**Trauma,**

1) *Assess and stabilize trauma patients with an organized approach, anticipating complications in a timely fashion, using the primary and secondary surveys.*

Primary Survey:

“2 large bore IVs, O2, monitors”

**A** Airway assessment and protection, while maintaining cervical spine stabilization.

**B** Breathing and ventilation assessment (maintain adequate oxygenation).

**C**Circulation assessment (control hemorrhage and maintain adequate end-organ perfusion). Major areas of hemorrhage are pelvis, abdomen, thorax, and external (from limbs, scalp). FAST exam using ultrasound can be included as part of circulation assessment.

**D** Disability assessment (basic neurologic evaluation). Basic exam includes GCS, pupils, neuro exam of all 4 limbs. If possible, rapid neuro exam prior to paralysis for intubation.

**E** Exposure, with environmental control (undress patient and search everywhere for possible injury, while preventing hypothermia).

Secondary Survey:

a) Hx: AMPLE (Allergies, Medications, PMHx, Last meal, Events leading to incident)

b) Head to toe examination, including C-spine, log roll (for spine exam and rectal exam if necessary)

c) Trauma imaging: Chest XR, C-spine XR, Pelvis XR

d) EKG, trauma labs, +/- additional imaging 

3) *When faced with several trauma patients, triage according to resources and treatment priorities.*

The sickest **viable** patients are managed first. 

2) *Suspect, identify, and immediately begin treating life-threatening complications (eg tension pneumothorax, tamponade).*

a) Tension pneumothorax

- if suspected, treat with needle decompression prior to obtaining Chest XR (14G angiocath in 2nd ICS, midclavicular)

- needle decompression must be followed by chest tube (4th-5th ICS, anterior axillary line)

b) Cardiac tamponade

- ER needle aspiration, or to OR if available 

4) *In trauma patients, secure the airway appropriately  (eg assume cervical spine injury, use conscious sedation, recognize a difficult airway, plan for back-up methods / cricothyroidotomy).*

Assessment for difficult airway:

**L** Look (trauma, teeth, hair, large tongue)

**E**Evaluate 3-3-2 (what you want is mouth opening to fit 3 finger-breadths,   submandibular length 3 finger-breadths, hyoid to cricoid 2 finger-breadths)

**M**Mallampati score (you want 3 or 4)

**O**Obstruction, any signs of? Sleep apnea?

**N**Neck mobility (neck arthritis, C-spine collar)

Assessment for difficult BVM ventilation:

**B**Beard

**O**Old

**O**Obese

**T**Toothless

**S**Snores 

5) *In a patient with signs and symptoms of shock:*

*a) Recognize the shock.*

Pre-shock:

      - <10% loss of effective blood volume

      - compensated shock

      - tachycardia, +/- modest BP change

Shock:

      - 20-25% loss of effective blood volume

      - s/s organ dysfunction appear

- tachycardia, BP drop, dyspnea, diaphoresis, restlessness, oliguria, cool / mottled skin

End-organ dysfunction:

- untreated shock progresses to end-organ dysfunction and death (renal failure, acidosis, obtundation)

*b) Define the severity and type (eg neurogenic, hypovolemic, septic).*

Hypovolemic shock:

      - Decreased preload due to intravascular volume loss.

      - DDx: hemorrhage, fluid loss

Cardiogenic shock:

      - Cardiac pump failure.

      - Cardiomyopathies, MI, arrhythmias

Distributive shock:

      - severely decreased systemic vascular resistance.

- DDx: sepsis, SIRS, anaphylaxis, neurogenic (neurogenic shock is disruption of autonomic pathways causing decreased systemic vascular resistance)

Combined shock:

      - combination of the above

*c) Treat the shock.*

      - Bolus 20cc/kg crystalloid

      - with hemorrhage give blood soon

      - massive transfusion protocols (eg 1:1:1 pRBCs:platelets:FFP)

6) *In trauma patients, rule out hypothermia on arrival and subsequently (as it may develop during treatment).*

7) *Suspect certain medical problems (eg seizure, drug intoxication, hypoglycemia, attempted suicide) as the precipitant of the trauma.*

8) *Do not move potentially unstable patients from treatment areas for investigations (eg to Xray, CT).*

If you need imaging urgently, a capable physician should accompany the patient.

9) *Determine when patient transfer is necessary (eg CNS bleeds, when no specialty support is available).*

This is very dependent on the center you’re practicing in.

10) *Transfer patients in an appropriate manner (ie stabilize them before transfer and choose the method, such as ambulance or flight).*

This is very dependent on the center you’re practicing in. Consider intubation for transfer. Indications for intubation include:

- oxygenation

- ventilation

- expected clinical course (eg with GCS<8 intubate to prevent aspiration, or with transfer intubate if at all suspecting decompensation during transfer) 

12) *In children with traumatic injury, rule out abuse.*

Hx factors suspicious for abuse:

- Hx inconsistent with injuries

- Vague or inconsistent Hx

- Injury attributed to actions of other siblings

Px findings suspicious for abuse:

- injuries not consistent with Hx

- multiple fractures or injuries

- likely inflicted injuries (cigarette burns or patterned bruises)

- bruising in a child that is not yet “cruising” (normally 9-12mo)

- bruising to pinna, neck, abdomen

- genitalia injury

11) *Find opportunities to offer advice to prevent or minimize trauma (eg do not drive drunk, use seatbelts and helmets).*