

ROTATION SUMMARY
ENDOCRINOLOGY

Rotation Contacts and Scheduling Details

Rotation Director: Caroline Buckway, MD
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Administrator: Ofelia Colin
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Positions Available:

1 position available per block as selective (not including required residency rotations), either 2 week or 4 week blocks, available to all levels of training, all months of the year, no lead time required for notification to the division

Introduction

Patterns of growth and pubertal development vary widely in healthy children. The challenge to the pediatrician is to identify patients with endocrine disorders that trigger excessive or delayed growth and maturation. The study of growth provides an excellent window through which to view all aspects of pediatrics. Two major educational objectives of the endocrine rotation are to review the expected growth and pubertal milestones and to be able to formulate a diagnostic plan for evaluating slow or accelerated growth. The function and control of thyroid hormone, growth hormone, sex steroids and adrenal hormones will be covered.

Diabetes mellitus is both a common disorder (~1/400 under the age of 20) and an excellent archetype of a chronic disease in pediatrics. Clearly, residents need to learn about diabetes in both the acute and chronic settings.

This rotation will expose residents and students to children to the spectrum of growth and developmental disorders and diabetes, in the outpatient and inpatient setting. These clinical conditions frequently prompt questions for the clinician in practice.

By the end of the endocrine rotation, the resident will be competent in these areas:

- Evaluation of patient with goiter
- Management of infant with elevated TSH on newborn screen
- Evaluation primary and secondary amenorrhea
- Evaluation short stature
- Diagnosis and management precocious or delayed puberty
- Office management of diabetes
- Newborn with ambiguous genitalia

References

Pediatric Endocrinology 4th edition, Mark Sperling, MD – 2014, Saunders

Resident Roles and Responsibilities

The selective is principally an outpatient experience tapping into patient encounters at LPCH and Sunnyvale outreach clinic. Some of the selective experience may include exposure to inpatient consultations at LPCH as well as involvement with our new-onset diabetes program.

1. Attend all endocrine and diabetes clinics
2. See outpatients, present to attendings, and complete EMR documentation
3. Attend endocrine conferences
4. Review top ten clinical scenarios
5. Complete the syllabus readings
6. Learn to use internet to access clinically relevant information for more evidence-based encounters

Evaluation and Feedback

Informal feedback will be provided throughout the rotation by attendings as the resident works with them.

The resident's evaluation in Medhub will be a group composite evaluation from all the attendings the resident has worked with during the rotation and will be based upon the core competencies.

Competency-based Goals and Objectives

Goal 1. Understand the role of the pediatrician in preventing endocrine dysfunction, and in counseling and screening individuals at risk for these diseases.

Resident Objectives:	Instructional Strategies	Assessment of Competency	ACGME Competency Goals
Identify the individual at risk for developing endocrine dysfunction through routine endocrine counseling and screening of all patients and parents, addressing: <ol style="list-style-type: none"> 1. Normal variations in growth (including genetic short stature and constitutional growth delay) 2. Expected and normal variations in body changes during puberty (information should be ethnic group specific) 3. The importance of vitamin D supplements in breast-fed infants and select populations with low intake of vitamin D, calcium or phosphorus 4. Diabetic screening for patients with symptoms of polyuria, polydipsia and polyphagia 5. Diabetic, hypercholesterolemia and hypertriglyceridemia screening for any child who is obese 6. Newborn metabolic screening 	Patient Care Teaching Modules Directed Readings	Direct observation Discussion of teaching modules Medhub evaluation	PC MK
Provide preventive counseling to parents and patients with specific endocrine conditions about: <ol style="list-style-type: none"> 1. The need for influenza vaccination in children with certain endocrine disorders (hypoadrenalism, diabetes mellitus, hypopituitarism, chronic steroid use, Cushing syndrome) 2. The association of chronic steroid use and decreased bone density 3. The importance of diabetes control for prevention of long-term complications such as retinopathy, neuropathy, nephropathy and gastroparesis 4. The value of support groups and camps for children with diabetes mellitus 	Patient Care Teaching Modules Directed Readings	Direct observation Discussion of teaching modules Medhub evaluation	PC MK

Goal 2. Differentiate between normal, physiologic deviations from normal, and pathological states related to endocrinology.

Resident Objectives:	Instructional Strategies	Assessment of Competency	ACGME Competency Goals
Describe the normal developmental patterns of statural growth and weight gain, along with normal variations. Describe body proportions that can help to differentiate proportionate from disproportionate short stature.	Patient Care Teaching Modules Directed Readings	Direct observation Discussion of teaching modules Medhub evaluation	MK PC
Perform Tanner staging (SMR) and explain the sequential physiologic events associated with puberty.	Patient Care Teaching Modules Directed Readings	Direct observation Discussion of teaching modules Medhub evaluation	PC
Identify early puberty and differentiate it from premature thelarche and premature adrenarche.	Patient Care Teaching Modules Directed Readings	Direct observation Discussion of teaching modules Medhub evaluation	PC MK
Describe the hypothalamus-pituitary-peripheral gland axis along with their stimulatory and inhibitory feedback mechanisms.	Patient Care Teaching Modules Directed Readings	Direct observation Discussion of teaching modules Medhub evaluation	MK
Describe calcium and phosphorus homeostasis, vitamin D metabolism, parathyroid hormone functions, and their interrelationships.	Patient Care Teaching Modules Directed Readings	Direct observation Discussion of teaching modules Medhub evaluation	MK
Explain the findings on clinical history and examination that suggest a disease of endocrine origin including: -hypo- and hyper-thyroid states -diabetes mellitus -diabetes insipidus -rickets -obesity -delayed or accelerated growth -early or delayed puberty -adrenal insufficiency and hyperactivity, -congenital adrenal hyperplasia.	Patient Care Teaching Modules Directed Readings	Direct observation Discussion of teaching modules Medhub evaluation	PC MK
Describe indications for and interpret clinical and laboratory endocrine tests to identify endocrine disease, including: bone age, vitamin D, calcium, phosphate and alkaline phosphatase, glucose, insulin, and hemoglobin A1C, T4, free T4, TSH, parathyroid hormone, serum and	Patient Care Interpret patient lab and study results with Attendings Teaching Modules	Direct observation Discussion of teaching modules Medhub evaluation	MK SBP

urine electrolytes and osmolality, cortisol and ACTH, FSH, LH, estradiol, testosterone, cortisol, renin, adrenal androgens and precursor hormone levels, IGF-1 and IGFBP-3, imaging studies (MRI, CT Scan, Ultrasound, and thyroid scans) and bone densitometry.

Directed Readings

Goal 3. Evaluate, treat and/or refer patients who present with undifferentiated signs and symptoms that may represent an endocrine disease process

Resident Objectives:	Instructional Strategies	Assessment of Competency	ACGME Competency Goals
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Create a strategy for determining if the following presenting signs and symptoms are caused by an endocrine disease process and determine if the patient needs treatment or referral:

Patient Care
Teaching Modules
Directed Readings

Direct observation
Discussion of teaching modules
Medhub evaluation

MK
PC

1. Fatigue
2. Vomiting/Weight loss
3. Short and tall stature
4. Obesity
5. Polydipsia
6. Hypoglycemia
7. Hyperglycemia
8. Hypocalcemia
9. Early or delayed puberty
10. Acanthosis nigricans
11. Headaches
12. Dizziness
13. Diplopia and blurred vision
14. Polyuria

Goal 4. Diagnose and manage endocrine conditions in patients not generally requiring referral.

Resident Objectives:	Instructional Strategies	Assessment of Competency	ACGME Competency Goals
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Diagnose, explain the pathophysiology of, and manage the following endocrine conditions:

Patient Care
Teaching Modules
Directed Readings

Direct observation
Discussion of teaching modules
Medhub evaluation

MK
PC

1. Premature adrenarche
2. Premature thelarche
3. Delayed puberty due to chronic disease or anorexia nervosa
4. Exogenous obesity
5. Familial short stature, constitutional delay of growth or puberty
6. Short stature variants not meeting criteria for hormone therapy

7. Gynecomastia in a pubertal male
8. Infant of mother with gestational diabetes
9. Transient hypocalcemia of a newborn
10. Transient hypoglycemia of a newborn

Goal 5. Recognize, initiate management of, and refer patients with endocrine conditions that require referral.

Resident Objectives:	Instructional Strategies	Assessment of Competency	ACGME Competency Goals
5.26.1 : Identify, explain the pathophysiology of, provide initial management for, and refer to a subspecialist the following endocrine conditions:	Patient Care Teaching Modules Directed Readings	Direct observation Discussion of teaching modules Medhub evaluation	MK PC
<ol style="list-style-type: none"> 1. Adrenal insufficiency 2. Ambiguous genitalia, hypogonadism, and micropenis 3. Diabetes insipidus 4. Congenital adrenal hyperplasia 5. Delayed or precocious puberty 6. Diabetes mellitus type I (diabetic ketoacidosis (DKA), long-term management) 7. Endocrine and genetic causes of obesity 8. Genetic syndromes and familial inheritance patterns with endocrine abnormalities 9. Hirsutism, hyperandrogenism, and polycystic ovaries 10. Hypoglycemia in childhood and adolescence 11. Metabolic bone disease including rickets and skeletal dysplasias 12. Abnormalities of calcium, phosphorus, or magnesium homeostasis such as hypo and hyperparathyroidism 13. Short stature variants meeting criteria for hormonal treatment 14. Tall stature and excessive growth syndromes 15. Thyroid dysfunction and goiters 16. Diabetes mellitus type II 			
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, and work effectively with endocrine specialists to care for children with endocrinology problems.	Attending discussion	Direct observation	SBP PC

Goal 6. Demonstrate high standards of professional competence while working with patients under the care of a subspecialist.

Resident Objectives:	Instructional Strategies	Assessment of Competency	ACGME Competency Goals
Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates.	Patient Care Attending Mentoring	Direct observation Medhub evaluation	ICS
Provide effective patient education, including reassurance, for a condition(s) common to this subspecialty area.	Patient Care Attending Mentoring	Direct observation Medhub evaluation	ICS
Communicate effectively with primary care and other physicians, other health professionals, and health-related agencies to create and sustain information exchange and teamwork for patient care.	Patient Care Attending Mentoring	Direct observation Medhub evaluation	ICS
Maintain accurate, legible, timely and legally appropriate medical records, including referral forms and letters, for subspecialty patients in the outpatient and inpatient setting.	Patient Care Attending Mentoring	Direct observation Medhub evaluation	ICS
Identify personal learning needs related to this subspecialty; systematically organize relevant information resources for future reference; and plan for continuing acquisition of knowledge and skills.	Patient Care Attending Mentoring	Direct observation Medhub evaluation	PBLI
Demonstrate personal accountability to the well-being of patients (e.g., following up on lab results, writing comprehensive notes, and seeking answers to patient care questions).	Patient Care Attending Mentoring	Direct observation Medhub evaluation	P
Identify key aspects of health care systems as they apply to specialty care, including the referral process, and differentiate between consultation and referral.	Patient Care Attending Mentoring	Direct observation Medhub evaluation	P
Demonstrate sensitivity to the costs of clinical care in this subspecialty setting, and take steps to minimize costs without compromising quality	Patient Care Attending Mentoring	Direct observation Medhub evaluation	SBP
Recognize and advocate for families who need assistance to deal with systems complexities, such as the referral process, lack of insurance, multiple medication refills, multiple appointments with long transport times, or inconvenient hours of service.	Patient Care Attending Mentoring	Direct observation Medhub evaluation	SBP P

PBLI = practice based learning and improvement

ICS = interpersonal and communication skills

P= professionalism

MK= medical knowledge

PC= patient care

SBP = systems based practice