Educational Objectives

National Guidelines:
Family Medicine - Emergency Medicine Residency Programs

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Introduction

The “National Guidelines: Family Medicine - Emergency Medicine Residency Programs” has been developed in order to provide all participants in the educational and accreditation process of family medicine - emergency medicine residency programs with a consistent and simple to use tool. It reflects the work and commitment of family medicine - emergency medicine educators in Canada to provide educational guidelines that are consistent with the philosophy and vision of the College of Family Physicians of Canada. The current objectives have been formatted along the four principles of family medicine and reflect the often stated view by family medicine - emergency medicine educators and care providers that the practice and teaching of acute care medicine is inalienably linked to these guiding principles. The approach to developing these Educational Objectives was guided by educational content regardless of the setting in which the learning takes place and was not clinical rotation oriented. We believe that this approach will likely make them more suitable for all parties.

These National Guidelines should prove to be useful to many. The “Part 1: Terminal Objectives” are summarized into a simple 13 page document. This will assist Program Directors in building terminal objectives for their programs. It can also be a useful and user friendly yet comprehensive tool in the review and credentialing of the family medicine - emergency medicine residency programs for the Assessment and Evaluation Committee of the CFPC. The larger document that follows is called “Part 2: Guidelines for Programs”. This abbreviated “study guide” will allow Program Directors to develop program specific enabling objectives and it also could provide both educators and residents with a guide to core content emergency medicine requirements. This Part 2 may also provide direction and assistance to those individuals on the CFPC’s Emergency Medicine Committee whose responsibility it is to develop exam questions for the national examination.

We believe that this document is comprehensive yet minor omissions may have occurred. This tool does not replace standard textbooks for educational purposes. The Educational objectives will allow each program in Canada the latitude to adapt some of the contents to their local specific needs. We would further like to suggest to programs that the task of attaining these objectives by individual residents should be looked at as a full-year work-in-progress. The training of residents takes place in many settings; urban and regional practices as well as off-service rotations in other traditional hospital-based disciplines. Parts of these objectives can be met during all rotations. The ultimate goal should be that by the end of comprehensive training, residents complete all the educational objectives recommended in this document.

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PART 1:

TERMINAL OBJECTIVES
Principle No. 1: THE DOCTOR-PATIENT RELATIONSHIP

COMMUNICATION
The competent resident will demonstrate the ability to:
1. Establish a physician-patient relationship and to communicate effectively and compassionately with patients and their families.

ETHICS AND MEDICOLEGAL ASPECTS OF CARE

ETHICAL PROBLEMS
The competent resident will:
1. Evaluate ethical problems and identify justifiable solutions.

MEDICOLEGAL PRINCIPLES
The competent resident will:
1. Display knowledge of and demonstrate appropriate conduct when dealing with issues of patient confidentiality, informed consent, competence and substitute decision makers, interaction with law enforcement agencies and role of the medical examiner’s office.
2. Understand the elements of a successful civil litigation and malpractice claim, and acquire competence in becoming an expert witness in the criminal court system.

Principle No. 2: THE FAMILY PHYSICIAN AS AN EFFECTIVE CLINICIAN

PRINCIPLES OF EMERGENCY MEDICINE

APPROACH TO THE EMERGENCY PATIENT
The competent resident will:
1. Evaluate and initiate management in a patient presenting with an urgent or emergent problem.
ANAESTHESIA ANALGESIA AND PROCEDURAL SEDATION
TOPICAL, LOCAL AND REGIONAL ANESTHESIA
The competent resident will demonstrate the ability to:
1. Use local anesthetics in topical, local and regional blocks.

ANALGESIA
The competent resident will:
1. Evaluate the various options and select an appropriate method of relieving pain for ED patients.

PROCEDURAL SEDATION
The competent resident will:
1. Evaluate the various options and select an appropriate method of providing sedation and analgesia for ED patients undergoing painful or anxiety-provoking procedures.

RESUSCITATION
AIRWAY MANAGEMENT
The competent resident will demonstrate the ability to:
1. Recognize situations requiring emergency airway intervention.
2. Demonstrate basic airway management skills.
3. Perform appropriate airway assessments.
4. Perform oro tracheal intubations.
5. Evaluate available alternatives to oro tracheal intubation.

BREATHING
The competent resident will demonstrate the ability to:
1. Manage a patient who presents with acute respiratory distress.
2. Distinguish situations requiring assisted or controlled ventilation,
3. Manage ventilatory failure.

CIRCULATION
SHOCK
The competent resident will:
1. Demonstrate the ability to identify, classify and treat shock.

VASCULAR ACCESS FOR DRUGS, FLUIDS, AND INVASIVE MONITORING
The competent resident will:
1. Identify circumstances requiring vascular access or invasive monitoring.
2. Obtain appropriate vascular access for drugs, fluids and invasive monitoring.

ECG INTERPRETATION AND DYSRHYTHMIAS
The competent resident will:
1. Exhibit expertise in interpreting 12 lead electrocardiograms.
2. Assess and initiate appropriate treatment of patients presenting with acute dysrhythmias.
SUDDEN DEATH
The competent resident will demonstrate the ability to:
1. Manage the patient in cardio-respiratory arrest.

DISABILITY
COMA AND ALTERED LEVEL OF CONSCIOUSNESS
The competent resident will:
1. Assess and manage the comatose patient.
2. Assess and manage patients with altered level of consciousness.

PEDIATRIC RESUSCITATION
NEWBORN ASSESSMENT AND RESUSCITATION
The competent resident will demonstrate the ability to:
1. Assess and resuscitate the newborn.

RESUSCITATION OF INFANTS AND CHILDREN
The competent resident will demonstrate the ability to:
1. Recognize the pediatric patient in need of resuscitative measures.
2. Assess and manage the pediatric patient in need of resuscitation.

ADULT NON-TRAUMATIC PRESENTATIONS
The competent resident will:
1. Outline a symptom-based physiological and anatomical initial approach followed by a differential diagnosis for each of the following non-traumatic adult presentations. The differential diagnosis should include the life threatening as well as the common disorders.
2. Elicit a history and perform a physical exam relevant to the conditions identified in the differential diagnosis of the presenting complaint.
3. Interpret the information obtained from the history and physical examination and generate a narrowed differential diagnosis.
4. Plan investigations pertinent to the narrowed differential diagnosis.
5. Demonstrate the ability to interpret requested investigations.
6. Initiate stabilization and perform or arrange for definitive treatment in an appropriate and timely manner.

HEAD NECK AND NEURO PRESENTATIONS
Acute Loss of Vision
Dental Pain
Difficulty Swallowing
Diplopia
Ear pain
Epistaxis
Headache
Hearing Loss
HIV+ with Headache or CNS dysfunction in HIV+ individuals
Hemiplegia/Hemisensory Loss +/; Aphasia
Neck Pain
Painful Eye
Red Eye
Sore Throat
Stridor
Vertigo
Weakness including Paresis and Paralysis

CHEST PRESENTATIONS
Chest Pain
Cough
Dyspnea
HIV+ with Cough and/or dyspnea
Hemoptysis
Palpitations & Dysrhythmias
Wheezeing

ABDOMINAL AND GI PRESENTATIONS
Abdominal Distension
Abdominal Pain: RUQ, Epigastric, LUQ, RLQ, LLQ, Flank, Anorectal, Generalized
Constipation
Diarrhea
Diarrhea in HIV+ patients
Dysphagia
GI Foreign Bodies
Hematemesis
Jaundice
Melena
Vomiting

GENITOURINARY PRESENTATIONS
Dysuria / Frequency
Flank Pain
Hematuria
Penile Discharge
Penile Lesion(s)
Priapism
Scrotal Pain
Urinary Catheter complications
Urinary Incontinence
Urinary Retention / Hesitancy
GYNECOLOGIC AND OBSTETRIC PRESENTATIONS

Emergency Contraception
Labor and ED Delivery
Pelvic Pain
Perineal lesions
Postpartum bleeding
Postpartum fever
Pregnant and Bleeding
Vaginal Bleeding
Vaginal Discharge
Vaginal FB
Vulvar lesions

MUSCULOSKELETAL AND EXTREMITY PRESENTATIONS

Monoarticular joint pain
Polyarticular joint pain
Myalgia
Back pain
Arm Pain
Leg pain
Swollen limb

DERMATOLOGIC PRESENTATIONS

Wheals
Purpura
Petechiae
Vesicles
Papules
Ulcers
Nodules
Pustules
Macules
Pruritis

PSYCHIATRIC PRESENTATIONS

Mood Disorders
Attempted Suicide
Anxiety and Panic
Psychosis and Thought Disorders
Behavioral Disorders
Personality Disorders

GENERAL PRESENTATIONS

Fever
Fever and/or Night Sweats in HIV+ patients
Generalized Weakness
Generalized edema
Coma
Altered Mental Status
Syncope
Convulsions
Weight Loss

PEDIATRIC NON-TRAUMATIC PRESENTATIONS

The competent resident will:
1. Outline a symptom-based physiological and anatomical initial approach followed by a differential diagnosis for each of the following non-traumatic pediatric presentations. The differential diagnosis should include the life threatening as well as the common disorders.
2. Elicit a history and perform a physical exam relevant to the conditions identified in the differential diagnosis of the presenting complaint.
3. Interpret the information obtained from the history and physical examination and generate a narrowed differential diagnosis.
4. Plan investigations pertinent to the narrowed differential diagnosis.
5. Demonstrate the ability to interpret requested investigations.
6. Initiate stabilization and management of identified conditions in an appropriate and timely manner.

NEONATAL PRESENTATIONS

Jaundice
Convulsions
Apnea

HEAD NECK AND NEURO PRESENTATIONS

Earache
Headache
Red Eye
Sore Throat
Stridor

CHEST PRESENTATIONS

Chest Pain
Cough
Respiratory Distress
Dyspnea
Hemoptysis
Wheezing

ABDOMINAL AND GI PRESENTATIONS

Abdominal Pain
Constipation
Diarrhea
Hematemesis
Jaundice
Vomiting

GENITOURINARY PRESENTATIONS
Scrotal Pain
Hematuria
Dysuria / Frequency

MUSCULOSKELETAL AND EXTREMITY PRESENTATIONS
Limp
Painful joint

PSYCHIATRIC PRESENTATIONS
Depressed mood
Disruptive Behavior

GENERAL PRESENTATIONS
Fever and Irritability < Three Months
Fever > Three Months < Three Years
Fever and Rash
Rash
Lethargy
Syncope
Convulsions
Weakness
Inconsolable infant
Failure to Thrive

TRAUMATIC DISORDERS

APPROACH TO MULTIPLE TRAUMA
The competent resident will demonstrate the ability to:
1. Perform an initial assessment of the patient who has potentially sustained multiple traumas.
2. Mobilize appropriate members of the trauma team.
3. Set priorities for the stabilization and investigation of patients with multiple injuries.

PRINCIPLES OF SOFT TISSUE INJURIES

WOUND MANAGEMENT
The competent resident will:
1. Assess wounds and formulate a plan for wound management.
2. Demonstrate wound preparation, exploration and closure.
3. Identify immediate and delayed complications of soft tissue injuries and take appropriate preventative steps to decrease complications.
4. Manage and arrange appropriate follow-up for simple and complicated wounds.

**BURNS**
The competent resident will demonstrate the ability to:
1. Identify and provide initial management of burns.
2. Identify appropriate patients and arrange referral to specialty burn units when indicated.

**MUSCULAR AND LIGAMENTOUS INJURIES**
The competent resident will demonstrate ability to:
1. Identify and manage patients with crush injuries to the extremities.
2. Identify compartment syndromes in patients at risk.
3. Provide for appropriate follow up and/or specialist support for compartment syndrome.
4. Identify and describe general management of ligament and tendon sprains

**PRINCIPLES OF FRACTURE MANAGEMENT**
The competent resident will demonstrate the ability to:
1. Describe a fracture accurately and completely using standard terminology.
2. List the complications associated with fractures and their treatment, and describe approaches to minimize the frequency and degree of severity of complications.
3. Describe the principles of fracture healing, including approaches used to assist fracture healing

**SPECIAL CONSIDERATIONS IN PEDIATRIC TRAUMA**
The competent resident will demonstrate the ability to:
1. Compare and contrast the management of adult and pediatric trauma.
2. Diagnose and provide appropriate initial management of pediatric extremity injuries.

**PRINCIPLES OF CASTING AND SPLINTING**
The competent resident will:
1. Describe the basic principles of splinting and casting.
2. Demonstrate the application splints and casts.
3. Select the appropriate splinting technique for injuries to the extremities.

**HEAD AND NECK TRAUMA**
The competent resident will demonstrate the ability to:
1. Identify and initiate appropriate management of mild, moderate and severe brain injuries.
2. Identify and initiate appropriate management of injuries involving the face, jaw, and teeth.
3. Identify and manage chemical, blunt, superficial and penetrating injuries of the eye.
4. Identify and initiate appropriate management of blunt and penetrating injuries to the neck.

CHEST AND ABDOMINAL TRAUMA
The competent resident will demonstrate the ability to:
1. Identify and appropriately manage blunt and penetrating chest and abdominal injuries.

UPPER LIMB INJURIES
The competent resident will demonstrate the ability to:
1. Perform a detailed examination of all structures of the forearm, wrist and hand.
2. Identify and provide initial management of common upper limb injuries involving the shoulder, clavicle, humerus, elbow, forearm, wrist, and hand, with attention to identification and prevention of complications.
3. Provide for appropriate follow up and/or specialist consultation upper limb injuries.

LOWER LIMB INJURIES
The competent resident will demonstrate the ability to:
1. Perform a thorough and systematic history and examination of the knee
2. Use evidence-based criteria for radiological investigation of the knee and ankle
3. Identify and provide initial management of common lower limb injuries involving the pelvis, hip, thigh, knee, lower leg, ankle and foot, with attention to identification and prevention of complications.
4. Provide for appropriate follow up and/or specialist consultation lower limb and pelvic injuries.
5. Identify and appropriately management stress fractures of the lower limb

SPINAL INJURIES
CERVICAL SPINE INJURIES
The competent resident will:
1. Identify the risk factors associated with symptomatic and occult cervical spine (C-spine) injuries.
2. Investigate suspected C-spine injuries using evidence-based decision rules.
3. Treat identified cervical spine injuries with attention to acute and chronic complications of the injury.

THORACIC AND LUMBAR SPINAL INJURIES
The competent resident will:
1. Identify the risk factors associated with thoracic and lumbar spinal injuries.
2. Investigate, stabilize and provide appropriate ED management of thoracic and lumbar spinal injuries.
3. Arrange appropriate referral and follow-up for thoracic and lumbar spinal injuries.

**Principle No. 3: FAMILY MEDICINE IS COMMUNITY-BASED**

**EMERGENCY MEDICAL SERVICES**

*LOCAL EMS CARE*

The competent resident will demonstrate the ability to:
1. Describe the key features and functioning of an EMS system.

*REGIONAL TRAUMA CARE*

The competent resident will demonstrate the ability to:
1. Describe the components of a regionalized trauma care system.

**DISASTER MEDICINE**

The competent resident will demonstrate the ability to:
1. Understand prehospital and hospital response to disasters and mass-casualty incidents

**ORGAN DONATION**

The competent resident will demonstrate the ability to:
1. Recognize situations for potential organ donation.
2. Identify the role for physicians in the ED in procuring organs for donation.

**Principle No. 4: THE FAMILY PHYSICIAN IS A RESOURCE TO A DEFINED PRACTICE POPULATION**
RESOURCE TO PATIENTS WITHIN AN EMERGENCY DEPARTMENT

TRIAGE AND ACUITY SCALES
The competent resident will be able to:
1. State the principles and goals of triage based on the use of a standardized ED triage instrument.

COMMUNITY RESOURCES
The competent resident will be able to:
1. Demonstrate knowledge of community resources available to ED patients, and understand how to access and utilize them.

CRISIS INTERVENTION
The competent resident will demonstrate the ability to:
1. Recognize those patients who are in crisis and appropriately manage their disposition.

ABUSE AND ASSAULT
The competent resident will demonstrate the ability to:
1. Identify and manage incidences of child, adult and elderly abuse presenting to the ED
2. Successfully perform a history and physical examination of an abused male or female victim, including children and the elderly.

RESOURCE TO PATIENTS, EMERGENCY DEPARTMENT CARE PROVIDERS, AND ADMINISTRATORS

EVIDENCE-BASED EMERGENCY MEDICINE (EBEM)
The competent resident will demonstrate the ability to:
1. Apply the principles of EBEM into daily clinical practice as well as non-clinical activities (i.e. research, critical appraisal of the medical literature, teaching and administration)

PERSONAL AND PROFESSIONAL EFFECTIVENESS

PROFESSIONAL DEVELOPMENT

CONTINUING MEDICAL EDUCATION
The competent resident will demonstrate the ability to:
1. Understand the principles of continuing medical education.
2. Describe an appropriate approach to maintaining skills and knowledge.

PRACTICE ARRANGEMENTS & FINANCIAL MANAGEMENT
The competent resident will demonstrate the ability to:
1. Understand emergency medicine practice arrangements.
2. Understand typical financial arrangements for physicians providing emergency medicine care.
PERSONAL ISSUES

The competent resident will demonstrate the ability to:
1. Recognize and manage health issues related to emergency medicine work.
PART 2:

GUIDELINES FOR PROGRAMS
Principle No. 1: THE DOCTOR-PATIENT RELATIONSHIP

COMMUNICATION

Situation:
A family brings a deaf 83-year-old male is brought to the Emergency Department (ED). They state that he is unable to cope at home.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Establish a physician-patient relationship and to communicate effectively and compassionately with patients and their families.

Enabling Objectives:
1. Demonstrate appropriate self-introduction, position and posture, and listening skills upon starting a patient encounter
2. Demonstrate courtesy and respect for patients.
3. Demonstrate knowledge of and sensitivity towards physical, mental, and cultural differences of patients and their families.
4. Be able to compassionately break bad news to patients and/or families.

ETHICS AND MEDICOLEGAL ASPECTS OF CARE

ETHICAL PROBLEMS

Situation:
A comatose 23-year-old male presents in severe hypovolemic shock due to hemorrhage. He and his family are Jehovah Witnesses, and his family is demanding that no blood products be administered. He carries no written documentation of his wishes.

Terminal Objectives:
The competent resident will:
1. Evaluate ethical problems and identify justifiable solutions.

Enabling Objectives:
1. Identify the principles used in ethical decision making
2. Define beneficence, nonmaleficence, confidentiality, & autonomy.
3. Apply ethical principles in the determination of an approach to any patient encounter.
4. Describe issues relevant to performing procedures on the recently dead.
5. Define medical futility.

**MEDICOLEGAL PRINCIPLES**

**Situation:**
An angry spouse is calling with a complaint about why his 44-year old wife was discharged from the ED after presenting with an overdose. He demands information about the encounter and states that she should have been “locked up” because she is “crazy”.

**Terminal Objectives:**
The competent resident will:
1. Display knowledge of and demonstrate appropriate conduct when dealing with issues of patient confidentiality, informed consent, competence and substitute decision makers, interaction with law enforcement agencies and role of the medical examiner’s office.
2. Understand the elements of a successful civil litigation and malpractice claim, and acquire competence in becoming an expert witness in the criminal court system.

**Enabling Objectives:**
1. Discuss the legal requirements of confidentiality and the limitations on confidentiality within the physician’s residing province as well as the situations where the physician is required by the law to break patient confidentiality.
2. Identify necessary information that must be provided for a patient to give informed consent.
3. Identify the elements of a valid consent, describe the circumstances in which informed consent is implied or waived.
4. List the criteria that must be met before a patient may be considered incompetent and identify the parties who may be considered appropriate substitute decision makers for the patient within the physician's province of residence.
5. Identify common mistakes contributing to adverse outcomes involving transfer of care.
6. Identify constraints imposed by the law in interacting with law enforcement agencies.
7. Identify the role of the medical examiner’s office in the care of the newly deceased patient.
8. Recognize the elements required to become a credible expert witness in the criminal court system.
**Principle No. 2: THE FAMILY PHYSICIAN AS AN EFFECTIVE CLINICIAN**

**PRINCIPLES OF EMERGENCY MEDICINE**

**APPROACH TO THE EMERGENCY PATIENT**

**Situation:**
A 65-year-old woman presents with cough and fever.

**Terminal Objectives:**
The competent resident will:
1. Evaluate and initiate management in a patient presenting with an urgent or emergent problem.

**Enabling Objectives:**
1. Elicit an accurate and concise history, based on the patient's presenting complaint.
2. Perform an appropriate physical examination, based on the patient's presenting complaint.
3. Formulate a symptom-based approach based on physiology and anatomy followed by an appropriate differential diagnosis listing life-threatening and common disorders.
4. Identify conditions requiring immediate resuscitation or stabilization.
5. Develop an appropriate plan of investigation and treatment.

**ANAESTHESIA ANALGESIA AND PROCEDURAL SEDATION**

**TOPICAL, LOCAL AND REGIONAL ANESTHESIA**

**Situation:**
A 43-year-old laborer presents with multiple small foreign bodies in his left hand requiring removal.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Use local anesthetics in topical, local and regional blocks.

**Enabling Objectives:**
1. Classify local anesthetics based on chemical structure and give examples of each class.
2. Identify the maximum dose and adverse effects of lidocaine.
3. Describe an approach to manage someone with possible local anesthetic hypersensitivity.
4. Describe the indications for topical anesthesia.
5. Perform regional blocks in the face, arms, wrists, fingers and feet.
6. List the equipment needed, their appropriate settings, and medications used to perform a bier block of an upper and lower limb.

**ANALGESIA**

**Situation:**
A 43-year-old man with a history of renal calculi presents with severe flank pain and hematuria.

**Terminal Objectives:**
The competent resident will:
1. Evaluate the various options and select an appropriate method of relieving pain for ED patients.

**Enabling Objectives:**
1. Compare and contrast pharmacological properties of narcotic agents available for providing analgesia in the ED.
2. Compare and contrast pharmacological properties of NSAIDS available for providing analgesia in the ED.
3. For analgesia in the ED, discuss the use (including indications, contraindications, route, strength, and side effects) of:
   a) acetaminophen
   b) ibuprofen
   c) ketorolac
   d) codeine
   e) oxycodone
   f) morphine
   g) meperidine
   h) hydromorphone
   i) fentanyl

**PROCEDURAL SEDATION**

**Situation:**
A frantic 4-year-old presents with a laceration to his penis following a minor straddle injury on his bike.

**Terminal Objectives:**
The competent resident will:
1. Evaluate the various options and select an appropriate method of providing sedation and analgesia for ED patients undergoing painful or anxiety-provoking procedures.
Enabling Objectives:
1. Compare and contrast pharmacological properties of agents available for providing sedation in the ED.
2. For procedural sedation in the ED, discuss the use (including indications, contraindications, routes, and side effects) of:
   a) midazolam
   b) diazepam
   c) pentothal
   d) propofol
   e) ketamine
4. Evaluate the advantages and the disadvantages of each of the individual agents mentioned in (1) and (2) above.
5. Discuss the indications for and contraindications to procedural sedation for adult and pediatric patients in the ED.
6. Discuss the risk assessment of the patient prior to performing procedural sedation.
7. Identify preparations necessary prior to performing procedural sedation.
8. Select a technique for procedural sedation in a patient.
9. Discuss and demonstrate the reversal of analgesic and sedative agents in the context of the ED and post procedural sedation.
10. Describe an appropriate level of recovery prior to patient discharge.

RESUSCITATION

AIRWAY MANAGEMENT

Situation:
A 33-year-old man was “assaulted” and is unconscious with a hemotympanum and agonal respirations.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Recognize situations requiring emergency airway intervention.
2. Demonstrate basic airway management skills.
3. Perform an appropriate airway assessment.
4. Perform orotracheal intubations.
5. Evaluate available alternatives to orotracheal intubations.

BASIC AIRWAY MANAGEMENT

Situation:
A 38-year-old male presents with an inability to speak and continuous coughing while clutching his throat.

Enabling Objectives:
1. Demonstrate the ability to assess airway protection and patency.
2. Demonstrate maneuvers for maintaining a patent airway.
3. Perform interventions (e.g. oxygen delivery, airway adjuncts) appropriate to the situation.
4. Describe the clinical presentation of acute complete and partial airway obstruction.
5. Describe the appropriate emergent management of a patient that presents with acute complete airway obstruction and delineate the management differences between an infant (< 1 year old) and a child (> 1 year old), and an adult.
6. Perform assisted and controlled ventilation with bag - valve - mask.
7. Demonstrate the use of airway adjuncts in a patient with respiratory failure or arrest.
8. Describe all possible measures to assist with the patient who is difficult to bag.

ENDOTRACHEAL INTUBATION

Situation:
A 44-year-old man suffers partial thickness burns to over 40% of his body, has stridor and he is brought to the ED.

Enabling Objectives:
1. List the indications for endotracheal intubations.
2. List the contraindications for the use of paralytic agents to facilitate endotracheal intubations.
3. Discuss alternatives to paralysis to facilitate endotracheal intubations.
4. For facilitation of intubation in the ED, discuss the use (including indications, contraindications, dose, onset, duration, and side effects) of:
   a) succinylcholine
   b) pancuronium
   c) vecuronium
   d) rocuronium
5. Select an appropriate method of muscle relaxation when indicated.
6. Identify preparations necessary prior to performing endotracheal intubations.
7. Discuss the adverse effects associated with endotracheal intubations in the multiple trauma or burn patients and describe an approach to minimizing these effects.
8. Demonstrate the ability to intubate a patient with an airway problem.
10. Describe criteria for, and perform extubation and post-extubation care.

APPROACH TO THE DIFFICULT AIRWAY

Situation:
A 42-year-old woman sustains a severe facial injury and the physician is unable to identify pharyngeal landmarks.

Enabling Objectives:
1. Describe the hallmarks of a patient with a difficult airway.
2. Select the equipment necessary for the management of a patient with an airway problem.
3. Demonstrate three alternatives to oral endotracheal intubations for capturing the airway of a patient.
4. Discuss the advantages, disadvantages and contraindications to the use of the following:
   a) laryngeal mask airway
   b) trans-tracheal jet ventilation
   c) cricothyroidotomy
   d) fiberoptic laryngoscopy
   e) lighted stylet devices

**BREATHING**

**Situation:**
A 17-year-old teenager presents with a life-threatening asthma attack.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Manage a patient who presents with acute respiratory distress.
2. Distinguish situations requiring assisted or controlled ventilation,
3. Manage ventilatory failure.

**Enabling Objectives:**
1. List the life-threatening causes of respiratory failure and describe the typical presentations of each cause.
2. Discuss the evaluation and immediate management of the patient with respiratory failure.
3. Outline the differences in presentation between upper airway obstruction and lower airway pathology causing respiratory distress.
4. Demonstrate the approach to the adult patient who is choking and the infant with an upper airway foreign body.
5. Demonstrate the ability to distinguish between pneumothorax, pleural effusion and consolidation based on physical examination findings.
6. Demonstrate how to interpret arterial blood gasses.
7. Describe the indications, contraindications and initial settings in the use of non-invasive ventilation.
8. Define initial ventilator settings for a patient with normal lung compliance, and a patient with reduced compliance.
9. Discuss the principle of permissive hypercapnic ventilation.

**CIRCULATION**

**SHOCK**

**Situation:**
A 43-year-old female presents with confusion, tachycardia, and hypotension.
Terminal Objectives:
The competent resident will:
1. Demonstrate the ability to identify, classify and treat shock.

Enabling Objectives:
1. Define shock and provide a physiologic explanation for all categories of shock.
2. Differentiate between “warm” and “cold” shock states based on physical findings.
3. Outline resuscitative measures used to stabilize patients developing shock.
4. Outline the hemodynamic monitoring utilized in diagnosing and managing shock states.
5. Describe the pharmacotherapy and non-pharmacologic treatment of specific shock states including the indications for blood component therapy and list the possible complications of each.
6. Outline the investigation, definitive management options and disposal of patients.

VASCULAR ACCESS FOR DRUGS, FLUIDS, AND INVASIVE MONITORING

Situation:
A 29-year-old known injection drug user presents after a fall down 12 steps and is found to be febrile and hypotensive. ED staff is unable to obtain peripheral IV access.

Terminal Objectives:
The competent resident will:
1. Identify circumstances requiring vascular access or invasive monitoring.
2. Obtain appropriate vascular access for drugs, fluids and invasive monitoring.

Enabling Objectives:
1. Identify the various routes of vascular access for drugs, fluids and invasive monitoring.
2. Describe indications and contraindications for peripheral, central venous (internal jugular, subclavian and femoral) and arterial access.
3. Describe management options in a patient with difficult vascular access.
4. Describe indications for arterial blood pressure monitoring and central venous pressure monitoring.
5. Demonstrate the ability to place internal jugular, subclavian and femoral central lines.
6. Demonstrate the ability to place radial and femoral arterial lines.
7. Interpret results of CVP and arterial line readings

ECG INTERPRETATION AND DYSRHYTHMIAS

Situation:
A 42-year-old male presents to the ED with "palpitations". He is lightheaded and feels some pressure in his chest.

Terminal Objectives:
The competent resident will:
1. Exhibit expertise in interpreting 12 lead electrocardiograms.
2. Assess and initiate appropriate treatment of patients presenting with acute dysrhythmias.

Enabling Objectives:
1. Describe clinical features used to differentiate stable from unstable dysrhythmias.
2. Demonstrate the ability to recognize and define the criteria for the following ECG patterns:
   a) acute ischemic changes
   b) acute anterior, inferior, lateral, posterior, right ventricular MIs
   c) evolving MI
   d) old MI
   e) first-degree, second degree Type I, II, 2:1 and third degree AV blocks
   f) right and left incomplete and complete and multi-fascicular bundle branch bloc
   g) sinus pause, arrest, bradycardia
   h) atrial flutter, fibrillation
   i) supraventricular tachycardias
   j) junctional and ventricular escape
   k) accelerated junctional and ventricular rhythm
   l) junctional and ventricular tachycardia (mono and polymorphic
   m) wide-complex tachycardias Wolf-Parkinson-White syndrome
   n) ventricular fibrillation
   o) asystole
   p) digoxin effect
   q) acute pericarditis
3. Differentiate between ventricular tachycardia and wide-complex supraventricular tachycardia based on electrocardiographic and clinical findings.
4. Discuss the pathophysiology of supraventricular dysrhythmias including ectopic and re-entrant forms.
5. Discuss the pathophysiology of preexcitation syndromes.
6. Outline treatment protocols for patients presenting with the above dysrhythmias, including indications and contraindications for pharmacotherapy, cardioversion, defibrillation, indications for and timing of referral.
7. Discuss the changes in typical management of acute dysrhythmias when patients present with dysrhythmias secondary to toxic ingestions of calcium channel blockers, beta blockers, digoxin, and tricyclic antidepressants
8. Discuss the potential consequences of using Digoxin, Calcium Channel Blocks, or Beta Blockers in wide complex rapid A.Fib.
9. Discuss methods of controlling bradycardia through temporary or permanent measures.

SUDDEN DEATH

Situation:
A 54-year-old man is brought to the hospital by ambulance in cardiac arrest.
Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Manage the patient in cardiac arrest.

Enabling Objectives:
1. Compare and contrast adult and infant CPR.
2. Discuss the controversies concerning CPR.
3. Demonstrate how to perform CPR in all age groups.
4. Define pulseless electrical activity
5. Discuss the role for and evidence behind the use of the following agents in cardiac arrest:
   a) fluid bolus
   b) epinephrine
   c) atropine
   d) bicarbonate
   e) calcium
   f) lidocaine
   g) procainamide
   h) amiodarone
   i) defibrillation
   j) cardioversion

DISABILITY

COMA AND ALTERED LEVEL OF CONSCIOUSNESS

Situation:
A 45-year-old man is found by his wife unconscious in the bathroom.

Terminal Objectives:
The competent resident will:
1. Assess and manage the comatose patient.
2. Assess and manage patients with altered level of consciousness.

Enabling Objectives:
1. Define coma.
2. Classify the causes of coma.
3. Outline the initial evaluation and appropriate sequence in the management of an unconscious patient.
4. Demonstrate proficiency in the use of the Glasgow Coma Scale
5. Describe the normal physiology and pathophysiology of regulation of intracranial pressure (ICP) and outline methods of monitoring.
6. Describe interventions for the management of presumed elevated ICP including pharmacologic and non-pharmacologic interventions.
7. Discuss the management of status epilepticus in both adult and pediatric patients.
PEDIATRIC RESUSCITATION

NEWBORN ASSESSMENT AND RESUSCITATION

Situation:
A delivery is about to occur in your ED.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Assess and resuscitate the newborn.

Enabling Objectives:
1. Perform an initial assessment of the newborn and determine an Apgar score.
2. Demonstrate the ability to perform bag-valve mask ventilation when indicated.
3. List the common causes of respiratory depression at birth.
4. Outline the immediate management of a depressed newborn.
5. Outline the management of common birth trauma, including initiating appropriate consultation.
6. Elicit and interpret information from the history and physical examination to differentiate among the causes of cyanosis in the newborn.
7. List the differential diagnosis of cyanosis in the newborn.
8. List and interpret basic investigations used to distinguish among the causes of cyanosis in the newborn.
9. Outline the initial management of a cyanotic newborn, including referral for specialized care.

RESUSCITATION OF INFANTS AND CHILDREN

Situation:
A 3-month-old baby is brought to the ED limp and cyanotic with a pulse of 30 beats per minute.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Recognize the pediatric patient in need of resuscitative measures.
2. Assess and manage the pediatric patient in need of resuscitation.

Enabling Objectives:
1. State the ranges for a normal heart rate, blood pressure and respiratory rate by age.
2. Evaluate the pediatric airway with particular attention to difficult or compromised airway.
3. State the differences between the adult, pediatric, and neonatal airways and differentiate their management.
4. Outline the management of an obstructed airway in an infant and child.
5. Demonstrate how to assess a pediatric patient and how to choose an appropriate oral airway and mask.


7. For facilitation of pediatric intubation in the ED, discuss the use of (including indications, contraindications, dose, onset, duration, and side effects):
   a) succinylcholine
   b) pancuronium
   c) vecuronium
   d) rocuronium
   e) fentanyl
   f) midazolam
   g) propofol
   h) pentobarbital
   i) ketamine
   j) atropine

8. Calculate the correct endotracheal tube size.

9. Demonstrate ability to endotracheally intubate neonates, infants and children.

10. Outline the indications for intraosseous, peripheral venous and central venous vascular access.

11. Demonstrate the proper technique to obtain emergent and urgent vascular access.

12. List the indications, contraindications, routes and doses of the following therapies:
   a) epinephrine,
   b) lidocaine,
   c) atropine,
   d) sodium bicarbonate,
   e) glucose,
   f) dopamine,
   g) calcium,
   h) furosemide,
   i) naloxone,
   j) adenosine,
   k) cardioversion.
   l) defibrillation.

13. List the important causes of cardiopulmonary arrest in children.

14. Identify and outline the current management of pediatric patients presenting with the following dysrhythmias:
   a) SVT
   b) bradycardia
   c) ventricular tachycardia
   d) ventricular fibrillation
   e) asystole
   f) PEA
ADULT NON-TRAUMATIC PRESENTATIONS

Situation:
A 72-year-old male presents with a new onset of shortness of breath.

Terminal Objectives:
The competent resident will:
1. Outline a differential diagnosis for each of the following non-traumatic adult presentations. The differential diagnosis should include the life threatening as well as the common disorders.
2. Elicit a history and perform a physical exam relevant to the conditions identified in the differential diagnosis of the presenting complaint.
3. Interpret the information obtained from the history and physical examination and generate a narrowed differential diagnosis.
4. Plan investigations pertinent to the narrowed differential diagnosis.
5. Demonstrate the ability to interpret requested investigations.
6. Initiate stabilization and perform or arrange for definitive treatment in an appropriate and timely manner.

HEAD NECK AND NEURO PRESENTATIONS

Headache
HIV+ with Headache or CNS dysfunction
Hemiplegia/Hemisensory Loss +/-; Aphasia
Weakness including Paresis and Paralysis
Vertigo
Acute Loss of Vision
Painful Eye
Red Eye
Dental Pain
Epistaxis
Sore Throat
Stridor
Neck Pain

CHEST PRESENTATIONS

Chest Pain
Cough
Dyspnea
HIV+ with Cough and/or dyspnea
Hemoptysis
Palpitations & Dysrhythmias
Wheeze

ABDOMINAL AND GI PRESENTATIONS

Abdominal Distension
Abdominal Pain: RUQ, Epigastric, LUQ, RLQ, LLQ, Flank, Anorectal, Generalized
Constipation
Diarrhea
HIV+ with Diarrhea
Dysphagia
Hematemesis
Jaundice
Melena
Vomiting

GENITOURINARY PRESENTATIONS
Scrotal Pain
Hematuria
Urinary Retention / Hesitancy
Dysuria / Frequency
Flank Pain

GYNECOLOGIC AND OBSTETRIC PRESENTATIONS
Pelvic Pain
Pregnant and Bleeding
Vaginal Bleeding
Vaginal Discharge
Vulvar lesions
Labor and ED Delivery
Postpartum bleeding
Postpartum fever
Perineal lesions

MUSCULOSKELETAL AND EXTREMITY PRESENTATIONS
Monoarticular joint pain
Polyarticular joint pain
Myalgia
Back pain
Arm Pain
Leg pain
Swollen limb

DERMATOLOGIC PRESENTATIONS
Wheals
Purpura
Petechiae
Vesicles
Papules
Ulcers
Nodules
Pustules
Macules
Pruritis

**PSYCHIATRIC PRESENTATIONS**
- Mood Disorders
- Attempted Suicide
- Anxiety and Panic
- Psychosis and Thought Disorders
- Behavioral Disorders
- Personality Disorders

**GENERAL PRESENTATIONS**
- Fever
- HIV+ with Fever and/or Night Sweats
- Generalized Weakness
- Coma
- Altered Mental Status
- Syncope
- Convulsions

**ADULT NON-TRAUMATIC DISORDERS**

**NEUROLOGICAL DISORDERS**

Enabling Objectives:
1. Describe a complete neurologic examination.
2. For each step of the examination, describe the normal findings and explain potential abnormal findings based on the anatomic location of the abnormality.

**MENINGITIS**

Situation:
A 17-year-old girl presents with a fever and a headache. LP results show a CSF WBC count of 1200 x10⁶/L.

Enabling Objectives:
1. Describe the typical presentations of viral and bacterial meningitis.
2. List the common infectious causes of meningitis.
3. Describe the physical findings and progression of disease of meningococcemia.
4. List the typical causes of meningitis in an immunocompromised patient.
5. Describe the typical CSF findings in bacterial and viral meningitis.
6. Describe the typical CSF findings in a patient with HIV but without clinical signs or symptoms of meningitis or encephalitis.
7. Distinguish between appropriate investigations for meningitis for immunocompetent vs. immunocompromised patients.
8. Choose an appropriate initial antibiotic therapy for an immunocompetent adult.

STROKE

Situation:
A 67-year-old woman presents with sudden loss of speech and weakness of her right arm.

Enabling Objectives:
1. Describe the typical deficits associated with an acute stroke involving the following areas:
   a) right frontal cortex (right hand dominant)
   b) left frontal cortex (right hand dominant)
   c) parietal cortex
   d) occipital cortex
   e) internal capsule - anterior
   f) internal capsule - posterior
   g) cerebellum
   h) brainstem
2. List potential stroke mimics
3. List the risk factors for stroke
4. Define the terms transient ischemic attack (TIA) and reversible ischemic neurologic deficit (RIND)
5. Describe the investigation, medical treatment and disposition of a patient who presents with a TIA or RIND.
6. List the possible medical therapies for acute stroke, and give their indications and contraindications.
7. List the non-pharmacologic measures useful to treat acute stroke and prevent complications of acute stroke.

CRANIAL NERVE DISORDERS

Situation:
A 45-year-old woman presents with an acute facial palsy.

Enabling Objectives:
1. Describe the typical presentation, complications, management and prognosis of the following conditions:
   a) Bell’s palsy
   b) Trigeminal neuralgia

SEIZURES

Situation:
A 52-year-old alcoholic presents with a grand-mal seizure
Enabling Objectives:
1. Define the following types of seizures:
   a) Grand-mal
   b) Petit-mal
   c) Absence
   d) Jacksonian
2. Define status epilepticus.
3. List the complications of seizures.
4. List the possible medications, dose and route for the treatment of status epilepticus in order of use.
5. Describe the typical presentation of patients with elevated blood levels of dilantin and carbamazepine.
6. List the indications for admission of patients with seizures.
7. Describe the investigation of, disposition, and discharge instructions appropriate for a patient who presents after his/her first seizure.
8. Describe the distinction between a person who feels unwell, looses consciousness and then has a grand-mal seizure and a person who has a seizure with no warning.

SPINAL CORD & NERVE ROOT DISORDERS

Situation:
A 25-year-old laborer presents with acute back pain radiating down his left leg after lifting a large load.

Enabling Objectives:
1. Identify motor deficits and outline an approach to distinguish between cerebral, cerebellar, upper and lower motor neuron disorders, and neuromuscular junction disorders.
2. Identify sensory levels and relate them to specific spinal cord levels.
3. List the most common nerve roots involved in disc herniation, and associated findings on physical exam.
4. Describe the clinical presentation of cauda equina syndrome.
5. Review a diagnostic and therapeutic approach to suspected cauda equina syndrome.
6. Describe the characteristic features of spinal stenosis.
7. Discuss the x-ray findings seen in spinal stenosis, and treatment and referral options.
8. Describe the clinical presentation, diagnosis and management of spinal epidural abscess.
9. Describe the typical history, physical findings, and initial management of each of the following:
   a) Cervical spinal stenosis
   b) Cervical disk protrusion
   c) Central cord syndrome
   d) Brown-Sequard syndrome
   e) Guillain-Barré syndrome
   f) Myasthenia gravis and myasthenic crisis
g) Transverse myelitis

**MIGRAINE**

**Situation:**
A 34-year-old female with a past history of migraine headaches presents with her typical headache occurring at the time of her menstrual period.

**Enabling Objectives:**
1. Describe the typical presentation of migraine without aura, migraine with aura, and cluster headache.
2. Contrast the clinical presentation of migraine with that of an intracranial hemorrhage.
3. Discuss the advantages and limitations of the CT scan in the investigation of acute headache.
4. Discuss the indications, contraindications, effectiveness, routes, dosage and side effects of medications used to treat acute migraine, including:
   a) Metoclopramide
   b) Prochlorperazine
   c) Chlorpromazine
   d) DHE
   e) Sumatriptan and other “triptans”
   f) Corticosteroids

**OPHTHALMOLOGIC DISORDERS**

**Enabling Objectives:**
1. Demonstrate the use of the slit lamp, tono-pen, Schiøtz tonometry, and direct ophthalmoscope.
2. Describe and contrast normal and abnormal ocular anatomy and neuro-ophthalmology.

**CONJUNCTIVITIS**

**Situation:**
A 23-year-old contact lens wearer has a purulent eye discharge.

**Enabling Objectives:**
1. Compare and contrast the findings, workup and treatment of bacterial, viral and allergic conjunctivitis.
2. List the common bacterial and viral infectious agents found in neonatal and adult conjunctivitis.
3. Discuss the indications for referral to an Ophthalmologist.

**IRITIS AND KERATITIS**
**Situation:**
A 28-year-old welder complains of bilateral eye pain and photophobia 12 hours after welding. There are multiple punctate staining defects on his cornea.

**Enabling Objectives:**
1. List the differential diagnoses of both iritis and keratitis.
2. Compare and contrast the clinical findings of iritis and keratitis.
3. Outline the management plan of iritis and keratitis.

**OPTIC NEURITIS**

**Situation:**
A 40-year-old woman has monocular vision loss that is slowly progressing over 3 weeks. Funduscopy reveals a swollen, pale optic disc.

**Enabling Objectives:**
1. Compare and contrast the clinical findings of anterior optic neuritis and retrobulbar neuritis.
2. Describe the medical management and referral of optic neuritis.

**GLAUCOMA**

**Situation:**
A 69-year-old elderly woman presents with 1 day of nausea, right eye ache and new cloudy vision.

**Enabling Objectives:**
1. Describe and contrast the abnormal anatomy changes of both open-angle and angle closure glaucoma.
2. Demonstrate the use of Schiøtz tonometry.
3. List medications useful in the management of acute glaucoma.

**PAPILLEDEMA**

**Situation:**
A 30-year-old man presents with 5 days of nausea, headache, and intermittent blurred vision.

**Enabling Objectives:**
1. Compare and contrast the differential diagnoses of papilledema, both with and without increased intracerebral pressure.
2. Describe the ophthalmologic findings of papilledema.
3. Discuss the role of CT scanning and lumbar puncture in the workup of papilledema.
4. Identify the indications for Ophthalmology or Neurology referral.
**RETINAL ARTERIAL AND VENOUS OCCLUSION**

**Situation:**
A 75-year-old man with atrial fibrillation presents 1 hour after sudden painless loss of left eye vision.

**Enabling Objectives:**
1. Compare and contrast the findings of Central Retinal Arterial and Venous Occlusion (CRAO and CRVO).
2. Describe the common causes of both CRAO and CRVO.
3. Describe medical and non-medical options in the management of CRAO.
4. Describe the workup and management of CRVO.

**RETINAL DETACHMENT**

**Situation:**
A 53-year-old myopic librarian has spontaneous cloudy left eye vision associated with flashes of lights.

**Enabling Objectives:**
1. Describe the clinical findings of retinal detachment.
2. State the initial management of a patient with retinal detachment.
3. State the indications for referral to Ophthalmology.

**ENT DISORDERS**

**ACUTE HEARING LOSS**

**Situation:**
A 40-year-old man has acute hearing loss after 3 days of painful left ear discharge.

**Terminal Objectives:**
The competent resident will:
1. Evaluate and initiate management of the patient with acute hearing loss.

**Enabling Objectives:**
1. Elicit the history and demonstrate the clinical examination of acute hearing loss, including Rinne and Weber tests.
2. List the indications for CT scanning.
3. Discuss the differential diagnoses of acute hearing loss.
4. Outline the approach to managing and appropriately referring acute hearing loss.

**ANTERIOR AND POSTERIOR EPISTAXIS**
Situation:
A 78-year-old woman on antihypertensive therapy presents with right-sided epistaxis.

Enabling Objectives:
1. Describe the normal nasal anatomy, distinguishing the Kiesselbach plexus.
2. Demonstrate the approach to evaluating epistaxis using vasoconstrictive and anesthetic agents.
3. Perform the methods for controlling anterior epistaxis using silver nitrate cautery, and different packing types.
4. Demonstrate the approach to controlling a posterior epistaxis.
5. Discuss the indications for laboratory investigation, ENT consultation, and hospitalization.
6. Outline the outpatient management of anterior packing.

SINUSITIS

Situation:
A 33-year-old woman has 2 days of left cheek pain, fever and mucopurulent nasal discharge.

Enabling Objectives:
1. List the 6 nasal sinuses and their locations.
2. Describe the mechanism of occurrence of sinusitis and the causal organisms.
4. List the complications that may occur.
5. Outline the treatment plan and follow up of sinusitis.

ADULT EPIGLOTTITIS

Situation:
A 26-year-old man presents after 2 days of sore throat and fever with difficulty swallowing secretions and stridor with lying flat.

Enabling Objectives:
1. List the various pathogens causing adult epiglottitis.
2. Describe the clinical findings and workup of adult epiglottitis.
3. Discuss the indications for laryngoscopy, referral to ENT and hospitalization.

PHARYNGEAL FOREIGN BODY

Situation:
A 48-year-old food-and-wine critic has a foreign body sensation in her throat after eating a delicious salmon dinner.

Enabling Objectives:
1. Describe the normal anatomy of the pharynx and hypopharynx.
2. Discuss the clinical findings of a pharyngeal foreign body.
3. Demonstrate the visualization and removal of a pharyngeal foreign body using techniques of indirect and direct laryngoscopy.
4. Discuss complications of a pharyngeal foreign body including appropriate workup and treatment.

DENTAL DISORDERS

DENTAL AND PERIDONTAL DISEASE

Situation:
A 25-year-old female has localized tooth pain slowly increasing over 1 week.

Enabling Objectives:
1. Describe the pathophysiology of dental caries, abscess and gingivitis.
2. List the systemic illnesses associated with periodontal disease.
3. Outline the treatment and referral plan of dental caries, abscess and gingivitis.
4. Discuss the treatment of post-extraction complications of infection, post-extraction alveolitis (dry socket) and postoperative hemorrhage.
5. Demonstrate the ability to perform local anesthesia of upper teeth, and inferior alveolar nerve blocks

LUDWIG'S ANGINA

Situation:
A 38-year-old man presents with difficulty swallowing and new stridor after 4 days of increasing right-sided tooth and jaw pain.

Enabling Objectives:
1. Describe the disease process and affected anatomical structures of Ludwig’s Angina.
2. Outline the management and treatment plan, with indications for referral and hospitalization.
3. Describe indications for securing the airway.

CARDIOVASCULAR DISORDERS

ACUTE CORONARY SYNDROMES

Situation:
A 53-year-old male presents to the ED with retrosternal chest pressure ongoing for the last 90 minutes.

Enabling Objectives:
1. List the major risk factors associated with coronary artery disease.
2. Discuss the epidemiology of coronary artery disease including risk factor stratification.
3. Discuss the pathophysiology of ischemic heart disease, including ischemia, infarction, and reperfusion.
4. Outline the anatomy of the myocardium, valves, conducting tissue and coronary arteries. Describe the common arterial supply to specific conducting tissues.
5. Identify common injury patterns by hemodynamic, radiographic, electrocardiographic, and clinical findings and specify the suspected vessel(s) responsible.
6. Demonstrate efficient use of laboratory resources to assist in the diagnosis of acute ischemic heart disease.
7. Demonstrate an advanced knowledge of symptomatic therapeutic agents used in the treatment of acute (emergent) ischemic heart disease including; oxygen, nitrates, opioids, anti-platelet agents, anticoagulants, vaspressors, and sympatholytic agents.
8. Outline the initial management of the patient with an uncomplicated acute myocardial infarction.
9. List the indications and contraindications for the use of thrombolytic therapy and outline the indications of invasive definitive management options.
10. Recognize complications of acute myocardial ischemia / infarction including congestive heart failure, valvular heart disease, and hypoperfusion (central and peripheral).
11. Define unstable angina.
12. Initiate timely referral to CCU as indicated by patient and laboratory findings.

**CONGESTIVE HEART FAILURE**

**Situation:**
A 72-year-old female patient is brought to the ED unable to speak full sentences, short of breath and with a respiratory rate of 35/min. Family members indicate that she has had worsening dyspnea with exertion and ankle swelling in the past several weeks.

**Enabling Objectives:**
1. Discuss the pathophysiology and clinical features of left and right sided C.H.F, including acute precipitating factors.
2. Display an advanced knowledge of therapeutics used in the treatment of chronic congestive heart failure.
3. State the clinical findings and outline the initial treatment and stabilization of patients in acute C.H.F., including indications and techniques of advanced airway management, hemodynamic monitoring, and initiation of pharmacotherapy.

**HYPERTENSIVE EMERGENCIES**

**Situation:**
A 59-year-old male is brought to the ED agitated and disoriented. Prior to this he had complained of headache and nausea. His blood pressure on initial evaluation is 240/140 in both arms.

Enabling Objectives:
1. Define hypertensive crisis using physical features and laboratory data.
2. Outline the etiologies of hypertension and relevant pathophysiology.
3. Discuss in detail the pharmacologic agents used in acute hypertensive crises, including indication/contraindications, method of action and preferred route of administration.
4. Develop a protocol for the safe treatment of hypertensive crises, including medications, followup, and indications for referral/admission.
5. Discuss the potential consequences of poorly controlled hypertension.
6. Discuss the complications of acutely lowering long-standing hypertension.

PERICARDITIS, MYOCARDITIS AND ENDOCARDITIS

Situation:
A 35-year-old female presents to the ED with chest pain associated with a febrile illness. She has previously been diagnosed with Systemic Lupus Erythematosus.

Enabling Objectives:
1. Discuss pericarditis with respect to etiology, clinical findings, ECG findings and treatment including indications for admission or referral.
2. Discuss myocarditis with respect to etiology, clinical presentations, diagnostic modalities, and treatment.
3. Discuss Bacterial Endocarditis with respect to etiology, clinical findings, diagnostic modalities, treatment, and disposition.

THORACIC AORTIC DISSECTION

Situation:
A 64 year-old man had sudden onset of mid-thoracic pain radiating to his back.

Enabling Objectives:
1. Describe the typical presentation and atypical presentations of a patient with an acute thoracic dissection
2. List the possible findings on CXR of a patient with an acute thoracic dissection.
3. Describe the Stanford classification of thoracic dissection, and distinguish between the general management of the type A and type B aneurysms.
4. Describe the medications used when medical management of an acute thoracic aortic dissection is needed- rationale for using them, and the goals of therapy.

THROMBOEMBOLIC DISORDERS

Situation:
A 46-year-old acute leukemic patient presents with right pleuritic chest pain and shortness of breath.

Enabling Objectives:
1. Describe the pathophysiology of the development of deep venous thrombosis (DVT).
2. List the risk factors for the development of DVT.
3. Describe the physical findings consistent with the presence of DVT
4. List the Well’s criteria for the risk stratification of patient’s with suspected DVT
5. In general terms, describe the accuracy of the following diagnostic tests when investigating a patient with possible DVT who is low, medium, or high clinical risk for DVT:
   a) Latex agglutination or whole-blood d-dimer assay
   b) ELISA d-dimer
   c) Duplex compression ultrasonography
   d) Contrast venography
6. Compare the efficacy and side effects of unfractionated heparin with low molecular weight heparin in the treatment of acute DVT.
7. List the contraindications for outpatient management of DVT.
8. Describe the role of ABG’s, EKG’s, d-dimer assays, VQ scans, contrast-enhanced thoracic CT, and pulmonary angiography in the diagnosis of pulmonary emboli.
9. Describe the management and duration of treatment for a patient presenting with and acute DVT or PE.
10. Describe the necessary investigation and management of a patient presenting with an acute PE who is currently appropriately anticoagulated for a previous PE.
11. Describe the clinical presentation, risk factors, investigation, initial management and complications of acute arterial emboli.

RESPIRATORY DISORDERS

ASTHMA

Situation:
A 23-year-old male presents with sudden worsening of his asthma. He was intubated one month ago for a similar attack.

Enabling Objectives:
1. Outline an appropriate assessment of an acute exacerbation of asthma.
2. Stratify patients into mild, moderate, severe or near-fatal asthma according to the CAEP Asthma Guidelines.
3. List appropriate therapy for each severity stratification.
4. Discuss indications for admission.
5. List the complications of asthma and asthma therapies.
7. List appropriate discharge medications and instructions.
COPD

Situation:
A 74-year-old woman on home oxygen for COPD presents with shortness of breath.

Enabling Objectives:
1. Outline an appropriate assessment of an acute exacerbation of COPD.
2. Discuss the initial management of the patient with COPD.
3. Describe indications and options for ventilatory support of patients with COPD.
4. Discuss indications for admission.
5. List appropriate discharge medications and instructions.

SPONTANEOUS PNEUMOTHORAX

Situation:
An 18-year-old male presents with SOB and a 30% pneumothorax is diagnosed on CXR.

Enabling Objectives:
1. List the risk factors for spontaneous pneumothorax
2. Describe the clinical findings of the patient with a pneumothorax.
3. Discuss the indications, contraindications, and technique of each of the following management options for treating pneumothorax:
   a) Observation only
   b) Chest tube insertion
   c) Thoracostomy catheter with Heimlich valve insertion
4. Describe the setup and principles of an underwater seal apparatus for chest tubes.

PNEUMONIA

Situation:
A 60-year-old female presents from home with fever, productive cough, and shortness of breath. Her chest x-ray shows a LLL infiltrate.

Enabling Objectives:
1. List the typical causes of community-acquired pneumonia and select appropriate empiric antibiotic therapy.
2. List the typical causes of nosocomial pneumonia and select appropriate empiric antibiotic therapy.
3. List admission criteria for a patient with pneumonia.
4. List complications of pneumonia and describe an approach to each.

LUNG CANCER

Situation:
A 48-year-old smoker presents with chronic cough and acute hemoptysis. Chest x-ray shows a mass in the left lung.
Enabling Objectives:
1. Discuss the evaluation and initial management of the patient with hemoptysis.
2. Describe indications for, and technique of inserting a double lumen endotracheal tube.
3. Discuss the evaluation and initial management of the patient with a pleural effusion.

ENDOCRINE AND METABOLIC DISORDERS

ENDOCRINE DISORDERS

Situations:
1. A 22-year-old diabetic female presents with vomiting, fever and a blood sugar of 35 mmol/L, with ketonuria.
2. An 84-year-old male presents from a nursing home with a decreased level of consciousness and a blood sugar of 64 mmol/L.
3. A 75-year-old female presents from home with a decreased level of consciousness, bradycardia, hypotension, and a temperature of 32 rectally.
4. A 32-year-old male presents with hypotension and decreased level of consciousness after a day of fever and chills.
5. A 46-year-old alcoholic has been unable to keep anything down for 2 days. She is tachycardic, hypotensive and has Kussmaul respirations.

Enabling Objectives:
1. Outline the initial management of the patient who presents with diabetic ketoacidosis.
2. Outline the initial management of the patient who presents with a nonketotic hyperosmolar state.
3. Outline the initial management of the patient who presents with alcoholic ketoacidosis.
4. Describe the signs and symptoms of hypoglycemia.
5. Describe admission criteria for hypoglycemia.
6. State the common presentation, laboratory abnormalities and treatment of the hypothyroid patient.
7. State the common presentation, laboratory abnormalities and treatment of the hyperthyroid patient, including thyroid storm.
8. State the common presentation, laboratory abnormalities and treatment of the patient with acute adrenal insufficiency.
9. State the common presentation, laboratory abnormalities and treatment of the patient with Cushing’s syndrome.
10. Describe the presentation and treatment of Beriberi and the Wernicke-Korsakoff syndrome.

METABOLIC DISORDERS

Situation:
1. A 34-year-old female presents with vomiting, fever and severe dehydration.
2. A 19-year-old female presents with a decreased level of consciousness and Kussmaul respirations.
3. A 45-year-old renal dialysis patient presents feeling very weak and ill. His ECG shows a slow rhythm where P waves cannot be seen.
4. A 74-year-old male from a nursing home presents with ongoing seizures. His serum sodium is 112 mmol/L.
5. A 56-year-old female with breast cancer presents with bone pain, altered mental status and is markedly dehydrated. Her serum calcium is 4.7 mmol/L.

Enabling Objectives:
1. Discuss the management of the patient who presents with hypokalemia.
2. Discuss the management of the patient who presents with hyperkalemia.
3. Discuss the ECG findings with hypokalemia and with hyperkalemia.
4. Differentiate among respiratory acidosis, respiratory alkalosis, metabolic acidosis, and metabolic alkalosis given an arterial blood gas result.
5. List the common causes of respiratory acidosis, respiratory alkalosis, metabolic acidosis, and metabolic alkalosis.
6. State the common causes of hyponatremia and discuss the therapeutic approach to hyponatremia.
7. Define SIADH.
8. Discuss the causes and clinical presentation of central pontine myelinolysis.
9. State the common causes of hypernatremia and discuss the therapeutic approach including complications.
10. Define Diabetes Insipidus.
11. State the common causes of hypocalcemia and discuss the therapeutic approach to hypocalcemia.
12. State the common causes of hypercalcemia and discuss the therapeutic approach to hypercalcemia.

ABDOMINAL AND GASTROINTESTINAL DISORDERS

GASTROINTESTINAL HAEMORRHAGE

Situations:
1. A 47-year-old male alcoholic presents with gross hematemesis.
2. A 76-year-old woman presents with left lower quadrant abdominal pain and red blood in her stools for the past week.
3. A 55-year-old man presents with weight loss and black stools.

Enabling Objectives:
1. Compare and contrast the causes and presentations of upper and lower gastrointestinal bleeding.
2. Discuss the role of endoscopy for diagnostic and therapeutic purposes.
3. Discuss the use of pharmacologic therapy for patients with gastrointestinal bleeding.
4. Describe the technique of balloon tamponade for use in variceal hemorrhage.
5. Identify situations in which surgical intervention is required.

**SWALLOWED FOREIGN BODIES**

**Situations:**
1. 63-year-old man complains of retrosternal chest pain and inability to swallow his own secretions after swallowing a large piece of poorly chewed steak.
2. A 26-year-old schizophrenic patient is witnessed to have swallowed a handful of safety pins.

**Enabling Objectives:**
1. Identify the most common foreign bodies ingested by adults.
2. Describe the sites of foreign body impaction in adults.
3. Identify the potential complications of an impacted foreign body.
4. Describe the clinical presentation of patients with an impacted foreign body in the esophagus.
5. Discuss the role of imaging for diagnosis and prognosis.
6. Identify the situations in which endoscopy is the treatment of choice for swallowed foreign bodies.
7. Discuss the potential options for managing patients with
   a) impacted food bolus
   b) ingestion of sharp objects
   c) cocaine ingestion

**PEPTIC ULCER DISEASE AND GASTRITIS**

**Situations:**
A 47-year-old man presents with intermittent burning epigastric pain.

**Enabling Objectives:**
1. Differentiate between peptic ulcer disease, gastritis, and dyspepsia.
2. Discuss the pathophysiology and risk factors for developing peptic ulcer disease.
3. Describe the clinical presentation of peptic ulcer disease and gastritis.
4. Discuss the use of laboratory tests and diagnostic imaging for diagnosis.
5. Describe the complications of peptic ulcer disease.
6. Discuss the management of peptic ulcer disease and its complications.

**APPENDICITIS**

**Situations:**
1. A 22-year-old man presents with periumbilical abdominal pain which has now moved to the right lower quadrant.
2. A 75-year-old man presents with anorexia, nausea, vomiting and vague right sided abdominal pain.
3. A previously healthy 29-year-old woman who is 30 weeks pregnant complains of nausea, vomiting, and lower abdominal pain.

Enabling Objectives:
1. Describe the classic presentation of acute appendicitis.
2. Discuss the role of anatomic location on the presentation of acute appendicitis.
3. Define McBurney’s point and perform maneuvers to elicit Rovsing, psoas, and obturator signs.
4. Describe the physical signs of a perforated appendix.
5. Discuss the special considerations when evaluating the following patient populations for suspected appendicitis:
   a) elderly
   b) pregnant patients
6. Discuss the use of blood and urine analysis in the diagnosis of acute appendicitis.
7. Evaluate the use of the following imaging studies as an adjunct to diagnosis:
   a) plain radiographs
   b) ultrasound
   c) CT scan
8. Discuss the use of ED observation and serial abdominal examinations for patients with atypical presentations.
9. Outline the ED management of acute appendicitis.

INTESTINAL OBSTRUCTION

Situations:
1. A 56-year-old woman with a history of multiple abdominal surgeries complains of increasing abdominal distension and diffuse abdominal pain.
2. A 70-year-old man with a history of weight loss and change in stool pattern presents with failure to thrive and inability to pass stool or flatus.

Enabling Objectives:
1. Define intestinal obstruction.
2. Discuss the pathophysiologic differences between mechanical obstruction and paralytic ileus.
3. List the most common causes of small and large bowel obstructions.
4. Compare and contrast the clinical and radiographic findings of small and large bowel obstructions.
5. Describe the potential complications of bowel obstruction.
6. Discuss the initial management of patients with bowel obstruction in the ED.
7. Recognize the conditions that require urgent surgical intervention.
8. Define Ogilvie’s syndrome and differentiate it from true intestinal obstruction.

HERNIAS

Situations:
1. A 70-year-old man presents with right sided groin swelling which is noticeable when he stands up or coughs.
2. A 2-month-old boy presents with irritability. On examination he has a firm mass at his umbilicus.

**Enabling Objectives:**
1. Discuss the types of hernias with respect to epidemiology and clinical presentation.
2. Discuss the potential complications of an incarcerated or strangulated hernia.
3. Demonstrate the technique used to reduce an incarcerated hernia.
4. Discuss the situations in which urgent surgical intervention is required.

**INFLAMMATORY BOWEL DISEASE**

**Situations:**
1. A 19-year-old woman with Crohn’s disease has had increased abdominal pain and frequent bloody stools over the past week.
2. A 22-year-old man with a family history of inflammatory bowel disease and colon cancer presents with painless rectal bleeding.

**Enabling Objectives:**
1. Compare and contrast the clinical and pathologic features of Crohn’s disease and ulcerative colitis.
2. Describe the extraintestinal manifestations of inflammatory bowel disease with specific focus on arthritic, ocular, dermatologic, hepatobiliary, and vascular features.
3. Describe the management of patients with fulminant colitis including:
   a) correction of fluid and electrolyte balance
   b) bowel rest and intestinal decompression
   c) corticosteroid therapy
   d) antibiotic therapy
   e) recognition and management of complications
4. State the typical presentation, appropriate investigations and management of the following potential complications of inflammatory bowel disease that may be seen in the emergency department:
   a) perianal complications
   b) abscesses
   c) intestinal obstruction or perforation
   d) gastrointestinal bleeding
   e) toxic megacolon
   f) malabsorption/malnutrition
   g) intestinal neoplasm
5. Identify patients with fulminant colitis or complications that require admission.

**ANORECTAL DISORDERS**

**Situations:**
1. A 20-year-old woman with a history of constipation presents with painless rectal bleeding following a bowel movement.
2. An 18-year-old boy with a history of Crohn’s disease presents with a tender mass in the anal region.
3. A mother brings her 2-year-old boy to the ED because he cries out in pain every time he has a bowel movement.

**Enabling Objectives:**
1. Demonstrate proficiency in examination of the anorectal region.
2. Compare and contrast the anatomical and clinical presentation of internal and external hemorrhoids.
3. List the risk factors for developing hemorrhoids.
4. Discuss the outpatient management of hemorrhoids and list the indications for surgical referral and intervention.
5. Perform an incision and drainage of a thrombosed external hemorrhoid.
6. Describe the potential locations for anorectal abscesses.
7. List the pathologic conditions that are associated with the development of anorectal abscesses.
8. Perform an incision and drainage of a simple perianal abscess.
9. Identify the most common location of anal fissures.
10. Describe the outpatient strategies for managing anal fissures.
11. Identify the complications of rectal foreign bodies.
12. Describe a technique to remove rectal foreign bodies in the ED.
13. Recognize the situations in which surgical intervention is required for foreign body removal from the rectum.

**GASTROENTERITIS**

**Situation:**
A 21-year-old college student complains of diarrhea for the past 2 weeks since returning from a trip to Thailand.

**Enabling Objectives:**
1. Define diarrhea.
2. Discuss the four basic pathophysiologic mechanisms that cause diarrhea.
3. Compare and contrast acute and chronic diarrhea.
4. Obtain a comprehensive history from a patient complaining of diarrhea.
5. List the most common causes of diarrhea including the most common infectious causes.
6. Discuss the laboratory tests available to the physician to evaluate the cause of diarrhea.
7. Identify and manage patients with dehydration and life threatening causes of diarrhea.
8. Discuss the indications as well as advantages and disadvantages of antibiotics and antimotility agents in the treatment of diarrhea.
CHOLELITHIASIS

Situations:
1. An obese 35-year-old woman presents with intermittent right upper quadrant pain.
2. A 51-year-old man presents with fever, abdominal pain, and jaundice.

Enabling Objectives:
1. Describe the different types of gallstones and the risk factors for their development.
2. Describe the typical clinical presentation of the biliary colic.
3. Describe the clinical presentation of the following complications of cholelithiasis:
   a) acute cholecystitis
   b) ascending cholangitis
   c) gallstone pancreatitis
4. Describe Murphy’s sign.
5. Differentiate between calculous and acalculous cholecystitis.
6. Define Charcot’s triad.
7. Discuss the use of laboratory studies in diagnosing the above disorders with focus on liver enzyme and liver function tests.
8. Discuss the use of ultrasound, CT scan, and HIDA in diagnosis of biliary disease.
9. Outline the EDpartment management of biliary colic.
10. Identify the role of endoscopic retrograde cholangiopancreatography (ERCP) in managing patients with cholelithiasis.
11. Discuss the initial and definitive management of the complications of cholelithiasis.

HEPATIC DISORDERS AND HEPATIC FAILURE

Situations:
1. A 47-year-old woman who contracted hepatitis C from a blood transfusion 15 years ago now complains of a low-grade fever, sweats, and malaise.
2. A 52-year-old man with known alcoholic cirrhosis and ascites presents with lethargy and disorientation.
3. A previously healthy 35-year-old woman presents with increasing jaundice, malaise, and weight loss.
4. A 20-year-old woman who recently returned from a trip to Southeast Asia complains of fever, malaise, and vomiting.

Enabling Objectives:
1. Show skills in obtaining a complete history and perform a physical examination of a patient with liver disease.
2. List the causes of acute and chronic hepatitis.
3. Describe the use of specific laboratory tests to diagnose acute liver disease.
4. Diagnose and manage patients presenting with jaundice.
5. List the causes of cirrhosis.
6. Describe the clinical manifestations of cirrhosis.
7. Diagnose and manage the complications of cirrhosis and end-stage liver disease including:
ACUTE AND CHRONIC PANCREATEITIS

Situations:
1. A 37-year-old woman with a history of gallstones presents with epigastric abdominal pain that radiates to her back.
2. A 55-year-old male alcoholic presents with vague abdominal pain, fever, and tachycardia.

Enabling Objectives:
1. Compare and contrast acute and chronic pancreatitis.
2. Discuss the most common causes of acute and chronic pancreatitis.
3. Describe the clinical presentation of acute pancreatitis.
4. Discuss the use of laboratory and imaging studies for diagnosis.
5. Describe the prognostic indicators of mortality.
6. Discuss the management of acute pancreatitis and its complications.
7. Discuss the management of chronic pancreatitis and its complications.

ABDOMINAL AORTIC ANEURYSM

Situations:
1. A 64-year-old man presents after a syncopal episode and now complains of severe abdominal pain radiating into his back.

Enabling Objectives:
1. Describe the risk factors for developing abdominal aortic aneurysms.
2. Describe the various clinical presentations of an abdominal aortic aneurysm.
3. Define Cullen’s sign and Grey-Turner’s sign.
4. Discuss the role of diagnostic imaging of a patient with a suspected abdominal aortic aneurysm.
5. Discuss the ED management of a patient with a ruptured abdominal aortic aneurysm.
6. Discuss the management and disposition of a patient with an abdominal aortic aneurysm discovered incidentally in the ED.

URINARY TRACT DISORDERS

RENAL CALCULI

Situations:
1. A previously healthy 30-year-old man presents with acute onset of severe right flank pain.
2. A 55-year-old man with a history of kidney stones complains of severe abdominal pain radiating to his right testicle.

Enabling Objectives:
1. Describe the characteristic clinical features of renal colic.
2. List the differential diagnosis of renal colic including gastrointestinal, gynecological, and vascular diseases.
3. List the risk factors for developing renal calculi.
4. Describe the types of renal calculi according to composition.
5. Identify the most common sites of stone impaction within the urinary tract.
6. Discuss the advantages and disadvantages of plain X-ray, ultrasound, intravenous pyelogram, and CT scan in the diagnosis of urinary tract stones.
7. Describe the findings on intravenous pyelogram consistent with renal calculi.
8. Discuss the treatment of renal calculi considering the size and location of the stone.
9. List the indications for urgent urologic consultation and admission.

URINARY TRACT INFECTIONS

Situations:
1. A sexually active 20-year-old female presents with a 1-day history of dysuria and urinary frequency.
2. A 45-year-old diabetic female presents with nausea, vomiting, fever, chills, and left flank pain.

Enabling Objectives:
1. Discuss the epidemiology of adult urinary tract infections with respect to age and sex.
2. Differentiate between uncomplicated and complicated urinary tract infections.
3. Define asymptomatic bacteriuria and state its significance during pregnancy.
4. Identify the most common organisms involved in adult urinary tract infections.
5. Describe the risk factors for developing urinary tract infections.
7. List alternative diagnoses for dysuria in men and women.
8. Discuss the use of urinalysis, routine microscopy, and urine culture for diagnostic purposes.
9. Discuss the management of lower and upper tract infections including appropriate antibiotic therapy.
10. Identify the indications for admission.

ACUTE RENAL FAILURE

Situations:
1. A 28-year-old man is found unconscious on a park bench. He is known to be a drug abuser. His urine is grossly red, his potassium is 7.1, and his creatinine is 800.
2. A 75-year-old man with hypertension and congestive heart failure is transferred from a long-term care facility. He has not voided for 2 days. He is lethargic, short of breath, and confused.

**Enabling Objectives:**
1. Define acute renal failure (ARF).
2. Identify the causes of ARF using the prerenal, renal, and postrenal classifications.
3. Identify the iatrogenic causes of ARF.
4. Discuss the common underlying pathophysiology of ARF.
5. Define anuric, oliguric, and nonoliguric ARF and comment on the significance of each.
6. Discuss the use of laboratory tests including urine and blood analysis for diagnosis.
7. Discuss the role of imaging studies for diagnosis.
8. Outline the treatment strategies for ARF depending on etiology.
9. Identify the indications for emergency hemodialysis.

**EMERGENCIES IN RENAL FAILURE AND DIALYSIS PATIENTS**

**Situations:**
1. A 35-year-old woman on peritoneal dialysis presents with a low grade fever, lethargy, and diffuse abdominal pain.
2. A 57-year-old male dialysis patient presents with increasing pain and swelling over his vascular access graft on his left arm.

**Enabling Objectives:**
1. Define end-stage renal disease (ESRD).
2. Describe the clinical features of uremia with focus on neurological, cardiovascular, hematological, gastrointestinal, and renal-bone complications.
3. Describe the complications encountered in hemodialysis patients with emphasis on problems associated with vascular access.
4. Describe the complications encountered in peritoneal dialysis patients with emphasis on secondary peritonitis.
5. Discuss the initial management of the complications associated with post-dialysis patients.
6. Describe an approach to hyperkalemia in a patient with chronic renal failure and hemodialysis.

**HEMATURIA**

**Situations:**
1. A 60-year-old male smoker presents to the ED with fatigue and weight loss has microscopic hematuria detected on a urine dipstick and microscopy.
2. A 25-year-old female presents with dysuria and gross hematuria.
3. A 17-year-old hockey player complains of blood in his urine after being crosschecked from behind during a game.
Enabling Objectives:
1. Define gross and microscopic hematuria.
2. Identify the most common causes of hematuria with respect to age and sex.
3. Compare and contrast the causes of painful and painless hematuria.
4. Differentiate between traumatic and atraumatic causes of hematuria.
5. List the causes of false hematuria.
6. Discuss the significance of initial, terminal, and total hematuria.
7. Discuss the use of urinalysis and urine microscopy to identify the source of hematuria.
8. Describe the use of imaging modalities (IVP, ultrasound, CT scan) for diagnosing the source of hematuria.
9. Describe the risk factors for bladder and renal carcinomas.
10. Identify which patients with hematuria may be followed up as an outpatient and which require admission.

OBSTETRICAL AND GYNECOLOGIC DISORDERS
ECTOPIC PREGNANCY

Situation:
A 27-year-old female presents with acute onset of pelvic pain. She states she is 2 weeks late, and her urine pregnancy test is positive.

Enabling Objectives:
1. Demonstrate the ability to rapidly estimate gestational age in any pregnant patient.
2. Be able to discuss the differential diagnosis of abdominal/pelvic pain in the first 20 weeks of pregnancy.
3. List the risk factors for ectopic pregnancy.
4. Understand how to use quantitative B-HCG results and both trans-vaginal and trans abdominal ultrasound to identify intrauterine and ectopic pregnancies.
5. Know the importance of maternal blood typing with any vaginal bleeding in pregnancy and know the appropriate dose of RhoGAM.
6. Initiate timely referral for patients with ectopic pregnancy.

VAGINAL BLEEDING IN THE FIRST 20 WEEKS OF PREGNANCY

Situation:
A 22-year-old G1P0 female presents at 9 weeks with vaginal spotting.

Enabling Objectives:
1. Be able to discuss the differential diagnosis and clinical features of causes of vaginal bleeding in the first 20 weeks of pregnancy including:
   a) the various form of miscarriage.
   b) gestational trophoblastic disease.
   c) ectopic pregnancy.
2. To use history and physical examination to diagnose non-obstetrical causes of bleeding including:
   a) cervical cancer or polyps
   b) friable condyloma acuminata
   c) postcoital trauma
   d) hemorrhoids

VAGINAL BLEEDING IN THE SECOND 20 WEEKS OF PREGNANCY

Situation:
A 29-year-old G3P2 female presents at 31 weeks with cramping and spotting.

Enabling objectives:
1. Discuss, diagnose and manage obstetrical causes of bleeding including:
   a) placental abruption
   b) placenta previa
   c) uterine rupture
   d) vasa previa
2. To be able to discuss how the normal pregnancy physiologic changes influence the clinical ability to assess hemorrhagic shock.
3. To be able to demonstrate how to assess fetal well-being and viability.

PREECLAMPSIA AND ECLAMPSIA

Situation:
A 19-year-old 33 week pregnant female has a witnessed seizure and is brought into the ED by ambulance.

Enabling Objectives:
1. In the setting of pregnancy define: hypertension, transient hypertension, preeclampsia and eclampsia.
2. List risk factors for hypertension during pregnancy.
3. Recognize and discuss the clinical and laboratory findings in severe preeclampsia.
4. Define and discuss the complication of preeclampsia (HELLP syndrome, eclampsia, abruption, hepatic and splenic hemorrhage.)
5. Be able to initiate initial diagnostic and treatment modalities for a patient with severe preeclampsia or eclampsia.
7. Be able to discuss the use (indications, contraindications, routes, and side effects) of:
   a) magnesium sulfate
   b) hydralazine
   c) labetalol
   d) benzodiazepines
8. Demonstrate timely and appropriate involvement of the indicated specialists (ICU, obstetrics)
EMERGENCY DELIVERY

Situation:
A 26-year-old patient at full term is driven into the ambulance bay in full labor with delivery imminent.

Enabling Objectives:
1. Describe the immediate preparations for a delivery in the ED.
2. Describe the ED management of a patient in labor who presents with one of the following:
   a) placenta previa
   b) placental abruption
   c) fetal distress
   d) cord prolapse
   e) pre-term labor
3. List and describe the maneuvers potentially useful in the management of a delivery complicated by shoulder dystocia.

POST-PARTUM EMERGENCIES

Situation:
A 26-year-old female presents 9 days after a spontaneous vaginal delivery with massive vaginal bleeding.

Enabling Objectives:
1. Define immediate and delayed post-partum hemorrhage (PPH)
2. Be able to discuss and diagnose the presentation and timing of various causes of post-partum hemorrhage:
   a) uterine atony.
   b) vaginal and cervical tears.
   c) retained products.
   d) placenta Accreta, Percreta, andIncreta.
   e) uterine inversion.
   f) uterine rupture.
   g) coagulopathy.
3. Be able to discuss and perform interventions to limit hemorrhage:
   a) oxytocin.
   b) methylergonovine maleate
   c) removal of uterine clots.
   d) aortic compression.
   e) manual removal of retained products.
   f) correction of coagulopathies
4. Obtain appropriate and timely consultations with appropriate specialists.
5. Give a differential diagnosis of post-partum fever after vaginal and cesarian deliveries.
6. Describe the common pathogens causing post-partum endometritis.
7. Describe the typical course of endometritis due to Group B Streptococcus.

GYNECOLOGIC DISORDERS

Situation:
A 25-year-old non-pregnant woman presents with vaginal discharge and dyspareunia.

Enabling Objectives:
1. Describe a diagnostic and therapeutic approach to a patient with post-menopausal vaginal bleeding.
2. State the current recommended treatment for
   a) pelvic inflammatory disease
   b) uncomplicated cervicitis or urethritis
   c) primary genital herpes
3. Describe the typical clinical presentation of ovarian torsion and its management.
4. Differentiate between the causes of vaginitis based on clinical findings and laboratory analysis, and describe appropriate treatment for each cause.

MALE GENITAL DISORDERS

URETHRITIS

Situation:
A 35-year-old male presents with dysuria and urethral discharge.

Enabling Objectives:
1. Define urethritis.
2. Differentiate between gonococcal and non-gonococcal urethritis.
3. Discuss laboratory diagnosis of urethritis, focusing on the use of urethral swabs for culture and staining.
4. Choose the appropriate antibiotic therapy for urethritis.

PROSTATITIS

Situations:
1. A 42-year-old man presents with fever, chills, and dysuria. On rectal examination, his prostate is diffusely swollen and tender.
2. A 60-year-old man complains of chronic perineal pain, urinary urgency and frequency.

Enabling Objectives:
1. Compare and contrast acute and chronic bacterial prostatitis.
2. Discuss the use of cultures of prostatic secretions and urine for diagnosis.
3. Outline the management of acute and chronic bacterial prostatitis including choice of appropriate antibiotic therapy.
4. Discuss the potential complication of acute bacterial prostatitis.
5. Define chronic nonbacterial prostatitis.

**EPIDIDYMITIS**

**Situations:**
A 27-year-old man presents with right scrotal and abdominal pain, which has gradually worsened over the past 3 days. He now has a fever.

**Enabling Objectives:**
1. Recognize the conditions causing acute scrotal pain that are urologic emergencies.
2. Compare and contrast the clinical presentations of testicular torsion and epididymitis.
3. Describe the risk factors and pathogens most responsible for epididymitis.
4. Choose the appropriate antibiotic and supportive therapy for patients with epididymitis.
5. Identify which patients with epididymitis require admission.

**PHIMOSIS AND PARAPHIMOSIS**

**Situations:**
1. A 3-year-old uncircumcised boy has not been able to urinate for 12 hours. His mother notices that his foreskin cannot be retracted.
2. A 30-year-old uncircumcised man complains that the tip of his penis is swollen and purple. His foreskin appears to be trapped behind the glans penis.

**Enabling Objectives:**
1. Define phimosis and paraphimosis.
2. Describe the risk factors for developing phimosis.
3. Identify a potential complication of phimosis.
4. Demonstrate the technique of hemostatic dilatation to correct a phimosis.
5. Identify a paraphimosis as a true urologic emergency.
6. Identify the complications of an unreduced paraphimosis.
7. Demonstrate a technique to reduce a paraphimosis.

**PRIAPISM**

**Situations:**
1. Following an intracavernosal injection of papaverine, a 60-year-old man presents 6 hours later with a persistent and painful erection.
2. An 11-year-old boy with sickle cell anemia presents with a painful erection.

**Enabling Objectives:**
1. Define priapism.
2. Classify priapism according to high-flow (non-ischemic) and low flow (ischemic) states.
3. Identify reversible and non-reversible causes of priapism.
4. Describe the general medical management of priapism.
5. Identify the complications of untreated priapism.
6. Recognize situations in which surgical intervention is required.

**MUSCULOSKELETAL DISORDERS (NONTRAUMATIC)**

**MONOARTICULAR ARTHRITIS**

**Situations:**
1. A 25-year-old male presents with a hot swollen knee.
2. A 30-year-old intravenous drug abuser has acute pain and swelling of his left elbow.
3. A 40-year-old female has pain and redness of her first toe.

**Enabling Objectives:**
1. List the differential diagnosis of acute monoarticular arthritis including:
   a. Infectious processes
   b. Inflammatory causes
   c. Degenerative diseases
2. Describe the essential history and physical exam needed to evaluate a hot joint.
3. List the indications and relative contraindications for arthrocentesis.
4. Demonstrate how to aspirate joints including the knee, shoulder, elbow and ankle.
5. Discuss the findings of arthrocentesis fluid that help differentiate crystal arthropathies, infective, and inflammatory disorders.
6. Define septic arthritis.
7. Describe the distinguishing features of septic arthritis.
8. List the risk factors for septic arthritis.
9. List the most common pathogens associated with septic arthritis.
10. List the diagnostic studies used to confirm the diagnosis of septic arthritis.
11. Describe the treatment of septic arthritis.
12. List the risk factors for crystal-induced synovitis.
13. Outline the most common joints involved in crystal arthropathies.
14. Differentiate between gout and pseudogout crystals.
15. Describe the treatment for crystal-induced synovitis.

**POLYARTICULAR ARTHRITIS**

**Situations:**
1. A 24-year-old woman complains of bilateral wrist pain and finger stiffness.
2. A 65-year-old man is complaining of achy joints worse in the morning.

**Enabling Objectives:**
1. List the risk factors for rheumatoid arthritis.
2. List the most commonly affected joints in rheumatoid arthritis.
3. Discuss the natural history of rheumatoid arthritis.
4. Describe laboratory findings commonly associated with rheumatoid arthritis.
5. Discuss the treatments available for rheumatoid arthritis.
6. List the emergent complications of rheumatoid arthritis.
7. List x-ray abnormalities that may be noted in cervical spines in rheumatoid arthritis.
8. List other collagen vascular diseases that can cause arthritis.
9. List the risk factors of osteoarthritis.
10. Describe the most likely joints affected by osteoarthritis.
11. Outline the signs and symptoms of osteoarthritis.
12. Describe typical radiological findings of osteoarthritis.
13. Discuss surgical and non-surgical options for treatment of osteoarthritis.

**BONE DISORDERS**

**Situations:**
1. A 58-year-old diabetic with a chronic foot ulcer has increasing pain and worsening appearance of the ulcer.
2. A 72-year-old female develops severe spontaneous low back pain relieved by rest.

**Enabling objectives:**
1. Define osteomyelitis.
2. List the signs and symptoms of osteomyelitis.
3. Compare and contrast the organisms most likely to cause osteomyelitis in neonates, children, adults, and immunocompromised patients.
4. Discuss the use of blood work, diagnostic imaging, and needle aspiration to diagnose osteomyelitis.
5. Outline the treatment of osteomyelitis.
6. Define osteonecrosis.
7. Describe the clinical features found in osteonecrosis.
8. List the risk factors for developing avascular necrosis, including post-traumatic and sickle cell disease.
9. List the sites most susceptible to avascular necrosis.
10. Describe the natural history of avascular necrosis.
11. Describe surgical and medical treatments for avascular necrosis.
12. Define the term osteochondrosis.
13. Review the following disease processes and identify the bony site of involvement:
   a) Freiberg
   b) Kohler
   c) Kienbock
   d) Osgood-Schlatter
   e) Sever
14. Describe typical x-ray findings of osteochondrosis.
15. Discuss the management of osteochondrosis.
16. List the risk factors for developing osteoporosis.
17. Discuss the complications of osteoporosis and identify the most commonly involved bony sites.
18. Review the treatment of osteoporosis and indications for referral/admission.
19. Describe the characteristic findings.
20. Review the typical sites of involvement of Paget’s disease.
21. Describe the typical radiographic appearance of Paget’s.
22. Discuss the potential complications of Paget’s disease, and the emergency department treatment of Paget’s disease.

CERVICAL, THORACIC, AND LUMBAR PAIN SYNDROMES

Situation:
A 34-year-old male presents to the ED with severe low back pain.

Enabling Objectives:
1. Demonstrate knowledge of vertebral anatomy and neuroanatomy.
2. Identify the clinical features of, complications of, and investigations indicated to diagnose the following disorders:
   a) Cervical radiculopathy.
   b) Facet syndrome.
   c) Cervical spinal stenosis.
   d) Intrinsic and extrinsic spinal cord pathology.
3. Demonstrate knowledge of treatment and complications of sacroiliitis.
4. Describe the disease progression of ankylosing spondylitis.
5. Describe the associated findings of ankylosing spondylitis beyond sacroiliitis.
6. Recognize the typical radiographic findings of ankylosing spondylitis.
7. Discuss the treatment approach for a patient with sacroiliitis.
8. Differentiate spondylolysis and spondylolisthesis.
9. Describe the Meyerding’s grading system of spondylolisthesis.
10. Identify the most common vertebral level affected by spondylolisthesis.
11. Describe the characteristics of back pain associated with spondylolysis/spondylolisthesis.
12. Outline the appropriate use of plain x-rays and CT scan in diagnosing spondylolysis/spondylolisthesis.
13. Discuss the treatment of spondylolisthesis dependent on grade of severity.

BONE TUMORS

Situation:
A 34-year-old woman with ovarian cancer has been diagnosed with bone metastases and presents with back and shoulder pain.

Enabling Objectives:
1. List the most common tumors that metastasize to bone.
2. List the most common bony sites involved in metastatic disease.
3. Discuss the most common primary benign and malignant tumors of the musculoskeletal system, including osteochondroma, osteosarcoma, and multiple myeloma.
4. Review the x-ray findings that can differentiate between a malignant and benign bone tumor.
5. Discuss the complications of a bone tumor.
6. Discuss the evaluation and initial management of a patient with a suspected neoplasm of the musculoskeletal system.

OVERUSE SYNDROMES (BURSITIS/TENDINITIS)

Situation:
A 34-year-old swimmer has noted increasing pain in the shoulder and limited movement while training for competition.

Enabling Objectives:
1. Define bursitis.
2. Review the common bursae affected.
3. Outline the treatment options for bursitis.
4. Describe the clinical presentation of tendinitis.
5. Describe the common areas affected by tendinitis
6. Discuss the approach and treatment of specific overuse injuries including:
   a) tennis/golfer’s elbow
   b) biceps tendinitis
   c) rotator cuff tendinitis
   d) deQuervain’s disease
   e) plantar fasciitis
   f) shin splints
   g) carpal tunnel syndrome

MUSCLE DISORDERS

Situation:
A 54-year-old female presents with difficulty walking and pain in her thighs.

Enabling Objectives:
1. List the early symptoms of a patient with muscular dystrophy.
2. Outline the prognosis of muscular dystrophy.
3. Recognize the potential hazard of using depolarizing paralytic agents in patients with muscular dystrophy.
4. Define myositis.
5. Describe the clinical presentation of a patient with polymyositis.
6. Describe the typical laboratory features found in polymyositis.
7. Outline the complications of polymyositis
8. Discuss the appropriate treatment and referral of a patient suspected to have myositis.
9. Define the term myositis ossificans.
10. Outline the risk factors for developing myositis ossificans.
11. Describe the clinical features, and radiographic findings of a patient with myositis ossificans.
12. Discuss the management of myositis ossificans.

**DERMATOLOGIC DISORDERS**

**RASHES**

Situation:
A 21-year-old female presents with a red itchy rash on her legs.

Enabling Objectives:
1. Describe the appearance of a rash using the following appropriate terminology:
   - a) wheal
   - b) purpura/petechia
   - c) vesicle
   - d) pustule
   - e) macule
   - f) papule
   - g) ulcer
   - h) nodule
2. Recognize potentially life threatening illnesses that may present with rash:
   - a) meningococcemia
   - b) anaphylaxis
   - c) toxic shock syndrome
   - d) toxic epidermal necrolysis
   - e) rocky mountain spotted fever
   - f) purpura fulminans

**URTICARIA**

Situation:
A 32-year-old male with known seafood allergy presents with a generalized wheals following accidental exposure to shrimp.

Enabling Objectives:
1. Describe the typical appearance of urticaria.
2. Outline the pathophysiology of urticaria.
3. List common causes of urticaria- including infections, drugs, and foods.
4. Recognize the severe allergic reaction and manage the patient with anaphylaxis (see Shock objectives).
5. Describe the emergency department treatment of urticaria, and discuss the use of H1, H2 blockers and steroids.

**HERPES ZOSTER**

Situation:
A 60-year-old male complains of right-sided chest pain and rash.
Enabling Objectives:
1. Describe the typical appearance of herpes zoster.
2. Describe the mechanism of developing shingles.
3. Identify the most common dermatomal areas of involvement.
4. Discuss the potential complications of herpes zoster including ocular involvement, Ramsay-Hunt syndrome, and post-herpetic neuralgia.
5. Outline the medical therapy available for herpes zoster.

PEMPHIGUS VULGARIS

Situation:
A 45-year-old woman recently started on captopril has developed generalized blisters over her body.

Enabling Objectives:
1. Discuss the clinical presentation of pemphigus vulgaris.
2. Describe the pathophysiology of pemphigus vulgaris.
3. List the potential drugs that can induce pemphigus.
4. Recognize the need for dermatologic consult and specialized wound care in pemphigus.
5. Discuss the use of steroids in treating pemphigus.

TOXIC EPIDERMAL NECROLYSIS (TEN)

Situation:
One day after starting cotrimoxazole for a UTI, a 48-year-old female presents with a fever, looks unwell and has a diffuse red, peeling rash.

Enabling Objectives:
1. Describe the clinical presentation of TEN.
2. List etiological factors associated with the development of TEN.
3. Describe the typical skin biopsy results.
4. Recognize the need for admission and specialized wound care for TEN.
5. Manage the fluid requirements of a patient with TEN, and discuss the potential role of plasmapheresis, hyperbaric oxygen, and steroids in the treatment of TEN.

PURPURA

Situation:
A 32-year-old asplenic male presents with a purpuric rash and high fever after being unwell for three days. His wife confirms that he has not been immunized in the past 10 years.

Enabling Objectives:
1. Describe the physical appearance of purpura, petechia, and ecchymosis.
2. Discuss the components of a medical history essential in diagnosing a patient with purpura.
3. Outline the laboratory work up of a patient with purpura.
4. Discuss the potential causes of purpura and directed treatment including:
   a) infectious (RMSF, meningococcemia, disseminated gonococcal infection, ecthyma gangrenosum)
   b) vasculitis (polyarteritis nodosum, Henoch-Schönlein purpura, Kawasaki)
   c) platelet disorders
   d) DIC (purpura fulminans)

**ERYTHEMA NODOSUM**

**Situation:**
A 27-year-old woman on oral contraceptives presents with malaise, fever and painful nodules over her shins.

**Enabling Objectives:**
1. Describe the typical presentation of erythema nodosum.
2. List the areas of the body most commonly affected.
3. Discuss the etiology of erythema nodosum.
4. Outline the most common causes of erythema nodosum.
5. Discuss the laboratory work up for erythema nodosum.
6. Discuss the management of erythema nodosum and the use of steroids.

**CONTACT DERMATITIS**

**Situation:**
A group of teens recently returned from a camping trip have all been exposed to poison ivy and present to the ED with an itchy rash.

**Enabling Objectives:**
1. Distinguish between allergic versus irritant contact dermatitis.
2. List common allergens and irritants that can cause contact dermatitis.
3. Describe the treatment of contact dermatitis, in particular, rhus dermatitis.

**TINEA INFECTIONS**

**Situation:**
A 70-year-old man presents with macerated skin over his feet.

**Enabling Objectives:**
1. Classify fungal infections according to location and appearance:
   a) tinea capitis
   b) tinea corporis
   c) tinea cruris
   d) tinea pedis
e) tinea unguium
f) tinea versicolor

2. Discuss the use of Wood’s lamp, microscopy and fungal cultures in diagnosing tinea infections.
3. Outline the use of oral and topical antifungals in the treatment of tinea infections.
4. Discuss potential drug interactions and side effects of oral antifungals.

PITYRIASIS ROSEA

Situation:
A previously healthy 17-year-old boy presents with a generalized rash predominantly affecting his trunk.

Enabling Objectives:
1. Describe the “herald patch” and secondary eruption of pityriasis rosea.
2. Discuss the treatment of pityriasis rosea.

TOXIC SHOCK SYNDROME (TSS)

Situation:
An 18-year-old girl presents with fever, a sunburn-like rash and weakness.

Enabling Objectives:
1. Identify the patient population most at risk for developing TSS.
2. List the major and minor criteria for diagnosing TSS.
3. Discuss the pathophysiology of TSS.
4. Describe the associated laboratory abnormalities found in TSS.
5. Differentiate between streptococcal and staphylococcal TSS.
6. Outline the treatment of TSS and the role of antibiotics.

CELLULITIS

Situation:
A 34-year-old carpenter presents with redness and swelling of his wrist and forearm following an abrasion to his wrist.

Enabling Objectives:
1. Define cellulitis.
2. Describe the classical signs and symptoms of cellulitis.
3. List risk factors that predispose a patient to cellulitis.
4. List the most common organisms involved in cellulitis.
5. Discuss the use of X-rays and laboratory studies in diagnosing cellulitis.
6. Outline the treatment of cellulitis, and describe the rationale for use of oral versus intravenous antibiotics.
7. List criteria for the inpatient management of cellulitis.
ERYSIPELAS

Situation:
A 65-year-old male presents with an intensely red, warm, swollen cheek following a minor scratch of his face.

Enabling Objectives:
1. Define erysipelas and identify the causative agent.
2. Describe the typical appearance of erysipelas.
3. List the parts of the body usually affected by erysipelas.
4. Discuss the potential complications of facial erysipelas.
5. Outline the inpatient and outpatient treatment of erysipelas.

ABSCESS

Situation:
A 32-year-old known intravenous drug abuser presents with a hardened, swollen area in his right antecubital fossa.

Enabling Objectives:
1. Define the terms abscess, furuncle, and carbuncle.
2. List risk factors that predispose a patient to developing abscesses.
3. Differentiate between abscesses according to location and their typical microbiology:
   a) Bartholin gland
   b) breast
   c) hidradenitis suppurativa
   d) pilonidal
   e) perirectal
4. Discuss the use of needle aspiration, cultures, radiology and laboratory studies in diagnosing abscesses.
5. Recognize which abscesses are amenable to treatment in the ED, and those that should be referred to general surgery.
6. Demonstrate the ability to incise and drain abscesses using adequate analgesia.
7. Discuss the role, if any, of antibiotics in the treatment of abscesses.

NECROTIZING FASCIITIS (NF) / MYONECROSIS

Situation:
A 55-year-old diabetic presents with fever, and rapidly spreading redness and pain in his left leg.

Enabling Objectives:
1. Describe the pathophysiology of necrotizing fasciitis.
2. List the most common organisms associated with NF.
3. Describe the typical historical and physical findings of a patient with NF.
4. Recognize the need for emergency surgical exploration and debridement of necrotizing fasciitis, and list usual pathogens and appropriate antibiotic coverage for NF.

MALIGNANT SKIN LESIONS

Situation:
A 75-year-old female presents with an enlarging fungating lesion on the side of her nose.

Enabling Objectives:
1. Describe the features of a potentially malignant skin lesion.
2. Arrange for appropriate follow up for a patient with a suspected skin malignancy.

HEMATOLOGIC DISORDERS
MICROCYTIC ANEMIA

Situation:
A 48-year-old female presents with increasing fatigue and mild dyspnea with exertion. A CBC reveals hemoglobin of 78 g/L and normal WBC and platelets. The MCV was microcytic at 69 fl. She is of Mediterranean descent and there is a family history of individuals requiring blood transfusions.

Enabling Objectives:
1. Discuss the following characteristics or laboratory tests which can be used to distinguish thalassemia from iron deficiency anemia:
   a. Ethnic origin
   b. Hypersplenism
   c. MCV (mean cell volume) and RDW (red blood cell distribution width)
   d. Hemoglobin electrophoresis
2. Define the following laboratory tests and discuss the expected results in regards to iron deficiency anemia:
   a. Serum iron
   b. Total iron-binding capacity (TIBC)
   c. Ferritin level
3. Describe the genetic basis, clinical manifestations, and laboratory diagnosis of β-thalassemia.
4. Describe the genetic basis, clinical manifestations, and laboratory diagnosis of α-thalassemia including:
   a. Silent carrier
   b. α-thalassemia trait
   c. Hemoglobin H
   d. Fetal Hydrops

HEMOLYTIC ANEMIA
**Situation:**
A 72-year-old gentleman with a known history of chronic lymphocytic leukemia (CLL) presents with weakness, jaundice and LUQ pain. He has splenomegaly and multiple sites of lymphadenopathy. A CBC reveals a hemoglobin of 68 g/L, normal platelet count and an elevated WBC count of \( 30 \times 10^9 /L \) with elevated lymphocytes at \( 21 \times 10^9 /L \).

**Enabling Objectives:**
1. Discuss how anemia due to underproduction can distinguished from anemia due to increased destruction using the following laboratory tests:
   a) Reticulocyte count
   b) Haptoglobin
   c) Bilirubin
   d) Lactose dehydrogenase (LDH)
   e) Urinary or fecal urobilinogen
2. Describe the pathophysiology of intravascular versus extravascular hemolysis.
3. Compare and contrast the following laboratory tests in intravascular and extravascular hemolysis
   a) Peripheral blood smear
   b) Haptoglobin
   c) Coombs test
4. Discuss the difficulty in obtaining a cross-match for RBC transfusion in a patient with autoimmune hemolytic anemia.

**MEGALOBLASTIC ANEMIA**

**Situation:**
A 58-year-old male presents with increasing fatigue, dyspnea with exertion and numbness and tingling in his feet and hands. A CBC reveals a hemoglobin of 100 g/L and an elevated MCV at 110 fl.

**Enabling Objectives:**
1. Define megaloblastic anemia.
2. Define macrocytosis.
3. Discuss the significance of hypersegmented neutrophils on a peripheral blood smear.
4. List the causes of megaloblastic anemia.
5. List the causes of macrocytic anemia.
6. Using the following laboratory tests, differentiate between Vitamin B\(_{12}\) (cobalamin) and folate deficiency:
   a) Serum cobalamin
   b) Red cell folate
   c) Serum methylmalonic acid
   d) Total homocysteine
7. List the causes of cobalamin deficiency.
8. Define pernicious anemia.
10. Discuss the neurological abnormalities that can be associated with cobalamin deficiency.
11. Discuss the importance of initiating early treatment for cobalamin deficiency.

**COMMON BLEEDING SYNDROMES**

**Situations:**
1. A 17-year-old male with hemophilia A presents to the ED with an acutely swollen painful left knee for the third time in one month.
2. A 42-year-old male with known chronic cirrhosis secondary to alcohol presents to the ED with severe epistaxis.
3. A 54-year-old female presents to the ED with confusion, a low-grade fever, and petechiae. Initial laboratory data also reveals anemia, thrombocytopenia and an elevated creatinine.

**Enabling Objectives:**
1. Define the coagulation deficiency, genetic inheritance, and clinical manifestations of the following disorders:
   a) Hemophilia A
   b) Hemophilia B
   c) Von Willebrand’s disease
2. Outline the primary therapy of factor replacement for hemophilia A in the presence of a moderate or severe acute bleed.
3. Outline the therapy for a mild bleed in hemophilia A, including the use of ancillary therapy.
4. Outline the primary therapy of factor replacement for hemophilia B in the presence of an acute bleed.
5. Describe the chronic manifestations of repeated bleeding into a “target” joint.
6. Outline the management of a minor bleed in von Willebrand’s disease.
7. Outline the management of a major bleed or surgical prophylaxis in von Willebrand’s disease.
8. Define the three mechanisms by which chronic liver disease can alter hemostasis.
9. Outline the management of acute bleeding in chronic liver disease including the indications for vitamin K, fresh frozen plasma, cryoprecipitate, and platelets.
10. Describe the etiologies, pathophysiology, laboratory abnormalities and therapy of the following acquired coagulation disorders:
   a) Vitamin K deficiency
   b) Disseminated intravascular coagulation (DIC)
11. Describe the pathophysiology and the pentad of clinical manifestations associated with TTP.
12. List the laboratory investigations required for investigation of intravascular hemolysis.
13. Discuss the significance of the presence of schistocytes on a peripheral blood smear.
14. Describe the initial management of TTP including the role of plasmapheresis, steroids, antiplatelet agents, and the avoidance of platelet transfusion.
15. Outline the other causes of thrombocytopenia based on the increased destruction or underproduction of platelets.

**SICKLE CELL DISEASE**

**Situation:**
A 32-year-old African American female presents with an acutely painful and swollen left thigh following a collision with another player when playing soccer.

**Enabling Objectives:**
1. Define the genetic abnormality and the populations at risk for sickle cell disease.
2. Describe the two pathophysiologic processes responsible for the clinical manifestations of sickle cell disease.
3. Describe the acute vaso-occlusive pain syndrome associated with sickle cell disease and outline its management.
4. Describe the acute chest syndrome associated with sickle cell disease including etiology, symptoms, and differential diagnosis.
5. List the other important vaso-occlusive complications that can be seen with sickle cell disease, and discuss the mechanism for the increased infection risk associated with sickle cell disease.
6. Describe the role of vaccinations and antimicrobial prophylaxis in sickle cell disease.
7. Describe the complications associated with the chronic hemolysis in sickle cell disease.

**TRANSFUSION THERAPY**

**Situation:**
A 74-year-old male on chronic NSAID therapy for osteoarthritis presents to the ED with hematemesis and melena. Laboratory results indicate a hemoglobin level of 84 g/L.

**Enabling Objectives:**
1. Discuss the role of red blood cell transfusion in acute blood loss.
2. List the infectious risks of red blood cell and plasma infusion for HIV, Hepatitis B, Hepatitis C, and HTLV.
3. Discuss the etiologies of bacterial contamination as it relates to transfusion including the failure to reduce risk of bacterial infection by autologous blood transfusion.
4. Describe the cause, symptomatology, and risk of the following transfusion reactions, and describe appropriate interventions when they occur:
   a. Hemolytic transfusion reactions (acute and delayed)
   b. Non-hemolytic transfusion reaction
   c. Transfusion related acute lung injury
   d. Transfusion associated graft versus host disease
   e. Post-transfusion purpura
5. Define a massive blood transfusion.
6. Describe the complications associated with massive transfusion including hypothermia, citrate intoxication, acidemia and hyperkalemia, and bleeding due to platelet and coagulation dilution.
7. Discuss the indications for red blood cell transfusion in chronic anemia.
8. Describe the indications for plasma transfusion.
9. Discuss alternatives to transfusions.

ONCOLOGIC DISORDERS

FEVERILE NEUTROPENIA

Situation:
A 39-year-old female with breast cancer and axillary lymph node involvement completed her third cycle of chemotherapy 8 days ago. She now presents to the ED feeling generally unwell with chills, rigors and a temperature of 38.9°C.

Enabling Objectives:
1. Define febrile neutropenia.
2. List the disease-related causes of neutropenia and the treatment-related causes of neutropenia other than cancer chemotherapy agents.
3. Discuss the principal causative organisms of a neutropenic fever.
4. Outline the initial investigations in a patient with neutropenia and fever.
5. Discuss the treatment of febrile neutropenia with respect to empiric antibiotics, antivirals, antifungals, central line infection, and the role of granulocyte-stimulating factor.
6. Discuss the potential consequence of delayed treatment in febrile neutropenia.

HYPERCALCEMIA

Situation:
A 65-year-old female with breast cancer and metastases to the bone presents to the ED with confusion, nausea, vomiting, and constipation.

Enabling Objectives:
1. Define hypercalcemia using the signs and symptoms as well as investigations.
2. Describe the mechanisms of hypercalcemia in malignancy.
3. Discuss the pathophysiology of polyuria in hypercalcemia.
4. Identify the other conditions that cause hypercalcemia.
5. Describe the necessary investigations and management of a patient presenting with hypercalcemia.
6. Discuss the pharmacological agents used in the treatment of hypercalcemia.

TUMOR LYSIS SYNDROME

Situation:
A 43-year-old male with acute lymphoblastic leukemia presents 4 days after his first chemotherapy treatment with complaints of abdominal and flank pain, nausea and vomiting, oliguria, hematuria, muscle cramps and spasms. On examination, he has hypertension, altered mental status, carpopedal spasms, CVA tenderness, ascites and a huge spleen.

**Enabling Objectives:**
1. Define tumor lysis syndrome using laboratory data.
2. Describe the physical findings associated with severe hypocalcemia.
3. Outline the treatment strategy for the management of tumor lysis syndrome, including the indications for hemodialysis.
4. Discuss the difference in pathophysiology of spontaneous versus treatment induced tumor lysis syndrome and how it relates to treatment.

**SPINAL CORD COMPRESSION**

**Situation:**
A 74-year-old male is brought to the ED with complaints of back pain and numbness and tingling of the lower extremities. He has a previous diagnosis of prostate cancer.

**Enabling Objectives:**
1. List the malignancies most commonly associated with spinal cord compression.
2. Describe the common characteristics of the back pain associated with spinal cord compression.
3. Discuss in detail the neurological symptoms associated with spinal cord compression.
4. Discuss the advantages and disadvantages to the use of the following investigations used to investigate spinal cord compression:
   a. plain spine radiographs
   b. CT myelogram
   c. MRI
5. Describe the role of steroids in spinal cord compression.
6. Outline the treatment options for patients with spinal cord compression.
7. Discuss the prediction for neurological outcome following the treatment for spinal cord compression.

**SUPERIOR VENA CAVA SYNDROME**

**Situation:**
A 54-year-old male smoker presents with gradually increased dyspnea, a sensation of fullness of the head and facial puffiness.

**Enabling Objectives:**
1. Describe the common signs and symptoms and underlying pathophysiology associated with superior vena cava syndrome.
2. List the most common malignant and benign causes of superior vena cava syndrome.
3. Describe the radiographic appearance of a patient with superior vena cava syndrome.
4. Outline the general treatment options for superior vena cava syndrome, and indicate which signs and symptoms would prohibit waiting for tissue pathology prior to commencing therapy.

**IMMUNE SYSTEM DISORDERS**

**HIV / AIDS RELATED ILLNESSES**

**Situations:**
1. A 33-year-old HIV+ Injection Drug User presents with a headache that started yesterday and isn’t resolving with increasing heroin use.
2. A 27-year-old gay male presents with a persistent cough that is worsening over the past 3 weeks.

**Enabling Objectives**
1. Describe the use of the CD4 lymphocyte count in determining the degree of immunodeficiency in patients without prior AIDS-defining diseases, and list cutoffs below which prophylaxis for *Pneumocystis carinii* pneumonia (PCP) and *Mycobacterium avium* Complex (MAC) should be initiated.
2. Describe the typical presentation of PCP, and a diagnostic and management approach to the patient with suspected PCP. Include the following:
   a) Typical findings on CXR
   b) Complications of PCP
   c) Use of LDH, O2 Saturation or ABG and effect of exercise on O2 Saturation on clinical suspicion of PCP
   d) Methods of obtaining definitive diagnosis of PCP
   e) Possible antibiotic options
   f) Indications for use of other therapies in moderately severe or severe disease.
3. Describe the typical presentation of Toxoplasmosis, and a diagnostic and management approach to the HIV+ patient with a mass lesion on CT scan. Indicate the increased or decreased likelihood of diagnoses other than toxoplasmosis if multiple lesions are seen on brain CT.
4. List the typical causes of meningitis and encephalitis in HIV+ patients
5. List the appropriate CSF studies to be requested in HIV+ patients with suspected meningitis.
6. Describe the typical clinical course and method of diagnosing cryptococcal and tuberculous meningitis.
7. Describe the usual CSF findings in the CSF of an HIV+ patient without other CNS disease.
8. List possible opportunistic infections of the gastrointestinal tract.
9. Describe the initial investigation of mild-moderate diarrhea without blood in the stool or fever, and initial recommended therapy for HIV+ patients.
10. Describe the initial work-up of recent onset fevers or night sweats without focal symptoms or findings.
ALLERGY AND ANAPHYLAXIS

Situation:
A 27-year-old female with a history of peanut allergy presents with a pruritic rash after eating at a Thai restaurant.

Enabling Objectives
1. Define anaphylaxis and angioedema.
2. Describe the initial evaluation of a patient presenting with an allergic reaction.
3. List the therapies used in the treatment of mild and moderate allergic reactions.
4. List the treatment priorities and first-line pharmacologic therapy in the treatment of severe and allergic reactions and anaphylaxis.
5. Describe possible second-line therapies that may be used in the setting of resistant anaphylaxis.
6. Describe medications to be avoided in patients with a history of allergic reactions with an unknown trigger or with recurrent life-threatening reactions.
7. Describe the disposition of a patient who has resolved after therapy for a:
   a) Mild or moderate allergic reaction
   b) Severe allergic reaction or anaphylaxis

PSYCHOBEHAVIORAL DISORDERS
PSYCHIATRIC DISORDERS

Situation:
Family members bring in a 43-year-old male to the ED after he threatened to kill his wife and then jump off a bridge.

Enabling Objectives:
1. Identify criteria for the diagnosis of mood disorders – major depression, bipolar disorder and dysthymic disorder.
3. Identify criteria for somatoform disorders – conversion disorder, somatization disorder
4. Identify dissociative disorders – describe dissociative amnesia and dissociative fugue
5. Identify schizophrenia and other psychotic disorders – schizophreniform, brief psychotic and delusional disorders.
6. Recognize the presentation of factitious disorders.
7. Define malingering.
8. Define anorexia nervosa and bulimia.
9. Define adjustment disorder and subsets of this clinical syndrome.
10. Contrast the three groups of personality disorders and identify typical behavioral patterns associated with each.
EMERGENT INTERVENTION AND STABILIZATION

Situation:
A 28-year-old injection drug user is brought in by police after he had been screaming, and lashing out at neighbors for several hours. In the end he “assaulted” an officer called to his apartment.

Enabling Objectives:
The competent resident will demonstrate the ability to:
1. Identify and manage agitated, violent or suicidal patients whom require aggressive intervention for stabilization.
2. Describe criteria to identify high-risk patients for suicide.
3. Explain techniques used by the physician to diffuse a potentially violent situation from escalating.
4. Perform a mental status exam and a mini-mental status examination.
5. Differentiate between acute organic and psychobehavioural disease.
6. Compare and contrast dementia and delirium.
7. Identify the presentation of substance intoxication and withdrawal.
8. Demonstrate the effective and safe use of physical and chemical restraints for patients requiring immediate intervention.

PSYCHOTROPIC MEDICATIONS

Situation:
A 34-year-old schizophrenic presents with an inability to talk clearly, has an odd posture and complains bitterly of a sore neck.

Enabling Objectives:
1. List the main uses, typical side-effects and potential drug interactions of the following classes of medications:
   a) Neuroleptics
   b) Benzodiazepines
   c) Tricyclic antidepressants
   d) MAOI’s
   e) SSRI’s
   f) Atypical antidepressants
   g) Mood stabilizers: lithium carbamazepine, valproic acid

TOXICOLOGIC DISORDERS

APPROACH AND MANAGEMENT OF THE POISONED PATIENT

Situation:
A 32-year-old woman is brought to the hospital following a drug overdose.

Enabling Objectives:
1. Describe the initial assessment and resuscitation of the poisoned patient.
2. Explain the importance of collateral history as it applies to investigation and
treatment of the poisoned patient.
3. State the role of the Poison Control Center.
4. Discuss the importance of initial vital signs in patient assessment and early
management.
5. Discuss how a toxin’s pharmacokinetics (toxicokinetics) may affect presentation.
6. Discuss toxin removal, decreased absorption, and enhanced elimination including the
indications and contraindications for the use of; Ipecac, gastric lavage and aspiration,
activated charcoal (AC), multiple-dose AC, whole-bowel irrigation and alkaline
diuresis.
7. State the indications and contra-indications for dialysis.
8. Describe the pharmacologic properties of drugs/toxins that promotes/resists their
elimination via dialysis/hemofiltration.
9. List commonly encountered drugs or drug classes that are dialyzable.
10. List the agents demonstrated to be eliminated via hemoperfusion (hemofiltration).
11. List the appropriate typical investigations for an unknown toxic exposure.
12. Discuss the importance of a baseline ECG in the evaluation of a poisoned patient.
13. Calculate an anion gap and an osmolar gap, and explain the significance of each.

**TOXIDROMES**

Situation:
A drowsy 15-year-old female is brought to the ED. She has ingested her grandmother's
chronic pain medication.

Enabling Objectives:
1. Define the term “clinical toxidrome”.
2. Recognize clinical presentation of prominent toxidromes and select the appropriate
management.
3. Describe the clinical presentation and list typical drugs causing anticholinergic
toxicity.
4. Describe the clinical presentation and list typical drugs causing cholinergic toxicity.
5. Describe the clinical presentation and list typical drugs causing opiate toxicity.
6. Describe the clinical presentation and list typical drugs causing sedative-hypnotic
toxicity.
7. Describe the clinical presentation and list typical drugs causing sympathomimetic
toxicity.
8. Provide the appropriate medical management for these toxidromes and/or their
physiologic sequelae.

**ANTIDOTES**

Situation:
A 5 year-old male presents to the ED having consumed approximately half of a bottle of his mother’s postnatal iron supplements.

Enabling Objectives:
1. List the specific antidotes available for the following overdoses/syndromes, and give their indications for use:
   a) Acute dystonic reactions
   b) Acetaminophen
   c) Arsenic
   d) Benzodiazepines
   e) beta-blockers
   f) calcium channel antagonists
   g) carbamates
   h) carbon monoxide
   i) cyanide
   j) digoxin
   k) ethylene glycol
   l) iron
   m) hydrofluoric acid
   n) lead
   o) MAOI’s
   p) methanol
   q) methemoglobinemia
   r) mercury
   s) neuroleptic malignant syndrome
   t) organophosphates
   u) opiates
   v) strychnine
   w) warfarin and superwarfarins

HAZMAT (HAZARDOUS MATERIALS) & DECONTAMINATION

Situation:
A 48-year-old farmer is splashed with an insecticide and develops wheezing and bradycardia.

Enabling Objectives:
1. Describe appropriate prehospital operations with regard to HAZMAT incidents.
2. Demonstrate the proper technique for handling a HAZMAT contaminated patient in the prehospital environment.
3. Demonstrate the proper technique for handling a HAZMAT contaminated patient in the ED.
4. Describe the appropriate facilities and preparations needed by ED to handle HAZMAT contaminated patients.
ENVIRONMENTAL DISORDERS

HEAT EMERGENCIES

Situation:
A 30-year-old woman has just run a marathon and collapsed at the finish line. She is brought to the ED confused with a temperature of 41 degrees Celsius.

Enabling Objectives:
1. Outline the factors predisposing people to heat illness.
2. Describe the clinical features of the minor heat illnesses including prickly heat, heat edema, heat syncope and heat cramps.
3. Discuss the options for cooling patients with heat illness.
4. Differentiate between heat stroke and heat exhaustion, and provide appropriate therapy.
5. Define and treat the possible complications of heatstroke.

HYPOTHERMIA AND COLD-INDUCED INJURIES

Situation:
A 4-year-old boy is brought to the ED unconscious. He was digging a tunnel in a snow bank and got stuck for over one hour.

Enabling Objectives:
1. Define hypothermia
2. Understand the principles of heat production, loss, and conservation
3. Outline the prehospital management of hypothermia
4. List predisposing factors to hypothermia
5. Describe the pathophysiologic effects of hypothermia on the cardiovascular and the central nervous systems
6. Outline the clinical findings in hypothermia
7. Outline the general approach to the hypothermic patient
8. Contrast active and passive rewarming and provide examples of each
9. Outline a management approach to hypothermic cardiac dysrhythmias and arrests
10. Describe admission criteria for hypothermic patients
11. Describe mechanisms for hypothermia prevention
12. Describe the clinical presentation, pathophysiology, management and complications of:
   a) Chilblains
   b) Trench foot
   c) Frostnip
   d) Frostbite

NEAR-DROWNINGS

Situation:
A 3-year-old boy is brought to the ED with a decreased level of consciousness. He was found in the neighbor’s pond.

**Enabling Objectives:**
1. Understand the pathophysiology of drowning.
2. Outline the factors affecting outcome in near drowning.
3. Define cold-water drowning.
4. Evaluate and resuscitate near drowning victims using appropriate diagnostic studies and available therapeutics.

**BITES AND STINGS**

**Situations:**
1. A parent brings a 7-year-old son who was bitten by a raccoon.
2. Surfers rescue a 19-year-old male who was stung repeatedly by a large jellyfish.

**Enabling Objectives:**
1. Describe the oral flora that can contaminate human, cat and dog bites, and list appropriate antibiotic therapy.
2. List factors that increase the risk of infection after a mammalian bite.
3. Describe the appropriate management of intraarticular bites.
4. List the animals typically associated with transmission of rabies in Canada.
5. Describe the risk factors for human rabies infection.
6. List the indications for acute rabies immunization, and the time frame it must be given to be effective after exposure.
7. Characterize the potential toxic and systemic reactions to Hymenoptera stings.
8. Describe the progression of symptoms after a bite from a brown recluse spider or a black widow spider bite.
9. Identify bites from fleas, flies, lice, caterpillars, kissing bugs and bed bugs
10. List complications of tick infestations
11. Describe how to remove a tick.
12. Outline basic identification and management of rattlesnake, coral snake and Gila monster bites.
13. Identify some of the marine species that can cause marine envenomations, and list the major affected organ systems and therapeutic options.

**PEDIATRIC NON-TRAUMATIC PRESENTATIONS**

**Situation:**
Parents bring their 4-year-old boy to the ED with a complaint of abdominal pain.

**Terminal Objectives:**
The competent resident will:
1. Outline a differential diagnosis for each of the following non-traumatic pediatric presentations. The differential diagnosis should include the life threatening as well as the common disorders.

2. Elicit a history and perform a physical exam relevant to the conditions identified in the differential diagnosis of the presenting complaint.

3. Interpret the information obtained from the history and physical examination and generate a narrowed differential diagnosis.

4. Plan investigations pertinent to the narrowed differential diagnosis.

5. Demonstrate the ability to interpret requested investigations.

6. Initiate stabilization and management of identified conditions in an appropriate and timely manner.

**NEONATAL PRESENTATIONS**
- Jaundice
- Convulsions
- Apnea

**HEAD NECK AND NEURO PRESENTATIONS**
- Earache
- Headache
- Red Eye
- Sore Throat
- Stridor

**CHEST PRESENTATIONS**
- Chest Pain
- Cough
- Respiratory Distress
- Dyspnea
- Hemoptysis
- Wheezing

**ABDOMINAL AND GI PRESENTATIONS**
- Abdominal Pain
- Constipation
- Diarrhea
- Hematemesis
- Jaundice
- Vomiting

**GENITOURINARY PRESENTATIONS**
- Scrotal Pain
- Hematuria
- Dysuria / Frequency
MUSCULOSKELETAL AND EXTREMITY PRESENTATIONS

Limp
Painful joint

PSYCHIATRIC PRESENTATIONS

Depressed mood
Disruptive Behavior

GENERAL PRESENTATIONS

Fever and Irritability < Three Months
Fever > Three Months < Three Years
Fever and Rash
Rash
Lethargy
Syncope
Convulsions
Weakness
Inconsolable infant
Failure to Thrive

PEDIATRIC NON-TRAUMATIC DISORDERS

NEONATAL DISORDERS

NEONATAL HYPERBILIRUBINEMIA

Situation:
A 5-day-old breast-fed infant presents with decreased feeds and marked jaundice. A heel-poke bilirubin returns as 424µmol/L

Enabling Objectives:
1. Elicit and interpret information from the history and physical examination to differentiate between the treatable causes of jaundice.
2. List and interpret the appropriate investigations used in the diagnosis of jaundice in the newborn.

NEONATAL SEPSIS

Situation:
A 23-day-old baby presents after the mother noted an apneic spell lasting 30 seconds associated with turning blue.

Enabling Objectives:
1. List the wide variety of possible presentations that are associated with neonatal sepsis.
2. Describe an appropriate workup for neonatal sepsis.
3. List the common organisms associated with neonatal sepsis, and list appropriate empiric antibiotic therapy.

**NECROTIZING ENTEROCOLITIS**

**Situation:**
A 9-day-old baby born at 35 weeks presents with feeding intolerance and then irritability followed by bloody stools.

**Enabling Objectives:**
1. List the signs and symptoms that are associated with necrotizing enterocolitis (NEC) and differentiate them from congenital bowel obstructions.
2. Describe the abdominal x-ray findings associated with NEC, and list the radiologic procedure(s) contraindicated in suspected NEC.
3. Describe the management of NEC, including the role and choice of antibiotics.

**HEAD NECK AND NEURO DISORDERS**

**EPIGLOTTITIS, BACTERIAL TRACHEITIS, AND CROUP**

**Situation:**
1. A toxic-looking 2-year-old child presents with drooling and stridor.
2. A non-toxic 3-year-old female presents with a frequent barking cough and inspiratory stridor.

**Enabling Objectives:**
1. Describe the epidemiology of epiglottitis.
2. Describe the epidemiology of croup.
3. Describe the pathophysiology and clinical manifestations of epiglottitis, bacterial tracheitis and croup.
4. Distinguish between croup and epiglottitis in the pediatric patient based on history and physical findings.
5. Discuss the typical etiologic agents and initiate appropriate antibiotic therapy (if any) for epiglottitis, bacterial tracheitis, and croup.
6. Describe a diagnostic and therapeutic approach to the patient with suspected epiglottitis, including aggravators needing to be avoided.
7. Describe a therapeutic approach to patients with croup.
8. Outline the controversies in the management of croup including the role of:
   a) Inhaled and oral steroids
   b) Inhaled epinephrine.
9. Discuss the indications for hospitalization and consultation for croup.

**PHARYNGITIS AND STOMATITIS**
Situation:
A 6-year-old girl presents with painful vesicles around her mouth and intra-orally.

Enabling Objectives:
1. Differentiate between viral pharyngitis and Group A Beta-hemolytic Streptococcal (GABHS) based on history and physical findings.
2. List the four Centor criteria used in the clinical assessment of acute pharyngitis.
3. Describe the typical appearance of an oral mucosal and dermal herpetic rash.
4. State the possible pathogen(s) involved in ulcerative stomatitis.
5. Discuss treatment options and the use of antivirals in herpes simplex infections.

RETOPHARYNGEAL AND PERITONSILLAR ABSCESS

Situation:
A 12-year-old child presents with fever, sore throat and inability to swallow.

Enabling Objectives:
1. Describe the physical findings and radiologic features of a retropharyngeal abscess.
2. Describe the physical findings associated with a peritonsillar abscess.
3. Discuss the etiologic agents and initiate appropriate antibiotic therapy for peritonsillar and retropharyngeal abscesses.
4. Discuss the advantages and disadvantages of needle aspiration vs. incision and drainage of peritonsillar abscesses.
5. List the contraindications and complications of drainage of peritonsillar abscesses.
6. Describe the approach and perform incision and drainage of peritonsillar abscesses.

OTITIS MEDIA AND EXTERNA

Situation:
A 15-year-old teenage swimmer presents with left otalgia and crusting of the external ear canal.

Enabling Objectives:
1. Compare and contrast the clinical findings of OM and OE.
2. List and contrast the predisposing factors and causal pathogens of OM and OE.
3. Discuss the possible complications of OM.
4. Outline the treatment plan of OM and OE.
5. Discuss the indications for referral to ENT.

PRESEPTAL AND ORBITAL CELLULITIS

Situation:
A 13-year-old female presents with nontraumatic swelling and redness of the soft tissues around her left eye. She also has associated fever and malaise.

Enabling Objectives:
1. Distinguish between preseptal and orbital cellulitis based on the clinical findings.
2. Describe the common bacterial causes and empiric therapy for preseptal and orbital cellulitis in the following groups:
   a) Nontraumatic, less than 5 years old.
   b) Nontraumatic, greater than 5 years old.
   c) Traumatic
3. Describe the appropriate investigation, management and complications of orbital cellulitis.

**V-P SHUNT MALFUNCTION**

**Situation:**
A 2-year-old child with developmental delay and a history of hydrocephalus presents with the patient’s mother stating he is acting in a manner similar to the last time he had a blocked shunt.

**Enabling Objectives:**
1. Describe the clinical progression of a patient with a blocked V-P shunt and increasing intracranial pressure.
2. Describe the typical components and usual location of a V-P shunt, and list the complications that result in malfunction.
3. Demonstrate the methods of assessing V-P shunt functioning, and describe normal and abnormal results.
4. Describe the ED management of this problem.

**MENINGITIS**

**Situation:**
A 15-year-old female presents with a flu-like illness including vomiting and fever. She looks toxic and is found to have a stiff neck on physical examination.

**Enabling Objectives:**
1. Describe the early and late findings on clinical assessment of infants with meningitis, and also with older children.
2. List the indications, contraindications, and appropriate timing for performing lumbar puncture in suspected meningitis.
3. Demonstrate the ability to perform lumbar puncture in all age groups.
4. List the appropriate CSF and blood investigations and outline the role of DI in the workup of suspected meningitis.
5. List the typical CSF findings with bacterial meningitis, and contrast them with the typical CSF findings of viral meningitis.
6. List the common bacterial pathogens and appropriate empiric therapy for the following age groups with meningitis:
   a) Neonates
   b) Infants one to three months old
c) Children 3 months to 6 years old.
d) Over 6 years old.
7. Choose an appropriate antibiotic for contact prophylaxis, and list the indications for prophylaxis of contacts.
8. Describe the typical presentation of herpes meningoencephalitis, and discuss indications for initiating antiviral therapy.

**FEBRILE SEIZURES**

Situation:
A 16-month old child presents after having a witnessed tonic-clonic seizure lasting 15 seconds at home. The child had URI symptoms and a fever beginning the previous day.

Enabling Objectives:
1. Describe the typical age range for uncomplicated febrile seizures, and list the risk factors predisposing infants and children to develop febrile seizures.
2. List the conditions that should be ruled out in patients presenting with febrile seizures.
3. State the age at which the absence of neck stiffness assists with ruling out meningitis.
4. List the appropriate immediate investigations required in a first presentation of a seizure associated with fever.
5. Describe the typical discharge instructions to parents whose child has had a first febrile seizure.

**EPILEPSY**

Situation:
A 6-year-old male with a known seizure disorder presents by EMS after having three tonic/clonic seizures at school within a one-hour period.

Enabling Objectives:
1. List the important historical points in the assessment of a patient with a first seizure, and with a past history of seizures.
2. Describe the common precipitating factors in persons with epilepsy.
3. Describe the features on clinical assessment that may suggest consultation or admission is appropriate.
4. Describe the initial investigations appropriate when investigating a person with a first afebrile seizure.

**PULMONARY DISORDERS**

**ASTHMA**

Situation:
A 9-year-old male presents with rapid onset and worsening of his asthma despite frequent use of his bronchodilator inhaler earlier in the day. He was hospitalized for his asthma one month ago for a similar attack.
Enabling Objectives:
1. Outline an appropriate assessment of an acute exacerbation of asthma and treatment priorities.
2. Stratify patients into mild, moderate, severe, or near-death asthma status according to the CAEP Guidelines for Emergency Management of Pediatric Asthma.
3. List appropriate therapeutic strategies for each severity stratification and the indications for intubation.
4. Outline risk factors for asthma relapse and indications for admission.
5. List the complications of asthma and asthma treatments.
6. Describe the appropriate interventions to be performed in an asthmatic arrest.
7. Outline appropriate discharge medications, instructions for parents, and follow-up plans.

PNEUMONIA

Situation:
A mother brings in her 3-year-old daughter from day care. The girl presents with fever, tachypnea, productive cough and increased irritability. Her chest x-ray reveals a LLL infiltrate.

Enabling Objectives:
1. List the typical viral and bacterial causes of pneumonia for the following age groups: birth to 1 month, 1 month to 3 months, 3 months to 5 years, and 5 years to 19 years.
2. List appropriate empiric antibiotic therapy for pneumonia in the following age groups: birth to 1 month, 1 month to 3 months, 3 months to 5 years, and greater than 5 years.
3. List the appropriate diagnostic workups for children with suspected pneumonia and the typical chest x-ray findings for various etiologic agents.
4. Describe the criteria for admission for pediatric pneumonia patients.
5. List the complications of pediatric pneumonia.

BRONCHIOLITIS

Situation:
A 5-month-old male is brought in by his parents with a 2-day history of low-grade fever, runny nose, and decreased appetite. He presents now with increased work of breathing.

Enabling Objectives:
1. Outline the appropriate assessment of a case of bronchiolitis.
2. Discuss the initial management of the patient with bronchiolitis.
3. Describe the epidemiology and most common etiologic agents of bronchiolitis.
4. Discuss the indications for intubation and for admission of patients with bronchiolitis.
5. List the possible therapeutic agents for bronchiolitis.
6. Describe the appropriate discharge instructions.
7. List the complications of bronchiolitis.
PERTUSSIS

Situation:
A 6-month-old female presents with a 2-day history of intermittent coughing spells followed by post-tussive emesis and occasional, brief cyanosis. The child is brought in by her mother who runs a daycare centre.

Enabling Objectives:
1. Describe the clinical stages of pertussis.
2. Outline the appropriate assessment of a patient with pertussis.
3. Discuss the treatment for pertussis.
4. Discuss the public health implications of pertussis infection.
5. List the complications of pertussis.

FOREIGN BODY INHALATION

Situation:
A previously well 4 year-old-male was attending a birthday party where he was playing with marbles. He presents with sudden onset stridor and coughing after playing with marbles.

Enabling Objectives:
1. Outline the appropriate clinical and radiographic assessment of a stable patient with partial airway obstruction.
2. Describe the appropriate emergent management of a patient that presents with acute partial airway obstruction and delineate the management differences between an infant (< 1 year old) and a child (> 1 year old).

CYSTIC FIBROSIS

Situations:
1. A Caucasian 2-month-old male presents with failure to thrive and persistent respiratory and gastrointestinal problems.
2. A 10-year-old male with known cystic fibrosis presents with a 5-day history of progressively worsening dyspnea, cough, and scant hemoptysis.

Enabling Objectives:
1. Describe the etiology of cystic fibrosis.
2. Describe the primary pathophysiological characteristic of cystic fibrosis.
3. List the possible pulmonary and non-pulmonary complications of cystic fibrosis.
4. Outline the typical laboratory and radiographic abnormalities found in patients with cystic fibrosis.
5. Describe the therapeutic approach for each of the following acute complications of cystic fibrosis: acute respiratory distress with mucous plugging, significant hemoptysis, cor pulmonale, and meconium ileus.
CARDIOVASCULAR DISORDERS

CONGESTIVE HEART FAILURE

Situations:
1. An afebrile 5-month-old female presents with sudden onset tachypnea, tachycardia, and lethargy.
2. A 13-year-old male with known myocarditis presents with severe dyspnea.

Enabling Objectives:
1. Describe the pathophysiology and clinical features of congestive heart failure in infants and older children, including the determinants of cardiac output and the different etiologies.
2. Outline the empiric management principles according to etiologic basis (increased preload, increased afterload, contractility problems, and dysrhythmia) of a pediatric patient with severe congestive heart failure.
3. Demonstrate advanced knowledge of the therapeutic agents used to treat congestive heart failure, their indications, their pharmacologic effects, and their complications.
4. Outline the appropriate diagnostic tests and specific chest x-ray findings for a patient in acute congestive heart failure.

RHEUMATIC FEVER

Situation:
A 9-year-old male who had an episode of streptococcal infection of the throat 2 weeks ago presents now with multiple joint pain, fever, rash, and dyspnea.

Enabling Objectives:
1. Describe the Jones Criteria for the diagnosis of initial attack of rheumatic fever.
2. Outline the typical clinical course of rheumatic fever and the possible clinical findings in a child suffering from acute rheumatic fever.
3. List the diagnostic tests required for the investigation of a patient with suspected rheumatic fever.
4. Describe the management of a patient with acute rheumatic fever.
5. List the complications of rheumatic fever.

CONGENITAL HEART DISEASE

Situations:
1. A 2-year-old male with Down’s syndrome and a known atrial septal defect presents with rapid onset dyspnea.
2. A 6-week-old female with known Tetralogy of Fallot presents with central cyanosis.

Enabling Objectives:
1. Describe the pathophysiology, etiologies and clinical presentations of pediatric patients that present with cardiac left-to-right shunt, right-to-left shunt, and left ventricular outflow obstruction.
2. List the clinical features of Tetralogy of Fallot and the related characteristic chest X-ray findings.
3. Describe the management of a pediatric patient with acute central cyanosis secondary to Tetralogy of Fallot.
4. List the possible etiologies for congenital left ventricular outflow obstruction.
5. Describe the management principles for a newborn with suspected left ventricular outflow obstruction.

**ABDOMINAL AND GI DISORDERS**

**APPENDICITIS**

**Situations:**
1. A 2-year-old boy presents with periumbilical abdominal pain which has now moved to the right lower quadrant.
2. A toxic looking 1-year-old girl presents with anorexia and vomiting with a mass in the right lower quadrant.

**Enabling Objectives:**
1. Distinguish the presentations of acute appendicitis in a child less than 2-years-old and a child greater than 2-years-old.
2. Describe the classic presentation of acute appendicitis.
3. Discuss the role of anatomic location on the presentation of acute appendicitis.
4. Define McBurney’s point and perform maneuvers to elicit Rovsing, psoas, and obturator signs.
5. Describe the physical signs of a perforated appendix.
6. Discuss the use of blood and urine analysis in the diagnosis of acute appendicitis.
7. Evaluate the use of the following imaging studies as an adjunct to diagnosis:
   a) plain radiographs
   b) ultrasound
   c) CT scan
8. Discuss the use of ED observation and serial abdominal examinations for pediatric patients with atypical presentations.
9. Outline the ED management of acute appendicitis.

**GASTROENTERITIS**

**Situation:**
A 2-year-old girl presents with vomiting, diarrhea and fever for the past 24 hours.

**Enabling Objectives:**
1. Describe the common causes for vomiting and diarrhea in the following groups:
   a) Infant.
b) Child.
c) Adolescent
2. List the conditions that should be ruled out in children presenting with vomiting and diarrhea.
3. Compare and contrast acute and chronic diarrhea.
4. Discuss the laboratory tests available to the emergency physician to evaluate the cause of diarrhea.
5. Identify and manage patients with dehydration and life threatening causes of diarrhea.
6. Discuss the indications as well as advantages and disadvantages of antibiotics in the treatment of diarrhea in children.
7. Describe the typical discharge instructions to a parent whose child has gastroenteritis and after appropriate investigation and observation is not found to have a serious concurrent illness.

DEHYDRATION

Situation:
A 6-year-old boy, who has had 48 hours of diarrhea, has sunken eyes, dry mucus membranes and tachycardia at rest.

Enabling Objectives:
1. State the clinical differences between mild, moderate and severe dehydration in children.
2. Discuss the management of acid-base and electrolyte imbalances that can co-exist with dehydration.
3. Compare and contrast the advantages and disadvantages between oral rehydration and intravenous rehydration.
4. Calculate the total fluid requirements in children including deficit correction, ongoing loss replacement and maintenance rates.

PYLORIC STENOSIS

Situation:
A 14-day-old infant presents with a history of increasing frequency of non-bilious emesis and weight loss.

Enabling Objectives:
1. Define pyloric stenosis.
2. Describe the typical age range presenting with pyloric stenosis.
3. List the risk factors predisposing infants to develop pyloric stenosis.
4. List the signs and symptoms that are associated with pyloric stenosis.
5. Describe the physical findings and radiological features of pyloric stenosis.
6. Discuss the initial management and definitive treatment of infants with pyloric stenosis in the emergency room.

MALROTATION WITH AND WITHOUT VOLVULUS
Situation:
A toxic-looking 21-day-old presents with bilious emesis and a rigid and distended abdomen.

Enabling Objectives
1. Describe the pathophysiology and clinical manifestations of malrotation with and without volvulus.
2. Define the ligament of Treitz.
3. Describe the abdominal x-ray findings associated with malrotation with and without volvulus.
4. Discuss the possible complications of malrotation with and without volvulus.
5. Discuss the situations in which urgent surgical intervention is required.

INTUSSUSCEPTION

Situation:
A 2-year-old boy presents with progressively frequent, episodic bouts of severe abdominal pain.

Enabling Objectives:
1. Define intussusception and its usual anatomic origin.
2. Describe the epidemiology of intussusception.
3. List the possible presentations that are associated with intussusception.
4. Describe the physical findings and radiologic features of intussusception.
5. Discuss the advantages and disadvantages of utilizing barium enema verses air insufflation for the diagnosis and treatment of intussusception.
6. Discuss the initial management and definitive treatment of infants with intussusception.

SWALLOWED FOREIGN BODIES

Situation:
A 2-year-old girl is suspected to have swallowed a large coin.

Enabling Objectives:
1. Identify the most common foreign bodies ingested by children.
2. Describe the sites of anatomic narrowing in the pediatric esophagus.
3. Compare and contrast the sites of foreign body impaction in children and adults.
4. Identify the potential complications of an impacted foreign body.
5. Describe the clinical presentation of patients with an impacted foreign body in the esophagus.
6. Discuss the role of imaging for diagnosis and prognosis.
7. Identify the situations in which endoscopy is the treatment of choice for swallowed foreign bodies.
8. Discuss the potential options for managing patients with
a) Coin ingestion  
b) Button battery ingestion  
c) Ingestion of sharp objects

**INCARCERATED HERNIA**

**Situation:**  
A 2-month-old boy presents with poor feeding and irritability. On examination he has a firm mass at his groin.

**Enabling Objectives:**  
1. Discuss the types of hernias with respect to clinical presentation.  
2. Identify the potential complications of an incarcerated hernia.  
3. Demonstrate the technique used to reduce an incarcerated hernia.  
4. Discuss the situations in which urgent surgical intervention is required.

**GASTROINTESTINAL HAEMORRHAGE**

**Situations:**  
1. A 1-month-old boy is noted to have a small amount of bright red blood in his diaper after a hard bowel movement.  
2. A toxic-looking 1-year-old girl presents with severe abdominal pain and blood per rectum. There is a horizontal sausage-like mass on examination of her abdomen.  
3. A 5-year-old boy presents with streaks of bright red blood after repeatedly vomiting.

**Enabling Objectives:**  
1. Compare and contrast the causes and presentations of upper and lower gastrointestinal bleeding in the following age groups:  
   a) Under 2-months  
   b) Under 2-years  
   c) Over 2-years  
2. Describe the appropriate investigation, management and complications of gastrointestinal bleeding in children.  
3. Describe the features on clinical assessment that may suggest consultation or admission is appropriate.  
4. Identify situations in which surgical intervention is required.

**GENITOURINARY DISORDERS**

**TESTICULAR TORSION**

**Situation:**  
During a long jump competition a 13-year-old boy develops an acutely painful and swollen right testicle.

**Enabling Objectives:**
1. Recognize the conditions causing acute scrotal pain that are urologic emergencies.
2. Identify the risk factors for developing testicular torsion.
3. Demonstrate the technique of manual detorsion.
4. Describe the clinical presentation of torsion of the appendix testes vs torsion of the testicle, including defining the “blue dot sign” and its relevance.
5. Discuss the role of duplex ultrasonography for diagnosing an acute scrotum.

**URINARY TRACT INFECTIONS**

**Situations:**
1. A sexually active 16-year-old male presents with a 1-day history of dysuria and urinary frequency.
2. A 6-year-old boy is found to have a positive urine culture.
3. A 3-year-old girl presents with nausea, vomiting, fever, and abdominal pain.

**Enabling Objectives:**
1. Describe the risk factors for developing urinary tract infections (UTIs) in children.
2. Discuss the classification and consequences of vesicoureteric reflux.
3. Identify the most common organisms involved in pediatric UTIs.
4. List the wide variety of possible presentations that are associated with UTIs.
5. Discuss the advantages and disadvantages of obtaining urine using a bag, cleanly voided mid-stream and catheterized or suprapubic sample.
6. Discuss the indications for obtaining a catheter or suprapubic urine specimen
7. Discuss the use of urinalysis, routine microscopy, and urine culture for diagnostic purposes.
8. Describe the indications and available algorithms for radiographic evaluations for children with their first UTIs.
9. Discuss the management and appropriate follow up of lower and upper tract infections including appropriate antibiotic therapy.
10. Identify the indications for admission.

**MUSCULOSKELETAL AND EXTREMITY DISORDERS**

**TRANSIENT SYNOVITIS OF THE HIP**

**Situation:**
A well looking 5-year-old boy began limping from right hip pain this morning.

**Enabling Objectives:**
1. List the conditions that should be ruled out in children presenting with antalgic gait.
2. Describe the features on clinical assessment that may suggest arthrocentesis is appropriate.
3. List other laboratory investigations or radiographic investigations (if any) that may be appropriate to help confirm or rule out the possible diagnoses.
4. Discuss the indications for hospitalization and consultation for pediatric painful hip.
5. Describe the typical discharge instructions to a parent whose child has a painful hip that is not thought to be caused by a serious illness.
SEPTIC ARTHRITIS/OSTEOMYELITIS

Situation:
A 2-year-old girl presents with a fever and refuses to walk. Exam reveals a hot, red left knee.

Enabling Objectives:
1. Describe the essential history and physical exam needed to evaluate a hot joint.
2. Describe the typical age range and most common joints involved in septic arthritis in children.
3. Describe the distinguishing features of septic arthritis in the neonate compared to the child.
4. List the common organisms associated with septic arthritis in the following groups:
   a) Neonate (0-2 months)
   b) Infant (2-36 months)
   c) Child
5. Discuss the possible complications of an unrecognized septic joint.
6. List the diagnostic studies used to confirm the diagnosis of septic arthritis.
7. List the indications and relative contraindications for arthrocentesis.
8. Demonstrate how to aspirate joints including the knee, shoulder, elbow and ankle.
9. Discuss the findings of arthrocentesis fluid that help differentiate crystal arthropathies, infective, and inflammatory disorders.
10. Distinguish between septic arthritis and osteomyelitis based on the clinical findings.
11. Discuss the use of blood work, diagnostic imaging, and needle aspiration to diagnose osteomyelitis.
12. Describe the management of septic arthritis and osteomyelitis, including the role and choice of antibiotics.

OSGOOD-SCHLATTER SYNDROME

Situation:
A 14-year-old boy presents with a tender lump over the tibial tubercle of his right leg.

Enabling Objectives:
1. Describe the pathophysiology and clinical manifestations of Osgood-Schlatter Syndrome.
2. Discuss the role of radiographic investigation for Osgood-Schlatter Syndrome.
3. Describe the management of Osgood-Schlatter Syndrome.

CONGENITAL DISLOCATION OF THE HIP

Situation:
A 3-day-old female neonate is suspected to have a dislocated hip.

Enabling Objectives:
1. Describe the complications that may occur if congenital dislocation of the hip is not detected.
2. Describe the variation of geographical incidents and positional risk factors that predispose to congenital dislocation of the hip.
3. Demonstrate the Barlow/Ortolani test for congenital dislocation of the hip.
4. Describe the pelvic x-ray findings associated with congenital dislocation of the hip.
5. Outline the ED management of congenital dislocation of the hip.

LEGG-CALVE PERTHES DISEASE

Situation:
A well-looking 6-year-old boy presents with episodic limping for the last 4 months and now refuses to play outside.

Enabling Objectives:
1. Describe the four pathophysiologic stages that occur in Legg-Calve-Perthes disease.
2. Describe the physical findings and radiologic features of Legg-Calve-Perthes disease at 3 to 6 months, 6 to 12 months, and 18 months after its onset.
3. Define Caffey’s sign.
4. List the differential diagnoses of Legg-Calve-Perthes disease.
5. Describe the initial management and referral of Legg-Calve-Perthes disease.

SLIPPED CAPITAL FEMORAL EPIPHYSIS

Situation:
A 13-year-old boy presents with severe right hip pain and inability to weight bear. His mother explains that he had been complaining of episodic right hip pain for the last 6 weeks.

Enabling Objectives:
1. Describe the typical age range and epidemiology of slipped capital femoral epiphysis.
2. List the risk factors predisposing infants and children to develop slipped capital femoral epiphysis.
3. Differentiate between acute slipped capital femoral epiphysis and chronic slipped capital femoral epiphysis based on history and physical findings.
4. List the conditions that should be ruled out in patients presenting with a painful hip.
5. Describe the findings on plain radiographs including bilateral ‘frog-leg’ lateral consistent with slipped capital femoral epiphysis.
6. Outline the treatment plan of slipped capital femoral epiphysis.
7. Describe the complications resulting from a delayed diagnosis of slipped femoral epiphysis.

RADIAL HEAD SUBLUXATION (NURSEMAID’S ELBOW)

Situation:
A 2-year-old girl presents refusing to use her left arm after slipping on ice while holding her father’s hand.

Enabling Objectives:
1. Describe the mechanism of injury and anatomical result of a nursemaid’s elbow.
2. Describe the typical arm position found when examining a patient with nursemaid’s elbow.
3. Discuss the role of imaging for diagnosis of nursemaid’s elbow.
4. Demonstrate the reduction of a nursemaid’s elbow.

OSTEOGENESIS IMPERFECTA

Situation:
Parents present with a 1-year-old girl and they suspect a fractured femur. She has bluish sclera and has had several fractures in the past. Her parents say fractures run in the family.

Enabling Objectives:
1. Describe the clinical and physical characteristics of osteogenesis imperfecta.
2. Describe the radiological features of osteogenesis imperfecta.

RHEUMATOLOGIC DISORDERS

JUVENILE RHEUMATOID ARTHRITIS (JRA)

Situations:
1. A well-looking 2-year-old girl is noted to have painless swelling of her right knee.
2. An 8-year-old boy complains of right hip and left knee pain and is progressively having difficulty keeping up to the other kids in gym class.
3. A 12-year-old girl is complaining of severe pain in both hands and feet worse in the morning.
4. An ill-looking 14-year-old girl presents with a 4 week history of spiking fevers and chills, associated with arthralgias and rash.

Enabling Objectives:
1. List the 3 broad clinical categories of JRA and their rates of occurrence.
2. List the typical age ranges for the onset of the 3 forms of JRA.
3. Compare and contrast the clinical presentation, typical laboratory findings, and radiographic appearance for patients with:
   a) Pauciarticular JRA
   b) Polyarticular JRA
   c) Systemic JRA
4. List the differential diagnoses of children with JRA.
5. Discuss the prominent extraarticular manifestations that may occur with JRA.
6. Discuss the emergent complications and prognosis of children with JRA.
7. List the life threatening complications of systemic JRA.
8. List the indications for admission of patients with JRA.
9. Discuss the potential options for managing patients with JRA.

HENOCHE-SCHÖNLEIN PURPURA

Situation:
A 7-year-old boy presents with hematuria and abdominal pain. The child had URTI symptoms and a fever 1-week ago.

Enabling Objectives:
1. Describe the pathophysiology and clinical manifestations of Henoch-Schönlein Purpura (HSP).
2. Describe the possible renal, gastrointestinal and pulmonary manifestations of children with HSP.
3. Describe the ED diagnostic evaluation of suspected HSP, considering the need to exclude other disease processes that share common clinical features.
4. Discuss treatment options and the use of steroids in children with HSP.
5. Discuss the indications for hospitalization and consultation for a child that presents with HSP.
6. Describe the possible complications and appropriate follow up to monitor for the development of complications in children with HSP.

KAWASAKI DISEASE

Situation:
A 2-year-old boy presents with fever, bilateral conjunctivitis and a rash that includes his palms.

Enabling Objectives:
1. Describe the pathophysiology of Kawasaki disease.
2. Describe the epidemiology of Kawasaki disease.
3. List the clinical features that must be present to make the diagnosis of Kawasaki disease.
4. List the infectious conditions that should be considered in a child presenting with erythroderma.
5. Describe the typical laboratory findings in Kawasaki disease.
6. Discuss the possible complications of Kawasaki disease.
7. Elaborate on the serious cardiac manifestations that can occur with Kawasaki disease.
8. Describe the management of Kawasaki disease, including the advantages and disadvantages of IVIG.

INFECTIOUS DISEASES

PEDIATRIC EXANTHEMS

Situations:
1. A 5 month-old afebrile female presents with a maculopapular rash after 3 days of a high fever and fussiness.
2. A 6-year-old boy presents with a fine pink rash starting on his face and neck which progressed to his trunk over one day. He had complaints of a fever and a sore throat for one day prior to the rash developing.

Enabling Objectives:
1. Distinguish between the following communicable diseases associated with a rash based on the incubation period, characteristics of the rash, duration of the rash, and associated symptoms:
   a) Chickenpox  
   b) Erythema infectiosum (Fifth disease)  
   c) Measles  
   d) Mononucleosis  
   e) Pityriasis rosea  
   f) Roseola Infantum  
   g) Rubella  
   h) Scarlet fever  
   i) Rocky mountain spotted fever
2. For the above conditions, identify the causative organism, mode of transmission, infectious period, complications, and any appropriate therapy.
3. Outline the important community health implications and interventions, and appropriate parental advice when dealing with cases of:
   a) Chickenpox  
   b) Measles  
   c) Rubella

LYME DISEASE

Situation:
After a family vacation to New Hampshire a 10 year-old boy presents with a target lesion 18cm in diameter on his left thigh.

Enabling Objectives:
1. Describe the pathogenesis of Lyme disease.
2. Describe the clinical features of the tick lesion in Lyme disease.
3. List the complications of the untreated Lyme tick lesion.
4. Describe the treatment of the Lyme tick lesion.

MUMPS

Situation:
A 5 year-old male presents with obvious bilateral pre-auricular swelling and pain.

Enabling Objectives:
1. Describe the clinical presentation, available methods of confirming the diagnosis, possible complications and any available treatment for patients with mumps.
2. Discuss the community health recommendations for patients with mumps.

**FEVER AND NEUTROPENIA**

**Situation:**
A 7 year-old female with alopecia presents with a cough and fever. Her parents confirm that she is receiving chemotherapy for Acute Lymphoblastic Leukemia. Her temperature at the triage desk is 38.6°C.

**Enabling Objectives:**
1. Describe the initial investigations appropriate for a non-toxic appearing febrile patient known to be neutropenic.
2. Describe the initial investigations appropriate for a toxic-appearing febrile patient known to be neutropenic.
3. List appropriate empiric antibiotic therapy for febrile neutropenia, and discuss the types of organisms that are associated with this.
4. Describe conditions under which outpatient therapy and follow-up may be appropriate for febrile patients with neutropenia.

**ENDOCRINE DISORDERS**

**DIABETES MELLITUS/HYPOGLYCEMIA**

**Situations:**
1. A 12-year-old female presents with extreme thirst, vomiting, polyuria and a blood sugar of 25 mmol/L.
2. A 12-month-old boy presents with ravenous hunger, jitteriness and altered personality with a blood sugar of 2.1 mmol/L.

**Enabling Objectives:**
1. Discuss the classification criteria of diabetes mellitus in children.
2. List the important historical points in the assessment of a patient with diabetes.
3. Describe the early and late findings on clinical assessment of diabetes.
4. Describe the etiology and epidemiology of diabetes.
5. Outline the initial management of the patient who presents with diabetic ketoacidosis.
6. Describe the common precipitating factors in persons with diabetic ketoacidosis.
7. Describe the appropriate investigation and complications of diabetic ketoacidosis.
8. Discuss the indications for admission to pediatric ward versus PICU in children presenting with diabetic ketoacidosis.
9. Describe the wide variety of possible presentations that are associated with hypoglycemia.
11. Elicit and interpret information from the history and physical examination to differentiate hypoglycemia from other disease processes.
12. Describe the appropriate investigation, management and complications of hypoglycemia.

**ADRENAL INSUFFICIENCY**

**Situations:**
1. A 10-day-old neonate who experienced a complicated delivery presents with hypoglycemia with fasting.
2. A weak looking 6-year-old boy presents with nausea, vomiting and syncopal episodes. His uncle was recently diagnosed with tuberculosis.

**Enabling Objectives:**
1. List the causes of adrenal insufficiency in infancy and childhood.
2. List the important historical points in the assessment of a patient with adrenal insufficiency.
3. State the common presentation and laboratory abnormalities of the child with acute adrenal insufficiency.
4. Describe the medical management and referral of adrenal insufficiency.

**DERMATOLOGIC DISORDERS**

**PEDICULOSIS**

**Situation:**
A 6-year-old boy presents with an itchy scalp.

**Enabling Objectives:**
1. Describe the typical presentation of head lice.
2. Discuss the etiology, transmission, and characteristic appearance of head lice.
3. Discuss the pharmacologic and environmental management of pediculosis.

**SCABIES**

**Situation:**
A 14-year-old girl presents with an intensely red, pruritic rash that is disturbing her sleep.

**Enabling Objectives:**
1. Identify the causative agent of scabies.
2. Describe the typical appearance and pathognomonic lesion of scabies.
3. List the parts of the body usually affected by scabies in the following:
   a) Infants
   b) Children and adolescents
4. Perform a scabies slide preparation.
5. Outline the treatment of scabies.
STAPHYLOCOCCAL SCALDED SKIN SYNDROME (SSSS)

Situation:
An 8-year-old girl presents following the spontaneous eruption of a diffuse tender rash which has turned into bullae.

Enabling Objectives:
1. Discuss the pathophysiology of SSSS.
2. Describe the three clinical phases and typical appearance of SSSS.
3. Describe the Nikolsky’s sign and list another condition that may demonstrate this sign.
4. Discuss the differential diagnosis of a patient with SSSS.
5. Discuss the indications for hospitalization for children presenting with SSSS.
6. Outline the treatment of SSSS and the role of antibiotics.

IMPETIGO

Situation:
A 3-year-old boy presents with an open sore under his nose that is oozing a honey-colored crust.

Enabling Objectives:
1. Describe the classical signs and symptoms of impetigo.
2. Describe the mode of transmission and demographic, seasonal distribution of impetigo.
3. List the most common organisms involved in impetigo.
4. Discuss the possible complications of impetigo.
5. Outline the treatment of impetigo, and describe the rationale for use of oral versus topical antibiotics.

ATOPIC DERMATITIS

Situation:
1. A 3-month-old male with a family history of allergies presents with a dry red rash on his cheeks.
2. A 6-year-old girl presents with a pruritic eruption of her extensor surfaces of her elbows and wrists.

Enabling Objectives:
1. Describe the epidemiology and natural history of atopic dermatitis.
2. List the differential diagnosis of eczematous lesions including metabolic, immunodeficiency, congenital diseases and other dermatological manifestations.
3. Describe the clinical features of the following recognized phases of atopic dermatitis.
   a) Infantile atopic dermatitis
   b) Childhood atopic dermatitis
   c) Adult atopic dermatitis
4. Distinguish between allergic versus irritant contact dermatitis.
5. Distinguish between atopic dermatitis and cradle cap in infants.
6. Discuss the possible complications of atopic dermatitis.
7. Describe lichenification.
8. Describe the treatment of atopic dermatitis.

CANDIDA

Situation:
A 1-month-old neonate presents with a diaper rash.

Enabling Objectives:
1. Describe the typical appearance of candidal diaper rash and discuss the appropriate treatment interventions.
2. Describe the typical appearance of oral candidasis in a neonate.
3. Outline the management of candidal infections in neonates.

CHILD AND ADOLESCENT PSYCHIATRY

Situation:
Angry and frustrated parents present with their 13-year-old son and state that they can’t handle him and aren’t willing to take him home.

Enabling Objectives:
1. Define and list causes for adolescent crisis, develop a strategy for appropriate follow-up or indications for admission.
2. Develop a strategy for “runaways” that arrive to the ED.
3. Describe common psychiatric disorders in children and adolescents that present to the ED:
   a) Oppositional defiant disorder
   b) Conduct disorder
   c) Attention Deficit Disorder
   d) Substance abuse
   e) Depression and suicide
   f) Anxiety
   g) Eating Disorders
4. Identify the role of social services in the ED for the care of children and adolescents.

TRAUMATIC DISORDERS

APPROACH TO MULTIPLE TRAUMA

Situation:
A 31-year-old man presents with injuries to his head, chest and pelvis following a fall from a rooftop.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Perform an initial assessment of the patient who has potentially sustained multiple traumas.
2. Mobilize appropriate members of the trauma team.
3. Set priorities for the stabilization and investigation of patients with multiple injuries.

Enabling Objectives:
1. State in detail the components of the primary survey of the trauma patient.
2. Describe a history appropriate for the multiple trauma patient.
3. State the components of the secondary survey of the trauma patient.
4. List the immediate life and limb threatening injuries that may occur to each of the following regions of the body:
   a. Head
   b. Neck
   c. Thorax
   d. Abdomen
   e. Pelvis
   f. Extremities
5. State the priorities in the initial management of the patient who has sustained multiple traumas.

**PRINCIPLES OF SOFT TISSUE INJURIES**

**WOUND MANAGEMENT**

Situation:
A 16-year-old female presents with a laceration to her left forearm.

Terminal Objectives:
The competent resident will:
1. Assess wounds and formulate a plan for wound management.
2. Demonstrate wound preparation, exploration and closure.
3. Identify immediate and delayed complications of soft tissue injuries and take appropriate preventative steps to decrease complications.
4. Manage and arrange appropriate follow-up for simple and complicated wounds.

Enabling Objectives:
1. Select an appropriate suture material, method of closure, and timing of suture removal for full thickness skin lacerations involving the following body regions:
   a) Face
   b) Eyelid
2. Demonstrate the following wound closure techniques:
   a) Simple interrupted sutures
   b) Vertical mattress sutures
   c) Horizontal mattress sutures
   d) Layered closures

3. Discuss the contraindications to wound closure and list appropriate alternatives.
4. Demonstrate the technique for draining a superficial abscess.
5. State the tetanus immunization schedule for variously immunized patients.
6. Perform an appropriate assessment, initiate management, and arrange follow up for
   the following:
   a) Needle stick injuries
   b) Foreign bodies
   c) Penetrating injuries of the extremities
   d) Wound hematomas
   e) Superficial infections
   f) High-pressure injection injuries

BURNS

Situation:
A 21-year-old cook presents with a burn to her right hand and forearm after submerging
her hand in hot oil at work.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Identify and provide initial management of burns.
2. Identify appropriate patients and arrange referral to specialty burn units when
   indicated.

Enabling Objectives:
1. Define the appearance and depth of injury associated with:
   a) First degree burns
   b) Superficial second degree burns
   c) Deep second degree burns
   d) Third degree burns
   e) Fourth degree burns
2. Calculate the percent of body surface area burned using standardized estimates for
   adults and children.
3. Describe the outpatient management of first and second degree burns.
4. List the indications for hospitalization of adults and children with a burn.
5. List the indications for referral burn unit referral for adults and for children.
6. Discuss the fluid management of the severely burned patient.
7. List the indications for and locations that may require an escharotomy, and perform an escharotomy when indicated.
8. Describe the indications for debridement of a burn, and be able to perform debridement when indicated.
9. Describe the typical appearance of electrical burns
10. Describe the approach to management and complications of:
    a) Thermal burns
    b) Electrical burns
    c) Alkali burns
    d) Acid burns

MUSCULAR AND LIGAMENTOUS INJURIES

Situation:
A 44-year-old male presents with a displaced tibial fracture and has increasing pain in his limb.

Terminal Objectives:
The competent resident will demonstrate ability to:
1. Identify and manage patients with crush injuries to the extremities.
2. Identify compartment syndromes in patients at risk.
3. Provide for appropriate follow up and/or specialist support for compartment syndrome.
4. Identify and describe general management of ligament and tendon sprains

Enabling Objectives:
1. Describe the clinical features associated with crush injury.
2. List the complications of extremity crush injuries, and outline appropriate investigations.
3. Define rhabdomyolysis, and describe the initial management and complications of rhabdomyolysis.
4. Describe limb compartment anatomy and neurovasculature.
5. Describe the typical mechanism of injury and pathophysiology of compartment syndromes.
6. Identify the clinical features of compartment syndrome, and describe indications for pursuing further investigation.
7. Demonstrate knowledge of differential diagnosis of raised intracompartmental pressures.
8. Perform appropriate investigations, including the use of an intracompartmental pressure monitor, and describe the appropriate management based on observed pressures.
9. Demonstrate knowledge of the principles of treatment of compartment syndrome.
10. Define sprains according to the various degrees of ligament injury.
11. Describe the process of healing of ligament and tendons, and the general treatment of sprains.

**PRINCIPLES OF FRACTURE MANAGEMENT**

**Situation:**
A 26-year-old carpenter presents with a deformed forearm after a large post fell on it.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Describe a fracture accurately and completely using standard orthopedic terminology.
2. List the complications associated with fractures and their treatment, and describe approaches to minimize the frequency and degree of severity of complications.
3. Describe the principles of fracture healing, including approaches used to assist fracture healing

**Enabling Objectives:**
1. Define the following terms with relation to bone injuries:
   a) Fracture
   b) Open vs. Closed
   c) Transverse
   d) Oblique
   e) Spiral
   f) Comminuted
   g) Displacement
   h) Alignment
   i) Angulation
   j) Impaction
   k) Distraction
   l) Rotation
   m) Valgus
   n) Varus
   o) Complete vs. Incomplete
   p) Greenstick
   q) Avulsion
   r) Pathologic
   s) Torus
   t) Epiphysis
   u) Metaphysis
   v) Diaphysis
2. Describe fractures using orthopedic terminology, including exact anatomic location, type of fracture line, relationship of fracture fragments, and any articular surface involvement.
3. Describe the clinical appearance and general ED management of closed and open fractures with emphasis on prevention of infectious complications.
4. Describe the clinical features of vascular compromise of an injured extremity, and discuss its implications on immediate fracture management.

5. Describe skin tenting and discuss its implications on immediate fracture management.

6. Describe the clinical features of neurologic compromise of an injured extremity, and discuss its implications on immediate fracture management.

7. Define fat embolism syndrome, and list the typical associated injuries and clinical features.

8. Define avascular necrosis of bone, list 4 locations prone to this complication, and describe the typical radiologic appearance.

9. Describe the complications of immobilization and describe any approaches to minimize their occurrence or severity.

10. Describe the stages of fracture healing, including typical timing of pathophysiologic, clinical and radiologic findings.

11. List and describe abnormalities of fracture healing, and methods to minimize their occurrence.

SPECIAL CONSIDERATIONS IN PEDIATRIC TRAUMA

Situation:
A 6-year-old boy rides his bicycle onto a busy street and is struck by a passing motorist.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Compare and contrast the management of adult and pediatric trauma.
2. Diagnose and provide appropriate initial management of pediatric extremity injuries.

Enabling Objectives:
1. Describe the following special considerations of trauma in the pediatric population
   a) Vital signs
   b) Heat loss
   c) C-spine control
   d) Fluid resuscitation
   e) Intravenous access
   f) Use of the Broselow tape
2. Demonstrate knowledge of pediatric skeletal anatomy and development.
3. Describe the 5 types of Salter Harris epiphyseal injuries.
4. Describe circumstances where comparison views of the opposite limb may be useful.
5. Describe the relative strength of ligaments to that of growth plates in children.
6. List the reason why figure 8 clavicle splints should never be used in children, if at all.

PRINCIPLES OF CASTING AND SPLINTING
Situation:

A 55-year-old woman presents with an injured right wrist after a fall.

Terminal Objectives:
The competent resident will:
1. Describe the basic principles of splinting and casting.
2. Demonstrate the application splints and casts.
3. Select the appropriate splinting technique for injuries to the extremities.

Enabling Objectives:
1. List the indications and contraindications for immobilizing an injured extremity with a splint or cast.
2. List the advantages and disadvantages of using plaster vs. fiberglass in casting and splinting.
3. List the potential complications of casts.
4. Demonstrate the proper application of the following commonly applied casts:
   a) Forearm cast
   b) Above-elbow forearm cast
   c) Sugar-tong splint
   d) Thumb spica cast
   e) Below-knee cast
   f) Above-knee cast
5. Describe the rationale for splinting joints in specific positions.
6. Demonstrate the appropriate positioning for immobilizing the joints of the hand and wrist.
7. Discuss the indications for, and demonstrate the proper application of the following commonly applied splints and immobilization techniques:
   a) Half-ring leg traction splint
   b) Knee-immobilization splint
   c) Buck’s traction
   d) Back slab splints of the lower and upper limbs
   e) Triangular arm sling
   f) Sling and swathe
   g) Velpeau bandage
   h) Wrist and hand gutter splints
   i) Aluminum finger splints
   j) Buddy-taping of digits

HEAD AND NECK TRAUMA

Situation:
A 19-year-old female arrives by EMS following an MVC with a Glasgow Coma Scale (GCS) of 8 and signs of facial trauma.
Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Identify and initiate appropriate management of mild, moderate and severe brain injuries.
2. Identify and initiate appropriate management of injuries involving the face, jaw, and teeth.
3. Identify and manage chemical, blunt, superficial and penetrating injuries of the eye.
4. Identify and initiate appropriate management of blunt and penetrating injuries to the neck.

BRAIN TRAUMA

Situation:
A 44-year-old obtunded man was found down on the street, smelling of alcohol.

Enabling Objectives:
1. Quickly and accurately assess the GCS.
2. Describe the management of the neck when intubating a patient with presumed c-spine injuries.
3. List the agents to be used and avoided in the rapid sequence intubation (RSI) of head injured patients.
4. Identify 4 brain herniation syndromes and manage appropriately.
5. List the causes and address the management of secondary brain injury.
7. Indicate the relationship to, and importance of intracranial pressure (ICP) and mean arterial pressure (MAP) in maintaining cerebral perfusion pressure (CPP).
8. Identify physical findings (Cushing reflex) of elevated ICP and critique the usefulness of commonly used measures for this.
9. Identify the limitations of physical examination of the spine and abdomen in the head injured patient.
10. Identify the indications for CT in head injuries.
12. Define concussions of grades 1 through 3, and give the recommendations on return to sports.
13. Discuss the usefulness of anticonvulsants in traumatic head injury.

FACIAL TRAUMA

Situation:
A 19-year-old “intoxicated” male drove his car into a tree. He was not wearing his seatbelt, and smashed his face on the windshield. He has diffuse swelling of his face.

Enabling Objectives
1. Describe the bony anatomy of the face and orbit, including suture lines and neural foramina.
2. Discuss the importance of obtaining historical information regarding vision, facial numbness and dental occlusion, indicating potential areas of injury.
3. Identify the normal bony landmarks on each of the following radiologic views:
   a) Waters or occipital-mental view
   b) Posterior-anterior or Caldwell view
   c) Cross-table or upright lateral view
   d) Submental-vertex or zygomatic arch view
   e) Towne view
4. Describe the examination technique used to identify LeFort I, II, and III fractures.
5. Describe the clinical findings, radiologic findings, complications, and management of the following facial injuries:
   a) Frontal Bone and Frontal Sinus fractures
   b) Naso-Ethmoidal-Orbital (NEO) injuries
   c) Orbital floor fractures
   d) Nasal fractures
   e) Tripod fractures
   f) Zygomatic arch fracture
6. Describe the clinical examination including the tongue blade test to assess for mandibular injury
7. List the radiologic views available to assess for mandibular injury.
8. Describe the appropriate initial management for undisplaced, displaced and open mandibular fractures.

EYE TRAUMA

Situations:
1. A 55-year-old janitor has bleach splashed into his eyes 20 minutes ago.
2. A 28-year-old greenskeeper has painful right eye movements after being hit in the face with a golf ball.
3. A 36-year-old worker has right eye pain after grinding metal.

Enabling Objectives:
1. Contrast between acid and alkali burns to the eye.
2. Describe the immediate initial management of a chemical eye injury, and the subsequent pH testing to ensure that treatment is adequate.
3. List the poor prognostic signs in chemical exposure.
4. List the complications of corneal trauma.
5. Discuss the approach to evaluating and managing blunt orbital trauma.
6. Discuss the physical findings and management of hyphaema, traumatic iritis, lens dislocation, global rupture, vitreous hemorrhage, and retinal detachment.
7. Describe the workup of a suspected penetrating eye injury.
8. Outline the clinical findings of orbital disruption.
9. Demonstrate the use of slit lamp and fluorescein staining in evaluating an eye injury.
10. List the indications for Diganostic Imaging: X-ray, CT scanning.
11. Discuss the initial management and appropriate referral of a penetrating eye injury.
12. Outline the management of corneal foreign bodies or abrasions.
13. List the complications of corneal trauma.

**DENTAL TRAUMA**

**Situation:**
A 25-year-old male was struck in the mouth by a hockey puck. One tooth is missing and another is broken off.

**Enabling Objectives:**
1. Describe the 4-quadrant naming system used by dentists to describe specific teeth.
2. Outline the differences in appearance and management of dental fractures that:
   a) involve only the enamel,
   b) expose dentin, and
   c) expose the nerve root canal.
3. Describe the appropriate management of avulsion of primary teeth and secondary (permanent) teeth.

**NECK TRAUMA**

**Situations:**
1. An 18-year-old man presents with a stab wound to the neck.
2. A 23-year-old woman presents with an upper chest bullet wound.
3. A 40-year-old man in a MVC was thrown against steering wheel and presents with bruising over his neck.

**Enabling Objectives:**
1. Identify important vascular, aero-digestive, endocrine, neurological, and spinal structures of the neck.
2. Describe the following anatomical classifications of the neck and the important structures in each region.
   a) Anterior and posterior triangles
   b) Zones I, II, and III
3. Recognize the risk factors, signs and symptoms for airway compromise after neck trauma.
4. Identify clinically insignificant injuries versus injuries requiring immediate surgical consultation.
5. Discuss indications, contraindications, and limitations of the following possible diagnostic tests in the setting of blunt and penetrating neck trauma
   a) Plain radiographs
   b) Laryngoscopy
   c) Bronchoscopy
   d) CT
   e) Angiography
   f) Esophagogram or esophagoscopy
6. Discuss use of prophylactic antibiotics in penetrating neck trauma.

**CHEST TRAUMA**

**Situation:**
1. A 60-year-old man not wearing a seatbelt was involved in a high speed MVC.
2. A 20-year-old man presents with a stab wound to his chest.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Identify and appropriately manage blunt and penetrating chest injuries.

**Enabling Objectives:**
1. List the immediate life-threatening injuries that should be identified during the primary survey of the chest.
2. Describe the clinical findings, investigation and appropriate initial management of the following thoracic injuries:
   a) Tension pneumothorax
   b) Pericardial tamponade
   c) Massive hemothorax
   d) Open pneumothorax
   e) Flail Chest
   f) Diaphragmatic rupture
   g) Rib fractures
   h) Sternal fractures
   i) Pulmonary contusion
   j) Pneumothorax
   k) Pneumomediastinum
   l) Tracheobronchial injury
   m) Esophageal injury
3. Describe the indications and contraindications and be able to perform:
   a) Needle thoracentesis
   b) Chest tube insertion
   c) Pericardiocentesis
   d) Emergency thoracotomy
   e) Double lumen endotracheal tube insertion
4. Describe the clinical factors associated with possible blunt aortic injury, and list the CXR findings of aortic injury.

**ABDOMINAL TRAUMA**

**Situation:**
1. A 30-year-old male was involved in a high speed MVC.
2. A 16-year-old female was allegedly assaulted with kicks to the abdomen.
3. A 20-year-old male presents with a torso gun shot wound.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Identify and manage blunt and penetrating abdominal injuries.

**Enabling Objectives:**
1. Identify the ‘surgical abdomen.’
2. List indications for emergent laparotomy.
3. Identify the structures that are commonly injured with blunt abdominal trauma, and describe their typical presentations.
4. List the advantages and disadvantages of the following diagnostic procedures in blunt traumatic injuries:
   a) Diagnostic peritoneal lavage
   b) Computed tomography
   c) The “F.A.S.T.” Ultrasound at the bedside
   d) Abdominal Ultrasound
5. Describe the approach to investigating a penetrating abdominal stab wound, and discuss the advantages and disadvantages of the following diagnostic procedures:
   a) Exploration of stab wound
   b) Diagnostic peritoneal lavage
   c) Computed tomography
   d) The “F.A.S.T.” Ultrasound at the bedside
   e) Abdominal Ultrasound
6. Discuss the distinction between high-velocity and low velocity gunshot wounds with regards to abdominal organ injury.
7. Demonstrate the technique for the insertion of a nasogastric tube and list the indication, contraindications and complications of the procedure.
8. Describe the retroperitoneal structures that may be injured, typical mechanisms, and indications for further investigation and/or management.
9. List the clinical and laboratory findings associated with renal and upper urinary tract injuries.
10. Describe the physical findings of a urethral injury in a trauma patient and their significance.
11. Demonstrate the technique for the insertion of a urinary catheter and list the indications, contraindications and complications of the procedure.
12. Describe the disposition of a stable patient with potential abdominal injury but no significant injury found after evaluation in the ED.

**SHOULDER INJURIES**

**Situation:**
A 32-year-old male presents after falling onto his right shoulder while skiing.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Identify and provide initial management of common shoulder and clavicle injuries with attention to identification and prevention of complications.
2. Provide for appropriate follow up and/or specialist consultation for shoulder and clavicular injuries.

Enabling Objectives:
1. Demonstrate knowledge of the clinical anatomy and neuroanatomy of the shoulder.
2. Describe the typical mechanism, clinical findings, radiologic appearance, relevant classification (if any), initial management, early complications, indications for emergent referral, expected time frame for initial follow-up, prognosis, and late complications of the following disorders:
   a) Clavicle fractures
   b) Acromioclavicular sprains grades I, II, and III
   c) Anterior glenohumeral dislocations
   d) Inferior glenohumeral dislocations
   e) Scapular fractures
   f) Rotator cuff impingement injuries
   g) Subacromial bursitis
   h) Rotator cuff tendinitis.
3. Outline the typical mechanism, clinical findings, radiologic appearance, initial stabilization, early complications, and appropriate timing of referral for the following injuries:
   a) Sternoclavicular dislocation.
   b) Glenoid fracture.
   c) Glenohumeral fracture-dislocation
   d) Brachial plexus injury

**UPPER ARM AND ELBOW INJURIES**

**Situation:**
A 21-year-old gymnast presents after hyperextending her elbow.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Identify and provide initial management of common humerus and elbow injuries with attention to identification and prevention of complications.
2. Provide for appropriate follow up and/or specialist consultation for humerus and elbow injuries.

**Enabling Objectives:**
1. Demonstrate knowledge of the clinical anatomy of the elbow and upper arm.
2. Describe the typical mechanism, clinical findings, radiologic appearance, relevant classification (if any), initial management, early complications, indications for emergent referral, expected time frame for initial follow-up, prognosis, and late complications of the following disorders:
a) Impacted humeral neck fractures  
b) Midshaft humeral fractures  
c) Biceps rupture  
d) Elbow dislocations  
e) Radial head fractures  
f) Pediatric radial head subluxations  
g) Lateral epicondylitis  
h) Medial epicondylitis  

2. Outline the typical mechanism, clinical findings, radiologic appearance, initial stabilization, early complications, and appropriate timing of referral for the following injuries:  
   a) Supracondylar humeral fractures in children and adults.  
   b) Olecranon fractures  
   c) Humeral condyle fractures  
   d) Triceps rupture

FOREARM INJURIES

Situation:  
A 27-year-old male presents after being hit in the forearm by a hockey stick.

Terminal Objectives:  
The competent resident will demonstrate the ability to:  
1. Identify and provide initial management of common radius and ulna injuries with attention to identification and prevention of complications.  
2. Provide for appropriate follow up and/or specialist consultation for radius and ulna injuries.

Enabling Objectives:  
1. Demonstrate knowledge of the clinical anatomy of the lower arm.  
2. Describe the typical mechanism, clinical findings, radiologic appearance, relevant classification (if any), initial management, early complications, indications for emergent referral, expected time frame for initial follow-up, prognosis, and late complications of the following disorders:  
   a) Nightstick ulnar fractures  
   b) Pediatric diaphyseal radial and ulnar fractures  
3. Outline the typical mechanism, clinical findings, radiologic appearance, initial stabilization, early complications, and appropriate timing of referral for the following injuries:  
   a) Monteggia fracture-dislocations  
   b) Galeazzi fracture-dislocations  
   c) Adult midshaft radius +/- ulna fractures

WRIST AND HAND INJURIES

Situation:
A 50-year-old female presents to ED after falling on an outstretched hand and an X-ray reveals a scapholunate distance of 6 mm.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Perform a detailed examination of all structures of the wrist and hand.
2. Identify and provide initial management of common wrist and hand injuries with attention to identification and prevention of complications.
3. Provide for appropriate follow up and/or specialist consultation for wrist and hand injuries.

WRIST AND HAND EXAMINATION

Situation:
A 17-year-old skateboarder complains of pain in his hand after a fall on an outstretched hand (FOOSH injury). He was not wearing wrist guards, and has a tender “anatomic snuffbox”.

Terminal Objectives:
1. Describe the bony and ligamentous structures of the wrist joint.
2. List the carpal bones of the hand, and identify their location with respect to surface landmarks and locations of tenderness when injured.
3. Identify the locations of all major arteries and nerves of the wrist and hand
4. List the motor nerve supply to the intrinsic muscles of the hand, and demonstrate an appropriate examination technique of each intrinsic muscle.
5. Identify the location of the neurovascular bundles of each digit.
6. Demonstrate the sensory examination of the digits using moving two-point discrimination, and describe normal and abnormal results.
7. Identify the location and function of each flexor and extensor tendon.
8. Demonstrate an appropriate examination of each flexor and extensor tendon of the wrist and hand.

FRACTURES

Enabling Objectives:
1. Describe the typical mechanism, clinical findings, radiological appearance, relevant classification (if any), initial management, early complications, indications for emergent referral, expected time frame for initial follow-up, prognosis, and late complications of the following disorders:
   c) Colles’ fractures
d) Barton’s fractures
e) Ulnar styloid fractures
   a) Undisplaced scaphoid fractures
   f) Chip fractures of the triquetrum
3. Outline the typical mechanism, clinical findings, radiologic appearance, initial stabilization, early complications, and appropriate timing of referral for the following injuries:
   a) Smith’s fractures
   b) Displaced scaphoid fractures
   c) Bennett fractures
   d) Hamate hook fractures
   e) Scapholunate dislocation
   f) Perilunate dislocation
   g) Lunate dislocation
   h) Radioulnar dislocation
   i) Triangular Fibrocartilage disruption

TENDON INJURIES

Situation:
A 45-year-old male states he grabbed a knife in self-defense, sustaining a laceration to the volar aspect of his right hand transversely across the palm.

Enabling Objectives:
1. Demonstrate knowledge of the 5 zones of flexor tendon injuries.
2. Demonstrate knowledge of typical post-treatment rehabilitation and complications of flexor tendon injuries.
3. Describe examination findings mandating ED exploration of wounds and possible repair of extensor tendons.
4. Perform extensor tendon repair.
5. Describe the appropriate follow-up and rehabilitation of extensor tendon injuries.
6. Perform regional anesthesia of the wrist and hand.

HAND INFECTIONS

Situation:
A 28-year-old male presents 18 hours after sustaining lacerations and puncture wounds to his right hand after striking someone in the mouth.

Enabling Objectives:
1. Perform an appropriate examination of the injured hand with emphasis on complications of tooth lacerations and puncture wounds.
2. Demonstrate knowledge of the typical pathogens and appropriate surgical and antibiotic treatment of the various trauma-related infections of the hand including:
   a) Cellulitis
   b) Lymphangitis
   c) Superficial abscesses
   d) Paronychia
   e) Felon
   f) Flexor tenosynovitis
METACARPAL AND FINGER INJURIES

Situation:
A 25-year-old male presents to the ED with a swollen right hand after a night of fighting.

Enabling Objectives:
1. Describe the typical mechanism, clinical findings, radiological appearance, relevant classification (if any), initial management, early complications, indications for emergent referral, expected time frame for initial follow-up, prognosis, and late complications of the following disorders:
   a) Skier’s thumb (Gamekeeper’s thumb)
   b) Fifth metacarpal neck fractures
   c) Metacarpal-phalangeal joint dislocations
   d) Interphalangeal joint dislocations
   e) Undisplaced phalangeal fractures
   f) Partial nail avulsion
   g) Lacerations of nail bed
   h) Open fractures of the distal phalanx.
   i) Amputations of the fingers and thumb.
   j) High-pressure injection injuries of the hand or fingers
2. Outline the typical mechanism, clinical findings, radiologic appearance, early complications, and appropriate timing of referral for the following injuries:
   a) Oblique metacarpal fractures
   b) Mallet finger
   c) Central slip injuries and Boutonnière’s deformity
   d) Open fractures of the proximal or middle phalanges
3. Describe the factors determining the stability or instability of fractures of the metacarpals or phalanges.

PELVIC INJURIES

Situation:
A 55-year-old male presents to the ED after an MVC with an unstable pelvis.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Identify and provide initial management of common injuries of the pelvis with attention to identification and prevention of complications.
2. Provide for appropriate follow up and/or specialist consultation for injuries of the pelvis.

**Enabling Objectives:**
1. Demonstrate knowledge of the clinical anatomy and neuroanatomy of the pelvis.
2. Describe the typical mechanism, clinical findings, radiologic appearance, relevant classification (if any), initial management, early complications, indications for emergent referral, expected time frame for initial follow-up, prognosis, and late complications of the following disorders:
   
   * e) Pelvic wing fractures
   * f) Isolated pubic ramus fractures
   * g) Coccyx fractures
   * h) Pelvic avulsion fractures

3. Outline the typical mechanism, clinical findings, radiologic appearance, initial stabilization, early complications, and appropriate timing of referral for the following injuries:
   
   * i) Acetabular fractures.
   * j) Open book fractures
   * k) Lateral compression fractures
   * l) Straddle fractures
   * m) Vertical shear fractures

4. Discuss the effects of a pelvic fracture on abdominal examination findings and DPL results.
5. Perform external stabilization of unstable pelvic fractures with the use of a sheet.
6. Describe the role and timing of angiography and embolization in hemorrhage due to pelvic fractures.

**HIP AND THIGH INJURIES**

**Situation:**
A 76-year-old female presents after falling. She can no longer weight bear on her left leg.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Identify and provide initial management of common injuries of the hip and thigh with attention to identification and prevention of complications.
2. Provide for appropriate follow up and/or specialist consultation for injuries of the hip and thigh.

**Enabling Objectives:**
1. Demonstrate knowledge of the clinical and radiological anatomy of the hip and femur.
2. Describe the typical mechanism, clinical findings, radiological appearance, relevant classification (if any), initial management, early complications, indications for emergent referral, expected time frame for initial follow-up, prognosis, and late complications of the following disorders:
a) Avulsion fractures of the greater trochanter
b) Posterior dislocation of a total hip prosthesis
c) Hamstring strains
d) Hip adductor strains
e) Undisplaced stress fractures of the femoral neck

3. Outline the typical mechanism, clinical findings, radiological appearance, initial stabilization, early complications, and appropriate timing of referral for the following injuries:
   a) Posterior dislocation of the hip
   b) Anterior dislocation of the hip
c) Femoral neck fractures – Garden I through IV
d) Intertrochanteric fractures
e) Greater trochanteric fractures
f) Subtrochanteric fractures
g) Femoral shaft fractures
h) Quadriceps tendon rupture
   i) Avulsion fracture of the lesser trochanter
   j) Femoral condyle fractures

KNEE INJURIES

Situation:
A 19-year-old male presents with a swollen left knee after being tackled during a football game.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Perform a thorough and systematic history and examination of the knee
2. Use evidence-based criteria for radiologic investigation of the knee
3. Identify and provide initial management of common injuries of the knee with attention to identification and prevention of complications.
4. Provide for appropriate follow up and/or specialist consultation for injuries of the knee.

Enabling Objectives:

1. List the bony and ligamentous structures of the knee, describe their function, and identify their location with respect to surface landmarks and locations of tenderness when injured.
2. Identify the locations of all major arteries and nerves crossing the knee joint.
3. Perform appropriate examination maneuvers to identify joint effusions, ligament injuries, meniscal injuries, tendon injuries and neurovascular injuries.
4. Discuss the criteria and limitations of the Ottawa rules for radiological evaluation of knees, and demonstrate their use.
5. Describe the typical mechanism, clinical findings, radiologic appearance, relevant classification (if any), initial management, early complications, indications for
emergent referral, expected time frame for initial follow-up, prognosis, and late complications of the following disorders:

a) Patellar dislocation

b) Undisplaced patellar fracture

c) Undisplaced tibial tuberosity fractures

d) Collateral ligament sprains: 1° and 2°

e) Incomplete anterior cruciate ligament (ACL) and posterior cruciate ligament (PCL) sprains

f) Meniscal injury

g) Patellar tendonitis

6. Outline the typical mechanism, clinical findings, radiologic appearance, initial stabilization, early complications, and appropriate timing of referral for the following injuries:

a) Displaced patellar fractures

b) Displaced tibial tuberosity fractures

c) Patellar tendon ruptures

d) Knee joint dislocations

e) Acute ACL tears

f) Locked knee

g) Tibial spine fractures

h) Tibial plateau fractures

**LOWER LEG INJURIES**

**Situation:**
A 22-year-old female presents with deformity of her distal tibia after falling off her horse.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:

1. Identify and provide initial management of common injuries of the lower leg with attention to identification and prevention of complications.

2. Provide for appropriate follow up and/or specialist consultation for injuries of the lower leg.

**Enabling Objectives:**

1. Describe the typical mechanism, clinical findings, radiologic appearance, relevant classification (if any), initial management, early complications, indications for emergent referral, expected time frame for initial follow-up, prognosis, and late complications of the following disorders:
   
a) Proximal fibular fractures

b) Fibular shaft fractures

c) Gastrocnemius strain

d) Shin splints

2. Outline the typical mechanism, clinical findings, radiologic appearance, initial stabilization, early complications, and appropriate timing of referral for the following injuries:
a) Tibial shaft fractures
b) Tibiofibular fractures
c) Maisonneuve’s fracture

ANKLE INJURIES

Situation:
A 24-year-old male presents after rolling over on his ankle while walking down stairs.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Identify and provide initial management of common injuries of the ankle with attention to identification and prevention of complications.
2. Use evidence-based criteria for radiological investigation of the ankle.
3. Provide for appropriate follow up and/or specialist consultation for injuries of the ankle.

Enabling Objectives:
1. Describe the ligamentous and bony structures that maintain integrity of the ankle mortise and subtalar joints.
2. Discuss the criteria and limitations of the Ottawa rules for radiological evaluation of ankles, and demonstrate their use.
3. Outline the principles of unilateral vs bilateral injury of ankle structures and any displacement of the ankle mortise in assessing ankle injuries for instability.
4. Explain why the presence of any deltoid ligament tenderness demands palpation of the full length of the fibula.
5. Describe the typical mechanism, clinical findings, radiologic appearance, relevant classification (if any), initial management, early complications, indications for emergent referral, expected time frame for initial follow-up, prognosis, and late complications of the following disorders:
   a) Isolated lateral collateral ligament sprain
   b) Isolated deltoid ligament sprain
   c) Lateral malleolar fracture distal to the tibiotalar joint
   d) Lateral malleolar fracture at the level of the tibiotalar joint
   e) Undisplaced isolated posterior malleolar fractures involving less than 25% of the joint surface
6. Outline the typical mechanism, clinical findings, radiologic appearance, initial stabilization, early complications, and appropriate timing of referral for the following injuries:
   a) Lateral malleolar fractures proximal to the tibiotalar joint
   b) Tibiotalar dislocation or fracture-dislocation
   c) Bimalleolar or trimalleolar fractures
   d) Pilon fractures
   e) Displaced or large posterior malleolar fractures
   f) Osteochondral fractures of the talar dome
g) Achilles tendon rupture

**FOOT INJURIES**

**Situation:**
A 40-year-old construction worker presents after falling six meters onto his foot.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Identify and provide initial management of common injuries of the ankle with attention to identification and prevention of complications.
2. Provide for appropriate follow up and/or specialist consultation for injuries of the ankle.

**Enabling Objectives:**
1. Demonstrate knowledge of the anatomy of the foot.
2. Describe the typical mechanism, clinical findings, radiologic appearance, relevant classification (if any), initial management, early complications, indications for emergent referral, expected time frame for initial follow-up, prognosis, and late complications of the following disorders:
   a) Nondisplaced extraarticular calcaneal fractures
   b) Extraarticular navicular fractures
   c) Nondisplaced second through fifth metatarsal shaft fractures
   d) Extraarticular or minimally displaced 5th metatarsal tuberosity fractures
   e) Phalangeal fractures
   f) Metatarsophalangeal and interphalangeal dislocations
   g) Puncture wounds to the sole of the foot
3. Outline the typical mechanism, clinical findings, radiologic appearance, initial stabilization, early complications, and appropriate timing of referral for the following injuries:
   a) Calcaneal fractures
   b) Talar fractures
   c) Subtalar dislocations
   d) Intraarticular navicular fractures
   e) Lisfranc fractures and dislocations
   f) Displaced 5th metatarsal tuberosity fractures
   g) 5th Metatarsal diaphyseal fractures (Jones fractures)

**STRESS FRACTURES**

**Situation:**
A 28-year-old marathon runner has been having increasing pain in her foot while training.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Identify and appropriately manage stress fractures of the lower limb

**Enabling Objectives:**
1. Describe the etiology of, and risk factors for the development of stress fractures.
2. List the most common sites of stress fractures of the lower limb.
3. Describe the investigation of suspected stress fractures, including required work-up when initial radiographs are normal.
4. Discuss the treatment and prognosis of the common stress fractures of the lower limb.

**SPINAL INJURIES**

**CERVICAL SPINE INJURIES**

**Situation:**
A 54-year-old man presents after falling 10 meters from a ladder. He arrives immobilized on a cervical spine board with a cervical collar in place, and complains of severe neck pain and paralysis of both legs.

**Terminal Objectives:**
The competent resident will:
1. Identify patients at risk of symptomatic and occult cervical spine (C-spine) injuries.
2. Investigate suspected C-spine injuries using evidence-based decision rules.
3. Treat identified cervical spine injuries with attention to acute and chronic complications of the injury.

**Enabling Objectives:**
1. Demonstrate knowledge of the anatomy, radiologic anatomy, and neuroanatomy of the cervical spine and the individual cervical nerve roots.
2. Describe the motor deficits and sensory levels associated with each level of C-spine cord injury.
3. Demonstrate an appropriate clinical examination of a patient with potential cervical spine or cord injury.
4. Using an evidence-based decision rule, list the criteria for C-spine radiographs in neck injuries.
5. Demonstrate the proper technique of immobilizing potential C-spine injuries, including methods of transferring and rolling patients.
6. Demonstrate expertise in evaluating cervical spine radiographs in trauma patients, including adequacy of radiographs and a detailed approach to detecting injuries.
7. Identify circumstances where injury may exist despite normal radiographs, and order appropriate investigations when indicated.
8. Demonstrate knowledge of the general classification of cervical spine fractures and dislocations.
9. Identify and prevent early and late complications of a fracture or dislocation of the cervical spine with spinal cord injury.
10. Describe the etiology and clinical presentation of the central cord contusion syndrome.

**THORACIC AND LUMBAR SPINAL INJURIES**

**Situation:**
A 78-year-old woman had a minor fall down the stairs and now has acute onset of back pain.

**Terminal Objectives:**
The competent resident will:
1. Identify patients at risk of thoracic and lumbar spinal injuries.
2. Investigate, stabilize and provide appropriate ED management of thoracic and lumbar spinal injuries.
3. Arrange appropriate referral and follow-up for thoracic and lumbar spinal injuries.

**Enabling Objectives:**
1. Demonstrate knowledge of the anatomy, radiologic anatomy, and neuroanatomy of the thoracic and lumbar spine and the individual cervical nerve roots.
2. Describe the motor deficits and sensory levels associated with each level of thoracic and lumbar cord injury.
3. Review the risk factors for compression fractures in the elderly.
4. Demonstrate an appropriate clinical examination of a patient with potential thoracic and lumbar spine or cord injury.
5. Demonstrate expertise in evaluating thoracic and lumbar spine radiographs in trauma patients, including adequacy of radiographs and a detailed approach to detecting injuries.
6. Identify thoracic and lumbar fractures that are unstable or have associated complications and require specialist consultation.
7. Discuss the medical treatment of compression fractures.
Principle No. 3: FAMILY MEDICINE IS COMMUNITY-BASED

EMERGENCY MEDICAL SERVICES

LOCAL EMS CARE

Situation:
A new physician arrives in a small city of 20,000 people. Local community representatives appeal to him to help upgrade the BLS system to a more "advanced" ALS system.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Describe the key features and functioning of an EMS system.

Enabling Objectives:
1. Describe the response phases in prehospital care.
2. Discuss the differences found in rural versus urban EMS systems.
3. Outline the medical interventions that each level of EMS provider may perform.
4. Discuss the components of an EMS dispatch (EMD) system.
5. Discuss the roles and responsibilities of the EMS director.
6. Define direct (on-line) and indirect (off-line) medical control of prehospital care.
7. Demonstrate the ability to make appropriate decisions about the best mode of transport in a variety of situations and utilizing available resources.

REGIONAL TRAUMA CARE

Situation:
1. A physician is practicing in a town of 3000 people that is 75 kilometers away from a large urban center. A single vehicle rollover has occurred, and she is attending to a single patient with multisystem trauma.
2. A 34-year-old male sustains a head injury (GCS8) with lateralizing signs and a flail chest after a fall. He requires air evacuation to a trauma hospital 1 hour away.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Describe the components of a regionalized trauma care system.

Enabling Objectives:
1. Recognize and describe the features of high-risk trauma.
2. Contrast regional stabilization with the concept of direct transport to trauma centers.
3. Describe the steps necessary to prepare the patient for ground or air transport.
4. Describe the advantages and disadvantages of air or ground transport.
5. Describe the effect of altitude on:
   a) \( \text{PO}_2 \)
   b) \( \text{O}_2 \) saturation monitoring
   c) Endotracheal tubes
   d) Trapped air spaces
6. Describe the features of a Quality Improvement program within a prehospital care system.

**DISASTER MEDICINE**

**Situation:**
A car/bus accident has occurred. A total of 26 people are injured. Resources: 2 major (trauma) hospitals 30 minutes away, 2 smaller hospitals 20 and 45 minutes away.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Understand prehospital and hospital response to disasters and mass-casualty incidents

**Enabling Objectives:**
1. Define a disaster and a mass-casualty incident.
2. Describe the prehospital response to a mass-casualty incident.
3. List the facilities, organizations and agencies that should be involved in disaster planning
4. Describe the stages of an ED response to a mass casualty incident.
5. Describe the four-color ED triage categories.

**ORGAN DONATION**

**Situation:**
A 17-year-old motorcyclist was brought to the ED following a high-velocity collision with a transport trailer. He has a persisting GCS of 3 following resuscitation. His CT shows massive intracranial bleeding. His parents arrive in the ED after he has been admitted to the ICU.

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Recognize situations for potential organ donation.
2. Identify the role for physicians in the ED in procuring organs for donation.

**Enabling Objectives:**
The competent resident will demonstrate the ability to:
1. List the tissues and organs that may be donated for transplantation purposes.
2. List the relative and absolute contraindications to organ donation.
4. Facilitate the decision making process for next of kin by providing information in a supportive, respectful manner.
**Principle No. 4: THE FAMILY PHYSICIAN IS A RESOURCE TO A DEFINED PRACTICE POPULATION**

**RESOURCE TO PATIENTS WITHIN AN EMERGENCY DEPARTMENT**

**TRIAGE AND ACUITY SCALES**

**Situation:**
A 52-year-old man comes to the triage desk complaining of central chest pain for the last hour. He is systemically well and thinks he has “heartburn”. Immediately following this is a 19-year-old female presenting with complaints of lower abdominal pain.

**Terminal Objectives:**
The competent resident will be able to:
1. State the principles and goals of triage based on the use of a standardized ED triage instrument.

**Enabling Objectives:**
1. Describe the types of illnesses falling into triage categories I-V in the Canadian Triage and Assessment Scale.
2. Understand the time objectives related to distinct triage levels.
3. Appreciate the nuances of triage in a pediatric and rural setting.
4. Conduct the investigation and management concomitantly of a number of ill and injured patients at any given time.

**COMMUNITY RESOURCES**

**Situation:**
1. An elderly male presents to the ED with his 82-year-old wife. She is weak but after investigations she is deemed to be well enough to be discharged with appropriate community support and follow-up. She has been a primary care provider for him, and he is unsure how he will look after himself or her.
2. A father brings a 2-year-old to the ED. The child has eaten leaves from a decorative plant.

**Terminal Objectives:**
The competent resident will be able to:
1. Demonstrate knowledge of community resources available to ED patients, and understand how to access and utilize them.
Enabling Objectives:
1. List the resources available in their community for the ongoing care of patients that are not admitted into an acute care institution.
2. Demonstrate skills in initiating and choosing follow-up care with the patient’s family physician or appropriate specialist.
3. Demonstrate skills in arranging care for patient’s home or non-acute facilities.
4. Demonstrate skills in consulting Social Services.
5. Have a working knowledge on accessing and using regional poison control centers.

CRISIS INTERVENTION

Situation:
A 32-year-old female presents with her 2 children and states she wants to leave her alcoholic verbally abusive husband and does not know what to do.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Recognize those patients who are in crisis and appropriately manage their disposition.

Enabling Objectives:
1. Understand the principles of crisis intervention and techniques for management.
2. List available resources to the patient whom is in crisis.
3. List tactics available to the physician to effectively manage the work stress related to his/her crisis involvement.

ABUSE AND ASSAULT

Situation:
An upset mother brings in her 4-year-old daughter and states that the daughter told her that her uncle was touching her “down there”.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Identify and manage incidences of child, adult and elderly abuse presenting to the ED
2. Successfully perform a history and physical examination of an abused male or female victim, including children and the elderly.
3. Demonstrate knowledge of the medical issues relating to sexual assault.

Enabling Objectives:
1. Elicit and interpret the historical features, symptoms and signs of physical and emotional abuse or neglect.
2. Identify specific injuries that are suggestive or characteristic of non-accidental trauma.
3. Describe typical patterns of trauma on a child due to physical assault.
4. Report cases of suspected child abuse to the appropriate agencies.
5. Explain Münchhausen Syndrome by Proxy.
6. Describe useful techniques that will enable a physician to perform a sexual assault examination on a child.
7. List the components of a sexual assault examination.
8. List treatments for prophylaxis of pregnancy, STD transmission, Hepatitis B, and HIV transmission.
9. Identify the indicators of domestic abuse and manage these patients.
10. Identify indicators of elder abuse and manage these patients.

RESOURCE TO PATIENTS, EMERGENCY DEPARTMENT CARE PROVIDERS, AND ADMINISTRATORS

EVIDENCE-BASED EMERGENCY MEDICINE (EBEM)

Situations:
1. A controversy regarding patient management (either in terms of diagnosis, therapy or prognosis) arises during a clinical shift.
2. A letter arrives from the diagnostic imaging department chastising acute care physicians on the inappropriate use of a diagnostic test i.e. helical CT in the evaluation of flank pain.
3. A regional health board audit of emergency patients with pneumonia reveals that the admission rate is twice the provincial average; an action plan to reduce the problem is requested.

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Apply the principles of EBEM into daily clinical practice as well as non-clinical activities (i.e. research, teaching and administration)

Enabling Objectives:
1. Identify the elements of the information cycle i.e. the components of the EBEM approach.
2. Describe the most important issues of diagnosis, prognosis, therapy and harm that arise from clinical scenarios.
3. Formulate a focused clinical question relating to these issues.
4. Demonstrate the ability to locate relevant scientific literature.
5. Classify various types of studies based on a hierarchy of evidence.
6. Use critical appraisal skills to draw sound conclusions that may be incorporated into clinical practice.
7. Understand the use of principles of EBEM to formulate research questions and describe research methodology that will address a focused clinical question.
8. Outline the principles of quality assurance as they relate to the practice of emergency medicine.
PERSONAL AND PROFESSIONAL EFFECTIVENESS

PROFESSIONAL DEVELOPMENT

CONTINUING MEDICAL EDUCATION

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Understand the principles of continuing medical education.
2. Describe an appropriate approach to maintaining skills and knowledge.

Enabling Objectives:
1. Define continuing medical education.
2. Describe several formats available as continuing medical education endeavors.
3. Contrast the time efficiency of reading journals with subscriptions to review journals and abstracting services.
4. Demonstrate a basic approach to literature searches and systematic reviews.

PRACTICE ARRANGEMENTS & FINANCIAL MANAGEMENT

Terminal Objectives:
The competent resident will demonstrate the ability to:
1. Understand emergency medicine practice arrangements.
2. Understand typical financial arrangements for practicing medicine in an ED setting.

Enabling Objectives:
1. Understand basic physician-employee contract agreements
   a. nature of the employer-employee relationship
   b. qualifications
   c. job description
   d. length of the contract
   e. scheduling
   f. liability
   g. reasons for termination
2. Describe the difference between associates and partners
3. Define the following terms:
   a) Fee-for-service
   b) Group billing
   c) Contracted hourly rate
   d) Yearly salary
4. Define billing codes and diagnostic codes and give examples of each.
5. Understand basic principles of taxation.
6. Identify basic principles of malpractice insurance.
7. Understand retirement planning and financial accounts.
8. Identify work-related expenses and deductions.
9. Understand basic models of hospital administration

**PERSONAL ISSUES**

**Terminal Objectives:**
The competent resident will demonstrate the ability to:
1. Recognize and manage health issues related to emergency medicine work.

**Enabling Objectives:**
1. Identify supportive strategies in the planning of shift work.
2. List recommendations to assist in the health maintenance of shift workers
3. Identify issues in stress management
   a. malpractice litigation support
   b. conflict resolution techniques
   c. preventative physical health care
   d. relaxation techniques
4. Identify physicians at risk for substance abuse
5. Identify physician behavior suspicious for substance abuse
6. Outline intervention strategies for physicians involved in substance abuse
7. Identify physicians at risk for work addiction
8. Identify physician behavior indicative of work addiction
9. Outline intervention strategies for work-addicted physicians