

## **Appendix A:**

### **Pediatric Emergency Medicine Fellowship Goals and Objectives**

The goal of a subspecialty residency (fellowship) program in Pediatric Emergency Medicine (PEM) is to produce physicians who are clinically proficient in the practice of pediatric emergency medicine, especially in the management of the acutely ill or injured child, in the setting of an emergency department (ED) that is approved as a 911 receiving facility or its equivalent and has an emergency medical services system.

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## **1. PEM Fellow Rotations in Pediatric Emergency Medicine**

### **First Year Goals**

Year I is spent as a direct care provider with very little time spent supervising trainees. During Year I the PEM Fellows are exposed to a wide variety of ill and injured pediatric patients so that they may become familiar with the diagnosis and management of the breadth of PEM patients. Ample exposure to important PEM procedures is provided.

Fellows gain experience in specific PEM related topics through rotations in Anesthesia, Pediatric Critical Care, and Toxicology. The Emergency Medicine and Trauma month at the University of New Mexico Hospital (UNMH) Adult ED and Level One trauma center offers exposure to adult patients and the opportunity to perform invasive procedures more frequently. All patients seen in by the Year I Fellow are supervised by attending faculty.

### **Second Year Goals**

In Year II the PEM Fellow begins the transition from caring for patients directly to becoming the supervising physician in charge of the entire ED. The Fellow will continue to devote time to caring directly for patients but will also begin Parallel Shifts where he or she will gradually assume the responsibilities of the Attending Peds ED physician. These Parallel Shifts are designed to provide the Year II Fellow with experience supervising, handling referral and transport calls and running the ED under the direct supervision and assistance of a PEM Attending. The Parallel Shifts are designed to prepare the Fellow for Year III when they will act as the Attending physician in the ED.

It is expected that the Year II Fellow will take on more teaching responsibilities and dedicate more time to their research projects as the total amount of clinical time decreases as compared to Year I.

### **Third Year Goals**

In Year III, the Fellow will become proficient in running a Pediatric ED which includes the care of emergency patients at the primary facility which is a regional pediatric referral center, Level One Pediatric Trauma Center, taking referral calls and offering telephone advice, managing the transport of critically ill patients, appropriately obtaining and interpreting subspecialty consults and maintaining an effective working relationship and communication with the charge nurse, nursing and ancillary staff as well as subspecialty residents, residents, medical students and other trainees. Year III clinical responsibilities offer the Fellow the opportunity to enjoy significant autonomy in working up and managing PEM patients with back-up or on-site readily available.

During Year III, the Fellow should complete the research requirements of the program and gain further experience in teaching, education and administrative roles of the academic PEM physician.

### **Progression of objectives from year to year are *italicized* for reference.**

#### **First Year Objectives:**

After completing this rotation, the fellow will demonstrate the ability to:

#### **Patient Care**

1. Perform an appropriate history and physical exam.
2. Assess patients with urgent conditions:
  - a. Recognize respiratory failure.

- b. Manage the acute airway, including knowledge about and use of appropriate equipment and drugs.
  - c. Manage the airway in a child with a tracheostomy tube.
  - d. Recognize shock.
  - e. Formulate a diagnosis quickly, with particular attention to diagnoses that require immediate airway intervention (e.g. depressed mental status, foreign body obstruction).
  - f. Describe indications for admission to a critical care unit.
  - g. Outline plan for stabilization, including relevant physiology, tests and therapies.
3. Generate differential diagnoses for common PEM problems.
- a. General: septic or ill appearance, unexplained crying, fever, hypothermia, Acute Life Threatening Event, sudden death, weight loss, psychological disturbance, dehydration, alleged or suspected child abuse or neglect
  - b. Allergy: acute allergic reactions
  - c. Respiratory: respiratory effort (increased or decreased), poor air movement, tachypnea, dyspnea, apnea, stridor, wheezing, crackles
  - d. Cardiology: arrhythmia, bradycardia, tachycardia, cardiopulmonary arrest, hypertension, hypotension, quality of pulses, skin perfusion, chest pain
  - e. Neurology: altered mental status, coma, encephalopathy, dizziness, weakness, paresthesias, status epilepticus, neck stiffness
  - f. Gastroenterology: abdominal distention, peritoneal signs, acute hemorrhage, vomiting, diarrhea, constipation, foreign body ingestion, jaundice, difficulty swallowing
  - g. Hematology/Oncology: bleeding, bruising, purpura, petechiae, neutropenia, anemia, thrombocytopenia, lymphadenopathy, hepatosplenomegaly, acute illness or fever in a neutropenic child with cancer
  - h. Nephrology: hematuria, oliguria, anuria, polyuria, edema, dysuria, hypertension
  - i. Urology: groin or scrotal mass or pain
  - j. Dermatology: skin rash, hair loss
  - k. Ophthalmology: red eye, abnormal pupils or eye movements, eye pain, visual disturbance
  - l. Otolaryngology: dizziness, nosebleed, sore throat, painful swallowing, earache, ear discharge, new hearing loss
  - m. Endocrinology: polydipsia, polyuria, known diabetic with acute symptoms, thyroid enlargement
  - n. Gynecology: vaginal discharge, vaginal bleeding, amenorrhea, breast masses
  - o. Musculoskeletal: extremity pain, limp, arthralgia, joint swelling, back pain, neck pain
  - p. Psychiatry: depression, suicidal or homicidal ideation, anxiety, aggressiveness
  - q. Trauma: lacerations, burns, fractures
4. Describe principles of the team approach to the management of a child with multi-system trauma.
5. Explain the indications for and interpretation of the following diagnostic tests:
- a. Arterial/Venous Blood Gas
  - b. Coagulation studies (PT, PTT, fibrinogen, FSP, D-dimers)
  - c. Complete Blood Count
  - d. Blood chemistries including renal function tests
  - e. Serologic Tests for Infection (hepatitis, mononucleosis)
  - f. Bacterial, viral and fungal cultures including rapid screening tests
  - g. Urinalysis
  - h. Pregnancy Testing

- i. Cerebrospinal Fluid Analysis including studies for viruses and fungi
  - j. Drug Levels and Toxicological Studies
  - k. Chest Radiographs
  - l. Abdominal/Pelvic Radiographs
  - m. Cervical Spine Films
  - n. Head CT
  - o. Chest/Abdominal CT
  - p. MRI
  - q. EKG
  - r. Echocardiography
6. Describe the indications and appropriate techniques, and perform the following procedures *under direct supervision by attending with presence in room*:
- a. Airway Management
    - i. Endotracheal Intubation
    - ii. Cricothyrotomy
    - iii. Bag-Valve-Mask-Ventilation
    - iv. Rapid Sequence Induction
    - v. Tracheostomy Tube Replacement
  - b. Cardio-Pulmonary
    - i. Thoracentesis
    - ii. Thoracostomy Tube Placement
    - iii. Cardioversion/Defibrillation
    - iv. Conversion of SVT
    - v. Intraosseous Access and Fluid Administration
    - vi. Pericardiocentesis
    - vii. Central Venous Catherization
    - viii. UVC Line Placement
    - ix. Cardiac Pacing – External
    - x. Arterial Line Placement
  - c. Abdominal
    - i. Gastric Lavage
    - ii. Gastrostomy Tube Replacement
  - d. Special Procedures
    - i. Lumbar Puncture
    - ii. Laceration Repair
    - iii. Foreign Body Removal
    - iv. Procedural Sedation
    - v. Incision and Drainage of Abscesses
    - vi. Nasal Packing
    - vii. Regional Nerve Blocks
    - viii. Slit Lamp Examination
    - ix. Intracranial Pressure Monitor
  - e. Orthopedic
    - i. Closed Reduction and Splinting
    - ii. Arthrocentesis
    - iii. Dislocation Reduction
7. Explain the indications for admission to the hospital ward, critical care unit, neonatal intensive care unit or transfer to another facility.
8. List important principles in the prioritizing care of multiple patients.
9. Identify different methods to adjust pace to ED patient acuity, volume and flow.
10. Function appropriately in resuscitations as a directed team member.

## Medical Knowledge

1. Describe the pathophysiology for the following conditions which are encountered in the Pediatric ED:
  - a. Pulmonary: acute pulmonary edema, acute upper airway obstruction (foreign body, allergic, infectious), status asthmaticus, pneumothorax, smoke inhalation, pneumonia, bronchiolitis, acute respiratory distress syndrome, drowning and near drowning, acute illness in a child with cystic fibrosis or bronchopulmonary dysplasia, SIDS
  - b. Cardiovascular: shock, acute blood loss, hypertensive crisis, acute myocardial infarction, cardiopulmonary arrest, cardiac arrhythmias (asystole, bradycardia, SVT, ventricular fibrillation, tachycardia, electromechanical dissociation), congestive heart failure, hypertension, aortic dissection, pericardial effusion, pericarditis, cardiac tamponade, shock (hypovolemic, cardiogenic, spinal, septic), acute illness in a patient with congenital heart disease, endocarditis, myocarditis, rheumatic fever, Kawasaki syndrome
  - c. Neurology: head trauma, acute increased intracranial pressure, cerebral edema, seizures, status epilepticus, stupor and coma, heat injury, weakness, paresis, ataxia, ventriculo-peritoneal shunt malfunction/infection
  - d. Infectious disease: septic shock, meningitis, encephalitis, HIV/AIDS, skin abscess, otitis media, otitis externa, pharyngitis, cervical adenitis, peritonsillar/retropharyngeal abscess, facial/orbital cellulitis, cellulitis, bacteremia, wound/bite infection, acute illness in immunosuppressed host
  - e. Endocrinology: diabetic ketoacidosis, hypoglycemia, hyperosmolar coma, hypocalcemia, hyponatremia, hypernatremia, diabetes insipidus, SIADH, acute illness in child with endocrine/metabolic disease, thyroid storm, acute adrenal insufficiency, congenital adrenal hyperplasia, infant presenting with inborn error of metabolism
  - f. Hematology/Oncology: acute illness in the oncology patient, fever and neutropenia, hemophilia with acute trauma, sickle pain crisis, sequestration, or acute chest syndrome, sickle cell disease with fever, anemia, thrombocytopenia and thrombotic and embolic disease
  - g. Gastroenterology: peptic ulcer disease, GI bleeding, abdominal pain, appendicitis, gastroenteritis, hepatitis, biliary tract disease, pancreatitis, gastroesophageal reflux, dehydration, small bowel obstruction, inflammatory bowel disease
  - h. Surgery: abdominal trauma (blunt/penetrating), acute abdomen, incarcerated hernia, pyloric stenosis, malrotation, massive GI bleeding, burns, foreign bodies, wound care, head or neck trauma, chest trauma, spine trauma, vascular injury, ruptured aortic aneurysm
  - i. Nephrology: hematuria, proteinuria, acute renal failure, end-stage renal disease, nephritic/nephrotic syndrome, glomerulonephritis, hemolytic uremic syndrome, urinary tract infection, edema, electrolyte disorders, acute illness or fever in a dialysis patient, acute illness or fever in a kidney transplant patient
  - j. Urology: balanitis, epididymitis, orchitis, testicular torsion, obstructive uropathy, renal colic
  - k. Allergy: anaphylaxis, angioedema, food allergy, drug allergy
  - l. Obstetrics/Gynecology: vaginal bleeding, vaginal discharge, pelvic inflammatory disease, sexual assault, pelvic pain, ectopic pregnancy, precipitous delivery
  - m. Toxicology and Environmental Exposure: poisoning, drug intoxication (unknown and common: acetaminophen, iron, aspirin, alcohols, cough and cold)

- medications, amphetamines, cocaine), bites and stings, drowning, near-drowning, electrical injuries, heat and cold injuries
- n. Psychiatry: acute psychosis, suicide attempt, acute agitation, aggressive behavior, anxiety
  - o. Orthopedic Surgery: bone and joint infections, overuse injuries, ligament injury, splinting, casting, proper x-rays, sprains, fractures, dislocations
  - p. Ophthalmology: corneal abrasions, eye pain, foreign bodies, acute visual loss, hyphema, globe injury, ocular trauma
  - q. Dermatology: acute drug reactions, contact dermatitis, bacterial, fungal and viral infections of the skin and hair, scabies, lice, cutaneous manifestations of systemic disease, Stevens-Johnson syndrome
  - r. Otolaryngology: epistaxis, foreign body aspiration, epiglottitis, croup, tracheitis, post-operative complications of tonsillectomy and adenoidectomy,
  - s. Social: child abuse or neglect, sexual abuse or assault
2. Explain triage principles in the management of victims or major multi-system trauma, including the rationale for and application of scoring systems.
  3. List important principles necessary for resuscitation of critically ill medical, surgical and trauma patients:
    - a. Management of an obstructed airway
    - b. Risks of delayed airway management with respiratory insufficiency
    - c. Rapid sequence induction, including indications and contraindications
    - d. Indications and principles of assisted ventilation
    - e. Options for vascular access
    - f. Cervical spine immobilization including appropriate alignment of the cervical spine
    - g. Blood product use in the management of shock
    - h. Appropriate fluids and rates for patients in shock
    - i. Indications for immediate thoracotomy
    - j. Indications and contraindications for bladder catheterization
    - k. Indications and contraindications for gastric intubation
  4. List the elements of the primary survey including:
    - a. Major causes of airway obstruction in multi-system trauma
    - b. Risk of cervical spine injury associated with multi-system trauma
    - c. Causes of early acute cardiopulmonary collapse following multi-system trauma
    - d. Distinguish causes of shock based on clinical findings
    - e. Methods of rapid assessment of central nervous system
  5. List the elements of the secondary survey of trauma patients:
    - a. Head (including face, eyes, ear and nose)
    - b. Neck
    - c. Back
    - d. Chest
    - e. Abdomen
    - f. Pelvis and extremities
    - g. Nervous system
  6. Describe the pathophysiology, discuss initial stabilization and ongoing management of the following common traumatic conditions:
    - a. Pulmonary contusion
    - b. Pneumothorax/Hemothorax
    - c. Flail Chest
    - d. Cardiac contusion
    - e. Hemopericardium

- f. Neurologic: head trauma, acute increased intracranial pressure, spinal trauma
  - g. Fractures: pelvic and long bone
  - h. Abdominal trauma: blunt and penetrating (stab wounds versus gunshot wounds)
  - i. Neck wounds
7. Explain the pharmacology of medications used in resuscitation.

#### Practice-based Learning and Improvement

1. Effectively search the medical literature, analyze the literature and determine its relevance for specific patients.
2. Effectively use online medical resources.
3. Facilitate professional learning with peers.
4. Review challenging cases to identify better patient care management strategies.

#### Interpersonal Skills and Communication

1. Demonstrate active listening skills including appropriate non-verbal behavior.
2. Effectively communicate with patients and families during critical illness.
3. Demonstrate respect for individual patient concerns and perceptions.
4. Effectively communicate and collaborate with the health care team including physicians, nurses, physical therapists, technicians, paramedics and other health care providers and specialists.
5. Accurately record findings and assessments in the medical record in a timely and legible manner.
6. Communicate with primary care provider for follow-up care.

#### Professionalism

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.
2. Respect patient self-autonomy and the right of the patient and family to be involved in care decisions.
3. Place the needs of the patients above personal concerns.
4. Develop an ethically sound relationship with patients and families.
5. Demonstrate respect for other health care professionals.
6. Demonstrate sensitivity and compassion to a variety of patient populations.
7. Apply sensitivity when evaluating cultural influences on patient and family behavior.
8. Demonstrate respect diversity of opinion, age, gender and ethnicity.
9. Develop awareness of ethical and medical-legal principles (emergency consent, AMA, EMTALA, organ donation, DNR, etc.).
10. Recognize the psychosocial needs of patients with traumatic injuries and their families.
11. Responds to pages and messages promptly.
12. Be punctual and respectful of others' time.
13. Demonstrate awareness of personal limitations and ask for help as appropriate.
14. Effectively instruct and mentor medical students.

#### Systems-based Practice

1. Practice cost-effective health care and resource allocation.
2. Advocate for quality patient care and assist patients in dealing with system complexities.
3. Describe principles of the team approach to the management of a child with major multi-system trauma.
4. Collaborate with other health care providers to facilitate orderly and effective transitions from one care environment to another such as critical care units, operating rooms, floor-

based nursing settings, rehabilitation settings, chronic care facilities, and home care settings.

5. Seek and address potential risk factors for the visit (intimate partner violence, knowledge limitations, etc.).
6. Demonstrate appropriate referral and consultation practices.
7. Coordinate recommendations from consultants.
8. Communicate effectively with members of other Departments (e.g. radiology, laboratory, respiratory therapy, etc.) to facilitate efficiency in obtaining tests and procedures.
9. Explain the role of Emergency Medical Services in the care of the acutely injured and acutely-ill patients.
10. Recognize system errors and recommend quality improvement.
11. Demonstrate advocacy for patients within the health care system.

### **Second Year Objectives:**

After completing this rotation, the fellow will demonstrate the ability to:

#### Patient Care

1. *Rapidly* perform an appropriate *problem-oriented* history and physical exam.
2. *Rapidly* assess patients with urgent conditions:
  - a. Recognize respiratory failure.
  - b. Manage the airway, including knowledge about and use of appropriate equipment and drugs.
  - c. Manage the acute airway in a child with a tracheostomy tube.
  - d. Recognize shock.
  - e. Formulate a diagnosis quickly, with particular attention to diagnoses that require immediate airway intervention (e.g. depressed mental status, foreign body obstruction).
  - f. Describe indications for admission to a critical care unit.
  - g. Outline plan for stabilization, including relevant physiology, tests and therapies.
3. Generate differential diagnoses, *order appropriate diagnostic studies and formulate treatment plans* for common PEM problems.
  - a. General: septic or ill appearance, unexplained crying, fever, hypothermia, Acute Life Threatening Event, sudden death, weight loss, psychological disturbance, dehydration, alleged or suspected child abuse or neglect
  - b. Allergy: acute allergic reactions
  - c. Respiratory: respiratory effort (increased or decreased), poor air movement, tachypnea, dyspnea, apnea, stridor, wheezing, crackles
  - d. Cardiology: arrhythmia, bradycardia, tachycardia, cardiopulmonary arrest, hypertension, hypotension, quality of pulses, skin perfusion, chest pain
  - e. Neurology: altered mental status, coma, encephalopathy, dizziness, weakness, parasthesias, status epilepticus, neck stiffness
  - f. Gastroenterology: abdominal distention, peritoneal signs, acute hemorrhage, vomiting, diarrhea, constipation, foreign body ingestion, jaundice, difficulty swallowing
  - g. Hematology/Oncology: bleeding, bruising, purpura, petechiae, neutropenia, anemia, thrombocytopenia, lymphadenopathy, hepatosplenomegaly, acute illness or fever in a neutropenic child with cancer
  - h. Nephrology: hematuria, oliguria, anuria, polyuria, edema, dysuria, hypertension
  - i. Urology: groin or scrotal mass or pain
  - j. Dermatology: skin rash, hair loss

- k. Ophthalmology: red eye, abnormal pupils or eye movements, eye pain, visual disturbance
  - l. Otolaryngology: dizziness, nosebleed, sore throat, painful swallowing, earache, ear discharge, new hearing loss
  - m. Endocrinology: polydipsia, polyuria, known diabetic with acute symptoms, thyroid enlargement
  - n. Gynecology: vaginal discharge, vaginal bleeding, amenorrhea, breast masses
  - o. Musculoskeletal: extremity pain, limp, arthralgia, joint swelling, back pain, neck pain
  - p. Psychiatry: depression, suicidal or homicidal ideation, anxiety, aggressiveness
  - q. Trauma: lacerations, burns, fractures
4. *Apply* principles of the team approach to the management of a child and *demonstrate leadership skills* with multi-system trauma.
  5. Explain the indications for and interpretation of and *their relevance to the patient's disease process as well as recognize cost* for the following diagnostic tests:
    - a. Arterial/Venous Blood Gas
    - b. Coagulation studies (PT, PTT, fibrinogen, FSP, D-dimers)
    - c. Complete Blood Count
    - d. Blood chemistries including renal function tests
    - e. Serologic Tests for Infection (hepatitis, mononucleosis)
    - f. Bacterial, viral and fungal cultures including rapid screening tests
    - g. Urinalysis
    - h. Pregnancy Testing
    - i. Cerebrospinal Fluid Analysis including studies for viruses and fungi
    - j. Drug Levels and Toxicological Studies
    - k. Chest Radiographs
    - l. Abdominal/Pelvic Radiographs
    - m. Cervical Spine Films
    - n. Head CT
    - o. Chest/Abdominal CT
    - p. MRI
    - q. EKG
    - r. Echocardiography
  6. Describe the indications and appropriate techniques *and risks*, and perform the following procedures *under direct supervision by attending*:
    - a. Airway Management
      - i. Endotracheal Intubation
      - ii. Cricothyrotomy
      - iii. Bag-Valve-Mask-Ventilation
      - iv. Rapid Sequence Induction
      - v. Tracheostomy Tube Replacement
    - b. Cardio-Pulmonary
      - i. Thoracentesis
      - ii. Thoracostomy Tube Placement
      - iii. Cardioversion/Defibrillation
      - iv. Conversion of SVT
      - v. Intraosseous Access and Fluid Administration
      - vi. Pericardiocentesis
      - vii. Central Venous Catherization
      - viii. UVC Line Placement
      - ix. Cardiac Pacing – External

- x. Arterial Line Placement
  - c. Abdominal
    - i. Gastric Lavage
    - ii. Gastrostomy Tube Replacement
  - d. Special Procedures
    - i. Lumbar Puncture
    - ii. Laceration Repair
    - iii. Foreign Body Removal
    - iv. Procedural Sedation
    - v. Incision and Drainage of Abscesses
    - vi. Nasal Packing
    - vii. Regional Nerve Blocks
    - viii. Slit Lamp Examination
    - ix. Intracranial Pressure Monitor
  - e. Orthopedic
    - i. Closed Reduction and Splinting
    - ii. Arthrocentesis
    - iii. Dislocation Reduction
- 7. *Demonstrate knowledge* of the indications for admission to the hospital ward, critical care unit, neonatal intensive care unit or transfer to another facility.
- 8. *Appropriately prioritize* the care of multiple patients.
- 9. *Adjust pace appropriately* to ED patient acuity, volume and flow.
- 10. Function appropriately in resuscitations as *an autonomous team member* and *begin to demonstrate team leadership skills*.

#### Medical Knowledge

1. Describe the pathophysiology, *explain possible disease and treatment complications and outline an evidence-based approach to the management* for the following conditions which are encountered in the Pediatric ED:
  - a. Pulmonary: acute pulmonary edema, acute upper airway obstruction (foreign body, allergic, infectious), status asthmaticus, pneumothorax, smoke inhalation, pneumonia, bronchiolitis, acute respiratory distress syndrome, drowning and near drowning, acute illness in a child with cystic fibrosis or bronchopulmonary dysplasia, SIDS
  - b. Cardiovascular: shock, acute blood loss, hypertensive crisis, acute myocardial infarction, cardiopulmonary arrest, cardiac arrhythmias (asystole, bradycardia, SVT, ventricular fibrillation, tachycardia, electromechanical dissociation), congestive heart failure, hypertension, aortic dissection, pericardial effusion, pericarditis, cardiac tamponade, shock (hypovolemic, cardiogenic, spinal, septic), acute illness in a patient with congenital heart disease, endocarditis, myocarditis, rheumatic fever, Kawasaki syndrome
  - c. Neurology: head trauma, acute increased intracranial pressure, cerebral edema, seizures, status epilepticus, stupor and coma, heat injury, weakness, paresis, ataxia, ventriculo-peritoneal shunt malfunction/infection
  - d. Infectious disease: septic shock, meningitis, encephalitis, HIV/AIDS, skin abscess, otitis media, otitis externa, pharyngitis, cervical adenitis, peritonsillar/retropharyngeal abscess, facial/orbital cellulitis, cellulitis, bacteremia, wound/bite infection, acute illness in immunosuppressed host
  - e. Endocrinology: diabetic ketoacidosis, hypoglycemia, hyperosmolar coma, hypocalcemia, hyponatremia, hypernatremia, diabetes insipidus, SIADH, acute illness in child with endocrine/metabolic disease, thyroid storm, acute adrenal

- insufficiency, congenital adrenal hyperplasia, infant presenting with inborn error of metabolism
- f. Hematology/Oncology: acute illness in the oncology patient, fever and neutropenia, hemophilia with acute trauma, sickle pain crisis, sequestration, or acute chest syndrome, sickle cell disease with fever, anemia, thrombocytopenia and thrombotic and embolic disease
  - g. Gastroenterology: peptic ulcer disease, GI bleeding, abdominal pain, appendicitis, gastroenteritis, hepatitis, biliary tract disease, pancreatitis, gastroesophageal reflux, dehydration, small bowel obstruction, inflammatory bowel disease
  - h. Surgery: abdominal trauma (blunt/penetrating), acute abdomen, incarcerated hernia, pyloric stenosis, malrotation, massive GI bleeding, burns, foreign bodies, wound care, head or neck trauma, chest trauma, spine trauma, vascular injury, ruptured aortic aneurysm
  - i. Nephrology: hematuria, proteinuria, acute renal failure, end-stage renal disease, nephritic/nephrotic syndrome, glomerulonephritis, hemolytic uremic syndrome, urinary tract infection, edema, electrolyte disorders, acute illness or fever in a dialysis patient, acute illness or fever in a kidney transplant patient
  - j. Urology: balanitis, epididymitis, orchitis, testicular torsion, obstructive uropathy, renal colic
  - k. Allergy: anaphylaxis, angioedema, food allergy, drug allergy
  - l. Obstetrics/Gynecology: vaginal bleeding, vaginal discharge, pelvic inflammatory disease, sexual assault, pelvic pain, ectopic pregnancy, precipitous delivery
  - m. Toxicology and Environmental Exposure: poisoning, drug intoxication (unknown and common: acetaminophen, iron, aspirin, alcohols, cough and cold medications, amphetamines, cocaine), bites and stings, drowning, near-drowning, electrical injuries, heat and cold injuries
  - n. Psychiatry: acute psychosis, suicide attempt, acute agitation, aggressive behavior, anxiety
  - o. Orthopedics: bone and joint infections, overuse injuries, ligament injury, splinting, casting, proper x-rays, sprains, fractures, dislocations
  - p. Ophthalmology: corneal abrasions, eye pain, foreign bodies, acute visual loss, hyphema, globe injury, ocular trauma
  - q. Dermatology: acute drug reactions, contact dermatitis, bacterial, fungal and viral infections of the skin and hair, scabies, lice, cutaneous manifestations of systemic disease, Stevens-Johnson syndrome
  - r. Otolaryngology: epistaxis, foreign body aspiration, epiglottitis, croup, tracheitis, post-operative complications of tonsillectomy and adenoidectomy
  - s. Social: child abuse or neglect, sexual abuse or assault
2. *Apply and demonstrate the use of triage principles in the management of victims or major multi-system trauma, including the rationale for and application of scoring systems.*
  3. *Explain the rationale and demonstrate the necessary skills for resuscitation of critically ill medical, surgical and trauma patients:*
    - a. Management of an obstructed airway
    - b. Risks of delayed airway management with respiratory insufficiency
    - c. Rapid sequence induction, including indications and contraindications
    - d. Indications and principles of assisted ventilation
    - e. Options for vascular access
    - f. Cervical spine immobilization including appropriate alignment of the cervical spine

- g. Blood product use in the management of shock
  - h. Appropriate fluids and rates for patients in shock
  - i. Indications for immediate thoracotomy
  - j. Indications and contraindications for bladder catheterization
  - k. Indications and contraindications for gastric intubation
4. *Demonstrate and perform* the elements of the primary survey including:
    - a. Major causes of airway obstruction in multi-system trauma
    - b. Risk of cervical spine injury associated with multi-system trauma
    - c. Causes of early acute cardiopulmonary collapse following multi-system trauma
    - d. Distinguish causes of shock based on clinical findings
    - e. Methods of rapid assessment of central nervous system
  5. *Demonstrate and perform* the elements of the secondary survey of trauma patients:
    - a. Head (including face, eyes, ear and nose)
    - b. Neck
    - c. Back
    - d. Chest
    - e. Abdomen
    - f. Pelvis and extremities
    - g. Nervous system
  6. Describe the pathophysiology, discuss initial stabilization and ongoing management *and explain possible disease and treatment complications* of the following common traumatic conditions:
    - a. Pulmonary contusion
    - b. Pneumothorax/Hemothorax
    - c. Flail Chest
    - d. Cardiac contusion
    - e. Hemopericardium
    - f. Neurologic: head trauma, acute increased intracranial pressure, spinal trauma
    - g. Fractures: pelvic and long bone
    - h. Abdominal trauma: blunt and penetrating (stab wounds versus gunshot wounds)
    - i. Neck wounds
  7. *Demonstrate and apply knowledge regarding the pharmacology of medications used in resuscitation by choosing medications appropriately.*

#### Practice-based Learning and Improvement

1. Effectively search the medical literature, analyze the literature and determine its relevance for specific patients.
2. Effectively use online medical resources.
3. Facilitate professional learning with peers.
4. Review challenging cases to identify better patient care management strategies.

#### Interpersonal Skills and Communication

1. Demonstrate active listening skills including appropriate non-verbal behavior.
2. Effectively communicate with patients and families during critical illness.
3. Demonstrate respect for individual patient concerns and perceptions.
4. Effectively communicate and collaborate with the health care team including physicians, nurses, physical therapists, technicians, paramedics and other health care providers and specialists.
5. Accurately record findings and assessments in the medical record in a timely and legible manner.

6. Communicate with primary care provider for follow-up care.

### Professionalism

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.
2. Respect patient self-autonomy and the right of the patient and family to be involved in care decisions.
3. Place the needs of the patients above personal concerns.
4. Develop an ethically sound relationship with patients and families.
5. Demonstrate respect for other health care professionals.
6. Demonstrate sensitivity and compassion to a variety of patient populations.
7. Apply sensitivity when evaluating cultural influences on patient and family behavior.
8. Demonstrate respect diversity of opinion, age, gender and ethnicity.
9. *Demonstrate* ethical and medical-legal principles (emergency consent, AMA, EMTALA, organ donation, DNR, etc.).
10. Recognize the psychosocial needs of patients with traumatic injuries and their families.
11. Responds to pages and messages promptly.
12. Be punctual and respectful of others' time.
13. Demonstrate awareness of personal limitations and ask for help as appropriate.
14. Effectively instruct, mentor and *begin to supervise* medical students and residents.

### Systems-based Practice

1. Practice cost-effective health care and resource allocation.
2. Advocate for quality patient care and assist patients in dealing with system complexities.
3. Describe principles of the team approach to the management of a child with major multi-system trauma.
4. Collaborate with other health care providers to facilitate orderly and effective transitions from one care environment to another such as critical care units, operating rooms, floor-based nursing settings, rehabilitation settings, chronic care facilities, and home care settings.
5. Seek and address potential risk factors for the visit (intimate partner violence, knowledge limitations, etc.).
6. Demonstrate appropriate referral and consultation practices.
7. Coordinate recommendations from consultants.
8. Communicate effectively with members of other Departments (e.g. radiology, laboratory, respiratory therapy, etc.) to facilitate efficiency in obtaining tests and procedures.
9. Explain the role of Emergency Medical Services in the care of the acutely injured and acutely-ill patients.
10. Recognize system errors and recommend quality improvement.
11. Demonstrate advocacy for patients within the health care system.

### **Third Year Objectives:**

After completing this rotation, the fellow will demonstrate the ability to:

### Patient Care

1. *Instruct and critique residents and medical students on their performance of a history and physical exam.*
2. *Instruct and critique the assessment of patients with urgent conditions by residents and medical students.*
  - a. Recognize respiratory failure.

- b. Manage the acute airway, including knowledge about and use of appropriate equipment and drugs.
  - c. Manage the airway in a child with a tracheostomy tube.
  - d. Recognize shock.
  - e. Formulate a diagnosis quickly, with particular attention to diagnoses that require immediate airway intervention (e.g. depressed mental status, foreign body obstruction).
  - f. Describe indications for admission to a critical care unit.
  - g. Outline plan for stabilization, including relevant physiology, tests and therapies.
3. *Instruct and critique residents and medical students as they generate differential diagnoses, order diagnostic studies and formulate treatment plans for common PEM problems.*
- a. General: septic or ill appearance, unexplained crying, fever, hypothermia, Acute Life Threatening Event, sudden death, weight loss, psychological disturbance, dehydration, alleged or suspected child abuse or neglect
  - b. Allergy: acute allergic reactions
  - c. Respiratory: respiratory effort (increased or decreased), poor air movement, tachypnea, dyspnea, apnea, stridor, wheezing, crackles
  - d. Cardiology: arrhythmia, bradycardia, tachycardia, cardiopulmonary arrest, hypertension, hypotension, quality of pulses, skin perfusion, chest pain
  - e. Neurology: altered mental status, coma, encephalopathy, dizziness, weakness, paresthesias, status epilepticus, neck stiffness
  - f. Gastroenterology: abdominal distention, peritoneal signs, acute hemorrhage, vomiting, diarrhea, constipation, foreign body ingestion, jaundice, difficulty swallowing
  - g. Hematology/Oncology: bleeding, bruising, purpura, petechiae, neutropenia, anemia, thrombocytopenia, lymphadenopathy, hepatosplenomegaly, acute illness or fever in a neutropenic child with cancer
  - h. Nephrology: hematuria, oliguria, anuria, polyuria, edema, dysuria, hypertension
  - i. Urology: groin or scrotal mass or pain
  - j. Dermatology: skin rash, hair loss
  - k. Ophthalmology: red eye, abnormal pupils or eye movements, eye pain, visual disturbance
  - l. Otolaryngology: dizziness, nosebleed, sore throat, painful swallowing, earache, ear discharge, new hearing loss
  - m. Endocrinology: polydipsia, polyuria, known diabetic with acute symptoms, thyroid enlargement
  - n. Gynecology: vaginal discharge, vaginal bleeding, amenorrhea, breast masses
  - o. Musculoskeletal: extremity pain, limp, arthralgia, joint swelling, back pain, neck pain
  - p. Psychiatry: depression, suicidal or homicidal ideation, anxiety, aggressiveness
  - q. Trauma: lacerations, burns fractures
4. *Demonstrate* the principles of the team approach to the management of a child with multi-system trauma *through leadership during trauma activations.*
5. *Instruct residents and medical students* on the indications for and interpretation of, limitations of and their relevance to the patient's disease process as well as recognize costs for the following diagnostic tests:
- a. Arterial/Venous Blood Gas
  - b. Coagulation studies (PT, PTT, fibrinogen, FSP, D-dimers)
  - c. Complete Blood Count
  - d. Blood Chemistries including renal function tests

- e. Serologic Tests for Infection (hepatitis, mononucleosis)
  - f. Bacterial, Viral and Fungal Cultures including Rapid Screening Tests
  - g. Urinalysis
  - h. Pregnancy Testing
  - i. Cerebrospinal Fluid Analysis including studies for viruses and fungi
  - j. Drug Levels and Toxicological Studies
  - k. Chest Radiographs
  - l. Abdominal/Pelvic Radiographs
  - m. Cervical Spine Films
  - n. Head CT
  - o. Chest/Abdominal CT
  - p. MRI
  - q. EKG
  - r. Echocardiography
6. *Instruct residents and medical students* on the indications and appropriate techniques and risks, limitations and alternatives, and *supervise their performance* of the following procedures *under indirect supervision with attending available*:
- a. Airway Management
    - i. Endotracheal Intubation
    - ii. Cricothyrotomy
    - iii. Bag-Valve-Mask-Ventilation
    - iv. Rapid Sequence Induction
    - v. Tracheostomy Tube Replacement
  - b. Cardio-Pulmonary
    - i. Thoracentesis
    - ii. Thoracostomy Tube Placement
    - vi. Cardioversion/Defibrillation
    - vii. Conversion of SVT
    - viii. Intraosseous Access and Fluid Administration
    - ix. Pericardiocentesis
    - x. Central Venous Catherization
    - xi. UVC Line Placement
    - xii. Cardiac Pacing – External
    - xiii. Arterial Line Placement
  - c. Abdominal
    - i. Gastric Lavage
    - ii. Gastrostomy Tube Replacement
  - d. Special Procedures
    - i. Lumbar Puncture
    - ii. Laceration Repair
    - iii. Foreign Body Removal
    - iv. Procedural Sedation
    - v. Incision and Drainage of Abscesses
    - vi. Nasal Packing
    - vii. Regional Nerve Blocks
    - viii. Slit Lamp Examination
    - ix. Intracranial Pressure Monitor
  - e. Orthopedic
    - i. Closed Reduction and Splinting
    - ii. Arthrocentesis
    - iii. Dislocation Reduction

7. Demonstrate *and instruct residents and medical students* on the indications for admission to the hospital ward, critical care unit, neonatal intensive care unit or transfer to another facility.
8. *Demonstrate the ability to prioritize the care of multiple patients as a supervisor.*
9. *Demonstrate the ability to adjust pace to ED patient acuity, volume and flow.*
10. Function appropriately *and autonomously* in resuscitations *as the team leader.*

### Medical Knowledge

1. *Critique the explanation and description of the pathophysiology, possible disease and treatment complications given by residents and medical students, critique the approach to the management suggested by residents and medical students using an evidence-based approach and explain the rationale for decisions regarding disposition* for the following conditions which are encountered in the Pediatric ED:
  - a. Pulmonary: acute pulmonary edema, acute upper airway obstruction (foreign body, allergic, infectious), status asthmaticus, pneumothorax, smoke inhalation, pneumonia, bronchiolitis, acute respiratory distress syndrome, drowning and near drowning, acute illness in a child with cystic fibrosis or bronchopulmonary dysplasia, SIDS
  - b. Cardiovascular: shock, acute blood loss, hypertensive crisis, acute myocardial infarction, cardiopulmonary arrest, cardiac arrhythmias (asystole, bradycardia, SVT, ventricular fibrillation, tachycardia, electromechanical dissociation), congestive heart failure, hypertension, aortic dissection, pericardial effusion, pericarditis, cardiac tamponade, shock (hypovolemic, cardiogenic, spinal, septic), acute illness in a patient with congenital heart disease, endocarditis, myocarditis, rheumatic fever, Kawasaki syndrome
  - c. Neurology: head trauma, acute increased intracranial pressure, cerebral edema, seizures, status epilepticus, stupor and coma, heat injury, weakness, paresis, ataxia, ventriculo-peritoneal shunt malfunction/infection
  - d. Infectious disease: septic shock, meningitis, encephalitis, HIV/AIDS, skin abscess, otitis media, otitis externa, pharyngitis, cervical adenitis, peritonsillar/retropharyngeal abscess, facial/orbital cellulitis, cellulitis, bacteremia, wound/bite infection, acute illness in immunosuppressed host
  - e. Endocrinology: diabetic ketoacidosis, hypoglycemia, hyperosmolar coma, hypocalcemia, hyponatremia, hypernatremia, diabetes insipidus, SIADH, acute illness in child with endocrine/metabolic disease, thyroid storm, acute adrenal insufficiency, congenital adrenal hyperplasia, infant presenting with inborn error of metabolism
  - f. Hematology/Oncology: acute illness in the oncology patient, fever and neutropenia, hemophilia with acute trauma, sickle pain crisis, sequestration, or acute chest syndrome, sickle cell disease with fever, anemia, thrombocytopenia and thrombotic and embolic disease
  - g. Gastroenterology: peptic ulcer disease, GI bleeding, abdominal pain, appendicitis, gastroenteritis, hepatitis, biliary tract disease, pancreatitis, gastroesophageal reflux, dehydration, small bowel obstruction, inflammatory bowel disease
  - h. Surgery: abdominal trauma (blunt/penetrating), acute abdomen, incarcerated hernia, pyloric stenosis, malrotation, massive GI bleeding, burns, foreign bodies, wound care, head or neck trauma, chest trauma, spine trauma, vascular injury, ruptured aortic aneurysm
  - i. Nephrology: hematuria, proteinuria, acute renal failure, end-stage renal disease, nephritic/nephrotic syndrome, glomerulonephritis, hemolytic uremic syndrome,

- urinary tract infection, edema, electrolyte disorders, acute illness or fever in a dialysis patient, acute illness or fever in a kidney transplant patient
  - j. Urology: balanitis, epididymitis, orchitis, testicular torsion, obstructive uropathy, renal colic
  - k. Allergy: anaphylaxis, angioedema, food allergy, drug allergy
  - l. Obstetrics/Gynecology: vaginal bleeding, vaginal discharge, pelvic inflammatory disease, sexual assault, pelvic pain, ectopic pregnancy, precipitous delivery
  - m. Toxicology and Environmental Exposure: poisoning, drug intoxication (unknown and common: acetaminophen, iron, aspirin, alcohols, cough and cold medications, amphetamines, cocaine), bites and stings, drowning, near-drowning, electrical injuries, heat and cold injuries
  - n. Psychiatry: acute psychosis, suicide attempt, acute agitation, aggressive behavior, anxiety
  - o. Orthopedic Surgery: bone and joint infections, overuse injuries, ligament injury, splinting, casting, proper x-rays, sprains, fractures, dislocations
  - p. Ophthalmology: corneal abrasions, eye pain, foreign bodies, acute visual loss, hyphema, globe injury, ocular trauma
  - q. Dermatology: acute drug reactions, contact dermatitis, bacterial, fungal and viral infections of the skin and hair, scabies, lice, cutaneous manifestations of systemic disease, Stevens-Johnson syndrome
  - r. Otolaryngology: epistaxis, foreign body aspiration, epiglottitis, croup, tracheitis, post-operative complications of tonsillectomy and adenoidectomy
  - s. Social: child abuse or neglect, sexual abuse or assault
2. *Demonstrate and instruct residents and medical students* on triage principles in the management of victims or major multi-system trauma, including the rationale for and application of scoring systems.
  3. *Demonstrate and instruct residents and medical students* on important principles necessary for resuscitation of critically ill medical, surgical and trauma patients:
    - a. Management of an obstructed airway
    - b. Risks of delayed airway management with respiratory insufficiency
    - c. Rapid sequence induction, including indications and contraindications
    - d. Indications and principles of assisted ventilation
    - e. Options for vascular access
    - f. Cervical spine immobilization including appropriate alignment of the cervical spine
    - g. Blood product use in the management of shock
    - h. Appropriate fluids and rates for patients in shock
    - i. Indications for immediate thoracotomy
    - j. Indications and contraindications for bladder catheterization
    - k. Indications and contraindications for gastric intubation
  4. *Demonstrate and instruct* on the elements of the primary survey including:
    - a. Major causes of airway obstruction in multi-system trauma
    - b. Risk of cervical spine injury associated with multi-system trauma
    - c. Causes of early acute cardiopulmonary collapse following multi-system trauma
    - d. Distinguish causes of shock based on clinical findings
    - e. Methods of rapid assessment of central nervous system
  5. *Demonstrate and instruct* on the elements of the secondary survey of trauma patients:
    - a. Head (including face, eyes, ear and nose)
    - b. Neck
    - c. Back
    - d. Chest

- e. Abdomen
  - f. Pelvis and extremities
  - g. Nervous system
6. *Instruct residents and medical students on the pathophysiology, discuss initial stabilization and ongoing management and explain possible disease and treatment complications of the following common traumatic conditions:*
    - a. Pulmonary contusion
    - b. Pneumothorax/Hemothorax
    - c. Flail Chest
    - d. Cardiac contusion
    - e. Hemopericardium
    - f. Neurologic: head trauma, acute increased intracranial pressure, spinal trauma
    - g. Fractures: pelvic and long bone
    - h. Abdominal trauma: blunt and penetrating (stab wounds versus gunshot wounds)
    - i. Neck wounds
  7. *Instruct and critique resident's and medical student's knowledge regarding the pharmacology of medications used in resuscitation by demonstrating appropriate medications choices.*

#### Practice-based Learning and Improvement

1. Effectively search the medical literature, analyze the literature and determine its relevance for specific patients.
2. Effectively use online medical resources.
3. Facilitate professional learning with peers.
4. Review challenging cases to identify better patient care management strategies.

#### Interpersonal Skills and Communication

1. Demonstrate active listening skills including appropriate non-verbal behavior.
2. Effectively communicate with patients and families during critical illness.
3. Demonstrate respect for individual patient concerns and perceptions.
4. Effectively communicate and collaborate with the health care team including physicians, nurses, physical therapists, technicians, paramedics and other health care providers and specialists.
5. Accurately record findings and assessments in the medical record in a timely and legible manner.
6. Communicate with primary care provider for follow-up care.

#### Professionalism

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.
2. Respect patient self-autonomy and the right of the patient and family to be involved in care decisions.
3. Place the needs of the patients above personal concerns.
4. Develop an ethically sound relationship with patients and families.
5. Demonstrate respect for other health care professionals.
6. Demonstrate sensitivity and compassion to a variety of patient populations.
7. Apply sensitivity when evaluating cultural influences on patient and family behavior.
8. Demonstrate respect diversity of opinion, age, gender and ethnicity.
9. *Demonstrate and instruct* the ethical and medical-legal principles (emergency consent, AMA, EMTALA, organ donation, DNR, etc.).
10. Recognize the psychosocial needs of patients with traumatic injuries and their families.

11. Responds to pages and messages promptly.
12. Be punctual and respectful of others' time.
13. Demonstrate awareness of personal limitations and ask for help as appropriate.
14. Effectively instruct, mentor and *supervise* medical students *and residents*.

#### Systems-based Practice

1. Practice cost-effective health care and resource allocation.
2. Advocate for quality patient care and assist patients in dealing with system complexities.
3. Describe principles of the team approach to the management of a child with major multi-system trauma.
4. Collaborate with other health care providers to facilitate orderly and effective transitions from one care environment to another such as critical care units, operating rooms, floor-based nursing settings, rehabilitation settings, chronic care facilities, and home care settings.
5. Seek and address potential risk factors for the visit (intimate partner violence, knowledge limitations, etc.).
6. Demonstrate appropriate referral and consultation practices.
7. Coordinate recommendations from consultants.
8. Communicate effectively with members of other Departments (e.g. radiology, laboratory, respiratory therapy, etc.) to facilitate efficiency in obtaining tests and procedures.
9. Explain the role of Emergency Medical Services in the care of the acutely injured and acutely-ill patients.
10. Recognize system errors and recommend quality improvement.
11. Demonstrate advocacy for patients within the health care system.

## 2. PEM Subspecialty Resident Rotation in Anesthesia

**Goals:** To train the fellow in airway management, intubation skills, vascular access, and techniques of sedation/anesthesia.

### **Objectives:**

After completing this rotation, the fellow will demonstrate the ability to:

#### Patient Care

1. Provide bag and mask ventilation for all ages of pediatric patients.
2. Demonstrate facility in oral and nasal intubation of all ages of pediatric patients.
3. Ventilate and monitor each patient appropriately during their surgical procedure.
4. Place appropriate intravascular lines for both monitoring and access.
5. Monitor patients for cardiorespiratory distress in the pre-operative, inter-operative and post-operative settings, including but not limited to cardiac monitoring, pulse oximetry and capnometry.
6. Recognize the patients with difficult-to-manage airways or respiratory problems in the operating room, and become familiar with alternative management options for these patients (laryngeal mask, flexible bronchoscopic intubations, tube changers).

#### Medical Knowledge

1. Discuss the indications, contraindications, pharmacology and potential complications for the different anesthetic agents including but not limited to:
  - a. Etomidate
  - b. Fentanyl
  - c. Ketamine
  - d. Midazolam
  - e. Pancuronium
  - f. Propofol
  - g. Rocuronium
  - h. Thiopental
  - i. Vecuronium
2. Discuss the indications, contraindications, pharmacology and potential complications for the different regional anesthetic agents including but not limited to:
  - a. Lidocaine
  - b. Bupivacaine
  - c. Ropivacaine
  - d. Topical Lidocaine (EMLA)
3. Explain the indications, describe the anatomic considerations, appropriate techniques, equipment and recognize the complications of emergent cricothyrotomy and replacement of tracheostomy tube.

#### Practice-based Learning and Improvement

1. Effectively search the medical literature, analyze the literature and determine its relevance for specific patients.
2. Effectively use online medical resources.
3. Actively participate in Anesthesia lectures that pertain to PEM.
4. Facilitate professional learning with peers.
5. Review challenging cases to identify better patient care management strategies.

### Interpersonal and Communication Skills

1. Demonstrate active listening skills including appropriate non-verbal behavior.
2. Demonstrate respect for individual patient concerns and perceptions.
3. Effectively communicate and collaborate with the Anesthesia team including physicians, nurses, respiratory therapists, and other health care providers and specialists.

### Professionalism

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.
2. Demonstrate sensitivity and compassion to a variety of patient populations.
3. Demonstrate respect diversity of opinion, age, gender and ethnicity.
4. Recognize the need for pain alleviation and the harm of under treatment in the pediatric patient.
5. Respond to pages and messages promptly.
6. Be punctual and respectful of others' time.

### Systems-based Practice

1. Coordinate and execute pre-operative recommendations from consultants.
2. Discuss the relationship between specialty practices and how they integrate within the larger delivery systems.
3. Collaborate with other health care providers to facilitate orderly and effective transitions from one health care environment to another such as the recovery area and floor-based nursing settings.

### **Policies on Duty Hours, Supervision and Expectations during Anesthesia Rotation**

**Duty Hours:** Fellows are to report every weekday to the Anesthesia Department and assist with cases. During this month the subspecialty residents will do six 8-10 hour shifts in UNMH PED.

**Supervision:** Fellows are directly supervised by Anesthesia attendings. All attending physicians are subspecialty board certified or board eligible in Anesthesia.

**Evaluation:** The Anesthesia faculty are responsible for supplying the program director with a written evaluation of the subspecialty resident's rotation using a global evaluation form and informing the resident and program director of any problems or issues which may arise during the month. Acceptable performance will be dependent on attendance and acceptable performance for level on all six ACGME clinical competency areas.

#### **Expectations:**

1. Assist the anesthesiologist with cases in the OR or in Day Surgery. Fellows are expected to participate in the care of a given patient including IV access, initial airway management and to remain with the case long enough to gain further insights into the anesthesia management of the patient.
2. Attend selected lectures on topics applicable to PEM which occurs between 650 and 7:20.
3. Attendance at PEM Mandatory conferences.

### 3. PEM Subspecialty Resident Rotation in Emergency Medicine and Trauma

#### Experience:

The experience for the PEM subspecialty residents during the emergency medicine and trauma rotation includes the care of trauma/surgical and emergency medical conditions such as: acute cardiac, respiratory, abdominal, neurologic, toxicologic, obstetric/gynecologic, and psychiatric. PEM subspecialty residents evaluate about 15-20 patients per shift under the direct supervision of board certified emergency medicine physicians at UNMH Adult ED. UNMH is a Level One Trauma Center.

#### Goals:

1. Learn the general principles of the diagnosis and management of major trauma.
2. Learn the general principles of the diagnosis and management of minor trauma.
3. Learn the general principles of the diagnosis and management of medical emergencies in adult patients such as: acute myocardial infarction, stroke, congestive heart failure, pulmonary embolism and toxicologic overdose. Exposure to obstetric and gynecologic and psychiatric emergencies is also expected.

#### **Progression of objectives from year to year are *italicized* for reference.**

#### First Year Objectives:

After completing this rotation, the fellow will demonstrate the ability to:

#### Patient Care

1. Perform an appropriate history and physical exam.
2. Assess patients with urgent conditions:
  - a. Recognize respiratory failure.
  - b. Manage the acute airway, including knowledge about and use of appropriate equipment and drugs.
  - c. Manage the airway in a child with a tracheostomy tube.
  - d. Formulate a diagnosis quickly, with particular attention to diagnoses that require immediate airway intervention (e.g. depressed mental status, foreign body obstruction).
  - e. Describe indications for admission to a critical care unit.
  - f. Outline plan for stabilization, including relevant physiology, tests and therapies.
3. Generate differential diagnoses, order appropriate diagnostic studies and formulate treatment plans for common emergency medicine problems.
4. Describe principles of the team approach to the management of an adult or child with multi-system trauma.
5. Explain the indications for and interpretation of the following diagnostic tests:
  - a. Arterial/Venous Blood Gas
  - b. Coagulation studies (PT, PTT, fibrinogen, FSP, D-dimers)
  - c. Complete Blood Count
  - d. Cerebrospinal Fluid Analysis including studies for viruses and fungi
  - e. Drug Levels and Toxicological Studies
  - f. Chest Radiographs
  - g. Abdominal/Pelvic Radiographs
  - h. Cervical Spine Films

- i. FAST (Focused Assessment by Sonography in Trauma)
  - j. EKG
  - k. Head CT
  - l. Chest/Abdominal CT
  - m. MRI
6. Describe the indications and appropriate techniques, and perform the following procedures under direct supervision by attending *with presence in room (independent competence not expected for all procedures)*:
- a. Airway Management
    - i. Endotracheal Intubation
    - ii. Cricothyrotomy
    - iii. Bag-Valve-Mask-Ventilation
    - iv. Rapid Sequence Induction
    - v. Tracheostomy Tube Replacement
  - b. Cardio-Pulmonary
    - i. Thoracostomy Tube Placement
    - ii. Cardioversion/Defibrillation
    - iii. Conversion of SVT
    - iv. Intraosseous Access and Fluid Administration
    - v. Pericardiocentesis
    - vi. Central Venous Catheterization (including U/S guided techniques)
    - vii. Cardiac Pacing – External
    - viii. Venous Cutdown
    - ix. Arterial Line Placement
  - c. Abdominal
    - i. Peritoneal Lavage
    - ii. Gastric Lavage
  - d. Special Procedures
    - i. Lumbar Puncture
    - ii. Laceration Repair
    - iii. Vaginal Delivery
    - iv. Foreign Body Removal
    - v. Procedural Sedation
    - vi. Incision and Drainage of Abscesses
    - vii. Nasal Packing
    - viii. Peritonsillar Abscess Drainage
    - ix. Regional Nerve Blocks (including U/S guided techniques such as brachial plexus blocks)
    - x. Dental Blocks
    - xi. Slit Lamp Examination
    - xii. Intracranial Pressure Monitor
    - xiii. Paracentesis
  - e. Orthopedic
    - i. Closed Reduction and Splinting
    - ii. Arthrocentesis
    - iii. Dislocation Reduction
7. List important principles in prioritizing the care of multiple patients.
8. Identify different methods to adjust pace to ED patient acuity, volume and flow.
9. Function appropriately in resuscitations as a directed team member.

### Medical Knowledge

1. Describe the pathophysiology for the following conditions which are encountered in the ED:
  - a. Pulmonary: acute pulmonary edema, acute upper airway obstruction (foreign body, allergic, infectious), status asthmaticus, pneumothorax, smoke inhalation, pulmonary embolus, pneumonia, acute respiratory distress syndrome, drowning and near drowning
  - b. Cardiovascular: shock, acute blood loss, hypertensive crisis, acute myocardial infarction, cardiopulmonary arrest, cardiac arrhythmias, congestive heart failure, hypertension, aortic dissection, pericardial effusion, cardiac tamponade
  - c. Neurology: head trauma, acute increased intracranial pressure, cerebral edema, status epilepticus, stupor and coma, heat injury
  - d. Infectious disease: septic shock, meningitis, encephalitis, HIV/AIDS, cellulitis, abscess
  - e. Endocrinology: diabetic ketoacidosis, hypoglycemia, hyperosmolar coma
  - f. Hematology/Oncology: acute illness in the oncology patient, fever and neutropenia, hemophilia with acute trauma, sick cell pain crisis, sequestration, or acute chest syndrome, sickle cell disease with fever, anemia, thrombocytopenia and thrombotic and embolic disease
  - l. Gastroenterology: peptic ulcer disease, GI bleeding, abdominal pain, appendicitis, small bowel obstruction, inflammatory bowel disease, end-stage liver disease
  - m. Surgery: necrotizing fasciitis, abdominal trauma (blunt/penetrating), acute abdomen, massive GI bleeding, burns, foreign bodies, wound care, ruptured aortic aneurysm
  - n. Nephrology: hematuria, proteinuria, acute renal failure, end-stage renal disease, urinary tract infection, edema, electrolyte disorders, acute illness or fever in a dialysis patient, acute illness or fever in a kidney transplant patient
  - o. Urology: epididymitis, orchitis, testicular torsion, renal colic, obstructive uropathy
  - p. Allergy: anaphylaxis, angioedema
  - q. Obstetrics/Gynecology: pelvic inflammatory disease, sexual assault, pelvic pain, ectopic pregnancy, precipitous delivery
  - r. Toxicology and Environmental Exposure: poisoning, drug intoxication (unknown and common: acetaminophen, iron, aspirin, alcohols, cough and cold medications, amphetamines, cocaine), bites and stings, drowning, near-drowning, electrical injuries, heat and cold injuries
  - s. Psychiatry: acute psychosis, suicide attempt, acute agitation
  - t. Orthopedic Surgery: splinting, casting, proper x-rays, sprains, fractures, dislocations
  - u. Ophthalmology: corneal abrasions, eye pain, foreign bodies, acute visual loss, ocular trauma
2. Explain triage principles in the management of victims or major multi-system trauma, including the rationale for and application of scoring systems.
3. List important principles necessary for resuscitation of critically ill medical, surgical and trauma patients:
  - a. Management of an obstructed airway
  - b. Risks of delayed airway management with respiratory insufficiency
  - c. Rapid sequence induction, including indications and contraindications
  - d. Indications and principles of assisted ventilation
  - e. Options for vascular access
  - f. Cervical spine immobilization including appropriate alignment of the cervical spine

- g. Blood product use in the management of shock
  - h. Appropriate fluids and rates for patients in shock
  - i. Indications for immediate thoracotomy
  - j. Indications and contraindications for bladder catheterization
  - k. Indications and contraindications for gastric intubation
4. List the elements of the primary survey including:
    - a. Major causes of airway obstruction in multi-system trauma
    - b. Risk of cervical spine injury associated with multi-system trauma
    - c. Causes of early acute cardiopulmonary collapse following multi-system trauma
    - d. Distinguish causes of shock based on clinical findings
    - e. Methods of rapid assessment of central nervous system
  5. List the elements of the secondary survey of trauma patients:
    - a. Head (including face, eyes, ear and nose)
    - b. Neck
    - c. Back
    - d. Chest
    - e. Abdomen
    - f. Pelvis and extremities
    - g. Nervous system
  6. Describe the pathophysiology of the following common traumatic conditions:
    - a. Pulmonary Contusion
    - b. Pneumothorax/Hemothorax
    - c. Flail Chest
    - d. Cardiac Contusion
    - e. Hemopericardium
    - f. Neurologic: head trauma, acute increased intracranial pressure, spinal trauma
    - g. Fractures: pelvic and long bone
    - h. Abdominal Trauma: blunt and penetrating (stab wounds versus gunshot wounds)
    - i. Neck Wounds

#### Practice-based Learning and Improvement

1. Effectively search the medical literature, analyze the literature and determine its relevance for specific patients.
2. Effectively use online medical resources.
3. Facilitate professional learning with peers.
4. Review challenging cases to identify better patient care management strategies.

#### Interpersonal Skills and Communication

1. Demonstrate active listening skills including appropriate non-verbal behavior.
2. Effectively communicate with patients and families during critical illness.
3. Demonstrate respect for individual patient concerns and perceptions.
4. Effectively communicate and collaborate with the health care team including physicians, nurses, physical therapists, technicians, paramedics and other health care providers and specialists.
5. Accurately record findings and assessments in the medical record in a timely and legible manner.
6. Communicate with primary care provider for follow-up care.

#### Professionalism

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.
2. Respect patient self-autonomy and the right of the patient and family to be involved in care decisions.
3. Place the needs of the patients above personal concerns.
4. Develop an ethically sound relationship with patients and families.
5. Demonstrate respect for other health care professionals.
6. Demonstrate sensitivity and compassion to a variety of patient populations.
7. Apply sensitivity when evaluating cultural influences on patient and family behavior.
8. Demonstrate respect diversity of opinion, age, gender and ethnicity .
9. Develop awareness of ethical and medical-legal principles (emergency consent, AMA, EMTALA, organ donation, DNR, etc.).
10. Recognize the psychosocial needs of patients with traumatic injuries and their families.
11. Responds to pages and messages promptly.
12. Be punctual and respectful of others' time.
13. Demonstrate awareness of personal limitations and ask for help as appropriate.
14. Effectively instruct and mentor medical students.

#### Systems-based Practice

1. Practice cost-effective health care and resource allocation.
2. Advocate for quality patient care and assist patients in dealing with system complexities.
3. Describe principles of the team approach to the management of an adult or child with major multi-system trauma.
4. Collaborate with other health care providers to facilitate orderly and effective transitions from one care environment to another such as critical care units, operating rooms, floor-based nursing settings, rehabilitation settings, chronic care facilities, and home care settings.
5. Seek and address potential risk factors for the visit (intimate partner violence, knowledge limitations, etc.).
6. Demonstrate appropriate referral and consultation practices.
7. Explain the role of Emergency Medical Services in the care of the acutely injured and acutely-ill patients.
8. Recognize system errors and recommend quality improvement.
9. Demonstrate advocacy for patients within the health care system.

#### **Second Year Objectives:**

After completing this rotation, the fellow will demonstrate the ability to:

#### Patient Care

1. Perform an appropriate *problem-oriented* history and physical exam.
2. *Rapidly* assess patients with urgent conditions:
  - a. Recognize respiratory failure.
  - b. Manage the acute airway, including knowledge about and use of appropriate equipment and drugs.
  - c. Manage the airway in a child with a tracheostomy tube.
  - d. Formulate a diagnosis quickly, with particular attention to diagnoses that require immediate airway intervention (e.g. depressed mental status, foreign body obstruction).
  - e. Describe indications for admission to a critical care unit.
  - f. Outline plan for stabilization, including relevant physiology, tests and therapies.

3. Generate differential diagnoses, order appropriate diagnostic studies and formulate treatment plans for common emergency medicine problems.
4. *Apply* principles of the team approach to the management of an adult or child with multi-system trauma.
5. Explain the indications for, interpretation of and *their relevance to the patient's disease process* for the following diagnostic tests:
  - a. Arterial/Venous Blood Gas
  - b. Coagulation studies (PT, PTT, fibrinogen, FSP, D-dimers)
  - c. Complete Blood Count
  - d. Cerebrospinal Fluid Analysis including studies for viruses and fungi
  - e. Drug Levels and Toxicological Studies
  - f. Chest Radiographs
  - g. Abdominal/Pelvic Radiographs
  - h. FAST (Focused Assessment by Sonography in trauma)
  - i. EKG
  - j. Cervical Spine Films
  - k. Head CT
  - l. Chest/Abdominal CT
  - m. MRI
6. Describe the indications, appropriate techniques *and risks*, and perform the following procedures under direct supervision by attending *with presence in room (independent competence not expected for all procedures)* :
  - a. Airway Management
    - i. Cricothyrotomy
    - ii. Tracheostomy Tube Replacement
  - b. Cardio-Pulmonary
    - i. Cardioversion/Defibrillation
    - ii. Pericardiocentesis
    - iii. Cardiac Pacing – External
    - iv. Venous Cutdown
  - c. Abdominal
    - i. Peritoneal Lavage
  - d. Special Procedures
    - i. Vaginal Delivery
    - ii. Peritonsillar Abscess Drainage
    - iii. Regional Nerve Blocks (including U/S guided techniques such as brachial plexus blocks)
    - iv. Dental Blocks
    - v. Intracranial Pressure Monitor
    - vi. Paracentesis
  - e. Orthopedic
    - i. Arthrocentesis
    - ii. Dislocation Reduction
7. Describe the indications, appropriate techniques *and risks*, and perform the following procedures *under direct supervision by attending*:
  - a. Airway Management
    - i. Endotracheal Intubation
    - ii. Bag-Valve-Mask-Ventilation
    - iii. Rapid Sequence Induction
  - b. Cardio-Pulmonary
    - i. Thoracostomy Tube Placement

- ii. Conversion of SVT
- iii. Intraosseous Access and Fluid Administration
- iv. Central Venous Catheterization (including U/S guided techniques)
- v. Arterial Line Placement
- c. Abdominal
  - i. Gastric Lavage
- d. Special Procedures
  - i. Lumbar Puncture
  - ii. Laceration Repair
  - iii. Foreign Body Removal
  - iv. Procedural Sedation
  - v. Incision and Drainage of Abscesses
  - vi. Nasal Packing
  - vii. Slit Lamp Examination
- e. Orthopedic
  - i. Closed Reduction and Splinting
- 8. *Apply important principles* in prioritizing the care of multiple patients to practice.
- 9. *Apply* different methods to adjust pace to ED patient acuity, volume and flow.
- 10. Function appropriately in resuscitations as an *autonomous team member*.

#### Medical Knowledge

1. Describe the pathophysiology and *explain possible disease and treatment complications* for the following conditions which are encountered in the ED:
  - a. Pulmonary: acute pulmonary edema, acute upper airway obstruction (foreign body, allergic, infectious), status asthmaticus, pneumothorax, smoke inhalation, pulmonary embolus, pneumonia, acute respiratory distress syndrome, drowning and near drowning
  - b. Cardiovascular: shock, acute blood loss, hypertensive crisis, acute myocardial infarction, cardiopulmonary arrest, cardiac arrhythmias, congestive heart failure, hypertension, aortic dissection, pericardial effusion, cardiac tamponade
  - c. Neurology: head trauma, acute increased intracranial pressure, cerebral edema, status epilepticus, stupor and coma, heat injury
  - d. Infectious disease: septic shock, meningitis, encephalitis, HIV/AIDS, cellulitis, abscess
  - e. Endocrinology: diabetic ketoacidosis, hypoglycemia, hyperosmolar coma
  - f. Hematology/Oncology: acute illness in the oncology patient, fever and neutropenia, hemophilia with acute trauma, sick cell pain crisis, sequestration, or acute chest syndrome, sickle cell disease with fever, anemia, thrombocytopenia and thrombotic and embolic disease
  - g. Gastroenterology: peptic ulcer disease, GI bleeding, abdominal pain, appendicitis, small bowel obstruction, inflammatory bowel disease, end-stage liver disease
  - h. Surgery: necrotizing fasciitis, abdominal trauma (blunt/penetrating), acute abdomen, massive GI bleeding, burns, foreign bodies, wound care, ruptured aortic aneurysm
  - i. Nephrology: hematuria, proteinuria, acute renal failure, end-stage renal disease, urinary tract infection, edema, electrolyte disorders, acute illness or fever in a dialysis patient, acute illness or fever in a kidney transplant patient
  - j. Urology: epididymitis, orchitis, testicular torsion, renal colic, obstructive uropathy
  - k. Allergy: anaphylaxis, angioedema

- l. Obstetrics/Gynecology: pelvic inflammatory disease, sexual assault, pelvic pain, ectopic pregnancy, precipitous delivery
  - m. Toxicology and Environmental Exposure: poisoning, drug intoxication (unknown and common: acetaminophen, iron, aspirin, alcohols, cough and cold medications, amphetamines, cocaine), bites and stings, drowning, near-drowning, electrical injuries, heat and cold injuries
  - n. Psychiatry: acute psychosis, suicide attempt, acute agitation
  - o. Orthopedic Surgery: splinting, casting, proper x-rays, sprains, fractures, dislocations
  - p. Ophthalmology: corneal abrasions, eye pain, foreign bodies, acute visual loss, ocular trauma
2. *Apply* triage principles in the management of victims or major multi-system trauma, including the rationale for and application of scoring systems.
  3. *Explain the rationale* and list important principles necessary for resuscitation of critically ill medical, surgical and trauma patients:
    - a. Management of an obstructed airway
    - b. Risks of delayed airway management with respiratory insufficiency
    - c. Rapid sequence induction, including indications and contraindications
    - d. Indications and principles of assisted ventilation
    - e. Options for vascular access
    - f. Cervical spine immobilization including appropriate alignment of the cervical spine
    - g. Blood product use in the management of shock
    - h. Appropriate fluids and rates for patients in shock
    - i. Indications for immediate thoracotomy
    - j. Indications and contraindications for bladder catheterization
    - k. Indications and contraindications for gastric intubation
  4. *Explain the rationale* and list the elements of the primary survey including:
    - a. Major causes of airway obstruction in multi-system trauma
    - b. Risk of cervical spine injury associated with multi-system trauma
    - c. Causes of early acute cardiopulmonary collapse following multi-system trauma
    - d. Distinguish causes of shock based on clinical findings
    - e. Methods of rapid assessment of central nervous system
  5. *Explain the rationale* and list the elements of the secondary survey of trauma patients:
    - a. Head (including face, eyes, ear and nose)
    - b. Neck
    - c. Back
    - d. Chest
    - e. Abdomen
    - f. Pelvis and extremities
    - g. Nervous system
  6. Describe the pathophysiology and discuss *initial stabilization and ongoing management* of the following common traumatic conditions:
    - a. Pulmonary Contusion
    - b. Pneumothorax/Hemothorax
    - c. Flail Chest
    - d. Cardiac Contusion
    - e. Hemopericardium
    - f. Neurologic: head trauma, acute increased intracranial pressure, spinal trauma
    - g. Fractures: pelvic and long bone

- h. Abdominal Trauma: blunt and penetrating (stab wounds versus gunshot wounds)
- i. Neck Wounds

#### Practice-based Learning and Improvement

1. Effectively search the medical literature, analyze the literature and determine its relevance for specific patients.
2. Effectively use online medical resources.
3. Facilitate professional learning with peers.
4. Review challenging cases to identify better patient care management strategies.

#### Interpersonal Skills and Communication

1. Demonstrate active listening skills including appropriate non-verbal behavior.
2. Effectively communicate with patients and families during critical illness.
3. Demonstrate respect for individual patient concerns and perceptions.
4. Effectively communicate, collaborate and *begin to direct* the health care team including physicians, nurses, physical therapists, technicians, paramedics and other health care providers and specialists.
5. Accurately record findings and assessments in the medical record in a timely and legible manner.
6. Communicate with primary care provider for follow-up care.

#### Professionalism

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.
2. Respect patient self-autonomy and the right of the patient and family to be involved in care decisions.
3. Place the needs of the patients above personal concerns.
4. Develop an ethically sound relationship with patients and families.
5. Demonstrate respect for other health care professionals.
6. Demonstrate sensitivity and compassion to a variety of patient populations.
7. Apply sensitivity when evaluating cultural influences on patient and family behavior.
8. Demonstrate respect diversity of opinion, age, gender and ethnicity.
9. *Apply* ethical and medical-legal principles (emergency consent, AMA, EMTALA, organ donation, DNR, etc.).
10. Recognize the psychosocial needs of patients with traumatic injuries and their families.
11. Responds to pages and messages promptly.
12. Be punctual and respectful of others' time.
13. Demonstrate awareness of personal limitations and ask for help as appropriate.
14. Effectively instruct and mentor medical students.

#### Systems-based Practice

1. Practice cost-effective health care and resource allocation.
2. Advocate for quality patient care and assist patients in dealing with system complexities.
3. Describe principles of the team approach to the management of an adult or child with major multi-system trauma.
4. Collaborate with other health care providers to facilitate orderly and effective transitions from one care environment to another such as critical care units, operating rooms, floor-based nursing settings, rehabilitation settings, chronic care facilities, and home care settings.

5. Seek and address potential risk factors for the visit (intimate partner violence, knowledge limitations, etc.).
6. Demonstrate appropriate referral and consultation practices.
7. *Demonstrate collaboration* with Emergency Medical Services in the care of the acutely injured and acutely-ill patients.
8. Recognize system errors and recommend quality improvement.
9. Demonstrate advocacy for patients within the health care system.

### Third Year Objectives:

After completing this rotation, the fellow will demonstrate the ability to:

#### Patient Care

1. *Rapidly* perform an appropriate problem-oriented history and physical exam.
2. *Demonstrate* the rapid assessment of patients with urgent conditions to residents and medical students.
  - a. Recognize respiratory failure.
  - b. Manage the acute airway, including knowledge about and use of appropriate equipment and drugs.
  - c. Manage the airway in a child with a tracheostomy tube.
  - d. Formulate a diagnosis quickly, with particular attention to diagnoses that require immediate airway intervention (e.g. depressed mental status, foreign body obstruction).
  - e. Describe indications for admission to a critical care unit.
  - f. Outline plan for stabilization, including relevant physiology, tests and therapies.
3. Generate differential diagnoses, order appropriate diagnostic studies and formulate treatment plans for common emergency medicine problems.
4. *Demonstrate as a team leader* the principles of the team approach to the management of an adult or child with multi-system trauma.
5. Explain the indications for, interpretation of, *limitations of* and their relevance to the patient's disease process for the following diagnostic tests:
  - a. Arterial/Venous Blood Gas
  - b. Coagulation studies (PT, PTT, fibrinogen, FSP, D-dimers)
  - c. Complete Blood Count
  - d. Cerebrospinal Fluid Analysis including studies for viruses and fungi
  - e. Drug Levels and Toxicological Studies
  - f. Chest Radiographs
  - g. Abdominal/Pelvic Radiographs
  - h. FAST (Focused Assessment by Sonography in Trauma)
  - i. EKG
  - j. Cervical Spine Films
  - k. Head CT
  - l. Chest/Abdominal CT
  - m. MRI
6. Describe the indications, appropriate techniques, risks, *limitations and alternatives*, and perform the following procedures under direct supervision by attending *with presence in room (independent competence not expected for all procedures)* :
  - a. Airway Management
    - i. Cricothyrotomy
    - ii. Tracheostomy Tube Replacement
  - b. Cardio-Pulmonary

- i. Pericardiocentesis
    - ii. Venous Cutdown
  - c. Abdominal
    - i. Peritoneal Lavage
  - d. Special Procedures
    - i. Vaginal Delivery
    - ii. Regional Nerve Blocks (including U/S guided techniques such as brachial plexus blocks)
    - iii. Intracranial Pressure Monitor
- 7. Describe the indications, appropriate techniques, risks, *limitations and alternatives*, and perform the following procedures *under indirect supervision with attending available*:
  - a. Airway Management
    - i. Endotracheal Intubation
    - ii. Bag-Valve-Mask-Ventilation
    - iii. Rapid Sequence Induction
  - b. Cardio-Pulmonary
    - i. Thoracostomy Tube Placement
    - ii. Cardioversion/Defibrillation
    - iii. Conversion of SVT
    - iv. Intraosseous Access and Fluid Administration
    - v. Central Venous Catheterization (including U/S guided techniques)
    - vi. Arterial Line Placement
  - c. Abdominal
    - i. Gastric Lavage
  - d. Special Procedures
    - i. Lumbar Puncture
    - ii. Laceration Repair
    - iii. Foreign Body Removal
    - iv. Procedural Sedation
    - v. Incision and Drainage of Abscesses
    - vi. Nasal Packing
    - vii. Peritonsillar Abscess Drainage
    - viii. Regional Nerve Blocks
    - ix. Dental Blocks
    - x. Slit Lamp Examination
    - xi. Paracentesis
  - e. Orthopedic
    - i. Closed Reduction and Splinting
    - ii. Arthrocentesis
    - iii. Dislocation Reduction
- 8. *Appropriately prioritize* the care of multiple patients.
- 9. *Adjust pace appropriately* to ED patient acuity, volume and flow.
- 10. *Demonstrate leadership skills during resuscitations.*

### Medical Knowledge

1. Describe the pathophysiology, explain possible disease and treatment complications and *outline an evidence-based approach to management* for the following conditions which are encountered in the ED:
  - a. Pulmonary: acute pulmonary edema, acute upper airway obstruction (foreign body, allergic, infectious), status asthmaticus, pneumothorax, smoke inhalation,

- pulmonary embolus, pneumonia, acute respiratory distress syndrome, drowning and near drowning
  - b. Cardiovascular: shock, acute blood loss, hypertensive crisis, acute myocardial infarction, cardiopulmonary arrest, cardiac arrhythmias, congestive heart failure, hypertension, aortic dissection, pericardial effusion, cardiac tamponade
  - c. Neurology: head trauma, acute increased intracranial pressure, cerebral edema, status epilepticus, stupor and coma, heat injury
  - d. Infectious disease: septic shock, meningitis, encephalitis, HIV/AIDS, cellulitis, abscess
  - e. Endocrinology: diabetic ketoacidosis, hypoglycemia, hyperosmolar coma
  - f. Hematology/Oncology: acute illness in the oncology patient, fever and neutropenia, hemophilia with acute trauma, sick cell pain crisis, sequestration, or acute chest syndrome, sickle cell disease with fever, anemia, thrombocytopenia and thrombotic and embolic disease
  - g. Gastroenterology: peptic ulcer disease, GI bleeding, abdominal pain, appendicitis, small bowel obstruction, inflammatory bowel disease, end-stage liver disease
  - h. Surgery: necrotizing fasciitis, abdominal trauma (blunt/penetrating), acute abdomen, massive GI bleeding, burns, foreign bodies, wound care, ruptured aortic aneurysm
  - i. Nephrology: hematuria, proteinuria, acute renal failure, end-stage renal disease, urinary tract infection, edema, electrolyte disorders, acute illness or fever in a dialysis patient, acute illness or fever in a kidney transplant patient
  - j. Urology: epididymitis, orchitis, testicular torsion, renal colic, obstructive uropathy
  - k. Allergy: anaphylaxis, angioedema
  - l. Obstetrics/Gynecology: pelvic inflammatory disease, sexual assault, pelvic pain, ectopic pregnancy, precipitous delivery
  - m. Toxicology and Environmental Exposure: poisoning, drug intoxication (unknown and common: acetaminophen, iron, aspirin, alcohols, cough and cold medications, amphetamines, cocaine), bites and stings, drowning, near-drowning, electrical injuries, heat and cold injuries
  - n. Psychiatry: acute psychosis, suicide attempt, acute agitation
  - o. Orthopedic Surgery: splinting, casting, proper x-rays, sprains, fractures, dislocations
  - p. Ophthalmology: corneal abrasions, eye pain, foreign bodies, acute visual loss, ocular trauma
2. *Demonstrate* triage principles in the management of victims or major multi-system trauma, including the rationale for and application of scoring systems.
  3. *Demonstrate and instruct* important principles necessary for resuscitation of critically ill medical, surgical and trauma patients:
    - a. Management of an obstructed airway
    - b. Risks of delayed airway management with respiratory insufficiency
    - c. Rapid sequence induction, including indications and contraindications
    - d. Indications and principles of assisted ventilation
    - e. Options for vascular access
    - f. Cervical spine immobilization including appropriate alignment of the cervical spine
    - g. Blood product use in the management of shock
    - h. Appropriate fluids and rates for patients in shock
    - i. Indications for immediate thoracotomy
    - j. Indications and contraindications for bladder catheterization

- k. Indications and contraindications for gastric intubation
- 4. *Demonstrate and instruct* the elements of the primary survey including:
  - a. Major causes of airway obstruction in multi-system trauma
  - b. Risk of cervical spine injury associated with multi-system trauma
  - c. Causes of early acute cardiopulmonary collapse following multi-system trauma
  - d. Distinguish causes of shock based on clinical findings
  - e. Methods of rapid assessment of central nervous system
- 5. *Demonstrate and instruct* the elements of the secondary survey of trauma patients:
  - a. Head (including face, eyes, ear and nose)
  - b. Neck
  - c. Back
  - d. Chest
  - e. Abdomen
  - f. Pelvis and extremities
  - g. Nervous system
- 6. Describe the pathophysiology, discuss initial stabilization and ongoing management and *explain possible disease and treatment complications* of the following common traumatic conditions:
  - a. Pulmonary Contusion
  - b. Pneumothorax/Hemothorax
  - c. Flail Chest
  - d. Cardiac Contusion
  - e. Hemopericardium
  - f. Neurologic: head trauma, acute increased intracranial pressure, spinal trauma
  - g. Fractures: pelvic and long bone
  - h. Abdominal Trauma: blunt and penetrating (stab wounds versus gunshot wounds)
  - i. Neck Wounds

#### Practice-based Learning and Improvement

1. Effectively search the medical literature, analyze the literature and determine its relevance for specific patients.
2. Effectively use online medical resources.
3. Facilitate professional learning with peers.
4. Review challenging cases to identify better patient care management strategies.

#### Interpersonal Skills and Communication

1. Demonstrate active listening skills including appropriate non-verbal behavior.
2. Effectively communicate with patients and families during critical illness.
3. Demonstrate respect for individual patient concerns and perceptions.
4. Effectively communicate, collaborate and *lead* the health care team including physicians, nurses, physical therapists, technicians, paramedics and other health care providers and specialists.
5. Accurately record findings and assessments in the medical record in a timely and legible manner.
6. Communicate with primary care provider for follow-up care.

#### Professionalism

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.

2. Respect patient self-autonomy and the right of the patient and family to be involved in care decisions.
3. Place the needs of the patients above personal concerns.
4. Develop an ethically sound relationship with patients and families.
5. Demonstrate respect for other health care professionals.
6. Demonstrate sensitivity and compassion to a variety of patient populations.
7. Apply sensitivity when evaluating cultural influences on patient and family behavior.
8. Demonstrate respect diversity of opinion, age, gender and ethnicity.
9. *Demonstrate* ethical and medical-legal principles (emergency consent, AMA, EMTALA, organ donation, DNR, etc.).
10. Recognize the psychosocial needs of patients with traumatic injuries and their families.
11. Responds to pages and messages promptly.
12. Be punctual and respectful of others' time.
13. Demonstrate awareness of personal limitations and ask for help as appropriate.
14. Effectively instruct and mentor medical students.

### Systems-based Practice

1. Practice cost-effective health care and resource allocation.
2. Advocate for quality patient care and assist patients in dealing with system complexities.
3. Describe principles of the team approach to the management of an adult or child with major multi-system trauma.
4. Collaborate with other health care providers to facilitate orderly and effective transitions from one care environment to another such as critical care units, operating rooms, floor-based nursing settings, rehabilitation settings, chronic care facilities, and home care settings.
5. Seek and address potential risk factors for the visit (intimate partner violence, knowledge limitations, etc.).
6. Demonstrate appropriate referral and consultation practices.
7. Demonstrate collaboration and *give feedback* to Emergency Medical Services in the care of the acutely injured and acutely-ill patients.
8. Recognize system errors and recommend quality improvement.
9. Demonstrate advocacy for patients within the health care system.

#### **4. PEM Fellow Rotation in Pediatric Critical Care**

##### **Experience:**

The pediatric critical care rotation is a one month long rotation completed in the first year of PEM subspecialty training. During this time, PEM fellows function as a full time member of the critical care team to gain experience in the acute as well as longer term management of the critically ill child. The rotation takes place in the pediatric intensive care unit (PICU) at UNMH Children's Hospital, which has 20 ICU level beds. The critical care service patient population is comprised of a mix of medical and subspecialty medical patients, as well as patients on whom the critical care team is consulted (multi-system trauma patients, post-operative major surgery patients, etc.).

##### **Goals:**

1. Gain experience in the diagnosis and management of the critically ill child, including airway management, ventilator management, cardiovascular support and resuscitation.
2. Gain experience in the management of potentially life-threatening illnesses.
3. Become more familiar with the indications for procedures used in the care of critically ill children as well as proper technique.
4. Gain experience dealing with the families of children who are critically ill or deceased.
5. Become more familiar with end of life decision making.

##### **Objectives:**

After completing this rotation, the fellow will demonstrate the ability to:

##### **Patient Care**

1. Recognize and manage isolated and multi-organ system failure and assessment of its reversibility.
2. Integrate clinical assessment and laboratory data to formulate management and therapeutic plans for critically ill patients.
3. Provide ventilatory support for all types of critical care patients to include medical and surgical patients.
4. Evaluate blood gases (arterial, venous, capillary, and end-tidal carbon dioxide) and appropriately adjust mechanical ventilation on patients.
5. Provide emergency airway management – BVM and endotracheal intubation.
6. Evaluate, diagnose and treat patients with acute respiratory failure (to include asthma, ALI / ARDS, aspiration).
7. Evaluate and prescribe appropriate antibiotics to those patients with severe pneumonia, sepsis, and other serious bacterial infections.
8. Provide appropriate fluid management for those patients with fluid and electrolyte imbalances.
9. Provide care for the patient with CNS trauma to include management of intracranial hypertension.
10. Provide support for patients with acute and chronic renal failure. Discuss indications and risks of CVVH, hemodialysis, peritoneal dialysis.
11. Provide adequate nutrition to critically ill patients.
12. Resuscitate, stabilize and transport patients to the PICU and within the hospital.
13. Participate in decision making in the admitting, discharge, and transfer of patients in the intensive care unit.

### Medical Knowledge

1. Describe the pathophysiology, assessment and treatment of organ dysfunction in critically ill pediatric patients.
2. Discuss the indication for different modes and types of mechanical and non-invasive ventilation.
3. Discuss the indications for nitric oxide and other medical gases.
4. Discuss indications and place appropriate intravascular catheters to include arterial catheter and central venous catheter. Interpret data provided by each of these catheters.
5. Describe the major complications (infection, rejection) of the critically ill immunocompromised patients (including transplant patients).
6. Discuss indications and risks of agents used for intravenous sedation, paralysis and procedural sedation and analgesia.
7. List and discuss the indications for vasoactive medications, such as dopamine, epinephrine, norepinephrine, milrinone, and vasopressin and implement their use when necessary.
8. Discuss indications and risk of parenteral and enteral nutrition.

### Practice-based Learning and Improvement

1. Make changes in practice using performance self-improvement assessment.
2. Effectively search the medical literature, analyze the literature and determine its relevance for specific patients.
3. Effectively use online medical resources.
4. Facilitate professional learning with peers.
5. Review challenging cases to identify better patient care management strategies.

### Interpersonal and Communication Skills

1. Demonstrate active listening skills including appropriate non-verbal behavior.
2. Effectively communicate with patients and families during critical illness, including end of life issues.
3. Demonstrate respect for individual patient concerns and perceptions.
4. Effectively communicate and collaborate with the team including nurses, respiratory therapists, and other health care providers and specialists.
5. Accurately record findings and assessments in the medical record in a timely and legible manner.

### Professionalism

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.
2. Respect patient self-autonomy and the right of the patient and a family to be involved in care decisions.
3. Place the needs of patients above personal concerns.
4. Develop an ethically sound relationship with patients and families.
5. Demonstrate appropriate respect for other health care professionals.
6. Demonstrate sensitivity and compassion to a variety of patient populations.
7. Demonstrate respect for diversity of opinion, age, gender and ethnicity.
8. Develop awareness of ethical and medical-legal considerations in the care of patients in the Intensive Care Unit.
9. Apply sensitivity when evaluating cultural influences on patient and family behavior.
10. Responds to pages and messages promptly.
11. Is punctual and respectful of others' time.

12. Effectively instruct and mentors residents and students.

Systems-based Practice

1. Recognize system errors and recommend quality improvements.
2. Describe non-acute provider settings (Rehab, Skilled Nursing).
3. Collaborate with other health care providers to facilitate orderly and effective transitions from one care environment to another such as floor-based nursing settings, rehabilitation settings, chronic care facilities, and home care settings.
4. Demonstrate an awareness of and skill in resource-efficient care.
5. Demonstrate advocacy for patients within the health care system.

**Policies on Duty Hours, Supervision, Call Schedule, Back-up Call, On-call Activities and Expectations during Critical Care Rotation**

**Duty Hours:** The PEM fellows are on call in-house no more than every fourth night and average every 4<sup>th</sup> night. During in-house call, fellows are provided with a sleep room, shower, and lounge and food facilities. Distribution of time during this month is 100% clinical.

- a. Duty hours are defined as all clinical and academic activities related to the residency program, i.e., patient care (inpatient and outpatient), administrative duties related to patient care, the provision for transfer of patient care, time spent in-house during call activities and scheduled academic activities such as conferences. Duty hours do not include reading and preparation time spent away from the duty site.
- b. Duty hours must be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities.
- c. Residents must be provided with 1 day in 7 free from all educational and clinical responsibilities, averaged over a 4-week period, inclusive of call. One day is defined as one continuous 24-hour period free from all clinical, educational and administrative activities.
- d. Adequate time for rest and personal activities must be provided. This should consist of a 10-hour time period provided between all daily duty periods and after in-house call.

**Supervision:** PEM fellows will be under the supervision of the critical care attendings for clinical decision making and the performance of procedures. All attending physicians are subspecialty board certified or board eligible in Pediatric Critical Care.

**Evaluation:** The PICU faculty are responsible for supplying the program director with a written evaluation of the subspecialty resident's rotation using a global evaluation form and informing the resident and program director of any problems or issues which may arise during the month. Acceptable performance will be dependent on attendance and acceptable performance for level on all six ACGME clinical competency areas.

## 5. PEM Fellow Rotation in Toxicology

### **Experience:**

The toxicology rotation is a one month long rotation completed in the first year of PEM subspecialty training. During this time, PEM fellows gain familiarity with the assessment and management of toxicologic problems while functioning as part of the toxicology team based at the New Mexico Poison and Drug Information Center (NMPDIC). This is done primarily through daily rounds in which the toxicology team discusses interesting cases from those calls received during the prior 24 hours from the region. Discussion is comprehensive covering all topics from initial presentation, assessment, and management, to toxicologic mechanisms, ongoing management and advanced medical decision making.

### **Goals:**

1. Provide the knowledge required to manage poisoned patients in the ED, outpatient clinic or in the hospital
2. Review the basic pharmacology and pathophysiology relevant to medical toxicology.

### **Objectives:**

After completing this rotation, the fellow will demonstrate the ability to:

#### **Patient Care**

1. Identify the pertinent aspects of the history and physical exam relevant to acute poisoning with particular emphasis on clinical recognition of major toxic syndromes (toxidromes) and drug withdrawal.
2. Demonstrate knowledge of the importance of airway management and cardiovascular support in a toxic ingestion.
3. Explain the principles, methods and controversies of decontamination techniques (e.g. gastric lavage, activated charcoal and whole bowel irrigation).
4. Demonstrate knowledge of the indications for and limitations of diagnostic tests and their relevance to the patient's toxic exposure.
5. Provide appropriate advice regarding use of antidotes and their usefulness in a given patient.
6. Identify the psychosocial needs of patients with toxic ingestions.
7. Participate in decision making regarding disposition from the ED of the poisoned patient: discharge, observation, admission to an inpatient ward or admission to an intensive care unit.
8. Describe the proper technique for handling a HAZMAT (hazardous materials) contaminated patient in the prehospital environment and the ED.

#### **Medical Knowledge**

1. Describe the evaluation and management of a patient who presents with an acute overdose, accidental or environmental exposure.
2. Describe the steps in the evaluation and general management of a poisoned patient including stabilization, risk assessment, decontamination, screening and observation.
3. Describe the evaluation and general management of common presentations of poisoning including dysrhythmia (bradycardia, tachycardia), hypotension, hypertension, coma, seizure and agitation.
4. Describe the presenting symptoms and any specific treatments for several common poisonings:

- a. Acetaminophen
- b. Anti-psychotic medications
- c. Barbiturates/Benzodiazepines/Other sedatives
- d. Beta-Blockers
- e. Calcium Channel Blockers
- f. Carbon Monoxide
- g. Caustic Ingestions
- h. Cocaine/Amphetamines/MDMA
- i. Cyanide/Hydrogen Sulfide
- j. Digitalis
- k. Envenomations: Snakes, Spiders and Scorpions
- l. Hallucinogens
- m. Hydrocarbons
- n. Hydrofluoric acid
- o. Iron
- p. Lithium
- q. Mushroom/plants
- r. Opioids
- s. Organophosphates/Carbamate Pesticides
- t. Phenytoin/Tegretol/Valproic Acid/Newer Anti-epileptics
- u. Salicylates
- v. SSRI's and Serotonin Syndrome
- w. Toxic alcohols: ethanol, isopropanol, methanol and ethylene glycol
- x. Tricyclic Anti-depressants

#### Practice-based Learning and Improvement

1. Effectively search the medical literature, analyze the literature and determine its relevance for specific patients.
2. Effectively use online medical resources.
3. Actively participate in Toxicology rounds and lectures.
4. Facilitate professional learning with peers.
5. Review challenging cases to identify better patient care management strategies.

#### Interpersonal and Communication Skills

1. Demonstrate active listening skills including appropriate non-verbal behavior.
2. Demonstrate respect for individual patient concerns and perceptions.
3. Effectively communicate and collaborate with the RMPDC team including physicians, pharmacy students, medical students, toxicology fellows, emergency medicine and pediatric residents.
4. Effectively utilize the resources of the RMPDC.

#### Professionalism

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.
2. Demonstrate sensitivity and compassion to a variety of patient populations.
3. Demonstrate appropriate respect for other health care professionals.
4. Demonstrate respect for diversity of opinion, age, gender and ethnicity.
5. Develop awareness of ethical and medical-legal considerations in the care of patients with toxic ingestions.
6. Apply sensitivity when evaluating cultural influences on patient and family behavior.
7. Respond to pages and messages promptly,

8. Be punctual and respectful of others' time.

#### Systems-based Practice

1. Recognize system errors and recommend quality improvements.
2. Demonstrate an awareness of and skill in resource-efficient care.
3. Demonstrate advocacy for patients within the health care system.

#### **Policies on Duty Hours, Supervision and Expectations during Toxicology Rotation**

**Duty Hours:** Daily bedside and chart rounds with the toxicology team, conferences at UNMH and NMPDIC. Hours 0800-1400 on weekdays. During this month the subspecialty residents will do six 8-10 hour shifts in UNMH PED.

**Supervision:** Toxicology rounds supervised by the NMPDIC attending toxicologist as well as the toxicology fellows. Attending physicians are emergency medicine with subspecialty certification in toxicology.

**Evaluation:** Toxicology faculty are responsible for supplying the program director with a written evaluation of the subspecialty resident's rotation using a global evaluation form and informing the resident and program director of any problems or issues which may arise during the month. Acceptable performance will be dependent on attendance and acceptable performance for level on all six ACGME clinical competency areas.

#### **Expectations:**

1. Attend lectures and rounds every day unless formally excused by one of the fellows or attendings.
2. Participate in rounds, attending lectures and independent study.
3. Prepare and deliver a twenty minute presentation on a specific topic in toxicology.
4. Prepare and deliver a 5- to 10- minutes presentation on an interesting question regarding patient management.
5. Assist in research activities (e.g., performing literature searches, locating and copying articles from the library for other rotating residents/fellows, etc.)
6. Complete a two hour Poison Center observation, including listening to incoming calls.
7. Mandatory conferences include UNMH M&M and the NMPDIC research meetings.

## 6. PEM Fellow Rotation in Emergency Medical Services (EMS)/Prehospital Care

**Experience:** The experience for the PEM fellows during the pre-hospital/emergency medical rotation includes the observation and care of adult and pediatric trauma/surgical and emergency medical conditions in the field. The subspecialty resident may also accompany the Critical Care Transport Team on transports from outlying hospitals to centers for a higher level of care.

### **Goals:**

1. Learn the general principles of field and transport medical management of adult and pediatric patients
2. Learn the general principles of accident/illness scene management

### **Objectives:**

After completing this rotation, the fellow will demonstrate the ability to:

#### **Patient Care**

1. Explain the general principles of field and transport medical management of adult and pediatric patients.
  - a. Management of the airway and breathing (RSI, BMV ventilation)
  - b. Circulation (obtaining central venous access)
  - c. Primary and secondary survey
  - d. Spinal immobilization
2. Insert appropriate intravascular lines for both monitoring and access to include intraosseous lines as appropriate.
3. Identify and monitor patients for the presence or development of cardio-respiratory distress on arrival to the scene and during transport.
4. Recognize the patients with difficult-to-manage airways or respiratory problem, and become familiar with alternative management options for these patients appropriate for the field (laryngeal mask).
5. Identify what interventions need to be performed in the field or referral hospital and which interventions should be appropriately delayed until arrival at the receiving hospital.
6. Integrate clinical assessment and laboratory data to formulate management and therapeutic plans for critically ill patients during transportation.
7. Provide ventilatory support for all types of critical care patients to include medical and surgical patients.
8. Evaluate blood gases (arterial, venous, capillary, and end-tidal carbon dioxide) and appropriately adjust mechanical ventilation on patients.
9. Develop competency in prioritizing and managing the emergency care of multiple patients.
10. Explain the limitations that aircraft impose on the delivery of medical care.

#### **Medical Knowledge**

1. Explain the pathophysiology, assessment and treatment of isolated and multi-system injured patients.
2. Discuss the indication for different modes and types of mechanical and non-invasive ventilation.
3. Explain the indications for cardioversion and defibrillation in patients with dysrhythmias.
4. List and discuss indications and risks of agents used for intravenous sedation, paralysis and procedural sedation and analgesia.

5. List and discuss the indications for vasoactive medications, such as dopamine, epinephrine, norepinephrine, milrinone, and vasopressin and implement their use when necessary.
6. List and discuss the variables involved in determining the optimal method of transfer (ground versus air) such as mobilization and response time, team configuration, availability of landing site, severity of illness and expertise of staff at the referral hospital.

#### Practice-based Learning and Improvement

1. Effectively search the medical literature, analyze the literature and determine its relevance for specific patients.
2. Effectively use online medical resources.
3. Effectively study book chapters.
4. Facilitate professional learning with peers.
5. Review challenging cases to identify better patient care management strategies.

#### Interpersonal Skills and Communication

1. Demonstrate active listening skills including appropriate non-verbal behavior.
2. Demonstrate respect for individual patient concerns and perceptions.
3. Effectively communicate and collaborate with the EMS/prehospital team including paramedics, physicians, nurses, respiratory therapists, and other health care providers and specialists.
4. Effectively communicate with police and fire departments at the scene.
5. Effectively communicate with referral and receiving hospitals and their respective health care providers.

#### Professionalism

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.
2. Demonstrate sensitivity and compassion to a variety of patient populations.
3. Demonstrate respect diversity of opinion, age, gender and ethnicity.
4. Be punctual and respectful of others' time.
5. Demonstrate sensitivity towards referral hospitals and any limitations in their ability to provide care.
6. Describe the general principles of accident/illness scene management including but not limited to:
  - a. Management of potentially dangerous scene incidents (i.e. crowd control, motor vehicle accidents)

#### Systems-based Practice

1. Collaborate with other health care providers to facilitate safe, orderly and effective transportation from the field to the receiving hospital and from the referral hospital to the hospital providing definitive care.
2. Coordinate and execute pre-transportation recommendations from consultants.
3. List and discuss the major factors associated with EMS helicopter crashes including human error, weather, mechanical failure and obstacle strikes.
4. List and discuss the approach taken by critical care flight teams in their analysis of adverse events or close calls including emphasis on systems versus people, emphasis on multifactorial nature of errors, assumption that errors will occur in a system, emphasis on crew interactions and analysis of latent versus active errors.

## **Policies on Duty Hours, Supervision and Expectations during EMS/Prehospital Rotation**

**Duty Hours:** PEM subspecialty residents accompany the pre-hospital providers for one week, and spend 8 hours or 10 hours/day for a 50 hour work week. There is no in-house or home call.

**Supervision:** All cases and procedures are supervised by either the AFD/BCFD/AAS paramedics or the Lifeguard/PHI transport RNs and paramedics. Distribution of time during this week is 100% clinical.

**Evaluation:** The PD will be responsible for gathering feedback from the appropriate services and medical directors. A written evaluation of the fellow's rotation using a global evaluation form and informing the resident and program director of any problems or issues which may arise during the month. Acceptable performance will be dependent on attendance and acceptable performance for level on all six ACGME clinical competency areas.

**Expectations:** PEM subspecialty residents will spend the assigned duty hours with either the paramedics or transport team. They will observe and assist in the history taking, examination and procedures involved in the care of the patient. These procedures will be supervised by the senior member of the team. Procedures must be documented in the procedure log. PEM fellows are to read assigned chapters from textbooks, "Principles and Direction of Air Medical Transport" and "Guidelines for Air and Ground Transport of Neonatal and Pediatric Patient".

## 7. PEM Subspecialty Resident Rotation in Neonatal Intensive Care

**Goals:** To train the fellow to care for newborns in the delivery room and neonatal intensive care unit.

### **Objectives:**

After completing this rotation, the fellow will demonstrate the ability to:

#### **Patient Care**

1. Perform the initial stabilization of all newborns regardless of gestational age including delivery room resuscitation of babies born in distress.
2. Manage premature babies with skill to recognize pulmonary, cardiovascular, GI and CNS problems related to prematurity.
3. Carry out a gestational age exam, identify congenital defects and to manage common problems of the newborn including, but not limited to, hypoglycemia, hyperbilirubinemia and feeding problems.
4. Recognize serious newborn conditions such as sepsis, respiratory distress, NEC, intracranial bleeds and congenital heart disease.
5. Manage critically ill infants with assisted ventilation, blood pressure support, parenteral nutrition and other ICU treatments.
6. Obtain the crucial elements of the prenatal history and interpret maternal labs and their relationship to newborn problems.
7. Perform a complete newborn physical exam.
8. Perform the following procedures:
  - a. Arterial Puncture
  - b. Umbilical Line Placement
  - c. Laryngoscopy and Intubation
  - d. Surfactant Replacement
  - e. Bag and Mask Ventilation
  - f. Lumbar Puncture
  - g. Thoracentesis
9. Apply concepts in preventative health care maintenance for the newborn.
10. Work as part of a health care team.

#### **Medical Knowledge**

1. Discuss basic newborn medicine for both term and preterm infants to include, but not limited to:
  - a. Hypoglycemia
  - b. Polycythemia
  - c. Hyperbilirubinemia
  - d. Early Onset and Nosocomial Infections
  - e. Respiratory Distress in Term and Pre-term Infants
  - f. Seizures
  - g. Intracranial Bleeds
  - h. Complications of Prematurity
  - i. Neonatal Outcome
  - j. Ventilatory Technologies and CPAP
  - k. Neonatal and Parenteral and Enteral Nutrition
2. Apply his or her knowledge in a clinical setting.

3. Utilize printed material, web-based material and other resources in self-directed acquisition of knowledge.
4. Attend all teaching conferences.

#### Practice-based Learning and Improvement

1. Develop skills to evaluate their care and learn through their experience.
2. Apply basic principles of evidence based medicine to their practice.
3. Utilize educational materials and their preceptors to continually enhance knowledge and procedural skills.
4. Identify areas of weakness to trigger and organized plan with their preceptor or Program Director to grow and improve in those areas.
5. Attend mandatory monthly Journal Club.
6. Participate in QI activities.

#### Interpersonal and Communication Skills

1. Develop clear and effective communication with their parents and families, staff, preceptors and consultants.
2. Listen effectively to patients, families, preceptors and staff.
3. Present cases in a well-organized and complete manner.
4. Participate in multidisciplinary care conferences with families to begin to develop skills in the delivery of bad news and end of life discussions.

#### Professionalism

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.
2. Demonstrate sensitivity, compassion and respect for families, staff and other colleagues.
3. Present him or herself in a dignified fashion.
4. Adhere to principles of ethics and obtain informed consent for all procedures.
5. Respect gender and cultural sensitivity.
6. Respond to pages and messages promptly.
7. Be punctual and respectful of others' time.

#### Systems-based Practice

1. Participate with the care team in multi-disciplinary rounds.
2. Access and utilize community resources.
3. Provide cost-effective health care and resource allocation.
4. Assist patients and families in negotiating the complexities of the health care system.

#### **Policies on Duty Hours, Call Schedule, Supervision, Back-up Call, On-Call Activities and Expectations during Neonatal Intensive Care Unit**

**Duty Hours and Call Schedule:** The PEM fellows are on call in-house an average every 4<sup>th</sup> night. During in-house call fellows are provided with a sleep room, shower, and lounge and food facilities. Distribution of time during this month is 100% clinical.

- a. Duty hours are defined as all clinical and academic activities related to the residency program, i.e., patient care (inpatient and outpatient), administrative duties related to patient care, the provision for transfer of patient care, time spent in-house during call activities and scheduled academic activities such as conferences. Duty hours do not include reading and preparation time spent away from the duty site.
- b. Duty hours must be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities.

- c. Residents must be provided with 1 day in 7 free from all educational and clinical responsibilities, averaged over a 4-week period, inclusive of call. One day is defined as one continuous 24-hour period free from all clinical, educational and administrative activities.
- d. Adequate time for rest and personal activities must be provided. This should consist of a 10-hour time period provided between all daily duty periods and after in-house call.

**Supervision:** PEM fellows will be under the supervision of the neonatology attendings or senior fellows for clinical decision making and the performance of procedures. All attending physicians are subspecialty board certified or board eligible in Neonatology.

**Evaluation:** Neonatology faculty are responsible for supplying the program director with a written evaluation of the fellow's rotation and informing the fellow and program director of any problems or issues which may arise during the month.

**Back-up Call:** In the event of excessive clinical activity during a call night, the back-up for additional assistance is with the attending on call. In an unexpected absence, calls are expected to be taken over by other fellows or residents in the call pool of the fellow who is absent. In the event that the fellows and residents cannot arrive at satisfactory sharing of this responsibility, the program director will assign back-up call duties.

**On-Call Activities:** The objective of on-call activities is to provide fellows with continuity of patient care experiences throughout a 24-hour period. **"In-house call"** is defined as "those duty hours beyond the normal workday when residents are required to be immediately available in the assigned institution."

**Expectations:** As a member of the neonatal intensive care team, PEM fellows are expected to help the general pediatric residents and neonatology fellows in the care of the NICU patients, and assist with the daily progress notes. They are also expected to contribute to discussions of patients during daily rounds. At any given time the PEM fellow should be familiar with all of the patients in the NICU. While on call, the PEM fellow is responsible for the care of the existing NICU patients as well as new admissions to the NICU. After 17:00 the neonatology attending is available by phone, but comes to the hospital in person to assist in the care of extremely ill or unstable patients. Procedures must be documented in the procedure log.

## 8. PEM Fellow Rotation in Pediatric Inpatient Ward

**Goals:** To train the fellow in the care of inpatient general pediatric patients.

### **Objectives:**

After completing this rotation, the fellow will demonstrate the ability to:

#### Patient Care

1. Obtain a complete pediatric history and perform a thorough examination of an infant or child admitted to the inpatient service.
2. Develop skills to accurately assess a pediatric patient in terms of overall severity of illness including volume status, cardiovascular stability and respiratory stability.
3. Explain the indications for hospital admission: proper patient monitoring and isolation, and indications for ICU transfer.
4. Develop skills to generate a differential diagnosis and a management plan for each patient and the ability to order and interpret medically indicated laboratory and radiology tests.
5. Work as part of the health care team.
6. Develop skills to generate a therapeutic plan for each patient and to determine the need for continued hospitalization or outpatient management.
7. Develop skills to utilize subspecialty consultants effectively.
8. Perform the following procedures:
  - a. Lumbar Puncture
  - b. Intravenous Line Placement

#### Medical Knowledge

1. Develop knowledge about problems seen in an in-patient pediatric setting including but not limited to:
  - a. Bronchiolitis
  - b. Pneumonia
  - c. Asthma Exacerbations
  - d. Dehydration
  - e. Drug Reactions
  - f. Growth Failure
  - g. Seizures
  - h. Eating Disorder
  - i. Congestive Heart Failure
  - j. Infectious Diseases
  - k. Chronic Pulmonary Disorders including Acute Exacerbation Management
  - l. Chronic Gastrointestinal Disorder including Acute Exacerbation Management
  - m. Acute Illness or Complication in a Special Needs Child
2. Apply his or her knowledge in a clinical setting.
3. Utilize printed material, web-based material and other resources in self-directed acquisition of knowledge.
4. Attend all teaching conferences, including morning report.
5. Apply down time to search electronic resources and textbooks for information on their patients.

#### Practice-based Learning and Improvement

1. Develop skills to evaluate their care and learn through their experience.

2. Apply basic principles of evidence based medicine to their practice.
3. Utilize educational materials and their preceptors to continually enhance knowledge and procedural skills.
4. Identify areas of weakness to trigger and organized plan with their preceptor or Program Director to grow and improve in those areas.
5. Attend mandatory monthly Journal Club.
6. Participate in QI activities.

#### Interpersonal and Communication Skills

1. Develop clear and effective communication with their parents and families, staff, preceptors and consultants.
2. Listen effectively to patients, families, preceptors and staff.
3. Present cases in a well-organized and complete manner.
4. Participate in multidisciplinary care conferences with families to begin to develop skills in the delivery of bad news and end of life discussions.

#### Professionalism

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.
2. Demonstrate sensitivity, compassion and respect for families, staff and other colleagues.
3. Present himself or herself in a dignified fashion.
4. Adhere to principles of ethics and obtain informed consent for all procedures.
5. Respect gender and cultural sensitivity.
6. Respond to pages and messages promptly.
7. Be punctual and respectful of others' time.

#### Systems-based Practice

1. Participate with the care team in multi-disciplinary rounds.
2. Access and utilized community resources.
3. Provide cost-effective health care and resource allocation.
4. Assist patients and families in negotiating the complexities of the health care system.

#### **Policies on Duty Hours, Call Schedule, Supervision, Back-up Call, On-Call Activities and Expectations during Inpatient Ward Rotation**

**Duty Hours and Call Schedule:** The PEM fellows are on call in-house no more than every fourth night and average every 4<sup>th</sup> night. During in-house call fellows are provided with a sleep room, shower, and lounge and food facilities. Distribution of time during this month is 100% clinical.

- a. Duty hours are defined as all clinical and academic activities related to the residency program, i.e., patient care (inpatient and outpatient), administrative duties related to patient care, the provision for transfer of patient care, time spent in-house during call activities and scheduled academic activities such as conferences. Duty hours do not include reading and preparation time spent away from the duty site.
- b. Duty hours must be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities.
- c. Residents must be provided with 1 day in 7 free from all educational and clinical responsibilities, averaged over a 4-week period, inclusive of call. One day is defined as one continuous 24-hour period free from all clinical, educational and administrative activities.

- d. Adequate time for rest and personal activities must be provided. This should consist of a 10-hour time period provided between all daily duty periods and after in-house call.

**Supervision:** PEM fellows will be under the supervision of the general inpatient ward attendings or senior residents for clinical decision making and the performance of procedures. All attending physicians are subspecialty board certified or board eligible in General Pediatrics.

**Evaluation:** General Pediatric Inpatient Faculty or are responsible for supplying the program director with a written evaluation of the subspecialty resident's rotation and informing the resident and program director of any problems or issues which may arise during the month.

**Back-up Call:** In the event of excessive clinical activity during a call night, the back-up for additional assistance is with the attending on call. In an unexpected absence, calls are expected to be taken over by other fellows or residents in the call pool of the fellow who is absent. In the event that the fellows and residents cannot arrive at satisfactory sharing of this responsibility, the program director will assign back-up call duties.

**On-Call Activities:** The objective of on-call activities is to provide fellows with continuity of patient care experiences throughout a 24-hour period. **"In-house call"** is defined as "those duty hours beyond the normal workday when residents are required to be immediately available in the assigned institution."

- a. In-house call must occur no more frequently than every third night, averaged over a four week period.
- b. Continuous on-site duty, including in-house call, must not exceed 24 consecutive hours.

**Expectations:** As a member of the general inpatient ward team, PEM fellows are expected to help the general pediatric residents in the care of patients, and assist with the daily progress notes. They are also expected to contribute to discussions of patients during daily rounds. At any given time the PEM fellow should be familiar with all of the patients on the general inpatient ward service. While on call the PEM fellow is responsible for the care of the existing inpatient ward patients as well as new admissions. After 17:00 the attending is available by phone, but comes to the hospital in person to assist in the care of extremely ill or unstable patients. Procedures must be documented in the procedure log.

Conferences include Pediatric Morning Report and Noon Conference at UNMH. Attendance at these conferences is mandatory.

1. Child Abuse Resource Team (CART)
2. Pediatric Surgery
3. Pediatric Radiology
4. Pediatric Cardiology
5. Ultrasound Techniques at Denver Health Medical Center

## **9. PEM Fellow Rotation in Child Abuse and Neglect/Child Advocacy Resource Team (CART)**

### **Goals:**

Develop the basic skills for the evaluation of suspected child abuse and an understanding of systems relevant to this aspect of Pediatrics.

### **Objectives:**

After completing this rotation, the fellow will demonstrate the ability to:

#### **Patient Care**

1. Demonstrate improved skills in recognizing and interviewing families and children at risk for abuse.
2. Perform a medical evaluation of a physically abused child and a sexually abused child or adolescent.
3. Obtain exposure to forensic evidence collection in acute sexual assault cases.
4. Obtain exposure to the complex consultation process for inpatient victims of abuse and neglect and apply this knowledge to clinical practice.

#### **Medical Knowledge**

1. List the wide spectrum of child physical presentations, including abusive head trauma, skin findings, burns and other injuries.
2. Explain the behavioral presentation, the disclosure process and physical exam findings of child sexual abuse.
3. Explain the medical, behavioral and psychological sequelae of child abuse and neglect.
4. Demonstrate knowledge obtained from review of mandatory educational materials including printed material, CD ROM and videos as well as other resources in self-directed acquisition of knowledge.

#### **Practice-based Learning and Improvement**

1. Develop skills to evaluate their approach to child abuse cases, their clinical care and learn through these experiences.
2. Attendance at weekly CAPT staffing is mandatory.
3. Demonstrate self-directed learning through use of distributed material and reading list.

#### **Interpersonal Skills and Communication**

1. Self-evaluate comfort level and communication skills with suspected child abuse patients and families and develop these skills during the rotation.
2. Demonstrate that they are effectively listening to patients, families and preceptors.
3. Develop their role as a teacher, as medical students may be on the rotation concurrently.

#### **Professionalism**

1. Demonstrate sensitivity, compassion and respect for patients, families, staff and other colleagues.
2. Adhere to principles of ethics and strict confidentiality.
3. Demonstrate gender and cultural sensitivity, and understand the additional sensitive issues of child victimization.

#### **Systems-based Practice**

1. Develop greater appreciation and understanding of the complexity of child protective services, child welfare system and criminal justice system. Fellow will attend court proceedings if possible with CART staff.
2. Review structure of child abuse mandated reporting laws.
3. Attend court with CART staff member to better understand the dual nature of child welfare civil and criminal justice systems.
4. Explain the nature of the child abuse mandated reporting to assist future patients and families so they may know what to expect after a report is made.

### **Policies on Duty Hours, Supervision, and Expectations during Child Abuse and Neglect/Child Advocacy and Protection Rotation**

**Duty Hours:** Fellows are to attend all CART clinics during their month and attend all appropriate conferences. During this month the subspecialty residents will do six 8-10 hour shifts in UNMH PED. There is no in-house or home call.

**Supervision:** All cases are supervised by CART attending physicians.

**Evaluation:** CART Faculty are responsible for supplying the program director with a written evaluation of the subspecialty resident's rotation and informing the resident and program director of any problems or issues which may arise during the month. Acceptable performance will be based on attendance and acceptable performance for level in the six clinical competency areas.

**Expectations:** PEM fellows will assess patients that have been referred to the CART clinic for evaluation and in-patient consultations in addition to those patients acutely presenting to the ED. Skills will be taught through observation of handling of cases, multidisciplinary case conferences and didactic presentations.

## 10. PEM Subspecialty Resident Rotation in Pediatric Radiology

### **Goals:**

Develop skills in basic image interpretation and indications for use of specific diagnostic modalities.

### **Objectives:**

After completing this rotation, the fellow will demonstrate the ability to:

#### **Patient Care**

1. Demonstrate the ability to interpret chest and abdominal plain radiography.
2. Demonstrate the ability to interpret extremity radiography.
3. Demonstrate improved skills with interpretation of more complicated plain radiography (e.g. skeletal survey), ultrasounds, CT scans and MRI's.

#### **Medical Knowledge**

1. Explain the indications, appropriate techniques, risks, limitations and alternatives for commonly ordered diagnostic modalities: plain radiography, ultrasounds, CT scans and MRI's.

#### **Practice-based Learning and Improvement**

1. Effectively search the medical literature, analyze the literature and determine its relevance for specific patients.
2. Effectively use online medical resources.
3. Facilitate professional learning with peers.
4. Review challenging cases to identify better patient care management strategies.

#### **Interpersonal Skills and Communication**

1. Demonstrate active listening skills including appropriate non-verbal behavior.
2. Demonstrate respect for individual patient concerns and perceptions.
3. Effectively communicate and collaborate with the pediatric radiology team including physicians, nurses and radiology technicians.

#### **Professionalism**

1. Maintain confidentiality of patient information according to hospital and HIPAA regulations.
2. Demonstrate sensitivity and compassion to a variety of patient populations.
3. Demonstrate appropriate respect for other health care professionals.
4. Demonstrate respect for diversity of opinion, age, gender and ethnicity.
5. Apply sensitivity when evaluating cultural influences on patient and family behavior.
6. Respond to pages and messages promptly,
7. Be punctual and respectful of others' time.

#### **Systems-based Practice**

1. Recognize system errors and recommend quality improvements.
2. Demonstrate an awareness of and skill in resource-efficient care.
3. Demonstrate advocacy for patients within the health care system.

**Policies on Duty Hours, Supervision, and Expectations during Pediatric Radiology Rotation**

**Duty Hours:** PEM Fellows will report to the radiology reading room every morning and read films with the attending radiologist on weekdays. During this month the subspecialty residents will do six 8-10 hour shifts in TCH ED. There is no in-house or home call.

**Supervision:** All cases are supervised by pediatric radiology attendings.

**Evaluation:** Pediatric Radiology Faculty are responsible for supplying the program director with a written evaluation of the subspecialty resident's rotation using a global evaluation form and informing the resident and program director of any problems or issues which may arise during the month. Acceptable performance will be dependent on attendance and acceptable performance for level on all six ACGME clinical competency areas.