Subspecialty Rotation: Pediatric Endocrinology	
****All Goals and Objectives for this rotation are identical across all PL years****	
Primary Goals for this Rotation	**Competencies**
GOAL I: Prevention, Counseling and Screening (Endocrine). Understand the role of the pediatrician in preventing endocrine dysfunction, and in counseling and screening individuals at risk for these diseases.	
1. Identify the individual at risk for developing endocrine dysfunction through routine endocrine counseling and screening of all patients and parents, addressing: a) Normal variations in growth (including genetic short stature and constitutional growth delay) b) Expected and normal variations in body changes during puberty (information should be ethnic group specific) c) The importance of vitamin D supplements in breast-fed infants and select populations with low intake of vitamin D, calcium or phosphorus d) Diabetic screening for patients with symptoms of polyuria, polydipsia and polyphagia e) Diabetic, hypercholesterolemia and hypertriglyceridemia screening for any child who is obese f) Newborn metabolic screening, when appropriate	K, PC, IPC, P
2. Provide preventive counseling to parents and patients with specific endocrine conditions about: a. The need for influenza vaccination in children with certain endocrine disorders (hypoadrenalism, diabetes mellitus, hypopituitarism, chronic steroid use, Cushing syndrome) b. The association of chronic steroid use and decreased bone density c. The importance of diabetes control for prevention of long-term complications such as retinopathy, neuropathy, nephropathy and gastroparesis d. The value of support groups and camps for children with diabetes mellitus e. Glucocorticoids and growth suppression	K, PC, IPC, P
GOAL II: Normal vs. Abnormal (Endocrine). Differentiate between normal, physiologic deviations from normal, and pathological states related to endocrinology.	
1. 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.	K
2. Perform Tanner staging (SMR) and explain the sequential physiologic events associated with puberty.	K, PC
3. Identify early puberty and differentiate it from premature thelarche and premature adrenarche.	K, PC

4. Describe the hypothalamus-pituitary-peripheral gland axis along with their stimulatory and inhibitory feedback mechanisms.	K
5. Describe calcium and phosphorus homeostasis, vitamin D metabolism, parathyroid hormone functions, and their interrelationships.	K
6. Explain the findings on clinical history and examination that suggest a disease of endocrine origin and require further evaluation and treatment. Such diseases include hypo- and hyper-thyroid states, diabetes mellitus, diabetes insipidus, rickets, obesity, hypertension, delayed or accelerated growth, early or delayed puberty, adrenal insufficiency and hyperactivity, and congenital adrenal hyperplasia.	K
7. 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 urine electrolytes and osmolality, cortisol and ACTH, FSH, LH, estradiol, testosterone, cortisol, renin, adrenal androgens and precursor hormone levels, growth hormone, IGF-I, IGFBP3, imaging studies (MRI, CT Scan, Ultrasound, and thyroid scans) and bone densitometry.	K
GOAL III: Undifferentiated Signs and Symptoms (Endocrine). Evaluate, treat and/or refer patients who present with undifferentiated signs and symptoms that may represent an endocrine disease process.	
1. 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: a) Fatigue b) Vomiting/Weight loss c) Short and tall stature d) Obesity e) Polydipsia f) Hypoglycemia g) Hyperglycemia h) Hypocalcemia i) Early or delayed puberty j) Acanthosis nigricans k) Headaches l) Dizziness m) Diplopia and blurred vision n) Polyuria	K, PC
GOAL IV: Common Conditions Not Referred (Endocrine). Diagnose and manage endocrine conditions in patients not generally requiring referral.	
1. Diagnose, explain the pathophysiology of, and manage the following endocrine conditions: a) Abnormal newborn metabolic screening, including hypothyroidism, congenital adrenal hyperplasia, and galactosemia b) Premature adrenarche c) Premature thelarche d) Delayed puberty due to chronic disease or anorexia nervosa e) Exogenous obesity	K, PC

f) Familial short stature, constitutional delay of growth or puberty g) Short stature variants not meeting criteria for hormone therapy h) Gynecomastia in a pubertal male i) Infant of mother with gestational diabetes j) Transient hypocalcemia of a newborn k) Transient hypoglycemia of a newborn	
GOAL V: Conditions Generally Referred (Endocrine). Recognize, initiate management of, and refer patients with endocrine conditions that require referral.	
1. Identify, explain the pathophysiology of, provide initial management for, and refer to a subspecialist the following endocrine conditions: a) Adrenal insufficiency b) Ambiguous genitalia, hypogonadism, and micropenis c) Central and nephrogenic diabetes insipidus and psychogenic polydipsia d) Congenital adrenal hyperplasia e) Delayed or precocious puberty f) Diabetes mellitus type I (diabetic ketoacidosis (DKA), long-term management) g) Endocrine and genetic causes of obesity h) Genetic syndromes and familial inheritance patterns with endocrine abnormalities i) Hirsutism, hyperandrogenism, and polycystic ovaries j) Hypoglycemia in childhood and adolescence k) Metabolic bone disease including rickets and skeletal dysplasias l) Abnormalities of calcium, phosphorus, or magnesium homeostasis m) Short stature variants meeting criteria for hormonal treatment n) Tall stature and excessive growth syndromes o) Thyroid dysfunction and goiters p) Diabetes mellitus type II	K, PC, IPC, SBP
2. 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.	K, PC, IPC, SBP
GOAL VI: Diabetes Mellitus (Types I and II). Diagnose and manage uncomplicated diabetes mellitus with or without the assistance of an endocrinologist.	
1. List the findings on clinical history and examination that suggest a diagnosis of diabetes mellitus and/or diabetic ketoacidosis.	K
2. Identify the risk factors for developing type 2 diabetes and provide routine screening for those at elevated risk.	K, PC
3. Differentiate Type I and Type II diabetes on the basis of findings from the clinical history, physical examination, and laboratory tests.	K, PC
4. Diagnose diabetes mellitus and diabetic ketoacidosis from presenting symptoms and confirmatory lab tests.	K
5. Order appropriate confirmatory diagnostic serum and urine tests for diabetes mellitus and accurately interpret the results.	K, PC

6. Compare and contrast the different preparations of insulin and describe the pharmacokinetics of each.	K
7. 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.	K, PC, P
8. Order appropriate initial dosages of insulin, based on both clinical and laboratory findings, and adjust subsequent dosages based on serum glucose levels.	K, PC
9. 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.	K, PC
10. Recognize immediate life-threatening complications associated with the diagnosis and treatment of diabetic ketoacidosis and steps for initial treatment and stabilization. Refer for intensive care as indicated.	K, PC, IPC
11. 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, PC, IPC, SBP
12. Develop a cost-effective plan for monitoring patients with diabetes, including use of hemoglobin A1-C levels and daily glucose profiles to assess control, frequency and severity of hypoglycemia and hyperglycemia, treatment compliance, and the development of long-term complications such as retinopathy, nephropathy and neuropathy.	K, PC, SBP
13. Identify the clinical and biochemical indicators that necessitate consultation or referral of a child with diabetes.	K, PC
GOAL VII: Thyroid Disorders. Understand the general pediatrician's role in the diagnosis and management of patients with congenital and acquired hypothyroidism and hyperthyroidism.	
1. Explain the findings on clinical history, examination, and laboratory tests that suggest the presence of a thyroid disorder (hypo- or hyper-thyroidism), including abnormal growth patterns, goiter, etc.	K, PC
2. Identify the thyroid function tests, including newborn screening, available for detecting and diagnosing a thyroid disorder, and describe the indications for ordering, limitations and interpretations.	K, PC
3. Discuss the identification, treatment, and follow-up in a patient with congenital hypothyroidism. Discussion should include the importance of early detection and limitations of newborn screenings, as well as treatment, monitoring and parental education.	K, PC, IPC, P
4. Identify imaging studies available for patients with a thyroid disorder and the indications for obtaining such studies.	K, PC
5. Discuss the causes of hyperthyroidism.	K
6. Compare and contrast the different treatment options for hyperthyroidism, including oral medications, irradiation and surgery, and discuss the selection criteria for each treatment modality.	K, PC
7. 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.	K, PC, IPC, SBP
8. Identify indicators for an endocrine referral of a child with a thyroid disorder.	K, PC

Procedures	
GOAL VIII: Diagnostic and screening procedures. Describe the following tests or procedures, including how they work and when they should be used; competently perform those commonly used by the pediatrician in practice.	
Appropriate growth measurement technique	
Growth curve interpretation	
Bone age: interpretation	
Bone densitometer	

Core Competencies: **K** - Medical Knowledge
PC - Patient Care and Procedural Skills
IPC - Interpersonal and Communication Skills
P - Professionalism
PBLI - Practice-Based Learning and Improvement
SBP - Systems-Based Practice

Performance Expectations by Level of Training

	Beginning	**Developing**	**Accomplished**	**Competent**
	Description of identifiable performance characteristics reflecting a **beginning level** of performance.	Description of identifiable performance characteristics reflecting **development and movement toward mastery** of performance.	Description of identifiable performance characteristics reflecting **near mastery** of performance.	Description of identifiable performance characteristics reflecting the **highest level** of performance.
Medical Knowledge	PL1	PL1, PL2	PL2, PL3	PL3
Patient Care and Procedural Skills	PL1	PL1, PL2	PL2, PL3	PL3
Interpersonal and Communication Skills	PL1	PL1, PL2	PL2, PL3	PL3
Professionalism		PL1	PL2, PL3	PL3
Practice-Based Learning and Improvement	PL1	PL1, PL2	PL2, PL3	PL3
Systems-Based Practice	PL1	PL1, PL2	PL2, PL3	PL3

Milestones assessed on this rotation are:

Patient Care 1: History				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
Gathers information strictly following a template	Adapts template to filter and prioritize pertinent positives and negatives based on broad diagnostic categories or possible diagnoses	Filters, prioritizes, and synthesizes the history to develop a differential diagnosis in real-time for uncomplicated or typical presentations	Filters, prioritizes, and synthesizes the history to develop a differential diagnosis in real time for complicated or atypical presentations	Recognizes and probes subtle clues from patients and families; distinguishes nuances among diagnoses to efficiently drive

				further information gathering

Patient Care 4: Clinical Reasoning				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
Presents clinical facts (e.g., history, exam, tests, consultations) in the order they were elicited	Generates an unfocused differential diagnosis based on the clinical facts	Organizes clinical facts to compare and contrast diagnoses being considered, resulting in a prioritized differential diagnosis	Integrates clinical facts into a unifying diagnosis(es); reappraises in real time to avoid diagnostic	Role models and coaches the organization of clinical facts to develop a prioritized differential diagnosis, including life threatening diagnoses, atypical presentations, and complex clinical presentations

Patient Care 5: Patient Management				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
Reports management plans developed by others	Participates in the creation of management plans	Develops an interdisciplinary management plan for common and typical diagnoses	Develops and implements informed management plans for complicated and atypical diagnoses, with the ability to modify plans as necessary	Serves as a role model and coach for development of management plans for complicated and atypical diagnoses, with the ability to modify plans as necessary

Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Personal Growth				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
Participates in feedback sessions	Demonstrates openness to feedback and performance data	Seeks and incorporates feedback and performance data episodically	Seeks and incorporates feedback and performance data consistently	Role models and coaches others in seeking and incorporating feedback and performance data
Develops personal and professional goals, with assistance	Designs a learning plan based on established goals, feedback, and performance data, with assistance	Designs and implements a learning plan by analyzing and reflecting on the factors which contribute to gap(s) between performance expectations and actual performance	Adapts a learning plan using long-term professional goals, self-reflection, and performance data to measure its effectiveness	Demonstrates continuous self-reflection and coaching of others on reflective practice

Interpersonal and Communication Skills 1: Patient and Family Centered Communication				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
Demonstrates respect and attempts to establish rapport	Establishes a therapeutic relationship in	Establishes a culturally competent and therapeutic	Establishes a therapeutic relationship in	Mentors others to develop positive

	straightforward encounters	relationship in most encounters	straightforward and complex encounters, including those with ambiguity and/or conflict	therapeutic relationships
Attempts to adjust communication strategies based upon patient/family expectations	Adjusts communication strategies as needed to mitigate barriers and meet patient/family expectations	Communicates with sensitivity and compassion, elicits patient/family values, and acknowledges uncertainty and conflict	Uses shared decision making with patient/family to make a personalized care plan	Models and coaches others in patient- and family-centered communication