Penn State Milton S. Hershey Medical Center
Division of Trauma, Acute Care & Critical Care Surgery
Residency-Trauma

Curriculum

The Medical Director for the Penn State Shock Trauma Center is Dr. Heidi Frankel.

The educational program for all levels includes daily teaching rounds, didactic lectures and psychomotor skills sessions as well as multidisciplinary trauma rounds. Residents rotate through the Trauma Service during their PGY 1, 3 and 4 years.

Overall goals and objectives for the service

Knowledge:

- Demonstrate understanding of institutional policies for pre-hospital care and trauma triage
- Complete ATLS verification
- Discuss management of traumatic wounds and musculoskeletal injuries
- Describe the pathophysiology, initial evaluation and management of:
  - CNS Injury-brain and spinal cord
  - Chest trauma-heart, thoracic aorta, chest wall and lungs
  - Abdominal injury-spleen, liver, GI tract and GU systems
  - Musculoskeletal trauma-axial skeleton, pelvis, long bones
  - Burn injury-thermal, chemical, electrical, inhalation injury

Demonstrate knowledge of pharmacologic agents used to treat trauma patients

Recognize the effects of increasing age and concurrent medical illness on organ system physiology as it relates to traumatic injury and the management of elderly patients with injury

Patient Care:

- Participate in the evaluation, resuscitation, operative and ICU management of trauma surgery patients
- Perform the following procedures:
  - FAST
  - DPL/DPA
  - Echocardiogram
  - Thoracostomy tube
  - Central line insertion
• Apply and remove all types of dressings
• Formulate rehabilitation plans
• Demonstrate accuracy and proficiency in documenting patient care

**Interpersonal Skills and Communication**

• Educate patients and families in post operative and rehabilitative strategies
• Interact and communicate with other Trauma Team members in an effective, professional manner to facilitate the rapid throughput of the trauma patient through the system

**System Based Practice**

• Participate in the coordination of the rehabilitation of the trauma patient
• Demonstrate knowledge of cost-effective trauma care
• Advocate for trauma patients within the health care system
• Refer trauma patients to appropriate practitioners and agencies
• Facilitate the timely discharge of trauma patients
• Work with paramedical professionals in the pre-hospital care of trauma patients

**Professionalism**

• Develop a sensitivity of the unique stresses place don families under care for traumatic injuries
• Demonstrate an unselfish regard for the welfare of trauma patients
• Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population
• Demonstrate firm adherence to a code of moral and ethical values
• Provide appropriately prompt consultations when requested
• Demonstrate sensitivity to the individual patient’s profession, life goals and cultural background as they apply to their diagnosis
• Be reliable, punctual and accountable for own actions
• Effectively deal with dissatisfied patients and their families
• Effectively deal with impaired patients and their families
• Understand the benefits and functionality of multidisciplinary health care teams.
• Refer patients to appropriate practitioners and agencies

**Specific Goals by PGY**

**PGY 1**

**A. Medical Knowledge**

1. The resident should understand the principles of ATLS.
2. The resident should be able to identify different forms of shock associated with the injured patient. *Examples include hemorrhagic, neurogenic, cardiogenic and septic shock.*

3. The resident should understand the indications for, and different types of agents used in prophylactic and therapeutic antibiotic use.

4. The resident should understand appropriate fluid and electrolyte resuscitation.

5. The resident should understand the costs, risks and expected information obtained from routine laboratory testing.

6. The resident should understand the basic principles in the diagnostic evaluation of single organ system injury.

7. The resident should understand his or her role in the trauma resuscitation team, and be able to perform the appropriate tasks of that role. The resident must be familiar with trauma protocols.

8. The resident should be able to discuss the costs, risks and expected information obtained from non-invasive diagnostic tests to evaluate the injured patient. *Examples include plain films, ultrasonography and CT scanning.*

9. The resident should understand the costs, risks and expected information obtained from invasive diagnostic tests to evaluate the injured patient. *Examples include wound exploration, DPL and arteriography.*

**B. Patient Care**

1. The resident must be aware of his or her limitations and know when to call for help.

2. The resident must attend daily check out rounds for his or her service.

3. The resident should assist with resuscitation in trauma patients presenting to the emergency department.

4. The resident should assume responsibility for care of all patients on the hospital ward, including initial assessment, creating a therapeutic plan, evaluation of daily progress, and initial assessment of new problems.

5. The resident should be able to assess patients on the ward when called for cross-coverage. *Examples include evaluation of patients with fever, oligura, hypotension, respiratory insufficiency, and intractable pain.*

6. The resident should assume responsibility for discharging patients, including dictating the discharge summary, writing prescriptions, and ensuring appropriate follow-up.
7. Under appropriate supervision, the resident should perform basic operative cases such as

*Insertion of central venous lines  Tracheal intubation  
Stabilize long bone fractures  Placement of thoracostomy tubes*

**C. Interpersonal and Communications Skills**
See general goals and objectives

**D. Practice-Based Learning and Improvement**
1. The resident must successfully pass ATLS.

2. The resident should use books, journal articles, internet access, and other tools available to learn about diseases and treatment of the injured patient.

3. The resident must attend Trauma Rounds every morning between 0700-0710.

4. The resident must attend and participate in the weekly clinics for their service.

5. The resident must attend Trauma M&M, Friday mornings at 0700.

**E. Systems-Based Practice**

The resident should be able to use appropriate consult services in the hospital to improve the care of his or her patients.

**F. Professionalism**
See general goals and objectives

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**PGY 2**

**A. Medical Knowledge**
1. The resident should learn the principles of triage and be able to demonstrate appropriate triage of injured patients based on number of patients, severity of injury and available resources.

2. The resident should review the principles of ATLS and be able to perform a rapid primary survey of the trauma patient, followed by an in depth secondary survey to detect all injuries.

3. The resident should be able to prioritize injuries in the multiply injured trauma patient.
4. The resident should understand the principles of resuscitation of the injured patient, including airway management, fluid administration, blood transfusion, fracture stabilization, and hemodynamic support.

5. The resident should be able to outline the signs and symptoms as well as the etiology of respiratory failure in the injured patient.

6. The resident should understand the indications for, and the complications of blood component therapy. Examples include PRBC’s, FFP, platelets and cryoprecipitate.

7. The resident should be familiar with indications and institution of the massive transfusion protocol.

8. The resident should understand the factors associated with non-surgical bleeding in the injured patient. Examples include hypothermia, dilutional and consumptive coagulopathy.

B. Patient Care
1. The resident must attend daily check out rounds for his or her service.

2. The resident should institute the trauma resuscitation protocol in trauma patients presenting to the emergency department.

3. The resident should assume responsibility for care of all patients in the emergency department, including initial assessment, identification of all injuries, creation of a therapeutic plan based on priority of injuries, initial resuscitation, and determination of admission to the hospital ward or to the ICU.

5. The resident should assume responsibility for initial assessment of hospital consultations.

6. Under appropriate supervision, the resident should perform basic procedures such as:

   Insertion of pulmonary artery catheters  Tracheostomy
   Tracheal intubation  Diagnostic peritoneal lavage/aspiration
   Stabilize long bone fractures  Placement of thoracostomy tubes
   Needle pericardiocentesis  Lower extremity amputation

C. Interpersonal and Communications Skills
See general goals and objectives
D. Practice-Based Learning and Improvement
1. The resident should use books, journal articles, internet access, and other tools available to learn about diseases and treatment of the injured patient.

2. The resident must attend Trauma Rounds between 0700-0710.

3. The residents must attend and participate in the weekly clinics for their service
4. The resident must attend Trauma M&M, Friday mornings at 0700.

E. Systems-Based Practice
1. The resident should be able to communicate with patients, families, nurses, paramedics, and other allied health care personnel.

2. The resident should take responsibility for posting emergency cases in the operating room.

F. Professionalism
See general goals and objectives

PGY 3

A. Medical Knowledge
1. The resident should be familiar with all organ-based trauma scoring systems.

2. The resident should learn in detail the management of intra-abdominal injuries. Examples include injuries of the liver, spleen, stomach, intestine, colon, pancreas, kidney, bladder, ureter, and diaphragm.

3. The resident should understand rationale and indications for the operative as well as non-operative management of the injured patient.

4. The resident should understand the rationale and indications for the use of adjuncts to both operative and non-operative management of injured patients. Examples include utilization of therapeutic interventional radiological techniques.

5. The resident should understand the pathophysiology of traumatic brain injury, altered mental status and spinal cord injury. The resident should also be able to discuss stabilization and initial treatment of patients with severe neurologic injuries.

B. Patient Care
1. The resident should assume responsibility for the care of all patients on the trauma service.
2. The resident should examine every patient admitted to the service, ensure that all injuries and comorbid medical problems have been identified, and ensure that adequate therapeutic and diagnostic plans have been made.

3. The resident should ensure that all prophylactic precautions are taken to prevent complications such as DVT, stress gastritis, pressure ulceration, and aspiration pneumonia.

4. The resident should make daily rounds and have full knowledge of the medical problems and progress of all patients on the service.

5. The resident should see every consult and ensure that proper disposition has been made.

6. The resident is responsible for ensuring proper posting in the operating room, ensuring that all information regarding communicable illness has been relayed, and alerting the operating room personnel about specific instrument and equipment needs.

7. Under appropriate supervision, the resident should perform intermediate procedures such as:
   - Exploratory laparotomy
   - Emergency thoracotomy
   - Acquisition of surgical airway
   - Repair of gastrointestinal injuries
   - Colostomy, colostomy closure
   - Open splenectomy
   - Upper and lower extremity fasciotomy
   - Neck exploration for trauma
   - Vascular exposure and repair of peripheral vascular injuries

C. Interpersonal and Communications Skills
See general goals and objectives

D. Practice-Based Learning and Improvement
   1. The resident should use books, journal articles, internet access, anatomy videotapes and other tools available to learn about diseases and treatment of the injured patient.

   2. The resident must attend Trauma Rounds every morning between 0700-0710.

   3. The residents must attend and participate in the weekly clinics for their service

   4. The resident must attend Trauma M&M, Friday mornings at 0700.

E. Systems-Based Practice
   1. The resident should be able to communicate with referring physicians from other hospitals and emergency departments.
2. The resident should be able to communicate with families, especially in those instances in which there has been a death.

3. The resident should communicate with his or her peer from the emergency general surgery service to determine the optimal use of resources for the hospital, including timing of procedures in the operating room and recommendation for placing the hospital on divert status.

F. Professionalism
   See general goals and objectives

   CHIEF RESIDENT

A. Medical Knowledge
   1. The chief resident should be able to discuss in detail the management of complex traumatic injuries. This includes diagnosis, timing of intervention, and therapeutic options. *Examples include traumatic disruption of the thoracic aorta, renovascular injuries, injuries of the portal triad, retrohepatic caval injuries, complex cervical spine fractures, facial fractures, and complex pelvis fractures.*
   2. The chief resident should be able to explain in detail advanced surgical procedures for management of injuries in the neck, torso and extremities. *Examples include management of tracheal injuries, stabilization and management of Le Fort fractures of the face, management of flail chest, management of the mangled extremity.*
   3. The chief resident should be able to summarize areas of trauma surgery in which patient management is controversial an areas in which change is taking place. *Examples include management of penetrating neck injuries, management of colon injuries, and management of minimal vascular injuries.*

B. Patient Care
   1. The chief resident should be able to direct the entire team through the trauma resuscitation.
   2. The chief resident should be able to correctly triage the diagnostic evaluation of the patient with multiple injuries.
   3. The chief resident should be able to perform advanced surgical procedures to manage injuries in the neck, torso and extremities.
   4. The chief resident should be able to correctly utilize consultants, yet remain responsible for ultimate patient care issues.
   5. The chief resident should be able to manage patients with multiple injuries using operative and non-operative techniques correctly.
6. Under appropriate supervision, the chief resident should perform advanced procedures such as:

- Liver resection for injury
- Placement of Shrock shunt
- Repair of abdominal, chest, or pelvic vascular injury
- Pancreatic resection for trauma
- Duodenal diverticularization
- Nephrectomy for trauma
- Repair of ureteral injury

C. Interpersonal and Communications Skills
See general goals and objectives

D. Practice-Based Learning and Improvement
1. The resident should use books, journal articles, internet access, anatomy videotapes, and other tools available to learn about diseases and treatment of the injured patient.

2. The resident must attend Trauma Rounds from 0700-0710

3. The resident must attend and participate in the weekly clinics for their service.

4. The resident must attend Trauma M&M, Fridays at 0700.

E. Systems-Based Practice
1. The chief resident should be able to understand triage of mass casualties

2. The chief resident should understand the multi-disciplinary approach to management of patients with multiple injuries.

3. The chief resident should understand the concept of trauma systems and the need to transfer patients for the appropriate level of care.

F. Professionalism
See general goals and objectives