Initial Assessment and Resuscitation of the Trauma Patient

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A systematic approach to the initial care of the traumatized patient should determine the presence of immediately life-threatening injuries and provide prompt treatment. At each step an assessment is made and any necessary interventions are performed. The patient is then reassessed before proceeding to the next stop. The mnemonic “ABC’s” is used.

A. Airway — Providing an adequate airway is the first step in the management of trauma patients. Patients are assessed for ability to maintain a patent airway and breath spontaneously. Conscious patients who are breathing spontaneously and who can speak require little if any intervention. However, unconscious patients, those with head or neck injuries, or those in profound shock require definitive airway control. Before any airway manipulation is undertaken, the possibility of cervical spine injury must be considered. In-line cervical stabilization must be maintained until a cervical spine injury has been ruled out by lateral x-rays of the cervical spine including C7. For a patient with spontaneous respirations, nasotracheal intubation may be considered as it requires the least amount of cervical movement. Orotracheal intubation is the next option in apneic patients or if nasotracheal intubation fails. Creation of a surgical airway is required in patients with severe maxillofacial injuries where endotracheal intubation may be dangerous, and when endotracheal intubation is not successful. In such cases, cricothyroidotomy is usually the preferred procedure. In some situations and in children, tracheostomy is performed.

B. Breathing — Assessment of breathing includes examination for bilateral and equal breath sounds, symmetric chest wall movement, midline position of the trachea and adequate saturation determined by
pulse oximetry. A supine AP chest x-ray should also be obtained. Malposition of the endotracheal tube, pneumothorax, and hemothorax are common reasons for ineffective ventilation. Tension pneumothorax should be considered in hemodynamically unstable patients with decreased or absent breath sounds on one side; in these instances, the trachea may be deviated to the opposite side. Decompression by needle thoracostomy should be performed immediately, before obtaining a chest x-ray. Hemothorax is treated with insertion of a large bore (32-40 Fr) chest tube. Traumatic pneumothorax is always accompanied by some degree of hemothorax and therefore also requires a large tube to evacuate blood. A gauze dressing taped on three sides will provide a flap valve for sucking chest wounds. A chest tube is never inserted through a chest wound. Mechanical ventilation is required in patients with decreased respiratory drive or an unstable or flail chest.

C. Circulation — Inadequate circulation in the trauma patient may be due to hemorrhage, tension pneumothorax, cardiac tamponade, or neurogenic shock. The pulse, blood pressure, heart sounds, jugular venous filling, urine output, and potential sources of bleeding are assessed. Control of external hemorrhage with compression dressings is attempted. Intravenous lines are placed with two wide bore (16 gauge or larger) catheters for rapid fluid administration. These are not to be placed distal to extremity injury sites. Venous cut-downs, either saphenous, femoral, or antecubital, are an alternative. If percutaneous femoral or subclavian catheters are required, a large introducer sheath should be used. Multi-lumen catheters do not permit sufficiently rapid fluid administration. Initial fluid resuscitation begins with a 2 liter (20 mL/kg in children) bolus of lactated Ringer's solution. The response to the initial bolus is assessed and further fluids or blood are administered as indicated. Hypotension, muffled heart sounds, and jugular venous distension are signs of cardiac tamponade. Needle pericardiocentesis may decompress the pericardium sufficiently to stabilize the patient until definitive treatment of the injury is possible. The presence of pericardial fluid can be rapidly determined with transcutaneous ultrasound performed in the emergency room.

D. Disability — Initial neurologic assessment includes determining the level of consciousness, pupillary function, and extremity movement and sensation. The Glasgow Coma Scale uses eye opening, best motor response and best verbal response to assess the level of consciousness