HEALTH
UNIVERSITY OF UTAH

Academic Year 2025-26

PED 7080 Pediatric Endocrinology Syllabus

Credit Hours: 2-4

Contact Information

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Course Information

Brief Description of Course

The essential elements of Pediatric Endocrinology involve recognizing and treating disorders of carbohydrate metabolism, growth, sexual development, thyroid function, calcium and bone metabolism, and water balance. The approach used to evaluate the child with a presumed endocrine disorder requires a reasonable knowledge of the basic sciences, including anatomy, biochemistry, physiology, and genetics/molecular biology. As a result of seeing new and established patients in our Pediatric Endocrinology and Diabetes Clinics, the medical student will develop an approach to and gain experience with a number of common endocrinologic conditions.

Course Goals

As a result of successfully completing the Pediatric Endocrinology Course, students will gain knowledge on the following:

1. Prevention, Counseling and Screening for Endocrine Dysfunction
    a. Identify the individual at risk for developing endocrine dysfunction through routine endocrine counseling and screening of all patients and parents, addressing:
        i. Normal variations in growth
        ii. Expected and normal variations in body changes during puberty
        iii. The importance of vitamin D supplements in breast-fed infants and select populations with low intake of vitamin D, calcium, or phosphorus
        iv. Screening for diabetes in patients with symptoms of polyuria, polydipsia, and polyphagia
        v. Screening for diabetes, hypercholesterolemia, and hypertriglyceridemia in a child with obesity
        vi. Newborn metabolic screening for hypothyroidism and congenital adrenal hyperplasia
    b. Provide preventive counseling to parents and patients with specific endocrine conditions about:
        i. The recommendation for influenza vaccination in children with certain endocrine disorders
        ii. The importance of diabetes control for prevention of long-term complications such as retinopathy, neuropathy, nephropathy, and gastroparesis
2. Normal, deviations, and pathological states related to endocrinology
    a. Describe the normal developmental patterns of statural growth and weight gain
    b. Perform Tanner staging (SMR) and explain the sequential physiologic events associated with puberty.
    c. Identify early puberty and differentiate it from premature thelarche and premature adrenarche.
    d. Describe the hypothalamus-pituitary-peripheral gland axis along with their stimulatory and inhibitory feedback mechanisms.
    e. Describe calcium and phosphorus homeostasis, vitamin D metabolism, parathyroid hormone functions, and their interrelationships.
    f. Explain the findings on clinical history and examination that suggest a disease of endocrine origin and require further evaluation and treatment.
    g. Interpret clinical and laboratory endocrine tests to identify endocrine disease.
3. Evaluation, treatment, referral of patients with possible endocrine disease

a. Create a strategy for determining if presenting signs and symptoms are caused by an endocrine disease process and determine if the patient needs treatment or referral
    i. Short and tall stature
    ii. Early or delayed puberty
    iii. Obesity, Acanthosis nigricans
    iv. Polydipsia, Polyuria, Hyperglycemia
    v. Hypoglycemia
    vi. Hypocalcemia
b. Diagnose, explain the pathophysiology of, and manage:
    i. Abnormal newborn metabolic screening, including hypothyroidism, congenital adrenal hyperplasia, PKU, and galactosemia
    ii. Premature thelarche, Premature adrenarche
    iii. Delayed puberty due to chronic disease or anorexia nervosa
    iv. Childhood obesity
    v. Familial short stature, constitutional delay of growth or puberty
    vi. Short stature variants not meeting criteria for hormone therapy
    vii. Gynecomastia in a pubertal male

4. Recognition and appropriate referral of patients with endocrine conditions
    a. Identify, explain the pathophysiology of, provide initial management for, and refer to a subspecialist the following endocrine conditions:
        i. Adrenal insufficiency
        ii. Ambiguous genitalia, hypogonadism, and micropenis
        iii. Central and nephrogenic diabetes insipidus and psychogenic polydipsia
        iv. Congenital adrenal hyperplasia
        v. Delayed or precocious puberty
        vi. Diabetes mellitus type I (diabetic ketoacidosis (DKA))
        vii. Endocrine and genetic causes of obesity
        viii. Hirsutism, hyperandrogenism, and polycystic ovaries
        ix. Hypoglycemia in childhood and adolescence
        x. Metabolic bone disease including rickets and skeletal dysplasias
        xi. Abnormalities of calcium, phosphorus, or magnesium homeostasis
        xii. Short stature variants meeting criteria for hormonal treatment
        xiii. Thyroid dysfunction and goiters
        xiv. Diabetes mellitus type II
    b. Identify the role and general scope of the practice of endocrinology. Recognize situations where children benefit from the skills of specialists trained in the care of children.
5. Diagnose and manage uncomplicated diabetes mellitus
    a. List the findings on clinical history and examination that suggest a diagnosis of diabetes mellitus
    b. Identify the risk factors for developing type 2 diabetes and provide screening for those at elevated risk.
    c. Differentiate Type I and Type II diabetes on the basis of findings from the clinical history, physical examination, and laboratory tests.
    d. Diagnose diabetes mellitus and diabetic ketoacidosis from presenting symptoms and confirmatory tests.
    e. Compare and contrast the different preparations of insulin and describe the pharmacokinetics of each.
    f. Discuss treatment regimens available for patients with Type II diabetes, including the use of oral medications, determination of initial dosages, drug pharmacokinetics, dose adjustments based on serum glucose levels, possible side effects and monitoring for safety.
    g. Order appropriate initial dosages of insulin, based on both clinical and laboratory findings, and adjust subsequent dosages based on serum glucose levels.
    h. Order appropriate IV and PO fluids to manage ketoacidosis and initial hyperglycemia with or without ketosis, realizing that insulin therapy may be required in the initial treatment of Type II diabetes.
    i. Recognize immediate life-threatening complications associated with the diagnosis and treatment of diabetic ketoacidosis and steps for initial treatment and stabilization.
    j. Develop an educational plan for parents and patients that provides effective education regarding diabetes, availability of support groups and diabetic camps, diet and exercise, home glucose monitoring, adjustment of insulin or oral medications dosages, use of insulin pumps, response to illness, and preventive care.

   k. Develop a cost-effective plan for monitoring patients with diabetes, including use of hemoglobin A1-C level, daily glucose profiles to assess control, frequency and severity of hypoglycemia/ hyperglycemia, and the development of long-term complications such as retinopathy, nephropathy, and neuropathy.
6. Diagnosis and management of patients with congenital and acquired hypothyroidism and hyperthyroidism
   a. Explain the findings on clinical history, examination, and laboratory tests that suggest the presence of a thyroid disorder (hypo- or hyper-thyroidism).
   b. Identify thyroid function tests including newborn screening, available for detecting and diagnosing a thyroid disorder, and describe the indications for ordering, limitations, and interpretations.
   c. Discuss the identification, treatment, and follow-up in patients with congenital hypothyroidism • Identify imagining studies available for patients with a thyroid disorder and their indications.
   d. Discuss the causes of hyperthyroidism.
   e. Compare and contrast the different treatment options for hyperthyroidism, including oral medications, irradiation, and surgery, and discuss the selection criteria for each treatment modality.
   f. Create an education, treatment and follow-up plan for a patient with a thyroid disorder that includes treatment, monitoring, potential complications, and long term follow-up.
   g. Identify indicators for an endocrine referral of a child with a thyroid disorder.

Course Format & Sample Schedule

The course consists of outpatient endocrine and diabetes clinics. Depending on number of learners, we may also ask you to spend some time inpatient with our on-call team performing consults. We will also invite you to any Endocrine Division didactics and fellow lectures that may take place during your time with us. You will receive Zoom invites for these.

Sample Schedule:

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
AM (8A-12P)	Independent study time using resources on Canvas	Endocrine Clinic	Diabetes Clinic	Endocrine Clinic	Endocrine Clinic
PM (1P-5P)	Diabetes Clinic	Endocrine Clinic	Obesity Clinic	Diabetes Clinic	Independent study time using resources on Canvas

Pediatric Endocrine Faculty
Vana Raman, MD
Scott Clements, MD
Mark Hamaker, MD
Allison Smego, MD
Kathleen Timme, MD
Zoe Raleigh, MD
Alex Karmazin, MD
Reem Shawar, MD
Hannah Jelley, MD
Michelle Meder, MD
Jacqueline Chan, MD
Michael Yao, MD
Julie Gibbons, DO

Role of the Student in this Course

We will encourage you to see patients on your own in clinic and present to the attending, depending on your level of comfort. For example, it is reasonable to shadow for a couple of patients on your first day to gain familiarity with our history gathering, physical exams, and work flow. Note that all puberty exams require the attending to present as a chaperone.

Please discuss expectations for documentation with the attending you are working with. We may have you assist with aspects of documentation during your rotation. Most attendings have a preferred note template that they will start for you.

Suggested Readings

Rotation Resources:
The attendings have put together the following collection of helpful articles. Reading is encouraged to supplement your clinical experience: https://uofu.app.box.com/folder/118462222813.

Here are other helpful resources:
Pediatric Endocrine Society Resources: https://pedsendo.org/clinical-resources/clinical-resource-library/
Pediatric Endocrine Society Patient Handouts: https://pedsendo.org/patient-resources/patient-education/
Endocrine Society Clinical Practice Guidelines: https://www.endocrine.org/clinical-practice-guidelines
American Diabetes Association: https://diabetes.org/
American Thyroid Association Guidelines: https://www.thyroid.org/professionals/ata-professional-guidelines/
The Magic Foundation: https://www.magicfoundation.org/

Assessment & Grading

Preceptor Evaluations
For Clinical Courses: This Clinical Course employs a preceptor evaluation which contributes to the student's overall course grade.

Assessments

Assessment Name	Weight toward Final Grade
Preceptor Evaluations	100%

Grading System
Students will receive a final letter grade of PASS (P) or FAIL (F) for this course.
Only elective courses with approved alternative grading schemes may use H/HP/P/F or H/P/F grading

PASS: A student who achieves the criteria, will be assigned a grade of PASS for the course.
FAIL: A student who fails to achieve the criteria for PASS, will be assigned a grade of FAIL for the course.

Student Feedback
Providing feedback is an important aspect of our professionalism expectations and helps with curriculum quality improvement. For each clinical course in Phases 3-4 you must complete an end-of-course survey and individual surveys of clinical faculty and residents by the due date to demonstrate reliability for the professionalism competency. Required surveys are administered online through Qualtrics and student responses are anonymous. Please refer to the resource section of the course canvas page for student feedback survey due dates.

Standard Practices
Please refer to the Clinical Curriculum Procedures and Practices for the following:

Phase 4 Developmental Benchmarks for Priority EPAs
Phase 4 Formative Feedback Form
Phase 4 Global Rating Form (Preceptor Evaluation)
Phase 4 Attendance Expectations
Medical Student Clinical and Educational Work (formerly Duty Hours)
Medical Student Clinical Documentation
Medical Student Call Rooms
Medical Student Mobile Communication
Students as Interpreters

Standard Policies

Please refer to the Student Handbook (on the Student Affair's website) for these policies:

Accommodations
Addressing Sexual Misconduct
Dress Code
Examination and Grading Policies
Grade or Score Appeal
Professionalism, Roles & Responsibilities
Mistreatment
Infectious, Environmental and Bloodborne Pathogen Exposures Policy

Alternate Name and/or Personal Pronoun

Class rosters are provided to the instructor with the student's legal name as well as 'Preferred' first name (if previously entered by you in the Student Profile section of your CIS account). While CIS refers to this as merely a preference, we will honor you by referring to you with the name and pronoun that feels best for you in class, on papers, exams, group projects, etc. Please advise us of any name or pronoun changes (and please update CIS) so we can help create a learning environment in which you, your name, and your pronoun will be respected.

Center for Disability & Access Services

The School of Medicine seeks to provide equal access to its programs, services and activities for all medical students. The Center for Disability and Access (CDA) provides accommodations and support for the educational development of medical students with disabilities. Medical students with a documented disability, and students seeking to establish the existence of a disability, that would like to request accommodations are required to meet with the CDA to establish accommodations. The CDA will work closely with eligible students and the Academic Success Program to make arrangements for approved accommodations. The School of Medicine and CDA maintain a collegial, cooperative, and collaborative relationship to ensure compliance with federal and state regulations for students with disabilities.

Steven Baumann EdD, School of Medicine Senior Director of Academic Success Program, serves as the liaison between the School Of Medicine and the CDA.

Contact Information:
Dr. Steven Baumann, Senior Director of Academic Success Program

Safety Statement

The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.