

IMMEDIATE PRIORITIES: ASSESSING THE PATIENT'S INJURIES

R Adams Cowley, M.D.

Carl A. Soderstrom, M.D.

Before I can present the immediate priorities needed in assessing a patient's injuries, you must have some knowledge of Maryland's systems approach to trauma. In the time available it is impossible to describe with any depth our systematized emergency medical service delivery program, but I would like to outline the essential components of the system which include:

1. Education and Training

This includes the 81 hour DOT course for EMT-A, physician training and nurse training.

2. Triage - at the scene of the accident and on arrival at the hospital.

3. Communications

This statewide system provides both voice and telemetry from:

- Ambulance to hospital
- Ambulance to physician
- Ambulance to ambulance
- Ambulance to helicopter.

Thus for any EMS hospital there is no need for the word - EMERGENCY!

4. Rapid Transportation - Surface and Air
5. Regionalization - The Golden Hour
6. Regional EMS Councils
7. Hospital Categorization
8. Specialty Referral Centers
9. Rehabilitation
10. Evaluation

HOSPITAL EMERGENCY MANAGEMENT OF THE CRITICALLY INJURED

The following pertinent and specific points must be remembered in the initial management of the critically injured:

1. It is essential, of course, if the severely injured victim is to survive, that there be certain dedicated, otherwise uncommitted areas of the hospital which can be used for immediate resuscitation, stabilization, diagnosis, operating room capability and critical care.
2. A pre-existing plan of action and an adequate number of skilled staff each with a predesignated duty to carry out is all important.
3. Every major trauma victim should be looked upon as in the process of deteriorating or dying on admission. Thus, to await a final diagnosis before treating, by using the standard classical assessment of injuries, the golden minutes for survival are lost.

Therefore, the FIRST CARDINAL RULE at MIEMS is treat before diagnosis. This rule becomes the basis of our philosophy if we are to prevent perfusion deficits that further injure the cells, the tissues and organs by that destroyer of all life - tissue hypoxia.

The SECOND CARDINAL RULE is to anticipate before waiting to confirm. This objective can only be accomplished by designing, developing and implementing standard therapy protocols. Only by the use of protocols can we abort the creeping in of error, procrastination and forgetfulness because a well thought out and preplanned series of maneuvers and objectives were not established beforehand.

The THIRD CARDINAL RULE is that for the multisystem injury victim, there is no place for individualized patient therapy during the resuscitation and stabilization phase. The thinking process of inexperienced residents and fellows omitting certain steps because they were not felt necessary can result in chaos.

The specific points involved in the management of multiply injured patients are:

1. Team Approach

2. Standard Therapy Protocols

The advantages of such protocols are as follows:

- a. provides a standardization of training. The didactic content of training programs clearly delineated in protocols makes possible standard training programs.
 - b. provides a single approach to patient care problems.
 - c. simplifies communication because each team member has his own task and knows his role. He thus functions individually and automatically.
 - d. assures that essential points are not left out jeopardizing treatment plan.
 - e. provides evaluation of the impact of various components of the program on morbidity and mortality.
 - f. enhances clinical and basic research by providing a standard of care which is of value for medical-legal purposes.
3. Aggressive resuscitation and stabilization by total monitoring; i.e. physiological, biochemical, infection control, and organ failure
 4. Total Ventilatory Support
 5. Prevention of shock by control of hemorrhage and infusion therapy by using a) the minilap, b) the upright chest film, c) blood component therapy.
 6. Careful medical and nursing supervision and care
 7. Early operation and one operation (all procedures done under one anesthesia)

INITIAL TRAUMA ASSESSMENT

The purpose of initial trauma assessment is to recognize and treat life-threatening conditions as rapidly and efficiently as possible. Using a team approach, with a general surgeon or emergency room physician as leader, resuscitation is started immediately, with the assessment being carried out by the leader. With a little practice, using a team approach,

the initial assessment can be completed in about 30 minutes.

The initial assessment, which includes first and second priority items, leads to information gains which determine the further course of the patient's work-up and treatment. Upon completion of first priority items, the need for summoning emergency specialist consultation(s) is often apparent (particularly, the neurosurgeon and thoracic surgeon).

NOTE: Specialists are not needed for the initial assessment of the multiple trauma patient. In fact, they may be a hindrance because of the tendency towards "tunnel vision" of problems related to their own specialty.

After completion of second priority items, the need for further emergency diagnostic procedures is usually apparent, such as cerebral angiography (to rule out an epi- or subdural hematoma), aortography (to rule out a ruptured aorta), an IVP (to rule in functioning kidneys and rule out GU pathology). Furthermore, upon completion of second priority items, the need for emergency surgery will be often apparent. Examples: grossly positive peritoneal lavage indicating the need for abdominal exploration to control intra-abdominal bleeding or persistent and heavy chest tube drainage necessitating emergency thoracotomy.

If emergency surgery or emergency diagnostic procedures are not required, further systemic examinations and investigations can be carried out. During this phase of the patient's course (third priority), a multi-discipline dialogue may be carried out and further management outlined.

A word concerning musculoskeletal injuries and the initial assessment of the multiple trauma victim. Initially, the prompt recognition of life-threatening conditions is of paramount importance. The recognition of extremity injuries (including nerve injuries) is often difficult in the uncooperative and/or unconscious trauma patient. Major bone and joint pathology is usually obvious. Other injuries are of low priority compared to the critical aspects of maintaining an adequate airway, assuring oxygen delivery to the tissues, and treating intracranial, thoracic and abdominal injuries. Taking multiple roentgenograms to rule out extremity injuries interferes with resuscitation and delays therapy of significant life-threatening conditions. An x-ray of the pelvis, however, is of vital importance during the initial assessment period to rule out an unrecognized major pelvic fracture associated with significant and unseen extraperitoneal hemorrhage.

SCOPE OF PRESENTATION: Initial assessment of the multiple trauma patient, i.e. the "crunch victim."

GUIDING PHILOSOPHY: To RAPIDLY recognize and treat LIFE-THREATENING conditions. Or, put another way: To consume

time during the initial assessment making esoteric and sophisticated diagnoses of conditions not immediately compromising survival is dangerous and contraindicated.

GENERAL CONSIDERATIONS OF INITIAL ASSESSMENT:

1. Team approach is employed. The general surgeon is the captain of the team (or emergency room physician till the general surgeon arrives). The team consists of other physicians, including an anesthesiologist, and nurses.
2. Assessment performed by the captain of the team.
3. Protocols should be employed in resuscitation and assessment.
4. Patient is fully disrobed.
5. Previously applied splints and bandages are left in place during the initial assessment. This includes mast trousers.
6. The patient is protected from self-inflicted injury.

NOTE: Resuscitation is begun immediately and carried out during the assessment of the patient.

SURGICAL SKILLS REQUIRED IN INITIAL ASSESSMENT AND TREATMENT:

1. Intubation (Emergency tracheostomy is rarely indicated.)
2. I.V. line insertions
 - a. percutaneous (including subclavian and internal jugular)
 - b. via cutdown
3. Chest tube insertion
4. Perform peritoneal lavage

COMPONENTS OF ASSESSMENT:

1. Brief physical exam and history
2. Cardiovascular monitoring (ECG, CVP, & BP)
3. Laboratory data

4. X-rays (C-spine, erect chest, and pelvis)
5. Peritoneal lavage
6. Foley catheter

INITIAL ASSESSMENT: FIRST PRIORITIES

- I. Establish Airway and give O₂
 - A. Is patient breathing?
 - B. Mouth and pharynx clear?
 - C. Signs of respiratory distress?
 1. Dyspnea
 2. Cyanosis
 3. Intercostal retractions
 - D. Open chest wound (inspection)?
 - E. Pneumothorax (palpation and auscultation)?
 - F. Flail chest (inspection and palpation)?
 - G. Required initial treatment(s)?
 1. Intubation
 2. Chest tube
 3. Closure (occlusion) of open wound
 4. Thoracotomy
- II. Control of external hemorrhage and order blood
 - A. Direct arterial pressure
 - B. Pressure dressing

NOTE: Tourniquets usually not required, may increase morbidity.

III. Gain Vascular Access allowing for:

- A. Treatment of shock (First Priority)
- B. CVP measurements (Second Priority)
- C. Obtaining of blood samples.
 - 1. Type and crossmatch (First Priority)
 - 2. Hb. and Hct.
 - 3. Lytes, BUN, Creatinine, Glucose
 - 4. Coagulation profile (PT, PTT, Platelets, Fibrinogen)
 - 5. ABG (drawn on arrival if feasible)

IV. Brief History and Neurologic Exam

- A. Is patient awake, oriented, etc. ?
- B. Pupils (PERL) ?
- C. Signs of head injury ?
- D. Moves all extremities ?
- E. Illnesses (hypertension, diabetes, heart disease, etc.) ?
- F. Medications ?
- G. Drug sensitivities ?
- H. Previous illnesses and surgical procedures ?

NOTE: History not available or unreliable in unconscious, hysterical or inebriated patient.

V. ECG

VI. N-G tube

INITIAL ASSESSMENT: SECOND PRIORITIES

- I. Laboratory Data
- II. Cervical spine x-ray. Lateral view to the level of C-7. (Neck is immobilized till pathology is ruled out.)

III. Catheters

A. CVP

B. Arterial

C. Foley

D. Temperature probe

IV. Upright chest x-ray

V. Pelvic x-ray

VI. Peritoneal lavage