

# Queen's University Emergency Medicine Resident Handbook

## Overall Curriculum Goals and Objectives

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## **MEDICAL EXPERT**

Goals and Objectives using the CanMEDS competencies as a framework have been provided for each rotation from PGY1 – PGY5.

The following list of Goals and Objectives is a comprehensive list of Goals and Objectives in the Medical Expert category that the resident is expected to know by the end of PGY5. These should be a final guide for exam and practice preparation at the end of the residency program. These Goals and Objectives are based on

- The Canadian Core Content of Emergency Medicine (1987)
- The ABEM Core Content of Emergency Medicine (1996)
- Goals and Objectives Queen's University Emergency Medicine Residency Program (1993)
- Goals and Objectives for Emergency Medicine Residency Programs developed by the Council of Residency Directors in Emergency Medicine (1996)
- CanMEDS 2016 Special Addendum to OTR
- Input from Queen's Department of Emergency Medicine Faculty.

## **ADMINISTRATION**

### **Goals:**

1. Learn basic principles of leadership and administration.
2. Develop an understanding of quality assurance and risk management programs and their application to the operation of an emergency department.
1. Develop an understanding of the function of emergency medicine within the institution and its relationship with other departments.
2. Develop an understanding of the function of accrediting agencies and their relationship with emergency medicine.
3. Outline the principles of confidentiality and obligatory reporting as related to Emergency Medicine in Canada.
4. Understand important medicolegal aspects of Canadian Emergency Medicine practice.

### **Objectives:**

1. Discuss the following concepts as they relate to Emergency Medicine:
  - a. Credentialing
  - b. Career development and practice management
  - c. Marketing and recruitment
  - d. Personal financial management
  - e. Cost containment
  - f. Health care financing
  - g. Personnel management
  - h. Public relations
  - i. Hospital and health care governance
  - j. Contract negotiation
  - k. Work schedules and physician wellness.
2. Discuss the management of patient complaints.
3. Discuss the principles of critical incident stress debriefing.
4. Discuss accepted Canadian guidelines relating to the Emergency Department with emphasis on:
  - a. Staffing (Including number of patients per hour per physician)
  - b. Equipment and supplies
  - c. Facility design (options for departments and square meterage required to handle a specific patient volume)
  - d. Quality assurance
  - e. Continuous quality improvement
  - f. Resource utilization
  - g. Hospital disaster planning
  - h. Patient transfer regulations
5. Discuss hospital and Emergency Department administrative organization.
6. State the principles of patient confidentiality.
7. List the situations of mandatory reporting in Ontario.
8. Outline the principles of a medical legal report.
9. Understand the principles of negligence.

## **ANAESTHESIA**

### **Goals:**

1. Develop airway management skills.
2. Develop intravenous access skills.
3. Develop familiarity with pharmacologic agents used in anaesthesia.
4. Learn standard monitoring techniques.
5. Learn relevant pre-operative historical and physical exam considerations.
6. Learn principles of pain management.

### **Objectives:**

1. Demonstrate correct use of the bag-valve-mask device.
2. Demonstrate knowledge of the anatomy of the upper airway.
3. Demonstrate the airway differences and implications for airway intervention for pediatric patients.
4. Demonstrate familiarity with nasotracheal and endotracheal intubation as well as the indications and complications.
5. Demonstrate relevant peripheral and central venous anatomy knowledge.
6. Demonstrate skill in obtaining peripheral and central venous access.
7. State the dosages, indications and contraindications for inhalation anesthetic agents, intravenous analgesic and anesthetics, and neuromuscular blocking agents for adult and pediatric populations.
8. Demonstrate ability to use standard monitoring techniques.
9. Demonstrate ability to manage a patient on a ventilator including ventilator associated complications or ventilation for special populations,
10. Demonstrate knowledge of the indications, contraindications and use of non-invasive ventilator strategies for adult and pediatric populations.
11. Demonstrate knowledge of the principles of regional anesthesia and successfully perform metacarpal, digital, radial, median, ulnar, tibial and sural nerve blocks.
12. Demonstrate ability to administer local anesthetics and be familiar with agents, dosing, side effects, and techniques to monitor pain.
13. Recognize and manage an obstructed airway.
14. Demonstrate skill in all aspects of nasotracheal and endotracheal intubation.
15. Demonstrate ability to use standard emergency department monitoring techniques.
16. Perform procedural sedation under faculty supervision.
17. Provide systemic analgesia under faculty supervision.
18. Perform facial nerve blocks to include supra orbital, infra orbital, mental and auricular nerves.
19. Demonstrate appropriate judgment regarding the need for airway intervention.
20. Demonstrate skill in the use of anaesthetics and neuromuscular blocking agents including conscious sedation and rapid sequence intubation.
21. Demonstrate ability to obtain a surgical airway.
22. Demonstrate ability to perform dental blocks.

## **COMMUNICATION SKILLS**

### **Goals:**

1. Demonstrate an ability to communicate effectively with patients and their families.
2. Demonstrate an ability to communicate effectively with fellow physicians, nursing staff and all other members of the health care team involved in Emergency care.
3. Demonstrate an ability to deal with patients and their families in a caring, nonjudgmental, compassionate manner.
4. Demonstrate effective written communication and documentation.

### **Objectives:**

1. Understand the principals of confidentiality when dealing with patients.
2. Demonstrate good interviewing skills with: appropriate use of open and closed ended questions, use of transitional statements, allowing the patient to answer appropriately, avoidance of medical jargon, maintaining appropriate control of the interview, exploring leads offered by the patient, and demonstration of respect and maintenance of comfort for the patient.
3. Demonstrate skill in age appropriate communication to involve the patient in shared decision making whenever possible.
4. Demonstrate the ability to give "bad news" effectively and compassionately.
5. Understand the support systems available in the Emergency Department to assist with grieving patients and families.
6. Understand verbal and nonverbal cues given by patients and their families that a violent situation might arise and how to prevent that from happening.
7. Demonstrate skilled use of nonviolent crisis intervention strategies to de-escalate difficult encounters.
8. Demonstrate an appropriate ability to communicate with all staff in the Emergency Department.
9. Demonstrate a strategy for dealing with staff conflict situations that can arise in the Emergency Department between: the emergency physician and consultants, the Emergency physician and all other Emergency departmental staff, and the emergency department and the hospital administration.
10. Demonstrate an effective strategy for dealing with: the angry patient or patient's family, the violent patient, the overly concerned anxious patient, the intoxicated patient, and patients of differing cultural, socioeconomic and lifestyle backgrounds.
11. Discuss a strategy for dealing with mistakes in patient care made by the physician or the physician's colleagues.
12. Disclose adverse events to patients and their families when appropriate.
13. Maintain complete, concise and relevant medical documentation that respects patient privacy.
14. Demonstrate skilled preparation of medicolegal reports, consultation letters and written responses to patient complaints.

## **CRITICAL CARE MEDICINE**

### **Goals:**

1. Develop the ability to rapidly evaluate, diagnose, stabilize, and expedite the disposition of critically ill patients.
2. Learn respiratory, cardiovascular, renal and neurologic physiology and the pathophysiology of trauma, toxins, shock, sepsis, cardiac failure, and respiratory failure, which affect critically ill patients.
3. Learn the principles of medical instrumentation and hemodynamic monitoring and be able to utilize them in the care of critically ill patients.
4. Learn the indications and develop the technical skills needed to perform diagnostic and therapeutic interventions in critically ill patients.
5. Learn the rational use of other consultants, laboratory, radiographic and other diagnostic tests in the management of critically ill patients.

### **Objectives:**

1. Demonstrate ability to rapidly perform history and physical exams in critically ill patients.
2. Demonstrate the ability to perform the following procedures: oral endotracheal intubation, nasotracheal intubation, cricothyrotomy, needle thoracostomy, tube thoracostomy, central intravenous placement, swan ganz placement, trans-venous cardiac pacing, arterial line placement, ABG, and foley catheterization.
3. Demonstrate the ability to use and interpret data from ECG monitors, ECGs, cardiac outputs, hemodynamic monitoring, arterial blood gases, pulse oximetry, end tidal CO<sub>2</sub> monitors and respirators.
4. Describe the dosages, indications and contraindications of pharmacologic interventions for shock, cardiac failure, dysrhythmias, sepsis, trauma, respiratory failure, hepatic failure, renal failure, and neurologic illnesses.
5. Demonstrate the ability to manage a patient on a ventilator including ventilator associated complications.
6. Demonstrate appropriate judgment in the management of critically ill patients.
7. Demonstrate appropriate prioritization of diagnostic and therapeutic interventions in critically ill patients.
8. Demonstrate ability to diagnose and treat shock, sepsis, fluid and electrolyte abnormalities, cardiac failure, cardiac dysrhythmias, renal failure, hepatic failure, and toxicological emergencies.
9. Demonstrate an understanding of the appropriate use of consultants in critically ill patients.
10. Demonstrate an understanding of the ethical and legal principles applicable to the care of the critically ill patients.
11. Demonstrate the ability to work as a member of the team in a critical care environment and understand the roles of the multidisciplinary team members required.
12. Demonstrate the necessary communication skills to deal with the critical ill patient, family and friends as well as the other staff involved with that patient's care.

## **DISASTER MEDICINE**

### **Goals:**

1. Learn the cycle of disaster planning.
2. Learn the Information Management System.
3. Understand the triage principles and systems used for mass casualty events.
4. Learn the principles of medical care in a for natural and man-made disasters.
5. Understand the aspects of disaster planning and preparedness unique to a CBRN event.

### **Objectives:**

1. Describe the 4 stages involved in disaster planning and preparedness.
2. Demonstrate the ability to complete a risk-hazard analysis for a given mass gathering event.
3. Describe the START triage system.
4. Demonstrate the ability to triage victims of a disaster scenario.
5. Describe the roles within Incident Management System for an ED response to a mass casualty event.
6. Describe the initial response to prepare the ED in the event of a mass casualty event.
7. Describe a classification for disaster scenarios (PICA).
8. Describe the most likely injuries to result from natural and man-made disasters including: avalanche, building collapse, tornado, multi-vehicle accidents, bomb explosion.
9. Describe the pathophysiology, patient evaluation and management of crush syndrome.
10. Describe the decontamination measures involved in a CBRN event.
11. Identify potential agents of bioterrorism and their treatment.

## **ENVIRONMENTAL ILLNESS**

### **Goals:**

1. Learn the pathophysiology, patient evaluation and management of thermal and chemical burns.
2. Learn the pathophysiology, patient evaluation and management of electrical injury, including lightning injury.
3. Learn the pathophysiology, patient evaluation and management of radiation injuries.
4. Learn the pathophysiology, patient evaluation and management of hypothermia and frostbite.
5. Learn the pathophysiology, patient evaluation and management of heat illness.
6. Learn the pathophysiology, patient evaluation and management of drowning and near-drowning.
7. Learn the pathophysiology, patient evaluation and management of barotraumas.
8. Learn the pathophysiology, patient evaluation and management of high altitude illness.

### **Objectives:**

1. Demonstrate the correct care for the burn victim.
2. Demonstrate the ability to calculate surface area burned for various age groups.
3. Demonstrate the method for determining the correct maintenance fluid regimen for the burned patient.
4. State the admission criteria for the burned patient, including criteria for burn unit admission.
5. State the chemical mechanism of injury for hydrochloric and sulfuric acids, hydrofluoric acid, alkaline burns, and white phosphorous burns.
6. List the differences between alkali and acid burns.
7. State the treatment for an acid burn, alkali burn, hydrofluoric acid burn, and white phosphorous burn.
8. Appropriately manage acute chemical burns in the Emergency Department.
9. State the common injuries/conditions which are associated with electrical injuries.
10. Demonstrate appropriate clinical and diagnostic evaluation of the electrically-injured patient.
11. State the common injuries and conditions associated with lightning injuries.
12. List the appropriate clinical and diagnostic evaluation of the lightning-injured patient.
13. Demonstrate the ability to evaluate and treat lightning injury.
14. State the conditions which are associated with radiation injuries.
15. State the appropriate clinical and diagnostic evaluation of the radiation-injured patient.
16. List the decontamination procedures required for the radiation-injured patient.
17. State the pathophysiologic mechanisms associated with inhalation injury.



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18. State the indications for intubation in the smoke inhalation patient.
19. List the common toxins commonly associated with a house fire.
20. Recognize those patients which require emergent intubation after an inhalation injury.
21. Demonstrate appropriate management of inhalation injuries.
22. Demonstrate the correct care for the frostbite victim.
23. Discuss the criteria for superficial frostbite and for deep frostbite.
24. Demonstrate the correct care for the hypothermic patient.
25. State the various techniques for passive and active rewarming.
26. Discuss the appropriate interpretation of blood gases in the hypothermic patient.
27. State specific considerations regarding intubation, use of external cardiac compression, and use of cardiovascular medications in the hypothermic patient.
28. Demonstrate the correct care for the heat cramp, heat exhaustion, and heat stroke patient.
29. State the definition for heat stroke and list the patients at risk for heat stroke.
30. State the criterion that differentiate the various types of heat illness.
31. Demonstrate the correct care for the near-drowning/drowning patient.
32. State the pathophysiologic process associated with immersion.
33. List the complications resulting from near-drowning/drowning.
34. State the pathophysiology of barotrauma of descent, barotrauma of ascent, air embolism, and decompression sickness.
35. Discuss the appropriate therapy for dysbaric injuries.
36. List the indications for hyperbaric oxygen therapy.
37. Discuss emergency first aid for a diving accident at sea.
38. State the symptoms associated with acute mountain sickness, high altitude cerebral edema, high altitude pulmonary edema, and high altitude retinopathy.
39. Discuss the appropriate therapy for mountain sickness, high altitude cerebral edema, high altitude pulmonary edema, and high altitude retinopathy.

## **eHEALTH AND TECHNOLOGY**

### **Goals:**

1. Use information and communication technologies to engage in patient centered care.
2. Use information technology to improve health care delivery.

### **Objectives:**

1. Assist patients and their families to identify, access and make use of information and communication technologies to support their care and manage their health
2. Document and share written and electronic information to optimize clinical decision making, patient safety, confidentiality and privacy.
3. Use health informatics to improve patient care and optimize patient safety.

## **ETHICS AND THE LAW**

### **Goals:**

1. Learn basic ethical principles relevant to emergency medicine.
2. Apply ethical principles to specific patient encounters to assist in decision making.
3. Learn basic legal principles relevant to emergency medicine.
4. Learn the similarities and differences between legal and ethical principles relating to emergency medicine.

### **Objectives:**

1. Discuss the historical, philosophical, and practical implications of beneficence, non-maleficence, autonomy, justice, truth-telling and confidentiality to emergency medical practice and research.
2. Demonstrate ability to assess patients' decisional capacity/competency.
3. Discuss the role of the expert witness in medicolegal proceedings.
4. Discuss the importance of proper documentation in medicolegal proceedings.
5. Demonstrate ability to apply ethical principles to resuscitation, including advance directives, decision to forgo resuscitation, medically assisted death, and organ transplantation.
6. Demonstrate knowledge of cost containment, resource allocation, quality of care and access to care issues.
7. Describe basic principles of medical malpractice.
8. Discuss the components of hospital administration and interactions as they relate to emergency medicine.
9. Discuss the components and responsibilities of physician-physician relationships.
10. Demonstrate knowledge of laws regarding reportable diseases, patient care, and patient transfers.
11. Demonstrate knowledge of laws regarding reporting of deaths and appropriate documentation.
12. Discuss laws relating to drug dispensing, regulation, and abuse.

## **GENDER AND CULTURAL ISSUES**

### **Goals:**

1. Understand the concept of gender, cultural and ethnic issues as they relate to the practice of Emergency Medicine in Canada.

### **Objectives:**

1. Demonstrate a non-judgmental attitude toward all patients regardless of gender, cultural, or ethnic background to provide care that is in keeping with the patient's wishes and value system.
2. Develop communication skills to allow effective care of patients of all gender, cultural and ethnic backgrounds.
3. Understand the gender and cultural differences of clinical disorders in terms of pathophysiology, diagnosis, treatment and research.
4. Demonstrate an attitude of caring and respect for patients and fellow staff members with different sexual orientation, socioeconomic or cultural backgrounds.
5. Demonstrate an understanding that people with cultural differences, different socioeconomic backgrounds, or sexual orientation have unique medical needs and manifestations of illness or injury.

## **INTERNAL MEDICINE SPECIALTIES**

### **Overall Goals:**

1. Assimilate general concepts of internal medicine, history taking and physical examination skills to develop a systemic evaluation for patients presenting to the emergency department.
2. Develop ability to recognize and appropriately treat disorders of the cardiovascular system.
3. Develop ability to recognize and appropriately treat disorders of the skin and mucous membranes.
4. Learn the pathophysiology, presentation, and management of diseases related to the alimentary tract.
5. Develop knowledge of the pathophysiology, presentation, and management of common hematologic diseases.
6. Master the understanding of the components of the immune system, and the disorders of hyper and hypofunction of the immune system.
7. Know the major systemic infectious disorders, their diagnosis and treatment.
8. Learn the pathophysiology, evaluation, and treatment of renal disorders.
9. Develop knowledge of the etiologies, manifestations, and treatment of endocrine and metabolic disorders.
10. Master an understanding of the diseases of the respiratory system, including pathophysiology, evaluation and treatment.

## **Cardiology**

### **Goals:**

1. Demonstrate the ability to stabilize patients who present in cardiopulmonary arrest.
2. Develop skills in the evaluation of patients who present with chest pain.
3. Demonstrate the ability to evaluate, stabilize, treat, and arrange for appropriate disposition of patients with cardiac disease processes.
4. Demonstrate the ability to develop a differential diagnosis for patients presenting with cardiac symptomatology (chest pain, shortness of breath, weakness, palpitations) etc.
5. Demonstrate skill in the interpretation of diagnostic modalities (ECG, chest x-ray, cardiac enzymes).
6. Develop a familiarity with cardiac pharmacologic agents.
7. Demonstrate skill at cardiac related procedures: venous line and CVP pressure monitoring, pericardiocentesis, defibrillation and cardioversion, transcutaneous and trans-venous cardiac pacing, and Swan ganz catheterization
8. Demonstrate the ability to diagnose, stabilize and treat patients presenting with acute coronary syndromes.

### **Objectives:**

1. Demonstrate the ability to perform an appropriate history and physical examination on the patient presenting with cardiac symptomatology.

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2. List items elicited from the history of patients with chest pain to suggest a risk for cardiac etiology.
3. Discuss limitations in differentiation of cardiac chest pain from non-cardiac pain in patients with risk factors.
4. Describe the pathophysiology of acute coronary syndromes.
5. Describe the typical electrocardiograph findings of patients with acute coronary syndrome.
6. Discuss differential diagnosis of atypical chest pain.
7. Discuss atypical presentations for acute coronary syndrome.
8. Discuss the sensitivity and specificity of ancillary studies for chest pain presentations.
9. Discuss the sensitivity and specificity of troponin levels in the investigation of patients presenting to the Emergency Department with chest pain.
10. Describe the appropriate triage considerations for patients presenting to the Emergency Department with chest pain.
11. Discuss the treatment of acute coronary syndromes.
12. Demonstrate knowledge of current ACLS recommendations
13. Describe the clinical findings of cardiogenic shock and outline therapy for cardiogenic shock.
14. Differentiate cardiogenic shock from other etiologies for shock.
15. Describe the clinical presentation for pericardial disease and outline the appropriate initial therapy and management for pericardial disease.
16. List the indications, contraindications and complications of PCI and thrombolytic therapy for acute myocardial infarction.
17. Describe the clinical presentation, etiologies, pathophysiology, and current therapy for acute congestive heart failure.
18. Describe the valvular anatomy of the heart and list etiologies for valvular heart disease.
19. List complications of prosthetic cardiac valves and appropriate Emergency Department management.
20. Differentiate between congestive cardiomyopathy, hypertrophic cardiomyopathy and restrictive cardiomyopathy and discuss therapy for each.
21. Define myocarditis and describe the ECG findings and acute management of myocarditis.
22. Discuss the pathophysiology and treatment of hypertensive urgency and emergency.
23. Discuss the pathophysiology, etiology, and treatment of patients presenting with thoracic aortic aneurysm dissection.
24. Describe the pathophysiology and clinical presentation and treatment of vascular disease.
25. Outline the diagnosis and management of acute thrombophlebitis
26. Discuss the use of thrombolysis in acute thrombophlebitis.

## Dermatology

### Objectives:

1. Demonstrate ability to diagnose and treat dermatitis and eczema.
2. Demonstrate ability to diagnose and treat soft issue infections.
3. Demonstrate ability to diagnose and treat maculopapular lesions.
4. Demonstrate ability to diagnose popular and nodular skin lesions.

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5. Demonstrate ability to diagnose and discuss the etiologies of erythema.
6. Demonstrate ability to diagnose and discuss the etiologies of vesicular and bullous skin lesions.
7. Demonstrate ability to diagnose common skin cancers.
8. Demonstrate knowledge of the cutaneous manifestations of acute systemic illnesses.
9. Discuss the indications for emergent dermatologic consultation.
10. Discuss the common pharmacologic agents used to treat dermatologic disorders and their indications.

## Endocrinology

### Objectives:

1. Discuss the manifestations, work-up, treatment, and disposition of patients with disorders of glucose metabolism.
2. Demonstrate understanding of the common endocrine abnormalities, especially regarding presentation, initial evaluation and management, and disposition.
3. Discuss acute treatment for patients presenting with disorders of severe malnutrition.

## General Medicine

### Objectives:

1. Appropriate history taking skills for all patients presenting to the emergency department.
2. Demonstrate the ability, based on the history acquired, to do an immediate assessment and initial stabilization, followed by a complete directed examination.
3. Combine the knowledge defined in the objectives below with the history and physical examination, to develop an appropriate differential diagnosis for all presentations

## Gastro Intestinal

### Objectives:

1. Demonstrate knowledge of the causes, presentation, and management of esophageal problems.
2. Describe the etiologic agents, pathophysiology, and management of infectious diarrhea.
3. Demonstrate the ability to evaluate, manage, and appropriately disposition patients with gallbladder and liver disorders.
4. Demonstrate knowledge of the presentations, diagnosis, and management of obstructive lesions of the alimentary tract.
5. Demonstrate the ability to perform NG tube insertion and anoscopy.

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6. Describe the presentations, work-up, and appropriate treatment of patients with inflammatory processes of the alimentary tract.
7. Demonstrate familiarity with the evaluation, treatment, and appropriate disposition of patients with gastrointestinal bleeding.

### Hematology/Oncology

#### Objectives:

1. Demonstrate knowledge of the proper evaluation and treatment of the patient with sickle cell disease.
2. Describe the appropriate steps in the assessment and treatment of the patient with bleeding disorders.
3. Demonstrate knowledge in the work-up, treatment, and appropriate disposition of the patient with anemia, platelet disorders and myeloproliferative disorders.
4. Demonstrate understanding of the appropriate use of transfusions of blood components, including diagnosis and treatment of transfusions reactions.
5. Demonstrate knowledge of the appropriate evaluation of patients with abnormalities of the lymphatic system.
6. Demonstrate knowledge of the presentation, treatment, and disposition of patients with malignancies of the hematopoietic system.
7. Demonstrate knowledge of pathophysiology, presentation, diagnosis and treatment of oncological emergencies.

### Immunology

#### Objectives:

1. Demonstrate familiarity with the mechanism and manifestations of immune compromise, including that caused by infection with HIV.
2. Discuss and be able to differentiate non-AIDS causes of immune hypofunction.
3. Discuss the manifestations, initial treatment, and appropriate disposition of patients with rheumatologic and autoimmune diseases.
4. Demonstrate understanding of the work-up and treatment of patients with hypersensitivity reactions, including transplant rejection.
5. Demonstrate knowledge of the concepts of cellular and humoral immunity and the proper use of immunizations in patients presenting to the emergency department.

### Infectious Disease

#### Objectives:

1. Demonstrate knowledge of the presentation, treatment and disposition of patients with needlestick injuries.



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2. Demonstrate familiarity with the manifestations of, evaluation for, and treatment of bacterial infections, including STDs, tuberculosis, tetanus and rabies.
3. Describe the diagnostic criteria for, and the treatment of, toxic shock syndrome.
4. Know the characteristics of sepsis in different age groups.
5. Demonstrate knowledge of the appropriate initial treatment of the patient with possible sepsis.
6. Demonstrate knowledge of the vector, predisposing factors, clinical course, work-up, and treatment of rickettsial diseases.
7. Discuss the manifestations of, treatment of, appropriate disposition for, and immunization (when appropriate) of patients with viral infections.
8. Demonstrate knowledge of the time course, vectors, and treatment of the more common protozoal diseases.

## Nephrology

### Objectives:

1. Demonstrate familiarity with the causes, presentation, initial management and disposition of patients with glomerular disorders.
2. Describe the common etiologic agents, and appropriate work-up and disposition of patients with renal failure.
3. Discuss the common causes, metabolic manifestations, treatment (including dialysis) and disposition of patients with renal failure.
4. Describe the indications for emergent dialysis.
5. Describe the common complications of dialysis therapy and how they manifest in patients presenting to the emergency department.
6. Define the etiologies, and demonstrate understanding in the evaluation and treatment of patients with acid/base disorders.
7. Demonstrate understanding of the etiologies, manifestations, and treatment of fluid and electrolyte abnormalities.

## Respirology

### Objectives:

1. Demonstrate knowledge in the etiologic agents causing, presentation and evaluation, and disposition of patients with infections of the respiratory system.
2. Describe the etiology, manifestation, and treatment of patients with acute and chronic airway disease including criteria for intubation and intubation/ventilator management.
3. Describe the indications for and the advantage of non-invasive ventilatory techniques such as nasal CPAP and nasal BiPaP.
4. Discuss the predisposing factors, presentation, and appropriate treatment of patients with pulmonary embolus.
5. Demonstrate knowledge of the potential presentation, work-up, treatment and appropriate disposition of patients with chest masses.

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6. Demonstrate knowledge of the presentation, work-up, treatment, and disposition of patients with chronic granulomatous disease.
7. Demonstrate understanding of the etiologies, diagnosis, and treatment of adult respiratory distress syndrome and multisystem organ failure.

## **GERIATRIC MEDICINE**

### **Goals:**

1. Understand the changes in anatomy, physiology, pharmacology, and psychology that occur with aging.
2. Learn the overall principles of managing the geriatric patient in an emergency care environment.
3. Understand societal biases regarding aging in the context of the emergency health care system.
4. Learn the concept of functional status as the interaction of age, disease, and environment.
5. Learn the ethical principles involved in medical decision making with regard to advance directives and life sustaining treatment.
6. Learn the pathophysiology and emergency treatment of elderly patients with common medical, neurologic, psychologic, and surgical diseases.

### **Objectives:**

1. Demonstrate a sensitivity to the needs of elderly patients and respect for their ability to make decisions.
2. Demonstrate the ability to do a formal mental status exam for the elderly patient in the emergency department environment.
3. Demonstrate the ability to assess decision making capacity in the elderly; discuss the types and meaning of advance directives.
4. Discuss which laboratory tests are physiologically altered with aging and which tests are not changed.
5. Discuss which common diseases (appendicitis, myocardial infarction, etc.) present in the elderly patients with atypical signs and symptoms that are different than the presentations in younger patients.
6. Demonstrate the ability to do functional assessments evaluating activities of daily living (ADL) of elderly patients in an emergency department setting.
7. Demonstrate the ability to define and diagnose dementia and delirium in elderly patients.
8. Discuss the etiologies and pathophysiology of falls in the elderly; demonstrate the ability to care for the elderly fall victim.
9. Discuss the management of elderly patients who present with polypharmacy.
10. Demonstrate the ability to detect depression, alcohol and drug abuse, and anxiety disorders in elderly patients.
11. Demonstrate the ability to detect and manage elder mistreatment, including physical abuse, sexual assault, physical neglect, and psychological abuse and neglect.
12. Demonstrate the ability to diagnose and treat myocardial infarction in elderly patients; discuss the importance of myocardial salvage for elderly patients with acute myocardial infarction.
13. Demonstrate the ability to diagnose and treat elderly patients with cerebral vascular accidents.
14. Demonstrate the ability to diagnose and manage trauma and acute abdominal emergencies in the elderly patient; discuss the differences in the approach to elderly patients with surgical emergencies compared to the non-elderly.

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15. Demonstrate the ability to manage elderly patients presenting with syncope, dizziness, bleeding disorders, and acute infections.
16. Demonstrate the ability to address the psychosocial needs of the elderly being discharged from the emergency department.

## **NEUROLOGY**

### **Goals:**

1. Learn the anatomy, pathophysiology, presentation, and management of common nervous system disorders.
2. Develop skill in the performance of a screening and detailed neurological evaluation.
3. Develop skill in the use and performance of diagnostic procedures in the evaluation of neurological disorders.

### **Objectives:**

1. Demonstrate brief and detailed neurological-directed history taking and physical examination.
2. Demonstrate the ability to recognize and manage the Emergency Department presentation of cerebrovascular disorders, cranial nerve disorders, demyelination disorders, neuromuscular disorders, seizure disorders, headache, spinal cord compression, pseudotumor cerebri, normal pressure hydrocephalus, peripheral neuropathy, shunt malfunction, neurological infections, and neurological inflammatory states.
3. Demonstrate knowledge of basic neuroanatomy and application of this knowledge in the neurological examination to localize neurological disorders.
4. Describe the indications, techniques, and contraindications for neurological imaging procedures including plain radiographs, computerized tomographic scans, magnetic resonance imaging, myelography, tomography.
5. Demonstrate accurate interpretation of neurological imaging studies including plain radiographs and computerized tomographic scans of common neurological disorders.
6. Describe the main classifications of headaches and state the doses, indications, and contraindications for agents used to manage each of these types of headaches.
7. Demonstrate skill in the performance and interpretation of spinal fluid studies
8. Demonstrate knowledge of the proper sequence for evaluation and management of patients with shunt malfunctions, seizures, spinal cord compression, neurological infections.
9. Discuss the indications, contraindications, and dosages of agents used to treat neurological infections in pediatric and adult populations.

## **NON TRAUMIC RESUSCITATION**

### **Goals:**

1. Understand the etiologies and pathophysiology of cardiac arrest in adults and children.
2. Learn to recognize the dysrhythmias associated with cardiac arrest and their treatment.
3. Learn the ACLS recommendations and develop skill in the performance of standard resuscitative procedures (both BLS and ALS).
4. Learn the principles of pharmacotherapy and the routes and dosages of drugs recommended during cardiac arrest and following resuscitation.
5. Learn standard monitoring techniques.
6. Learn the indications for withholding and terminating resuscitation.

### **Objectives:**

1. Demonstrate knowledge of the various etiologies of cardiac arrest and the corresponding therapeutic approaches.
2. Demonstrate knowledge of the factors affecting blood flow oxygen delivery and oxygen consumption during cardiac arrest.
3. Demonstrate ability to recognize dysrhythmias associated with cardiac arrest and knowledge of ACLS protocols for their treatment.
4. Demonstrate ability to manage the airway during cardiac arrest, including mouth-to-mouth ventilation, bag-valve-mask ventilation, endotracheal intubation, cricothyroidotomy, and recognition of the obstructed airway.
5. Demonstrate ability to perform external closed chest cardiopulmonary resuscitation according to ACLS guidelines.
6. Discuss the dosages, indications and contraindications for pharmacologic therapy during cardiac arrest and following resuscitation.
7. Demonstrate knowledge of the techniques for drug administration including peripheral and central venous, endotracheal, intraosseous and intra-cardiac administration.
8. Demonstrate ability to safely perform external defibrillation.
9. Demonstrate ability to safely perform external cardiac pacing.
10. Demonstrate ability to perform standard monitoring techniques during cardiac arrest and resuscitation including arterial blood gases, blood pressure monitoring, right heart and pulmonary artery catheterization and end tidal CO<sub>2</sub> monitoring.
11. Demonstrate understanding of "Do not resuscitate" orders, advance directives. Living wills and brain death criteria.

## **OBSTETRICS/GYNECOLOGY**

### **Goals:**

1. Learn the principle of contraception.
2. Develop expertise in the diagnosis and management of emergent complications of pregnancy.
3. Develop expertise in the management of uncomplicated and complicated labor and delivery.
4. Develop expertise in the management of sexual assault.
5. Learn the principles of management of gynecologic and obstetrical trauma.
6. Learn diagnosis and treatment of genital and pelvic infectious diseases.
7. Develop expertise in the diagnosis and management of abdominal pain in females.
8. Develop expertise in the diagnosis and management of vaginal bleeding.

### **Objectives:**

1. Demonstrate ability to correctly perform a complete gynecologic exam.
2. Discuss the differential diagnosis and demonstrate ability to evaluate and treat patients with vaginal discharge.
3. Discuss the differential diagnosis and demonstrate ability to evaluate and treat patients with pelvic pain.
4. Discuss the differential diagnosis and demonstrate ability to evaluate and treat vaginal bleeding in pregnant and non-pregnant women.
5. Discuss the differential diagnosis and demonstrate ability to evaluate and treat patients with dysmenorrhea.
6. Demonstrate ability to evaluate and treat patients with genitourinary infections including PID, UTI, STD, and vaginitis.
7. Describe the symptoms and differential diagnosis of toxic shock syndrome
8. Demonstrate knowledge of perinatal and neonatal resuscitations.
9. Describe the relative effectiveness and complications of various contraceptive methods, including post-coital douche, coitus interruptus, condoms, diaphragm, rhythm method, oral contraceptives, injectable hormonal agents the morning after pill, and the IUD.
10. Demonstrate ability to evaluate and manage the care of patients with suspected ectopic pregnancy.
11. Discuss the signs, symptoms, and treatment of placenta previa.
12. Discuss the signs, symptoms and treatment of abruptio placenta.
13. Discuss the signs, symptoms and treatment of preeclampsia and eclampsia.
14. Discuss the normal stages of labor and the time course for each.
15. Demonstrate ability to determine the APGAR score and discuss the significance of different values.
16. Demonstrate ability to evaluate and treat sexual assault victims, including evidence collection, referral for appropriate patient counseling and pregnancy prevention.
17. Discuss the differential diagnosis and demonstrate ability to diagnose and treat genital ulcerations.
18. Discuss the pathophysiology, differential diagnosis, signs, symptoms and treatment of ovarian torsion.
19. Discuss the management of trauma during pregnancy.

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20. Discuss the indications for peri-mortem caesarian section and describe the technique.
21. Demonstrate ability to perform uncomplicated full-term deliveries.
22. Demonstrate ability to manage patients with hyperemesis gravidarum.
23. Discuss the diagnosis and treatment of complicated labor including premature rupture of membranes, premature labor, failure to progress, fetal distress, and ruptured uterus.
24. Describe the management of complicated deliveries, including prolapsed cord, uncommon presentations, dystocia, uterine inversion, multiple births and stillbirth.
25. Demonstrate ability to diagnose and manage postpartum complications including retained products, endometritis and mastitis.
26. Discuss RH incompatibility.
27. Describe the presentation a patient with hydatidiform mole.



## **PATIENT SAFETY, QUALITY IMPROVEMENT AND RESOURCE STEWARDSHIP**

### **Goals:**

1. Actively contribute to providing care, to the continuous improvement of health care quality and patient safety
2. Share health care information and plans with patients and their families
3. Handover care of patients effectively.
4. Engage in stewardship of health care resources.

### **Objectives:**

1. Recognize and respond to harm from health care delivery including patient safety incidents
2. Implement strategies to promote patient safety and address human and system factors that contribute to potential for harm
3. Disclose harmful patient safety incidents appropriately.
4. Manage transitions in care effectively.
5. Contribute to a culture that promotes patient safety.
6. Analyze patient safety incidents to enhance systems of care.
7. Allocate health care resources for optimal patient care.
8. Apply evidence and management processes to achieve cost-appropriate care.
9. Ensure patient safety is maintained when learners are involved.

## **PEDIATRICS**

### **Goals:**

1. Develop skill in infant/pediatric resuscitation.
2. Develop skill in performance of appropriate pediatric history and physical exam, including general growth and development, assessment and knowledge of current immunization requirements.
3. Learn the etiologies, significance, and treatment of fever and infection in the child.
4. Learn the manifestations and significance of abdominal related complaints in the child.
5. Learn the etiologies and treatment of neurologic emergencies in the child.
6. Learn the physiology and derangements of fluid and electrolyte management in children.
7. Learn the indications of social and/or psychological disturbances.
8. Learn the specific problems of pediatric trauma victims.
9. Learn the manifestations and treatment of pediatric cardiac abnormalities.
10. Learn the pathophysiology, etiologies, and treatment of respiratory disorders of children.
11. Learn the pathophysiology, etiologies, and treatment of common serious endocrine and hematologic disorders of children.
12. Learn the pathophysiology, etiologies, and treatment of common serious gynecologic and urologic conditions of children.
13. Learn to recognize and provide appropriate treatment for orthopedic and soft tissue problems of childhood.
14. Learn the common dermatologic diseases and dermatologic manifestations of systemic diseases in children.
15. Learn to recognize and treat children with common and/or serious problems of the head and neck.

### **Objectives:**

1. Demonstrate correct airway management including pediatric endotracheal intubation.
2. Demonstrate ability to obtain and utilize intravenous access including venipuncture, intraosseous needle placement, and administration of appropriate dose of emergency medications.
3. Demonstrate knowledge of the significance of fever in children of various ages, and the appropriate workup and treatment for each age group.
4. Demonstrate knowledge of common infectious diseases of childhood, including appropriate work-up and treatment of meningitis, sepsis, pneumonia, urinary tract infection, and bacteremia.
5. Demonstrate ability to properly perform a pediatric lumbar puncture.
6. Demonstrate knowledge of the pathophysiology and manifestations of common and/or serious diseases of the gastrointestinal tract and abdominal cavity of children, including gastroenteritis, intussusception, volvulus, Meckel's anaphylactoid purpura, and appendicitis.
7. Discuss the differential and preliminary work-up of abdominal masses found in the pediatric patient.

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8. State the appropriate management of children with seizures, both febrile and afebrile.
9. Demonstrate familiarity with the diagnosis and management of Reye's syndrome.
10. Demonstrate knowledge of hydrocephalus, its differential, treatment and the management of neurologic shunt problems
11. Calculate fluid and electrolyte requirements of a dehydrated child.
12. Discuss child abuse in terms of presentation, pathognomonic historical findings, physical findings and radiological abnormalities.
13. Discuss the diagnostic work-up and disposition when child abuse and/or neglect is suspected
14. Demonstrate ability to perform a history and physical exam of an alleged victim of sexual abuse.
15. Demonstrate ability to direct a pediatric trauma resuscitation.
16. Demonstrate knowledge of the significance and correct treatment of various patterns of burns in pediatric patients.
17. Discuss the common pediatric dysrhythmias, their diagnosis and treatment.
18. Discuss the types of congenital cyanotic and noncyanotic heart disease, their complications and treatment.
19. Demonstrate ability to read pediatric chest x-rays.
20. Demonstrate ability to properly treat a patient who needs prophylaxis for rheumatic fever or subacute bacterial endocarditis.
21. Discuss the differential diagnosis of chest pain in children and adolescents, noting differences from adults, and demonstrating knowledge of proper work-up and treatment
22. Discuss the differential of congestive heart failure in the pediatric patient and demonstrate knowledge of appropriate treatment.
23. Discuss the anatomy and physiology of the respiratory tract in children
24. Demonstrate correct performance of peak expiratory flow measurements, pulse oximetry and end-tidal CO<sub>2</sub>.
25. Demonstrate management of patients with upper airway infection suspected of having epiglottitis.
26. Correctly interpret soft tissue lateral neck x-rays in children.
27. Discuss the etiologies and demonstrate correct management of children with lower and upper airway diseases including asthma, bronchiolitis, cystic fibrosis, laryngotracheitis and pneumonia.
28. Demonstrate correct management of foreign bodies of the upper airway and ability to diagnose and arrange for disposition for patients with lower airway foreign bodies.
29. Demonstrate correct management of the pediatric patient with diabetes and/or diabetic ketoacidosis.
30. Demonstrate knowledge of the etiologies of anemia in children and the appropriate diagnostic evaluation.
31. Demonstrate knowledge of the differential diagnosis and work-up of the jaundiced child.
32. Discuss the differential diagnosis and work-up of the child with evidence of a bleeding disorder.
33. Demonstrate correct evaluation and treatment of a child with dysuria or a suspected urinary tract infection.
34. Discuss the indications for and interpret the intravenous pyelogram of a child.
35. Demonstrate knowledge of and treatment for phimosis, paraphimosis, balanitis, and testicular lesions including torsion.

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36. Discuss the differential and required workup for a pediatric patient with a limp.
37. Demonstrate x-ray interpretation and perform proper casting and splinting for a variety of pediatric fractures including the clavicle, distal radius and ulna, and distal tibia and fibula.
38. Demonstrate ability to perform and interpret the results of an arthrocentesis
39. Discuss the findings and disposition of a patient with a suspected autoimmune syndrome such as juvenile arthritis, lupus, or dermatomyositis.
40. Demonstrate ability to perform reduction of a dislocated joint.
41. Discuss the etiology and treatment of acute soft tissue infections and demonstrate the ability to perform an incision and drainage.
42. Correctly diagnose common pediatric exanthemas including varicella, measles, monilia, roseola, pityriasis, scabies, and erythema infectiosum.
43. Demonstrate knowledge of the differential diagnosis and evaluation of children with petechiae.
44. Demonstrate ability to correctly perform and interpret the exam of the ears, nose and throat.
45. Demonstrate knowledge of pediatric facial and orbital infections and their treatment.
46. Discuss the causes of neonatal shock and demonstrate the ability to perform infant resuscitation, including endotracheal intubation and insertion of an umbilical venous catheter or an interosseous catheter.
47. Discuss the technique for suprapubic bladder aspiration.
48. Demonstrate bladder catheterization in male and female infants and discuss indications for this procedure.
49. Discuss the findings and differential diagnosis of sudden infant death syndrome, and demonstrate knowledge of the proper legal steps and ability to support the family.
50. Discuss the differential diagnosis and acute treatment of the weak infant and child, including polio, botulism and the Landry-Guillain-Barr syndrome.
51. Demonstrate knowledge of the evaluation and treatment of children with diarrheal illness.
52. Discuss the signs, symptoms, diagnosis and treatment of a child with hemolytic uremic syndrome.
53. Demonstrate knowledge of the common poisonings of childhood and their treatments.
54. Manage the care of a child with immersion/drowning.
55. Manage the care of a child with a foreign body ingestion, discussing the complications, diagnostic steps and treatment.
56. State the differential diagnosis of a child with upper or lower GI bleeding, and discuss the evaluation and treatment.
57. Discuss the differential diagnosis and work-up of renal failure or anuria in children.
58. Demonstrate ability to evaluate children with syncope and discuss its differential diagnosis.
59. Discuss the signs, symptoms, treatment and complications of Kawasaki disease.
60. Discuss the risk factors associated with teenage suicide.
61. Discuss the differential of abnormal vaginal bleeding in childhood and demonstrate ability to perform a complete genital exam on children of various ages.
62. Demonstrate ability to evaluate and treat a child with altered mental status and interpret a pediatric cranial CT scan.

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- 63. Discuss the technique for reducing an incarcerated inguinal hernia.
- 64. Discuss the common pediatric malignant tumors.
- 65. Differentiate between the presentation, diagnostic test results and treatment of transient synovitis and septic joint.

## **PHYSICIAN WELLNESS AND LEADERSHIP**

### **Goals:**

1. Understand the concept of wellness and its' relationship to longevity and productive practice.
2. Understand the unique stressors of emergency medicine, and acquire the basic principles of stress management and reduction techniques.
3. Learn the physiological responses to shift work and their implications to scheduling strategies.
4. Learn to recognize physician impairment and be familiar with support programs.
5. Learn the difference between positive and dysfunctional dynamics.
6. Recognize the impending violent encounter and other issues related to personal safety in the emergency department.
7. Demonstrate leadership in professional practice.

### **Objectives:**

1. Discuss the concept of wellness relative to emergency medicine practice.
2. Discuss the unique stressors inherent to emergency medicine.
3. Demonstrate various stress reduction techniques and develop a stress reduction package that works best for the individual resident to foster optimal patient care.
4. Discuss the unique risks to health and safety inherent in emergency medicine.
5. Discuss circadian rhythms and the effects of shift work on the body.
6. Demonstrate scheduling strategies that reduce the physiological effects of shift work.
7. Demonstrate the ability to recognize the impaired physician.
8. Discuss the concepts of intervention and support systems/resources for impaired physicians.
9. Describe dysfunctional family dynamics.
10. Demonstrate the recognition of potentially violent encounters.
11. Demonstrate de-escalation techniques.
12. Discuss strategies to reduce safety risks in the emergency department.
13. Demonstrate leadership skills to enhance health care.
14. Promote a culture that recognizes, supports and responds effectively to colleagues in need.

## **PREHOSPITAL CARE**

### **Goals:**

1. Learn common organizational structures of emergency medical services.
2. Learn the educational requirements and skill levels of various EMS providers.
3. Learn the principles of ambulance dispatch /EMS communications.
4. Learn the basic principles of disaster management.
5. Learn principals of prehospital triage and emergency medical care delivery.
6. Learn the principles of EMS medical control.
7. Learn the EMS response to cardiac arrest and trauma.
8. Learn patient care protocols/ standing orders for BLS and ALS providers.
9. Learn the indications for the use of air ambulance and helicopter inter-hospital transport and scene response.
10. Learn the principles of inter-hospital transport for critically ill and injured patients.

### **Objectives:**

1. Participate in prehospital care research.
2. Participate in prehospital care quality assurance.
3. Demonstrate ability to provide online medical delegation from the Emergency Department.
4. Demonstrate ability to provide initial and continuing education to all levels of EMS personnel.
5. Demonstrate familiarity with research methodologies relating to EMS and disaster management.
6. Discuss medicolegal liability issues relating to EMS.
7. Discuss EMS continuous quality improvement.
8. Participate as an observer or team member in EMS transport systems.
9. Discuss development of EMS prehospital care protocols.
10. Discuss basic concepts of prehospital disaster management.
11. Demonstrate understanding of appropriate utilization practices for ground and air medical services.
12. Participate in hospital or community disaster exercises.
13. Discuss the importance of and methods for medical control in EMS systems.
14. Discuss the differences in education and skill level of various EMS providers.
15. Describe common environment, toxicological, biological hazards encountered in the prehospital care setting.
16. Discuss the medicolegal issues involved in patient transfers.

## **PSYCHIATRY**

### **Goals:**

1. Understand the major categories of psychiatric illness
2. Learn relevant interviewing techniques to deal with patients with various psychiatric disorders.
3. Develop familiarity with common psychopharmacologic agents.
4. Learn principles of managing the violent patient.
5. Develop a knowledge of the support offered in a community for patients with psychiatric illness.

### **Objectives:**

1. Demonstrate ability to conduct an interview in patients with acute psychiatric disorders
2. Demonstrate ability to perform a mental status exam in patients with normal and altered mental status.
3. Discuss the indications for emergent psychiatric consultation.
4. Discuss the indications for routine psychiatric consultation.
5. Demonstrate ability to assess suicide risk.
6. Demonstrate ability to interact with violent emergency department patients and discuss protection techniques for patients and staff members.
7. Define major categories of psychiatric illness including thought, mood, anxiety, somatoform and personality disorders.
8. Discuss the pharmacokinetics, indications, contraindications and side effects of the major classes of psychopharmacologic agents including antipsychotics, sedative/hypnotics, and antidepressants.
9. Discuss the process of voluntary and involuntary commitment.
10. Discuss the indications for physical and chemical restraint and demonstrate ability to use restraint appropriately.
11. Discuss the difference between pseudodementia (depression) and true dementia in the elderly.
12. Discuss organic causes of altered mental status including dementia and delirium.
13. Demonstrate ability to differentiate organic and functional causes of altered mental status.
14. Demonstrate ability to diagnose and manage common intoxication and withdrawal syndromes.
15. Discuss the common complications of alcohol and drug abuse and demonstrate ability to diagnose and manage these complications.
16. Demonstrate ability to interact effectively with patients with personality disorders including antisocial, borderline, compulsive, dependent, histrionic and passive-aggressive personalities.



## **RESEARCH**

### **Goals:**

1. Learn techniques of analyzing biomedical research.
2. Understand methods of hypothesis development and testing.
3. Understand various types of study design and methodology.
4. Learn various methods of obtaining consent for biomedical research.
5. Understand basic statistical methods.
6. Understand the ramifications of ethical considerations in research.
7. Learn the skills to develop a manuscript that is acceptable for publication in a peer review journal.
8. Understand grants and funding of research.

### **Objectives:**

1. Demonstrate an understanding of the advantages and disadvantages of various study designs, including the randomized clinical trial and case control, cohort, and cross-sectional studies.
2. Demonstrate an understanding of null and alternative hypotheses.
3. Demonstrate an understanding of the practical and ethical ramifications of implied and non-implied consent as they apply to hospital and pre-hospital research.
4. Understand the differences between interval, ordinal, nominal, parametric, and non-parametric data.
5. Understand the differences between independent and dependent variables.
6. Demonstrate an understanding of methodologies and variable types analyzed by the following statistical tests: t test, analysis of variance, chi square, Fischer exact test, and non-parametric tests for interval and nominal data.
7. Demonstrate an understanding of the terms "paired" and "tailed" (one and two).
8. Demonstrate an understanding of type I and type II errors as they relate to sample size and variance.
9. Demonstrate an understanding of alpha, beta, and statistical power.
10. Demonstrate an understanding of the differences between statistical and clinical significance.
11. Define sensitivity, specificity, positive predictive value, and negative predictive value.
12. Define mean, median, mode, standard deviation, and variance.
13. Demonstrate an understanding of confidence intervals.
14. Describe correlation and regression to the mean.
15. Discuss the advantages of single and double blind studies.
16. Demonstrate facility with at least one computer statistical program.
17. Demonstrate an understanding of basic ethical issues in research including consent and researchers' interactions with corporate funding sources.

## **SURGICAL SPECIALITIES**

### **General Surgery**

#### **Goals:**

1. Develop familiarity with common general surgical disorders.
2. Develop relevant history and physical exam skills.
3. Develop procedural skills relevant to general surgery.
4. Develop skill in the overall assessment of the general surgical patient.
5. Learn indications for consultation and surgical intervention in patients with acute abdominal pain.
6. Learn the principles of care of the perioperative patient.

#### **Objectives:**

1. Demonstrate ability to perform an appropriate history and physical exam in patients with general surgical disorders, including an appropriate preoperative evaluation.
2. Discuss the differential diagnosis of acute abdominal pain and demonstrate ability to evaluate, treat and obtain appropriate consultation.
3. Demonstrate ability to diagnose and treat common disorders of the breasts.
4. Demonstrate ability to diagnose and treat common disorders of the anus and rectum.
5. Demonstrate ability to perform common procedural skills including gastric intubation, tube thoracostomy, placement of central venous lines, wound closure, and incision and drainage of superficial abscesses.
6. Demonstrate ability to assist in the operative and perioperative therapy of surgical patients.
7. Discuss the common fluid and electrolyte disturbances in surgical patients and demonstrate ability to manage patients with these disorders.
8. Demonstrate appropriate prophylaxis and treatment of surgical infections.
9. Recognize and initiate management of patients with postoperative complaints including postoperative wound infections.
10. Demonstrate ability to manage pain in surgical patients.
11. Discuss the role of diagnostic imaging in the evaluation of abdominal pain and demonstrate ability to appropriately order and interpret imaging modalities (abdominal films and basic CT scans) in surgical patients.
12. Demonstrate ability to rapidly recognize and initiate treatment of patients with abdominal aortic aneurysm.
13. Demonstrate ability to manage patients with acute and chronic peripheral vascular insufficiency.
14. Demonstrate ability to manage patients with soft tissue infections.  
Demonstrate ability to diagnose common structural defects of the abdominal wall.

## **Neurosurgery**

### **Goals:**

1. Develop history taking and physical examination skills that identify and localize injury to the central nervous system.
2. Effectively utilize radiologic studies to diagnose neurological disease or injury.
3. Diagnose, stabilize and provide initial treatment of injuries and diseases of the brain, spinal cord, bony spine and peripheral nerves.
4. Learn how CSF shunts function and learn to evaluate patients with possible shunt malfunction.

### **Objectives:**

1. Demonstrate a brief and a complete neurological history and examination on patients with various levels of consciousness, including trauma patients.
2. Demonstrate an understanding of neuroanatomy and function by localizing the site of pathology in these patients.
3. Demonstrate the ability to recognize and stabilize cerebrovascular and spinal cord disorders that are amendable to neurosurgical intervention.
4. Describe the indications, techniques, and contraindications for neurologic imaging procedures including plain skull and spinal radiography, computerized tomographic scan (with and without contrast), tomography, and magnetic resonance imaging.
5. Demonstrate ability to interpret skull and spinal radiographs (cervical, thoracic, lumbar, sacral), and CT scans of the head.
6. Describe initial management of fractures, subluxations, and dislocations of the spine.
7. Demonstrate spinal immobilization techniques.
8. Demonstrate skill in the initial evaluation and management of blunt and penetrating traumatic injuries of the CNS.
9. Demonstrate the ability to recognize and provide initial management of spinal cord compression due to non-traumatic causes.
10. Describe the pathophysiology of and the indications and techniques for control of intracranial pressure.

## **Ophthalmology**

### **Goals:**

1. Develop relevant history and physical exam skills.
2. Learn to recognize and treat emergent causes of visual loss.
3. Learn the principles of ocular trauma management.
4. Learn the evaluation and management of common ophthalmologic complaints.

### **Objectives:**

1. Demonstrate an understanding of normal ocular anatomy.
2. Demonstrate ability to perform an ocular exam.
3. Recognize and discuss the differential of abnormal funduscopic findings.
4. Demonstrate the technique of slit lamp examination.
5. Demonstrate ability to measure intraocular pressures.
6. Demonstrate ability to patch an eye.
7. Demonstrate knowledge of the dosages, indications and contraindications of topical and systemic ophthalmologic medications.
8. Discuss the differential diagnosis of acute loss of vision.
9. Discuss the differential diagnosis and demonstrate correct evaluation of patients presenting with a painful eye.
10. Discuss the differential diagnosis and demonstrate correct evaluation of patients presenting with a red eye.
11. Demonstrate ability to evaluate and manage chemical injuries of the eye.
12. Demonstrate ability to evaluate and manage blunt and penetrating trauma to the eye and surrounding tissues.
13. Demonstrate ability to evaluate and manage ocular foreign bodies.
14. Discuss the presenting signs, symptoms and management of acute closure glaucoma.
15. Discuss the presenting signs, symptoms and management of orbital and periorbital cellulites.
16. Describe and identify the various patterns seen on fluorescein staining of the eye.
17. Discuss the ocular manifestations of systemic disease.
18. Discuss the indications for emergent ophthalmologic consultation.
19. Discuss the indications for routine ophthalmologic consultation.

## **Orthopedic Surgery**

### **Goals:**

1. Develop relevant history and physical exam skills for the musculoskeletal system.
2. Learn the use of the diagnostic imaging modalities available for the evaluation of orthopedic disorders.
3. Develop skill in the evaluation and management of musculoskeletal trauma.
4. Develop skill in the diagnosis and treatment of inflammatory and infectious disorders of the musculoskeletal system.
5. Learn principles of acute and chronic pain management in patients with musculoskeletal disorders.

### **Objectives:**

1. Develop ability to correctly perform a history and physical in patients with musculoskeletal disorders.
2. Demonstrate ability to correctly order and interpret radiographs in patients with orthopedic injuries.
3. Demonstrate understanding of the anatomy, mechanism of injury, presentations, complications, management and prognosis of common musculoskeletal injuries.
4. Demonstrate knowledge of standard orthopedic nomenclature.
5. Demonstrate knowledge of appropriate aftercare of common orthopedic injuries.
6. Demonstrate knowledge of the differences in pediatric and adult skeletal anatomy and indicate how those differences are manifested in clinical and radiographic presentations.
7. Demonstrate ability to apply orthopedic devices, including casts, compressive dressings, splints and immobilizers.
8. Demonstrate ability to perform the following procedures: fracture/dislocation immobilization, reduction of dislocations of the shoulder, elbow, knee, ankle and hip, reduction of Colles fractures, arthrocentesis, and extensor tendon repair.
9. Demonstrate ability to prioritize and manage the treatment of orthopedic injuries in multiple trauma patients.
10. Describe the pathophysiology and presentation of patients with inflammatory and infectious disorders and demonstrate ability to diagnose and treat them.
11. Demonstrate ability to diagnose and treat soft tissue foreign bodies.
12. Describe the pathophysiology, presentations, complications, diagnosis, management and prognosis of patients with human and animal bites.
13. Describe the pathophysiology, presentations, complications, diagnosis and management of compartment syndromes.
14. Demonstrate ability to provide regional anesthesia, including hematoma blocks, Bier blocks and radial, ulnar and median nerve blocks.
15. Discuss the dosages, indications, contraindications and side effects of standard analgesic and sedative agents used to treat patients with acute orthopedic trauma and demonstrate skills in their use.

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16. Discuss the dosages, indications, contraindications, side effects and relative potency of standard oral analgesics used in treatment of patients with musculoskeletal disorders.
17. Discuss the differential diagnosis, historical features, physical examination findings, diagnostic modalities and treatment of patients with low back pain.
18. Demonstrate ability to recognize and treat soft tissue infections involving muscle, fascia, and tendons.
19. Describe diagnosis and initial treatment of overuse syndrome.
20. Describe how to evaluate and preserve amputated limb parts.
21. Demonstrate knowledge of joint injuries, evaluation and grading of joint injuries, treatment of joint injuries and prognosis.
22. Discuss the treatment of soft tissue injuries such as strains, penetrating soft tissue injuries, crush injuries, and high pressure injection injuries.
23. Demonstrate a knowledge of the anatomy and physical examination of the hand as well as treatment of simple hand injuries including lacerations, dislocations and fractures.

## Otolaryngology

### Goals:

1. Develop relevant history and physical exam skills.
2. Learn the evaluation and management of common problems of the head and neck.
3. Learn the evaluation and management of facial trauma.
4. Develop skill in the evaluation and management of upper airway disorders.
5. Learn use of the diagnostic imaging modalities available for evaluation of head and neck disorders.

### Objectives:

1. Demonstrate ability to correctly perform a history and physical in patients with disorders of the head, ears, nose, pharynx, neck and larynx.
2. Demonstrate ability to diagnose and treat infections of the head and neck including rhinitis, otitis, labyrinthitis, sinusitis, mastoiditis, laryngitis, pharyngitis, epiglottitis, stomatitis, and gingivitis.
3. Demonstrate ability to control anterior and posterior epistaxis including placement of nasal packing.
4. Demonstrate ability to diagnose and treat disorders of the tympanic membrane including perforation.
5. Demonstrate knowledge of the diagnosis and treatment of oropharyngeal abscesses.
6. Demonstrate knowledge of common dental emergencies and indications for emergent referral.
7. Demonstrate ability to evaluate and manage disorders of the mandible, including fractures, dislocations, and infections.
8. Demonstrate ability to evaluate and manage trauma to the head, neck, face, and teeth.
9. Demonstrate ability to diagnose and treat disorders of the salivary glands.
10. Demonstrate ability to remove foreign bodies from the ears, nose, and throat.
11. Demonstrate ability to perform direct and indirect laryngoscopy.
12. Demonstrate knowledge of the indications, contraindications and complications of surgical airway techniques and demonstrate ability to perform a cricothyroidotomy.
13. Demonstrate ability to obtain airway control in patients with major facial trauma.
14. Demonstrate knowledge of the following nerve blocks: supraorbital, infraorbital, mental, auricular and dental blocks.
15. Demonstrate knowledge of uncommon but life-threatening infections of the head and neck including cavernous sinus thrombosis, Ludwig's angina, and malignant otitis.

## **Plastic Surgery/Wound Management**

### **Goals:**

1. Understand the pathophysiology of wound healing.
2. Learn effective wound evaluation and management skills.
3. Learn wound closure techniques appropriate for outpatient, traumatic wounds.
4. Learn appropriate methods for control of pain in patients with traumatic wounds.
5. Understand quality assurance/risk management issues relating to wound care.
6. Learn effective documentation skills in patients with traumatic wounds.
7. Learn appropriate disposition and referral skills.
8. Learn appropriate follow-up techniques and management of the complications of traumatic wounds.

### **Objectives:**

1. Demonstrate ability to perform appropriate history and physical exams in patients with traumatic wounds.
2. Demonstrate an understanding of wound pathophysiology, including cellular response, static and dynamic wound tensions, growth factors and tensile strength.
3. Demonstrate an understanding of the predictors of wound sepsis.
4. Demonstrate effective wound cleansing skills.
5. Describe the appropriate use, limitations and potential complications of wound cleansing solutions.
6. Describe the appropriate use, limitations and potential complications of antimicrobials in the management of traumatic wounds.
7. Demonstrate an understanding of various imaging modalities in the detection of soft tissue foreign bodies.
8. Demonstrate appropriate use of universal precautions in wound treatment.
9. Demonstrate skill in various wound closure techniques including intradermal suture, facial closure, interrupted skin sutures, running skin sutures, vertical and horizontal mattress sutures, half-buried horizontal mattress sutures, tape closure, staples and tissue glue.
10. Demonstrate appropriate use of delayed closure techniques.
11. Demonstrate appropriate management of special wound types, including skin ulcers, human bites, animal bites, snake bites, plantar puncture wounds, dermal abrasions and tar burns.
12. Demonstrate skill in the provision of analgesia and anaesthesia to patients with traumatic wounds including use of local infiltration, topical administration and conscious sedation.
13. Demonstrate ability to apply wound dressings.
14. Demonstrate ability to thoroughly document historical and physical exam data relating to wound care.



## **Urology**

### **Goals:**

1. Learn the relevant history and physical exam skills in the evaluation of patients with urological complaints.
2. Learn the use of diagnostic imaging modalities available for the evaluation of urologic disorders.
3. Learn the diagnosis and management of urinary tract infections, including pyelonephritis and prostatitis.
4. Learn the diagnosis and management of renal calculi.
5. Learn the evaluation and management of renal and genitourinary trauma.
6. Learn the diagnosis and management of disorders of the male genitalia.

### **Objectives:**

1. Discuss the pathophysiology, differential diagnosis and management of pre-renal, renal and post-renal failure.
2. Discuss the indications and demonstrate ability to interpret intravenous pyelography.
3. Discuss the indications for the use of antibiotics appropriate for use in the urinary tract.
4. Discuss the indications and demonstrate ability to insert urethral catheters.
5. Demonstrate ability to perform and interpret retrograde urethrograms and cystograms.
6. Demonstrate ability to diagnose and treat infections of the urinary tract including pyelonephritis, cystitis, prostatitis, and urethritis.
7. Demonstrate ability to diagnose and testicular disorders, including torsion, epididymitis, torsion of the appendix testis, and orchitis.
8. Discuss the indications for doppler and other imaging techniques in the diagnosis of testicular disorders.
9. Demonstrate ability to diagnose and treat disorders of the penis and scrotum, including priapism, fracture of the penis, phimosis, paraphimosis, Fournier's gangrene, and balanitis.
10. Demonstrate ability to diagnose and treat urinary retention.
11. Demonstrate ability to diagnose and treat renal colic and nephrolithiasis.
12. Demonstrate ability to evaluate and treat patients with blunt and penetrating urologic trauma.
13. Describe the indications for emergent urologic consultation.
14. Describe the indications for routine urologic consultation.

## **TOXICOLOGY**

### **Goals:**

1. Learn the pertinent aspects of the history and physical exam relative to acute poisoning with particular emphasis on clinical recognition of major toxic syndromes (toxidromes).
2. Learn the generic aspects of clinical management of poisoning, including stabilization and decontamination.
3. Understand the principles, methods, and controversies of decontamination and enhancement of elimination of toxins.
4. Learn the presenting signs, symptoms, laboratory findings, pathophysiology and treatment of common therapeutic drug poisonings, drugs of abuse, natural toxins, and general household poisons.
5. Learn the common hazardous materials of the workplace and pre-hospital operations with regard to hazardous materials incidents.
6. Learn the fundamentals of poisoning epidemiology, pharmacokinetics, and biotransformation, including the effects of pregnancy and lactation.
7. Learn to recognize, diagnose, assess and emergently manage acute and chronic complications of substance abuse.
8. Learn the use of adjunctive services, including the toxicology laboratory, the poisondex and poison center, in the management of acute poisonings.
9. Learn the specific indications and implementation of specific therapeutic modalities, such as the use of antidotes, hemodialysis, and hyperbaric oxygen.

### **Objectives:**

1. Demonstrate the ability to perform gastric lavage, whole bowel irrigation, skin and eye decontamination, and administration of activated charcoal.
2. Discuss the indications, contraindications, dosages, and side effects of the currently available antidotes and anti-venoms.
3. Demonstrate clinical recognition of toxidromes associated with drug overdose and drug withdrawal.
4. Demonstrate knowledge of the principle of hemodialysis and hemoperfusion and the toxic agents that can be removed by these methods.
5. Demonstrate ability to recognize common venomous animals and poisonous plants and their clinical presentations and treatments.
6. Demonstrate knowledge of the diagnostic laboratory in toxicology including methods, limitations and costs.
7. Demonstrate knowledge of the drug interactions, side effects, and therapeutic levels of the commonly used therapeutic agents.
8. Demonstrate the proper technique for handling a contaminated patient in the emergency department and the pre-hospital environment.
9. Demonstrate knowledge of the common household poisons, pesticides, hydrocarbons and metals, their effects and treatments.
10. Demonstrate the knowledge of the pathophysiology and the clinical skills necessary to manage a patient poisoned by any of the following:
  - a. Acetaminophen
  - b. Amphetamines
  - c. Anticholinergics
  - d. Aspirin

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- e. Barbiturates
  - f. Benzodiazepines
  - g. Beta blockers, calcium channel blockers
  - h. Carbon monoxide
  - i. Caustics
  - j. Cocaine
  - k. Cyanide
  - l. Cyclic antidepressants
  - m. Digitalis
  - n. Ethanol
  - o. Ethylene glycol
  - p. INH
  - q. Iron
  - r. Lithium
  - s. Methanol
  - t. Opiates
  - u. Organophosphates
  - v. Phenytoin
  - w. Theophylline
  - x. Venomous animals.
11. Demonstrate knowledge of basic principles of drug absorption, redistribution, metabolism, and elimination.

## **TRAUMA**

### **Goals:**

1. To learn principles trauma care as outlines in the American College of Surgeons ATLS program.
2. To develop an organized approach to the assessment, resuscitation, stabilization and provision of definitive care for the trauma victim.
3. To learn use of the diagnostic imaging modalities available for evaluation of the trauma victim.
4. To develop procedural skills necessary in the evaluation and management of the trauma victim.
5. To learn to recognize and treat immediate life and limb threatening injuries in the trauma victim.
6. To learn special considerations in the evaluation and management of the pregnant trauma victim.
7. To learn special considerations in the evaluation and management of the pediatric trauma victim.
8. To learn special considerations in the evaluation and management of the geriatric trauma victim.
9. To learn the principles of disaster management.
10. To learn the principles of burn management.
11. To learn a systems approach to trauma management that includes provincial and national trauma systems and categorization of institutions and emergency departments.
12. To learn the principles of pre-hospital trauma care including the role of BCS and ALS ambulance services and air transport services.

### **Objectives:**

1. Demonstrate ability to rapidly and thoroughly assess victims of major and minor trauma.
2. Demonstrate ability to establish priorities in the initial management of victims of life-threatening trauma.
3. Demonstrate ability to manage fluid resuscitation of trauma victims.
4. Demonstrate ability to manage the airway of trauma victims.
5. Discuss the definitive care of the trauma victim, including operative, post-operative and rehabilitative phases of care.
6. Demonstrate ability to perform the following procedures: oral and nasogastric intubation, venous cut-downs, insertion of large bore peripheral and central venous lines, insertion of arterial lines, tube thoracostomy, local wound exploration, peritoneal lavage, vessel ligation, repair of simple and complex lacerations, splinting of extremity fractures, and reduction and immobilization of joint dislocations, cricothyroidotomy, and extensor tendon repair.
7. Discuss the indications for and the technique of: resuscitative thoracotomy, pericardiotomy and aortic cross-clamping.
8. Demonstrate ability to interpret radiographs on trauma patients, including plain x-rays of the chest, cervical, thoracic and lumbar spine, pelvis and extremity films.
9. Demonstrate ability to interpret CT scans of the head in the neuro trauma patient.

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10. Discuss the importance of mechanism of injury in the evaluation and treatment of the trauma victim.
11. Demonstrate ability to calculate the Glasgow Coma Score and discuss its role in the evaluation and treatment of head injured patients.
12. Demonstrate ability to use spine immobilization techniques in trauma victims.
13. Demonstrate ability to diagnose and manage trauma victims with extremity fractures, dislocations and subluxations.
14. Demonstrate ability to manage soft tissue injuries including lacerations, avulsion and high-pressure injection injuries.
15. Discuss the diagnosis and management of compartment syndromes.
16. Discuss the diagnosis and management of urogenital injuries.
17. Demonstrate appropriate use of analgesics and sedatives in trauma patients.
18. Demonstrate appropriate use of antibiotics in trauma patients.
19. Demonstrate ability to direct a trauma team during complex resuscitations.
20. Demonstrate ability to coordinate consultants involved in the care of multiple trauma patients.
21. Demonstrate ability to use and interpret imaging modalities in the evaluation of trauma patients.
22. Demonstrate ability to arrange appropriate consultation and disposition of trauma patients.
23. Demonstrate ability to direct the care of trauma victims in the pre-hospital setting.
24. Discuss principle of disaster management and participate in disaster drills.
25. Discuss the role of pre-hospital systems in the management of trauma patients.
26. Discuss the factors unique to the evaluation and management of pediatric trauma.
27. Demonstrate ability to direct pediatric trauma resuscitations.
28. Discuss factors unique to the evaluation and management of geriatric trauma.
29. Demonstrate ability to direct geriatric trauma resuscitations.
30. Discuss factors unique to the evaluation and management of trauma in pregnancy.
31. Discuss the evaluation and management of spinal cord injuries.
32. Demonstrate ability to diagnose and manage tendon injuries.
33. Demonstrate ability to manage amputation injuries and discuss the potential for implantation.
34. Demonstrate the ability to manage the acutely burned patient, including minor and major injuries.
35. Demonstrate the ability to diagnose and treat smoke inhalation.
36. Demonstrate the ability to assess and manage facial trauma.
37. Demonstrate the ability to evaluate and manage anterior neck injuries.
38. Demonstrate the ability to assess and manage penetrating and blunt chest trauma.
39. Demonstrate the ability to evaluate and manage blunt and penetrating abdominal trauma.
40. Demonstrate the ability to diagnose and treat pelvic fractures
41. Demonstrate ability to use FAST in the trauma patient.

## **ULTRASOUND**

### **Goals:**

1. To have a basic understanding of the physics behind image generation (frequency, penetration, common artifacts)
2. To describe the essential knobs on a generic ultrasound machine (overall gain, near and far gain, focal zone, calipers)
3. To understand basic care of the machine and probes
4. To understand the limitations of emergency ultrasound
5. To appreciate the importance of declaring scans indeterminate when inadequate images are produced
6. To master the common applications: FAST, cardiac for effusion/activity, early pregnancy and AAA evaluation.
7. To have some experience with more advanced applications: renal, gallbladder and venous access and foreign body application.

### **Objectives:**

#### Physics

1. discuss the principles of ultrasound as compared to sound: frequency, amplitude and speed
2. understand the relationship between frequency, resolution and depth of penetration
3. discuss common tissue effects and artefacts: attenuation, reflection, scatter, posterior acoustic enhancement, refraction
4. define and use the terms hyperechoic, hypoechoic and anechoic
5. discuss the role of overall gain, time-gain compensation, focal length in image generation and modulation
6. know the biologic effects and safety guidelines for medical ultrasound

#### Trauma/FAST

1. perform a complete FAST exam in a timely manner (2-4 minutes)
2. know the required elements for each view (RUQ= complete sweep thru interface, liver tip; LUQ= complete sweep thru interface, view of diaphragm and spleen tip; heart= sweep thru inferior pericardium anterior-posterior, pelvis= view posterior to bladder)
3. declare scans indeterminate when inadequate images are generated
4. know the limitations of FAST
5. develop a management algorithm incorporating FAST

#### Cardiac Scanning

1. name the clinical indications for cardiac scanning
2. perform a complete cardiac scan in a timely manner (evaluate LV for activity, sweep thru whole inferior pericardium anterior-posterior)
3. distinguish between pericardial fat and effusion
4. know what constitutes a complete vs indeterminate scan
5. know the limitations of cardiac EDTU
6. have some knowledge of alternate views when subxiphoid view is unobtainable

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#### Early Pregnancy

1. discuss the relative merits of transabdominal vs transvaginal scanning and name the indications for each
2. state instructions to the patient before this scan informing them of the limitations/role of EDTU etc
3. reliably identify the following on US images, and state the approximate gestational age when each is visible: uterine tissue, gestational sac, decidual reaction, yolk sac, fetal pole, fetal heart;
4. understand the importance of the yolk sac in identifying an intrauterine pregnancy
5. understand the concept of 'no definite intra-uterine pregnancy' (NDIUP) and its clinical implications
6. develop a management algorithm for first trimester abnormalities using EDTU and quantitative beta hCG
7. understand the impact of fertility interventions on this algorithm
8. know the limitations of pelvic EDTU

#### Aorta

1. reliably identify, survey and measure the whole abdominal aorta
2. know the size definitions of ectasia, aneurysm.
3. develop troubleshooting skills to overcome barriers to scanning
4. know the limitations of aortic EDTU
5. know what constitutes a complete vs indeterminate scan

#### Lung

1. Identify the pleural line in multiple sample areas bilaterally
2. Assess for lung sliding, lung point, A lines, B Lines, hepatization, air bronchograms and pleural effusion.
3. Give a differential for B lines based on their pattern and appearance.
4. Integrate the findings into a management algorithm for patients with cardiac arrest, shortness of breath, and chest pain.
5. Understand the limitations of Lung US.

#### Gallbladder

1. Identify the GB neck body and fundus in short and long axis and assess for stones, wall thickness, pericholecystic fluid.
2. Identify the Portal triad in short and long axis and distinguish normal from abnormal.
3. Assess the liver for intrahepatic duct dilation.
4. Develop the ability to troubleshoot using several different probe locations and patient positions in order to generate adequate images.
5. Integrate the PoCUS findings into a patient management algorithm.
6. Identify the key elements of a determinate scan.
7. Understand and discuss the limitations of PoCUS in assessing for gallbladder pathology.

#### Renal/Bladder

1. Generate long and short axis views of the kidney to assess for hydronephrosis.
2. Name the characteristics of simple renal cysts vs complex masses.
3. Evaluate the bladder for the presence of urine jets.
4. Calculate the bladder volume.

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5. Integrate the PoCUS findings into a management algorithm for patients with suspected renal colic.
6. Use renal PoCUS as a radiation-sparing strategy to manage patients with classic renal colic.
6. Discuss the limitations of PoCUS in the diagnosis and management of renal colic.

#### DVT

1. Perform a two-point compression technique at the inguinal area and popliteal fossa to look for acute DVT
2. Identify the greater saphenous vein, CFV, superficial and deep FV, popliteal vein and trifurcation.
3. Know several techniques to improve the accuracy of the scan – colour flow, enhancement, patient positioning.
4. Name the features that distinguish acute clots from chronic clot.
5. Incorporate wells score, D-dimer and the PoCUS findings into a management algorithm for patients with suspected DVT/PE.
6. Discuss the limitations of the scan.

#### Procedural

1. Know how to use US for the following: joint aspiration, para/thoracentesis, nerve blocks, abscess vs cellulitis, fracture reduction.
2. Demonstrate how to set up the machine and patient in order to achieve the best ergonomics and line of sight.
3. Know the limitations of PoCUS for these applications.
4. Integrate PoCUS clinically into the management of these patients.

#### US Guided Central and Peripheral Venous Access

1. Discuss the role of US guidance in improving patient safety.
2. Reliably distinguish arteries from veins in the neck, subclavian and femoral areas, and upper arm.
3. Discuss the advantages and disadvantages of the short vs long axis approach.
4. Demonstrate how to set up the machine and patient for the best ergonomics.
5. Demonstrate the technique of accurately following a needle tip through tissue.
6. Evaluate the best peripheral vein for access based on depth, size and anatomical location.
7. Know which catheter to use for USG PIV access.