PRE-HOSPITAL PATIENT

ASSESSMENT
Section

Patient Assessment.........................................................................................................A

Medical Patient Assessment ...........................................................................................B

Pediatric Patient Assessment..........................................................................................C

Neurologic Assessment...................................................................................................D
I. PREFACE TO PATIENT ASSESSMENT

Patient assessment in the field and in the emergency center is performed differently than assessment in a conventional medical setting. Emergency assessment, both pre-hospital and in-hospital, focuses on the ABC’s first; history is often obtained after physical examination and treatment may need to be initiated before the assessment is completed. No matter what sequence the assessment is performed, it must be very systematic. The very speed with which emergencies must be handled, makes systematic assessment and care so important. Certain key questions organize the approach to emergency assessment and treatment:

A. **What is the life threat to this patient?**
The purpose of the initial and rapid survey is to detect life-threatening problems. Treatment of life threats, both medical and traumatic, must then be started before further assessment.

B. **What is the most serious condition that this patient could have?**
Diagnosis of a patient in the field is often not possible. However, appropriate care should be possible in most instances. It is important to treat the patient as if he or she has whatever would be most medically dangerous to that patient. When the patient is considered "ill or injured until proven healthy" you are prepared for anything.

C. **What has caused the patient or family to seek help at this time?**
Particularly with medical problems, the real purpose of the call must be determined. What is new about the patient's problem? What has changed recently to make the patient or family consider this is an emergency at this time?

D. **What data can be gathered from the scene that will help improve patient care?**
The EMS provider is the physician's eyes and hands in the field; he or she is the only health-care provider who can observe such things as the patient's environment, the mechanism of injury, empty pill bottles or syringes, the patient's ability to care for themselves. The data obtained in the field can be invaluable to patient care and outcome.

E. **How can field care keep this patient from becoming worse?**
By field stabilization, an attempt is made to prevent or minimize patient deterioration.
during pre-hospital care. Management to prevent deterioration is always a part of patient care, even if further treatment cannot be performed or is not indicated. Stabilization can provide relatively definitive treatment of some patients such as splinting a fractured extremity. On the other hand, when no field techniques can keep the patient from deteriorating, treatment may consist of immediate transport to minimize time in the field.

F. **Does this patient require field treatment?**
The BLS service must be aware of the transport time, the risk of delaying treatment and the illnesses that are best managed by a call for ALS backup or rendezvous during transport to the hospital.

G. **What treatment is appropriate for this patient?**
Some problems can be documented and definitively treated in the field (i.e., ventricular fibrillation, hypoglycemia). Some can't be diagnosed or managed in the field (i.e., pericardial tamponade). Many problems lie in between these two extremes. Deciding who is to be treated and how requires judgment:

1. How certain is the diagnosis?
2. How sick is the patient?
3. Can the problem be documented before treatment?
4. How effective is the treatment?
5. What are the hazards of the proposed treatment?
6. What are the risks of delaying treatment?
7. How much will the treatment alter the ability of the physician to assess the patient at the hospital?
8. What is the transport time?

The ability to use good judgment in assessing and describing the patient is a difficult and yet more valuable skill than any of the technical skills involved in pre-hospital treatment and assessment.

Tab 600
Patient Assessment A-2

*Patient Assessment, cont.*

H. **Has On-Line Medical Control been consulted appropriately?**
Frequently it is necessary to make rapid assessments and treatment decisions with little time to gather information. The radio is an essential tool for assessment. Use it to share the picture with On-Line Medical Control; it can often lead to better
understanding of the patient's illness.

I. Have the treatment decisions you are making taken into consideration the surroundings and the patient's situation?
Care must be individualized. Is this patient capable of taking care of him/herself even if unwilling to be transported? Is the patient competent to refuse to consent to treatment? (Refer to Tab 100, G-1, Refusal of Treatment or Transport)

Patient evaluation requires skillful history taking, and physical examination, plus an evaluation of multiple factors, which vary from patient to patient. Stabilization and treatment must be started without complete knowledge of what this patient's disease process may be. This uncertainty both limits the ability to treat in the field and provides a challenge to work skillfully and to make the most of field assessment with the limited tools available.

II. THE IMPORTANCE OF PATIENT ASSESSMENT

A. Introduction
THE MOST IMPORTANT SKILL IN PRE-HOSPITAL CARE IS PATIENT ASSESSMENT. You cannot treat what you cannot find. The ability to assess patients rapidly and accurately is the FIRST step in effective treatment.

Patient assessment requires a thorough knowledge of anatomy, physiology and pathophysiology. It is a complex process. You need to develop and rely on four (4) separate items:

1. Proper sequence of assessment.
2. Proper recording and reporting of data.
3. Thorough knowledge of diagnostic signs and how to obtain them.
4. Judgment - the ability to KNOW what has been found, to EVALUATE it and to DEVELOP appropriate conclusions.

Tab 600
Patient Assessment A-3

Patient Assessment, cont.

All of these skills are fully integrated when performing a general patient assessment. With practice and experience, they become second nature.

Proper patient assessment is a pre-requisite to proper patient treatment. You, as the EMS provider, will be the "eyes and hands" of On-Line Medical Control.
B. **The Goals of Patient Assessment**
There are four (4) primary goals when assessing a patient:

1. Comprehensive data gathering to determine the patient condition and extent of injury or problem.
2. Identification of life-threatening conditions.
4. Treatment of all non-threatening injuries; packaging and transporting.

These goals need to be accomplished with speed, thoroughness and reliability. A good assessment quickly gathers information that helps in determining the treatment to be given. The way information is gathered will vary from patient to patient, but the goals will always remain the same. Quick recognition of when the limits of your treatment or intervention ability have been reached is essential. During such times, the best treatment for the patient may be immediate transport.

C. **Sequence of Patient Assessment**
The assessment sequence, which will be discussed, is designed to be done on every patient regardless of condition. The way the information will develop through the sequence will vary from patient to patient, as you will see.

Trauma Assessment is divided into 5 major parts:

1. Scene Size Up
2. Initial Assessment
3. Rapid Assessment
4. Detailed Exam
5. Ongoing Exam

1. **Scene Size Up** - Designed to protect the responders
   a. **Hazards** - Location of emergency and physical scene. Where are you? Outside, inside, are you dealing with fire, MVA, building collapse, or hazardous material, standard precautions are always required.
   b. **Hostile situation** - Law enforcement assistance is paramount. Never enter a hostile situation (domestic included) until law enforcement personnel indicate the scene is safe. Never assume there is only one perpetrator. Always be aware of bystander's mood in a hostile situation. It may be hostile or supportive. NOTE: If the scene is unsafe - DO NOT ENTER IT - you are of no help to others if you are injured in an unsafe scene. The #1 priority in any emergency call is safe treatment and transport of the patient to definitive care, which requires EMS personnel safety.
c. EMS personnel and Patient Protection

(1) **Special equipment** - If special equipment is warranted, you must consider using it before entering a scene. Example: you are called to the scene of an unattended death - the patient expired one week ago and was just discovered today. You might consider using a SCBA before you enter the house.

(2) **Protective clothing** - is a must when dealing with any chemical scene, gas, fire or environmental extremes (hot, cold). A decontamination suit maybe necessary if dealing with radiation.

(3) **Aerial Access/Water Rescue Equipment** - Unless you are trained to use this equipment, let those who are trained perform the rescue operations such as fire dept./water rescue teams.

(4) **Environment** - Know your environment and protect your patient. Example: rain, snow, heat, cold, chemical contamination, etc. Preserve the patient's modesty as much as is allowable under the specific circumstances and protect them from further injury and exposure.

(5) **Backup** - You may need additional personnel at the scene to assist with transportation, patient removal or for your protection and the patient's protection. Need for such backup must be recognized and requested by contacting Fulton County EMS Dispatch immediately on arriving to the scene. Additional help needs to be enroute ASAP.

(6) **Classification** - All runs are classified according to the type of illness or injury.
(a) Medical - chest pain, DM, CVA, etc.
(b) Trauma - MVA, industrial accidents,
(c) Behavioral - mental disturbances, i.e. etc., many overdose cases are behavioral in origin.
(d) OB/GYN - pregnancy, vaginal bleeding, toxemia.
(e) Major Incident - or multiple casualty such as a bus crash with 25 or more victims or an industrial explosion, bridge collapse, etc. where several victims are involved.
(f) Pediatric

d. History of emergency

(1) Ascertain events preceding the emergency. If a motor vehicle crash - determine if the patient sustained a blunt or penetrating injury. Note: determine mechanism of injury. Use the photo kit if possible. (See Tab 500 Q)

(2) Medical emergency - determine if CP, CVA, DM etc. Was a medical problem the reason for an accident or was there a change in the weather or environment that contributed to the crash?

(3) Obtain pertinent past medical history if possible. If unconscious patient, check for Medic Alert Tag, DNR identification or interview bystanders.

Patient Assessment, cont.

2. Initial Assessment - Designed to find and treat airway and circulatory conditions

a. Airway/c-spine - Evaluate LOC. AVPU. Check patency of airway - clear as needed. Evaluate potential of c-spine involvement by mechanism of injury (if applicable). Movement of the patient should be limited until it is determined that no spine injury is probable.

b. Breathing/Exposure - Assess character, rate of respirations and lung sounds. Observe if face, neck or chest muscles are used during ventilation. Treat compromised ventilation. Expose your patient as necessary.

c. Circulation - assess pulses - this can be done when opening the airway with c-spine control. Take carotid pulse, compare with radials. Quickly scan to observe
any obvious tracheal deviation, neck trauma or step offs.

3. **Rapid Assessment** - Designed to find and treat other threats to life

   a. **Rapid Physical Assessment** - to determine what's life threatening. A head to toe exam checking

      D - Deformity        B - Burns        T - Tenderness
      C - Contusions       L - Lacerations   I - Instability
      A - Abrasions        S - Swelling      C - Crepitus
      P - Penetration
      P - Paradoxical movement in chest assessment

   b. **Transport Decision** - Determine if the patient is a "load and go".

   c. **Package and transport**

4. **Detailed Exam** - Designed to find non-life threatening injuries and treat (done enroute to hospital).

   a. **Head**

      (1). Evaluate the scalp (DCAPP - BLS - TIC)

      (a)  Or any obvious bleeding, lacerations, abrasions, contusions. Look for Battle signs behind the ears.

      (b)  Palpate for any crepitus, indentations.

      (2) Evaluate the face (DCAPP - BLS - TIC)

      (a)  Check the nose for deformity, CSF or blood.

      (b)  Palpate and inspect the face for juries.

   Patient Assessment cont.,

   (3) Evaluate the eyes

      (a)  Inspect for injuries and note papillary reaction.

      (b)  Are they equal

   (4) Evaluate the ears

      (a)  Inspect for CSF and blood coming from the ears.

   (5) Evaluate the mouth

      (a)  Inspect for loose teeth, blood, vomitus or other injuries that might obstruct the airway.
Neck
(6) Inspect C-spine (DCAPP - BLS - TIC)
Check anteriorly for JVD, tracheal deviation and posteriorly for deformity or injury. NOTE: May be done initially as part of Primary, if applicable.

b. Chest
(1) Evaluate the chest (DCAPP - BLS - TIC)
(a) Check for deformity, uniform movement of the chest on inspiration and expiration.
(b) Palpate for any subcutaneous air, deformity or crepitus. Note symmetry of breathing during palpation.
(c) Auscultate lung sounds.

(b) Chest
(1) Evaluate the chest (DCAPP - BLS - TIC)
(a) Check for deformity, uniform movement of the chest on inspiration and expiration.
(b) Palpate for any subcutaneous air, deformity or crepitus. Note symmetry of breathing during palpation.
(c) Auscultate lung sounds.

b. Chest
(1) Evaluate the chest (DCAPP - BLS - TIC)
(a) Check for deformity, uniform movement of the chest on inspiration and expiration.
(b) Palpate for any subcutaneous air, deformity or crepitus. Note symmetry of breathing during palpation.
(c) Auscultate lung sounds.

Tab 600
Patient Assessment A-8

Patient Assessment cont.,

(2) Evaluate the lower extremities
(a) Inspect for deformity, crepitus, pain, motor function, sensory functions, all pulses and capillary refill.
(b) Palpate

d. Upper Extremities (DCAPP - BLS - TIC)
(1) Evaluate the upper extremities
(a) Inspect for deformity, crepitus, pain, motor function, sensory functions, all pulses, and capillary refill.
(b) Palpate
e. Posterior Thorax/Lumbar Area (DCAPP - BLS - TIC)

(1) Evaluate the posterior thorax/lumbar area

(a) Palpate posterior thorax region feeling for crepitus, deformity or pain.
(b) Palpate posterior lumbar region feeling for crepitus, deformity or pain. NOTE: Must be done without compromising c-spine and should also be done earlier if situation warrants it. Such as when the patient is log rolled to backboard if c-spine is suspected.

f. Vital Signs

(1) LOC
(2) Pulse - Re-check
(3) Respirations - Re-check
(4) Blood Pressure
(5) Pulse Oximetry
(6) EKG
* May be done simultaneously by other responders if possible.

g. On-Going - Designed to find changes in the patient’s condition

a. To continually reassess this patient's condition while in your care.
b. To note, record and report any changes in patient condition.

Tab 600
Patient Assessment A-9

Patient Assessment cont.

III. Anatomy and Physiology of Patient Assessment

A. Airway

1. Anatomy

a. **Tongue/Hypopharynx** - located in the mouth and is attached to the pharynx (throat)
b. **Nasal air passages** - consists of the nasal cavity, nasopharynx - air enters the nose and it is warmed, humidified and cleaned by nasal hairs and mucous.

(1) Hemorrhage - nosebleeds - may be spontaneous. Such as from simple irritation to the turbinates in the nose (highly vascular) or traumatic from injury to the nose.
c. **Oral air passages** - pharynx, larynx and vocal cords make up the oropharynx and allow air to enter. The vocal cords regulate the passage of air through the larynx and control the production of sound.

2. **Physiology**
   a. **Flow of air** - breathing entails the movement of air from outside the body into the bronchial tree and alveoli followed by reversal of this air movement (inspiration - expiration)

3. **Management of upper airway control**
   a. **Manual opening**
      (1) Hyper extension (if no c-spine injury)
      (2) Chin lift
      (3) Jaw lift
      (4) Jaw thrust
   b. **Obstructed airway**
      (1) **Back blows** - now only done on infants with obstructed airway
      (2) **Manual thrusts** - Heimlich maneuver on conscious obstructed airway and abdominal thrusts on unconscious obstructed airway and chest compressions on infants

Patient Assessment cont.,

(3) **Laryngoscope** - instrument used to directly visualize the larynx and its related structures.
(4) **Magill Forceps** - long curved forceps designed to reach into the posterior pharynx to remove a FB if visualized.

c. **Mechanical devices for airway patency**

(1) **Nasal airway** - constructed of soft rubber tubing, adjustable ring located on tube. It is better tolerated and can be used in conscious or semi-conscious patients. It is not useful with massive facial injury involving the nose. Needs to be lubricated with watersoluble lubricant or **Xylocaine jelly** and inserted gently into the right nare bevel toward the septum, avoid trauma to the nasal air passages. Contraindicated in trauma to the nasal air passages, facial or skull fractures.

(2) **Oral airway** - plastic or rubber curved apparatus designed to fit over the back of the tongue and hold the tongue away from the posterior wall of the hypopharynx. It effectively clears the airway
and helps keep the patient from biting the tongue during seizures. Should never be used in trauma where there is airway compromise. Needs to be inserted using a tongue blade. Contraindicated in conscious or semi-conscious patients. Should always be used on unconscious patient when using a BVM.

(3) ET - plastic tube with open end tube and cuff on posterior portion equipped with 15mm. adapter anterior to facilitate BVM. Most effective method of securing airway in unconscious patient. Place head in a sniffing position (if no c-spine suspected); use laryngoscope to visualize trachea. Insert ET tube into the trachea, ventilate and auscultate lungs and abdomen. Use Tube Check. Inflate cuff. Recheck lungs and abdomen. Careful evaluation of usage in patients with irritation of pharynx where attempted intubation may cause laryngeal spasm (croup, epiglottitis). Check tube placement often.


Patient Assessment, cont.

d Ventilation

(1) BVM (bag valve mask) - is the device used among basic EMT’s. Several problems are associated BVM. Rescuers cannot consistently deliver adequate volumes of are. Therefore, patients are frequently HYPO ventilated, depriving them of O2 and worsening their acid-base status. Proper ventilation depends on an airtight seal. If air leaks, adequate volumes are not likely to enter the lungs. At the same time, while maintaining an adequate seal, the head must be hyper-extended. Both must be done with one hand. Then the rescuer must squeeze enough air (at least 800cc) with the other hand. This usually is more than most rescuers can handle physically. BVM may also cause gastric distension as tidal volumes cannot be controlled.

B. Breathing

1. Anatomy
   a. Lungs - cone shaped organs that almost completely fill the thoracic cavity. They extend from the diaphragm to slightly above the clavicle and
lie against the ribs on either side of the heart. The left lung has 2 lobes upper/lower. The right lung has 3 lobes; upper/middle/lower. The lungs are covered with the visceral pleura, which acts to protect them.

b. **Trachea** - windpipe - divides into the right and left bronchus; the right being shorter than the left. Air enters the trachea from the larynx.

c. **Alveoli** - on entering the lungs, each bronchus divides into smaller and smaller bronchi. The smaller bronchi continue to subdivide and finally connect with the alveoli, which are surrounded by capillaries carrying blood to and from the alveoli. The exchange of gases takes place in the alveoli.

d. **Diaphragm** - comprises the floor of the thoracic cavity. It is a large dome shaped muscle that forms the boundary between the thoracic and the abdominal cavity.

e. **Thoracic wall/cavity** - extend from the clavicle to the diaphragm and is protected in the front, sides and back by the ribs. The lungs, heart, trachea, esophagus and large blood vessels are located in the thoracic cavity.

f. **Pleural space** - the lungs are enclosed by a membrane, the visceral pleura, which lies in contact with another membrane - lining the thoracic cavity, the parietal pleural. There is a potential space between the two membranes called the pleural space. It contains a small amount of fluid that acts as a lubricant, reducing friction and making respiration painless.

---

**Patient Assessment cont.**

C. **Physiology**

1. **Pulmonary expansion (Inhalation/Expiration)** - during inhalation (active process) the diaphragm flattens and descends increasing the vertical dimensions of the thorax. At the same time, the intercostal muscles contract, causing the ribs to move upward and outward thus increasing the horizontal dimensions of the thorax. The enlargement of the thoracic cavity creates a negative intra thoracic pressure and air rushes in to fill the lungs. During exhalation (passive process), the respiratory muscles relax, decreasing the size of the thoracic cavity and air is expelled from the lungs. A patient in respiratory distress may use accessory muscles (between the ribs and in the neck) to aid in respiration. Patient may present with nasal flaring, tracheal tugging, retraction of intercostal muscles or use of the diaphragm and/or abdominal muscles.

**NOTE:** When evaluating a patient in respiratory distress, be aware that the pleural space can become an actual space if air or if blood enters it. Lung sounds will be diminished or absent.

2. **Gas Exchange** - O$_2$ continually diffuses from the alveoli into the pulmonary capillary blood, while CO$_2$ diffuses from the capillary blood into the alveoli. During inhalation, the O$_2$ that has been absorbed from the alveoli is replenished and during exhalation, the CO$_2$ that has accumulated in the alveoli is washed
out. So when we inhale, the fresh $O_2$ attaches to the RBC, which carries it throughout the system until it reaches the alveoli/capillary bed. Here the $O_2$ is exchanged for $CO_2$ and expelled through exhalation.

D. Pathophysiology

1. Chest wall -
   **Open Pneumothorax (Sucking Chest Wound)** - air is drawn through a hole in the chest wall into the pleural space by negative intrapleural pressure during exhalation. It causes collapse of the lung and decreased air exchange.

2. Diaphragm
   70% of the breathing capacity is regulated here. Injury to the diaphragm may be caused by trauma to the diaphragm or the C-spine at the level of C3, C4 or C5. Such trauma may cause paralysis of the diaphragm or rupture the diaphragm. The airway is severely compromised with little or no air exchange taking place. Assist ventilations.

Patient Assessment Cont.

3. Lung rupture/perforation
   a. **Simple pneumothorax** - characterized by decreased or absent breath sounds. It is defined as the presence of air low pressure within the pleural space. It prevents adequate expansion of the lungs and atelectasis (collapse of alveoli) results.
   b. **Tension pneumothorax** - caused by a leak of air into the pleural space through a hole in the lung that acts as a one-way valve. However, the free air in pleural space becomes highly pressurized usually due to positive pressure ventilation. There is marked decrease in air exchange due to limited expansion of functional lung.

**SIGNS/SYMPTOMS - TENSION PNEUMOTHORAX**
Acute dyspnea
Restlessness/anxiety
Weak - rapid pulse
B/P often will be low
Cyanosis due to the marked decrease in air exchange subcutaneous emphysema may not be present
JVD may be evident
Trachea deviation may be present
Absence of lung sounds on affected side

4. Flail chest - occurs when several ribs, the sternum, or both are fractured in several places producing an unstable or flail segment in the chest. The chief
The sign of a flail chest is the expansion of the unsupported area of the chest during exhalation and the collapse of the same area during inhalation, (paradoxical movement). A flail chest is frequently associated with contusion to the lung and pneumothorax. The patient, if conscious, will be in severe pain along with decreased chest expansion.

5. Assessment
   a. Inspect, auscultate, palpate, percuss.
   b. Expose the chest to inspect for obvious deformity and symmetrical movement. Evaluate the patient’s respiratory effort. Note any retraction of the sternum, thorax or abdomen.
   c. Auscultate lungs for quality and type of sounds bilaterally.
   d. Gently palpate thorax for deformity, tenderness, subcutaneous air, crepitus.

6. Management
   a. Mechanisms - may need to assist ventilation by BVM or ET insertion.
   b. Evaluate effectiveness - observe chest wall movement. Auscultate LL, RL and epigastrium often.
   c. Trauma
      (1) Thoracic wall stabilization - reduces movement of the flail segment. Accomplished by padding the flail segment with a towel and taping device across the entire chest.
      (2) Evacuation of pleural space if indicated - can be accomplished by needle decompression. Inserted into chest wall to penetrate pleural space and promote escape of air. Helps lung to re-expand to provide better ventilation.
      (3) Open Chest Wound - needs to be sealed using hand over hole, i.e. Vaseline gauze pad, plastic taped on 3 or 4 sides, or a device designed for this type of injury.

C. Circulation
   1. Perfusion
      a. Anatomy - the cardiovascular system, made up of the heart, arteries, veins and capillaries is divided into systemic and pulmonary circulation. The systemic circulation transports blood to and from the organs of the body. The pulmonary circulation transports blood to and from the lungs.
The heart pumps blood through both systems. When adequate perfusion is present, homeostasis (normal state) of chemical balance within the body is maintained.

b. Pathophysiology

(1) Decreased Perfusion - caused by shock. Shock is the state of being when perfusion is NOT adequate and homeostasis within the body is unbalanced. There are 5 (five) kinds of shock that cause decreased perfusion: hypovolemic, neurogenic (spinal), cardiogenic, septic and anaphylactic.

(2) Cardiac Arrest - results in no perfusion due to absence of heartbeat and respirations. With these elements not present, no O2 is being circulated by the RBC’s, so no perfusion is taking place.

Patient Assessment, cont.

c. Evaluation of perfusion

(1) Check the pulses - note rate and character (strong, bounding, weak, thready, regular or irregular)

(2) Check capillary refill - if less than 2 seconds, adequate perfusion is occurring. If more than 2 seconds, the body is not receiving adequate perfusion.

(3) Location of pulses - may be taken at the radial, femoral or carotid arteries. If radial is present, assume a B/P of at least 80 mmHg; if femoral is present, assume a B/P of at least 70 mmHg; if carotid is present, assume a B/P of at least 60 mmHg.

(4) Check skin color - is it pink, flushed, cyanotic, mottled. Skin color is an indicator of adequate perfusion.

d. Management of decreased perfusion

(1) Cardiac compressions if no pulse or slow carotid pulse with low perfusion signs.

(2) Hemorrhage/Hypovolemia

(a) Anatomy - can result from internal or external hemorrhage; plasma loss from burns, dehydration from vomiting, diarrhea, excessive sweating or abnormal urinary loss; or internal third space loss (bleeding into the abdominal cavity).

(b) Evaluation - massive vs. minor hemorrhage - there are 4 (four) classes of hemorrhage:
CLASS I  An acute blood loss of 15% or less - does not result in a state of clinical shock - patient remains alert - most often missed in the field.

CLASS II  An acute blood loss of 20-25% causes moderate shock. Patient will exhibit tachycardia and a slightly rising diastolic pressure (from increased peripheral resistance). Systolic pressure falls resulting in a narrowed pulse pressure (systolic - diastolic). Venous return to the heart is decreased lowering cardiac output. Patient will have prolonged capillary refill and may show postural hypotension. Patients generally respond to verbal stimuli.

Tab 600
Patient Assessment A-16

Patient Assessment cont.

CLASS III  An acute blood loss of 30-35% resulting in classic shock symptoms with decreased B/P. Patient usually only responds to painful stimuli.

CLASS IV  An acute blood loss of 40% or more. These patients are unresponsive and may have a non-palpable B/P.

e. Management of hemorrhage

(1) Direct pressure - may use hand or gauze dressing.
   (a) Pressure points - used to slow circulation

(2) Elevation - elevate above heart level
(3) Cold compress - slows circulation.
(4) Tourniquets - useful only for some amputations, need to be documented when they are applied. Apply above the area of the injury. Use only as last resort. Hemostats - cuts off all perfusion to a given area. May force amputation if applied. (NOT TO BE USED)

f. Disability - mini neuro examination

(1) LOC (AVPU)
   (a) Alert
   (b) Verbal stimuli - appropriately/inappropriately
   (c) Painful stimuli - appropriately/inappropriately
   (d) Unresponsive

2. Exposure
VII  Resuscitation

A.  Shock resuscitation

---

Patient Assessment cont.

1.  **Physiology** - shock results from inadequate perfusion of the cells with oxygenated blood. Hypovolemic shock occurs when the cardiac output is insufficient to fill the vascular space with blood under enough pressure to provide the organs and tissues with adequate blood flow.

2.  Shock is tissue anaerobic metabolism - if there is inadequate oxygenation of RBC's or if the delivery of RBC's to the tissue cells is inadequate - tissue anaerobic metabolism results - shock.

B.  Evaluation

a.  Heart rate will be evaluated (tachycardic). It is the body's effort to compensate for the decrease in cardiac output.

b.  B/P will be decreased due to low cardiac output.

c.  Capillary refill will be delayed because of inadequate perfusion to the tissues.

d.  Skin color and temperature will be cold, pale and in severe cases, cyanotic or ashen.

C.  Management

a.  Provide high flow O₂ in the method most effective for the patient's condition. (use the pulse oximeter)

b.  Fluid replacement 20ml/kg. enroute to hospital.

D.  Maintain stability of items in primary survey

1.  Evaluate and re-evaluate airway, breathing and circulation.
B
MEDICAL PATIENT ASSESSMENT

A primary survey is done on all medical and trauma patients. In conscious medical patients, this may consist only of identifying yourself and noting the patient's responsiveness and general appearance. The formal secondary survey may not need to be done on patients with a specific complaint, such as "chest pain." Assessment must be no less thorough, but it may be limited to the body systems that are pertinent to the presenting problem.

I. Medical Patient Assessment

A. Vital signs:
   1. Quantitative vital signs usually precede the rest of the exam.

B. Head/Face:
   1. Note airway patency, oral swelling hydration.
   2. Eyes - note pupil symmetry, reaction to light, movement.
   3. Note symmetry of facial movements.

C. Neck:
   1. Observe for neck vein distention in the semi-fowler's position, use of accessory muscles for breathing.

D. Chest:
   1. Observe chest wall for symmetry of air movement and evidence of respiratory effort.
   2. Auscultate:
      a. Breath sounds for symmetry, rales - i.e., crackles (wet sounds), wheezing, rhonchi, evidence of obstruction.
      b. Heart for regularity (if irregular, is it intermittently or consistently irregular)?

E. Abdomen:
Children can be examined easily from head to toe, but lack of understanding by the patient, poor cooperation and fright, often limit the ability to assess completely in the field. Children often cannot verbalize what is bothering them, so it is important in trauma victims to do a systematic survey. For more defined treatment for specific problems, refer to Pediatric Protocols, Tab 1100, A1-Q3.

I. Pediatric Patient Assessment

A. General:
   1. Level of alertness: eye contact, attention to surroundings.
   2. Muscle tone: normal, increased, or weak and flaccid.
   3. Responsiveness to parents, care givers: is the patient playful or irritable?

B. Head:
   1. Signs of trauma
   2. Fontanelle, if open: abnormal depression or bulging.

C. Face:
   1. Pupils: size, symmetry, reaction to light.
   2. Hydration: brightness of eyes, is child making tears, is the mouth moist:

D. Neck:
   1. Note stiffness

E. Chest:
   1. Note presence of strider, retractions (depressions between ribs on inspiration) or increased respiratory effort.
   2. Breath sounds: symmetrical, wet, wheezing?
   3. Heart: rate, obvious murmur.

F. Abdomen:
   1. Note presence of distention, rigidity, bruising, tenderness.

G. Extremities:
   1. Pulse, brachial/radial.
   2. Signs of trauma.
Management of patients with head injury or neurologic illness depends on careful assessment of neurologic function. Changes are particularly important. The first observations of neurologic status in the field provide the basis for monitoring sequential changes. It is, therefore, important that the EMS personnel accurately observe and record neurologic assessment, using measures, which will be followed throughout the patient's hospital course. The Glasgow Coma Scale shall be recorded on the EMS run report. The GCS score may assist in determining if the patient meets “Trauma Protocol”, however, it may be better to paint a picture for On-Line Medical Control than give them a numerical score.

I. Neurologic Assessment

A. Vital signs:
   i. Observe particularly for adequacy of ventilations, depth, frequency and regularity of respiration.

B. AVPU
C. Level of consciousness;
D. Eyes:
   i. Direction of gaze
   ii. Size and reactivity of pupils

E. Movement:
   i. Observe whether all four extremities move equally well.

F. Sensation (if patient alert):
   i. Observe for absent, abnormal or normal sensation at different levels if cord injury is suspected.
Neurologic Assessment cont.

F.  Adult Glasgow Coma Scale

**Eye Opening:**
- Spontaneous 4
- To speech 3
- To pain 2
- None 1

**Best Verbal Response**
- Oriented 5
- Confused 4
- Inappropriate words 3
- Incomprehensive sounds 2
- None 1

**Best Motor Response**
- Obeys 6
- Localizes 5
- Withdraws 4
- Abnormal flexion 3
- Extensor response 2
- None 1

**Total** = Eye+Verbal+Motor 3-15

G.  Pediatric Glasgow Coma Scale

Patient >2 years  Patient < 2 years

**Eye Opening**
- Spontaneous 4
- To voice or speech 3
- To pain 2
- None 1

**Verbal Response**
- Oriented Coos, babbles 5
- Confused Cries, irritability 4
- Inappropriate words Cries to pain 3
- Incomprehensive Moans to pain 2
- None 1

**Motor Response**
- Obeys command Normal movements 6
- Localizes pain Withdraws - touch 5
- Withdrawal - pain Withdrawal - pain 4
- Flexion - pain Abnormal flexion 3
- Extension - pain Abnormal extension 2
II Special Notes:
A. The Glasgow Coma Scale (GCS) is one method of scoring and monitoring patient's neurologic assessment. It is readily learned, has little observer-to-observer variability and accurately reflects cerebral function. Always record specific responses in addition to just the score (sum of observations). The Glasgow Coma Score shall be recorded on the EMS run sheet.

B. Sensor and motor exam must be documented before moving patient with suspected spinal injury.

C. Sensory deficit levels should be marked gently on the patient’s skin with a pen to help identify any changes.

D. Note what stimulus is being used when recording responses. Applied noxious stimuli must be adequate to the task, but not excessive. Initial mild stimuli can include light pinch, dull pinprick or sternal rub. If these are unsuccessful at eliciting a pain response, pressure with dull object to base of nail bed, stronger pinch (particularly in axilla) or sternal rub may be necessary to demonstrate the patient’s best motor response.

E. When responses are not symmetrical, use motor response of the best side for scoring GCS and note asymmetry as part of neurologic evaluation.

F. Use of restraints or intubation of patient will make some observations less accurate. Be sure to note on chart if circumstances do not permit full verbal or motor evaluation.

G. Remember that a patient who is totally without response will have a score of 3, not 0.

H. In small children, the GCS may be difficult or impossible to evaluate. Children who are alert should focus their eyes and follow your actions, respond to parents or caregivers and use language and behavior appropriate to their age level. In addition, they should have normal muscle tone and normal cry. Several observers should attempt to elicit a “better verbal response”, to avoid over or under estimation of level of consciousness. Pediatric Glasgow Coma Scales, one for >2 years and one for < 2 years are now included in the protocol to assist.