

Patient Assessment Scenario "Q"

Comprehensive Guide



Course Director/Course Coordinator: Management of this scenario includes placement of a definitive airway in the ED of a community hospital. If ED clinicians do not perform orotracheal intubation in the local practice environments, the setting and/or details of the scenario may be altered.

SCENARIO SETTING AND PATIENT INFORMATION

Setting

Community hospital without surgical services. Portable x-rays and bedside ultrasound are available. CT scan images and results will take 60 min to obtain. There are 4 units of O negative blood and 2 units of frozen plasma available. The plasma will take 30 min to thaw and arrive. The nearest referral center is 30 miles (50 km) away. Ground and air transport are available.

Personnel

- ATLS Learner is the only advanced care clinician available.
- Emergency Department Registered Nurse (1)
- Inpatient Nurses (3)
- Emergency Technician (1)
- Radiology, pharmacy, and laboratory technicians

Incident History

M	A 25-year-old female reportedly intentionally jumped from the third floor of an apartment complex in an attempt at self-injury.
I	The patient reports severe left leg pain. There is a large contusion on the left forehead. The left thigh is contused and deformed without an open wound. Breath sounds are decreased on the left. Per bystanders, the patient was conscious immediately after injury, lost consciousness, and then regained consciousness at time of ambulance arrival.
S	BP 100/60, HR 110, RR 24 and shallow, and SpO ₂ 89%. GCS score is 14 (E4, V4, M6).
T	Oxygen at 6 L/min via mask. One large-caliber intravenous catheter was inserted, and 500 cc of isotonic IV fluid was administered. Full-spinal motion restriction, including a cervical motion restriction device (cervical collar), was instituted. A traction splint was applied to the left leg.

INJURIES AND INJURY MANIFESTATIONS

PHYSICAL FINDINGS	INJURIES	SKILLS
Unresponsive, bruise on left forehead	Intracranial hemorrhage	Neurologic exam, GCS score
Sonorous, gasping, rapid respirations	Airway obstruction due to head injury	Basic airway maneuvers, definitive airway, endotracheal intubation
Diminished left breath sounds, tenderness of left chest wall	Left rib fractures (based on clinical findings), left pneumothorax	Tube thoracostomy
Left thigh deformity	Left femur fracture	Musculoskeletal exam, splint management

Imaging

- Slide 1: Chest x-ray - definitive airway in appropriate position, multiple left rib fractures, left pneumothorax
- Slide 2: Chest x-ray - definitive airway in appropriate position, multiple left rib fractures, left thoracostomy tube
- Slide 3: Pelvic x-ray - no pelvic fracture present
- Slide 4: Left femur x-ray - midshaft fracture

INITIAL ASSESSMENT

Pre-arrival Huddle

After the pre-hospital MIST report is received, there is an opportunity to assemble personnel to the Emergency Department from other locations in the hospital and to assign roles and responsibilities to these personnel. The Learner may ask to initiate the hospital's Trauma Activation Response. The Instructor may allow this activation. However, the Learner must specify who will constitute the team and assign roles. Responders should use personal protective equipment. Hypothermia management measures should be described.

The Learner is the only ATLS clinician in the hospital and should perform the trauma assessment with other personnel directed to assist. The Learner should anticipate that transfer will be indicated and may ask the administrative support technician to initiate contact with the referral center.

Primary Survey xABCDE



The Learner should identify injuries and subsequent physical and imaging results in proper sequence and institute resuscitative measures.

On ED arrival, the patient became unresponsive. The Learner should assess the xABCDEs and indicate that all clothing should be removed with measures to avoid hypothermia, such as providing warm blankets, increasing the room temperature, and providing warm IV fluids.



Patient Assessment Scenario “Q”

Comprehensive Guide



X: eXsanguinating eXternal Hemorrhage

- The Learner should perform a rapid initial assessment and full exposure to reveal any potential bleeding wounds. The area around the femur deformity should specifically be examined for external bleeding. There is no exsanguinating hemorrhage.

A: Airway

-  • The Learner should assess the airway. The patient is unresponsive with sonorous, rapid, gasping respirations.
- Basic management maneuvers should be employed, including jaw-thrust, insertion of an oral airway, suction, and assisted ventilation with a bag-valve mask device. During suction and oral airway insertion, a gag response is absent.
- Supplemental O₂ should be administered.
- The Learner should recognize that a definitive airway is indicated, preferably via endotracheal intubation. If the practice setting is such that ED personnel do not perform orotracheal intubation, the Instructor may allow an LMA or indicate that there is an airway-credentialed professional available who can perform orotracheal intubation. This is at the discretion of the Course Director and Instructor.
- The Learner should initiate IV volume resuscitation in anticipation of administration of RSI medications.
- The Learner may listen to and confirm the decreased left breath sounds while intubation equipment is being prepared, and may elect to decompress the chest prior to intubation as decreased breath sounds were reported in the “MIST” handover. Thoracostomy is permitted if the Learner indicates that they will proceed with intubation if the patient’s mental status does not improve. The Instructor reports that neurological status is unchanged after chest decompression. If chest decompression is performed, the assessment and procedures are as listed in Breathing.
- The Learner should describe the proper technique of endotracheal intubation, including confirmation with exhaled CO₂ detection.
- Cervical spine motion is restricted during intubation.
- Following intubation, ventilation is assisted with a bag-valve mask device or by mechanical ventilation, and 100% O₂ is administered initially.
- The Learner should request a chest x-ray to confirm positioning of endotracheal tube within the trachea. The Instructor should indicate that bag-valve mask ventilation is difficult. If the Learner does not progress to breathing assessment and tube thoracostomy, the oxygen saturation should decrease. The Instructor may choose to show the CXR on Slide #1.
- An arterial blood gas may be requested after intubation. If requested, the test is not completed until after thoracostomy.

B: Breathing

- Breath sounds are heard on the right but are severely diminished on the left.
- The pulse oximeter should be placed on the patient if not done already. SpO₂ is 89% if tube thoracostomy has not been completed.
-  • The Learner should perform a left tube thoracostomy. If a needle or finger thoracostomy is performed, these are temporary, and the Learner must progress to tube insertion. The Learner should confirm improvement by auscultation of breath sounds which are improved on the left.

- Appropriate position of the thoracostomy tube is evaluated with a chest x-ray. The Instructor may choose to show the chest x-ray on Slide #2. The x-ray confirms placement of the endotracheal and thoracostomy tubes. If the Learner has difficulty interpreting the x-ray, the Instructor may report that a Radiologist reviewed the x-ray remotely and stated that the endotracheal and thoracostomy tubes are in adequate position.
- SpO₂ after intubation and thoracostomy is 96%.
- The values after intubation and thoracostomy are pH 7.31, PaO₂ 85 mm Hg (11.3 kPa), PaCO₂ 32 mm Hg (4.3 kPa), SaO₂ 96%, and BD 9.4 mmol/L.

C: Circulation

- The Learner should assess the function of the IV catheter initiated by the prehospital personnel, indicate that a second large-caliber IV catheter should be placed, and obtain blood for type and crossmatch and routine laboratory tests. The Learner should indicate that all fluids should be warmed.
- An ECG monitor should be connected if not already done. The ECG tracing shows a HR of 95 and sinus rhythm. The blood pressure is 105/70.
- Pulses should be evaluated in all four extremities. Pulses are present and equal. After tenderness and swelling is identified in the left thigh, a left thigh x-ray may be requested (to be performed after the completion of the Primary Survey).
- The traction splint is indicated for the temporization of bleeding secondary to the left femur fracture.

D: Disability

- Pupils are equal, round, and react briskly to light.
- The patient opens eyes in response to pressure stimuli only. E = 2.
- The patient abnormally flexes all extremities in response to pressure stimuli only. M = 3.
- Intubation has been performed. The patient is unable to speak. V = T.
- GCS score = 6 (E2, V1T, M3).

-  • The Learner should recognize the history of a lucid interval, indicate that a severe head injury is present based on the GCS score, and request transfer to a hospital capable of providing neurosurgical care. Basic neuroprotective measures such as tilting the bed 30 degrees head-up, while maintaining spine neutral position, may be implemented. The Learner should indicate that hypotension and hypoxemia should be avoided in the context of a severe head injury.

E: Environment/Exposure

-  If not performed previously, the Learner should indicate that all clothing should be removed to permit a more complete inspection, and measures should be taken to prevent hypothermia (i.e. warm blankets, increasing room temperature, and warmed IV fluids).

ADJUNCTS TO THE PRIMARY SURVEY

Chest and Pelvic X-rays, FAST exam and eFAST Exams

The chest and pelvic x-rays are adjuncts to the initial assessment, and the Learner should indicate that they should be obtained. The chest x-ray shows properly placed endotracheal and left thoracostomy tubes.



Patient Assessment Scenario “Q”

Comprehensive Guide



The pelvic x-ray is within normal limits. If a FAST scan is requested, peritoneal and pericardial fluid are not present.

Urinary Bladder Catheter

A urinary bladder catheter should be inserted if not done previously. There is no perineal ecchymosis or blood in the vaginal vault. Clear urine returns when the catheter is inserted.

Gastric Decompression

A gastric decompression tube should be inserted, if not already done. The tube should be placed by the oral, not nasal, route.

Arterial Blood Gases

Arterial blood gases should be obtained, if not already accomplished. The values are as noted above, pH 7.31, PaO₂ 85 mm Hg (11.3 kPa), PaCO₂ 32 mm Hg (4.3 kPa), SaO₂ 96%, and BD 9.4 mmol/L.

Blood Tests

Blood should have been sent to the laboratory for type and crossmatch and other laboratory tests.

Tactical Pause

The Learner should reevaluate the xABCDEs before proceeding to the Secondary Survey.

SECONDARY SURVEY

Head

- The Learner should examine the head. There is a large bruise on the left forehead.
- There is no drainage from the ears, nose, or mouth.
- The GCS score should be redetermined.
 - Pupils are equal, round, and react briskly to light.
 - The patient opens her eyes in response to pressure stimuli only. E = 2.
 - The patient abnormally flexes all extremities to pressure stimuli only. M = 3.
 - The patient is intubated and unable to speak. V = T.
- GCS score = 6 (E2, V1T, M3).

Neck

- Cervical spinal motion should be restricted while the Learner removes the cervical device to assess the neck. No deformity, crepitus, or swelling is present.
- The cervical device should be replaced and the Learner should indicate that imaging will be necessary but will not change treatment prior to transfer, so imaging should not be performed now.

Chest

- Auscultation of the chest reveals equal breath sounds bilaterally after thoracostomy tube placement.
- There is a properly functioning left thoracostomy tube without air leak.

Abdomen

- The abdomen should be examined by inspection, auscultation, and palpation. There is no tenderness or external injury.

Pelvis/Perineum

- The Learner should examine the pelvis. No abnormalities are present.

Musculoskeletal System

- The Learner should examine the extremities for soft-tissue or bony injury. There is bruising and deformity of the left thigh.
- The Learner should assess the neurovascular status of the extremities, realizing that the low GCS score and RSI medications impair the neurologic examination. The Instructor may specify that the patient is unable to assist with the sensory examination other than grimacing or wincing when the area around the femur deformity is examined.
- The Learner should perform a logroll and examine the back if this was not already done. Rectal examination can be performed (optional, as tone may not be easily ascertained). No abnormal findings are present.

Imaging

- If not previously requested, a left femur x-ray may be obtained. Results are as above. The Instructor may choose to show Slide #4.

Case Status

- Intubation has been performed due to a severe head injury. GCS score remains at 6 total (E2, V1T, M3). The left thoracostomy tube is functioning without drainage and without air leak. BP is 105/70, HR is 95, respirations are manually (or ventilator) controlled at a rate of 16, and SpO₂ is 97% with 80% oxygen.
- Arterial blood gases may be repeated. Values are: pH 7.36, PaO₂ 98 mm Hg (13.1 kPa), PaCO₂ 38 mmHg (5.1 kPa), SaO₂ 97%, and BD 4.0 mEq/L.

TRANSFER TO DEFINITIVE CARE

The Learner should indicate that transfer to a hospital capable of providing a higher level of neurological care is indicated. The Learner should directly contact the receiving clinician. The Learner should relate these injuries and probable diagnoses and treatment:

- Severe head injury.
- Intubation performed due to the head injury.
- Left pneumothorax and tube thoracostomy.
- Left femur fracture with traction splint applied.
- Further evaluation for other injuries is indicated.
- Evaluation for reported self-harm.

Pretransfer Management

The Learner should indicate the need to manage the following before transfer:

- Continuous monitoring
- Continued restriction of spinal motion
- Ensure airway remains controlled with endotracheal tube appropriately positioned
- Administration of supplemental oxygen, with continued reassessment of pulmonary status
- Monitor thoracostomy tube function and output
- Assess for proper placement of traction splint and monitoring of pulses after placement
- Assess effectiveness of resuscitation
- Appropriate consultation with the receiving clinicians
- Copies of the laboratory data and imaging



Patient Assessment Scenario “Q”

Comprehensive Guide



Transfer Specifics

The Learner should indicate the specifics of the transfer to another hospital, including who and what equipment/supplies should accompany the patient, and how the contact with the receiving doctor should be made. The Learner should provide a report to the accepting clinician using the S-xABCDE-BAR template, including that the mechanism was reportedly self harm. If time permits, the Learner may be questioned about plans for avoiding pitfalls that may be encountered during transport, such as a decrease in the blood pressure, neurological deterioration, loss of pulses in injured leg, thoracostomy tube malfunction, and others.

DIRECTIONS FOR MOULAGE

- Apply makeup and moulage to simulate a large bruise on the left forehead.
- Apply makeup and moulage to simulate injury to the left chest wall.
- Apply makeup and moulage to simulate bruising and deformity of the left thigh.
- Tape IV tubing to the right arm.
- Apply a semirigid cervical motion restriction device (cervical collar) and backboard (pad for comfort) before beginning the scenario.
- Apply an oxygen mask before beginning the scenario.
- Apply a traction splint to left leg.

DIRECTIONS FOR THE PATIENT MODEL

You were in a major car crash. You are unresponsive. Your eyes are closed and you are unconscious. Your respirations are initially shallow, gasping, and rapid but become slower as the Learner is examining you. Once you are intubated, your respirations become more normal. You remain unconscious throughout the entire scenario. You are only able to open your eyes and abnormally flex to pressure stimuli.

Notes:

