

**SERVICE: Trauma – St Mary’s Medical Center, PGY 1, 3 & 5**

**General description:**

The FAU surgical residents will rotate in the State of Florida Certified Level 1 Trauma Center at St Mary’s Medical Center, during their 1<sup>st</sup>, 3<sup>rd</sup>, and 5<sup>th</sup> clinical year for a total of 4 months. The duration of the rotation is 4 weeks for the PGY I residents and 6-8 weeks for the PGY III and V residents.

The resident will be a fully integrated member of the Trauma Surgery team, under the supervision of the Trauma Surgery attending staff. This rotation is designed to provide each resident with thorough exposure to injury management and Acute Care [emergency] surgery at three different levels of training. The rotation-based training will be supplemented by the completing the following courses during their training: Advanced Trauma Life Support [ATLS™], PGY I and IV, Advanced Trauma Operative Management [ATOM™], PGY III, Advanced Surgical Skills for Exposure in Trauma [ASSET™], PGY IV, Focused Abdominal Sonography in Trauma [FAST], PGY III, team-based simulation in trauma, PGY I-V.

PGY I surgical residents focus mostly on patient care tasks, core bed-side procedures, laceration repair, and learning the fundamentals about the core diseases and conditions outlined in the S.C.O.R.E. curriculum; PGY III residents master the core conditions and diseases and learn the advanced conditions and diseases outlined in the S.C.O.R.E. curriculum; PGY III residents assist the PGY I resident in more complex patient care tasks and supervise core bedside procedures; PGY III residents learn and perform the more complex bedside procedures and participate in all core trauma operative procedures; PGY III residents assume team leadership in absence of the chief resident.

PGY V residents assume leadership of the trauma team, supervise core and advanced bedside procedures, master core and advanced conditions and diseases, as well as core and advanced operations.

The surgical residents will attend the following **educational activities**:

**Surgery Core/specialty curriculum and Resident Lectures** - 2 hours/week

**Surgery/Trauma M&M** - 1 hours/week

**Trauma Clinic/Faculty Office Hours** – 1 four- to six-hour block/week

Educational activities related to the Trauma Center at St Mary’s Hospital

**Trauma Morning Sign-out Rounds** – every morning 7:00 – 8:00 AM

**Trauma Clinic** – Wednesday 8:00 AM – 12:00 noon; and [as scheduled] Tuesdays;

**Trauma Journal Club** – 3<sup>rd</sup> Thursday of the month 8:00 – 9:00 AM

**Trauma Morbidity & Mortality Conference** – 1<sup>st</sup> Wednesday of the month 8:00 – 9:00 AM

**Trauma Grand Rounds** – 3<sup>rd</sup> Wednesday of the month 8:00 – 9:00 AM

**Trauma Quality Improvement Conference** – 2<sup>nd</sup> Wednesday of the month 8:00 – 9:00 AM

**Trauma student/resident lecture** - 2<sup>nd</sup> Wednesday of the month 9:00 – 9:30 AM

In addition the residents (all levels) will receive trauma-related lectures during the subspecialty core curriculum, including: trauma: initial management, management of injury in all major organ systems [head& neck, chest, abdomen, liver, stomach, duodenum and pancreas, genito-urinary, major vascular injury (chest, abdomen, extremities), extremity injuries (management of major fractures, soft tissue trauma, compartment syndrome) as outlined in the S.C.O.R.E curriculum by the American Board of Surgery [see appendix]

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<b>Competencies:</b>	<b>Goals and objectives :</b>
<b>Patient Care:</b>	<p><b><u>Goals:</u></b>                      During this rotation, the resident should learn and practice to:</p> <ul style="list-style-type: none"> <li>▪ Demonstrate caring and <b>respectful behaviors</b> when interacting with patients and their families; demonstrate <b>sensitivity</b> to gender, age, ethnicity, religion, value systems and other potential differences of patients and their families; practice according to the clinical standards of St Mary's Medical Center</li> <li>▪ Gather patient and case specific essential, <b>comprehensive multi-source and accurate information</b> about their patients for initial or peri-operative work-up and patient follow-up in the inpatient and outpatient setting</li> <li>▪ Using all available resources, under the guidance of the Trauma attending, make <b>informed decisions about diagnostic and therapeutic interventions</b> based on patient information, up-to-date scientific evidence and clinical judgment; evaluate and implement priorities in patient care and incorporate preventive measures</li> <li>▪ Under the guidance of the Trauma attending and in collaboration with other designated Trauma Surgery related expert personnel develop and <b>carry out patient management plans</b></li> <li>▪ Under the guidance of the trauma attending and in collaboration with other designated Trauma Surgery related expert personnel, <b>monitor</b> closely the patients clinical progress, review and react to variances in patient progress or response to therapeutic interventions; <b>communicate</b> the details and changes of patient care, progress and complications to the Trauma fellow and/or attending in a timely manner</li> <li>▪ Under close supervision of the Trauma attending and in collaboration with other designated Trauma Surgery related expert personnel, <b>counsel and educate patients</b> and their families on the state of the patient's disease, necessary diagnostic tests, operative procedures and medical management</li> <li>▪ Use information technology (hospital computer system) to support patient care decisions and patient education (electronic patient record, electronic radiology studies, online educational resources, including literature research)</li> <li>▪ <b>Work closely with other healthcare professionals</b>, including those from other disciplines (Trauma Anesthesia, Orthopedics, Neurosurgery, Trauma Critical Care, mid-level providers, nurses, nutritionist, Social Work, Case Management, Trauma office staff, etc.), <b>to provide patient-focused and optimum outcome driven care</b></li> <li>▪ Ensure that the <b>needs of the patient and team supersede individual preferences</b> when managing patient care; incorporate evidence-based medicine into patient care</li> </ul>

whenever possible; comply with changes in clinical practice and standards given by the Trauma attending

**Objectives:**

During the rotation, the resident should:

- Learn how to use a **logical and systematic approach to the care of the injured patient**, applying the principles of **evidence-based and protocol-driven decision-making and problem-solving**, based on the American College of Surgeons Committee on Trauma guidelines for Advanced Trauma Life Support (ATLS) and other appropriate Trauma Society Guidelines (EAST, AAST, etc.):
  - a. Demonstrate ability to perform **accurate initial assessment and triage** of the injured patient, based on EMS information and/or primary and secondary surveys
  - b. Demonstrate the **ability to multi-task and provide simultaneously care to multiple patients with varying levels of acuity**, adjusting pace and delegation of tasks according to the patient's needs
  - c. Perform **primary and secondary survey**, recognize and react to the signs and symptoms of injury and initiate, monitor and sustain **life/limb saving therapeutic interventions**
  - d. Understand and apply proper level of **monitoring** (neurological, cardiovascular, respiratory, laboratory, etc.) for individual trauma patients
  - e. Manage **initial resuscitation** (fluid, electrolyte, blood and blood products, drug therapy), including CPR
  - f. Understand the importance of an **orchestrated multi-specialist approach** in the care for the severely injured and become a part of such a team, taking a team leadership role as appropriate for the individual patient
  - g. Determine the **appropriate diagnostic workup**, including plain film radiography, focused abdominal sonography in trauma (FAST), Computed tomography (CT), angiography +/- embolization, magnetic resonance imaging (MRI), radionuclide studies, diagnostic peritoneal lavage (DPL), specialist consultation, exploratory procedures, etc.
  - h. Understand the **dynamic nature of trauma** care and the importance of close patient follow-up and ongoing resuscitation over the first 24 – 48 – 72 hours to prevent secondary injury (neurologic, abdominal compartment syndrome, bleeding, etc.)
  - i. Understand the importance of and apply knowledge in **acute wound care** to prevent secondary infection
  - j. Understand the importance of and apply knowledge in **acute fracture management** (reduction, immobilization) to prevent secondary injury

	<p>k. Understand the importance of and apply knowledge in appropriate <b>pain, anxiety and agitation management</b></p> <ul style="list-style-type: none"> <li>▪ Under one-on-one supervision of the Trauma attending, <b>perform competently and/or assist in procedures considered essential for the area of practice</b>, including: <ul style="list-style-type: none"> <li>a. Vascular access (arterial, central venous)</li> <li>b. Endotracheal intubation (oral, nasal) and emergent tracheal access (cricothyroidotomy, tracheostomy) tube thoracostomy, (emergent) thoracotomy</li> <li>c. Trauma laparotomy, including damage control operations</li> <li>d. Trauma thoracotomy (lateral, median sternotomy, other approaches)</li> <li>e. Exploration of neck and extremities for injury</li> <li>f. Elective and urgent operations related to the care of trauma patients, including tracheostomy, percutaneous and open enteral feeding access, operations for complications after trauma and initial operative therapy</li> <li>g. Wound management, including flap closures and skin grafting</li> </ul> </li> <li>▪ Participate in the <b>pre- and post-operative surgical management</b> of patients before and after trauma operations; attend trauma clinic once a week; participate on daily morning and afternoon patient rounds</li> <li>▪ <b>Manage post-operative surgical complications</b>, including infection (wound, systemic), bleeding, organ failure, anastomotic stenosis and leaks, etc.</li> </ul>
<p><b>Medical Knowledge:</b></p>	<p><b>Goals:</b></p> <ul style="list-style-type: none"> <li>▪ Understand the <b>epidemiology and major trauma mechanisms</b> in children and adults in an urban environment; develop a fundamental understanding of the role of prevention and major preventive efforts in the State of Florida and the costs associated with the delivery of trauma care and trauma-related disability (productive years lost)</li> <li>▪ Understand the <b>organization of the trauma system</b> and its implications on the delivery of trauma care in Florida</li> <li>▪ Demonstrate firm knowledge and applications of the principles of <b>ATLS</b> in evaluation and initial management of the injured patient</li> <li>▪ <b>Airway management and breathing:</b> <ul style="list-style-type: none"> <li>- Demonstrate fundamental knowledge of the mechanisms and types of <b>airway injury</b> (blunt, penetrating) and compromise, their clinical signs and symptoms and management thereof (endotracheal intubation [oral, nasal], cricothyroidotomy, tracheostomy, fiberoptic intubation and other techniques, in-line stabilization)</li> <li>- Demonstrate fundamental knowledge of the mechanisms and types of <b>compromised breathing</b> (CNS impairment, [multiple] rib fractures and flail chest, [tension] pneumothorax and hemothorax, aspiration, etc) the clinical signs and symptoms and management thereof (ventilator support, tracheal suctioning/bronchoscopy, tube</li> </ul> </li> </ul>

thoracostomy, etc.)

- Discuss the significance of “**incidental**” **pneumothorax** (found on CT) in the trauma patient with head injury/on positive pressure ventilation, undergoing surgery
- Discuss the dynamic nature of pulmonary contusion and strategies to minimize expansion
- Discuss the **pulmonary sequelae of aspiration** (massive and water) and their management; Discuss the indications for antibiotic therapy
- Discuss the **medical and surgical management of**:
  - Single/multiple rib fractures/flail chest
  - Pulmonary laceration and contusion
  - Pneumothorax (open/closed/tension) and hemothorax
  - Diaphragmatic rupture
  - Mediastinal air

▪ **Circulation:**

- Demonstrate fundamental knowledge of mechanisms and types of injuries that cause **cardiovascular compromise**, the clinical signs and symptoms of different grades of **shock**, and management thereof
- Demonstrate knowledge in techniques of **limiting external blood loss** and obtaining adequate **vascular access** for resuscitation
- Understand the advantages and limitations of different resuscitation solutions
  - **Crystalloid vs. colloid; isotonic vs. hypertonic solutions**
  - Indications for the use of **blood and blood products** (active ongoing hemorrhage, signs and symptoms of significant loss, age and pre-existing cardiovascular conditions, etc.); understand the difference and implications of O<sub>neg</sub>, type specific and fully cross-matched blood, and time requirements for availability
  - Understand the sequelae of “**massive**” **transfusion** on coagulation, immune system, organ (dys-)function, etc. and strategies to minimize these effects
  - Understand the concepts behind **alternative O<sub>2</sub> carriers** and their current uses
  - Discuss different clinical and laboratory **resuscitation endpoints** (lactate, base excess, O<sub>2</sub> delivery, mucosal pH, urine output, etc.)
  - Discuss the **role of invasive vs. non-invasive monitoring** in different clinical situations
  - Understand the **dynamic nature of circulatory compromise and resuscitation** and the need for close patient follow-up/re-evaluation
  - Discuss the use of other cardiovascular therapies, including pressor-inotropes

▪ **Disability:**

- Demonstrate knowledge in the **mechanisms of injury** that may lead to brain and spine trauma; demonstrate ability to perform a **comprehensive neuro-assessment**, and delineate appropriate radiologic studies
- Understand the different types (and mechanisms of **brain injury** and (region) associated signs, symptoms and therapy:
  - Concussion
  - Epidural, subdural, subarachnoid, intra-cerebral, intra-ventricular hemorrhage
  - Petechial intra-cranial hemorrhage and diffuse axonal injury
  - Intra-cranial hypertension and cerebral herniation syndromes
- Understand about the incidence and influence of **sedatives, narcotics, alcohol and illicit drugs** on neuro-evaluation and management
- Understand the influence of **shock** on neuro-evaluation and management
- Discuss the factors that cause **secondary brain injury** and strategies for their prevention (hypotension, hypovolemia, hypoxia, seizure, etc.)
- Understand indications for the following **therapeutic strategies** in brain injury:
  - Airway management and ventilation
  - Mannitol, (controlled) hyperventilation, head of bed elevation
  - Anti-convulsive drugs
  - Intra-cranial pressure monitoring and cerebral perfusion pressure guided cardiovascular therapy
  - Operative intervention (ventriculostomy, bur-hole drainage, craniotomy, etc.)
- Understand **major types of (basal) skull fractures** and their implications for underlying brain injury, need for operative intervention and/or antibiotic therapy
- Understand the **different types (and mechanisms) of spine injury** and (region) associated signs, symptoms and therapy:
  - Discuss different types of **spine fractures**, associated injury mechanism and implications for spine stability
  - Understand the concepts of full **spinal immobilization** and strategies to maintain spinal protection during the evaluation and initial therapy of trauma victims
  - Discuss different presentation with complete/incomplete, anterior/lateral/posterior/central **spinal cord injury**
  - Discuss **medical management** (+/- steroids, perfusion pressure, etc.) and **operative management** of spine fractures (braces, traction, halo, anterior / posterior instrumentation)
  - Understand the pathophysiology of **neurogenic shock** and medical management

	<ul style="list-style-type: none"><li>- Indications for airway management and ventilator support with “high” spinal cord injuries</li><li>- Understand the <b>long-term sequelae</b> of spinal injuries and indications for physical and occupational therapy and rehabilitation</li><li>▪ <b>Exposure:</b><ul style="list-style-type: none"><li>- Understand the need for complete exposure and examination in all trauma patients</li><li>- Understand the effects of <b>environmental exposure</b> and strategies for prevention:<ul style="list-style-type: none"><li>- <b>Grades of hypothermia</b>, effects on metabolism, coagulation, CNS, heart and other organ function, accelerated effects in children and elderly patients, alcohol intoxication, moist exposure and extremes of temperature</li><li>- <b>External and internal re-warming:</b> heated IV fluids and blood products, heating blankets and lamps, heated ventilator air, warm perfusion of body cavities, etc.</li></ul></li></ul></li><li>▪ <b>Specific body region and organ injuries:</b><ul style="list-style-type: none"><li>- <b>Facial trauma</b><ul style="list-style-type: none"><li>- Discuss the <b>major types of blunt facial injuries</b> (LeFort) and their implications for airway management</li><li>- Understand the care principles involved with violation of the intracranial space (rhinorrhea, otorrhea, pneumocephalus); indications for the use of (prophylactic) antibiotics</li><li>- Discuss the <b>implications of orbital involvement</b> (globe trauma, optic nerve injury, ocular muscle entrapment), their recognition and management</li><li>- Discuss <b>common complications</b> of facial fractures and management thereof<ul style="list-style-type: none"><li>- Bleeding and aspiration of blood: nasal/oropharyngeal packing, angiography-embolization, operative hemostasis</li><li>- Injury to teeth/foreign body aspiration: preservation of teeth, bronchoscopic retrieval of foreign bodies</li><li>- Nasal septum hematoma</li><li>- Loss of airway and the <b>“difficult to intubate” patient:</b> emergent Cricothyroidotomy or tracheostomy and other techniques of airway management (bougie, fiberoptic, etc.)</li><li>- <b>Ethmoid/cribriform plate fractures</b> and the dangers of nasal instrumentation (intubation, nasogastric tube, etc.) in facial trauma</li></ul></li><li>- Diagnosis and management of <b>penetrating facial trauma</b></li></ul></li><li>- <b>Neck trauma</b><ul style="list-style-type: none"><li>- Understand the <b>complex anatomy</b>, the definition of the <b>zones</b> of the neck and</li></ul></li></ul></li></ul>
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	<p>related implications for management of injuries</p> <ul style="list-style-type: none"> <li>- Indication for <b>exploration</b> (zone II, obvious vascular, esophageal and/or tracheal injury)</li> <li>- <b>Alternatives to exploration:</b> tracheo-bronchoscopy, esophagoscopy and/or barium swallow, (CT) angiography</li> <li>- <b>Recognition and management of (potential) airway compromise</b> (see difficult to intubate patient)</li> <li>- Discuss diagnosis and management of <b>blunt carotid artery injuries</b> (direct trauma vs. hyper-extension rotation injury): relevance of carotid bruit in trauma patient; ultrasonography vs. angiography; role of anticoagulation/anti-platelet agents</li> <li>- <b>Chest trauma (see also airway management and breathing)</b> <ul style="list-style-type: none"> <li>- <b>Mediastinal injuries:</b> <ul style="list-style-type: none"> <li>- Understand the <b>complex anatomy and the different zones</b> of the mediastinum</li> <li>- Discuss the <b>clinical signs and symptoms</b> of mediastinal injury to the trachea and bronchial tree, great vessels, esophagus, heart, etc.</li> <li>- Discuss the basic differences between blunt and penetrating injury to the chest; Understand the concept of “the box”</li> <li>- Discuss the sensitivity, specificity and accuracy of various <b>diagnostic tests:</b> plain film radiographs, CT, angiography, tracheo-bronchoscopy, esophagoscopy vs. barium swallow</li> <li>- Develop a fundamental understanding of the <b>management</b> of injuries to: <ul style="list-style-type: none"> <li>- <b>Esophagus</b> (cervical, upper and lower thoracic), including considerations regarding the time interval between injury and repair, overall status of the patient, primary vs. interposition repair, etc.</li> <li>- <b>Trachea, bronchi</b> (main stem/lobar/segmental, partial/complete), including options for repair vs. primary resection</li> <li>- <b>Aorta</b> (ascending, arch, descending), including definition of types, advantages and problems of cardiovascular bypass vs. clamp-and-sew techniques of repair</li> <li>- <b>Vena cava</b></li> <li>- <b>Heart:</b> blunt vs. penetrating injury; signs and symptoms of <b>pericardial tamponade</b>; signs, symptoms and complications of <b>cardiac contusion</b> and indications for (prolonged) cardiac monitoring; indications for left/”clam-shell” thoracotomy and/or median sternotomy/trap-door exposure; concepts of acute cardiac hemostasis (finger, balloon, stapler) and permanent repair</li> <li>- <b>Thoracic lymphatic injuries:</b> diagnosis and conservative management (tube</li> </ul> </li> </ul> </li> </ul> </li> </ul>
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thoracostomy, TPN, sclerotherapy) vs. operative management

- **Abdominal trauma**

- **Penetrating vs. blunt trauma**

- Understand the **anatomy of the abdomen** and the distinctive zones (I – III, supra- vs. infra-mesocolic) and their implication for injury (combinations); discuss association of certain trauma **mechanisms** (axial deceleration, AP vs. lateral force, “seatbelt injury”, “handlebar injury”, etc. **and specific patterns of intra-abdominal injury**
- Discuss the evaluation of the patient with blunt and penetrating abdominal trauma; understand the **diagnostic/management algorithm**, using hemodynamic (in-) stability, absence or presence of peritoneal signs or evisceration, use of FAST/DPL/CT as diagnostic tests; understand the indications, limitations and diagnostic accuracy of these tests
- Differentiate abdominal from flank trauma; discuss the diagnostic work-up for **retroperitoneal injuries**
- Understand the difference between gunshot and stab wounds, and considerations regarding **conservative management of penetrating abdominal trauma**; discuss the options to evaluate for peritoneal penetration (CT, ultrasound, wound exploration, diagnostic laparoscopy)
- Understand the requirements for conservative management (serial abdominal examination) of abdominal trauma; discuss the implications of delayed diagnosis of hollow viscus injury (Fakhry et al.)
- Discuss the difference in the **diagnosis and management of patients with altered mental state** (head injury, intoxication, etc.) and abdominal trauma, and those patients who are to undergo lengthy (non-abdominal) operations
- Discuss the management of patients with **incidental free fluid** on FAST/CT but without other clinical or radiological signs of intra-abdominal injury
- Discuss the indications, limitations and potential complications of diagnostic laparoscopy and contrast with those of laparotomy
- Understand the concept of **damage control laparotomy**: indications, options for (temporary) closure of the abdomen; pathophysiology and clinical signs of **intra-abdominal hypertension** and strategies to avoid and manage this complication
- Discuss the indications and duration of **antibiotic therapy** in different types of abdominal injury (solid organ, hollow viscus, minimal vs. substantial spillage of enteric contents, gastric/duodenal vs. small bowel vs. colonic contamination)

- **Liver/Spleen**

- Understand the **anatomy of liver and spleen**, common mechanisms and patterns of injury
- Understand the **AAST grading** of liver and spleen injury and graded therapeutic intervention
- Understand the role of **conservative management**, including **angiography and embolization** in liver and spleen injury, its outcomes, and potential complications
- Discuss options for **operative intervention**:
  - Splenic hemostasis (topical pro-coagulants), splenorrhaphy vs. partial/total splenectomy; immunologic implications (OPSI, vaccination); Splenic vascular control; avoidance and management of injuries to the tail of the pancreas
  - Liver hemostasis (electro-cautery, argon beam coagulator, topical pro-coagulants, omental patch, liver sutures, individual vessel ligation, peri-hepatic packing) vs. partial hepatectomy; use of the Pringle maneuver in hepatic bleeding
- Discuss **complications** of liver and spleen trauma and management thereof:
  - Organ infarction and abscess, persistent or recurrent bleeding, etc.

- **Pancreas/Duodenum**

- Understand the complex **anatomy** of the pancreas and duodenum, common mechanisms and patterns of injury
- Understand the **AAST grading** of pancreas and duodenal injuries and graded therapeutic intervention
- Understand the importance and diagnostic options to make the **diagnosis of pancreatic and biliary ductal injury** (exploration, intra-operative radiographic or vital dye studies, ERCP); discuss the options to manage ductal injury
- Understand the concept of **duodenal/pancreatic diversion and drainage** (pyloric exclusion, duodenal diverticularization, gastric/retrograde duodenal tubes, peri-duodenal/-pancreatic drainage)
- Discuss the options for pancreatic resection preservation
- Discuss the options for duodenal closure (primary, omental vs. jeunal patch)

- **Stomach/Intestines**

- Recognize and management of penetrating and blunt injury, including mesenteric injury and devascularization; resection vs. repair; indications for (protective) ostomy
- Understand the consequences of delayed diagnosis of visceral injury and

	<p>strategies to prevent such occurrence; understand the consequences of anastomotic leak, short bowel, etc. and discuss strategies for management</p> <ul style="list-style-type: none"> <li>- Discuss the options and timing for enteral feeding access</li> <li>- Discuss incidence, management and strategies for prevention of long-term complications, including ventral hernia, bowel obstruction, etc., after laparotomy</li> <li>- Discuss the various options of management for abdominal compartment syndrome and open abdomen, including the Starr artificial bur delayed fascial closure technique</li> </ul> <p>- <b>Kidney/Bladder/Ureter</b></p> <ul style="list-style-type: none"> <li>- Understand the <b>anatomy of the genitourinary system</b>, common mechanisms and patterns of injury</li> <li>- Understand <b>AAST grading</b> of renal injury and graded therapeutic intervention</li> <li>- Discuss sensitivity, specificity and accuracy of <b>diagnostic tests</b> in genitourinary trauma <ul style="list-style-type: none"> <li>- (urethro-) Cystogram, CT-cystogram</li> <li>- (single shot vs. formal) IVP vs. IV contrast CT</li> <li>- FAST vs. formal renal ultrasonography</li> <li>- Angiography</li> <li>- MRI / MRA</li> </ul> </li> <li>- Discuss the management of the intra-operatively identified <b>peri-nephric hematoma</b> in blunt vs. penetrating trauma</li> <li>- Discuss the diagnosis and <b>management of reno-vascular trauma</b>; understand the consequences of the chronically ischemic kidney (pain, hypertension)</li> <li>- Understand the difference in management between <b>intra- and extra-peritoneal bladder rupture</b>; discuss implications and evaluation of trigonal involvement</li> <li>- Discuss options for <b>operative intervention</b> in genitourinary trauma: <ul style="list-style-type: none"> <li>- Reno-vascular control</li> <li>- Kidney hemostasis (electro-cautery, topical pro-coagulants, renorrhaphy, [partial-] nephrectomy)</li> <li>- Repair of calices and renal pelvis</li> <li>- Ureteral repair (primary, uertero-ureterostomy, psoas hitch, renal auto-transplant, ileal conduit, etc.)</li> </ul> </li> </ul> <p>- <b>Retroperitoneal injuries</b></p> <ul style="list-style-type: none"> <li>- Understand the common mechanisms (blunt and penetrating) that may lead to retroperitoneal injury and discuss signs and symptoms of isolated retro-peritoneal injury</li> </ul>
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- Understand the value of CT in the evaluation of retroperitoneal injury
- Discuss the management in view of the individual organs injured and significance of combination injuries

- **Pelvic trauma**

- Understand the **anatomy of the pelvic ring, vasculature and organs**, common mechanisms and patterns of injury (AO classification of pelvic fractures)
- Discuss the **clinical diagnosis of and initial/damage control maneuvers** in patients with significant pelvic injuries (pelvic binder, external fixation); discuss the concerns regarding DPL and bladder catheterization with pelvic injury
- Discuss the role of **angiography and embolization** in pelvic trauma
- Discuss the diagnosis and management and specific considerations in male and female perineal trauma

- **Extremity trauma**

- **Vascular and peripheral nerve injuries**

- Understand the fundamentals of **extremity neuro-vascular anatomy**
- Understand fundamentals of **diagnosis and management** of extremity vascular injury (see Vascular Surgery, Medical Knowledge: Goals and Objectives)
- Discuss hard and soft signs of vascular injury; understand the concept of proximity and blast injury in penetrating trauma; understand the concept of partial injury in blunt (intima) and penetrating trauma (adventitia); discuss orthopedic injuries with higher incidence of (neuro-) vascular damage; understand the concepts of shunting and damage control orthopedic stabilization, and “out of the zone of injury” vascular repair; discuss the specific risks of anticoagulation and anti-platelet agents in (multiple-) trauma patients and head-injured patients

- **Orthopedic and soft tissue injuries**

- Understand fundamentals of diagnosis and management of extremity orthopedic (bone and soft tissue injury (see Orthopedic Surgery, Medical Knowledge: Goals and Objectives), including initial fracture stabilization and pain control, management of open fractures, management of dislocations with and without neuro-vascular compromise, diagnosis and management of compartment syndromes, diagnosis and management of nerve injury, diagnosis and management of crush injury and rhabdomyolysis

**Objectives – General:**

- **Complete the reading assignment (see literature list)**
- **Attend all (≥ 85%) conferences, M&M conferences, Grand Rounds/other**

	<p><b>educational activities of the Trauma Center, during the rotation</b></p> <ul style="list-style-type: none"> <li>▪ <b>Take a post-rotation self-assessment test with at least 75% correct answers</b> [if offered]</li> </ul>
<p><b>Practice-based Learning and Improvement:</b></p>	<p><b><u>Goals and Objectives:</u></b></p> <p>Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. Residents are expected to:</p> <ul style="list-style-type: none"> <li>▪ <b><u>Self-assessment:</u></b> Analyze practice experience during the rotation, as well as own performance-based on interaction with Trauma fellow, attending(s) and other key Trauma staff; accept and use constructive criticism to improve performance in the six core competencies.</li> <li>▪ <b><u>Medical knowledge:</u></b> Self-directed and under mentorship of Trauma fellow and attending staff, locate, appraise and assimilate evidence from scientific studies related to their patients' health problems; use evidence based medicine approach to patient care whenever possible; apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness; use information technology to manage information, access online medical information; and support their own education; facilitate the learning of students and other health care professionals on the transplant service by sharing pre-existing and newly acquired knowledge (general and case-based) on rounds and during formal educational activities. Residents are encouraged to ask/question the Trauma fellow, attending staff and/or other Trauma Surgery related expert providers for clarification of unclear concepts/practices at any time.</li> <li>▪ Participate in the <b><u>peri-operative management of Trauma and critically ill patients</u></b> as outlined in patient care competency; during the rotation the resident should become familiar/proficient with: <ul style="list-style-type: none"> <li>a. The major mechanisms/etiologies of Trauma in an urban environment and commonly associated injury patterns</li> <li>b. The protocol-driven, organized, multi-specialist driven approach to Trauma resuscitation and damage control, including successful participation in ATLS and ATOM</li> <li>c. Sequential goal-directed diagnostic work-up of trauma patients</li> <li>d. Operative approaches for trauma in all major body areas</li> <li>e. Organ failures, individual and combined, definitions, etiologies and management</li> <li>f. The continuum of care from scene to rehabilitation</li> <li>g. Management of complex multi-morbid patients</li> </ul> </li> </ul>

	<p>h. Management of complications related to trauma care</p> <ul style="list-style-type: none"> <li>▪ Perform/participate in <b>trauma-related operations</b> as outlined in the patient care competency; During the rotation the resident should become familiar/proficient with: <ul style="list-style-type: none"> <li>a. Laparotomy</li> <li>b. Thoracotomy</li> <li>c. Neck exploration</li> <li>d. Extremity exploration</li> <li>e. Repair of simple and complex wounds in all body areas</li> <li>f. Placement of emergent airway and vascular access</li> <li>g. Stabilization of fractures (extremity, pelvic, spine)</li> </ul> </li> </ul>
<p><b>Interpersonal and Communication Skills:</b></p>	<p><b><u>Goals and Objectives:</u></b></p> <p>Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patient’s families and professional associates. Residents are expected to:</p> <ul style="list-style-type: none"> <li>▪ Develop interpersonal skills necessary to <b>communicate effectively</b> with patients, patient families, nursing staff, mid-level healthcare providers, ancillary staff, medical students, fellow residents and attending staff in the complex multi-specialty environment that constitutes Trauma surgery</li> <li>▪ Contribute to <b>creating an atmosphere of collegiality and mutual respect</b> with all providers involved in the care of patients</li> <li>▪ Develop <b>effective listening, questioning and documentation skills</b></li> <li>▪ Demonstrate <b>ability to work effectively as a member of a team</b></li> <li>▪ Demonstrate <b>ethically sound behavior</b> (see also Professionalism)</li> <li>▪ <b>Share own knowledge</b> with other members of the team to foster an environment of learning</li> </ul>
<p><b>Professionalism:</b></p>	<p><b><u>Goals and Objectives:</u></b></p> <p>Residents must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population. Residents are expected to:</p> <ul style="list-style-type: none"> <li>▪ Demonstrate <b>adherence to institutional and departmental standards and policies</b></li> <li>▪ Demonstrate <b>respect, compassion, integrity and ethical behavior</b> consistent with the <b>values of the division</b> and St Mary’s Medical Center; develop and sustain sensitivity toward differences of age, gender, culture, religion, ethnicity or other diversities in both co-workers and patients</li> <li>▪ Demonstrate ability to appropriately take on, <b>share and delegate responsibilities</b> with regard to patient care; balance own rights and privileges appropriately with</li> </ul>

	<p>responsibilities and accountability resulting from being a member of a team dedicated to patient care</p> <ul style="list-style-type: none"> <li>▪ Demonstrate <b>commitment to excellence and on-going professional development</b></li> <li>▪ Under attending and other Trauma staff guidance, develop skill <b>to resolve potential problems and conflicts that occur in a complex corporate environment</b> using the appropriate channels and methods of communication to maximize patient care and surgical service performance</li> <li>▪ Evaluate and formulate a response to <b>ethical questions</b>, including: <ul style="list-style-type: none"> <li>a. Management of the patient with severe brain injury, clinical prognosis and limitation/withdrawal of care?</li> <li>b. Management of high spinal cord injury – patient-driven withdrawal of care in the awake and conscious patient?</li> <li>c. Management of the coagulopathic patient – depleting blood bank resources – when is enough, enough?</li> <li>d. Application of advanced care directives – how do they apply to trauma?</li> <li>e. Management of the elderly trauma patient – how aggressive should therapy be in octogenarians and older patients?</li> <li>f. The pediatric Jehovah’s Witness patient – transfusion against the parents will?</li> <li>g. Management and/or withdrawal of care in patients without family or healthcare power of attorney – the state as guardian?</li> <li>h. Management of the imprisoned patient – institutional demands vs. medical needs?</li> </ul> </li> </ul>
<p><b>Systems-based Practice:</b></p>	<p><b><u>Goals and Objectives:</u></b></p> <p>Residents must demonstrate an awareness of and responsiveness to the larger context and system of healthcare and the ability to effectively call on system resources to provide care that is of optimal value. Residents are expected to:</p> <ul style="list-style-type: none"> <li>▪ Understand how choices in patient care and other professional practices affect other healthcare professionals, the healthcare organization and the larger society and how these elements of the system affect their own practice: <ul style="list-style-type: none"> <li>a. Average <b>cost of trauma</b> in the State of Florida/nationwide</li> <li>b. Productive years lost, cost of disability, particularly in head and spine injury</li> <li>c. Cost of acute care and rehabilitation</li> <li>d. Cost of prevention efforts</li> <li>e. Comparative cost of conservative vs. primary operative management in select injuries, i.e., blunt splenic injury</li> <li>f. The relevance and components of clinical pathways and protocols and how to deal with deviation.</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>▪ Practice cost-effective healthcare and resource allocation that does not compromise quality of care</li> <li>▪ Know how to partner with healthcare managers (Trauma coordinator, Social Work, case management, PT/OT and Rehabilitation medicine, etc.) and other healthcare providers (PMD, specialty providers in and out of the hospital) to assess, coordinate and improve healthcare for the individual patient and cohorts of patients</li> </ul>
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## Appendix: S.C.O.R.E. Curriculum

<p><b>Surgical Council on Resident Education</b></p> <p>The SCORE® Curriculum Outline for General Surgery is a list of topics to be covered in a five year general surgery residency program. Graduating residents are expected to be competent in six areas: patient care; medical knowledge; professionalism; interpersonal and communication skills; practice-based learning; and systems-based practice.</p> <p>The <i>SCORE Portal</i> (<a href="http://www.surgicalcore.org">www.surgicalcore.org</a>) has been created to provide educational content and assessment in support of the curriculum to general surgery residency programs. Learning “modules” are available on the portal for nearly all of the topics listed in this booklet</p> <p><b>Patient Care Classification System</b></p> <p>The patient care curriculum topics are organized into 28 organ-based categories. Within each category, the topics are further separated into Diseases/Conditions and Operations/Procedures. With this edition, the topics are then stratified into two levels using the same classifications:</p> <ul style="list-style-type: none"> <li>• <i>CORE</i> – Diseases and procedures encountered in general surgery for which a graduate of training will possess significant knowledge and be able to provide comprehensive care, including procedural competency.</li> <li>• <i>ADVANCED</i> – Diseases and procedures that are not consistently part of general surgery practice for which a graduate of training should have sufficient knowledge to make a diagnosis and provide initial management. In some instances, graduates will have sufficient knowledge and experience to provide comprehensive care.</li> </ul>	<p><b>TraumaDiseases/Conditions</b></p> <p><i>Core</i></p> <ul style="list-style-type: none"> <li>• Aortic Injury</li> <li>• Bladder Injury</li> <li>• Burns - Electrical and Chemical</li> <li>• Burns - Flame and Scald</li> <li>• Cardiac Tamponade</li> <li>• Colon and Rectal Injury</li> <li>• Diaphragmatic Injury</li> <li>• Esophageal Injury</li> <li>• Frostbite and Hypothermia</li> <li>• Gastric Injury</li> <li>• Geriatric Trauma</li> <li>• Hemothorax and Pneumothorax</li> <li>• Hepatic Injury</li> <li>• Initial Assessment and Management of Trauma</li> <li>• Myocardial Contusion</li> <li>• Pancreatic and Duodenal Injury</li> <li>• Pediatric Trauma</li> <li>• Pelvic Fractures</li> <li>• Pulmonary Injury</li> <li>• Renal Injury</li> <li>• Retroperitoneal Hematoma</li> <li>• Rib and Sternal Fractures</li> <li>• Small Intestinal Injury</li> <li>• Splenic Injury</li> <li>• Trauma in Pregnancy</li> <li>• Upper Aerodigestive Tract Injury</li> <li>• Ureteral Injury</li> <li>• Vascular Injury - Abdomen</li> <li>• Vascular Injury - Extremities</li> <li>• Vascular Injury - Neck</li> <li>• Vascular Injury - Thorax</li> </ul> <p><i>Advanced</i></p> <ul style="list-style-type: none"> <li>• Animal and Insect Bites and Stings</li> <li>• Brachial Plexus Injury</li> <li>• Extremity Fractures and Traumatic Amputations</li> <li>• Head Injury - Penetrating and Closed</li> </ul>
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- Human Bites
- Smoke Inhalation Injury/Carbon Monoxide Poisoning
- Spine Fracture
- Sprains, Strains, and Dislocations
- Tracheal and Bronchial Injury
- Urethral Injury

### **Operations/Procedures**

#### *Core*

- Abdominal Aorta or Vena Cava Injury - Repair
- Bladder Injury - Repair
- Cardiac Injury - Repair
- Carotid Artery Injury - Repair
- Duodenal Trauma - Management
- Esophageal Injury - Operation
- Exploratory Laparoscopy
- Exploratory Laparotomy
- Fasciotomy for Injury
- Focused Abdominal Sonography for Trauma
- Gastrointestinal Tract Injury - Operation
- Hepatic Injury - Packing and Repair
- Neck Exploration for Injury
- Pancreatic Injury - Operation
- Renal Injury - Repair/Resection
- Splenectomy/Splenorrhaphy
- Temporary Closure of the Abdomen
- Thoracoscopy for Management of Hemothorax
- Truncal and Peripheral Vessels - Repair
- Ureteral Injury - Repair
- Wounds, Major - Debride/Suture

#### *Advanced*

- Burn Debridement and Grafting of Major Burns
- Hepatic Injury - Resection
- Tendon – Repair