

Strategies In Surgery

Oklahoma's Level I Trauma Center

Trauma triage starts with the use of the **ABCD's**

- **A**irway - compromise, stridor
- **B**reathing – labored, irregular, unequal
- **C**irculation – tachycardia, hypotension, decreased or absent pulses, pallor, diaphoresis
- **D**isability – depressed level of consciousness not due to drugs or alcohol

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OU Physicians and the OU MEDICAL CENTER are the core of the only American College of Surgeons Level 1 Trauma Center in Oklahoma. This Level 1 classification means the center offers the capability and commitment for the care of severely injured patients. A Level 1 Trauma Center must have a surgeon, specialists and ancillary services immediately available to evaluate and treat a critically injured trauma patient.

The Department of Surgery at the University of Oklahoma supported the development of a trauma service, dedicated an attending surgeon to be on call for trauma 24 hours per day, and hired a surgical director of trauma and critical care. In 2001, the American College of Surgeons Committee on Trauma verified OU MEDICAL CENTER as meeting the criteria for a Level 1 Trauma Center. An Oklahoma trauma system is being developed to get more severely injured patients to the best facility as quickly as possible.

Which Patients?

The State Department of Health has published pre-hospital criteria defining patients who would benefit from triage and transport to a Level 1 Trauma Center. Triage starts with the use of the **ABCD's** listed to the left.

Next comes anatomic assessment of patients. Level 1 criteria includes:

- penetrating injury to the trunk, neck or head
- amputation above the wrist or ankle
- paralysis (new)
- flail chest
- two or more proximal long bone fractures
- unstable pelvis fracture
- open skull fracture
- burn >20% Total Body Surface Area (TBSA)

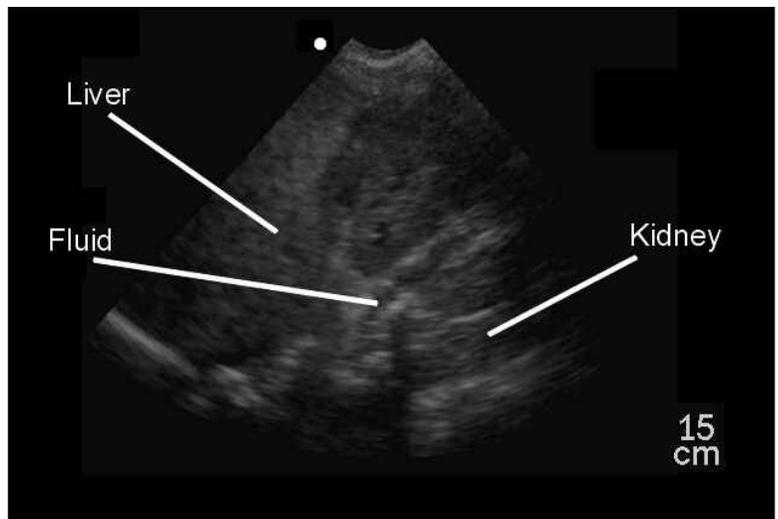


Figure A: Positive Right Upper Quadrant FAST

The final triage decision is made based on the situations from high-energy accidents, such as:

- ejection from a vehicle
- death of an occupant
- significant external damage to a vehicle or to a vehicle steering wheel
- significant motorcycle or ATV crash
- fall from a significant height
- pedestrian or bicycle vs. a moving vehicle.

Patients who have significant airway, breathing, circulatory or anatomic injuries from high energy mechanisms potentially need immediate evaluation and treatment of their injuries.

Why A Trauma Center?

The Level 1 Trauma Center was developed to offer the community a center to immediately care for severe, multiple-organ-system injuries. To maintain this expertise, a Level 1 Center must admit a certain volume of patients, which includes the most severely injured patients within the community.

The American College of Surgeons (ACS) has developed more than 150 criteria that a center must meet to maintain the Level 1 designation. Those criteria specific to trauma surgeons include current board eligibility and certification, 16 hours of trauma-related CME per year, Advanced Trauma Life Support certification and participation in performance improvement and trauma-related research. A surgeon must be dedicated to one hospital while on call and must be present and involved in decision-making during resuscitation in the emergency department and in the operating room. A back-up surgeon must also be available on a daily and nightly basis.

The ACS requires a structured trauma service to provide continuity of care to the severely injured patient from admission through discharge and outpatient follow-up.

There are currently two full-time surgeons and a physician assistant within the Department of Surgery who provide daily management of the trauma service. All of the general surgeons in the Department of Surgery participate in trauma call on a rotating basis and all have shown dedication and expertise in caring for severe multiple organ injured patients and those in need of immediate operative intervention.

Abdominal Trauma

Surgeons perform a **Focus Assessment using Sonography for Trauma (FAST)** as part of the primary assessment of the trauma patient to evaluate for thoracoabdominal sources of trauma or shock.¹⁻³ The FAST examination is a noninvasive, rapid, safe, accurate and repeatable tool for the bedside assessment of intrapericardial and intra-abdominal etiologies of injury in the unstable trauma patient (Figure A). In the setting of hypotension, the FAST examination is sensitive (100%) and specific (96%) in defining intra-abdominal hemorrhage as the etiology of the shock.

We follow the algorithm in Figure B for the use of FAST examination in hypotensive patients. This allows us to meet our goal of rapid primary and secondary assessment, and triage patients to the operating room or ancillary departments for further diagnostic studies.

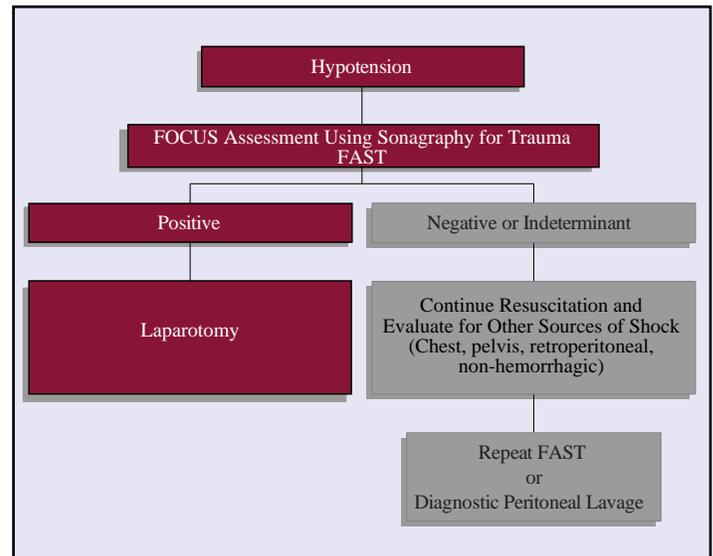


Figure B: FAST Examination in Unstable Trauma Patients

Hemodynamically stable patients who have a negative FAST undergo serial examinations if they are alert and cooperative or a confirmatory CT scan of the abdomen and pelvis if they are obtunded. Hemodynamically stable patients with a positive FAST undergo a CT scan of the abdomen and pelvis to evaluate the etiology of the hemoperitoneum. If the hemoperitoneum is secondary to a solid organ injury, the majority of patients will likely undergo nonoperative management. If significant free fluid is present on CT without solid organ injury, then further invasive evaluation is needed to diagnose intestinal or mesenteric injuries.

References:

1. Wherrett LJ, Boulanger BR, McLellan BA, Brenneman FD, Rizoli SB, Culhane J, Hamilton P. Hypotension after blunt abdominal trauma: the role of emergent abdominal sonography in surgical triage. *J Trauma* 1996;41:815-820.
2. Rozycki GS, Ballard RB, Feliciano DV, Schmidt JA, Pennington SD. Surgeon-performed ultrasound for the assessment of truncal injuries: lessons learned from 1540 patients. *Ann Surg* 1998;228:557-567.
3. McKenney MG, Martin L, Lentz K, Lopez C, Sleeman D, Aristide G, Kirton O, Nunez D, Najjar R, Namias N, Sosa J. One thousand consecutive ultrasounds for blunt abdominal trauma. *J Trauma* 1996;40:607-612.



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