Thread Map: COM Pediatrics

# Overview:

Pediatrics is introduced in OST 520 – Foundations of Biomedical Science in semester 2. The pediatric curriculum is then continued throughout each semester’s systems course and the capstone offerings. Within each semester, pediatric content is integrated within the systems course to highlight normal growth and development, disease prevention, and childhood pathology.

After completion of the pre-clerkships arc, students will be prepared to demonstrate knowledge of pediatrics on COMLEX-USA Level 1. Students will also be prepared to enter the pediatric clerkship curriculum with a foundation in basic pediatric knowledge.

# Framework:

The American Academy of Pediatrics defines pediatrics/pediatricians as follows:

* “Pediatrics is the specialty of medical science concerned with the physical, mental, and social health of children from birth to young adulthood. Pediatric care encompasses a broad spectrum of health services ranging from preventive health care to the diagnosis and treatment of acute and chronic diseases. Pediatrics is a discipline that deals with biological, social, and environmental influences on the developing child and with the impact of disease and dysfunction on development. Children differ from adults anatomically, physiologically, immunologically, developmentally, and metabolically.”
* “A pediatrician is a physician who is concerned primary with the health, welfare, and development of children and is uniquely qualified for these endeavors by virtue of interest and initial training’
  + Reference: AAP Policy statement “Definition of a Pediatrician” in Pediatrics, April 2015.

**The thread map below includes the majority of the pediatric content in the curriculum. Given that some disease states are found in both adults and children, there may be some pediatric content found in other lectures as well.**

# Semester 2

OST 520- Foundations of Biomedical Science

Genetic Testing and Informed Consent – Dr. Azevedo

OST 521 – Musculoskeletal System

* Pediatric Orthopedics – Dr. Lissy
* Pediatric Rheumatology – Dr. Rosenberg
  1. Recall the general pathogenesis of rheumatic disease.
  2. Recall the definitions of arthritis, synovitis, enthesitis, myositis, serositis, and vasculitis.
  3. Recall the key components/finding history and physical examination.
  4. Recall the best way to diagnose a rheumatic disease and the supportive lab/imaging evaluation indicated.
  5. Recall the etiology, epidemiology, clinical presentation, diagnostic evaluation, differential diagnosis, treatment, complications, and prognosis of the following diseases.
     + Juvenile Idiopathic Arthritis (JIA)
     + Systematic Lupus Erythematosus (SLE)
     + Juvenile Dermatomyositis (JDM)
  6. Recall the common manifestations, diagnosis, treatment of musculoskeletal pain syndromes.
     + Growing pains
     + Benign Hypermobility
     + Myofascial Pain Syndromes and Fibromyalgia

OST 522 – Hematology, Oncology, and Infectious Disease

* Pediatric Hematology I – Dr. Greenberg
  1. Understand the physical exam findings in newborns with blood disorders.
  2. Understand the timing and reason for changes from fetal to adult hemoglobin and the physiologic anemia due to this.
  3. Name the causes of decreased red blood cell production and the causes of increase red blood cell destruction.
  4. Understand polycythemia including its etiology and treatment.
  5. Understand the issues with ABO blood group incompatibility and Rh blood group incompatibility.
  6. Understand the different types of Hyperbilirubinemia in newborns including the causes and treatments for each.
  7. Understand the different types of Coagulation disorders in the newborn period including evaluation and treatment
  8. Understand a few of the lymphocyte disorders in the newborn period including clinical manifestations presentations and treatment of these disorders
  9. Understand a few of the neutrophil disorders in the newborn period including clinical manifestations.

* Pediatric Hematology II – Dr. Boote
  1. Review embryologic development of hematopoiesis
  2. Understand the definition and significance of pediatric anemia.
  3. Recognize the significance of hemoglobin/hematocrit levels, reticulocyte count, MCV, MCH, and peripheral smear in different types of pediatric anemia.
  4. Use laboratory findings to classify different types of pediatric anemia.
  5. Recognize features of common causes of pediatric anemia.
* Pediatric Oncology – Dr. Rosenberg
  1. Know the epidemiology of pediatric cancer.
  2. Know how to take a history and assess a child suspected of having pediatric malignancy.
  3. Know the general diagnostic and treatment principles involved in pediatric oncology.
  4. Know the epidemiology of the major pediatric malignancies (leukemia, lymphoma, CNS tumors, Wilms tumor, sarcoma, neuroblastoma).
  5. Know the major clinical manifestations of the major pediatric malignancies.
  6. Know how to diagnose the major pediatric malignancies.
  7. Know general treatment strategies for the major pediatric malignancies.
  8. Know complications of the major pediatric malignancies.
  9. Know the prognoses of the major pediatric malignancies.
* Pediatric Infectious Disease Cases – Dr. Rosenberg

# Semester 3a

OST 523 – Neurological Systems

* Hypotonic Infant – Dr. Khalil
* Pediatric Headache – Neurology Faculty
* Pediatric Seizures – Neurology Faculty
* Central Nervous System Viral Infections – Dr. Rosenberg
  1. Goal: The goal of this lecture is to familiarize the students with viral infections that have predominately neurologic manifestations.
  2. Objectives: Know the virology, epidemiology, clinical manifestations, diagnosis, treatment, and prevention of the following.
     + Poliovirus
     + Rabies
     + Enteroviruses 70 and 71
     + Herpes Simplex
     + Arboviruses (West Nile Virus)

OST 524 – Psychopathology

* Adolescent Psychosocial Issues – Dr. Benbow
  1. Discuss key psychosocial issues that affect adolescents.
  2. Explore how to conduct adolescent psychosocial interviews.
  3. Identify risk factors for teen pregnancy.
  4. Identify how violence and bullying affect adolescents.
  5. Discuss substance use/abuse in teens.
  6. Recognize eating disorders that occur in adolescents.
  7. Identify circumstances in which adolescents have a right to confidentiality and right to consent to treatment.

# Semester 3b

OST 552 – OPC II

* Pediatric Physical Exam – OPC Faculty

OST 525 – Genitourinary System

* Hypospadias and Cryptorchidism – Dr. Harding

1. Describe the anatomy, epidemiology, embryology, pathophysiology, and clinical features of hypospadias, including typical physical exam findings, associated anomalies, and potential complications in children with hypospadias.
2. Explain why children with hypospadias should not be circumcised.
3. Describe the 3 phases of normal testicular descent and factors that can influence this process.
4. Describe the anatomy, epidemiology, embryology, pathophysiology and clinical features of cryptorchidism.
5. Describe the potential consequences of delayed diagnosis of cryptorchidism.
6. Formulate plans for appropriate diagnostic evaluation and treatment of clinical cases involving cryptorchidism.
7. Understand how to perform a physical exam on a pediatric patient.

* Reflux nephropathy and Urinary Tract Infections – Dr. Harding
  1. After completing of this learning activity, the student will be able to:
  2. Describe epidemiology, pathophysiology, host susceptibility factors (age, gender, periurethral colonization, preputial skin, native immunity, fecal colonization, GU abnormalities) and role of bacterial virulence as a cause of pediatric urinary tract infections.
  3. Compare and contrast the typical clinical signs and symptoms of UTI in infants vs. older children.
  4. Explain how anatomical abnormalities such as vesicoureteral reflux (VUR) and ureteropelvic junction (UPJ) obstruction allow bacteria renal access. Describe the association between the severity of vesicoureteral reflux (VUR grade) and the likelihood of spontaneous resolution of VUR in the pediatric population.
  5. Define vesicoureteral reflux (VUR) and reflux nephropathy including history, pathophysiology, association with pyelonephritis, and interventions that may help prevent renal damage.
  6. Define congenital ureteropelvic junction (UPJ) obstruction and obstructive nephropathy including history, pathophysiology, association with pyelonephritis, and interventions that may help prevent renal damage.
  7. Describe reflux nephropathy, including natural history, pathophysiology, association with pyelonephritis, and interventions that may help prevent renal damage.
  8. Describe the association between risk of renal scarring and:
  9. the grade of VUR
  10. the number of episodes of pyelonephritis
  11. the age of the patient
  12. the timing of diagnosis and antibiotic treatment of UTI
  13. Describe clinical limitations affecting specimen collection and processing for urinalysis and urine culture.
* Pediatric Nephrology – Dr. Benbow
  1. Identify differences in neonatal renal function as compared to older children and adults
  2. Describe congenital renal and urinary tract anomalies
  3. Discuss evaluation and management of hematuria and/or proteinuria in children
  4. Recognize the most common causes of glomerulonephritis in children
  5. Discuss diagnosis and management of hemolytic uremic syndrome
  6. Recognize the most common causes of nephrotic syndrome in children
  7. Identify systemic complications of chronic kidney disease

Development of the Kidney and Urogenital System – Nazaroff

Learning Objectives:

After completing this learning activity, the student will be able to:

1. Explain what occurs in the different stages of pronephros, mesonephros, and metanephros.

2. Describe the developmental basis of the following features of the urinary system: horseshoe kidney, pelvic kidney, duplicated ureters, typical anomalous renal arteries, urachal cysts & sinuses; urachal fistulas.

3. Describe the roles anti-Müllerian hormone (AMH) and testosterone have on the paramesonephric and mesonephric ducts, respectively.

4. Distinguish those structures of the female reproductive track derived from the paramesonephric duct from those derived from the uterovaginal plate; list the vestigial remnants of paramesonephric and mesonephric ducts in females.

5. List the possible uterine anomalies and how they form.

6. Describe Gartner cysts and how they form.

7. Specify the male homologues of the following features of the female genitalia: labia majora, labia minora, clitoris.

8. Explain the developmental basis of hypospadias.

OST 525 GU 2024

Review of Female and Male Reproductive Anatomy – Tilden

Learning Objectives

By the end of this session, learners will be able to:

1. • Describe the structures and features of the pelvic cavity and perineum and discuss the reproductive structures found in each
2. • Identify the structures and features of the female reproductive system and the ligaments that support these structures
3. • Trace and list the neurovasculature supply of the female reproductive structures
4. • Identify the structures and features of the male reproductive system
5. • Compare and contrast the relationships between the urinary and reproductive structures in the male and female anatomy
6. • Trace and list the neurovasculature supply of the male reproductive structures

OST 526 – Endocrine

* Pediatric Endocrinology – Dr. Kaufman

After completing this learning activity, the student will be able to:

1. Describe the anatomy (gross and microscopic), biochemistry, epidemiology, regulation, physiology, and pharmacology related to pediatric disorders of the endocrine system discussed during this lecture.
2. Describe the endocrine disorders associated with growth delay / growth failure and explain the pathophysiology of each.
3. Describe the feedback regulation of the growth hormone / IGF1 system and explain how other hormones, nutritional factors, and diseases interact with this system in regulating growth.
4. Compare and contrast the physiological role of IGF1, IGF2, and insulin in regulating growth.
5. Describe the pathophysiology and clinical manifestations of craniopharyngioma, including effects on anterior or posterior pituitary hormones.
6. Describe the pathophysiology and clinical manifestations associated with achondroplasia (fibroblast growth factor receptor 3 mutation) and Laron syndrome (GH receptor mutation).
7. Describe changes in the hypothalamic-pituitary-gonadal axis that occur during normal puberty.
8. Describe the sexual maturity rating (SMR) scale (Tanner stages) and the physical features that are evaluated.
9. Describe thelarche, pubarche, adrenarche, and menarche and the hormones involved in these processes. Describe the age ranges that are considered normal for these components of puberty.
10. Explain the hormonal basis for the pubertal growth spurt in girls and boys.
11. Describe constitutional delay of puberty.
12. Describe precocious puberty and the mechanism of action of luprolide in treating this disorder.
13. Explain the hormonal basis for the pubertal growth spurt in girls and boys.
14. Explain the effects of estrogens on the growth plate, on skeletal maturation and epiphyseal closure, and on accretion of bone mass.
15. Explain how bone maturation (bone age), epiphyseal closure, and bone mass would be affected in a boy treated with a drug that inhibits aromatase.
16. Explain the effects of an inactivating mutation of the estrogen receptor alpha (ER-α) on bone maturation (bone age), epiphyseal closure, and bone mass.
17. Describe the effects of glucocorticoid excess on GH secretion and action.
18. Describe the effects of glucocorticoid excess on the growth plate, mature bone, and body proteins.
19. Describe the epidemiology, genetic abnormalities, ovarian pathology, characteristic physical examination findings, and associated abnormalities of the cardiovascular and genitourinary systems in patients with Turner syndrome.
20. Describe the embryonic origin and normal secretory product of thyroid C cells. Describe the secretory products from medullary thyroid carcinomas (MTC) and list the two that can be used as “tumor markers.” Describe two symptoms that can result from ectopic secretory products of MTC.
21. Formulate a differential diagnosis based on the description of a pediatric patient with symptoms, signs, and/or results of diagnostic tests related to a disorder of the endocrine system, and explain the rationale for each disorder in the list of differential diagnoses.
22. Describe the endocrine and nutritional disorders that are associated with growth delay and/or short stature and the pathophysiology of growth impairment in each.
23. Describe common presenting signs and symptoms in children with acquired (not congenital) primary hypothyroidism.
24. Describe the consequences of untreated congenital hypothyroidism.
25. Compare and contrast growth chart findings (for height and weight) in the following disorders: hypothyroidism, growth hormone deficiency, Cushing syndrome, Turner syndrome, malnutrition.
26. Describe the types of presenting signs and symptoms and the hormone deficiencies that would most likely result from expansion of a craniopharyngioma.
27. Describe the differential diagnosis of primary amenorrhea and how the history, physical exam, and appropriate diagnostic tests can be used to narrow the differential diagnosis.
28. Describe the differential diagnosis of hypogonadotropic hypogonadism and compare this with the differential diagnosis of hypergonadotropic hypogonadism.
29. Describe the pathophysiology of hypoglycemia in children with Wilms tumor.
30. Compare and contrast the genetic and clinical features of multiple endocrine neoplasia (MEN) type 2A with MEN 2B. Explain what percentage of patients with MEN 2 syndromes eventually develop medullary thyroid carcinoma.
31. Choose the most appropriate diagnostic test or tests, explain the rationale for ordering each test, and predict the outcome of each test when provided with a description of a pediatric patient with a disorder involving the endocrine system.
32. Explain which diagnostic tests would permit one to distinguish between primary hypothyroidism due to thyroid dysfunction and hypothyroidism secondary to hypothalamic or pituitary dysfunction. Explain how you would interpret the results of these tests.
33. Explain the purpose of measuring antithyroid antibodies. Explain why serially measuring antibody titers is not clinically useful.
34. Compare and contrast the lab values that you would expect to find in health and disease (including pituitary insufficiency) based on feedback relationships between thyroxine and TSH, cortisol and ACTH, IGF-1 and GH, gonadotropins and gonadal hormones.
35. Describe the expected hormone changes in a patient with pituitary stalk compression from an expanding craniopharyngioma, and which combination of diagnostic test results would support the diagnosis of anterior pituitary insufficiency.
36. List factors that stimulate GH secretion. Explain why “provocative tests” are used in assessment of patients with suspected GH deficiency (instead of measuring baseline serum concentrations of GH).
37. Explain how a bone age test is performed, what information it can provide, and which disorders cause a “delayed bone age.”
38. Describe which diagnostic tests would be most appropriate in the evaluation of primary or secondary amenorrhea and how you would interpret their results.
39. Describe which diagnostic tests would be most appropriate in differentiating between hypogonadotropic and hypergonadotropic hypogonadism. Describe the results you would expect in a patient with Turner syndrome.
40. Describe how the diagnosis of Turner syndrome is confirmed and explain the rationale for additional diagnostic tests that should be performed at the time of diagnosis of Turner syndrome.
41. Describe serum tumor markers and other diagnostic tests that are important for diagnosis and prognosis in patients with medullary thyroid carcinoma.
42. Formulate a basic management plan when provided with a description of a pediatric patient with a disorder involving the endocrine system.
43. Describe the treatment of choice for children with hypothyroidism and how the starting dose changes in children of various ages. Explain how therapy is monitored for the purpose of dose adjustment. Explain how monitoring and dose adjustment differs in cases of primary hypothyroidism compared to secondary (central) hypothyroidism.
44. Describe the treatment of patients with GH deficiency.
45. Describe the age at which administration of GH and sex steroids is recommended in children with Turner syndrome.
46. Explain why periodic imaging of the cardiovascular system is recommended in patients with Turner syndrome.
47. Explain the rationale for prophylactic thyroidectomy in children with certain mutations of the RET proto-oncogene and data needed for recommending the timing of this surgery

5. Describe aspects of this learning activity that illustrate fundamental elements of osteopathic principles, practice, and philosophy related to the following concepts:

1. Interrelatedness of structure and function in the human body

An understanding of normal structure and function is essential for understanding the consequences of a pathologic disruption or pharmacologic intervention that interrupts normal regulatory processes.

1. Self-healing and self-regulatory mechanisms

Homeostatic mechanisms are responsible for maintaining stability of the internal environment through feedback regulation and compensatory (self-healing) responses to disturbances of the normal steady-state.

* Tanner Staging – Dr. Christensen
  1. Identify the physical stages and sequence of adolescent growth for females and males.
  2. Identify factors that influence timing of pubertal growth.
  3. Identify at which stage peak height velocity occurs for females and males.
* Amenorrhea Dr. Boes
  1. Describe the difference between primary and secondary amenorrhea.
  2. Describe the age by which secondary sexual characteristics should have occurred as well as the age by which should have occurred.
  3. Describe a basic approach to Evaluation & Management of Amenorrhea
  4. Explain the classification of primary amenorrhea based on sexual development, gonadotropic hormone levels, physical exam and imagining evaluation.
  5. Describe the normal pubertal development scale for breast development & pubic hair development
* Clinical Reproductive and Embryology Cases – Dr. Kaufman
  1. After completing this learning activity, the student will be able to:
  2. Describe the normal anatomy (gross and microscopic), embryology, biochemistry, physiology and pharmacology related to the reproductive system
  3. Describe feedback regulation of the reproductive system in healthy persons of various ages and the pathophysiology of disorders affecting the reproductive system.
  4. Explain how thyroid hormone regulation and thyroid binding globulin (TBG) are affected by pregnancy or estrogen use.
  5. Describe the mechanism of action of each of the following drugs; explain how administration of each of these hormones and/or drugs affects the normal hypothalamic-pituitary-gonadal axis and which components of the reproductive system are affected:
     + exogenous androgens
     + exogenous estrogens
     + exogenous progestins
     + pulsatile administration of short-acting GnRH agonists
     + Leuprolide
     + Finasteride
     + Flutamide
     + Spironolactone
     + Degarelix
  6. Describe the embryologic processes involved in sex differentiation and the pathophysiology of differences in fetal sex development in patients with conditions described in this lecture.
  7. Formulate a differential diagnosis based on the description of a patient with symptoms, signs, and/or results of diagnostic tests related to a disorder of reproduction, and explain the rationale for each disorder in the list of differential diagnoses.
  8. Create a list of differential diagnoses for hypogonadotropic hypogonadism and describe how you would prioritize your list based on the patient presentation and results of diagnostic tests. Do the same for hypergonadotropic hypogonadism.
  9. Describe aspects of a patient’s clinical presentation that would lead one to suspect a difference/disorder of sex development, and provide a rationale for your approach to diagnostic evaluation.
  10. Choose the most appropriate diagnostic test or tests, explain the rationale for ordering each test, and predict the outcome of each test when provided with a description of a patient with a disorder involving the reproductive system.
  11. Formulate a basic management plan when provided with a description of a patient with a health concern involving the reproductive system.
  12. Describe aspects of this learning activity that illustrate fundamental elements of osteopathic principles, practice, and philosophy related to the following concepts:
  13. Interrelatedness of structure and function in the human body**:** An understanding of normal structure and function is essential for understanding the consequences of a pathologic disruption or pharmacologic intervention that interrupts normal regulatory processes.
  14. Self-healing and self-regulatory mechanisms: Homeostatic mechanisms are responsible for maintaining stability of the internal environment through feedback regulation and compensatory (self-healing) responses to disturbances of the normal steady state.

OST 526 Endocrine System 2024

Pathophysiology of Type 1 Diabetes – Pfotenhauer

Instructional Objectives for Lecture on Pathophysiology of Type 1 Diabetes

1. Describe the anatomy (gross and microscopic), biochemistry, regulation, physiology, epidemiology, and pharmacology related to disorders of the pancreas and disorders of glucose regulation in the pediatric population and in adults.

a. Explain the pathogenesis of type 1 diabetes and describe the stages in its development.

b. Differentiate between the actions of hormone-sensitive lipase and lipoprotein lipase. Describe the influence of insulin on each of these enzymes.

c. Describe the consequences of diabetes mellitus on carbohydrate, fat, and protein metabolism.

d. List the 4 classic symptoms of Type 1 diabetes and explain why they occur.

2. Describe the epidemiology of type 1 diabetes including incidence peaks by age.

3. Explain the natural history of type 1 diabetes

a. Describe genetic risk associated with the development of autoantibodies.

b. Explain relative risk in identical twins, siblings, and offspring of those with type 1 diabetes

c. Describe theories of immune system activation that leads to an attack on beta cells

d. Explain the risk of development of one autoantibody or two autoantibodies in the development of type 1 diabetes

4. Describe the stages of type 1 diabetes

5. Explain the significance of major autoantibody markers for type 1 diabetes

6. Explain why testing for C-peptide is not recommended in the diagnosis of type 1 diabetes

7. Describe the presentation of type 1 diabetes in adults and which patients should undergo further testing.

8. Describe risks and benefits of current screening recommendations for type 1 diabetes.

9. Define criteria for diagnosis of type 1 diabetes

Pathophysiology of Type II Diabetes

Diabetes Case Discussion- Kaufman

Hyperglycemia Crisis- Kaufman

OST 526 Endocrine 2024

Hyperandrogenic Disorders – Kaufman and Boes

Learning Objectives:

1. Describe variations in hirsutism and virilization

2. Describe androgen metabolism in the normal female

3. Discuss the relationship of ovarian, adrenal, pituitary, and pharmacologic causes of hirsutism and virilization

4. Discuss the differential diagnosis, evaluation and management of hirsutism and virilization.

5. Discuss pathophysiology of PCOS (Polycystic Ovarian Syndrome) & Congenital Adrenal Hyperplasia (CAH)

6. Explain the diagnostic criteria for Constitutional Hirsutism

7. Be aware and sensitive to ethnic variances, as well as social acceptance of terminal hair on the abdomen, breasts and face.

OST 526 Endocrine 2024

Thyroid and Parathyroid Gland Embryology - Fitzsimmons

Learning Objectives

1. Specify the structures that are derived from, and associated deficits from abnormal development of, pharyngeal pouches 1-4.
2. Describe the developmental basis and anatomical locations of the following thyroid related structures: pyramidal lobe, accessory glandular tissue, thyroglossal duct cyst.
3. Specify the cranial nerve associated with pharyngeal arches 1 & 2.
4. List the skeletal elements (cartilage and bone) derived from pharyngeal arches 2-6.
5. Describe the developmental basis and anatomical locations of lateral cervical cysts.
6. Describe the developmental basis of ectopic parathyroid glands.
7. List the primary characteristics of DiGeorge Syndrome (a 22q11.2 deletion syndrome) and relate this to pharyngeal arch development & differentiation.
8. Describe the characteristic features of Treacher Collins syndrome and first arch syndromes. Relate these syndromes to neural crest cell migration and pharyngeal arch development.

OST 526 Endocrine 2024

Immunology of Type 1 Diabetes - Taylor

Learning Objectives

Following this session, you will be able to:

1) Describe the main immunological events that are associated with the onset of autoimmune type 1 diabetes mellitus (T1DM)

2) Describe the major autoantigens targeted by autoantibodies in T1DM and explain how autoantibodies can facilitate the onset of autoimmune diabetes.

3) Explain the role of T cells in T1DM disease progression, and why β-cells are preferentially targeted for destruction by cytotoxic T cells.

4) Explain how HLA alleles predispose a patient to (or protect them from) T1DM onset.

Clinical Adrenal Disease- Kaufman

# Semester 4

OST 531 – Reproductive, Development, and Sexuality

* Growth and Development of the Infant/Toddler - Dr. Abdel-Karim
  1. Understand the basics of normal growth and development from 0-4 years old.
  2. Know the essentials of health supervision visits as recommended by the American Academy of Pediatrics.
  3. Overview of growth charts and growth patterns.
  4. Explain normal developmental milestones.
  5. Review developmental screening test and tools.
  6. Discuss appropriate anticipatory guidance topics at different well child visits.
  7. Understand basic discipline concepts.
* Growth and Development of the School Age Child – Dr. Benbow
  1. Describe normal growth patterns of school-aged children.
  2. Recognize variants of growth seen in school-aged children.
  3. Evaluate developmental milestones of school-aged children.
  4. Discuss the importance of well child visits and appropriate anticipatory guidance for school-aged children.
  5. Compare normal and disordered sleep patterns commonly seen in children.
  6. Identify appropriate discipline strategies.
* Growth and Development of the Adolescent – Dr. Christensen

1. Describe the developmental stages of adolescence and identify psychological and social characteristics of each stage.
2. Identify qualities of a good physician adolescent interview.
3. Identify goals and key components of the Adolescent well child exam.
4. Identify common adolescent laboratory screening.
5. Identify appropriate adolescent immunizations.
6. Discuss age-appropriate adolescent anticipatory guidance.

* Adolescent GU – Dr. Christensen
  1. Identify the physical stages and sequence of adolescent growth for females and males.
  2. Identify factors that influence timing of pubertal growth.
  3. Identify at which stage peak height velocity occurs for females and males.
* Congenital Infections (along with a case study) - Dr. Rosenberg

1. Immunology Overview
2. Development of Fetal Immune System
3. The virus-host interaction during pregnancy or neonatal life.
4. Microbiology, Epidemiology, Clinical Manifestations, Diagnosis, Treatment and Prevention of the following infections
   1. Rubella
   2. Cytomegalovirus
   3. Herpes Simplex Virus
   4. Parvovirus B19
   5. Varicella Zoster Virus
   6. Human Immunodeficiency Virus
   7. Toxoplasmosis
   8. Syphilis
   9. Zika
   10. Hepatitis Viruses

* Care of Gender Diverse Youth – Dr. Lowery
  1. Learning Objectives
  2. Define terms of Sex/Gender
  3. Promote sensitivity to the diverse gender dysphoria population
  4. Understand the concept of an individual’s physical gender, chromosomal gender, and personal perceived gender
  5. Learn the prevalence of gender dysphoria
  6. Review current guidelines for gender dysphoria
  7. Know what labs and conditions to monitor for an individual with gender dysphoria
* Developmental Disorders – Neurology Faculty

OST 532 – Integumentary

Pediatric Dermatology – Dr. Gallagher

1. Know how to separate the following conditions in the skin by their clinical appearance- focus is on Clinical Presentation.

2. Know each conditions pathogenesis, genetic inheritance, mimics, diagnostic techniques, treatment and its rationale, prognosis, prevention, emergency (yes or no), Signs of underlying anatomical malformation (yes or no) manifestation of systemic illness (yes or no).

OST 533 – Gastrointestinal

* Pediatric Abdominal Pain – Dr. Greenberg
  1. Be able to develop a differential diagnosis list for abdominal pain – both generalized list for non–GI etiologies and specific for GI etiologies.
  2. Know the incidence of abdominal pain.
  3. Know the difference between chronic and acute abdominal pain.
  4. Know the alarming factors in history, physical and labs that help differentiate organic abdominal pain from functional abdominal pain.
  5. Know the important history findings, physical findings, laboratory testing, and diagnostic test in the evaluation of abdominal pain.
  6. Understand the following diseases that cause abdominal pain including their specific presentations, diagnostic findings and treatment.
     + Irritable Bowel Disease
     + Abdominal Migraine
     + Infant Regurgitation
     + Colic
     + Constipation (see constipation lecture)
     + Hirsprung’s Disease (see constipation lecture)
     + Infant Dyschezia (see constipation lecture)
     + Appendicitis
     + Intussusception
     + Malrotation/Volvulus
     + Gastroenteritis
     + Inflammatory Bowel Disease
     + MIS-C
* Pediatric Constipation – Dr. Greenberg
  1. Know the definition and incidence of constipation in children.
  2. Know the normal frequency of bowel movements by age.
  3. Describe the problems associated with constipation.
  4. Know the definition of encopresis.
  5. Name the times of life which trigger constipation in children.
  6. Know the alarming signs which indicate worrisome etiologies for constipation.
  7. Know the Rome Criteria for functional constipation by age.
  8. Name the history and physical findings important in the evaluation of constipation.
  9. Be able to name a differential diagnosis for organic & non-organic etiologies of constipation.
  10. Be able to discuss the treatment of constipation from mild to serve.
  11. Know how the listed organic etiologies of constipation are present.
      + Hirschsprung Disease
      + Cow’s milk allergy
      + Neurogenic constipation – myelomeningocele or tethered cord
      + Cystic Fibrosis
      + Metabolic abnormalities
* Pediatric Diarrhea – Dr. Root
  1. Know the important components of an age-appropriate history and physical for a patient presenting with diarrhea.
  2. Be familiar with the normal bowel habits of children.
  3. Know that infectious gastroenteritis is one of the most common causes of diarrhea in children.
  4. Be familiar with Toddlers/Functional Diarrhea.
  5. Be able to describe the presentation/clinical manifestations, diagnosis, and management of antibiotic associate diarrhea.
  6. Understand the etiology, presentation, diagnosis, and management of celiac disease.
  7. Be familiar with the various forms of lactose intolerance and their respective clinical manifestations diagnosis, and management.
  8. Understand the nature of dirrhea as a symptom of vairous conditions; IBD, IBS, HUS.
* Pediatric Vomiting – Dr. Root
  1. Define vomiting and understand pathophysiology.
  2. Be familiar with the key elements of a H&P in Pediatric Patient with vomiting.
  3. Know the clinical features of infectious gastroenteritis and its treatment.
  4. Describe the clinical presentation of pyloric stenosis, the diagnosis, management.
  5. Be familiar with the natural history of infant GERD, diagnosis, management.
  6. Be familiar with various causes of intestinal obstruction in infants and children.
  7. Recognize that vomiting can be a sign of systemic infection.
  8. Know key features and treatment of cycle vomiting syndrome.
* General Pediatric Nutrition – Dr. Abdel-Kairm
  1. Overview of basic nutrients needed for optimal nutrition.
  2. Understand breastfeeding physiology, benefits and contraindications.
  3. Discuss early infancy nutritional needs.
  4. Review of newborn feeding behavior and common feeding concerns.
  5. Understand general principles of late infancy feeding.
  6. Discuss toddler feeding principles and common concerns.
  7. Overview of childhood and teenage years nutritional needs.
* Viral Gastroenteritis – Dr. Rosenberg
  1. Virologic characteristics
  2. Epidemiology
  3. Medical importance
  4. Etiology, Epidemiology, Clinical Manifestations, Diagnosis, Treatment, and Prevention of the Following:
* Rotavirus
* Caliciviruses
* Adenovirus
* Astrovirus
* Coronaviruses

# Semester 5

OST 534 – Cardiovascular

* Cyanotic Heart Disease – Dr. Taqatqa
* Acyantoic Heart Disease – Dr. Taqatqa
* Pediatric Heart Sounds Lab – Dr. Taqatqa

OST 535 – Respiratory

* Acute Otitis – Dr. Sims
  1. Recognize why children are more susceptible to ear infections.
  2. Identify the most common pathogens with acute otitis media.
  3. Be able to differentiate acute infection from normal tympanic membrane.
  4. Identify common complications from AOM.
  5. Know the clinical guidelines in treatment for AOM.
* Pediatric ENT – Dr. Sims
  1. Be aware of the most common pathology for pediatric ear, nose, and throat disorders.
  2. Know the basic management for common ENT disorders.
  3. Recognize normal vs abnormal when examining your patients.
  4. Identify the need for emergent care in particular findings.
  5. Recognize the most common presentations of acute airway obstruction and how to differentiate them.
* Lower Airway Chest Disorders – Dr. Boote
  1. Understand the etiology behind a variety of topics of lower airway disorders in pediatric patients.
  2. Identify lower airway disorders based on presenting features.
  3. Choose the proper diagnostic study to make a definitive diagnosis of lower airway disorder in the pediatric patient.
  4. Predict the most appropriate treatment for a patient with lower airway disorder.
* Neonatal Respiratory Disorders – Dr. Thomas
  1. Overview of transition of respiratory system during birth.
  2. Discuss how to differentiate between different conditions.
  3. Discuss the management of neonatal respiratory conditions.
  4. Discuss long term outcomes.
* Cystic Fibrosis – Dr. Thomas
  1. Know epidemiology of cystic fibrosis.
  2. Describe the genetics of cystic fibrosis.
  3. Know how to diagnose cystic fibrosis.
  4. Understand the pathophsiology of cystic fibrosis.
  5. Describe the clinical manifestations of cystic fibrosis.
  6. Discuss therapeutic regimens and options in cystic fibrosis.
* Pediatric Respiratory Pathology – Dr. Kowalski
  1. Delineate the pathologic findings, pathogenesis, and clinical implications of the following pediatric, perinatal, and neonatal, disease processes.
  2. Pulmonary hypoplasia (and the Potter/oligohydramnios sequence)
  3. Tracheoesophageal fistula.
  4. Bronchogenic cyst.
  5. Bronchopulmonary sequestration.
  6. Neonatal respiratory distress syndrome (hyaline membrane disease of the newborn)
  7. Bronchopulmonary Dysplasia.
* Viral Respiratory Infections – Dr. Rosenberg
  1. Recall the virology, epidemiology, clinical manifestations, diagnosis, treatment, and prevention of the following viruses:
     1. Rhinovirus
     2. Influenza
     3. Parainfluenza
     4. Respiratory Syncytial Virus
     5. Adenovirus
     6. Human Metapneumovirus
     7. Coronavirus
     8. Hantavirus
* Pediatric Chest Radiology – TBD
* Pediatric Reactive Airway Disease and Asthma – Dr. Rosser
  1. Understand the pathophysiological changes that cause wheezing in children.
  2. Understand the common infectious, anatomical and atopic causes of RAD.
  3. Understand the triggers, classification, and treatment of pediatric asthma.
  4. Understand the updated NHL asthma guidelines and the “SMART” therapy protocol.

# Semester 6

OST 561 – Ambulatory Care Capstone

* Growth and Development Workshops (2) - Pediatric Faculty
* Failure to Thrive – Dr. Greenberg
  1. Define Failure to Thrive (FTT)
  2. Define how food insecurity impacts children worldwide.
  3. Prognosis: How does Malnutrition impact a child’s growth and development?
     + How this historically changed in how we look at FTT.
     + How does this relate to obesity.
  4. Etiology: Be able to discuss the multiple causes of FTT by using the “follow the calorie approach.”
  5. Clinical manifestations: Know the typical clinical features of a child with FTT.
  6. Diagnosis: Be able to use growth chart, history, and physical data to properly categorize the FTT or normal but less common growth patterns.
  7. Know the role for laboratory work-up for FTT. (Very limited use)
  8. Treatment: Treatment of FTT depends on etiology.
* Obesity – Dr. Azevedo
* Child Abuse and Neglect – Dr. H. Greenberg
* Approach to the Febrile Infant/Child - Dr. Shattuck
* Vaccine Preventable Disease I and II – Dr. Rosenberg & Dr. Taylor

OST 562 – Hospital Care Capstone

* Fluid and Electrolyte Workshop – Pediatric Faculty
  1. Review of normal fluid and electrolyte physiology in children.
  2. Calculation of maintenance fluids by the Holiday-Segar Method
  3. Principles of isonatremic dehydration, including calculation of rehydration fluids
  4. Estimate percent dehydration based on physical exam findings
  5. Review appropriate fluids used in pediatrics
  6. Know how to convert pounds to kilograms
  7. Principles of oral rehydration

OST 533 – Health System Science

* Peds Ethics – Dr. Azevedo
  1. Review four principles of medical ethics.
  2. Understand the principles of assent and parental permissions.
  3. Explain ethical considerations for specific age groups within pediatrics.
  4. Understand the ethical issues surrounding childhood.