Learning objectives:
Chief Complaint: 6 yo girl with nonspecific periumbilical abdominal pain and loose stools

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Understand normal bowel patterns at all ages.
- Recognize the clinical features associated with fecal overflow incontinence.
- Understand the physiologic effects of stool retention.
- Understand the pathophysiology of fecal overflow incontinence and functional encopresis.
- Recognize co-morbidities commonly associated with encopresis.
- Plan the appropriate management of constipation of various etiologies.
- Understand the correct evaluation for chronic constipation and distinguish functional from organic causes.
- Delineate the risk factors for chronic constipation, strong and weak factors, and be able to recognize the possible complications, their likelihood, and timeframe.
- Understand the benefits of diagnostic tests and when to consider using them.
- Delineate differential diagnosis, establish differentiating signs and symptoms, and differentiating tests.

Learning objectives:
Chief Complaint: 15 yo with 8-day history of fever, sore throat, malaise, and fatigue

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Recognize the potential complications of Epstein-Barr virus infection in normal and immunocompromised children of various ages.
- Understand the significance of a rash following ampicillin therapy in patients with infectious mononucleosis.
- Recognize exudative pharyngitis and tonsillitis associated with EBV infectious mononucleosis.
- Recognize bilateral cervical lymphadenopathy associated with EBV infectious mononucleosis.
- Identify palatal petechiae associated with EBV infectious mononucleosis.
- Identify the Ampicillin-induced generalized rash in a patient with EBV infectious mononucleosis.
- Understand the natural history of EBV.
- Comprehend the most severe complications of EBV infections.
- Understand that in addition to primary EBV infection, IM can also be caused by primary HIV, human herpesvirus 6, cytomegalovirus, or Toxoplasma gondii infection.
- Recognize the differential diagnosis of exudative pharyngitis also includes group A Streptococcus and other viral enanthems such as adenovirus and enterovirus.

Learning objectives:
Chief Complaint: 24-month-old health supervision visit

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Complete neurologic assessment, consisting of a focused clinical history, detailed neurologic exam, and general PE that focuses on features that may be related to neurologic disease.
- Obtain history in infants and children which should include information about prenatal exposures and symptoms and assessment of developmental milestones.
- Recognize that observations of infants and toddlers during play can provide valuable information about the patient's attention span, joint attention, babbling, speech, gross and fine motor coordination, and problem-solving abilities. These higher cortical functions are also assessed with a series of questions appropriate to the child's age.
- Recognize each cranial nerve (CN) is tested by performance of a specific motor or sensory test. Also recognize that testing in infants is often by observation for specific movements and responses which are less reliable.
- Understand that the patient should be observed for abnormalities of posture and movements, including asymmetry at rest, fisting of the hand, frog-legged position suggesting hypotonia, tremor, myoclonus, or tics.
- Understand that muscle tone is the resistance felt upon passive movement of a joint through its range of motion. And that Hypotonia is characterized by decreased resistance to passive movement and hyperextension at the joints and can be either spastic in nature or characterized by muscle rigidity.
- Understand that a sensory examination in young children is often imprecise, and only gross deficits can be detected.
- Understand that in children older than 5-6 years, sensory function is evaluated in the same manner as in an adult.
- Recognize developmental reflexes (also known as primitive reflexes) appear at a certain time, during the course of brain development, and normally disappear with progressive maturation of cortical inhibitory functions. Also, the persistence of primitive reflexes beyond the time by which they should have disappeared may be an early clue to cerebral palsy.
- Delineate which elements of the general physical examination may provide clues to the diagnosis of childhood neurologic disorders. Important features include facial dysmorphism, abnormalities of skin pigmentation, color and texture of hair, breath odor, hepatosplenomegaly, and evidence of cardiac disease.

Learning objectives:
Chief Complaint: 8 yo health supervision visit

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Analyze and understand normal puberty (The Basics) and the SEQUENCE OF PUBERTAL MATURATION.
- Identify the correct TIMING OF PUBERTAL EVENTS.
- Understand the PHYSIOLOGY AND ENDOCRINOLOGY OF PUBERTY.
- Understand how to realize the pediatric physical examination: in particular “The perineum”
- Student will recognize:
    - a. Sexual maturity rating of breast development in girls
    - b. Sexual maturity rating of pubic hair in girls
    - c. Sexual maturity rating of pubic hair and genitalia in boys
- Understand definition, etiology, and evaluation of precocious puberty.
- Recognize the approach to the patient with delayed puberty.
- Recognize normal puberty and related health concerns: anemia, gynecomastia, acne, physiologic changes, musculoskeletal injuries, gynecologic consequences, myopia, scoliosis, STD’s.
- Recognize how pubertal timing affects risks for a number of adult conditions.
- Identify sexual maturity rating of secondary sexual characteristics.

Learning objectives:
Chief Complaint: 12 yo with hyperglycemia and hyperkalemia

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Recognize the clinical features of diabetic ketoacidosis in children.
- Recognize and identify the proper management of a child with diabetic ketoacidosis.
- Understand the pathophysiology related to ketoacidosis and diabetes.
- Understand the relationship between diabetes ketoacidosis, hypokalemia, and other electrolyte imbalances.
- Understand the mechanism of metabolic acidosis during diabetes.
- Understand the diagnostic test to consider and results to be expected in patients with diabetic ketoacidosis.
- Distinguish between all types of conditions that can cause hypoglycemia and acidosis in children. Differentiate their signs and symptoms and identify tests to consider.
- Delineate the main goals of treatment, restoration of volume deficit, resolution of hypoglycemia and ketosis/acidosis, and correction of electrolyte abnormalities.
- Recognize precipitating event(s) and prevention of complications.
- Understand the prognosis and adequate monitoring of patients who developed DKA, and the necessary instructions for patients with diabetes.

Learning objectives:
Chief Complaint: 3 yo with fever, drooling, and a muffled voice

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Recognize the anatomic location where the retropharyngeal abscess occurs.
- Understand the related epidemiology surrounding retropharyngeal abscesses.
- Recognize the most common microorganisms implicated in the etiology of retropharyngeal abscess.
- Delineate possible implicating factors that could develop in the occurrence of retropharyngeal abscess.
- Understand the pathophysiology surrounding the developing of abscesses in the retropharyngeal space of the neck.
- Delineate conditions associated with the developing of abscesses in the retropharyngeal space as well as their presentation among children and adults.
- Recognize the typical presenting signs and symptoms related to abscesses in the neck with or without airway compromise.
- Delineate the recommended laboratory investigations necessary to confirm the presence of an abscess.
- Delineate the correct radiologic investigations required to confirm the diagnosis.
- Understand the criteria necessary to recommend surgery in patients with retropharyngeal abscess.

Learning objectives:
Chief Complaint: 12-day-old infant with skin lesions for 2 days

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Recognize neonatal herpes virus (HSV) infections in neonates.
- Recognize the modes of transmission of HSV in neonates.
- Understand the consequences of intrauterine infections associated with HSV.
- Delineate the presentation of HSV in survivor infants from congenital HSV.
- How to classify neonatal HSV infections.
- Delineate the methods of diagnosis of HSV in infants.
- Interpretation of diagnostic testing for HSV in neonates.
- Perform comprehensive evaluation for all neonates with suspected or proven HSV infection.
- Delineate the differential diagnosis of HSV infections in neonates, including infectious and noninfectious conditions.
- Understand how to select appropriate therapy for neonatal HSV and when to implement empiric therapy.

Learning objectives:
Chief Complaint: 16 yo with new onset confusion

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Evaluate children and adolescents with direct blows to the head.
- Understand the criteria used to classify mild traumatic brain injury in children.
- Delineate the most common causes of concussion in children.
- Understand the appropriate diagnostic approach for these cases.
- Delineate the most important factors affecting the outcome of children with head concussions.
- Identify the key diagnostic factors in cases of head trauma.
- Understand the criteria for when to order imaging in cases of head trauma.
- Delineate the differentiating signs and symptoms with other differential diagnosis.
- Use different diagnostic tools to assess the severity of head trauma.
- Apply the appropriate treatment approach and prevention guidelines.

Learning objectives:
Chief Complaint: Newborn with rapid shallow respirations and peripheral cyanosis after birth

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- The etiology, evaluation, and initial management of the newborn with cyanosis will be reviewed here. Peripheral cyanosis may be associated with peripheral vasoconstriction, or many causes associated with central cyanosis.
- Neonatal central cyanosis is most commonly due to hypoxia due to one or more of the following mechanisms: Alveolar hypoventilation, Ventilation-perfusion mismatch, Right-to-left shunt, Diffusion impairment.
- The following factors can affect the detection of cyanosis: Hemoglobin concentration, Fetal hemoglobin, Skin pigmentation, Physiological conditions that affect oxygen dissociation curve.
- Peripheral cyanosis is due to increased oxygen extraction that results from sluggish movement of blood through capillary circulation. Causes include cold exposure and benign acrocyanosis, shock, sepsis, elevated venous pressure or venous obstruction, polycythemia.
- Causes of central cyanosis in the newborn can be categorized based on their primary pathophysiology: hypoventilation, ventilation/perfusion mismatch, diffusion impairment, right-to-left shunting, and hematologic disorders.
- Most airway abnormalities will present shortly after birth; cyanosis is generally a result of alveolar hypoventilation secondary to airway obstruction: Choanal atresia, Micrognathia or retrognathia, Laryngeal and tracheal abnormalities.
- Hematologic causes of inadequate transport of oxygen causes cyanosis, like Hemoglobinopathies and Polycythemia.
- The goals of evaluation are to identify and provide supportive care to the critically or potentially critically ill infant and determine the underlying cause of neonatal cyanosis. Evaluation of the cyanotic infant should systematically assess the infant for airway, pulmonary, cardiovascular, or other causes.
- The initial laboratory testing includes measurement of arterial oxygenation, complete blood count, blood glucose, blood culture and a chest radiograph.
- Newborns with persistent central cyanosis after birth should be promptly evaluated, and empirical treatment should be initiated until the underlying cause is determined. Overview of all the recommended managements is discussed here.

Learning objectives:
Chief Complaint: 9 yo with progressive muscle weakness

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Understand the epidemiology, clinical features, and diagnosis of GBS in children.
- Understand the pathogenesis of Guillain-Barré syndrome (GBS).
- Guillain-Barré syndrome (GBS) is a clinical syndrome with a number of variant forms. Understand the various presentations of GBS.
- Recognize Guillain-Barré syndrome (GBS) to be a heterogeneous syndrome with several variant forms. (Historically, GBS was considered a single disorder)
- Recognize the typical clinical features of GBS, as progressive, mostly symmetric, or modestly asymmetric muscle weakness and absent or depressed deep tendon reflexes.
- Understand the supportive features for the diagnosis, including CSF, electrodiagnostic studies, MRI, and use of antibodies.
- Recognize that disorders of the central nervous system, peripheral nerve, neuromuscular junction, and muscle may have features that initially resemble Guillain-Barré syndrome.
- Understand the main modalities of therapy for Guillain-Barré syndrome.
- Understand the prognosis that is expected in children.

Learning objectives:
Chief Complaint: 2 ½ yo girl with delayed language performance on a developmental screening test

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Understand the correct definition of poor weight gain.
- Epidemiology of poor weight gain, be able to define medical risk factors as well as psychological risk factors.
- Determine the initial evaluation of children with mild to moderate malnutrition, focusing on the age of onset, associated symptoms, and possible feeding problems.
- Determine the initial evaluation of children with moderate to severe malnutrition, with emphasis and more intensive investigation of medical, nutritional, and social factors.
- Delineate the possible etiologic factors of failure to thrive or undernutrition based on inadequate intake, increase caloric demand, and expenditure or inefficient utilization of calories or loss of calories.
- Correct interpretation of growth data, and the correct diagnosis of FTT based on growth charts data.
- Diet and feeding detailed information required, as well as specific areas of inquiry of the dietary history including feeding problems, structural abnormalities on the child, food preferences, excessive consumption of artificial sweeteners, and dietary restrictions and dietary beliefs and practices.
- Evaluation of the psychosocial history, including poverty and food insecurity, parenting skills and nutrition knowledge, psychosocial stressors and access to resources, maternal factors, and child neglect.
- Important aspects of the physical examination in the evaluation of poor weight gain in children.
- Diagnostic evaluation: laboratory tests and imaging studies, selective screening studies for initial tests, additional and advanced tests recommended.

Learning objectives:
Chief Complaint: 6 yo boy with nasal discharge

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Understand that rhinosinusitis is inflammation of the mucosal lining of one or more of the paranasal sinuses. Such inflammation is common during viral upper respiratory infections (URI) but usually resolves spontaneously. Acute bacterial rhinosinusitis (ABRS) occurs when there is secondary bacterial infection of the sinuses.

- The clinical features and diagnosis of ABRS in children. The diagnosis of uncomplicated ABRS can be made clinically in children with symptoms and signs of sinus inflammation (i.e., daytime cough, nasal symptoms, or both) and one of the following presentations.
    - Symptoms present without improvement for >10 and <30 days, or
    - Severe symptoms (i.e., ill appearance, temperature ≥39°C [102.2°F], and purulent nasal discharge for ≥3 consecutive days), or
    - Worsening symptoms (i.e., increase in respiratory symptoms, new onset of severe headache or fever, or recurrence of fever after initial improvement).

- Viral URI and allergic rhinitis are the most frequent predisposing factors for ABRS in children. Less common predisposing factors include anatomic obstruction, mucosal irritants, and sudden changes in atmospheric pressure.

- The clinical course, particularly the persistence and severity of symptoms, helps to differentiate between ABRS and viral URI.

- Identify and distinguish characteristics of chronic rhinosinusitis (CRS).

- Recognize complications associated with acute sinusitis. ABRS may present with complications including preseptal (periorbital) and orbital cellulitis; orbital subperiosteal abscess; septic cavernous sinus thrombosis; meningitis; osteomyelitis of the frontal bone; and epidural, subdural, or brain abscess.

- PE findings and radiologic imaging studies do not distinguish viral from bacterial inflammation of sinus mucosa.

- Plan the appropriate diagnostic evaluation of acute sinusitis while recognizing the limitations of some modalities. Imaging studies are not necessary for children with uncomplicated ABRS. It is recommended that children with potential orbital or intracranial complications of ABRS undergo contrast-enhanced computed tomography imaging of the orbits, sinuses, and brain. Magnetic resonance imaging is an alternative.

- Recognize the differential diagnosis of ABRS includes uncomplicated viral URI, allergic or nonallergic rhinitis, nasal foreign body, enlarged or infected adenoids, mucosal cyst of the maxillary antrum, and the catarrhal stage of pertussis. These conditions can usually be distinguished from ABRS with history and examination, but imaging may be necessary to exclude structural abnormalities.

- Prompt initiation of antibiotics is necessary for children with ABRS and complications or suspected complications. For children with a clinical presentation that is compatible with uncomplicated ABRS, we suggest treatment with antimicrobial therapy rather than observation. Improvement and resolution of symptoms are more likely with antibiotic therapy. Usually initiate antimicrobial therapy at the time of presentation to medical attention. However, offer children with ABRS and 10 days of symptoms that are neither severe nor worsening the option of a three-day period of observation.

Learning objectives:
Chief Complaint: 16 yo girl emergency department evaluation

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Recognize the clinical findings associated with anorexia nervosa (AN) and the criteria for diagnosis and classification.
- Understand the pathogenesis and neurobiology related to anorexia nervosa.
- Understand the components of the clinical evaluation, including:
    - Height and weight
    - Frequent self-weighing
    - Present and past eating disorder symptoms
    - Fear of gaining weight or becoming fat
    - Self-evaluation, self-esteem, and perception of body weight and shape
    - Menstrual status
    - Prescription medications
    - Suicidality
    - Comorbid disorders
    - Psychological functioning
    - Prior treatments
    - Family history
- Learn the differential diagnosis for anorexia nervosa (AN) including medical conditions that may cause weight loss:
    - Bulimia nervosa
    - Avoidant/restrictive food intake disorder
    - Other specified feeding or eating disorders
    - Other psychiatric disorders: Unipolar major depression, social phobia, OCD, Body dysmorphic disorder, psychotic disorders 7+
    - ADD/ADHD
- Understand that the components of medical history are essential for the diagnosis of AN, as part of the medical evaluation.
- Understand which common physical signs need to be evaluated in cases of AN, as part of the medical evaluation.
- Recognize the essential laboratory tests indicated for all patients with AN.
- If the diagnosis of anorexia nervosa is not clear, the evaluation should account for general medical illnesses that can present with weight loss (tab, malabsorption, or secondary amenorrhea).
- Understand the established criteria based upon systematic reviews and clinical practice guidelines, which suggest inpatient hospitalization in a medical facility for adolescents and young adult patients.
- Delineate the possible complications of anorexia nervosa and the pathogenesis of refeeding syndrome.

Learning objectives:
Chief Complaint: 12 yo boy with a puncture wound

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Review the clinical aspects, management, and prevention of puncture wound infections.
- Recognize how soft tissue and systemic infections can also complicate intentional puncture injuries, such as body piercing or injection drug use.
- Identify the risk factors associated with infection after a puncture wound.
- Identify the variety of microorganisms that can be related with infections complicating puncture wounds.
- The spectrum of infectious complications following a puncture wound includes cellulitis, soft tissue abscess, septic arthritis, tenosynovitis, necrotizing soft tissue infection, and osteomyelitis.
- Understand that evaluation of a patient following a puncture wound includes a careful history.
- Identify risk factors for infection and other complications following a puncture wound.
- Examine the involved area for signs of infection and injury to the tendon, nerve or vascular structures, and assessment for retained foreign material.
- Decide when to perform imaging to evaluate for a foreign body.
- Understand that patients who develop puncture wound infections should be thoroughly evaluated for the presence of foreign bodies, know how to remove them, when to do debridement and drainage, and the selection of antibiotic therapy.

Learning objectives:
Chief Complaint: 3-month-old infant with a 4-day history of diarrhea and vomiting

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Understand the clinical assessment and diagnosis of hypovolemia in children.

- Recognize the most common sites for extracellular fluid loss:
    - Gastrointestinal tract (e.g., diarrhea, vomiting, bleeding)
    - Skin (e.g., fever, burns)
    - Urine (e.g., glucosuria, diuretic therapy, diabetes insipidus)

- Recognize that third-space fluid sequestration occurs in children with edema due to renal disease, liver failure, malnutrition, heart failure, or those with increased vascular permeability or patients with ascites.

- Differentiate between the terms volume depletion (hypovolemia) and dehydration.

- When assessing a child with hypovolemia, the clinician needs to address two issues:
    - The degree of extracellular fluid volume depletion
    - The type of fluid lost

- Identify how laboratory testing is useful for assessing the degree of volume depletion.

- Understand that rapid volume repletion is required in children with severe hypovolemia. Clinical assessment of hypovolemia is based upon physical signs that reflect the status of the effective arterial blood volume and include pulse, blood pressure, and skin turgor.

- Recognize that after severe volume depletion has been corrected with intravenous fluid, fluid repletion can continue with either continued intravenous fluid or oral rehydration therapy (ORT).

- Recognize the physical findings of volume depletion in infants and children.

- Recognize the clinical and laboratory abnormalities associated with isotonic, hypernatremic, and hyponatremic dehydration, and manage appropriately.

Learning objectives:
Chief Complaint: Discharge of a 2-day-old neonate born at 35 weeks

Upon completion of this exercise, the student should be able to show proficiency in the following learning objectives:

- Define jaundice and understand normal physiologic patterns in term and preterm newborns.
- Understand that clinical assessment consists of routine evaluation of the newborn for the onset and progression of jaundice while in the hospital.
- Determine if there are risk factors for severe neonatal unconjugated hyperbilirubinemia in term and late preterm infants.
- Understand the differences between physiologic jaundice in pre-term and full-term infants.
- Perform screening for hyperbilirubinemia and know the different choices for screening.
- Understand the therapeutic interventions (i.e., phototherapy and exchange transfusion) to reduce total serum/plasma bilirubin (TB) levels in the blood and potentially prevent bilirubin-induced neurologic dysfunction. Know the criteria for intervention based on severity assessment.
- Understand acute bilirubin encephalopathy and chronic bilirubin encephalopathy.
- Know that prior to discharge, risk assessment for severe hyperbilirubinemia should be performed, which (along with the age of the patient at discharge) guides the timing of the initial follow-up appointment.
- Understand the mechanism of breast-milk jaundice and manage appropriately. Recognize the association between breast-feeding and physiologic jaundice in the neonatal period.
- Plan the appropriate diagnostic evaluation of jaundice in a pre-term and full-term infant.