

ADVANCED TRAUMA LIFE SUPPORT (ATLS)



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ADVANCED TRAUMA LIFE SUPPORT

- ATLS In US
- EMST In Australia
- PTC In UK
- Most Countries having an epidemic of trauma
- In India one of the major killer is trauma
200,000 deaths/year ; In TN 25000/year

ATLS? OBJECTIVES

- To rapidly & accurately assess trauma patients
- Early recognition & timely intervention of life threatening conditions
- To resuscitate & stabilise trauma patients
- To understand the priorities in trauma management ? Triage
- To organise quality trauma care in your hospital

TRAUMA MANAGEMENT

Six Phases

- Access Phase
- Pre hospital & Triage Phase
- Early Hospital or Resuscitation Phase
- Operative Phase
- Intensive care Phase
- Rehabilitative Phase

ATLS? TRIMODAL DEATH

By Arnold D. Trunkey

- ~~Within Seconds to Minutes~~
 - ? Brainstem injury
 - ? Aortic rupture
- ~~Within Minutes to Hours~~
 - ? Sub dural Hematoma
 - ? Rupture of Liver & Spleen
- ~~Within Days to Weeks~~
 - ? Sepsis & MODS

ATLS

- Emergency life saving preceeds examination of trauma patients
- Once immediate survival is achieved definitive assessment & treatment begins
- Priorities in management must always be salvage of
 - ☐ Life, Limb, Function & Cosmetic

Pre Hospital Trauma Life Support

- Scene size up & Extrication
 - Primary Survey & Basic Life Support
 - Spinal Protection in LSB
 - Splinting Extremities
 - Control of External Hemorrhage
 - Aim: To Stabilize the Patient
- Platinum 10 Minutes
- Load & Go within Golden first hour

Field Triage- Color Coding

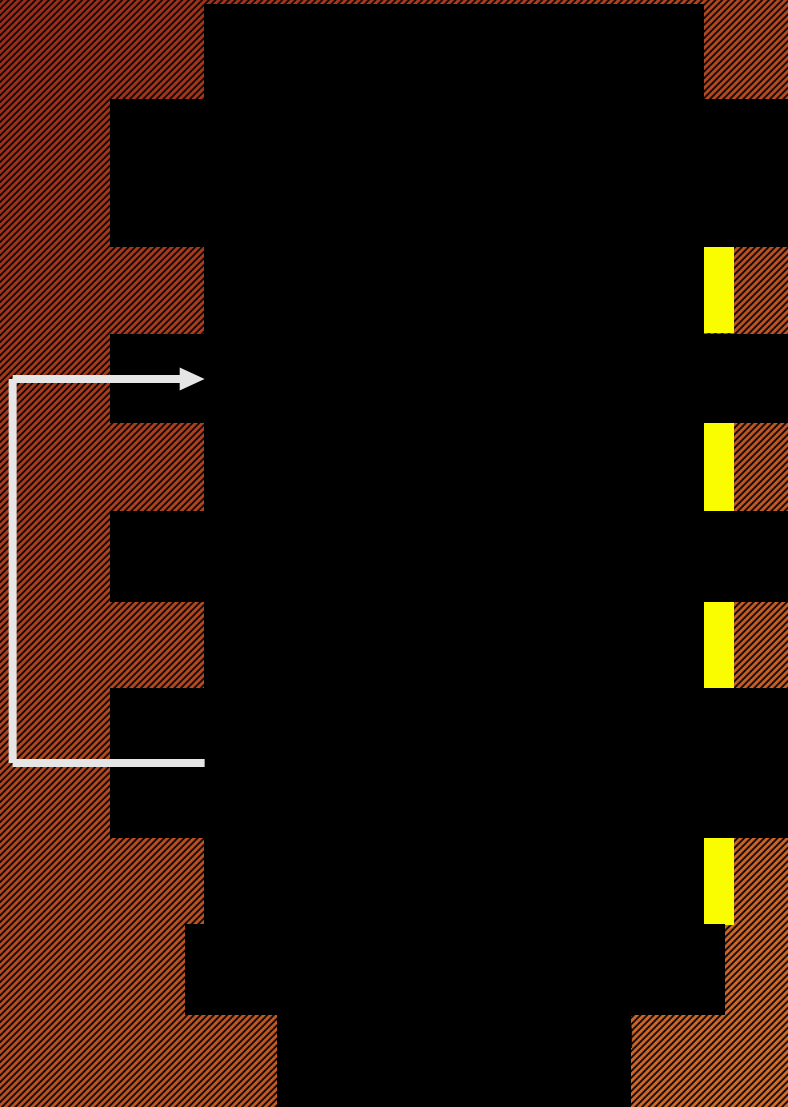
- Triage- sorting of patients by injury severity and need for transport
- **RED**-most critically injured-immediate transfer to hospital
- **YELLOW**-less critically injured-delayed transfer to hospital without endangering life
- **GREEN**-No life/limb threatening injury-patient ambulatory-may not need IP treatment
- **BLACK**- Dead patient

ATLS-SPINAL PROTECTION

Long Spinal Board



Overview of ATLS



ATLS PRIMARY SURVEY

- A- Airway & Cervical Spine Control
- B-Breathing & Ventilation
- C-Circulation & Hemorrhage Control
- D-Disability & Neurological Status
- E-Exposure & Completely undress the patient

ATLS—PRIMARY SURVEY

Airway&Cervical Spine Control

- Chin lift or Jaw Thrust
- Removal of FB,Blood & Vomitus
- Oropharyngeal or Nasopharyngeal Airway
- Intubate With ETT
- Cricothyroidotomy
- Keep the neck immobilised

CHIN LIFT & JAW THRUST

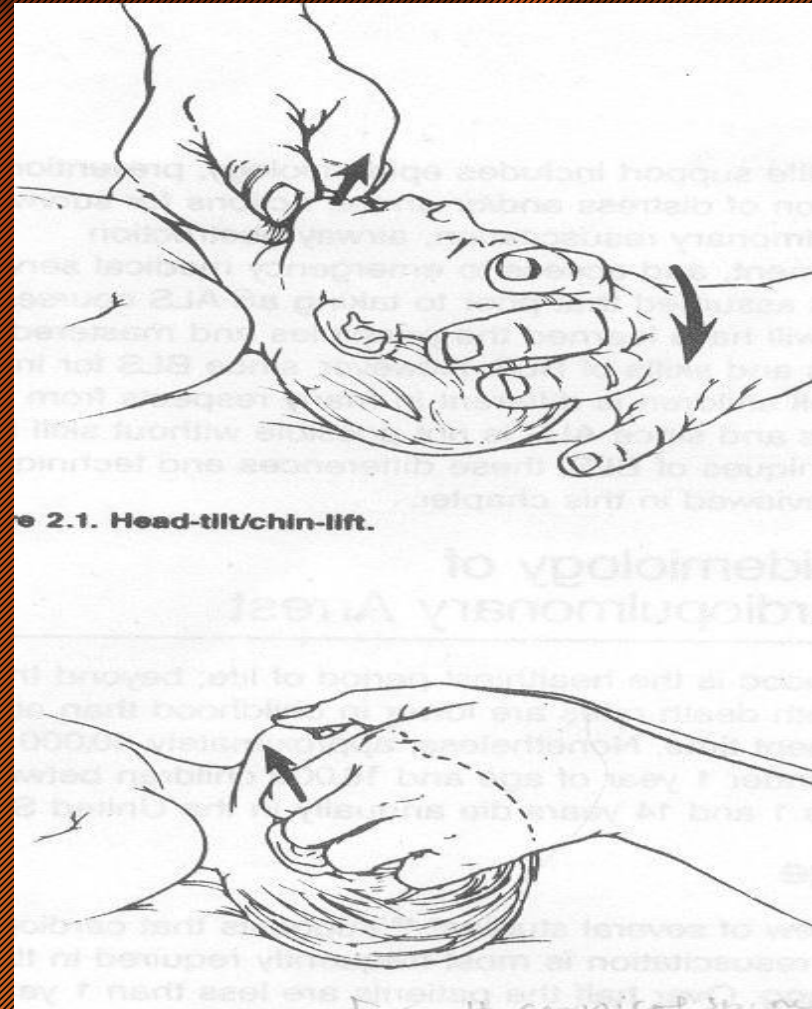
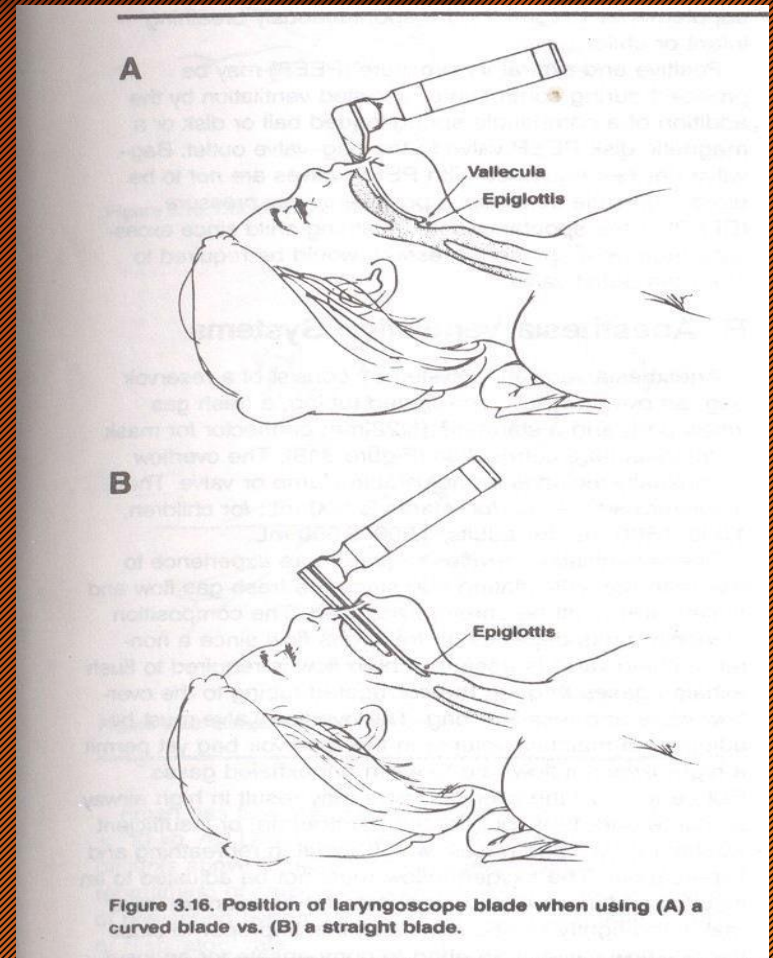
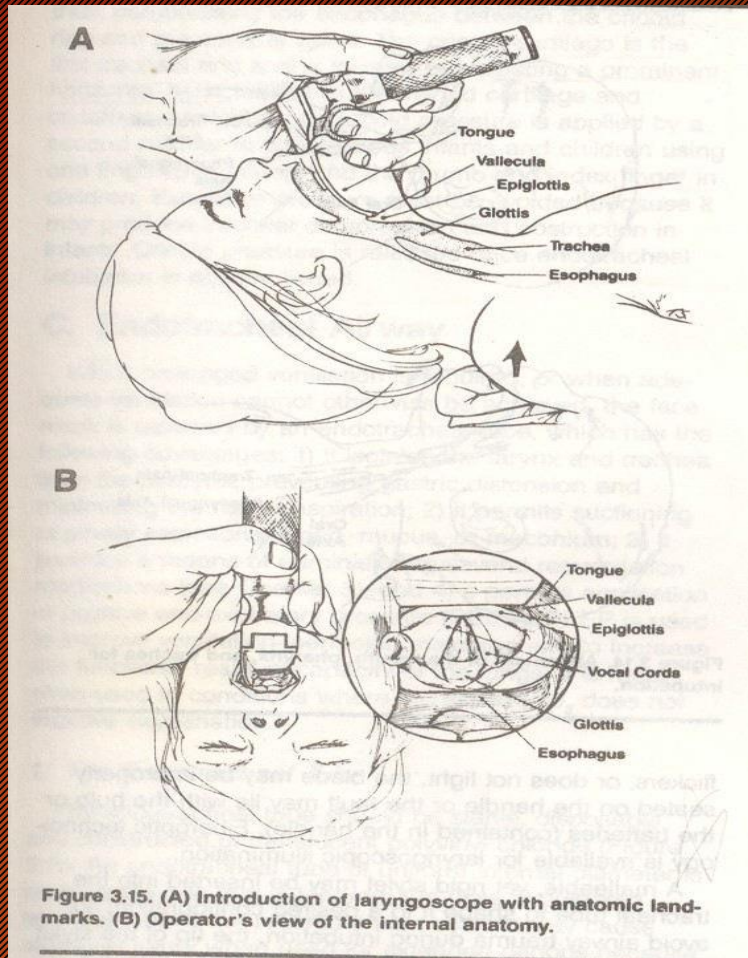


Figure 2.1. Head-tilt/chin-lift.

ENDOTRACHEAL INTUBATION



CRICOTHYROIDOTOMY

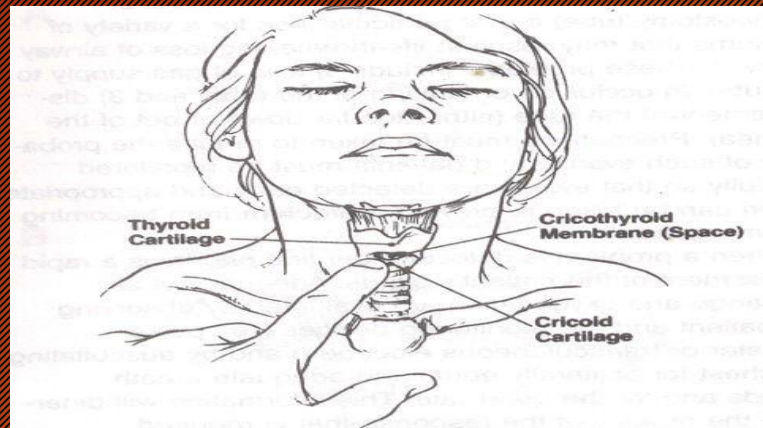


Figure 3.19. Cricothyroid membrane anatomy.

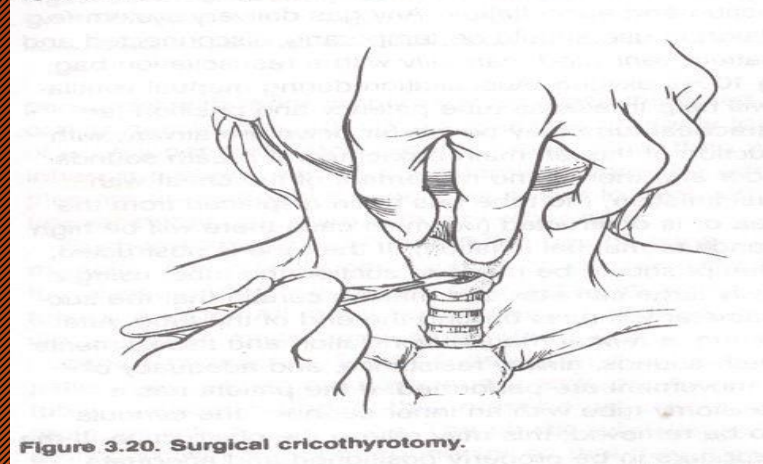


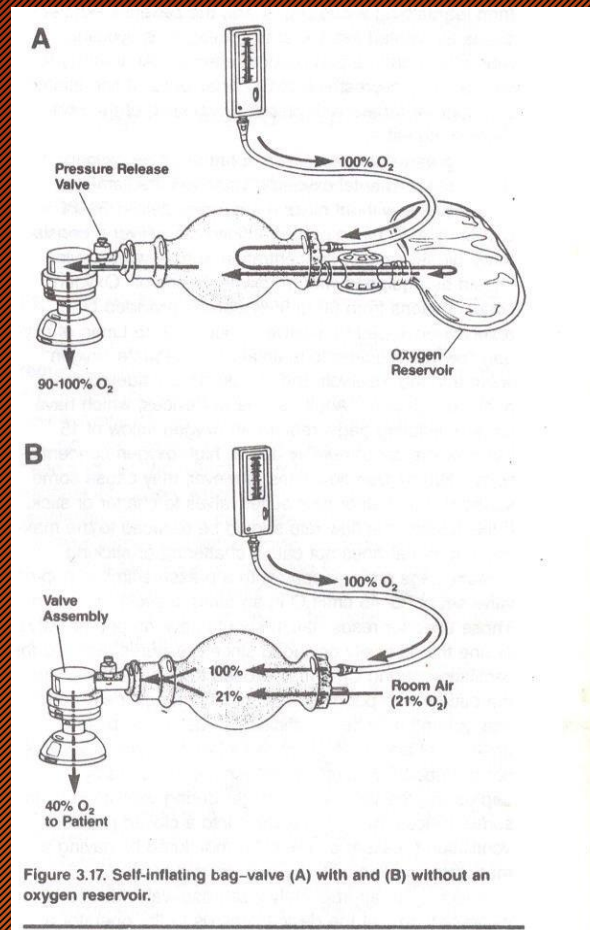
Figure 3.20. Surgical cricothyrotomy.

ATLS-PRIMARY SURVEY

Breathing & Ventilation

- Airway patency doesn't assure adequate ventilation- Look for bilateral breath sounds
- To ensure adequate oxygenation start Ambu bag or ETT ventilation— $\text{FIO}_2 > 0.85$
- Decompress Tension Pneumothorax
- Close open Chest Injury
- IPPV in large Flail Chest

BAG & MASK VENTILATION



ATLS-PRIMARY SURVEY

Circulation & Hemorrhage Control

- Post Traumatic Hypotension: Hypovolemia
- Conscious Patient ☐ Enough blood for cerebral perfusion
- Capillary Refill >2 seconds
- Pale, Cold & clammy Skin ☐ Blood Volume Loss >30%

ATLS PRIMARY SURVEY

Circulation & Hemorrhage Control

- Rapid & Thready Pulse → Hypovolemia
- Absent Pulse → CPR
- External Exsanguinating Hemorrhage controlled with MAST/ PASG, Never use Tourniquets



ATLS-PRIMARY SURVEY

Disability? Neurological Status

- AVPU? Describes Patient's Level of Consciousness
- A? Alert
- V? Responds to vocal stimuli
- P? Responds to painful stimuli
- U? Unresponsive
- GCS to be done in secondary survey

Common Life Threatening Pathology

A = Airway

Obstruction

B = Breathing

Tension PTX or HTX

Open PTX

Flail Chest

C = Circulation

Hypovolemic Shock

Massive hemorrhage

Spinal Shock

ATLS-RESUSCITATION

- Start 2 Large Bore IV Lines
- Infuse Crystalloids 2 to 3 Litres
- Then Transfuse Type Specific WB or O-ve Packed RBCs
- Tissue Aerobic Metabolism is assured by Perfusion with well oxygenated RBCs
- Never treat Hypovolemic Shock with Vasopressors, Steroids or NaHCO_3

ATLS -RESUSCITATION

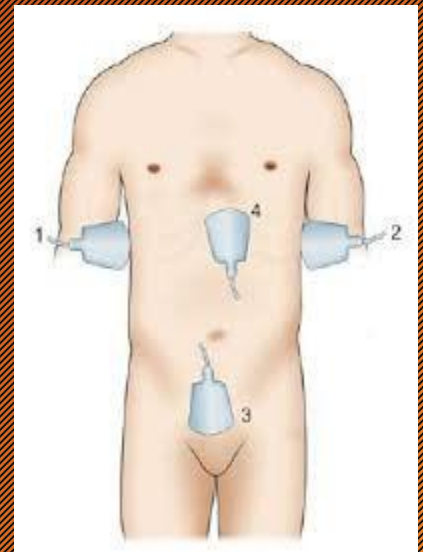
- CBD & NGT aspiration if not contraindicated
- Careful ECG Monitoring & Correction of Arrhythmias
- Data Flow sheet of Vital Parameters to assess effectiveness of Resuscitation
- Reevaluate Airway, Breathing and Circulation. If needed ☐ CPR

Adjuncts to Primary Survey

- Vital Signs/ECG monitoring
- ABGs
- POX/ETCO₂
- Urinary/gastric catheters
- Urinary output
- Supplemental Oxygen

Adjuncts to Primary Survey

- Diagnostic tools
 - ☐ CXR, C-spine, Pelvis
 - ☐ DPL
 - ☐ Ultrasound ☐ FAST



Secondary Survey

- Secondary Survey does not begin until the primary Survey(ABCDEs) is completed, resuscitative efforts are well established, and patient is demonstrating normalisation of vital functions

ATLS® SECONDARY SURVEY

- Head and Skull
- Faciomaxillary Injuries
- Neck
- Chest & Spine
- Abdomen

ATLS® SECONDARY SURVEY

- Perineum/ Rectum/ Vagina
- Extremities® Fractures
- Complete Neurological Exam® GCS
- Appropriate X-Rays, Lab Tests and Special Studies
- “Tubes & fingers” in every orifice

ATLS® SECONDARY SURVEY

TABLE 9-2

Glasgow Coma Scale

Assessment Area	Score
Eye opening (E)	
Spontaneous	4
To speech	3
To pain	2
None	1
Motor Response (M)	
Obeys commands	6
Localizes pain	5
Withdraws to pain	4
Decorticate posturing (abnormal flexion)	3
Decerebrate posturing (abnormal extension)	2
None (flaccid)	1
Verbal response (V)	
Oriented	5
Confused conversation	4
Inappropriate words	3
Incomprehensible sounds	2
None	1
GCS score = E + M + V; best = 15, worst = 3.	

ATLS Patient's

History

y

- **A** Allergies
- **M** Medications Currently Taken
- **P** Past Illness
- **L** Last Meal
- **E** Events/ Environment related to injury

ATLS Mechanism of

Injury

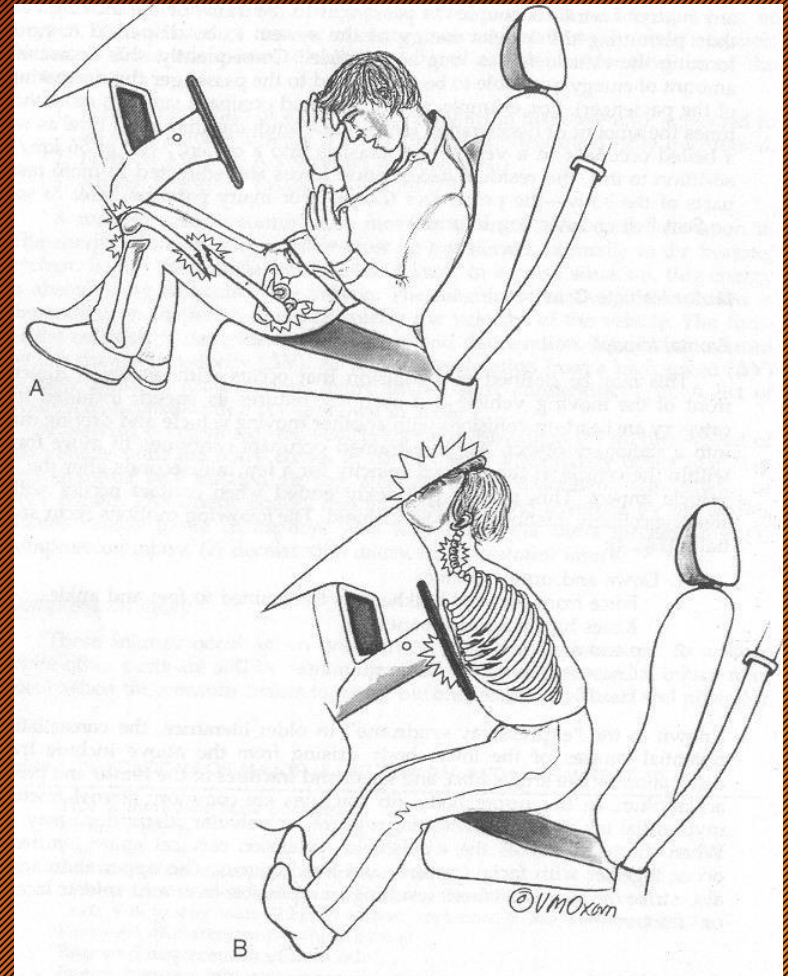
- **Blunt Trauma**

- Front Impact Myocardial contusion, Pneumothorax, Flail Chest, Cervical Spine#
- Side Impact.# Spleen or Liver,# Pelvis, Flail Chest, Opposite Cervical Spine Sprain/ #
- Rear Impact Whiplash Injury Cervical Spine
- Ejection from Vehicle Multiple Injuries

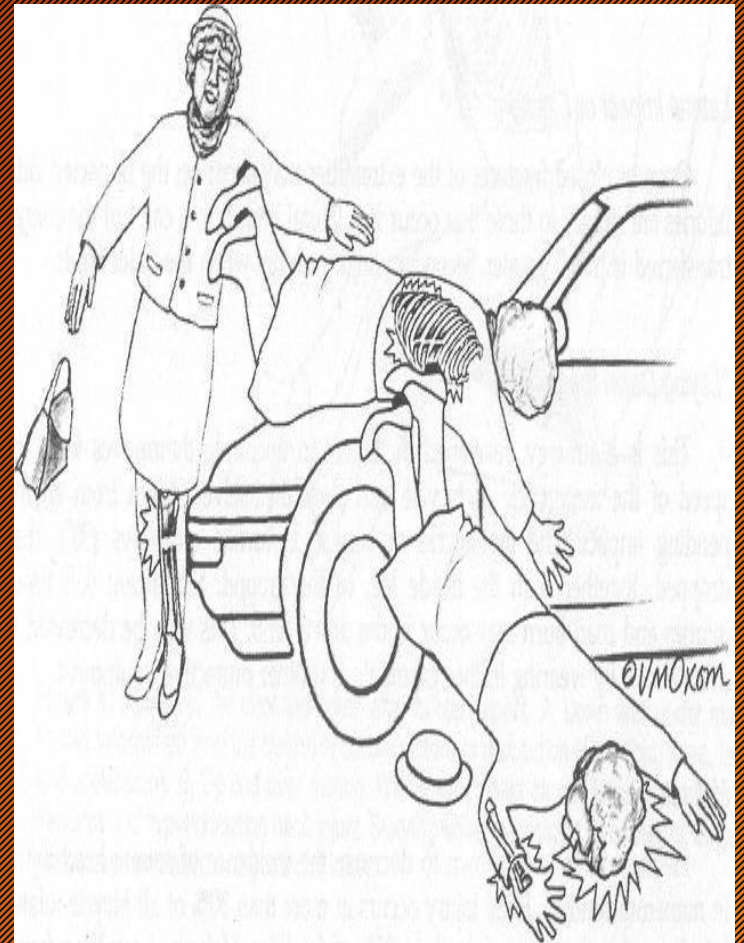
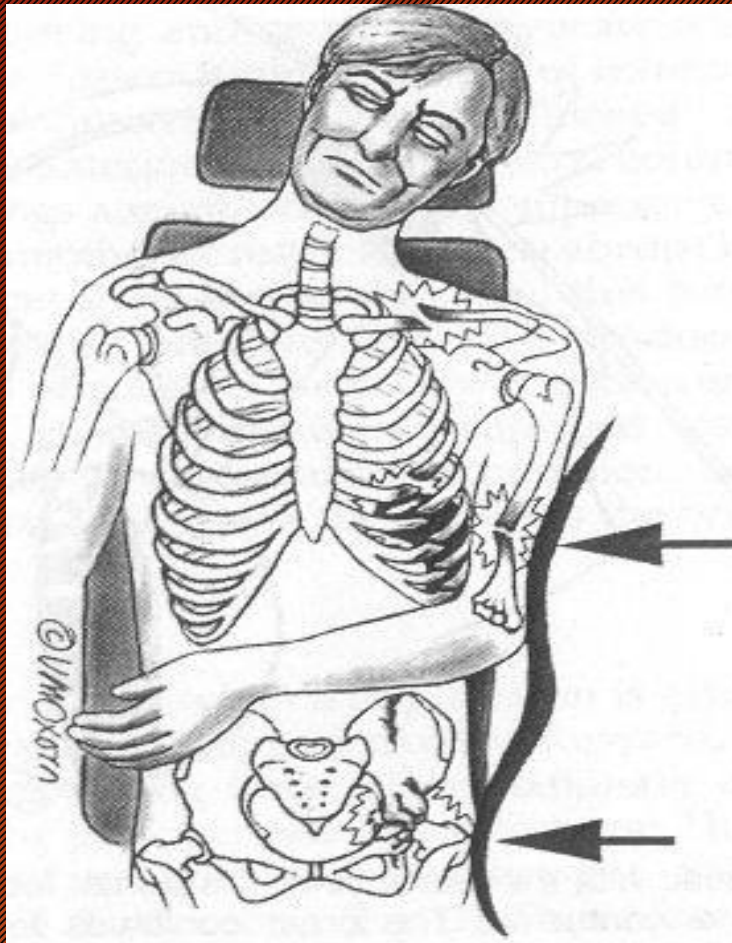
- **Penetrating Trauma**

- Sharp objects, Missiles

FRONT IMPACT



SIDE IMPACT & PEDESTRIAN INJURY



Reevaluation

- Minimizing missed injuries
 - ☐ high index of suspicion
 - ☐ frequent reevaluation and continuous monitoring

ATLS® Definitive Care

- Comprehensive Treatment of all Injuries
- Fracture Stabilisation
- Necessary Operative Intervention
- Appropriate Intensive Care
- Rehabilitation
- Stabilisation & Appropriate Transfer

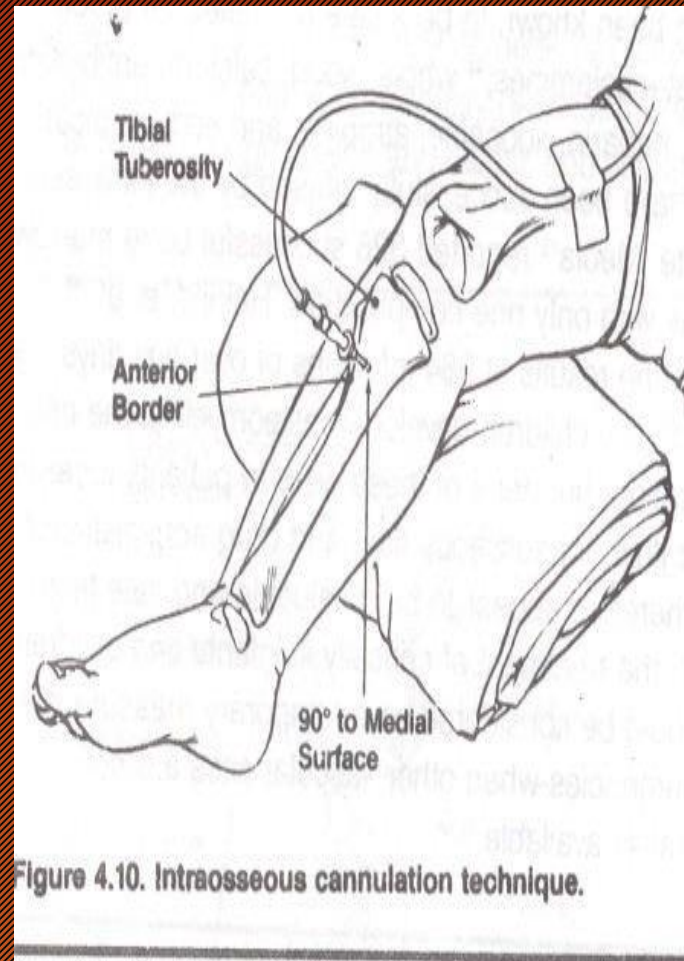
ATLS TRIAGE

- Sorting of patients based on severity of injuries and availability of resources
- Number of patients & severity of injuries do not exceed facility
 - multiple casualties
 - treat the most critically injured first
- The same exceed the facility □ Mass casualties
 - treat as many as salvageable patients as possible

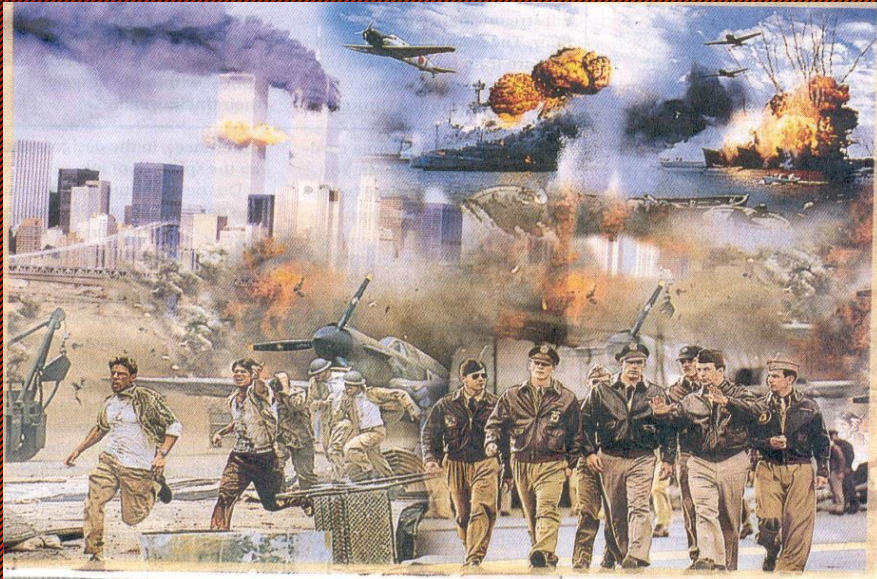
ATLS® SKILL STATIONS

- Airway Management
- Vascular access and Fluid Resuscitation
- ECG Monitoring & CPR including defibrillation
- Pediatric/ Pregnant patients
- Transport of Critically Ill Patients
- Disaster Management

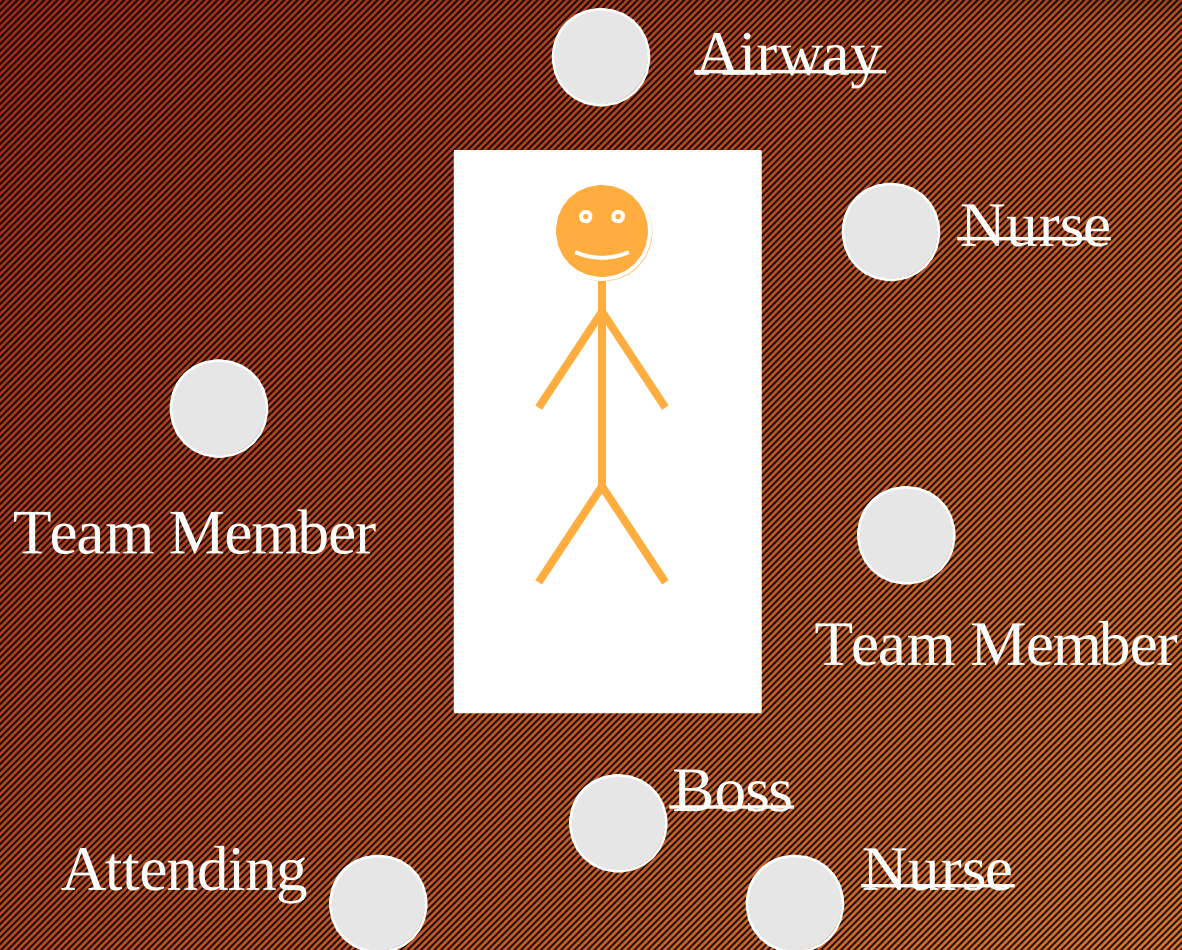
INTRAOSSEOUS NEEDLE



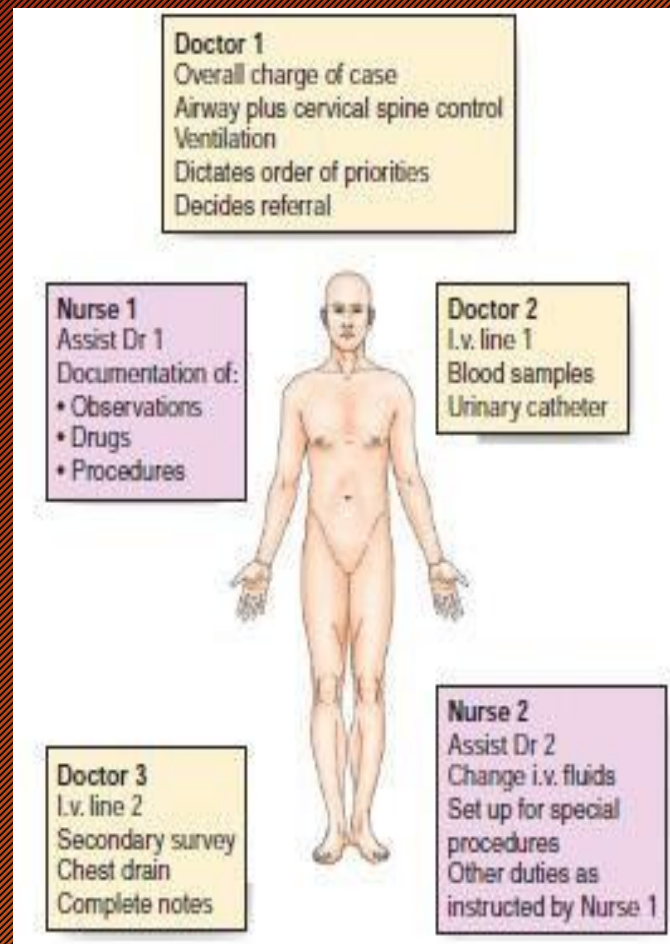
DISASTER MANAGEMENT



Roles of the Trauma Team



Roles of the Trauma Team

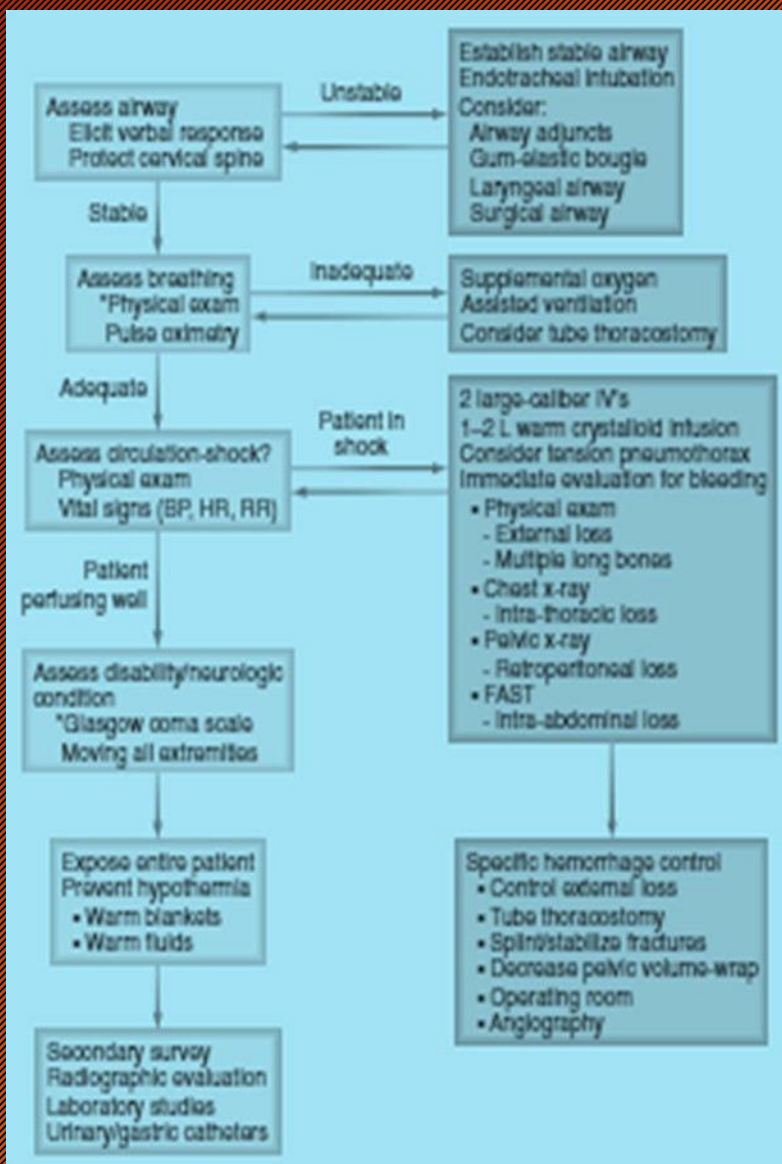


Things to remember...

The Ideal Trauma Resuscitation

- Roles are pre-assigned ☐ Multidisciplinary team
- Clear direction & communication
- Pertinent findings verbalized in proper order
- All team members know all findings
- Rapid, Efficient
- Calm & Quiet!

Over view of ATLS



CARRY HOME MESSAGE

TEAM WORK

*“Joining Together is Beginning
Staying Together is Progress
Working Together is Success”*





[https://www.youtube.com/
watch?v=M3D7o-TSlik](https://www.youtube.com/watch?v=M3D7o-TSlik)

To watch the video version go to
Channel
Surgical Educator in You Tube

Thank You