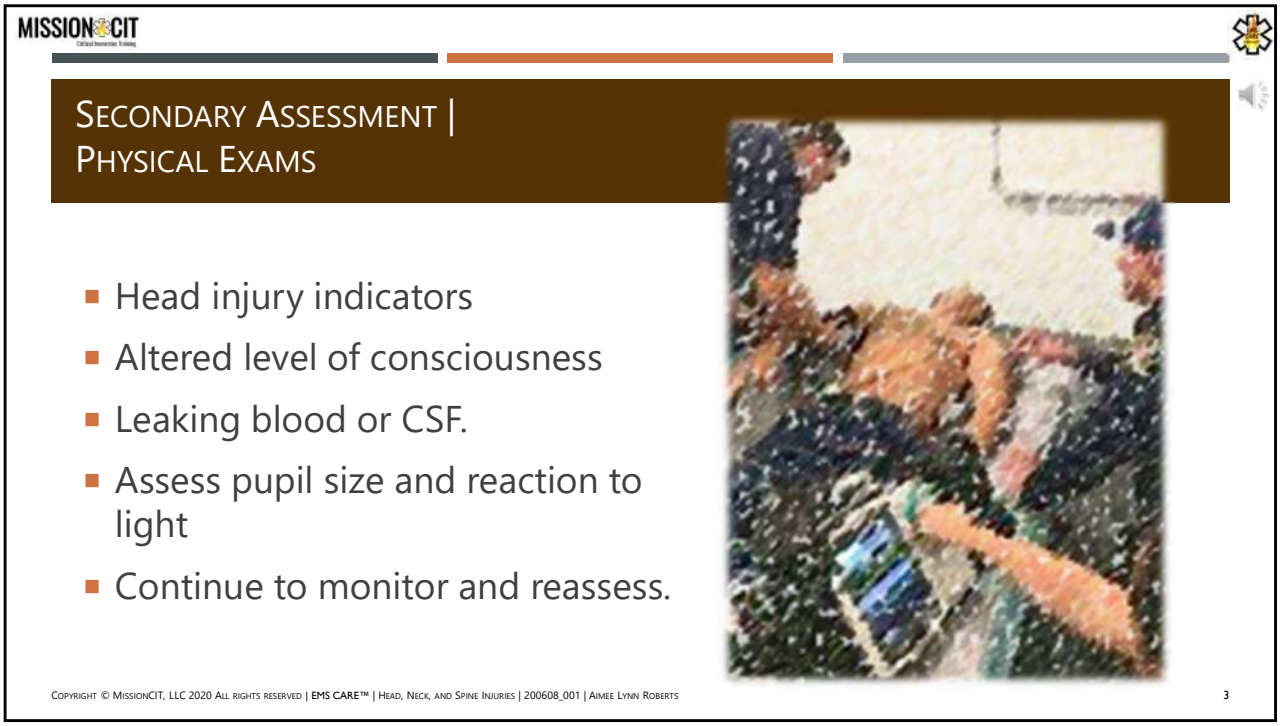
- Respirations will become erratic with complications from both head and spine injuries.
- Hypotension may be present with cervical or high thoracic spine injuries. The heart rate may become slow or fail to increase in response to hypotension.

In addition to hands-on assessment, you should use monitoring devices to quantify your patient's oxygenation and circulatory status.

- Again, oxygenation is recommended.
- Look for a pulse oximeter value above 95.
- If you have end tidal carbon dioxide monitoring equipment, look to main ETCO2 between 35 and 40 mm Hg.

Also, during your exam, as time permits:

- Examine the entire body using DCAP-BTLS.
- Be sure to scrutinize the head, chest, abdomen, extremities, and back.

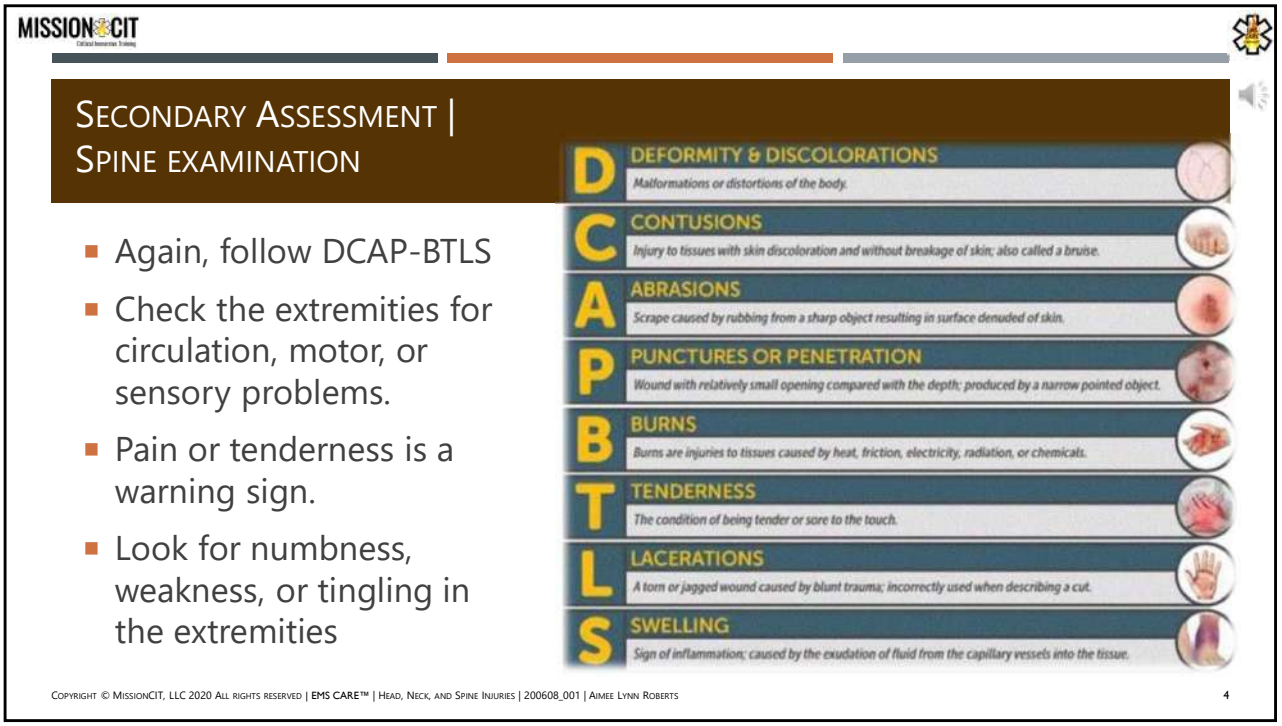


Continuing the physical examination considerations, note that:

- A decreased or altered level of consciousness is the most reliable sign of a head injury.
- Check for decreased movement as well as numbness and tingling in the extremities.
- Look for blood or CSF leaking from the ears, nose, or mouth and for bruising around the eyes and behind the ears.
- Assess pupil size and reaction to light and continue to monitor the pupils; any change in their reactions

over time may indicate progressive brain injury.

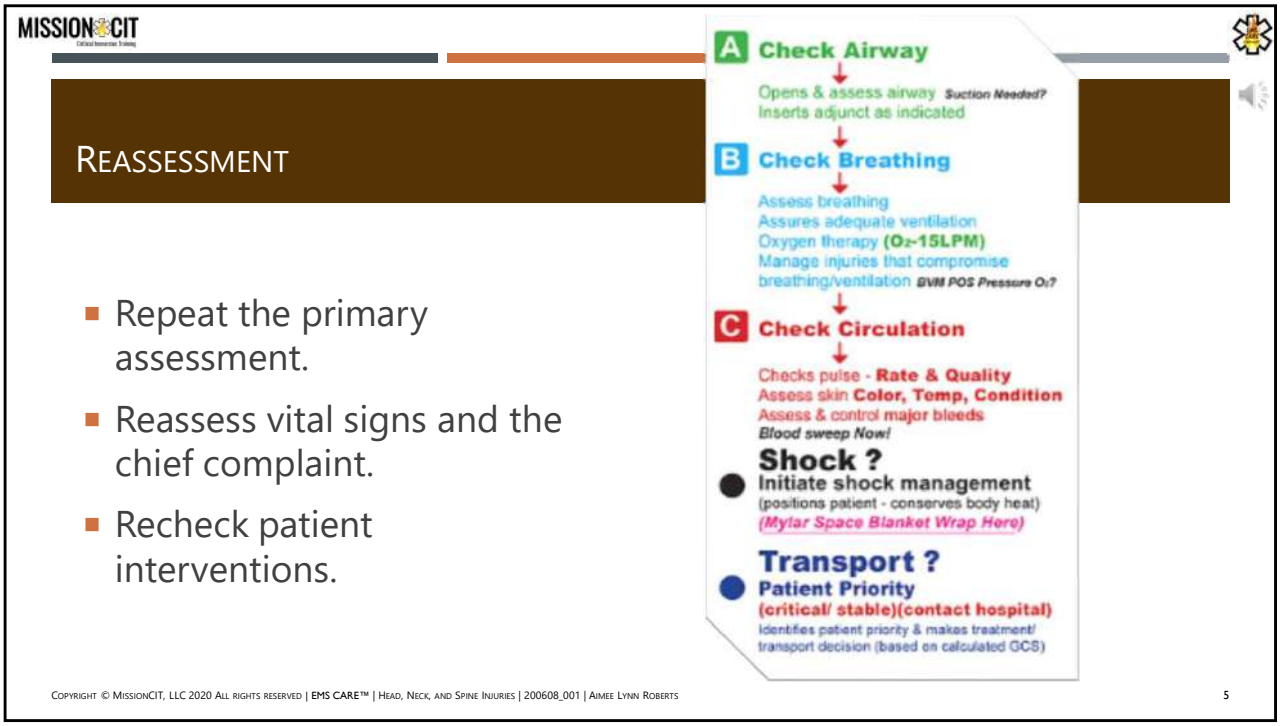
- Be sure not to probe open scalp lacerations with your gloved finger because this may push bone fragments into the brain. And
- Do not remove an impaled object from an open head injury.



So, if there is a potential spine injury, you need to investigate.

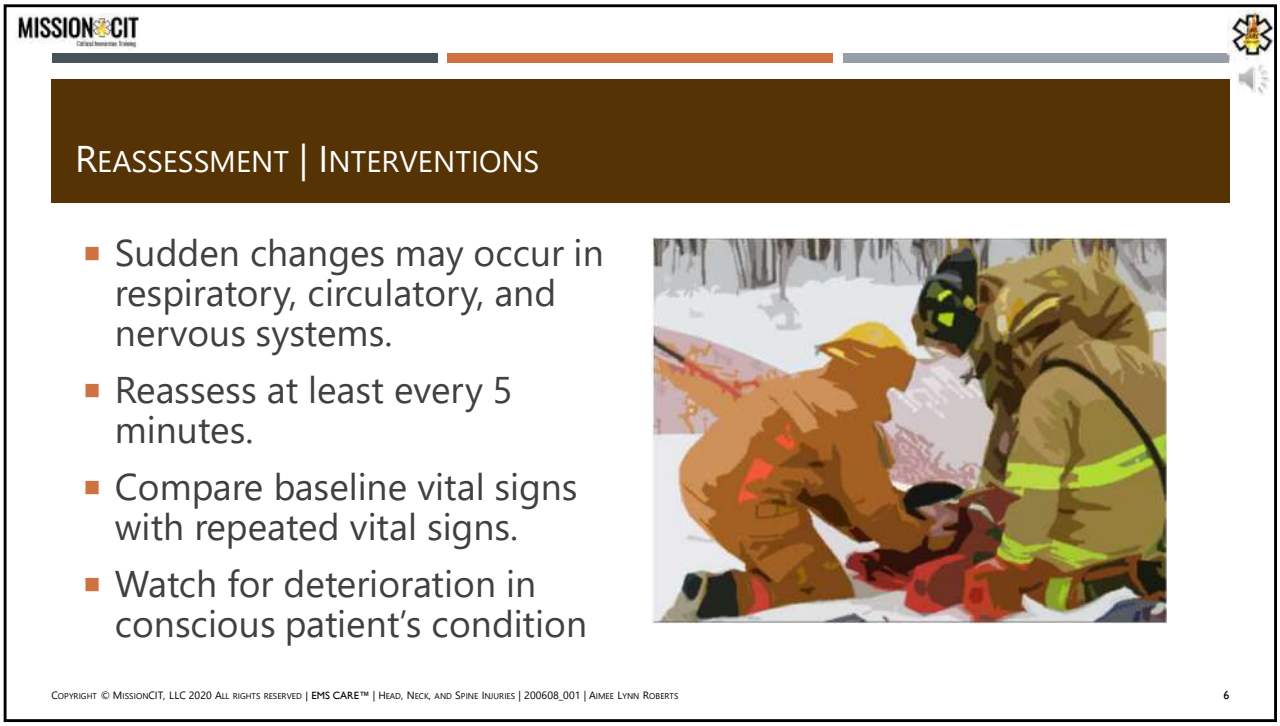
- Start by inspecting for DCAP-BTLS and check the extremities for circulation, motor, or sensory problems.
- If there is impairment, note the level.
- Pain or tenderness when you palpate the spinal area is a warning sign that a spinal injury may exist.
- Remember, other signs and symptoms include an obvious deformity; numbness, weakness, or tingling in the extremities; and soft-tissue injuries in the

spinal region.



So, with a head or spinal injury patient, you need to continually reassess the situation. Per the timing of your local protocol,

- Repeat the primary assessment.
- Reassess vital signs and the chief complaint. And
- Recheck patient interventions.



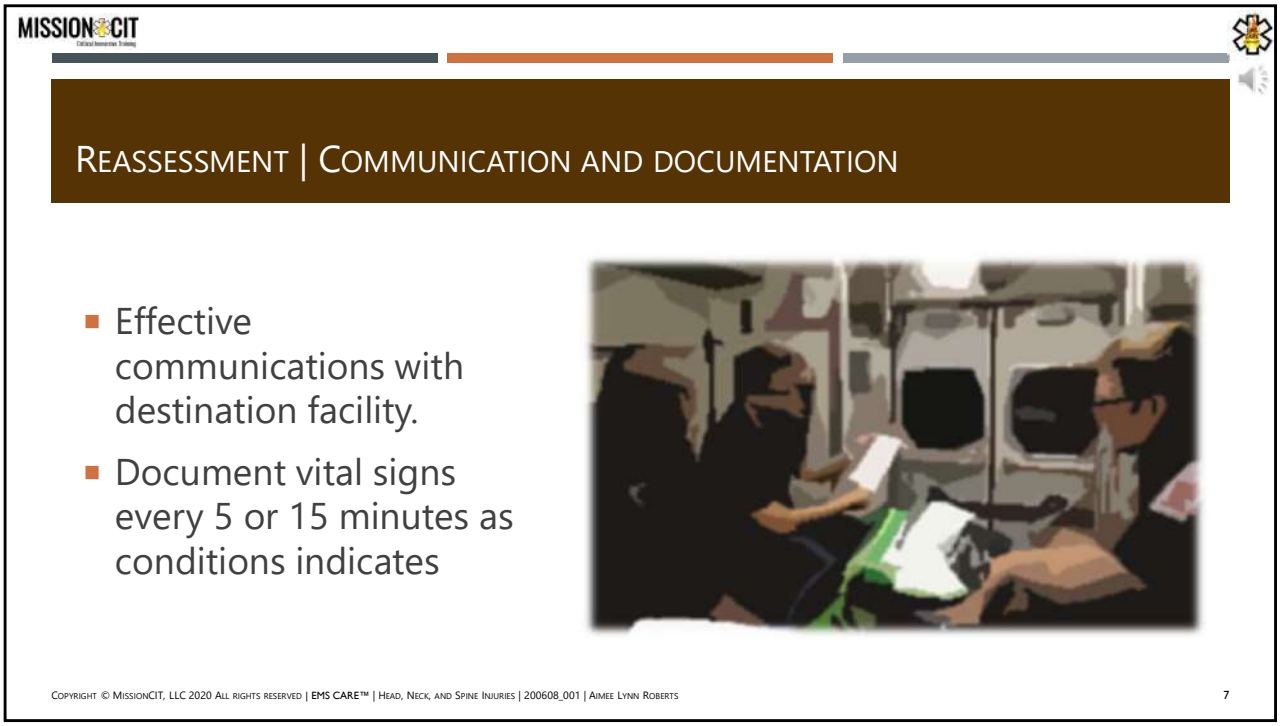
Continuing with patient interventions for head & spine injuries:

- These injuries can suddenly affect the respiratory, circulatory, and nervous systems.
- The patient's condition should be reassessed at least every 5 minutes.

Some specific Interventions to follow include:

- Compare baseline vital signs with repeated vital signs; changes will often tell you if treatments have been effective.

- Rapid deterioration of neurologic signs following a head injury may be a sign of an expanding intracranial hematoma or rapidly progressing brain swelling. When this occurs, you will notice deterioration in a conscious patient's awareness of time, place, and self.
- To restate the obvious, you must act quickly to evaluate and treat these patients.
- If cerebrospinal fluid is present, cover the wound with sterile gauze to prevent further contamination, but do not bandage it tightly.
- Hyperventilation should be used with caution and only when capnography is available.
- Your protocol should include the administration of high-flow oxygen and if indicated, the application of a cervical collar.
- Again, reassessment should take place as the patient is transported to an appropriate trauma facility.



So, with head and spine injuries, communication with the Trauma facility and detailed documentation is essential. Considerations are:

- Hospitals may better prepare for seriously injured patients with more advanced warning and a description of the most serious problems found during your assessment.
- More seriously injured patients should have documented vital signs every 5 minutes.
- More stable patients should have documented vital signs every 15 minutes. And,

- You may be requested to testify as a witness – so contemporaneous documentation enables you to refresh your recollection, if this should occur.

Emergency Medical Care of Head Injuries

- Control bleeding and provide adequate circulation
- Establish an adequate airway.
- Assess and continuously monitor consciousness



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Now, for the Emergency Medical Care of Head Injuries there are Three general principles designed to protect and maintain the critical functions of the central nervous system.

1. Establish an adequate airway.
2. Control bleeding and provide adequate circulation to maintain cerebral perfusion. And
3. Assess the patient's baseline level of consciousness, and continuously monitor it.

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Emergency Medical Care of Head Injuries | Circulation

- Begin CPR if the patient is in cardiac arrest.
- Control bleeding from a scalp laceration
- Be vigilant for shock
  - Transport immediately



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Continuing with circulation, the current protocol is C A B. So first, begin CPR if the patient is in cardiac arrest.

Some considerations to keep in mind:

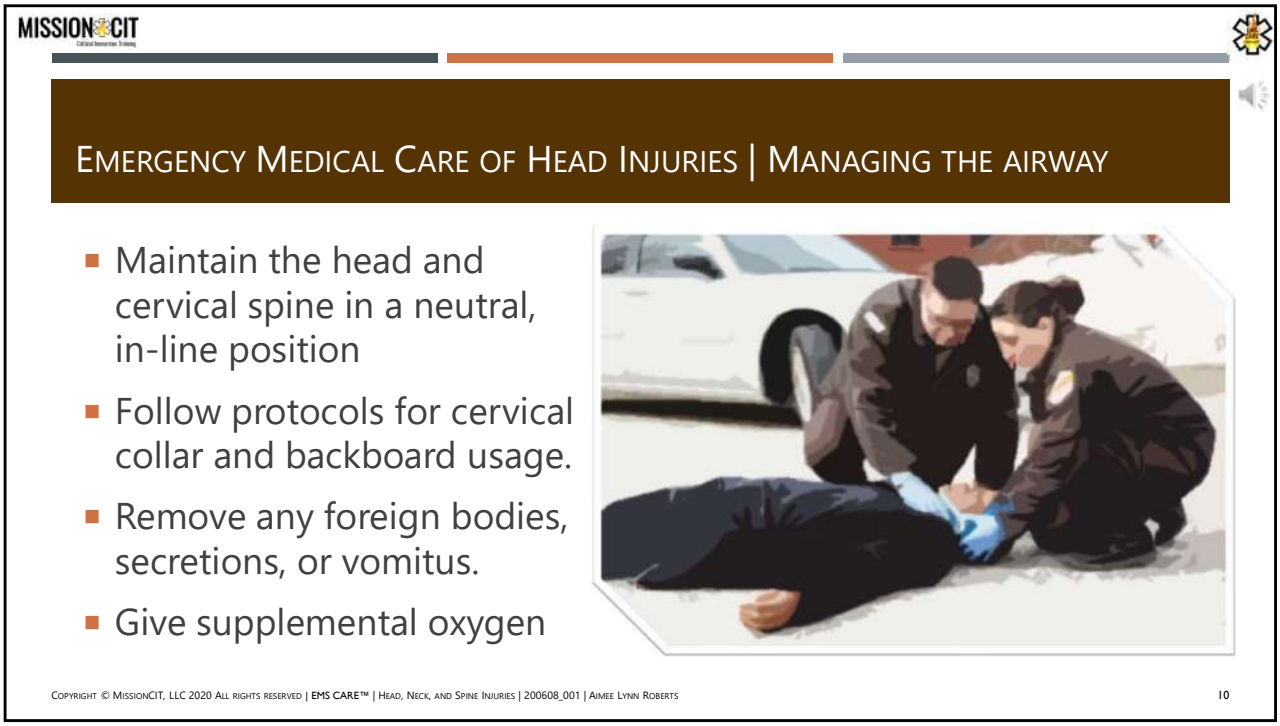
Active blood loss aggravates hypoxia by reducing the available number of oxygen-carrying red blood cells.

Bleeding inside the skull may cause intracranial pressure to rise to life-threatening levels.

You can almost always control bleeding from a scalp laceration by applying direct pressure over the wound. If you suspect a skull fracture, do not apply excessive

pressure to the open wound. If the dressing becomes soaked, do not remove it. Instead, place a second dressing over the first.

If the patient is displaying Shock symptoms, hypovolemia caused by bleeding from other injuries is a likely cause. And of course, you need to transport immediately to a trauma center.



As with any trauma patient, you must establish and maintain an adequate airway.

Once the airway is open, maintain the head and cervical spine in a neutral, in-line position. If indicated, you may place the patient in a cervical collar. And if indicated, secure the patient on a backboard.

Then have suction available if you have to remove any foreign bodies, secretions, or vomitus from the airway.

Once you have cleared the airway, check ventilation.

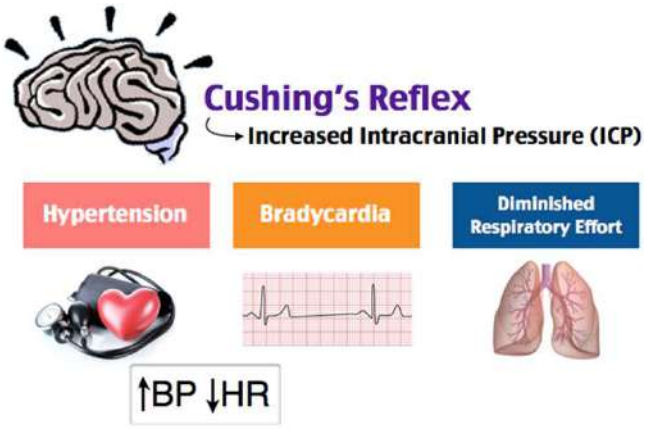
Give supplemental oxygen to any patient with a

suspected head injury.

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Emergency Medical Care of Head Injuries | Cushing's Triad

- Increased blood pressure (hypertension)
- Decreased heart rate (bradycardia)
- Irregular respirations (Cheyne-Stokes respirations or Biot respirations)
- Perform controlled hyperventilation



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The Cushing reflex, is a physiological nervous system response to acute elevations of intracranial pressure. The body's reaction is Cushing's triad of increasing systolic along with decreasing diastolic pressure, decreased heart rate or bradycardia, and irregular respirations.

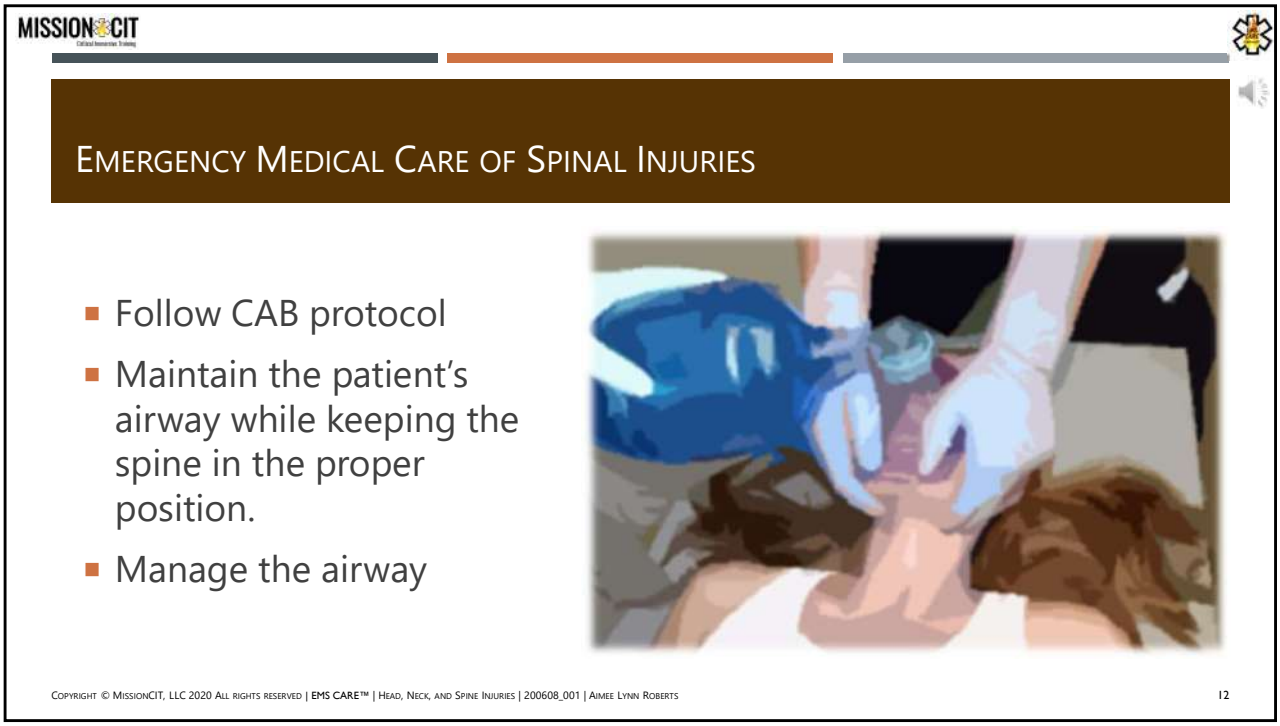
The patient may experience Cheyne-Stokes respiration. This is a type of abnormal breathing. It's characterized by a gradual increase in breathing, and then a decrease. This pattern is followed by a period of apnea where breathing temporarily stops. The cycle then repeats

itself.

Similar to Cheyne-Stokes is Biot respirations. It is characterized by periods, or "clusters", of fairly rapid respirations of close to equal depth followed by regular periods of apnea that can last between 15 seconds to 120 seconds.

If the Cushing’s Triad process is allowed to continue, it is a fatal injury.

It is suggested to perform controlled hyperventilation of your patient via positive-pressure ventilation at a rate of 20 breaths per min.



Now, moving on to the Emergency Medical Care of Spinal Injuries, follow the same protocol for Head Injuries starting with circulation.

However, with suspected spinal injuries, the standard protocol is to maintain the patient's airway while keeping the spine in the proper position, assess respirations, and give supplemental oxygen.

When airway management is indicated:
Perform the jaw-thrust maneuver to open the airway.

Consider inserting an oropharyngeal airway.
Have a suctioning unit available, and
Provide supplemental oxygen.

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Emergency Medical Care of Spinal Injuries

- Be aware of changing protocols for immobilization of the cervical spine
- Immobilize the head and trunk so that bone fragments do not cause further damage.
- Never force the head into a neutral, in-line position.
- Stabilize the patient in his or her current position.



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So now let's examine the immobilization of the cervical spine. As we previously discussed, with suspected spinal cord injuries, Patient Care Goals for the EMT are:

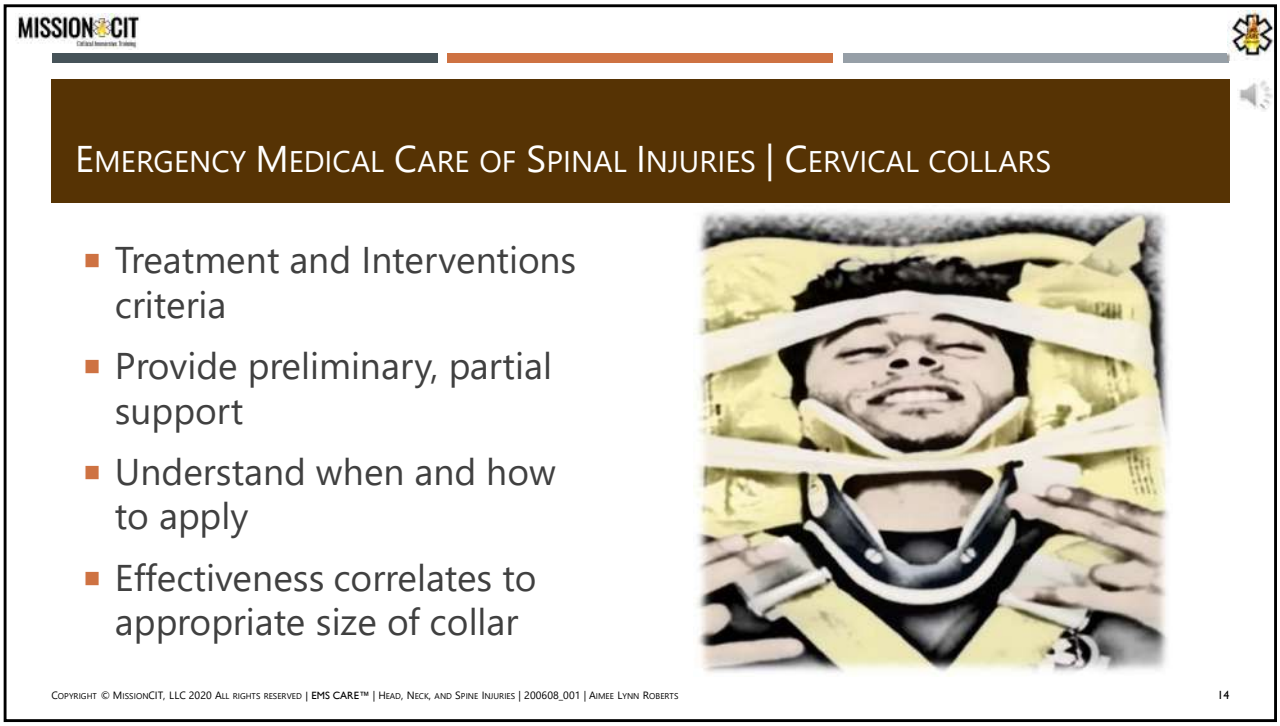
1. Minimize secondary injury to the spine in patients who have, or may have, an unstable spinal injury, and
2. Minimize patient morbidity from the unnecessary use of immobilization devices.

Be aware that protocols are evolving as to when to immobilize. Recent history suggests that fear of the

consequences of spinal cord injury from possible vertebral fractures may have resulted in the overuse of prehospital spinal immobilization. Today, backboard usage is being reevaluated to better match treatment with patient outcomes. You should re-familiarize yourself with your local practices for indications and possible updated S O Ps.

If Immobilization of the cervical spine is indicated:

- Immobilize the head and trunk so that bone fragments do not cause further damage.
- Never force the head into a neutral, in-line position, and
- Stabilize the patient in their current position.



We will end this lesson discussing Cervical collars. Recall the current treatment and interventions that indicate use of a cervical collar:

- Patient complains of midline neck or spine pain.
- Any midline neck or spinal tenderness with palpation.
- Any abnormal mental status (including extreme agitation).
- Focal or neurologic deficit.
- Any evidence of alcohol or drug intoxication.
- Or, if Another severe or painful distracting injury is

present.

Then if indicated the cervical collar:

- Should provide preliminary, partial support
- Should be applied to every patient who has a possible spinal injury based on the MOI, history, or signs and symptoms, except those with penetrating injury to the neck.
- To be effective, a rigid cervical collar must be the correct size for the patient.
- Once the patient's head and neck have been manually stabilized, assess the pulse, motor functions, and sensation in all extremities. Then, assess the cervical spine area and neck.

In the next lesson, Justin will discuss extrication and transportation considerations for head, neck and spinal injuries.