ATLS 9th Edition: What’s New?

- Concept of balanced resuscitation
- Emphasis on the pelvis as a source of blood loss
- Use of more advanced airway techniques for the difficult airway
- Optional DPL and pericardiocentesis
- New FAST Skill Station
- New multiple-choice questions for pre-test and post-test
- Optional expanded content on heat injury
- New initial assessment scenarios
- Many new images
- New Instructor Course content
- New Skills videos
- New ATLS Mobile App (MyATLS.com)
Statistics

- According to the World Health Organization, injury is responsible for 10% of global deaths.
- By 2020, traffic deaths will be the third leading cause of death in the world.
1913 – ACS founded to improve standards of surgical care in hospitals.

1922 – Committee on Fractures founded

1949 – Committee on Trauma founded

1978 – Advanced Trauma Life Support Course developed
Vision and Mission

- Common language of initial trauma care
- One safe way
Quality

- Enhance content quality by facilitating broad input
- Emphasis on evidence-based changes
- Enhancing quality of materials through use of professional design
- Adopting web-based learning
ATLS® Revisions - 9th Edition

We welcome your suggestions for revising and improving ATLS content. In order to ensure that ATLS provides accurate and relevant information for optimal care, all revisions to the next edition will be evidence-based. This site allows you to provide your suggested revision with supporting evidence, and to classify that evidence according to current guidelines. The ATLS subcommittee will review all proposed revisions. Please feel free to contact the ATLS Program Office with any questions or concerns at atlsrevision@facs.org or 312-202-5180.

Thank you for your commitment to improving the care of the trauma patient.

Karen Brasel, MD, FACS
ATLS Subcommittee Chair.

Login with ATLS ID Number:
Please contact your ATLS Coordinator if you forget your ATLS ID.

Register for an ATLS ID Number to Login:
This typically applies to individuals without an ATLS ID and faculty members in the following countries: Australia (New Zealand, Bolivia, Denmark, Germany, Hungary, Indonesia, Ireland, Israel, Lithuania, Netherlands, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, Singapore, Taiwan, Thailand, Trinidad & Tobago (Grenada), and United Kingdom.

If you have questions or need further information, please call the ATLS Department at 312-202-5160
e-mail address: atlsrevision@facs.org
Airway

- Cuffed tubes for pediatric patients
- Uncuffed for infants (<1 year of age)
What can I do about shock?

- Hemostatic resuscitation
- Angio-embolization
- Splint fractures
- Hemostatic Agents
- Direct pressure/tourniquet
- Reduce pelvic volume
- Operation

STOP the bleeding!
Shock

What can I do about shock?

- Fluid resuscitation
  - Vascular access?
  - Type?
  - Volume?
  - Balanced
- Monitor response
- Prevent hypothermia!
What can I do about shock?

- Balanced resuscitation
  - Accepting a lower-than-normal blood pressure
  - Packed red blood cells, FFP, platelets
  - Not a substitute for definitive surgical control of bleeding

Caution: Too much may be as bad as too little.
FAST
Thoracic

- Pneumothorax, chest tube versus observation

- ED thoracotomy and signs of life for penetrating trauma (i.e., organized ECG activity, reactive pupils, spontaneous movement)

- No ED thoracotomy for blunt trauma (PEA)
Blast injury
  ● Primary: Shock wave
  ● Secondary: Penetrating wounds – shrapnel
  ● Tertiary: Victim thrown by blast
  ● Quaternary: Crush, inhalational, chemical and burn injuries
Abdominal and Pelvic Trauma

Hemodynamically Abnormal Pelvic Fractures

Initial Management
- Surgical consult
- Pelvic wrap

Intraperitoneal gross blood?

Yes
- Laparotomy

No
- Angiography

Hemorrhage control fixation device
Skills Station Abdominal Evaluation

- FAST and / or DPL
- Up to course director / coordinator
  - Taught with surgical skills
  - Emphasize case-based skills station
Head Trauma

Indications for CT head in minor head trauma GCS 13-15

TABLE 6-3 Indications for CT Scanning in MTBI

| Head CT is required for patients with minor head injuries (i.e., witnessed loss of consciousness, definite amnesia, or witnessed disorientation in a patient with a GCS score of 13 to 15) and any one of the following: |
|---|---|
| **High risk for neurosurgical intervention:** | **Moderate risk for brain injury on CT:** |
| • GCS score less than 15 at 2 hours after injury | • Amnesia before impact (more than 30 minutes) |
| • Suspected open or depressed skull fracture | • Dangerous mechanism (e.g., pedestrian struck by motor vehicle, occupant ejected from motor vehicle, fall from height more than 3 feet or five stairs) |
| • Any sign of basal skull fracture (e.g., hemotympanum, raccoon eyes, CSF otorrhea or rhinorrhea, Battle sign) | |
| • Vomiting (more than two episodes) | |
| • Age greater than 65 years | |

Head Trauma

- **Penetrating intracranial objects**
  - Leave in place until possible vascular injury has been evaluated and definitive neurosurgical management is established.

- **Extensive wounds with nonviable scalp, bone, or dura**
  - Treat with careful debridement before primary closure or grafting to secure a watertight wound.
Steroids: There is insufficient evidence to support the routine use of steroids in spinal cord injury at present.
Spine Trauma

Blunt Carotid and Vertebral Vascular Injuries (BCVI)

Suggested criteria for screening include:

- C1-3 fracture
- C-spine fracture with subluxation
- Fractures involving the foramen transversarium
Musculoskeletal Trauma

Tourniquets

- The use of a tourniquet may occasionally be life-saving and/or limb-saving in the presence of ongoing hemorrhage uncontrolled by direct pressure.

- A properly applied tourniquet, while endangering the limb, can save a life.
Trauma in Pregnancy

- Unrestrained pregnant women have a higher risk of premature delivery and fetal death.
- There does not appear to be any increase in pregnancy-specific risks from the deployment of airbags in motor vehicles.
Pediatric Trauma

- The presence of a splenic blush on computed tomography (CT) with intravenous contrast does not mandate exploration.

- (FAST) in the injured child
  - Operative management is indicated not by the amount of intraperitoneal blood, but by hemodynamic abnormality.
Goals:

- To understand the basic principles of disaster management and emergency preparedness
- To understand the key components of the four phases of the disaster response
- To understand the rationale for and the application of an ICS in a disaster
- To apply principles of disaster triage to MCIs and MCEs
Provider Course

- Optional scenario-based skills stations for manikins
- FAST versus DPL
- Optional DPL
- Optional pericardiocentesis
Materials / Skills Stations

Instructor Course

- Separate faculty manuals will include a DVD that contains:
  - All course slides
  - All x-rays
  - An electronic version of the FM (including all of the course paperwork)
  - Slide guides
  - Initial Assessment videos (same as the ones on the Student DVD)
Coordinators

- Separate ATLS Course Coordinator and Director Manual
  - Course Coordinator guide
  - Course schedules
  - Guide to ATLS rules
  - Equipment lists
Instructor Update and Reverification

Online update process with new editions

- Review of compendium of changes and new algorithm
- Online MCQ / tutorial with CME credit
- Reverification will be automatic at expiration if teaching history complete.
  - 4 courses / 4 years required
Online update process with new editions

- Separate coordinator, educator, and instructor online update
- Online MCQ / tutorial with CME credit
- Reverification will be automatic at expiration if teaching history complete.
  - 4 courses / 4 years required
ATLS App

ATLS ADVANCED TRAUMA LIFE SUPPORT

MyATLS FOR IPAD

AMERICAN COLLEGE OF SURGEONS
Inspiring Quality
Highest Standards
Better Outcomes

ATLS LIFE SUPPORT COMPANION 9E

CHAPTERS
JUST-IN-TIME VIDEOS
RESOURCES
SKILL STATIONS

NovaDOC
Doctors On Call Health Support Initiative
CACITMG 7046
Summary

- One safe way of initial trauma care
- A common baseline for continued innovation
Initial Assessment and Management
Case Scenario

- 44-year-old male driver who crashed head-on into a wall
- Patient found unresponsive at the scene
- Arrives at hospital via basic life support with c-collar in place and strapped to a backboard; technicians assisting ventilations with bag-mask
Case Scenario

What is the sequence of priorities in assessing this patient?

1. Do you need to identify the specific injuries before initial management of this patient?

2. If not, how do you proceed?
Objectives

1. Identify the correct sequence of priorities for assessment of a multiply injured patient.

2. Apply the principles outlined in the primary and secondary surveys to the assessment of a multiply injured patient.

3. Explain how a patient's medical history and the mechanism of injury contribute to the identification of injuries.

4. Identify the pitfalls associated with the initial assessment and management of an injured patient and describe steps to minimize their impact.

5. Recognize patients who will require transfer for definitive management.
Standard Precautions

- Cap
- Gown
- Gloves
- Mask
- Shoe covers
- Protective eyewear / face shield
Primary survey and resuscitation of vital functions are done simultaneously using a team approach.
Concepts of Initial Assessment

Preparation

Primary Survey
Resuscitation Adjuncts

Reevaluation

Detailed Secondary Survey
Reevaluation Adjuncts

Reevaluation
Definitive Care
Quick Assessment

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

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

• Ask the patient his or her name
• Ask the patient what happened
Appropriate Response Confirms

A. Patent airway
B. Sufficient air reserve to permit speech
C. Sufficient perfusion
D. Clear sensorium
Primary Survey

A. Airway with c-spine protection
B. Breathing and ventilation
C. Circulation with hemorrhage control
D. Disability: Neuro status
E. Exposure / Environmental control
Primary Survey

The priorities are the same for all patients.
Special Populations

- Elderly
- Infants and Children
- Pregnant Women
- Obese
- Athletes
Primary Survey

Airway

Establish patent airway and protect c-spine

Pitfalls

- Occult airway injury
- Progressive loss of airway
- Equipment failure
- Inability to intubate
Breathing and Ventilation

Assess and ensure adequate oxygenation and ventilation

- Respiratory rate
- Chest movement
- Air entry
- Oxygen saturation
Primary Survey

Breathing and Ventilation

Pitfalls

Airway versus ventilation problem?

Iatrogenic pneumothorax or tension pneumothorax?
Primary Survey

Circulation
(including hemorrhage control)

Assess for organ perfusion

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

Circulatory Management

- Control hemorrhage
- Restore volume
- Reassess patient

Pitfalls

- Elderly
- Children
- Athletes
- Medications
Primary Survey

Disability

- Baseline neurologic evaluation
- Glasgow Coma Scale score
- Pupillary response

Caution: Observe for neurologic deterioration
Primary Survey

Exposure / Environment

Completely undress the patient

Caution

Prevent hypothermia

Pitfalls

Missed injuries
Resuscitation

- Protect and secure airway
- Ventilate and oxygenate
- Stop the bleeding!
- Crystalloid / blood resuscitation
- Protect from hypothermia
Adjuncts to Primary Survey

**PRIMARY SURVEY**

- **Vital signs**
- **ECG**
- **ABGs**
- **Pulse oximeter and CO₂**
- **Urinary / gastric catheters unless contraindicated**
- **Urinary output**
Adjuncts to Primary Survey

Diagnostic Tools
Adjuncts to Primary Survey

Diagnostic Tools

- FAST
- DPL
Adjuncts to Primary Survey

Consider Early Transfer

- Use time before transfer for resuscitation
- Do not delay transfer for diagnostic tests
Secondary Survey

What is the secondary survey?

The complete history and physical examination.
When do I start the secondary survey?

After

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

Components of the secondary survey

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

History

- Allergies
- Medications
- Past illnesses / Pregnancy
- Last meal
- Events / Environment / Mechanism
Secondary Survey

Mechanisms of Injury
Secondary Survey

Head

- External exam
- Scalp palpation
- Comprehensive eye and ear exam
- Include visual acuity

Pitfalls

- Unconsciousness
- Periorbital edema
- Occluded auditory canal
Secondary Survey

Maxillofacial

- Bony crepitus
- Deformity
- Malocclusion

Pitfalls

- Potential airway obstruction
- Cribiform plate fracture
- Frequently missed
Secondary Survey

Neck (Soft Tissues)

Mechanism: Blunt versus penetrating
Symptoms: Airway obstruction, hoarseness
Findings: Crepitus, hematoma, stridor, bruit

Pitfalls
- Delayed signs and symptoms
- Progressive airway obstruction
- Occult injuries
Secondary Survey

Chest

- Inspect
- Palpate
- Percuss
- Auscultate
- X-rays
Secondary Survey

Abdomen

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

Pitfalls

- Hollow viscous injury
- Retroperitoneal injury
Secondary Survey

**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
Secondary Survey

Pelvis

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

Pitfalls

Excessive pelvic manipulation
Underestimating pelvic blood loss
Secondary Survey

Extremites

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

Musculoskeletal System

Pitfalls

- Potential blood loss
- Missed fractures
- Soft tissue or ligamentous injury
- Compartment syndrome
Secondary Survey

Neurologic: Brain

- GCS
- Pupil size and reaction
- Lateralizing signs
- Frequent reevaluation
- Prevent secondary brain injury

Early neurological consult
Secondary Survey

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
Secondary Survey

Neurologic: Spine and Spinal Cord

Conduct an in-depth evaluation of the patient’s spine and spinal cord

Early neurological / orthopedic consult
Secondary Survey

Neurologic

Pitfalls

- Incomplete immobilization
- Neurologic deterioration
Adjuncts to Secondary Survey

Special Diagnostic Tests as Indicated

Pitfalls

- Patient deterioration
- Delay of transfer
- Deterioration during transfer
- Poor communication
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?
Transfer to Definitive Care

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
Transfer to Definitive Care

When should the transfer occur?
When should the transfer occur?

As soon as possible after stabilizing measures are completed:

- Airway and ventilatory control
- Hemorrhage control (operation)
Transfer to Definitive Care

Transfer Agreements
Local Resources

Local Facility

Trauma Center  Specialty Facility
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Questions?
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