430 SURGERY TEAM

Trauma Care

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ATLS* Concept:

- **ABCDE approach to evaluation and treatment**
- **Treat greatest threat to life *first***
- **Definitive diagnosis *not* immediately important**
- **Time is of the essence**
- **Do no further harm**

*Advanced Trauma life support

Airway with c---spine protection
Breathing / ventilation / oxygenation
Circulation: stop the bleeding!
Disability / Neurological status
Expose / **E**nvironment /Body temperature

Apply principles of "primary" and "secondary" surveys

- **Identify management priorities**
- **Institute appropriate resuscitation and monitoring procedures**
- **Recognize the value of the patient history and biomechanics of injury**
- **Anticipate and manage "pitfalls"**

Initial assessment:-

Primary survey and resuscitation of vital functions are done simultaneously using a team approach.

Primary survey

Primary survey: (ABCDE approach)

Airway:

Establish patent airway and protect c-spine

Basic Airway techniques:

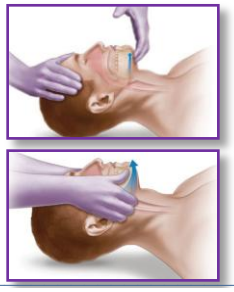
Chin-lift maneuver

jaw-thrust maneuver

Advanced airway techniques:

Orotracheal intubation

Pitfalls:
occult air way injury
progressive loss of airway
Equipment failure
Inability to intubate



Breathing:

Assess and ensure adequate oxygenation and ventilation

- Respiratory rate
- Chest movement
- Air entry (by auscultation)
- Oxygen saturation

Pitfalls:
Airway versus ventilation problem?
Iatrogenic pneumothorax or tension pneumothorax?

The Immediate *life threatening* injurie:

- Laryngeotracheal injury / Airway obstruction
- Tension pneumothorax
- Open pneumothorax
- Flail chest and pulmonary contusion
- Massive hemothorax
- Cardiac tamponade

Circulation:

- Level of consciousness
- Skin color and temperature
- Pulse rate and character

Pitfalls:
Elderly
Children
Athletes
Medication

Management

- Control hemorrhage
- Restore volume (By 2 Large-bore peripheral lines to give 2L of Crystalloids OR Blood)
- Reassess patient
- Prevent the lethal triad (Coagulopathy, Hypothermia, Acidosis)

Disability:

Baseline neurologic evaluation:

- Glasgow Coma Scale score
- Pupillary response (the only way to check for brain injury)

Caution:
observe for neurologic deterioration

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Glasgow Coma Score		
Eye Opening (E)	**Verbal Response (V)**	**Motor Response (M)**
4=Spontaneous 3=To voice 2=To pain 1=None	5=Normal conversation 4=Disoriented conversation 3=Words, but not coherent 2=No words.....only sounds 1=None	6=Normal 5=Localizes to pain 4=Withdraws to pain 3=Decorticate posture 2=Decerebrate 1=None
		Total = E+V+M

Exposure / Environment:

Completely undress the patient **but** prevent hypothermia!!

Pitfalls:
Missed injuries

What is a quick simple way to assess a patient in 10 seconds?

1. Identify yourself
2. Ask the patient his or her name
3. Ask the patient what happened

A Patent airway
B Sufficient air reserve to permit speech
C Sufficient perfusion to permit cerebration
D Clear sensorium

Adjuncts to primary Survey: X-ray (Cervical Spin, Chest X-ray, Pelvic X-ray)
ECG, ABG, Vital signs, Urinary Output, Pulse oximeter and CO2, urinary/gastric catheters unless contraindicated

Resuscitation

- Protect and secure airway
- Ventilate and oxygenate
- Stop the bleeding!
- Vigorous shock therapy
- Protect from hypothermia

Consider Early Transfer !!
- Use time before transfer for resuscitation
- Do not delay transfer for diagnostic tests

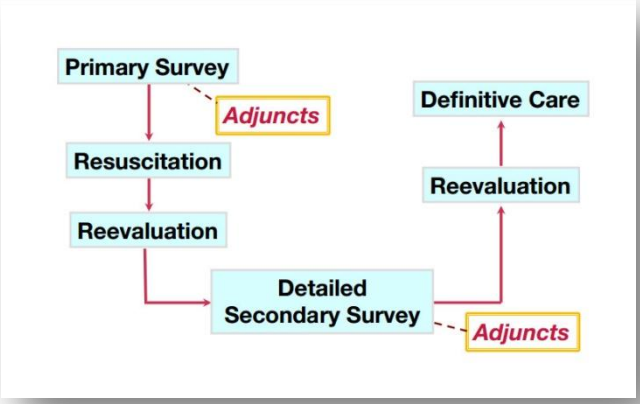
With special considerations for:
- Trauma in the elderly
- Pediatric trauma
- Trauma in pregnancy

When should the transfer occur?
As soon as possible after stabilization:
- Airway and ventilatory control
- Hemorrhage control

How do I minimize missed injuries?
- **High index of suspicion**
- **Frequent reevaluation and monitoring**

Pain management !
- Relief of pain / anxiety as appropriate
- Administer intravenously
- Careful monitoring is essential

Which patients do I transfer to a higher level of care?
Those whose injuries exceed institutional capabilities:
- Multisystem or complex injuries
- Patients with comorbidity or age extremes



Secondary

Secondary survey:

The complete **history** and **physical examination**

- History
- Physical exam: Head to toe
- Complete neurologic exam
- Special diagnostic tests
- Reevaluation

After
- Primary survey is completed
- ABCDEs are reassessed
- Vital functions are returning to normal

History:

Allergies
Medications
Past illnesses
Last meal
Events / Environment / Mechanism

Secondary survey

Physical exam: Head to toe:

Head
- External exam
- Scalp palpation
- Comprehensive
- eye and ear exam
- Including visual acuity

Pitfalls !
- Unconsciousness
- Periorbital edem
- Occluded auditory canal

Maxillofacial
- Bony crepitus
- Deformity
- Malocclusion

Pitfall !
Potential airway obstruction
Cribriform plate fracture
Frequently missed

Neurologic: Brain
- GCS (Glasgow Coma Scale score)
- Pupil size and reaction
- Lateralizing signs
- Frequent reevaluation
- Prevent secondary brain injury >>>> by Early neurosurgical consult !

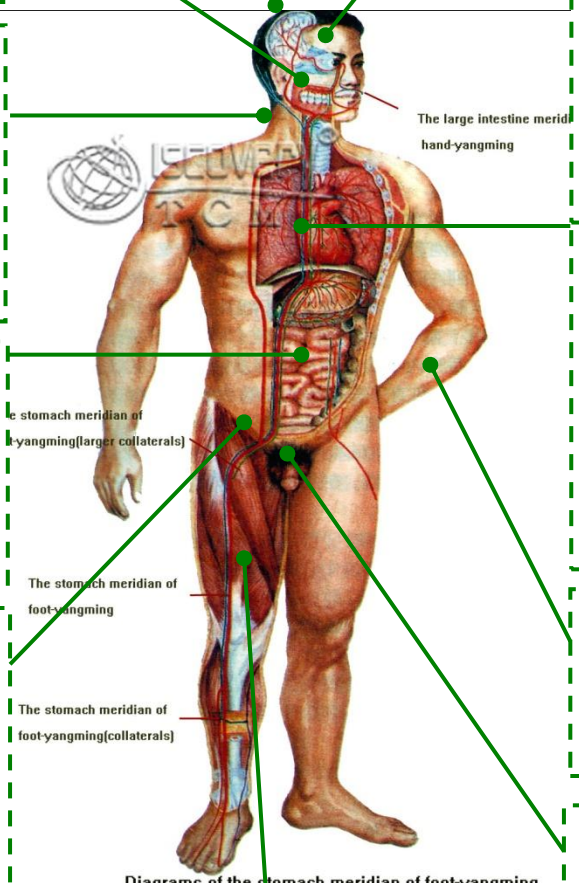
Neurologic: Spinal Assessment
- Whole spine
- Tenderness and swelling
- Complete motor and sensory exams
- Reflexes
- Imaging studies

Pitfalls !
Altered sensorium
Inability to cooperate with

clinical exam
Neurologic: Spine and Cord
Conduct an in-depth evaluation of the patient's spine and spinal cord
Early neurosurgical / orthopedic consult

Neck (Soft Tissues)
Mechanism: Blunt vs penetrating
Symptoms: Airway obstruction, hoarseness
Findings: Crepitus, hematoma, stridor, bruit

Pitfalls:
Delayed symptoms and signs
Progressive airway obstruction
Occult injuries



Diagrams of the stomach meridian of foot-yangming

Chest:
- Inspect
- Palpate
- Percuss
- Auscultate
- X-rays

The Potential life threatening injuries
- Blunt cardiac injury
- Traumatic aortic disruption
- Blunt esophageal rupture
- Traumatic diaphragmatic injury

Abdomen:
- Inspect / Auscultate
- Palpate / Percuss
- Reevaluate
- Special studies

pitfalls !
Hollow viscous injury
Retroperitoneal injury

Pelvis:
- Pain on palpation
- Leg length unequal
- Instability
- X-rays as needed

Pitfalls !
Excessive pelvic manipulation
Underestimating pelvic blood loss

Extremities
- Contusion, deformity
- Pain
- Perfusion
- Peripheral neurovascular status
- X-rays as needed

Perineum
Contusions, hematomas, lacerations, urethral blood
Rectum.
Sphincter tone, high-riding prostate, pelvic fracture, rectal wall integrity, blood.
Vagina.
Blood, lacerations.

Pitfalls !
Urethral injury
Pregnancy

Musculoskeletal.

Pitfalls !
Potential blood loss
Missed fractures
Soft tissue or ligamentous injury
Compartment syndrome (especially with altered sensorium / hypotension)

Indications for Laparotomy_Blunt Trauma:
- Hemodynamically abnormal with
- suspected abdominal injury (DPL / FAST)
- Free air
- Diaphragmatic rupture
- Peritonitis
- Positive CT

Indications for Laparotomy_Penetrating Trauma:
- Hemodynamically abnormal
- Peritonitis
- Evisceration
- Positive DPL, FAST, or CT

Adjuncts to secondary survey:
Special Diagnostic Tests as Indicated

Pitfalls !
Patient deterioration
Delay of transfer
Deterioration during transfer
Poor Communication