

91W10  
Advanced Individual  
Training Course



Core Skills Handbook

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## **TERMINAL LEARNING OBJECTIVE**

Given a standard fully stocked M5 Bag or Combat Medic Vest System. You encounter a casualty with suspected injuries, perform a casualty assessment IAW cited references.

### ***Determine threats in the area near the casualty***

The medic situational assessment differs from the civilian scene size-up in that it centers around an awareness of the tactical situation and current hostilities in order to safely and effectively render care

#### **Examining the battlefield and determining zones of fire during engagement**

- (1) Determine routes of access to the casualty and egress with the casualty to ensure safety
- (2) Casualties will occur over time, thus, changing the demands on your services and resources

#### **Consider care under fire**

- (1) Anticipate the care you will offer at the casualty's side and what effect the care being given will have on drawing fire such as movement, noise or light
- (2) Determine what care is best offered at the casualty's side and what is best given after movement to safety
- (3) Do not offer extensive assessment and care until you can move the casualty to cover or at least concealment

#### **As you enter a fire zone, recognize hazards, seek cover and concealment, and carefully scan the area for potential danger**

- (1) Survey the area for small arms fire
- (2) Detect area for fire or explosive devices
- (3) Determine threat for chemical or biological agents
- (4) Survey building(s) structure for stability

#### **Remove casualty to safe area if necessary prior to assessment or treatment**

- (1) Getting the casualty to cover (or concealment) may entail moving the casualty. Tell the casualty to move as quickly as possible to cover while maintaining a low profile. If the casualty is unable to move, the medic may need to assist the casualty using manual evacuation. The risk in moving the casualty is further injuries, but the benefit of protection outweighs the risk
  - (a) The medic should never hesitate to move a casualty who is exposed to fire. Each situation is different. You must evaluate the pros and cons of movement. If the casualty is not currently receiving fire and a C-spine injury is likely, you may elect to delay movement until it can be done safely.
  - (b) Ideally, choose a technique that is least likely to aggravate the casualty's injuries

- (2) Request assistance. You should request assistance in movement and treatment prior to attempting to move casualty.
  - (a) Direct Combat Life Savers (CLS) to provide treatment. CLS' will be utilized and directed by medical personnel once hostilities have ceased.
  - (b) Assign individuals to perform self aid or buddy aid as needed
- (3) Request covering fire to reduce the risk to you and the casualty during movement to and from the casualty's location
- (4) Be sure that the location you are moving to will provide optimum cover and concealment. Plan your evacuation route prior to exposing yourself to hostile fire.
- (5) Consider a NBC environment

**Determine mechanism of injury**

- (1) Determine how the injury occurred
  - (a) Burns
  - (b) Ballistic, etc.
  - (c) Falls
  - (d) NBC
- (2) Determine number of casualties: Request additional help, if available (this information can be obtained from situational reports and evacuation requests)
  - (a) The number of casualties determines how and where you will treat
    - (i) Consider care of casualties under fire
    - (ii) Consider a mass casualty situation
  - (b) Manage time, equipment and supplies for casualty treatment
  - (c) Triage casualties

***Perform Initial Casualty Assessment given a medic aid bag or CMVS***

**Form general impressions: Consider c-spine immobilization**

- (1) Observe position of casualty
  - (a) Body position
  - (b) Position in relation to surroundings
- (2) Note activity in area surrounding casualty
  - (a) Survey the area for small arms fire
  - (b) Detect area for fire or explosive devices
  - (c) Determine threat for chemical or biological agents
  - (d) Survey building(s) structure for stability
- (3) Appearance of casualty
  - (a) Skin color
  - (b) Severe bleeding
  - (c) Obvious major injuries
  - (d) Anxiety
  - (e) Obvious distress - breathing, etc.

**Assess airway**

- (1) Assess the airway and level of consciousness (LOC)
- (2) Use common sense when opening the airway. Provide c-spine immobilization when necessary.
- (3) If the casualty can talk to you the airway is open and he/she is breathing
- (4) Open the airway
  - (a) Head-tilt/Chin-lift
  - (b) Jaw thrust
- (5) Sweep - use index finger to attempt to manually clear airway of obstructing object

**Assess breathing**

- (1) LOOK--LISTEN--FEEL.
  - (a) Can you **see** the chest rise and fall?
  - (b) Can you **hear** the casualty breathing?
  - (c) Can you **feel** the casualty breathing?
  - (d) Regular & full = Normal
  - (e) Labored, shallow, rapid, or irregular or absent = Abnormal
- (2) Assist ventilations if abnormal breathing

**Assess circulation**

- (1) Does the casualty have a pulse?
  - (a) Palpate and compare the carotid and radial pulse in the adult and child casualty, and auscultate the apical pulse in the infant casualty
  - (b) Full & regular = normal
  - (c) Weak, thready, irregular = abnormal
  - (d) Capillary Blanch Test
- (2) Both pulses absent, start CPR. In a combat situation with multiple casualties, there may be limited opportunities to initiate CPR.
- (3) Do not start CPR on a soldier who has been shot and is in cardiopulmonary arrest except on a very limited basis

**Assess disability/neurological status**

- (1) Level of mental status: Level of mental status has partially been assessed in the medic's general impression and airway assessment using AVPU:
  - (a) Alert (awake and oriented)
  - (b) Verbal - responds to verbal stimuli (awake but confused/unconscious but responds in some way)
  - (c) Pain - responds to pain (unconscious but responds to pain)
  - (d) Unresponsive (no gag or cough reflex)
- (2) Pupils
  - (a) Are they equal, round and reactive?
  - (b) Pinpoint
  - (c) Dilated

**Expose wounds**

- (1) Remove equipment and clothing (Except in a NBC environment or field of fire) from area around wound
- (2) Identify additional life-threatening injuries

***Obtaining an AMPLE history***

**Allergies**

- (1) Primarily to medications, also environmental allergies
- (2) Check ID tag to see if red allergy tag is affixed

**Medication**

- (1) Prescribed medication
- (2) Over-the-counter medication

**Pertinent medical history: Associated injuries/complications**

**Last oral intake**

**Events preceding incident.** "What were you doing at the time of injury?"

***Identify immediate life-threatening injury(ies)***

**Control life-threatening hemorrhage**

- (1) Direct pressure
- (2) Pressure dressing/pressure points
- (3) Tourniquet

**Treat for shock**

- (1) Provide supplemental oxygen
- (2) Consider intravenous fluids
  - (a) Utilize to reverse, or stabilize, effects of hypovolemia
  - (b) Should not delay direct transport or oxygen interventions

**Provide airway/breathing support**

- (1) Manual maneuvers
- (2) Airway adjuncts
- (3) Proper positioning
- (4) Provide supplemental oxygen: Assist ventilations

**Identify chest injury**

- (1) Look for:
  - (a) Flail chest –multiple rib fractures that cause paradoxical chest movement
  - (b) Open wounds
  - (c) Tension pneumothorax
  - (d) Hemothorax
  - (e) Impaled objects
  - (f) Lacerations

- (g) Punctures
  - (h) Ecchymosis - bluish discoloration of an area of skin or mucous membrane caused by the extravasation of blood into the subcutaneous tissues as a result of trauma
- (2) Provide immediate care
- (a) Seal sucking chest wounds
  - (b) Stabilize flail chest
  - (c) Decompress tension pneumothorax
  - (d) Stabilize impaled objects

**Assess the back**

**Assess the extremities**

**Perform additional casualty assessment given a medic aid bag**

**When performing a detailed trauma assessment**

- (1) Deformities
- (2) Contusions
- (3) Abrasions
- (4) Punctures/penetrations
- (5) Burns
- (6) Tenderness
- (7) Lacerations
- (8) Swelling

**Head**

- (1) Inspect for
  - (a) Obvious hemorrhage
  - (b) Ecchymosis, erythema, or contusions
  - (c) Scalp lesions
- (2) Palpate (touching or feeling) for
  - (a) Lumps
  - (b) Tenderness
  - (c) Distension
  - (d) Crepitation
  - (e) Depressions

**Eyes**

- (1) Inspect for
  - (a) PEARLA (Pupils, Equal, Round, Reactive, Light, Accommodation)
  - (b) Laceration to lid or globe
  - (c) Foreign matter in eye
  - (d) Unequal pupils (anisocoria)
  - (e) Eye movements
  - (f) Pupillary reaction
  - (g) Raccoon Eyes - which may indicate skull fracture
- (2) Palpate for
  - (a) Swelling in orbital or periorbital area

- (b) Failure to sense touch in supra-orbital and infraorbital areas if casualty is communicative

**Ear - inspect for**

- (1) Discharge from external auditory canal
- (2) Ecchymosis over mastoid (Battle's sign)
- (3) Lacerations
- (4) Bleeding
- (5) Avulsions

**Nose - inspect for**

- (1) Rhinorrhea
- (2) Patent nostrils
- (3) Bleeding
- (4) Flaring of anterior nares on inspiration
- (5) Septal hematoma

**Mouth**

- (1) Inspect for
  - (a) Potential airway obstruction
  - (b) Edema or hematoma to in tongue
  - (c) Bleeding
  - (d) Teeth or dentures lodged in pharynx
  - (e) Misalignment of teeth
  - (f) Pain when biting teeth together
- (2) Palpate for fractures
  - (a) Zygomatic bones
  - (b) mandible
  - (c) Maxilla

**Neck**

- (1) Inspect for C-spine tend lacerations
  - (a) Retraction at suprasternal notch on inspiration
  - (b) Deviation of trachea from midline
  - (c) Jugular vein distention (Step-offs)
- (2) Auscultate for air sounds in trachea

**Skin: Inspect for**

- (1) Jaundice
- (2) Cyanosis
- (3) Diaphoresis
- (4) Temperature
- (5) Moistness
- (6) Pallor

**Thorax**

- (1) Inspect for
  - (a) Respiration
    - (i) Rate-tachypnea
    - (ii) Depth



- (b) Retraction of intercostal spaces
  - (c) Excursion
  - (d) Chest elevation symmetry-flail chest
  - (e) Lacerations, puncture, or ecchymosis
- (2) Palpate
- (a) Vertebrae and ribs for symmetry and tenderness
  - (b) Anterior to posterior compression of thorax
  - (c) Lateral-to-lateral compression of thorax
  - (d) Clavicle
  - (e) Costochondral junction
- (3) Auscultate for lung and heart sounds
- (a) Lung sounds
    - (i) Absent or unequal breath
    - (ii) Characteristics
      - \* Crackles – a common abnormal respiratory sound heard on auscultation of the chest during inspiration. Sounds like shuffling of paper.
      - \* Rhonchi – abnormal sounds heard on auscultation of an airway obstructed by thick secretions, muscular spasm, neoplasm, or external pressure.
      - \* Wheezes – A form of rhonchus, characterized by a high-pitched or low-pitched musical quality.
      - \* Stridor – abnormal high pitch musical sound caused by an obstruction in the trachea or larynx (Best heard in neck region).
  - (b) Heart sounds – a normal noise produced within the heart during the cardiac cycle that can be heard over the pericardium. It may reveal abnormalities in cardiac structure or function. Cardiac auscultation is performed systematically from apex to base of the heart, using a stethoscope to listen. Listen for the following:
    - (i) Rate
    - (ii) Rhythm
    - (iii) S1 – The first heart sound in the cardiac cycle, occurring at the outset of ventricular systole. A dull and prolonged „lub“.
    - (iv) S2 – The second heart sound in the cardiac cycle. It is associated with closure of the aortic and pulmonic valves at the outset of ventricular diastole.
    - (v) Abnormal or skipped beats
- (4) Percussion
- (a) Fluid in thorax

- (b) Pneumothorax or collapsed lung – collection of air or gas in the pleura spaces causing the lung to collapse. May be the result of:
  - (i) An open chest wound that permits the entrance of air
  - (ii) The rupture of an emphysematous Bleb on the surface of the lung
  - (iii) Severe bout of coughing
  - (iv) May occur spontaneously without apparent cause

**Back - Inspect for**

- (1) Deformities
- (2) Contusions
- (3) Abrasions
- (4) Punctures/penetrations/exit wounds
- (5) Burns
- (6) Tenderness
- (7) Lacerations
- (8) Swelling

**Abdomen**

- (1) Inspect for
  - (a) Lacerations, ecchymosis, burns, etc.
  - (b) Hematoma
  - (c) Flexion of hips to relieve pain
  - (d) Wound
- (2) Auscultate bowel sounds
- (3) Palpate firmly for
  - (a) Distended abdomen
  - (b) Guarding
  - (c) Local tenderness
  - (d) Rebound pain
  - (e) Rigidity

**Pelvis**

- (1) Inspect for
  - (a) Stable or not stable
  - (b) Fracture
    - (i) Could be a source of major hemorrhage

**Extremities**

- (1) Inspect for
  - (a) Deformities or abnormal angulation or bone ends protruding
  - (b) Contusion
  - (c) Abrasions
  - (d) Punctures, needle marks or bites
  - (e) Bruising
  - (f) Tenderness
  - (g) Lacerations or ecchymosis

- (2) (h) Swelling
- Assess
  - (a) Inability to move joint
  - (b) Presence of extremity pulse
    - (i) Dorsalis pedis
    - (ii) Radial
  - (c) Nail bed color (cyanosis)
  - (d) Impaired sensation
  - (e) Pain

**Central nervous system**

- (1) Inspect for
  - (a) Absent reflexes, paralysis
  - (b) Loss of bowel or bladder

## TERMINAL LEARNING OBJECTIVE

Given a fully stocked M5 Bag or Combat Medic Vest System, oxygen and portable suctioning device secure an open airway and ensure casualty's ventilation/oxygenation IAW cited references.

### *Establish an airway*

#### **Perform manual maneuvers**

- (1) Head-tilt, chin-lift
  - (a) Once casualty is in supine position, place one hand on forehead and place fingertips of other hand under bony area at center of casualty's lower jaw
  - (b) Tilt head by applying gentle pressure to casualty's forehead
  - (c) Use fingertips to lift chin and to support lower jaw. Move jaw forward to point where lower teeth are almost touching upper teeth.
  - (d) Do NOT allow casualty's mouth to be closed
- (2) Jaw-thrust
  - (a) Keep casualty's head, neck, and spine aligned
  - (b) Take position at top of casualty's head resting your elbows on same surface the casualty is lying on
  - (c) Reach forward and gently place one hand on each side of casualty's lower jaw, at the angles of the jaw below the ears
  - (d) Stabilize casualty's head with forearms
  - (e) Using index fingers, push angles of casualty's lower jaw forward
  - (f) You may need to retract the casualty's lower lip with your thumb to keep the mouth open
  - (g) Do NOT tilt or rotate the casualty's head

#### **Insert nasal airway adjunct**

**NOTE:** Do not use the nasopharyngeal airway if you see the roof of the mouth is fractured or brain matter is exposed. The airway may enter the cranial cavity.

- (1) Purpose-to maintain an artificial airway for oxygen therapy or airway management when suctioning is necessary
- (2) Indications-when oropharyngeal airway cannot be used
  - (a) Casualty is conscious, semi-conscious, or has a gag reflex
  - (b) Casualty has injuries to mouth (e.g. broken teeth, massive oral tissue damage)
  - (c) Seizure casualties who may have clenched teeth due to seizing
  - (d) When vomiting is likely to occur
- (3) Complications

- (a) Possible complication resulting from device is nasal trauma
- (b) Some casualties, a nasal airway will trigger gag reflex: Do NOT use nasopharyngeal airway if there is evidence of head injury or if drainage of cerebrospinal fluid (CSF) from nose, mouth, or ears is present. CSF may indicate a skull fracture and the airway might enter the cranial cavity. Follow SOPs.
- (4) Nasopharyngeal insertion procedures
  - (a) Place the casualty on a firm surface in the supine position with C-spine stabilized
  - (b) Select proper size nasopharyngeal airway
    - (i) Diameter-select an airway with a diameter smaller than the casualty's nostril or one that is approximately the diameter of the casualty's little finger
    - (ii) Length-measure from tip of patient's nose to ear lobe
  - (c) Lubricate airway with a water soluble lubricant or sterile water if lubricant is not available
  - (d) Push tip of nose slightly up to expose opening in nostril
  - (e) Keeping the head in a neutral position, insert tip of airway through nostril
  - (f) Slowly advance tube along floor of nasal cavity until flange rest firmly against casualty's nostril
    - (i) If resistance is met during insertion, DO NOT continue
    - (ii) Stop, remove adjunct, relubricate and try other nostril
    - (iii) If resistance is still met, check proper size or use alternate artificial airway method
  - (g) Administer oxygen therapy and ventilate casualty at this time if necessary. Follow local protocol
  - (h) To remove the airway, pull out with a steady motion along the curvature of the nasal cavity

**Insert oral airway adjunct**

- (1) Purpose
  - (a) To hold the tongue away from the back of the throat, thereby preventing an airway obstruction (in a person without gag reflex)
  - (b) Also allows for drainage and/or suction of secretions to prevent aspiration
- (2) Indication-utilized for the unconscious patient without a gag reflex
- (3) Complications
  - (a) Induces vomiting and aspiration when gag reflex is present
  - (b) Airway obstruction from tongue may occur with improper placement: If the oropharyngeal airway is inserted into a patient with a gag reflex, vomiting or spasms of the vocal cords may occur, causing airway obstruction.

- (4) Oropharyngeal insertion procedures
  - (a) Place patient on a flat surface in a supine position
    - (i) Non-trauma patient-use head-tilt, chin-lift method
    - (ii) Trauma patient-minimize neck movement using jaw-thrust maneuver
  - (b) Maintain airway by utilizing manual techniques and/or mechanical devices (e.g., head-tilt, chin-lift, jaw thrust airway adjuncts)
  - (c) Select the proper size airway by measuring from the earlobe to the corner of the mouth or from the center of the casualty's mouth to the angle of the lower jaw bone
  - (d) With non-dominant hand, use the cross-finger technique to open the patient's mouth
  - (e) Visualize inside the mouth, and suction if necessary: Do NOT use the oropharyngeal airway if you see that the roof of the mouth is fractured or brain matter is exposed. The airway may enter the cranial cavity.
  - (f) Holding the adjunct in the dominant hand, position the correct size airway so that the tip is pointing toward the roof of the casualty's mouth
  - (g) Insert airway into casualty's mouth by sliding tip along the roof past the uvula or until resistance is met by the soft palate
  - (h) Gently rotate the airway 180 degrees, so tip is positioned behind back of tongue
  - (i) The flange of the airway should rest against the casualty's lips
  - (j) If J-tube is too large for casualty, more than a 1/4 of length protruding from lips, remove and choose proper size to prevent occlusion of airway.
  - (k) Administer oxygen, ventilate as necessary, IAW SOPs
  - (l) Monitor casualty closely. If the casualty gags or regains consciousness, remove the airway immediately
  - (m) Remove airway by pulling out with the natural curvature of the mouth, **DO NOT** rotate
  - (n) Vomiting may occur with airway removed; have suction device ready when removing airway adjunct.

#### Consider cricothyroidostomy

**NOTE:** This section is for familiarization only. The medic **will not** perform this procedure.

- (1) Casualty preparation
  - (a) Place casualty in a supine position
  - (b) Slightly hyperextend the casualty's neck (If suspected cervical injury do not hyperextend neck).
  - (c) Place blankets under casualty's neck or between shoulder blades so the airway is straight.

- (2) Assemble and prepare equipment and supplies
  - (a) Scalpel/scalpel handle/knife
  - (b) Suctioning device, if available
  - (c) Hemostats
  - (d) Needle holders
  - (e) Cannula (non-collapsible tube to maintain airway)
  - (f) Blanket
  - (g) Gloves
  - (h) Tape
  - (i) Establish a sterile field
- (3) Overview of procedure

**NOTE:** This procedure is performed by MD/PA. The medic should not attempt to perform.

- (a) Position the casualty for procedure (supine position). Strict surgical aseptic technique is followed during procedure.
- (b) Surgically prepare the area and assist the MD/PA in anesthetizing the area locally, if the patient is conscious/time permits
- (c) Assist MD/PA in locating the cricothyroid membrane.
- (d) Assist the MD/PA in stabilizing the trachea to prevent lateral movement of the trachea during the procedure
- (e) Provide the MD/PA the cannula and assist as necessary with insertion. Cannula may be a cuffed endotracheal tube of appropriate size or tracheostomy tube. Inflate the cuff of the tube and ventilate patient.
- (f) Provide supplemental oxygen
- (g) Secure the cannula in place to reduce movement in the opening and to prevent inhalation of the cannula.
- (h) Suction and or assist the MD/PA in suctioning the casualty's airway, as necessary.
  - (i) Insert the suction catheter 4 to 5 inches into the cannula
  - (ii) Apply suction only when withdrawing the catheter.
  - (iii) Administer 1 cc of saline solution into the airway to loosen secretions and help facilitate suctioning, if indicated
  - (iv) When directed by MD/PA, apply a sterile dressing under the casualty's cannula and make a Y-shape fold in a 4X4 gauze pad and place under the edge of the cannula to prevent irritation to the incision.
- (5) Assist with on-going patient assessment/management
  - (a) Continue to monitor vital signs to include pulse oximetry, if available.
  - (b) Assist with ventilation as necessary.
  - (c) Monitor for complications associated with the procedure

- (i) Aspiration
- (ii) Asphyxia
- (iii) Laceration of the esophagus/trachea
- (iv) Mediastinal emphysema
- (v) Hemorrhage/hematoma formation

**Consider chest needle decompression**

- (1) Indications - This procedure is applicable to the rapidly deteriorating casualty with a life threatening tension pneumothorax with decompression as evidenced by
  - (a) Respiratory distress and cyanosis
  - (b) Decreasing level of consciousness
- (2) Materials required to perform the procedure
  - (a) A minimum of a 2 inch, 12 to 14 gauge I.V. needle with catheter
  - (b) Betadine or alcohol prep pads
  - (c) Surgical gloves
- (3) Review anatomy of the chest and identify the following anatomical landmarks on the side of the tension pneumothorax
  - (a) Mid-Clavicular line
  - (b) Second Intercostal space - superior edge of the 3rd rib
- (4) Steps for performing the procedure
  - (a) Position of Casualty: this procedure is not dependant on any single position that the casualty may be in or able to be moved to. Casualty may be lying flat, sitting etc
  - (b) Site preparation: Preparation of the site is accomplished using either alcohol and or betadine prep pads to disinfect the skin
  - (c) Using your index finger trace the mid clavicular line, then Identify the second intercostal space (between the second and third ribs) on the side of the tension pneumothorax
  - (d) Insert the needle perpendicular to the chest wall, directly over the top of the third rib until a palpable pop is felt followed immediately by a hissing of air escaping from the chest cavity
  - (e) A rush of air confirms the diagnosis and rapidly improves the patient's condition
- (5) Complications
  - (a) Laceration of the intercostal vessels may cause hemorrhage. The intercostal artery and vein run around the inferior margin of each rib. Poor needle placement can lacerate one of these vessels
  - (b) Creation of a pneumothorax may occur if not already present. If your assessment was incorrect you may create a pneumothorax when you insert the needle into the chest
  - (c) Risk of infection is a consideration. Adequate skin preparation with an antiseptic will usually prevent this
  - (d) Intercostal nerve/artery injury is possible if the needle is placed beneath the rib accidentally



- (e) A tube thoracostomy should be accomplished by a PA/MD ASAP as the needle may be inadequate to continuously decompress the chest if a major bronchus is ruptured

**Review concepts of airway management**

**Objective of airway maintenance**

- (1) Immediately establish and maintain a patent airway
- (2) Determine whether casualty is breathing
- (3) Consider artificial ventilation

**Identify neglected prehospital skills related to airway**

- (1) Need for oxygen and artificial ventilation
- (2) Properly establishing and maintaining an open airway

**Review modified forms of respiration**

- (1) Coughing
  - (a) Forceful exhalation of a large volume of air from lungs
  - (b) Serves a protective function
- (2) Sighing
  - (a) Slow, deep inspiration followed by a prolonged expiration
  - (b) Sighing hyperinflates lungs and re-expands atelectatic areas
- (3) Grunting: indication of respiratory distress

**Review terminology**

- (1) Hyperventilation - An increase in the number of respirations per minute above the normal range for a given age group.
- (2) Hypoventilation - A decrease in the number of respirations per minute that falls below the normal range for a given age group.
- (3) Compliance - the ability of the lungs and chest wall to expand and ventilate a patient, supports whether or not you can adequately ventilate.

**Assess for respiratory obstruction**

**Type of respiratory obstruction**

- (1) Partial
  - (a) Allows for either adequate or poor air exchange
  - (b) Adequate exchange makes it possible for patient to cough effectively
  - (c) Poor air exchange will no longer allow casualty to generate an effective cough
  - (d) Often give off high-pitched noise while inhaling
  - (e) May also experience increased breathing difficulty and cyanosis
- (2) Complete
  - (a) Airflow is neither felt nor heard from nose and mouth
  - (b) Casualty cannot speak, breathe, or cough

- (c) Casualty will become unconscious quickly
- (d) Can be recognized by difficulty encountered when trying to ventilate the casualty

**Source of respiratory obstruction**

- (1) Tongue
  - (a) Most common cause of airway obstruction
  - (b) In absence of sufficient muscle tone, the relaxed tongue falls back against rear of pharynx
  - (c) Airway blockage by base of tongue depends on position of head and jaw
  - (d) Can occur regardless of whether casualty is in lateral, supine, or prone position
- (2) Foreign body: Largely, poorly chewed piece of food can obstruct upper airway by becoming lodged in laryngopharynx
- (3) Trauma/Combat
  - (a) Airway may be obstructed by:
    - (i) Loose teeth
    - (ii) Facial bone fractures
    - (iii) Tissue
    - (iv) Clotted blood
    - (v) Neck wound
  - (b) Penetrating or blunt trauma may obstruct airway by fracturing or displacing larynx, allowing vocal cords to collapse into tracheal lumen
- (4) Laryngeal spasm
  - (a) Moderate amounts of edema can severely obstruct airflow through the glottis and result in asphyxia
  - (b) Causes can include:
    - (i) Anaphylaxis
    - (ii) Epiglottitis
    - (iii) Inhalation of super-heated air, smoke, or toxic substances
- (5) Aspiration
  - (a) Dentures, teeth, and vomitus are likely to obstruct the airway
  - (b) If allowed to enter the lungs, can result in increased interstitial fluid and pulmonary edema
  - (c) Result can be severe damage to alveoli, thus causing hypoxemia
  - (d) Can usually be avoided by proper airway management and suction
- (6) Inadequate ventilation
  - (a) A reduction of either rate or volume of inhalation leads to a reduction of either rate or volume of inhalation
  - (b) Respiratory rate may be rapid, but depth of breathing is so shallow that little air exchange takes place
  - (c) State of decreased ventilation may be brought on by:
    - (i) Depressed respiratory function
    - (ii) Fractured ribs

- (iii) Drug overdose
- (iv) Spinal injury
- (v) Head injury

**Provide emergency medical care**

- (1) Heimlich maneuver (Only if choking, not in trauma)
  - (a) Stand behind casualty and wrap arms around waist
  - (b) Place a fist thumb-side toward abdomen, midway between xiphisternal notch and navel
  - (c) Grasp properly positioned fist with other hand and apply pressure inward and up toward casualty's head. Deliver five rapid thrusts
  - (d) For unconscious casualty, place in supine position. Kneel and straddle casualty at level of thighs, facing chest.
- (2) Finger sweep
  - (a) Open mouth by grasping tongue and lower jaw together with one hand and lifting
  - (b) Sweep a curved index finger from far side of mouth along the cheek, deeply into back of throat, and then out the near side
  - (c) Do NOT extend finger straight into center of pharynx
- (3) Chest thrusts (Only if choking, not in trauma)
  - (a) Place hands in position for closed chest compression
  - (b) Deliver 6-10 distinct thrusts in rapid succession
- (4) Suctioning: To remove vomitus, blood, and other fluids and secretions from the airway

***Provide oxygen if casualty is found not breathing***

**Apply mouth-to-mask (mouth-to-mouth) ventilation**

- (1) Position yourself at casualty's head and open the airway. If trauma is suspected, open using jaw-thrust technique.
- (2) Connect oxygen to inlet on face mask. Oxygen should run at 15 liters per minute.
- (3) Position mask on casualty's face so that apex is over bridge of nose and base is between lower lip and prominence of chin
- (4) Hold mask firmly in place while maintaining the proper head tilt
- (5) Take a deep breath and exhale into mask port
- (6) Remove mouth from port and allow for passive exhalation

**Apply one person bag-valve-mask**

- (1) Position yourself at casualty's head and establish an open airway. If trauma is suspected, open using jaw-thrust technique.
- (2) Select correct size mask
- (3) Form a "C" around ventilation port with thumb and index finger
- (4) With other hand, squeeze bag once every 5 seconds
- (5) Release pressure on bag and let casualty exhale passively
- (6) Observe for gastric distension, changes in compliance of bag with ventilation, improvement or deterioration of ventilation status

**Apply two person bag-valve-mask: noninvasive**

- (1) Open casualty's airway using jaw thrust technique (if trauma is suspected)
- (2) Select correct bag-valve mask size
- (3) Kneel at patient's head. Place thumbs over nose portion of mask and place you index and middle fingers over portion of mask that covers the mouth.
- (4) Use your ring and little fingers to bring the jaw upward, toward the mask.
- (5) Second rescuer should squeeze the bag once every 5 seconds (with two hand technique) to ventilate the casualty

### **Suction the airway**

**NOTE:** The first opportunity for suctioning will be in the field ambulance (FLA). (In relation to only on the battlefield)

Purpose-to keep airway clear of all foreign matter (e.g., blood, saliva, vomitus, debris) which could be aspirated into the trachea or the lungs

#### **Indications**

- (1) Casualties that have a decreased level of consciousness and are unable to clear their own airway
- (2) Casualties who cannot clear airway because of excessive amounts of foreign matter

#### **Suction Steps and Procedures**

- (1) Preoxygenate the casualty for 1 to 2 minutes to increase the oxygen saturation in the blood. This reduces the risk of causing hypoxemia.
- (2) Position casualty
  - (a) Non-trauma/conscious casualty--position yourself at the casualty's head and turn casualty's head to the side
  - (b) Trauma/unconscious casualty--position yourself at the casualty's head and maintain spinal alignment while log rolling casualty towards you
- (3) Select and measure the suction catheter
  - (a) Flexible suction catheter
    - (i) Sterile tube used for oropharyngeal or nasopharyngeal suctioning of fluids of small foreign particles
    - (ii) Sized in French (Fr.) guage
  - (b) Yankaeur suction tip (tonsil tip)
    - (i) Used for oral suction only
    - (ii) Not necessary to measure, just keep sight of the tip when inserting it
    - (iii) Large-bore opening - preferred method of removing large particles of foreign material
    - (iv) Only one size
  - (c) Consider route
    - (i) Oral
    - (ii) Nasopharyngeal
    - (iii) Nasotracheal
- (4) Check suction unit and equipment
  - (a) Ensure power source is available and unit is functioning before beginning the procedure
  - (b) Cover the proximal port with your thumb and set the suction vacuum at 100-120 mmHg for an adult or child, and 60-100 mmHg for an infant
  - (c) Release your thumb from the port before inserting it, do not suction on the way in

**Perform oropharyngeal suctioning**

- (1) Open casualty's mouth using the crossed finger technique and clear the mouth of any visible fluids or obstructions with gloved finger
- (2) Suction apparatus placement
  - (a) Suction tip--insert with the convex (bulging out) side against the roof of the mouth and stop at the beginning of the pharynx
  - (b) Suction catheter--insert the catheter up to the base of the tongue
  - (c) Cover proximal port to begin suctioning
  - (d) Suction as you slowly withdraw, moving the tip from side to side
  - (e) Suction for **15 seconds or less**
  - (f) Reoxygenate casualty after suctioning IAW local SOPs
  - (g) Observe casualty for:
    - (i) Hypoxemia
    - (ii) Color change
    - (iii) Increased or decreased pulse rate
    - (iv) Change in breath

*Combitube Intubation*

**Complications**

- (1) An increased incidence of sore throat, dysphagia and upper airway hematoma when compared to endotracheal intubation and LMA.
- (2) Esophageal rupture is a rare complication but has been described.
- (3) Complications may be partially preventable by avoiding over-inflation of the distal and proximal cuffs
- (4) Compared to intubation with an endotracheal tube under direct laryngoscopy or using the LMA, the Combitube seems to exert a more pronounced hemodynamic stress.

**Contra-indication**

- (1) Known esophageal disease

**Preparation**

- (1) Test both cuffs for leaks
  - (a) The pilot balloon of the distal cuff is white and is marked with the number 2
  - (b) Test the distal cuff by inflating with 15 ml of air
  - (c) The pilot balloon of the proximal cuff is blue and is marked with the number 1
  - (d) Test the proximal cuff by inflating with 85 ml of air

**Sizes Of Combitube**

41 Fr	for patients taller than 5ft (152 cm)
37 Fr	patients shorter than 5ft (152 cm)

- (1) The bulky design of the 41 Fr can make it more technically difficult to insert
- (2) Satisfactory results using the 37 Fr Combitube on taller patients.

#### **Oral Intubation**

- (1) The combitube can be inserted blindly without the aid of a laryngoscope
- (2) Use of a laryngoscope has been reported to facilitate placement of the Combitube,
- (3) The laryngoscope aids insertion by forcefully creating a greater space in the hypopharynx.
- (4) Induce patient as if for regular intubation.
- (5) Patient head position can be neutral.
- (6) When direct laryngoscopy is attempted and the vocal cords can be visualized, the Combitube should be placed in the trachea and used as a regular endotracheal tube.
  - (a) Inflate the distal cuff with just enough air until no leak is present.
  - (b) Check for bilateral breath sounds over the lungs and confirm endotracheal placement on the capnogram.
  - (c) Connect the breathing circuit to the white connector number 2.
- (7) If the Combitube is placed blindly, the left hand should elevate the chin while the right hand maneuvers the Combitube.
- (8) More space can be created in the hypopharynx by using a laryngoscope with the left hand.
- (9) The Combitube should be inserted to such a depth that the upper incisors are between the two black guidelines on the external surface of the tube:
  - (a) Inflate the distal cuff with 12 ml.
  - (b) Ventilate through the white connector number 2 and listen for gurgling sounds over the epigastrium or breath sounds over the lungs. If breath sounds are heard over the lungs the Combitube has been placed in the trachea and can be used as a regular ETT as described above after confirmation on the capnogram. If gurgling sounds are heard over the epigastrium, the Combitube is located in the esophagus.
  - (c) Inflate the proximal cuff with just enough air until either no leak is present or a subjective sensation of increased resistance to cuff inflation is encountered. This is usually achieved by inflating with 50-75 ml of air. This is less than the 85 ml recommended by the manufacturer but has been found to cause less upper airway trauma (1)
  - (d) Ventilate through the blue connector number 1, listen for breath sounds over the lungs and confirm ventilation on the capnogram.

#### **Troubleshooting Tips**

- (1) Unable to ventilate patient through blue connector number 1

- (a) Make sure the Combitube is not per chance in the trachea.
  - (b) Attempt to ventilate through connector number 2, if breath sounds are heard over the lungs then the combitube has been placed in the trachea instead of the esophagus.
  - (c) Deflate the large proximal pharyngeal cuff and use the Combitube as a regular ETT.
- (1) Unable to ventilate patient through either connector
- (a) Confirm that the combitube has been placed in the esophagus by listening for epigastric gurgling sounds while ventilating through connector number 2.
  - (b) Withdraw the combitube 2-3 cm at a time while ventilating through connector number 1 until breath sounds are heard over the lungs.
  - (c) The most common cause of this inability to ventilate through either connector is an excessive insertion depth of the combitube (relative to the patient).
  - (d) This will cause obstruction of the glottic opening by the large proximal pharyngeal cuff.



## TERMINAL LEARNING OBJECTIVE

Given a standard fully stocked M5 Bag or Combat Medic Vest System, IV administration equipment and fluids, selected medications, and documentation forms. You encounter a casualty who presents with external or internal bleeding. The casualty has been initially assessed and injury(ies) prioritized. IAW Emergency Care in the Streets, FM 21-11, and Emergency Medicine.

### **Identify external bleeding**

**Body substance isolation must be routinely taken to avoid skin and mucous membrane exposure to body fluids**

- (1) In a tactical situation, your only line of defense may be gloves.
- (2) Additional BSI equipment could include:
  - (a) Eye protection
  - (b) Masks
  - (c) Hand washing following each run

### **Severity**

- (1) Dependent upon amount of blood lost in relation to physical size of casualty
- (2) Sudden loss of 1 liter (1000 cc) of blood is considered serious
- (3) May also depend on casualty's condition - look for signs and symptoms of shock

### **Types of bleeding**

- (1) Arterial
  - (a) Often rapid, profuse and pulsating
  - (b) Usually bright red in color because it is rich in oxygen
- (2) Venous
  - (a) Steady flow
  - (b) Usually dark red or maroon in color
- (3) Capillary
  - (a) Slow and oozing
  - (b) Often clots spontaneously

### **Provide emergency medical care**

- (1) **Direct Pressure:**
- (2) Quickest method to control bleeding. Bleeding is controlled by applying pressure directly to the wound
  - (a) Place a sterile dressing on the wound
  - (b) Tie a knot with the sterile dressing or adhere tape directly over the wound
  - (c) Only tight enough to control bleeding

- (i) If bleeding is not controlled, apply another dressing over the first or apply direct pressure with your hand or fingers over the wound
  - (ii) Direct pressure can be applied by the casualty or a bystander
- (3) Elevation to control bleeding**
- (a) Raising (elevation) of an injured arm or leg extremity, above the level of the heart
  - (b) Elevation should be used together with direct pressure
  - (c) Do not elevate an extremity if you suspect a broken bone (fracture) until it has been properly splinted and you are certain that elevation will not cause further injury
  - (d) Use a stable object to maintain elevation, such as a ruck sack. Placing an extremity on an unstable object may cause further injury
- (4) Pressure Points: Used in cases of severe bleeding when direct pressure and elevation are not controlling the bleeding**
- (a) Bleeding from an artery can be controlled by applying pressure to the appropriate pressure point
  - (b) Pressure point
    - (i) Areas of the body where the blood flow can be controlled by pressing the artery against an underlying bone
    - (ii) Pressure is applied with the fingers, thumb, or heel of the hand.
  - (c) Pressure points most often used
    - (i) Arm (brachial)
      - \* Used to control severe bleeding of the lower part of the upper arm and elbow
      - \* Located above the elbow on the inside of the arm in the groove between the muscles
      - \* Using your fingers or thumb, apply pressure to the inside of the arm over the bone
    - (ii) Groin (femoral)
      - \* Used to control severe bleeding of the thigh and lower leg
      - \* Located on the front, center part of the crease in the groin
  - (d) Application of pressure points
    - (i) Position the casualty on his or her back, kneel on the opposite side from the wounded leg, place the heel of your hand directly on the pressure point, and lean forward to apply pressure
    - (ii) If the bleeding is not controlled, it may be necessary to press directly over the artery with the flat surface of the fingertips and to apply

additional pressure on the fingertips with the heel of your other hand

**(5) Splints**

- (a) Immobilization is one of the best ways to stop bleeding
- (c) Broken bone fragments may continue to grate on blood vessels and increase bleeding if they are not immobilized
- (d) Muscular activity can also increase the rate of blood flow
- (e) Air splints may be used to apply direct pressure over an extremity
- (f) Splinting using an air splint gives a double benefit – splinting and direct pressure

**(6) Tourniquet**

- (a) Used only as a last resort to control severe bleeding after all other methods have failed and is used only on the extremities
- (b) Before use, you must thoroughly understand its dangers and limitations. Tourniquets cause tissue damage and loss of extremities when used by untrained individuals. Tourniquets are rarely required and should only be used when an arm or leg has been partially or completely severed and when bleeding is uncontrollable.
- (c) The standard tourniquet
  - (i) Normally a piece of cloth folded until it is 3 or more inches wide
  - (ii) 6 or 7 layers thick
  - (iii) Can be a strap, belt, neckerchief, towel, or other similar item.
  - (iv) Folded triangular bandage makes a great tourniquet
  - (v) Never use wire, cord, or any material that will cut the skin.
- (d) Apply a tourniquet
  - (i) While maintaining the proper pressure point, place the tourniquet between the heart and the wound, leaving at least 2 inches of uninjured skin between the tourniquet and wound
  - (ii) Place a pad (roll) over the artery to be compressed
  - (iii) Wrap the tourniquet around the extremity twice, and tie a half-knot on the upper surface
  - (iv) Place a short stick or similar object on the half-knot, and tie a square knot
  - (v) Twist the stick to tighten, **UNTIL BLEEDING STOPS AND NO FURTHER**
  - (vi) Secure the stick in place
  - (vii) Never cover a tourniquet
  - (viii) Using a marker, make a "T" on the casualty's forehead and the time and date tourniquet was applied

- (ix) Never loosen or remove a tourniquet once it has been applied. The loosening of a tourniquet may dislodge clots and result in enough blood loss to cause shock and death
- (7) **Dress the stump (in case of amputation)**
- (a) Apply dressing to cover the end of the stump
  - (b) Often, blood vessels collapse or retract
  - (c) Control bleeding by direct pressure, pressure dressing and/or tourniquet (as required or necessary)
  - (d) When possible, wrap the amputated part in a sterile dressing
  - (e) Preservation of Amputated Parts
    - (i) Rinse the amputated part free of debris with cool, sterile saline
    - (ii) Wrap the part loosely in saline-moistened sterile gauze
    - (iii) Seal the amputated part inside a plastic bag, and place it in a cool container. Keep cool, but do not allow it to freeze
    - (iv) Never warm an amputated part
    - (v) Never place an amputated part in water
    - (vi) Never place an amputated part directly on ice
    - (vii) Never use dry ice to cool an amputated part
- (8) **Continually reassess the casualty to include all vital signs**

**Identify internal bleeding**

**Severity**

- (1) Internal bleeding can result in severe blood loss with resultant shock (hypoperfusion) and subsequent death
- (2) Injured or damaged internal organs commonly lead to extensive bleeding that is concealed
- (3) Traumatized painful, swollen, and deformed extremities, or long bone fractures may also lead to serious internal blood loss
- (4) Suspicion and severity of internal bleeding should be based on mechanism of injury
- (5) Although not usually visible, can result in serious blood loss. A casualty with internal bleeding can develop shock before you realize the extent of their injuries.

**Mechanism of injury**

- (1) Falls
- (2) Blast injuries
- (3) Penetrating trauma
  - (a) Gunshot wounds
  - (b) Stab wounds
  - (c) Impaled objects

**Signs and symptoms - assessment findings of internal bleeding**

- (1) Bruise indicates bleeding into the skin (soft tissues)
- (2) Severe internal bleeding occurs in injuries caused by a violent force (blunt injury), puncture wounds (knife), and broken bones
- (3) Signs of internal bleeding include: (Steps 1 – 6 are the same as shock so there should be a strong suspicion of shock)
  - (i) Anxiety and restlessness
  - (ii) Excessive thirst (polydipsia)
  - (iii) Nausea and vomiting
  - (iv) Cool, moist, and pale skin (cold and clammy caused by lack of circulation to skin)
  - (v) Rapid breathing (tachypnea)
  - (vi) Rapid, weak pulse (tachycardia)
  - (vii) Bruising or discoloration at site of injury (contusion)
  - (viii) Tenderness or rigidity of abdomen
- (4) Severe internal bleeding
  - (i) Notify MD/PA
  - (ii) Rapid Transport
  - (iii) Monitor airway, breathing, and circulation (ABCs)
  - (iv) Treat for shock
  - (v) Administer oxygen, if available
  - (vi) Place casualty in most comfortable position
  - (vii) Maintain normal body temperature
- (5) Nosebleed (epistaxis) can be caused by an injury, disease, the environment, high blood pressure, and changes in altitude
  - (i) Nosebleeds frighten the casualty and may bleed enough to cause shock
  - (ii) Cover the nose with a loose, dry, sterile dressing and notify the MD/PA
  - (iii) Keep the casualty quiet, sitting with head tilted forward
  - (iv) Put pressure on the upper lip just below the nose
  - (v) Inform the casualty not to rub, blow, or pick their nose
  - (vi) Seek MD/PA assistance if the nosebleed continues, bleeding starts again, or bleeding is because of high blood pressure
  - (vii) If the casualty loses consciousness, place them on their side to allow blood to drain from the nose and call the MD/PA

**Provide emergency medical care**

- (1) Casualties with severe external bleeding and suspected internal bleeding must be seen by MD/PA as soon as possible and evacuated
- (2) All casualties with external and internal bleeding should be treated for shock. Includes IV fluids to maintain peripheral perfusion.
- (3) Maintain airway - provide artificial ventilation
- (4) Continue reassessments, pulse oximetry, if available

**Review of dressings and bandages**

**Dressing**

**Any materials applied to a wound in an effort to control bleeding and prevent further contamination.  
Dressings should be sterile.**

**Bandage**

**Any material used to hold a dressing/or splint in place.  
Bandages should be clean but may not be sterile.**

**Three basic rules to dressing application:**

- (1) Use sterile materials
- (2) Cover the entire wound
- (3) Control bleeding

**Four basic rules to bandaging:**

- (1) Do not bandage too tightly
- (2) Do not bandage too loosely
- (3) Do not leave loose ends
- (4) Do not cover tips of fingers, mouth, nose and toes

**Types of dressings and bandages**

- (1) Dressings:
  - (a) Gauze pads (4x4's etc...)
  - (b) Roller gauze (various sizes)
- (2) Bandages:
  - (a) Roller gauze
  - (b) Elastic Roller gauze (ice wraps)
  - (c) Triangular (cravats)
- (3) Combo dressings/bandages:
  - (a) Field dressing/Abdominal dressing
  - (b) Adhesive bandages (band-aids = various sizes)

## TERMINAL LEARNING OBJECTIVE

Given a stocked M5 Bag or Combat Medic Vest System, IV administration equipment and fluids, oxygen, suction and ventilation equipment (if available), selected medications, and documentation forms. Given a casualty who is exhibiting signs and symptoms of shocks. Other life threatening injury(ies) is/are identified and treated. IAW Emergency War Surgery, Emergency Medicine, and Basic Trauma Life Support.

### Definition of shock

Shock is a state of inadequate tissue perfusion resulting in decreased amount of oxygen to vital tissues and organs leading to reduced removal of waste products of metabolism

### Causes of shock

- (1) Heart attack
- (2) Severe or sudden blood loss from an injury or serious illness
- (3) Large drop in body fluids, such as following a severe burn or severe vomiting and/or diarrhea
- (4) Blood poisoning from major infections
- (5) Exposure to extreme heat or cold for too long

### Hypovolemic shock

- (1) Hemorrhage is the most common cause of hypovolemic shock after injury
- (2) Volume of fluid is reduced because of loss of blood, plasma, or body fluids or volume of vascular system has increased (vasodilation)
- (3) Adequate circulation cannot be maintained to all parts of the body
- (4) Can be caused by:
  - (a) Severe burns
  - (b) Protracted vomiting and diarrhea
  - (c) Hemorrhage
- (5) Internal or external hemorrhage due to trauma such as crush injuries (hemorrhagic shock) - loss of whole blood
- (6) Clinical signs of acute hemorrhagic shock include:

% Blood loss	Clinical Signs
< 15	Slightly increased heart rate, Local swelling, bleeding
15-25	Increased heart rate, Increased diastolic blood pressure, prolonged capillary refill
25-50	Above findings plus: hypotension, confusion, acidosis, decreased urine output
> 50	Refractory hypotension, refractory acidosis, death

- (7) Other common signs:
  - (a) Progressive fall in systolic and diastolic blood pressure
  - (i) Organ blood flow and tissue perfusion are the critical determinants

- (ii) Systolic blood pressure 80mmHg or below can indicate shock for normotensive patients
- (iii) Any fall in systolic blood pressure below 100mmHg or any fall of 20mmHg or more below patient's usual systolic blood pressure must be brought to the attention of the physician
- (iv) In early stages of shock, blood pressure may not fall because of body's attempt to compensate
- (b) Skin is cold, clammy and pale, caused by:
  - (i) Constriction of peripheral blood vessels (cold)
  - (ii) Activation of sweat glands (clammy)
  - (iii) Ischemia of the cells (pale)
- (c) Cyanosis
  - (i) Nail beds, lips, and ear lobes
  - (ii) Lack of cyanosis may not prove absence of hypoxia
- (d) Rapid, weak, thready pulse
  - (i) Rapid heart rate is a compensatory mechanism to increase cardiac output
  - (ii) Narrow pulse pressure due to fall in systolic blood pressure and rise in diastolic blood pressure causes weak and thready pulse
  - (iii) In later stages, pulse may be imperceptible
- (e) Shallow, rapid breathing, and grunting may be heard
  - (i) Air hunger evident in earlier stages
  - (iii) Rate decreases in profound shock
- (f) Subnormal temperature due to depressed heat regulating mechanism (except in bacteremic shock)
- (g) Oliguria - caused by vasoconstriction associated with diminished cardiac output resulting in a reduction in renal blood flow
- (h) Listlessness, stupor, and loss of consciousness as condition deteriorates

#### **Non-hemorrhagic shock**

##### **(1) Cardiogenic shock**

- (a) A decrease in the contractions/contractile ability of the myocardium. Heart fails to circulate blood efficiently to the tissues. From MI etc.
- (b) A reduction in cardiac output results in:
  - (i) Decreased circulating blood supply
  - (ii) Decreased oxygen delivery
- (c) Assess for blunt trauma to the chest. Can be caused by:
  - (i) Cardiac tamponade
  - (ii) Cardiac dysrhythmias
  - (iii) Myocardial infarction
  - (iv) Cardiac contusions
- (d) Also assess for:
  - (i) Tachycardia



- (ii) Muffled heart sounds
  - (iii) Engorged neck veins with hypotension
  - (iv) Dyspnea
  - (v) Edema in feet and ankles
- (2) **Septic shock**
- (a) Overwhelming bacterial infection
    - (i) Result of vasodilation of small blood vessels in wound area
    - (ii) General vasodilation if infection has entered the bloodstream
  - (b) Major cause - endotoxin release by these microorganisms
  - (c) Most common cause - gram negative organisms
  - (d) Common conditions that predispose to sepsis
    - (i) Diabetes
    - (ii) Cirrhosis
    - (iii) Post partum
    - (iv) Post abortion infections
  - (e) Septic shock usually does not develop for 2 to 5 days after an injury and the medic will not often see it in a first aid situation
  - (f) This type of shock carries a poor prognosis and must always be treated under the direct supervision of a medical officer.
  - (g) The medic should assess for:
    - (i) Penetrating abdominal injuries
    - (ii) Signs of infection
    - (iii) Warm pink skin and dry elevated body temperature
    - (iv) Tachycardia
    - (v) Wide pulse pressures
- (3) **Neurogenic shock**
- (a) Insult to the nervous system which leads to decreased arterial resistance
  - (b) Vasodilation -- as result of loss of sympathetic nervous system control over the size of the arterioles
  - (c) Can be caused by:
    - (i) Spinal cord injury
    - (ii) Certain drugs
    - (iii) Brain stem, spinal or torso trauma
  - (d) Signs and Symptoms:
    - (i) Hypotension without tachycardia
    - (ii) Warm pink skin
    - (iii) Low blood pressure
- (4) **Anaphylactic shock/Vasogenic shock**
- (a) Diffuse vasodilation results in an increase in the size of the vascular bed
  - (b) Blood is trapped in small vessels and in viscera and is temporarily lost to total circulatory volume
  - (c) Sudden severe allergic reaction to:
    - (i) Drug

- (ii) Foreign substance
- (iii) Toxin
- (iv) Insect stings (i.e. wasps, bees, hornets, ants, yellow jackets)
- (v) Food
- (vi) Animal serum
- (vii) Plants (i.e. poison oak, poison ivy and sumae)
- (d) Onset usually begins within 30 minutes after exposure to causative factor
  - (i) Reaction usually progresses in explosive manner
  - (ii) Peak intensity within 1 hour
- (e) Primary anaphylactic shock organs - Respiratory and cardiovascular events account for a majority of mortality associated with anaphylaxis.
  - (i) Cardiovascular
  - (ii) Respiratory
  - (iii) Cutaneous
  - (iv) Gastrointestinal
  - (v) Circulatory
- (f) Symptoms
  - (i) Apprehension and flushing
  - (ii) Tightness in chest or difficulty breathing due to bronchi constriction
  - (iii) Wheezing or shortness of breath
  - (iv) Rapid, weak pulse
  - (v) Cyanosis
  - (vi) Generalized itching or burning
  - (vi) Sneezing or coughing
  - (viii) Watering and itching of the eyes
  - (ix) Hives
  - (x) Blood pressure drops, dizziness/faintness, swelling/edema, especially of face, tongue
  - (xi) Coma
- (g) Consider an epinephrine injection, if indicated and authorized under protocol

**Severity of Shock**

- (1) Compensated shock
  - (a) First stage
  - (b) Normal body defense mechanisms maintain perfusion and function
- (2) Decompensated shock
  - (a) Second stage
  - (b) Blood shunted from less to more vital organs
- (3) Irreversible shock
  - (a) Third and final stage
  - (b) Multiple system organ damage
  - (c) Even with treatment, death is the result

**Assess for shock**

**Determine history of shock**

- (1) Is there internal or external hemorrhage underlying cardiac problems sepsis trauma to spine cord, drugs or other sensitize substance contact?
- (2) Determine amount of blood loss
- (3) Determine how long casualty has been bleeding

**Determine level of consciousness. Report and record, using AVPU:**

- (1) Alert
- (2) Verbal response to stimuli
- (3) Pain response to stimuli
- (4) Unresponsive to any stimuli

**Early Signs of shock include:**

- (1) Soldier must have high index of suspicion
- (2) Minimum tachycardia
- (3) No measurable changes occur in blood pressure, pulse pressure or respiratory rate

**Other common signs:**

- (1) Decrease in systolic and increase in diastolic resulting in narrow pulse pressure
  - (a) Organ blood flow and tissue perfusion are the critical determinants
  - (b) Systolic blood pressure 80mmHg or below can indicate shock for normotensive patients
  - (c) Any fall in systolic blood pressure below 100mmHg or any fall of 20mmHg or more below patient's usual systolic blood pressure must be brought to the attention of the physician
  - (d) In early stages of shock, blood pressure may not fall because of body's attempt to compensate
- (2) Skin is cold, clammy and pale, caused by:
  - (a) Constriction of peripheral blood vessels (cold)
  - (b) Activation of sweat glands (clammy)
  - (c) Ischemia of the cells (pale)
- (3) Cyanosis
  - (a) Nail beds, lips, and ear lobes
  - (b) Lack of cyanosis may not prove absence of hypoxia
- (4) Rapid, weak, thready pulse
  - (a) Rapid heart rate is a compensatory mechanism to increase cardiac output
  - (b) Narrow pulse pressure due to fall in systolic blood pressure and rise in diastolic blood pressure causes weak and thready pulse
  - (c) In later stages, pulse may be imperceptible
- (5) Shallow, rapid breathing, and grunting may be heard
  - (a) Air hunger evident in earlier stages

- (b) Rate decreases in profound shock
- (6) Subnormal temperature due to depressed heat regulating mechanism (except in septic shock)
- (7) Oliguria - caused by vasoconstriction associated with diminished cardiac output resulting in a reduction in renal blood flow
- (8) Listlessness, stupor, and loss of consciousness as condition deteriorates

**Provide medical care**

**Treatment for Hypovolemic Shock**

- (1) The goal of treating shock is to increase tissue perfusion and oxygenation status. The treatment will vary according to type of shock.
- (2) Maintain airway
  - (a) Ensure open airway using head-tilt/chin-lift or jaw-thrust
  - (b) Provide oxygen therapy once at BAS
- (3) Control bleeding
  - (a) Direct pressure
  - (b) Elevation
  - (c) Pressure points
  - (d) Tourniquet if indicated
- (4) Obtain baseline vital signs and level of consciousness
- (5) Position casualty
  - (a) On back with legs elevated 6 to 12 inches
  - (b) Place casualty so that head is lower than the feet if possible (except in head injury)
  - (c) If vomiting or bleeding around mouth, place on side or back with head turned to side (except in head injury)
  - (d) If you suspect head or neck injuries, or are unsure of casualty's condition, keep them lying flat.
- (6) Keep patient at normal temperature. Attempt to maintain normal body temperature, to prevent hypothermia and minimize effect of shock
- (7) Fluid therapy
  - (a) Intravenous fluid administration is the single most important factor in treatment of any type of shock except cardiogenic shock
  - (b) Two 16 gauge IV's ACF Bilateral
  - (c) Normal saline is adequate until properly cross-matched whole blood can be administered
    - (i) Replace lost blood volume
    - (ii) Replace lost extracellular fluid
  - (d) All shock is severe, immediate administration of fluids is warranted. Delay transportation
- (8) Drug therapy
  - (a) To correct specific cardiac problems, only if ordered by MD
- (9) Provide on-going assessment
  - (a) Monitor level of consciousness
  - (b) Monitor blood pressure

- (c) Monitor heart rate
- (d) Monitor respiratory rate
- (e) Monitor vital signs
- (f) Monitor skin response

**Treatment for Septic Shock**

- (1) Securing the airway is the first priority
- (2) Administer oxygen, if available
- (3) Obtain baseline vital signs and level of consciousness
- (4) Position casualty
  - (a) On back with legs elevated 6 to 12 inches
  - (b) Place casualty so that head is lower than the feet if possible (except in head injury)
  - (c) If you suspect head or neck injuries, or are unsure of casualty's condition, keep them lying flat.
- (5) Keep patient at normal temperature. Attempt to maintain normal body temperature, to prevent hypothermia and minimize effect of shock.
- (6) Fluid therapy
  - (a) Intravenous fluid administration is the second most important factor in treatment of any type of shock except cardiogenic shock
  - (b) Two 16 gauge IV's ACF Bilateral
  - (c) Normal saline is adequate until properly cross-matched whole blood can be administered
    - (i) Replace lost blood volume
    - (ii) Replace lost extracellular fluid
  - (d) All shock is severe, immediate administration of fluids is warranted.
- (7) Drug therapy
  - (a) Dependent on source of infection
  - (b) Administer empiric antibiotic as ordered by MD
- (8) Provide on-going assessment
  - (a) Perform serial neurological exams
  - (b) Monitor blood pressure
  - (c) Monitor heart rate
  - (d) Monitor respiratory rate
  - (e) Monitor vital signs
  - (f) Monitor skin response

**Treatment for Neurogenic Shock**

**NOTE:** Diagnosis of Neurogenic shock is one of exclusion

- (1) Securing the airway is the first priority
- (2) Administer oxygen, if available
- (3) Obtain baseline vital signs and level of consciousness
- (4) Position casualty
  - (a) On back with legs elevated 6 to 12 inches

- (b) Place casualty so that head is lower than the feet if possible (except in head injury)
- (c) If vomiting or bleeding around mouth, place on side or back with head turned to side (except in head injury)
- (d) If you suspect head or neck injuries, or are unsure of casualty's condition, keep them lying flat.
- (5) Keep patient at normal temperature. Attempt to maintain normal body temperature, to prevent hypothermia and minimize effect of shock.
- (6) Fluid therapy
  - (a) Intravenous fluid administration is the single most important factor in treatment of any type of shock except cardiogenic shock
  - (b) Two 16 gauge IV's ACF Bilateral
  - (c) Normal saline is adequate until properly cross-matched whole blood can be administered
    - (i) Replace lost blood volume
    - (ii) Replace lost extracellular fluid
  - (d) All shock is severe, immediate administration of fluids is warranted.
- (7) Drug therapy
  - (a) High dose corticosteroids given intravenously over the first two – three days. Ordered by MD.
- (8) Provide on-going assessment
  - (a) Monitor level of consciousness
  - (b) Monitor blood pressure
  - (c) Monitor heart rate
  - (d) Monitor respiratory rate
  - (e) Monitor vital signs
  - (f) Monitor skin response

**Treatment for Anaphylactic shock**

- (1) Securing the airway is the first priority
- (2) Exposure to the causative agent, if identified, must be terminated if ongoing
- (3) First-line therapies, during acute stage of anaphylaxis
  - (a) Epinephrine
  - (b) IV fluids
  - (c) Oxygen (may be limited until reach BAS)
- (4) Second-line therapies the soldier medic may use to prevent recurrences and treat anaphylaxis refractory to the first-line treatments
  - (a) Antihistamines
  - (b) Corticosteroids
- (5) Evacuate

***Perform a Casualty Assessment  
Appendix A  
Competency Skill Sheets***

**Primary Survey**

Soldiers Name: \_\_\_\_\_ SSN: \_\_\_\_\_ CO: \_\_\_\_\_ TM: \_\_\_\_\_  
Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Initial Evaluator: \_\_\_\_\_  
Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Retest Evaluator: \_\_\_\_\_  
Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Final Evaluator: \_\_\_\_\_

	1st	2nd	3rd
a. Ensure scene safety	P / F	P / F	P / F
b. General appearance	P / F	P / F	P / F
c. Airway Assessment (1) Rapidly assess for obstruction (2) Establish patent airway (Jaw Thrust Maneuver) (3) Provide C-spine immobilization (4) Clear airway of foreign bodies	P / F	P / F	P / F
d. Breathing Assessment (1) Expose the neck and chest (2) Determine respiration rate (3) Auscultate chest bilaterally	P / F	P / F	P / F
e. Circulation Assessment (1) Determine pulse rate (2) Identify hemorrhage	P / F	P / F	P / F
f. Assess Neurological Status (1) Used AVPU (2) Assess pupils	P / F	P / F	P / F
g. Expose Wounds (1) Removed equipment and clothes	P / F	P / F	P / F

Instructor Comments:



**Primary and Secondary Survey**

Soldiers Name: \_\_\_\_\_ SSN: \_\_\_\_\_ CO: \_\_\_\_\_ TM: \_\_\_\_\_

Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Initial Evaluator: \_\_\_\_\_

Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Retest Evaluator: \_\_\_\_\_

Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Final Evaluator: \_\_\_\_\_

	1st	2nd	3rd
a. Ensure scene safety	P / F	P / F	P / F
b. General appearance	P / F	P / F	P / F
c. Airway Assessment			
(1) Rapidly assess for obstruction			
(2) Establish patent airway (Jaw Thrust Maneuver)	P / F	P / F	P / F
(3) Provide C-spine immobilization			
(4) Clear airway of foreign bodies			
d. Breathing Assessment			
(1) Expose the neck and chest			
(2) Determine respiration rate	P / F	P / F	P / F
(3) Auscultate chest bilaterally			
e. Circulation Assessment			
(1) Determine pulse rate	P / F	P / F	P / F
(2) Identify hemorrhage			
f. Assess Neurological Status			
(1) Used AVPU	P / F	P / F	P / F
(2) Assess pupils			
g. Expose Wounds			
(1) Removed equipment and clothes	P / F	P / F	P / F
--- SECONDARY SURVEY ---			
h. Obtain AMPLE history	P / F	P / F	P / F
i. Inspect and palpate head.	P / F	P / F	P / F
j. Inspect and palpate eyes and ears	P / F	P / F	P / F
k. Inspect and palpate nose and mouth	P / F	P / F	P / F
l. Inspect neck	P / F	P / F	P / F
m. Inspect back	P / F	P / F	P / F
n. Inspect, palpate, auscultate, and percuss thorax and lung fields	P / F	P / F	P / F
o. Auscultate heart	P / F	P / F	P / F
p. Inspect, auscultate, and palpate abdomen	P / F	P / F	P / F
q. Inspect and palpate pelvis	P / F	P / F	P / F
r. Inspect extremities (DCAP BTLS)	P / F	P / F	P / F
s. Assess CNS			
(1) Loss of bladder / bowel	P / F	P / F	P / F
(2) Paralysis			

Instructor Comments:

***Airway Management and Oxygen Therapy  
Appendix B  
Competency Skill Sheets***

**Nasal Trumpet**

Soldiers Name: \_\_\_\_\_ SSN: \_\_\_\_\_ CO: \_\_\_\_\_ TM: \_\_\_\_\_  
Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Initial Evaluator: \_\_\_\_\_  
Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Retest Evaluator: \_\_\_\_\_  
Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Final Evaluator: \_\_\_\_\_

	1st	2nd	3rd
a. Assessed nasal passages for apparent obstruction.	P / F	P / F	P / F
b. Selected appropriately sized airway.	P / F	P / F	P / F
c. Lubricated the nasal pharyngeal airway with a water soluble lubricant or tap water.	P / F	P / F	P / F
d. Inserted the tip of the airway into the nostril and directs it posteriorly and toward the ear.	P / F	P / F	P / F
e. Gently passed the nasal pharyngeal airway through the nostril into the hypopharynx with a slight rotating motion, until the flange rests against the nostril.	P / F	P / F	P / F
f. Ventilated the patient with a pocket face mask or bag-valve-mask.	P / F	P / F	P / F

Instructor Comments:

**J Tube**

Soldiers Name: \_\_\_\_\_ SSN: \_\_\_\_\_ CO: \_\_\_\_\_ TM: \_\_\_\_\_  
Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Initial Evaluator: \_\_\_\_\_  
Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Retest Evaluator: \_\_\_\_\_  
Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Final Evaluator: \_\_\_\_\_

	1st	2nd	3rd
a. Selected the proper-sized airway.	P / F	P / F	P / F
b. Opened the patient's mouth with the chin-lift maneuver.	P / F	P / F	P / F
c. Inserted a tongue blade on top of the patient's tongue far enough back to depress the tongue, but not gag the patient.	P / F	P / F	P / F
d. Inserted the airway, gently sliding the airway over the curvature of the tongue until the device's flange rests on top of the patient's lips.	P / F	P / F	P / F
e. Ensured proper fit and that the airway does not push the tongue backward, blocking the airway.	P / F	P / F	P / F
f. Removed the tongue blade.	P / F	P / F	P / F
g. Ventilated the patient with a pocket face mask or bag-valve-mask.	P / F	P / F	P / F

Instructor Comments:

**Combitube**

Soldiers Name: \_\_\_\_\_ SSN: \_\_\_\_\_ CO: \_\_\_\_\_ TM: \_\_\_\_\_  
 Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Initial Evaluator: \_\_\_\_\_  
 Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Retest Evaluator: \_\_\_\_\_  
 Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Final Evaluator: \_\_\_\_\_

	1st	2nd	3rd
a. Inspected upper airway for visual obstruction.	P / F	P / F	P / F
b. Hyperventilated the patient for 30 seconds.	P / F	P / F	P / F
c. Positioned patient head in a neutral position.	P / F	P / F	P / F
d. Tested both cuffs (white and blue) for leaks by inflating with 15ml (white) or 85ml (blue) of air.	P / F	P / F	P / F
e. Inserted the combitube in the same direction as natural curvature of pharynx. (1) Grasped the tongue and lower jaw between index fingers and lifts upward (jaw-lift maneuver) (2) Inserted the combitube gently but firmly until the black rings on the tube are positioned between the patient's teeth. (3) Did not use force - if tube does not insert easily, student withdrew tube and retried. Student hyperventilated between each attempt. (4) Inflated the pharyngeal cuff through line #1 (blue) with 100cc of air and the distal cuff through line #2 (white) with 15 ml of air. (5) Ventilated through the primary (blue) tape (6) Confirmed the tube placement by auscultating breath sounds bilaterally and auscultating over stomach. (7) Esophageal placement - combitube was placed in the esophagus when: 1) breath sounds are present bilaterally and 2) epigastric sounds are absent. (a) Student identified tube placement. (b) Continued to ventilate through primary (blue) tube.	P / F	P / F	P / F

(8)	<p>(c) Hyperventilated for 30 seconds.</p> <p>Tracheal placement - Combitube was placed in the trachea when breath sounds are absent and epigastric sounds are present.</p> <p>(a) Student identified tube placement</p> <p>(b) Ventilated through secondary (white) tube</p> <p>(c) Hyperventilated for 30 seconds</p>			
(9)	<p>Unknown placement - both breath and epigastric sounds are absent.</p> <p>(a) Student immediately deflates cuffs (blue then white)</p> <p>(b) Slightly withdraws tube then reinflates cuffs (blue then white)</p> <p>(c) Ventilates, then reassesses tube placement</p> <p>(d) If breath sounds are still absent, student immediately deflates cuffs and extubates.</p> <p>(e) Student inserts oropharyngeal or nasopharyngeal airway and hyperventilates patient.</p>			

Instructor Comments:

**Needle Chest Decompression**

Soldiers Name: \_\_\_\_\_ SSN: \_\_\_\_\_ CO: \_\_\_\_\_ TM: \_\_\_\_\_

Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Initial Evaluator: \_\_\_\_\_

Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Retest Evaluator: \_\_\_\_\_

Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Final Evaluator: \_\_\_\_\_

		1st	2nd	3rd
a.	Assessed the patient to make sure that condition is due to a pneumothorax	P / F	P / F	P / F
b.	Administered high-flow oxygen and ventilatory assistance	P / F	P / F	P / F
c.	Determined if indications for emergency decompression are present	P / F	P / F	P / F
d.	Identified the second or third intercostal space on the anterior chest at the midclavicular line on the same side as the pneumothorax (1) Felt for "angle of Louis" - bump located on sternum about a quarter of the way from the suprasternal notch	P / F	P / F	P / F
e.	Quickly prepared the area with an antiseptic	P / F	P / F	P / F
f.	Made a one-way valve by inserting a 12- or 14-gauge over the needle catheter through a condom. (1) Used a catheter that is long enough to enter the pleural space (2) Ensured maximum catheter length should be 5 cm	P / F	P / F	P / F
g.	Removed plastic cap from a 2-inch large-bore catheter (1) Inserted the needle into the skin over the superior border of the third rib, midclavicular line, and direct it into the intercostal space at a 90-degree angle to the third rib (2) As the needle entered the pleural space, there was a "pop" and possibly a hiss of air (3) Removed the needle and leave the catheter in place (4) Stabilized catheter hub to chest with tape	P / F	P / F	P / F
h.	Left the plastic catheter in place until it is replaced by a chest tube at the hospital	P / F	P / F	P / F
i.	Intubated the patient if indication	P / F	P / F	P / F
j.	Monitor closely for reoccurrence of pneumothorax	P / F	P / F	P / F

Instructor Comments:

***Control Bleeding  
Appendix C  
Competency Skill Sheets***



**Primary Survey**

Soldiers Name: \_\_\_\_\_ SSN: \_\_\_\_\_ CO: \_\_\_\_\_ TM: \_\_\_\_\_  
Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Initial Evaluator: \_\_\_\_\_  
Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Retest Evaluator: \_\_\_\_\_  
Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Final Evaluator: \_\_\_\_\_

	1st	2nd	3rd
a. Ensure scene safety	P / F	P / F	P / F
b. General appearance	P / F	P / F	P / F
c. Airway Assessment (1) Rapidly assess for obstruction (2) Establish patent airway (Jaw Thrust Maneuver) (3) Provide C-spine immobilization (4) Clear airway of foreign bodies	P / F	P / F	P / F
d. Breathing Assessment (1) Expose the neck and chest (2) Determine respiration rate (3) Auscultate chest bilaterally	P / F	P / F	P / F
e. Circulation Assessment (1) Determine pulse rate (2) Identify hemorrhage	P / F	P / F	P / F
f. Assess Neurological Status (1) Used AVPU (2) Assess pupils	P / F	P / F	P / F
g. Expose Wounds (1) Removed equipment and clothes	P / F	P / F	P / F

Instructor Comments:

**Mechanical Methods**

Soldiers Name: \_\_\_\_\_ SSN: \_\_\_\_\_ CO: \_\_\_\_\_ TM: \_\_\_\_\_

Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Initial Evaluator: \_\_\_\_\_

Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Retest Evaluator: \_\_\_\_\_

Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Final Evaluator: \_\_\_\_\_

	1st	2nd	3rd
a. Ensures scene safety.	P / F	P / F	P / F
b. Assesses general appearance.	P / F	P / F	P / F
c. Manage the airway. (1) Rapidly assesses for obstruction (2) Establishes a patent airway, if needed (Jaw Thrust Maneuver) (3) Provides C-spine immobilization (4) Clear airway of foreign bodies, if needed.	P / F	P / F	P / F
d. Assess and manage breathing. (1) Exposes the neck and chest assuring C-spine immobilization (2) Determines respiration rate and depth. (3) Inspects and palpates neck and chest for tracheal deviation, bilateral chest movement, use of accessory muscles and any signs of injury. (4) Percuss chest for presence of dullness or hyperresonance. (5) Auscultates chest bilaterally. (6) Adminsters high concentration oxygen, if available.	P / F	P / F	P / F
e. Assess and manage circulation (1) Identifies source of hemorrhage in anterior thigh. (2) Applies direct pressure to external bleeding site and applies a dressing to control hemorrhage. (3) Elevates lower extremities. (4) Establishes two large-bore IVs of Normal Saline. (5) Determines pulse rate and capillary refill. (6) Assesses skin color and temperature.	P / F	P / F	P / F
f. Assesses neurological status (1) Uses AVPU. (2) Assesses pupils (PERRLA)	P / F	P / F	P / F
g. Exposes wounds. (1) Removes equipment and clothes.	P / F	P / F	P / F

Instructor Comments:

**IV Infusion**

Soldiers Name: \_\_\_\_\_ SSN: \_\_\_\_\_ CO: \_\_\_\_\_ TM: \_\_\_\_\_

Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Initial Evaluator: \_\_\_\_\_

Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Retest Evaluator: \_\_\_\_\_

Start: \_\_\_\_\_ Stop: \_\_\_\_\_ Final Evaluator: \_\_\_\_\_

	1st	2nd	3rd
a. Obtained a physician's order.	P / F	P / F	P / F
b. Performed a patient care handwash.	P / F	P / F	P / F
c. Gathered equipment.	P / F	P / F	P / F
d. Identified patient and explained procedure. Asked about allergies.	P / F	P / F	P / F
e. Inspected and assembled equipment.	P / F	P / F	P / F
f. Hung container at least 2 feet above the level of the patient's heart and squeezed the drip chamber until it is half full of solution.	P / F	P / F	P / F
g. Removed air from the tubing.	P / F	P / F	P / F
h. Cut several tape strips and hung them in accessible location.	P / F	P / F	P / F
i. Selected infusion site.	P / F	P / F	P / F
j. Prepared the infusion site. (1) Applied constricting band 2" above venipuncture site - tight enough to stop venous flow, but not so tight that radial pulse cannot be felt. (2) Instructed patient to open and close first several times to increase circulation. (3) Selected and palpates a prominent vein. (4) Cleaned skin with antiseptic sponge in a circular motion from the center outward.	P / F	P / F	P / F
k. Put on gloves.	P / F	P / F	P / F
l. Held catheter with dominant hand and removed protective cover without contaminating needle.	P / F	P / F	P / F
m. Held flash chamber with thumb and forefinger directly above the vein or slightly to the side of the vein.	P / F	P / F	P / F
n. Drew skin below cleansed area downward to hold the skin taut over the site of the venipuncture.	P / F	P / F	P / F
o. Positioned the needle point, bevel up, parallel the vein and about 1/2 inch below the venipuncture site.	P / F	P / F	P / F
p. Held the needle at approximately 20-30 degree angle and pierced skin.	P / F	P / F	P / F
q. Decreased angle until almost parallel to skin	P / F	P / F	P / F

	surface and direct it toward the vein. Continued advancing the needle/catheter until vein is pierced.			
r.	Checked for blood in the flash chamber.	P / F	P / F	P / F
s.	Advanced catheter/needle unit approximately 1/8 inch further to insure catheter placement in the vein.	P / F	P / F	P / F
t.	Stabilized flash chamber with dominant hand, grasped catheter hub with non-dominant hand and treaded catheter into vein to catheter hub.	P / F	P / F	P / F
u.	Removed flash chamber/needle and laid aside.	P / F	P / F	P / F
v.	With dominant hand, removed protective cover from needle adapter on tubing and quickly connected adapter into the catheter hub, while maintaining stabilization of the hub with non-dominant hand.	P / F	P / F	P / F
w.	Told patient to unclench fist and released constricting band.	P / F	P / F	P / F
x.	Unclamped IV tubing and adjusted flow rate to appropriate drip rate.	P / F	P / F	P / F
y.	Examined infusion site for infiltration and discontinued if infiltration is present.	P / F	P / F	P / F
z.	Cleaned the area of blood, if necessary, and secured hub of catheter with tape, leaving hub and tubing connection visible.	P / F	P / F	P / F
aa.	Applied a sterile dressing over the puncture site.	P / F	P / F	P / F
bb.	Looped the IV tubing in extremity and secured with tape.	P / F	P / F	P / F
cc.	Splinted the arm loosely on a padded splint, if necessary, to reduce movement.	P / F	P / F	P / F
dd.	Printed the date, gauge of the catheter, and time IV was started and initials of person starting IV on a piece of tape and secured the tape to the dressing.	P / F	P / F	P / F
ee.	Printed patient's identification, drip rate, date and time the IV infusion was initiated and the person initiating the IV on a piece of tape and secured the tape to the IV container.	P / F	P / F	P / F
ff.	Printed the date and time the tubing was put in place and the initials of the person initiating the IV on a piece of tape and wrapped the tape around the tubing, leaving a tab.	P / F	P / F	P / F
gg.	Re-examined the IV site for infiltration.	P / F	P / F	P / F
hh.	Removed gloves and performed a patient care handwash.	P / F	P / F	P / F
ii.	Recorded the procedure on the appropriate form.	P / F	P / F	P / F