

**Vanderbilt University Medical Center
Division of Trauma & Surgical Critical Care**

Clinical Management Guideline: Standard Trauma Resuscitation

Global Communication is the key to a well organized and efficient trauma resuscitation. Individual conversations must be kept at a minimum and in general only **ONE** voice should be heard by ALL trauma resuscitation team personnel. All information is to be communicated for every member of the team to hear. This information is directed by the trauma team leader.

Individuals with direct patient contact, or those who will have possible contact with bodily fluids, will observe Universal Precautions, instituted prior to the patient's arrival if possible. This will include:

- Essential
- Gown
 - Head Cover
 - Shoe Cover
 - Gloves
 - Eye Protection
 - Mask

Optional:
Lead apron – preferable for those at head of bed, primary nurse and PCT

Sterile gowns and gloves, head covers and mask plus sterile barriers **SHOULD BE USED WHEN PERFORMING ALL STERILE PROCEDURES** such as chest tube insertion, central line placement and diagnostic peritoneal lavage, ED thoracotomy or wound explorations.

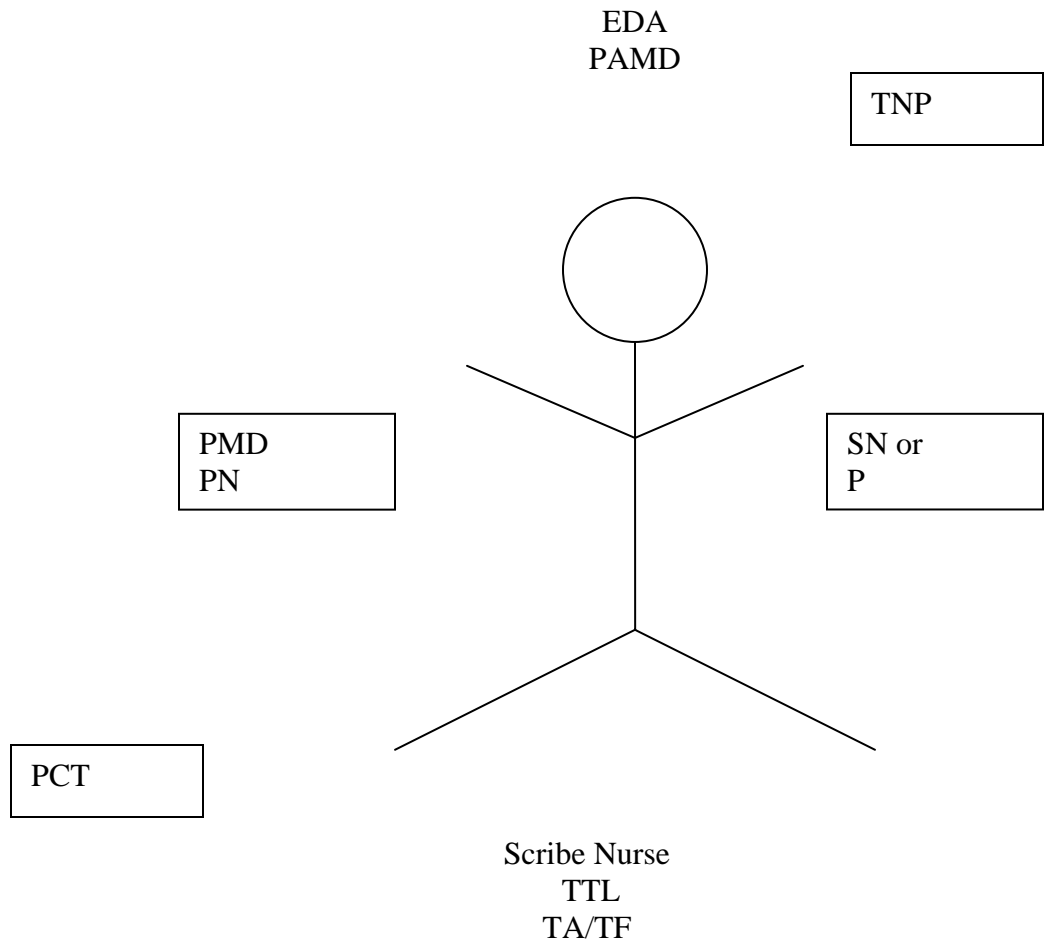
Trauma Resuscitation Team: Personnel

1. Trauma Team Leader (TTL) – PGY⁴ Surgical Resident
2. Trauma Attending / Fellow (TA/TF) –
3. Primary MD (PMD) – PGY² Surgical Resident, PGY – 1 or 2 ED resident rotating on Trauma Service
4. Primary Airway MD (PAMD) – PGY 2/3 ED resident
5. ED Attending (EDA)
6. Primary Nurse (PN)
7. Secondary Nurse (SN) or Paramedic (P)
8. Scribe Nurse (Scribe)
9. Patient Care Technician (PCT)
10. Respiratory Therapist (RESP)
11. Radiology Technicians (RT)
12. Trauma Nurse Practitioner (TNP) – present at night, occasionally during day
13. Medical Student (MS) MS 3 or 4
14. Service Center Personnel

15. Environmental Services

16. VU Police

Trauma Resuscitation Team – Positioning



Trauma Resuscitation Team Personnel: Detailed Description of Responsibilities

1. **Trauma Team-Leader (TTL)**: A Senior (PGY-4) Surgical Resident will be the team leader and directs the overall resuscitation. He/She will be identified by a green surgical head cover. The TTL will initiate the primary survey and assume responsibility for life saving procedures such as assisting with airway management including surgical airway, emergent chest tube placement, and ED thoracotomies. The TTL may pass the responsibility of directing the resuscitation to the Trauma fellow or Trauma Attending if personally performing such advanced procedures. The TTL is responsible for the majority of communication except during intubation when it is allocated to the PAMD & ED Attending.
2. **Trauma Attending or Fellow (TA or TF)** – The Trauma Attending or Fellow will be overall responsible for the resuscitation and supervising the Trauma Team Leader. If the Trauma Attending or Fellow is not present, the ED Attending will assume this role and responsibility. TA/TF is the designated trauma triage officer directing flow of patients to the OR, CT and ICU. TA/TF must be in close communication with the Trauma Charge Nurse for bed allocation and bed availability.
3. **Primary MD (PMD)** – A Second Year Surgical or Emergency Department Resident rotating on the trauma service will perform their portion of the primary survey (BCD) assisted as necessary by the trauma team leader. This MD will then perform the secondary survey from the neck down, which will include assuring that two large bore IV's are in place and functioning, blood has been obtained for T&S or C and labs, and that the placement of nasogastric tubes has been carried out. The TTL may also assign the PMD to perform invasive procedures such as central line placement, chest tube insertions, wound explorations and assisting with ED thoracotomies.
4. **Primary Airway MD (PAMD)** - A 2nd or 3rd year ED resident will be responsible for assessing the adequacy of the trauma patient's airway and in concurrence with the EDA and TTL determine the need for intubation (if not already performed by pre-hospital personnel). If the patient is awake and conscious, the PAMD should briefly inquire about allergies, pre-existing medical problems and medications. If intubation is necessary the PAMD & or EDA confirms and communicates to the PN, RSI medication doses. Once intubated and PAMD confirms and globally communicates ETT color change, saturations, ETT size and position. The PAMD is also responsible for C-spine stabilization, head examination of the secondary survey including pupillary and verbal response

of a neurologic examination, control of bleeding from scalp lacerations and insertion of either an NG or OG.

5. **ED Attending (EDA)** – Will be responsible for the airway and supervising the PAMD. In the absence of the TA or TF, the EDA will be overall responsible for the resuscitation and supervising the TTL. The EDA is also responsible for all ED staffing, equipment and triage into the ED. The EDA may also assume the role of TTL during the resuscitation of multiple patients.
6. **Primary Nurse(PN)**- This is a nurse who will give direct patient care by helping perform the primary assessment, including assisting with airway management if necessary or starting O₂ with a high flow mask. Monitoring devices such as EKG's and O₂ sat monitors should be promptly placed, and the blood pressure should be frequently monitored. The PN will then assure that 2 large bore IV's are in place and functioning, or will place such IV's (14 or 18 gauge). The PN will assist as needed with the secondary assessment, NG or log-rolling the patient and then prepare the patient to leave the resuscitation room by making available O₂ or ventilators, securing all IV bags and by preparing appropriate monitoring for transport. The PN is also responsible for administering any medications for rapid sequence intubation, antibiotics, steroids or medications for pain and analgesia.
7. **Secondary Nurse (SN)** – The SN or P will assist the PN with all of the above **Or Paramedic (P)** mentioned duties. The SN or P will obtain the first B.P. from the left arm and call out the reading for everyone to hear. This person is also responsible for transporting the patient to CT, O.R. or TICU and having the Gold Key available for the elevator leading directly to the O.R.
8. **Scribe Nurse** (Scribe) This nurse is primarily responsible for keeping records, assuring that all standard tests or other labs as ordered by MD, are completed. (Blood sent to the blood-bank for T and S or C, blood & urine for lab testing, CT scans ordered, Trauma gram ordered, etc.) This nurse will also assist in direct patient care in times of hemodynamic instability or managing multiple simultaneous trauma admissions. The Scribe Nurse will also assist with preparation for transport from the resuscitation room if all their primary responsibilities are complete. The Scribe Nurse is also responsible for noise control and ensuring only those personnel directly involved in patient care are in the trauma bay. All others will be asked to leave the area.
9. **Patient Care Technician(PCT)** - The PCT's primary responsibility should be to assure that blood is sent for appropriate tests. PCT's will also be responsible for errands such as the retrieving Emergency Blood from the Blood Bank or assisting with transportation. They should perform all other tasks as directed by the Primary Nurse, such as placing monitors, removing clothes, and gathering patient's valuables for safe keeping and helping log roll the patient.

10. **Radiology Technicians (RT)** - The RT should be present at all trauma resuscitations and be prepared to perform the standard chest x-ray and pelvis x-ray in cases of blunt trauma as directed by the Trauma Team Leader. Both of these x-rays should be processed through the PACS system as soon as possible and be available prior to transportation to CT scan for Trauma gram. In cases of penetrating trauma, the RT's should be initially prepared to perform AP films over the areas where there may be retained foreign bodies. These films should be processed and lateral cross table films planned according to the results of the initial films. A radio-opaque marker or the tip of a paper clip should mark all penetrating wounds. The Trauma Team Leader will direct the RT's on the studies to be obtained and on the order in which they should be obtained. The XR machine should be on the left side of the patient in room 1 and on the right in rooms 2 and 3.
11. **Trauma Nurse Practitioner(TNP)**- The TNP will be available to assist with trauma resuscitations at night and occasionally during the day depending on the acuity and volume of the TNP service. The TNP will initiate filling out the trauma history and physical, call the OR for operative intervention, assist the PN, SN or P with resuscitation efforts including management of the Level I transfuser. The TNP will make bed arrangements with the charge nurse on 10N and communicate with the liaison concerning bed assignments and family issues. Once the patient's stat name has been placed in the computer, the TNP will initiate placing Wiz orders.
12. **Medical Student (MS)**- The role of the MS is commensurate with their abilities as determined by the trauma service. The MS will be assigned tasks by either the TTL or PMD which may include: assistance in removal of clothing, log rolling, and femoral vein blood draw.
13. **Service Center Personnel** – Shall remain outside the trauma bay to assist in providing additional supplies needed for the resuscitation.
14. **Environmental Services** - Shall remain outside the trauma bay to assist with needed cleaning issues.
15. **Vanderbilt University Police Department** – In the event of a violent crime, a VUPD officer will be available for safety issues and crowd control.

Trauma Resuscitation: Sequential Management

0. Crew resource management- identification process
1. Move patient from stretcher to Trauma Bay Bed
2. Primary Survey
 - a. Assess airway by PAMD – may ask patient a few questions regarding past medical history and allergies if airway is intact.
 - b. Breathing by PAMD & PMD
Circulation by PMD
PN/SN/P – IV's/EKG/SATS/1st B.P.
 - c. Disability by PAMD – pupils/ GCS
PMD – move all 4 extremities
 - d. Exposure/Environment by SN, MS, PCT completely undress, cover with warm blankets
3. EMS/Flight Crew report
4. CXR/ XR / FAST exam, pelvis XR if suspect severe fracture
5. Assess need for pain / sedation / enter standing orders
6. Secondary Survey including assessing the need for NG/OG
7. Roll patient / palpate entire spine from occiput to sacrum
8. Rectal exam
9. Full range of motion all extremities
10. Traumagram versus OR
11. Foley to be placed on Trauma Unit or O.R. under sterile conditions under supervision of R4 or above or by staff in-service on proper insertion technique

STANDARD TRAUMA RESUSCITATION: DETAILED DESCRIPTION

Crew Resource Management – Identification process. Trauma Resuscitation Team members should identify themselves by name and roles. Most importantly the TTL, PMD, PAMD, PN and scribe need to introduce themselves to the entire team prior to the arrival of the patient.

Pre hospital personnel including Emergency Medical Services or the air transport team will bring the patient into the Trauma Resuscitation room and quickly move the patient to the resuscitation bed with the assistance of the Primary Nurse, Primary MD and PCT's as available. After securing an adequate airway and the primary survey is performed, the pre hospital primary care provider should be encouraged to give the entire team a report including mechanism of injury, pre hospital vital signs, Glasgow coma scale, treatments and response to such treatments and any pertinent past medical history. A complete report should not exceed 60 seconds in length. Courtesy towards EMS and Air-Transport Personnel **MUST BE MAINTAINED**. Other conversations during the report should be kept to a minimum. The Scribe Nurse should record all information as reported to the trauma team.

Primary and Secondary Survey:

The PAMD should begin the primary assessment immediately upon the patient's arrival to the resuscitation bed and should verbalize findings to the entire trauma team. The Primary MD will complete the primary survey after an adequate airway is secured. The TTL directs the resuscitation based on the PAMD and Primary MD's assessment and determines the need for additional access or airway management. If life threatening conditions are present, for example- **establish a surgical airway, chest tube placement, emergency thoracotomy**, the TTL will assume a position to deal with these issues. During this time, the TTL may relinquish their responsibility to the TA or TF and communicate this process to the entire team.

Primary Survey:

Airway: The Primary Assessment of the Airway should be performed by the PAMD & EDA who are positioned at the head of the bed. Collaboration between the PAMD / EDA and TTL regarding definitive airway management should be made expeditiously. If intubation is not deemed necessary the primary nurse should place O₂ by hi-flow mask on all patients.

Breathing:

The PAMD and PMD should assess breathing jointly. The Primary Nurse should place the pulse oximeter on the patient. During this primary assessment, any life threatening conditions discovered should be immediately treated. For example a suspected tension pneumothorax should be treated by needle decompression followed by an emergent chest tube.

Circulation:

The Primary Nurse should place EKG leads and the SN or P obtain an initial blood pressure to assess circulation and report these results to the TTL and Scribe. If not already present, the Primary Nurse should also place 2 large bore IV's. The Primary MD should assess peripheral pulses, skin color and mental status and determine if central venous access is indicated. Blood for laboratory evaluation should be obtained during assessment of the circulation by the Primary MD or personnel assigned by the TTL.

Disability:

Disability should be assessed during the primary assessment by noting the level of consciousness, pupil examination, and ability to move all 4 extremities.

Exposure and Environment:

The patient should be undressed for complete examination. Once the examination is complete, the patient should be **covered with warm blankets**. Warm IV fluids should be given via the Level I transfuser in all multi trauma patients.

SECONDARY SURVEY:

The PMD should continue with the secondary assessment. This should include rapid examination of the entire patient's anterior surface followed by log rolling the patient off the back board, examination of the back and flanks, and performing the rectal exam. The entire spinal column from occiput to sacrum must be inspected and palpated for deformity, ecchymosis, step off and pain. The patient must be log rolled in both directions to adequately examine both flanks and axillary regions. A warm blanket is then placed between the backboard and the patient. Again, findings must be verbalized to the entire team. The patient will remain on the back board until arrival in the Trauma Unit or operating room.

The Trauma Team Leader determines the need and exact sequence of placement of additional IV's, the timing of laboratory assessment, and the radiologic assessment required. Trauma x-rays should be completed immediately following examination of the back. These typically include- chest x-ray and pelvic x-ray for blunt trauma and the appropriate AP and cross table lateral films for penetrating trauma. If the patient is hemodynamically stable and there is no evidence of major pelvic trauma, the pelvic x-ray can be deleted and replaced with the pelvic portion of the CT trauma gram.

The PMD should perform a detailed head to toe examination while x-rays and other procedures are being performed and findings communicated.

Consultants should be notified early upon recognition of injuries that need their evaluation. Fractures should be splinted and wounds dressed appropriately.

The TTL will then determine where and when the patient should be moved from the resuscitation room to complete their workup. It may be determined that an unstable patient requires transport out of the resuscitation room prior to completing the full work up for operative intervention or to continue the resuscitation in the Trauma Intensive Care Unit.

PERSONNEL and Their Responsibilities for the Resuscitation of Multiple Patients.

A Primary Nurse, Primary MD, Surgical Resident, ED Resident and a Trauma Team Leader (PGY 4 Surgical Resident, Trauma Fellow, Trauma Attending or ED Attending) should be available to resuscitate each patient.

The TTL may direct multiple resuscitations simultaneously. The Scribe Nurse (scribe) may record the details of multiple resuscitation simultaneously. The Trauma Team Leader will prioritize radiologic studies and direct the radiology techs accordingly.

Individual patients will be identified by their STAT name when multiple patients are being cared for simultaneously. The Trauma Team Leader, Trauma Attending or Trauma Fellow will decide when patients are stable for transfer out of the resuscitation room.

Only the Trauma Attending in conjunction with the Emergency Department Attending will determine if Vanderbilt should go on diversion for Trauma.

Specifics For Penetrating Trauma

All ballistic wounds should be marked prior to radiologic intervention with a paperclip. For gunshot wounds to the torso, and patients that are not agonal, three films taken one after the other from the chest through the pelvis will allow trajectory determination. In non-hypotensive patients, if a foreign body is seen on the AP films then a lateral film will be performed to help determine its exact location.

Additional Important Points

*** EVERY PERSON TAKES RESPONSIBILITY FOR THEIR OWN SHARPS**

- Disposal of sharps IS the responsibility of the person using the sharp instrument. A large sharp box will be readily accessible in each Trauma Room.
- No XRs are obtained during insertion of any IV access, especially central line insertion.
- If the patient's initial B.P. is within normal limits, repeat B.P. will be obtained every 5 minutes. If the patient is hypotensive (SBP < 100) the obtain BP every ONE minute.

If a death occurs in the Trauma Bay during a Trauma Alert and the patient arrived via EMS, it is the responsibility of the ED staff to communicate this information to family members. If the patient arrived by air transport, the Trauma Service will perform this duty as long as the TTL, TA or TF is available and not scrubbed in the O.R. or actively resuscitating other critically ill patients.

Practice management guidelines (PMG) have been developed by the division of Trauma, Burns and Surgical Critical Care in an attempt to standardize and optimize care. They are based on a combination of accepted surgical practice and recent contributions to the medical literature. PMG's are intended to provide guidelines to the management of the majority of patients and are not proposed as rules, policies or as a substitute for good clinical judgment. Deviations from the PMG's are necessary and expected; all exceptions should be documented in the medical record and discussed with the Attending Physician.