Patient Assessment Scenario "L"

Comprehensive Guide

SCENARIO SETTING AND PATIENT INFORMATION

Setting

Community hospital with abdominal surgical services. The surgeon and an operating team will be available in 20 minutes. The nearest referral center is 30 miles (50 km) away. Fastest transportation would take 45 minutes.

Personnel

- ATLS Learner is the only advanced care clinician available
- Emergency Department Registered Nurses (2)
- Respiratory / Ventilation Technician (use appropriate term for region)
- Radiology Technician
- Pharmacy Technician
- Laboratory Technician
- Emergency Area Technicians (2)

Incident History

Scenario gender may be determined by the course administrators based upon available models.

M	A 20-year-old presents by private vehicle to the emergency area reporting several stab wounds to the right arm, chest, and abdomen.
I	There is profuse bleeding coming from the right arm despite the patient attempting to hold pressure. The patient reports stab wounds to the right arm, chest, and upper abdomen.
S	Respirations are rapid and shallow. The patient reports feeling light-headed, speaks in short, gasping words, and is pale and anxious. Lips are cyanotic.
T	The patient is immediately transported to a treatment room.

INJURIES AND INJURY MANIFESTATION

PHYSICAL FINDINGS	INJURIES	SKILLS
6 cm laceration in the medial distal right arm with arterial hemorrhage	Brachial artery laceration	Staged bleeding control, tourniquet application
Right chest wound, respiratory distress, gasping speech, tachypnea	Right pneumothorax	Right tube thoracostomy
Pale, cyanosis, hypotension, abdominal stab wound, right back stab wound	Intra-abdominal hemorrhage	Blood product resuscitation, transfer to OR, avoid RSI medications

Images and Results

- Slide 1: FAST – (right upper quadrant) intra-abdominal fluid
- Slide 2: Chest x-ray – right thoracostomy tube

INITIAL ASSESSMENT

Pre-arrival Huddle

There is no opportunity for a pre-arrival huddle. The Learner should request activation of a trauma response team if a protocol is available at the hospital. The Learner may request notification of the operating area, blood bank, radiology, and other services. The Learner should indicate that appropriate personal protective equipment must be worn.

Primary Survey

x-ABCDE

The Learner will perform the initial assessment and should instruct other personnel to assist with procedures such as airway manipulation, intravenous access, placement of physiologic monitors, clothing removal, and application of warm blankets.

CTD The Learner should identify injuries and subsequent physical and x-ray findings in proper sequence and institute resuscitative measures.

x: eXsanguinating eXternal Hemorrhage

- The Learner should instruct that the patient's clothing be removed and to cover the patient with warm blankets. The Learner must tell the patient that clothing will be removed to treat the injuries and that the patient will be covered with blankets.
- CTD The right arm and clothing are saturated with blood. Blood is squirting from the right arm and pooling on the stretcher and the floor. The Learner should instruct a team member to apply direct pressure. The wound does not have a cavity that is suitable for packing. A nurse reports that the right arm radial pulse is absent, and that the lower arm is pale and blue. Bleeding continues despite appropriate direct pressure. The Learner must direct that a tourniquet be applied, properly describe the procedure, and inform the patient that the tourniquet will be painful.
- Bleeding is controlled with application of a tourniquet.
- The other wounds do not have exsanguinating bleeding.

A: Airway

- CTD The Learner assesses the airway. The patient can speak. However, speech is brief due to rapid respirations. The patient reports feeling lightheaded and short of breath. The patient is more lethargic. The Learner should recognize that the upper airway is not obstructed and not progress to an advanced airway maneuver.
- If the Learner attempts to insert an oral airway, the patient awakens and coughs while pulling devices off the face.
- CTD The Learner should apply supplemental oxygen, direct connection of SpO_2 and cardiac monitors, and proceed to assessment of breathing.
- CTD If the Learner progresses to an advanced airway, volume (preferentially blood and blood products) must be administered prior to RSI medications. If RSI medications are administered first, severe hypotension, potentially cardiac arrest, occurs. If volume is administered and intubation is performed, hypotension, potentially cardiac arrest, occurs due to conversion of a simple pneumothorax to a tension pneumothorax.

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B: Breathing

- Nurse reports that the lips are blue. RR is 30 and SpO_2 is 90% with face mask oxygen. HR is 120. BP is not yet available.
- CTD The Learner should auscultate the chest. Breath sounds are present on the left but not on the right.
- CTD The Learner should visually examine the chest wall. There is a wound in the right chest wall at the anterior axillary line between the inframammary fold and costal margin. Another wound is present in the right upper quadrant of the abdomen.
- If the Learner requests a chest x-ray, the Instructor may have the technician be unavailable for 10 minutes.
- CTD The Learner should indicate that right tube / finger / needle thoracostomy is indicated, inform the patient, describe the appropriate landmarks, and accurately describe the procedure. Following either finger or tube thoracostomy, a hiss of air and a small amount of blood are evacuated. If a needle thoracostomy is performed, a small amount of air is released but the needle catheter kinks and continues to not function if the procedure is repeated. The Learner should then perform a finger or tube thoracostomy, describe the appropriate landmarks, and accurately describe the procedure. Following tube insertion, the Learner should connect the thoracostomy tube to an underwater seal drainage system.
- The Learner should reassess the breath sounds, respiratory rate, and SpO_2. Breath sounds are now equal. However, tachypnea persists with a rate of 28 (due to shock). SpO_2 improves slightly to 93%.
- Blood gas determination may be requested. To provide a more realistic scenario, the Instructor may delay reporting the result until time of transfer to the operating area at the conclusion of the scenario. For Instructor reference, the values at this point in assessment are pH 7.20, PaO_2 75 mm Hg (10 kPa), $PaCO_2$ 28 mm Hg (3.7 kPa), SpO_2 93%, and BD 15.6 mEq/L.

C: Circulation

- The Learner should indicate that a cardiac rhythm monitor is connected, if not already done. Sinus tachycardia is present on the monitor, with a HR of 120. The Learner should request a blood pressure which is 80/50. If the Learner requests skin exam, the skin is cool and moist with a capillary refill of more than 4 seconds.
- CTD The Learner must recognize the presence of hemorrhagic shock and indicate that two large-caliber IVs be inserted, while simultaneously obtaining blood for type and crossmatch and routine laboratory determinations. If the Learner asks for the results, the Instructor should indicate that the results will be available in 20 minutes.
- CTD The Learner should transfuse warmed type O blood (whole blood or PRBCs). In utilizing blood components, the Learner should indicate the need for balanced blood product resuscitation at a 1:1:1 ratio of PRBCs:FFP:Platelets. The Learner should initiate a massive transfusion / hemorrhage protocol, if present in the facility. The Learner should indicate that crossmatched blood will be transfused as soon as it is available. If blood products are not routinely available in the practice environment, the Learner may administer warmed crystalloid solution. However, the Learner must report that blood would be the optimal product if available.
- CTD The Learner should request new vital signs after administration of blood or crystalloid. The BP increases to 90/60, HR remains 120, and SpO_2 remains 93% with 100% supplemental oxygen.
- CTD The Learner should assess five locations for a source of uncontrolled hemorrhage:
  - **External (the floor)** - The Learner should re-assess bleeding control by examining the right arm wound. Bleeding is controlled.
  - **Thoracic cavity** – The Learner should evaluate thoracostomy tube output and request a chest x-ray (if not previously requested). There is no further output. Chest x-ray image is ordered. The Instructor will present the image later in the scenario.
  - **Peritoneal cavity** – The Learner may request either FAST, eFAST, or DPL if the operating team is not prepared. However, a diagnostic study is not needed and may be omitted. If FAST / eFAST, right upper quadrant intra-abdominal (Slide #1) and pelvic fluid are present. The included FAST image (Slide #1) of the right upper quadrant may be shown to the Learner to interpret. If eFAST, the same result as FAST with normal lung sliding present. If DPL, there is more than 10 mL of blood on aspiration.
  - **Retroperitoneal Space** – Although the mechanism is not consistent with a pelvic fracture, the Learner should recognize that other injuries may be present with bleeding into the retroperitoneum.
  - **Long Bone / Soft Tissue Compartments** – The mechanism is not consistent with a long bone fracture.
- CTD The Learner should conclude that the major sources of hemorrhage are the arm laceration and an intra-abdominal injury. The Learner should request emergent surgical consult and direct a team member to contact the operating team.

D: Disability

- CTD The Learner should mention progression to Disability evaluation. The Learner should perform a neurologic exam consisting of a GCS evaluation, pupil reactivity, and sensory exam. The Instructor should modify the exam if RSI medications and an advanced airway were performed.
- The GCS score is 15.
- Both pupils react rapidly to light.
- The patient has no sensory or motor defects except inability to move or feel the right arm distal to the tourniquet.
- Spinal motion restriction is not indicated.

E: Environment/Exposure

- CTD If not done previously, the Learner should direct removal of all clothing to permit a complete inspection. A logroll should be performed to examine the back. A right mid back stab wound is present without external hemorrhage.
- A rectal examination is not indicated.
- CTD During examination and logroll, the Learner should mention measures to preserve patient privacy and to prevent hypothermia, such as covering with warm blankets, increasing the room temperature, and providing warmed IV fluids.

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ADJUNCTS TO THE PRIMARY SURVEY

Monitoring Devices
Monitoring devices, including an ECG monitor and a pulse oximeter should be applied, if not performed previously.

Chest and Pelvic X-rays, FAST and eFAST Exams
The chest x-ray is an adjunct to the Primary Survey. The Learner should have previously requested this x-ray during Circulation assessment. The x-ray is being obtained. The Instructor may present the image just before the transfer report. FAST / eFAST should have been performed as part of Circulation assessment.

Urinary Bladder Catheter
The Learner should indicate that an indwelling urinary catheter should be inserted. Clear yellow fluid (500 mL) returns from the bladder catheter.

Gastric Decompression
Gastric decompression should be postponed until operation.

Arterial Blood Gases
Arterial blood gases (or repeat) may be obtained. Results after the xABCDEs and resuscitation are pH 7.30, PaO_2 90 mm Hg (12 kPa), $PaCO_2$ 32 mm Hg (4.3 kPa), SpO_2 96%, and BD 10 mEq/L.

Blood Tests
Blood should have been sent to the laboratory for type and crossmatch, coagulation profile, electrolytes, renal function, and other determinations.

Case Status after Primary Survey and Adjuncts
The Learner should perform a tactical pause and reevaluate the xABCDEs before proceeding to the Secondary Survey. Instructor reports vital signs: BP 90/60, HR 120, RR 24, and SpO_2 93% with supplemental oxygen. If blood infusion is paused, blood pressure promptly decreases to less than 80 systolic. A total of 4 units of red cell blood products have been transfused with appropriate balanced resuscitation.

There are no changes on xABCDE re-assessment. Capillary refill remains more than 4 seconds, skin is cool, and sclerae are pale. The infusion of warmed blood and blood products should be continued, and the pulse oximeter and ECG monitored. The vital signs should be monitored. If not mentioned earlier, the Learner may state that emergent transfer to the operating area is indicated.

The chest x-ray image is available on Slide #2. The Learner should identify the right thoracostomy tube without hemothorax.

The Learner should recognize the presence of persistent intra-abdominal hemorrhage and expedite transfer for operation.

The Instructor may state that the operating team arrives to accept the patient. If so, advance to the transfer section below. Or the Instructor may ask the Learner to perform a secondary survey.

SECONDARY SURVEY

CTD • The Learner should begin a head-to-toe examination.

Head
- There are no head wounds or contusions.
- The GCS score remains 15.
- The head exam is without abnormality. However, the Instructor may choose to add contusions consistent with blunt trauma if desired.

Neck
- The Learner should palpate the neck. There is no tenderness. The trachea is midline. Spinal motion restriction is not indicated unless the Instructor desires to add blunt injuries.

Chest
- Breath sounds remain equal. RR is 24.
- There is one chest wound as previously described.
- The Learner should examine the tube thoracostomy and collection chamber for drainage. The tube is functioning adequately, and no blood has drained.
- A chest x-ray (Slide #2) should be ordered, if not obtained previously.

Abdomen
- There is a 2 cm mid right upper quadrant stab wound that is not bleeding. The abdomen is very tender. Bowel sounds are absent.

Pelvis/Perineum
- The pelvic bones are not tender, and contusions are not present. A rectal exam is not indicated. If performed, there are no abnormalities.
- A pelvic x-ray is not indicated.

Musculoskeletal System
- Right arm bleeding remains controlled by the tourniquet. There are no visible or palpable extremity deformities.
- If not previously performed during the Exposure portion of Primary Survey, the Learner should examine the back. A right mid-back stab wound is present without external hemorrhage.
- The Learner should indicate the need to administer tetanus toxoid and broad-spectrum antibiotics.

TRANSFER TO DEFINITIVE CARE

At completion of the Primary and Secondary Surveys of the Initial Assessment, the Learner should request current vital signs and review the xABCDE's as part of a tactical pause. Assessment is unchanged. A total of 4 units of red cell blood products have been transfused with appropriate balanced resuscitation. Vital signs are BP 90/65, HR 120, RR 24, and SpO_2 93% with supplemental oxygen. GCS score remains 15. The Learner should initiate handover to the operating team and the receiving clinician should be informed directly.

Pretransfer Management
The Learner should describe the aspects of management before and during transfer:

- Appropriate handover to the receiving clinician.
- Provision of continuous monitoring.
- Ensure adequate tourniquet fixation.
- Supply of supplemental oxygen.
- Administration of tetanus immunization and antibiotics.
- Adequate fixation of urinary catheter and thoracostomy tube.
- Copies of all test results and images are prepared to accompany the patient.

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Transfer Specifics

- The Learner should indicate the specifics of the transfer to the operating team, including the personnel, blood products, and other equipment / supplies.
- The Learner should use the S-xABCDE-BAR tool to provide a handover. For this scenario, the Learner should relate the following:
  - Multiple stab wounds – list all 4 locations.
  - Right arm laceration with bleeding controlled by a tourniquet (mention tourniquet application time).
  - Tube thoracostomy for pneumothorax.
  - FAST/eFAST/DPL demonstrated intra-abdominal fluid consistent with hemorrhage.
  - Hemorrhagic shock due to external and intra-abdominal bleeding. Received 4 units of blood and additional products to maintain a balanced resuscitation.
  - Received tetanus immunization and antibiotics.

Communicating Serious News

After departure to the operating area, the patient's family arrive. The clinician should indicate that communication with the family will occur in a quiet room with ample chairs, tissue and water available, and additional support personnel (such as a translator, social worker, spiritual counselor). Following the meeting, the Learner will debrief the team and relay family meeting information to the operating team. The meeting will follow the principles discussed in the Communicating Serious News chapter and Skills Station. The ABCDE's of meeting communication are:

- A. Ask what the family has been told.
- B. Begin with the warning.
- C. Concise summary.
- D. Do allow for silence. Don't speak too much. Listen!
- E. Elicit questions. End Encounter with a plan for next steps.

Injury Prevention

If time permits, the Instructor may ask what opportunities exist for injury prevention. The Learner should discuss potential hospital-based violence prevention programs and legislative efforts.

DIRECTIONS FOR MOULAGE

- Dress the model in old cloths and cover right sleeve with blood. Have blood over right hand and forearm. Have blood on left hand (to simulate patient trying to hold pressure on right arm with left hand).
- Apply makeup to simulate shock and central cyanosis.
- Apply makeup and moulage to the right chest, abdomen, and back to simulate stab wounds.
- Apply makeup and moulage to simulate a slash-type laceration to the right arm over the brachial artery. IV tubing connected to a hand-operated blood pump may be added to simulate arterial hemorrhage. Apply cloth and saturate the dressing and clothes with the simulated blood.
- Apply makeup to the right hand and fingers to simulate poor distal circulation (pallor).
- Apply simulated perspiration.

DIRECTIONS FOR THE PATIENT MODEL

You are anxious and "scared to death" after being stabbed. You are breathing very fast and can only speak a few words at a time. It hurts to take a deep breath. Your abdomen is painful when touched.

You scream in pain as the tourniquet is applied. If the clinician does not talk to you, you keep asking, "What's happening? What are you doing to me?"

If the clinician tries to insert an airway you take it out.

After the chest tube is inserted, you can breathe deeper but still slightly rapidly.

Periodically you can be sleepier but then more alert.

Notes: