

Pediatric Endocrinology Goals and Objectives

Goals

Pediatric Endocrine residency program at the University of Tennessee Health Science Center (UTHSC) will prepare the physician to become a competent pediatric endocrinologist. The program will provide a broad as well as in depth clinical and didactic training in the field of pediatric endocrinology, diabetes, metabolism, and clinical nutrition. This includes diseases of the pituitary, thyroid, and adrenal glands; diabetes mellitus and the metabolic syndrome; hypoglycemic syndromes; lipid disorders; calcium disorders and metabolic bone disease; oncologic endocrinology; childhood growth and development; nutritional counseling; and endocrine diagnostic testing. The trainee should be prepared for a career in academic medicine including teaching, research and patient care in an academic environment. A primary goal of the research component of the program is to bring about the maturation of the trainee to an independent investigator who has the ability to develop appropriate techniques, design research studies, and collect and interpret meaningful data in an organized manner.

The residency program provides education and experience in the clinical, research, and educational arenas. The clinical experience includes care of endocrine patients and providing consultations 1) on the inpatient service at Le Bonheur Children's Medical Center, the Newborn Center of the Regional Medical Center at Memphis and St. Jude Children's Research Hospital and 2) in the outpatient clinics including the Endocrine clinics, Diabetes clinics, and Lifestyle (Obesity) clinics at UTMG, and the Endocrine-Oncology clinics at St. Jude.

The research experience includes clinical or basic research studies. The clinical research component is directed to developing and carrying out a human investigation study with a member(s) of the clinical faculty. The basic (laboratory) research experience is done under the guidance of a faculty member who does basic science research at UTHSC or St. Jude. These experiences include writing a study proposal, obtaining IRB approval, obtaining local grant funding, recruiting subjects for study, acquiring and interpreting the data, and writing the results for presentation and publication.

The teaching experience includes providing teaching of students and residents around the patients, presenting formal talks at endocrine conferences, reviewing journal articles at journal club, presenting research findings formally, and developing lectures for students and residents.

General Objectives

By the end of the three year Pediatric Endocrinology residency training program, all residents are expected to work with increasing responsibility and to achieve the following objectives based on the six general competencies:

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	GENERAL OBJECTIVES			
	Provide patient care that is compassionate, appropriate, and effective for the treatment of endocrine and metabolic problems and the promotion of health.			
	Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients with endocrine and metabolic problems and their families.			
	Gather essential and accurate information about their patients endocrine disease/disorder.			
	Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgments.			
	Develop and carry out patient management plans.			
	Counsel and educate patients and their families about a variety of endocrine disorders.			
	Use information technology to support patient care decisions and patient education.			
	Perform competently all medical and invasive procedures essential for proper treatment of endocrine disorders.			
	Provide health care services aimed at preventing			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	endocrine problems and maintaining health.			
	Work with health care professionals (dietitians, social service workers, nurses, and students), including those from other disciplines, to provide patient-focused care.			
	SPECIALTY SPECIFIC OBJECTIVES			
	See specific rotations for a detailed list of patient care objectives.			
Medical Knowledge	GENERAL OBJECTIVES			
	Demonstrate knowledge about established and evolving biomedical, clinical, and cognate sciences and the application of this knowledge to the field of pediatric endocrinology and diabetes.			
	Demonstrate an investigatory and analytic thinking approach to clinical situations.			
	Know and apply the basic and clinically supportive sciences which are appropriate to their discipline.			
	SPECIALTY SPECIFIC OBJECTIVES			
	See specific rotations for a detailed list of medical knowledge objectives.			
Practice Based Learning and Improvement	GENERAL OBJECTIVES			
	Investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their practice of endocrinology and diabetes.			
	Analyze practice experience and perform practice-based improvement activities using a			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	systematic methodology.			
	Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems.			
	Obtain and use information about their own population of patients and the larger population of patients from which their patients are drawn.			
	Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.			
	Use information technology to manage information, access on-line medical information; and support their own education.			
	Facilitate the learning of students and other health care professionals.			
	SPECIALTY SPECIFIC OBJECTIVES			
	Evaluate documents of patient care practices, discuss how they meet standards, and develop ways to improve these practices.			
	Compare clinical practice, patient safety, and quality of care with evidence based medicine to improve pediatric endocrinology care..			
	Complete a pediatric endocrinology QA/QI project under faculty direction.			
	Demonstrate improvement in clinical management and diagnostic assessment.			
	Implement new scientific advances and clinical			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	approaches from a variety of sources into current pediatric endocrinology practices.			
	Analyze and evaluate medical literature and examine alternate sources for information that pertains to their patient's endocrinology health problems.			
	Take responsibility for lifelong learning.			
	Use information technology such as Up-To-Date, PubMed or Ovid to enhance patient care.			
	Teach fellow residents, medical students, and interns.			
	Maintain appropriate records documenting practice activities (such as patient logs).			
Interpersonal and Communication Skills	GENERAL OBJECTIVES			
	Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patients' families, and professional associates.			
	Create and sustain a therapeutic and ethically sound relationship with patients.			
	Use effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.			
	Work effectively with others as a member or leader of a health care team or other professional group.			
	SPECIALTY SPECIFIC OBJECTIVES			
	Carefully listen to patients to assess the patient's			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	health problems including their verbal and non-verbal communications.			
	Demonstrating respectful and considerate attitudes, effectively communicate with patients, families, and other health care personnel, when addressing management plans, patient issues, and especially end-of-life decisions.			
	Accurately present (orally and written) a case to attending physicians, fellow residents, and other health care professionals.			
	Provide timely, legible, and thorough medical record documentation - histories and physical examinations, admission notes, progress notes, procedure notes and discharge summaries.			
	Provide education and counseling to patients, and families using non-technical and clear language. (Use non-verbal and verbal communication skills)			
	Demonstrate skill in handling all difficult patient care situations.			
	Spend adequate time with patients addressing their questions and concerns.			
	Work well within team consisting of students, residents, attending physicians, nurses, and patients.			
	Function effectively as a consultant for specialty and subspecialty care.			
	Represent the Pediatric Endocrinology staff in interactions with patients and their families,			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	acting with compassion and consideration at all times.			
Professionalism	GENERAL OBJECTIVES			
	Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.			
	Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, society that supercedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.			
	Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care confidentiality of patient information, informed consent, and business practices.			
	Demonstrate a sensitivity and responsiveness to patients' culture, age, gender, and disabilities.			
	SPECIALTY SPECIFIC OBJECTIVES			
	Demonstrate respect, compassion, integrity, punctuality, reliability, and honesty with regards to patients and colleagues.			
	Show regard for the opinions of others.			
	Display initiative and leadership.			
	Acknowledge errors, alert patients and appropriate health care providers about the errors, and create a plan of action to minimize them.			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	Demonstrate concern for the educational development of students and residents.			
	Volunteer for activities for the good of the institution and community.			
	Ask for help when needed and accept constructive feedback.			
	Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.			
	Maintain patient confidentiality.			
	Discuss the psychosocial effects of endocrine disorders with patients.			
	Compassionately respond to issues of culture, age, gender, ethnicity, and disability in patient care.			
Systems-Based Practice	GENERAL OBJECTIVES			
	Demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.			
	Understand how their patient care and other professional practices affect other health care professionals, the health care organization, and the larger society and how these elements of the system affect their own practice.			
	Know how types of medical practice and delivery systems differ from one another, including			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	methods of controlling health care costs and allocating resources.			
	Practice cost-effective health care and resource allocation that does not compromise quality of care.			
	Advocate for quality patient care and assist patients in dealing with system complexities.			
	Know how to partner with health care managers and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performance.			
	SPECIALTY SPECIFIC OBJECTIVES			
	Demonstrate ability to deliver high-quality medical care in a private, government, and inner city hospital settings.			
	Demonstrate the knowledge of different types of medical practice and health care delivery systems and understand how this affects pediatric endocrinology care.			
	Demonstrate the ability to tap into the various resources available throughout the intra-hospital, inter-hospital, state and national systems to provide optimal care.			
	Discuss the issues surrounding health care management in order to balance health care delivery and financial pressures.			
	Demonstrate knowledge of business aspects of medical practice including coding, billing, and			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	insurance.			
	Work with ancillary team members (discharge planners, case managers, and social workers) to provide high quality cost-effective care.			
	Use systematic approaches to reduce errors.			
	Practice effective allocation of health care resources to avoid compromising quality of care.			
	Interact with patients, attending physicians and allied health care personnel as part of a health care team.			
	Serve as a patient advocate in the outpatient and inpatient setting.			
	Direct care in inpatient and outpatient settings as a member of a multidisciplinary team.			
	Demonstrate knowledge of how the health care system including other physicians, nurses, and health care professionals affect their patient care practices.			

In-patient Service at LeBonheur Children’s Medical Center, Medical Regional Center, and St. Jude Children’s Research Hospital

During the in-patient service rotation, the PGY-4 resident is expected to expand and cultivate knowledge and skills acquired during previous training and to achieve the following objectives based on the six general competencies:

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	SPECIALTY SPECIFIC OBJECTIVES			
	Obtain an accurate medical history relevant to pediatric endocrinology disorders.			
	Perform a thorough and systematic physical examination relevant to pediatric endocrinology problems.			
	Formulate a diagnosis of endocrine disorders and when necessary generate a differential diagnosis.			
	Counsel and educate patients and their families concerning diabetes management, hormone treatment, emergency treatment with hydrocortisone, etc.			
	Perform the following diagnostic endocrine procedures including but not limited to: <ul style="list-style-type: none"> • Growth hormone stimulation tests • Oral glucose tolerance test • TSH surge • Metyrapone test • Low dose ACTH test • Lupron stimulation test • Modified GnRH test • Water deprivation test 			
	Provide health care services aimed at preventing			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	health problems or maintaining health: blood glucose monitoring, stress steroid dosing, glucagon administration, dietary services, writing prescriptions, 24 hour emergency service, consultation service for community physicians, etc.			
	Generate and implement patient management plan based on patient information, preferences, up-to-date scientific evidence, and clinical judgement.			
	Interpret the following endocrine tests: <ul style="list-style-type: none"> • Stimulation and suppression tests, including the normal variations that occur in laboratory results at different ages and times of day • Thyroid function tests • Histopathology slides • Bone age X-ray • Brain MRI 			
	Select appropriate diagnostic procedures for the evaluation of common pediatric endocrinology disorders that involve radiology (e.g. ultrasonography, CT scanning, MRI, and nuclear medicine).	Lecture Series		
	Initiate insulin regimen including carbohydrate counting, calculating insulin sensitivity factor and high sugar correction.			
	Assess diabetes and create treatment plans that	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	are augmented by analysis of hemoglobin Alc.			
	Properly adjust insulin dosages.	Lecture Series		
	Utilize new strategies in diabetes management such as insulin dose calculator, inhaled insulins, and other therapies.	Lecture Series		
	Prioritize patient care issues.			
	Counsel parents and children about changes expected in puberty and normal variations.			
	<p>Diagnose, evaluate, and manage patients with the following endocrine disorders including but not limited to:</p> <ul style="list-style-type: none"> • Carbohydrate metabolism <ul style="list-style-type: none"> • Physiology of systemic glucose metabolism • Type 1 and Type 2 diabetes mellitus • Hypoglycemia • Thyroid hormone physiology <ul style="list-style-type: none"> • Fetal and neonatal physiology • Congenital & acquired hypothyroidism • Thyroid hormone resistance • Hyperthyroidism • Thyroid nodules and cancer • Thyroiditis • Thyroid hormone and receptors • Morphologic abnormalities • Impact of non-thyroid illness on thyroid function 	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Pituitary Gland and Hypothalamus <ul style="list-style-type: none"> • Neuroendocrine regulation of neurohypophyseal function • Disorders of hypothalamic pituitary function (e.g. thyrotropin, corticotrophin, gonadotropins, prolactin, vasopressin, oxytocin) • Treatment of disorders of hypothalamic pituitary dysfunction • Clinical disorders of the posterior pituitary • Diabetes insipidus • Adrenal gland <ul style="list-style-type: none"> • Cortisol, androgens, estrogens, and aldosterone • Congenital Adrenal Hyperplasia • Catecholamines • Adrenomedullin • Hypoadrenocortism • Hyperadrenocortism • Hyperaldosteronism • Virilizing and feminizing adrenal tumors • Biosynthesis and metabolism • Gonadal disorders <ul style="list-style-type: none"> • Development and differentiation of the reproductive system • Hormone synthesis, secretion, 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> transport, metabolism, and action <ul style="list-style-type: none"> • Normal sexual maturation • Abnormal development • Undescended Testicle • Gynecomastia • Delayed or precocious puberty • Benign premature adrenarche and thelarche • Mineral Metabolism <ul style="list-style-type: none"> • Calcium, phosphate, magnesium, PTH, Vitamin D • Calcitonin • Bone formation and associated disorders (e.g., rickets and skeletal dysplasias) • Hypophosphatemia • Hypo and hypercalcemia (William's Syndrome, Hypervitaminosis A) • Growth Hormone <ul style="list-style-type: none"> • Short stature (e.g. constitutional delay, familial SS) • Obesity • Tall stature • Infants who are small for Gestational Age • Normal growth and development • Hormone assays and lipoprotein metabolism 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Hormone receptors • Gastrointestinal and atrial natriuretic hormones • Hormone assays • Disorders of androgen and estrogen metabolism (e.g. adolescent reproductive endocrinology) • Disorders of sexual differentiation and development (e.g. Turner syndrome, Klinefelter syndrome, cryptorchidism, hermaphroditism, pseudo-hermaphroditism) • Disorders of parathyroid gland physiology • Disorders of fluid and electrolyte balance • Disorders of nutrition (e.g. anorexia and bulimia nervosa) • Neonatal and childhood hypoglycemia • Endocrine neoplasia • Non-endocrine illness impact on endocrine system 			
Medical Knowledge	SPECIALTY SPECIFIC OBJECTIVES			
	Demonstrate knowledge of proper use of laboratory tools and techniques for measurement of hormones in body fluids.			
	Differentiate between normal and pathological states related to endocrinology: <ul style="list-style-type: none"> • normal patterns of linear growth and weight gain 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • normal from early and delayed puberty • premature thelarche and adrenarche from true precocious puberty • Describe Tanner staging in boys and girls • Enlarged thyroid • Normal age ranges for pubertal onset 			
	Understand the pediatrician's role in preventing morbidity related to endocrine dysfunction in children.			
	Recognize the risks and limitations of the interpretation of laboratory results.			
	Demonstrate an understanding of the physiology, pathology, biochemistry, pharmacology and embryology of the endocrine and related systems.	Lecture Series		
	Demonstrate a basic understanding of the basic principles of hormone action including: <ul style="list-style-type: none"> • General classes of hormones; their actions and regulations • Types of receptors and second messengers for individual hormones • Defects in hormonal structure, synthesis, release, and target cell • Hypothalamic releasing factors and their affects • Bioassays and Immunoassays (i.e., Ligand displacement, ELISA, IRMA/ICMA) • Resistance syndromes for specific hormones and their diagnosis 	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	Develop knowledge of the basic principles of insulin including: <ul style="list-style-type: none"> • Pathogenesis of diabetes mellitus • Diagnosis and treatment of DKA • Insulin types and their uses • Chronic management of type 1 and type 2 diabetes; roles of diet, exercise, insulin, and oral glycemc agents 	Lecture Series		
	Demonstrate an understanding of current devices in development to improve the lives of diabetic children (e.g. continuous glucose monitoring, insulin pumps, and meters)	Lecture Series		
	Describe the growth hormone (IFG-1) patterns of normal growth and short variants.			
	Discuss the metabolic effects of growth hormone, sex steroids, and insulin-like growth factor I in puberty and beyond.	Lecture Series		
	Compare and contrast the consequences of mutations in pituitary transcription factor genes.	Lecture Series		
	Demonstrate an understanding of the role of genetics in pediatric endocrinology: <ul style="list-style-type: none"> • Genetic syndrome with Endocrinopathies • Molecular genetics of Hypothalamic-Pituitary Axis Development • Laboratory methods • Cytogenetics • Enzymology 			
	Describe the aspects of immunology pertinent to			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	understanding endocrine disease and the use of immunoassays.			
	Discuss the interaction of endocrine pathology and psychosocial problems in endocrine patients.			
	Demonstrate an understanding of molecular biology and its impact on pediatric endocrinology: <ul style="list-style-type: none"> • DNA and RNA • Protein synthesis • Manipulation of gene expression 			
	Demonstrate the knowledge of therapy techniques that are necessary for the treatment and management of endocrine disorders (e.g. hormone replacement,			
Practice Based Learning and Improvement	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			
Interpersonal and Communication Skills	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			
Professionalism	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			
Systems-Based Practice	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			

Out-patient Endocrine Clinics at UTMG

During the Endocrine clinics, the PGY-4 resident is expected to expand and cultivate knowledge and skills acquired during previous training and to achieve the following objectives based on the six general competencies:

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	SPECIALTY SPECIFIC OBJECTIVES			
	Obtain an accurate medical history relevant to pediatric endocrinology disorders.			
	Perform a thorough and systematic physical examination relevant to pediatric endocrinology problems.			
	Formulate a diagnosis of endocrine disorders and when necessary generate a differential diagnosis.			
	Counsel and educate patients and their families concerning diabetes management, hormone treatment, emergency treatment with hydrocortisone, etc.			
	Perform the following diagnostic endocrine procedures including but not limited to: <ul style="list-style-type: none"> • Growth hormone stimulation tests • Oral glucose tolerance test • TSH surge • Metyrapone test • Low dose ACTH test • Lupron stimulation test 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Modified GnRH test • Water deprivation test 			
	Provide health care services aimed at preventing health problems or maintaining health: blood glucose monitoring, stress steroid dosing, glucagon administration, dietary services, writing prescriptions, 24 hour emergency service, consultation service for community physicians, etc.			
	Generate and implement patient management plan based on patient information, preferences, up-to-date scientific evidence, and clinical judgement.			
	Interpret the following endocrine tests: <ul style="list-style-type: none"> • Stimulation and suppression tests, including the normal variations that occur in laboratory results at different ages and times of day • Thyroid function tests • Histopathology slides • Bone age X-ray • Brain MRI 			
	Select appropriate diagnostic procedures for the evaluation of common pediatric endocrinology disorders that involve radiology (e.g. ultrasonography, CT scanning, MRI, and nuclear medicine).	Lecture Series		
	Initiate insulin regimen including carbohydrate			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	counting, calculating insulin sensitivity factor and high sugar correction.			
	Assess diabetes and create treatment plans that are augmented by analysis of hemoglobin Alc.	Lecture Series		
	Properly adjust insulin dosages.	Lecture Series		
	Utilize new strategies in diabetes management such as insulin dose calculator, inhaled insulins, and other therapies.	Lecture Series		
	Prioritize patient care issues.			
	Counsel parents and children about changes expected in puberty and normal variations.			
	<p>Diagnose, evaluate, and manage patients with the following endocrine disorders including but not limited to:</p> <ul style="list-style-type: none"> • Carbohydrate metabolism <ul style="list-style-type: none"> • Physiology of systemic glucose metabolism • Type 1 and Type 2 diabetes mellitus • Hypoglycemia • Thyroid hormone physiology <ul style="list-style-type: none"> • Fetal and neonatal physiology • Congenital & acquired hypothyroidism • Thyroid hormone resistance • Hyperthyroidism • Thyroid nodules and cancer • Thyroiditis • Thyroid hormone and receptors 	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Morphologic abnormalities • Impact of non-thyroid illness on thyroid function • Pituitary Gland and Hypothalamus <ul style="list-style-type: none"> • Neuroendocrine regulation of neurohypophyseal function • Disorders of hypothalamic pituitary function (e.g. thyrotropin, corticotrophin, gonadotropins, prolactin, vasopressin, oxytocin) • Treatment of disorders of hypothalamic pituitary dysfunction • Clinical disorders of the posterior pituitary • Diabetes insipidus • Adrenal gland <ul style="list-style-type: none"> • Cortisol, androgens, estrogens, and aldosterone • Congenital Adrenal Hyperplasia • Catecholamines • Adrenomedullin • Hypoadrenocortism • Hyperadrenocortism • Hyperaldosteronism • Virilizing and feminizing adrenal tumors • Biosynthesis and metabolism • Gonadal disorders 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Development and differentiation of the reproductive system • Hormone synthesis, secretion, transport, metabolism, and action • Normal sexual maturation • Abnormal development • Undescended Testicle • Gynecomastia • Delayed or precocious puberty • Benign premature adrenarache and thelarche • Mineral Metabolism <ul style="list-style-type: none"> • Calcium, phosphate, magnesium, PTH, Vitamin D • Calcitonin • Bone formation and associated disorders (e.g., rickets and skeletal dysplasias) • Hypophosphatemia • Hypo and hypercalcemia (William's Syndrome, Hypervitaminosis A) • Growth Hormone <ul style="list-style-type: none"> • Short stature (e.g. constitutional delay, familial SS) • Obesity • Tall stature • Infants who are small for Gestational Age 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Normal growth and development • Hormone assays and lipoprotein metabolism <ul style="list-style-type: none"> • Hormone receptors • Gastrointestinal and atrial natriuretic hormones • Hormone assays • Disorders of androgen and estrogen metabolism (e.g. adolescent reproductive endocrinology) • Disorders of sexual differentiation and development (e.g. Turner syndrome, Klinefelter syndrome, cryptorchidism, hermaphroditism, pseudo-hermaphroditism) • Disorders of parathyroid gland physiology • Disorders of fluid and electrolyte balance • Disorders of nutrition (e.g. anorexia and bulimia nervosa) • Neonatal and childhood hypoglycemia • Endocrine neoplasia • Non-endocrine illness impact on endocrine system 			
Medical Knowledge	SPECIALTY SPECIFIC OBJECTIVES			
	Demonstrate knowledge of proper use of laboratory tools and techniques for measurement of hormones in body fluids.			
	Differentiate between normal and pathological			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	states related to endocrinology: <ul style="list-style-type: none"> • normal patterns of linear growth and weight gain • normal from early and delayed puberty • premature thelarche and adrenarche from true precocious puberty • Describe Tanner staging in boys and girls • Enlarged thyroid • Normal age ranges for pubertal onset 			
	Understand the pediatrician's role in preventing morbidity related to endocrine dysfunction in children.			
	Recognize the risks and limitations of the interpretation of laboratory results.			
	Demonstrate an understanding of the physiology, pathology, biochemistry, pharmacology and embryology of the endocrine and related systems.	Lecture Series		
	Demonstrate a basic understanding of the basic principles of hormone action including: <ul style="list-style-type: none"> • General classes of hormones; their actions and regulations • Types of receptors and second messengers for individual hormones • Defects in hormonal structure, synthesis, release, and target cell • Hypothalamic releasing factors and their affects • Bioassays and Immunoassays (i.e., Ligand 	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<p>displacement, ELISA, IRMA/ICMA)</p> <ul style="list-style-type: none"> • Resistance syndromes for specific hormones and their diagnosis 			
	<p>Develop knowledge of the basic principles of insulin including:</p> <ul style="list-style-type: none"> • Pathogenesis of diabetes mellitus • Diagnosis and treatment of DKA • Insulin types and their uses • Chronic management of type 1 and type 2 diabetes; roles of diet, exercise, insulin, and oral glycemic agents 	Lecture Series		
	<p>Demonstrate an understanding of current devices in development to improve the lives of diabetic children (e.g. continuous glucose monitoring, insulin pumps, and meters)</p>	Lecture Series		
	<p>Describe the growth hormone (IFG-1) patterns of normal growth and short variants.</p>			
	<p>Discuss the metabolic effects of growth hormone, sex steroids, and insulin-like growth factor I in puberty and beyond.</p>	Lecture Series		
	<p>Compare and contrast the consequences of mutations in pituitary transcription factor genes.</p>	Lecture Series		
	<p>Demonstrate an understanding of the role of genetics in pediatric endocrinology:</p> <ul style="list-style-type: none"> • Genetic syndrome with Endocrinopathies • Molecular genetics of Hypothalamic-Pituitary Axis Development • Laboratory methods 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Cytogenetics • Enzymology 			
	Describe the aspects of immunology pertinent to understanding endocrine disease and the use of immunoassays.			
	Discuss the interaction of endocrine pathology and psychosocial problems in endocrine patients.			
	Demonstrate an understanding of molecular biology and its impact on pediatric endocrinology: <ul style="list-style-type: none"> • DNA and RNA • Protein synthesis • Manipulation of gene expression 			
	Demonstrate the knowledge of therapy techniques that are necessary for the treatment and management of endocrine disorders (e.g. hormone replacement,			
Practice Based Learning and Improvement	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			
Interpersonal and Communication Skills	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			
Professionalism	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Systems-Based Practice	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			

Out-patient Diabetes Clinics at UTMG

During the Diabetes clinics, the PGY-4 resident is expected to expand and cultivate knowledge and skills acquired during previous training and to achieve the following objectives based on the six general competencies:

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	SPECIALTY SPECIFIC OBJECTIVES			
	Obtain an accurate medical history relevant to pediatric endocrinology disorders.			
	Perform a thorough and systematic physical examination relevant to pediatric endocrinology problems.			
	Formulate a diagnosis of endocrine disorders and when necessary generate a differential diagnosis.			
	Counsel and educate patients and their families concerning diabetes management, hormone treatment, emergency treatment with hydrocortisone, etc.			
	Perform the following diagnostic endocrine procedures including but not limited to: <ul style="list-style-type: none"> • Growth hormone stimulation tests • Oral glucose tolerance test • TSH surge • Metyrapone test 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Low dose ACTH test • Lupron stimulation test • Modified GnRH test • Water deprivation test 			
	Provide health care services aimed at preventing health problems or maintaining health: blood glucose monitoring, stress steroid dosing, glucagon administration, dietary services, writing prescriptions, 24 hour emergency service, consultation service for community physicians, etc.			
	Generate and implement patient management plan based on patient information, preferences, up-to-date scientific evidence, and clinical judgement.			
	Interpret the following endocrine tests: <ul style="list-style-type: none"> • Stimulation and suppression tests, including the normal variations that occur in laboratory results at different ages and times of day • Thyroid function tests • Histopathology slides • Bone age X-ray • Brain MRI 			
	Select appropriate diagnostic procedures for the evaluation of common pediatric endocrinology disorders that involve radiology (e.g. ultrasonography, CT scanning, MRI, and nuclear	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	medicine).			
	Initiate insulin regimen including carbohydrate counting, calculating insulin sensitivity factor and high sugar correction.			
	Assess diabetes and create treatment plans that are augmented by analysis of hemoglobin Alc.	Lecture Series		
	Properly adjust insulin dosages.	Lecture Series		
	Utilize new strategies in diabetes management such as insulin dose calculator, inhaled insulins, and other therapies.	Lecture Series		
	Prioritize patient care issues.			
	Counsel parents and children about changes expected in puberty and normal variations.			
	Diagnose, evaluate, and manage patients with the following endocrine disorders including but not limited to: <ul style="list-style-type: none"> • Carbohydrate metabolism <ul style="list-style-type: none"> • Physiology of systemic glucose metabolism • Type 1 and Type 2 diabetes mellitus • Hypoglycemia • Thyroid hormone physiology <ul style="list-style-type: none"> • Fetal and neonatal physiology • Congenital & acquired hypothyroidism • Thyroid hormone resistance • Hyperthyroidism • Thyroid nodules and cancer 	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Thyroiditis • Thyroid hormone and receptors • Morphologic abnormalities • Impact of non-thyroid illness on thyroid function • Pituitary Gland and Hypothalamus <ul style="list-style-type: none"> • Neuroendocrine regulation of neurohypophyseal function • Disorders of hypothalamic pituitary function (e.g. thyrotropin, corticotrophin, gonadotropins, prolactin, vasopressin, oxytocin) • Treatment of disorders of hypothalamic pituitary dysfunction • Clinical disorders of the posterior pituitary • Diabetes insipidus • Adrenal gland <ul style="list-style-type: none"> • Cortisol, androgens, estrogens, and aldosterone • Congenital Adrenal Hyperplasia • Catecholamines • Adrenomedullin • Hypoadrenocortism • Hyperadrenocortism • Hyperaldosteronism • Virilizing and feminizing adrenal tumors 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Biosynthesis and metabolism • Gonadal disorders <ul style="list-style-type: none"> • Development and differentiation of the reproductive system • Hormone synthesis, secretion, transport, metabolism, and action • Normal sexual maturation • Abnormal development • Undescended Testicle • Gynecomastia • Delayed or precocious puberty • Benign premature adrenarache and thelarche • Mineral Metabolism <ul style="list-style-type: none"> • Calcium, phosphate, magnesium, PTH, Vitamin D • Calcitonin • Bone formation and associated disorders (e.g., rickets and skeletal dysplasias) • Hypophosphatemia • Hypo and hypercalcemia (William's Syndrome, Hypervitaminosis A) • Growth Hormone <ul style="list-style-type: none"> • Short stature (e.g. constitutional delay, familial SS) • Obesity 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Tall stature • Infants who are small for Gestational Age • Normal growth and development • Hormone assays and lipoprotein metabolism <ul style="list-style-type: none"> • Hormone receptors • Gastrointestinal and atrial natriuretic hormones • Hormone assays • Disorders of androgen and estrogen metabolism (e.g. adolescent reproductive endocrinology) • Disorders of sexual differentiation and development (e.g. Turner syndrome, Klinefelter syndrome, cryptorchidism, hermaphroditism, pseudo-hermaphroditism) • Disorders of parathyroid gland physiology • Disorders of fluid and electrolyte balance • Disorders of nutrition (e.g. anorexia and bulimia nervosa) • Neonatal and childhood hypoglycemia • Endocrine neoplasia • Non-endocrine illness impact on endocrine system 			
Medical Knowledge	<p>SPECIALTY SPECIFIC OBJECTIVES</p> <p>Demonstrate knowledge of proper use of</p>			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	laboratory tools and techniques for measurement of hormones in body fluids.			
	Differentiate between normal and pathological states related to endocrinology: <ul style="list-style-type: none"> • normal patterns of linear growth and weight gain • normal from early and delayed puberty • premature thelarche and adrenarche from true precocious puberty • Describe Tanner staging in boys and girls • Enlarged thyroid • Normal age ranges for pubertal onset 			
	Understand the pediatrician's role in preventing morbidity related to endocrine dysfunction in children.			
	Recognize the risks and limitations of the interpretation of laboratory results.			
	Demonstrate an understanding of the physiology, pathology, biochemistry, pharmacology and embryology of the endocrine and related systems.	Lecture Series		
	Demonstrate a basic understanding of the basic principles of hormone action including: <ul style="list-style-type: none"> • General classes of hormones; their actions and regulations • Types of receptors and second messengers for individual hormones • Defects in hormonal structure, synthesis, release, and target cell 	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Hypothalamic releasing factors and their affects • Bioassays and Immunoassays (i.e., Ligand displacement, ELISA, IRMA/ICMA) • Resistance syndromes for specific hormones and their diagnosis 			
	<p>Develop knowledge of the basic principles of insulin including:</p> <ul style="list-style-type: none"> • Pathogenesis of diabetes mellitus • Diagnosis and treatment of DKA • Insulin types and their uses • Chronic management of type 1 and type 2 diabetes; roles of diet, exercise, insulin, and oral glycemic agents 	Lecture Series		
	<p>Demonstrate an understanding of current devices in development to improve the lives of diabetic children (e.g. continuous glucose monitoring, insulin pumps, and meters)</p>	Lecture Series		
	<p>Describe the growth hormone (IFG-1) patterns of normal growth and short variants.</p>			
	<p>Discuss the metabolic effects of growth hormone, sex steroids, and insulin-like growth factor I in puberty and beyond.</p>	Lecture Series		
	<p>Compare and contrast the consequences of mutations in pituitary transcription factor genes.</p>	Lecture Series		
	<p>Demonstrate an understanding of the role of genetics in pediatric endocrinology:</p> <ul style="list-style-type: none"> • Genetic syndrome with Endocrinopathies 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Molecular genetics of Hypothalamic-Pituitary Axis Development • Laboratory methods • Cytogenetics • Enzymology 			
	Describe the aspects of immunology pertinent to understanding endocrine disease and the use of immunoassays.			
	Discuss the interaction of endocrine pathology and psychosocial problems in endocrine patients.			
	Demonstrate an understanding of molecular biology and its impact on pediatric endocrinology: <ul style="list-style-type: none"> • DNA and RNA • Protein synthesis • Manipulation of gene expression 			
	Demonstrate the knowledge of therapy techniques that are necessary for the treatment and management of endocrine disorders (e.g. hormone replacement,			
Practice Based Learning and Improvement	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			
Interpersonal and Communication Skills	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Professionalism	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			
Systems-Based Practice	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			

Out-patient Lifestyle/Obesity Clinics at UTMG

During the Lifestyle/Obesity clinics, the PGY-4 resident is expected to expand and cultivate knowledge and skills acquired during previous training and to achieve the following objectives based on the six general competencies:

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	SPECIALTY SPECIFIC OBJECTIVES			
	Obtain an accurate medical history relevant to pediatric endocrinology disorders.			
	Perform a thorough and systematic physical examination relevant to pediatric endocrinology problems.			
	Formulate a diagnosis of endocrine disorders and when necessary generate a differential diagnosis.			
	Counsel and educate patients and their families concerning diabetes management, hormone treatment, emergency treatment with hydrocortisone, etc.			
	Perform the following diagnostic endocrine procedures including but not limited to:			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Growth hormone stimulation tests • Oral glucose tolerance test • TSH surge • Metyrapone test • Low dose ACTH test • Lupron stimulation test • Modified GnRH test • Water deprivation test 			
	<p>Provide health care services aimed at preventing health problems or maintaining health: blood glucose monitoring, stress steroid dosing, glucagon administration, dietary services, writing prescriptions, 24 hour emergency service, consultation service for community physicians, etc.</p>			
	<p>Generate and implement patient management plan based on patient information, preferences, up-to-date scientific evidence, and clinical judgement.</p>			
	<p>Interpret the following endocrine tests:</p> <ul style="list-style-type: none"> • Stimulation and suppression tests, including the normal variations that occur in laboratory results at different ages and times of day • Thyroid function tests • Histopathology slides • Bone age X-ray • Brain MRI 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	Select appropriate diagnostic procedures for the evaluation of common pediatric endocrinology disorders that involve radiology (e.g. ultrasonography, CT scanning, MRI, and nuclear medicine).	Lecture Series		
	Initiate insulin regimen including carbohydrate counting, calculating insulin sensitivity factor and high sugar correction.			
	Assess diabetes and create treatment plans that are augmented by analysis of hemoglobin Alc.	Lecture Series		
	Properly adjust insulin dosages.	Lecture Series		
	Utilize new strategies in diabetes management such as insulin dose calculator, inhaled insulins, and other therapies.	Lecture Series		
	Prioritize patient care issues.			
	Counsel parents and children about changes expected in puberty and normal variations.			
	<p>Diagnose, evaluate, and manage patients with the following endocrine disorders including but not limited to:</p> <ul style="list-style-type: none"> • Carbohydrate metabolism <ul style="list-style-type: none"> • Physiology of systemic glucose metabolism • Type 1 and Type 2 diabetes mellitus • Hypoglycemia • Thyroid hormone physiology <ul style="list-style-type: none"> • Fetal and neonatal physiology • Congenital & acquired 	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<p>hypothyroidism</p> <ul style="list-style-type: none"> • Thyroid hormone resistance • Hyperthyroidism • Thyroid nodules and cancer • Thyroiditis • Thyroid hormone and receptors • Morphologic abnormalities • Impact of non-thyroid illness on thyroid function <ul style="list-style-type: none"> • Pituitary Gland and Hypothalamus <ul style="list-style-type: none"> • Neuroendocrine regulation of neurohypophyseal function • Disorders of hypothalamic pituitary function (e.g. thyrotropin, corticotrophin, gonadotropins, prolactin, vasopressin, oxytocin) • Treatment of disorders of hypothalamic pituitary dysfunction • Clinical disorders of the posterior pituitary • Diabetes insipidus • Adrenal gland <ul style="list-style-type: none"> • Cortisol, androgens, estrogens, and aldosterone • Congenital Adrenal Hyperplasia • Catecholamines • Adrenomedullin • Hypoadrenocortism 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Hyperadrenocortism • Hyperaldosteronism • Virilizing and feminizing adrenal tumors • Biosynthesis and metabolism • Gonadal disorders <ul style="list-style-type: none"> • Development and differentiation of the reproductive system • Hormone synthesis, secretion, transport, metabolism, and action • Normal sexual maturation • Abnormal development • Undescended Testicle • Gynecomastia • Delayed or precocious puberty • Benign premature adrenarche and thelarche • Mineral Metabolism <ul style="list-style-type: none"> • Calcium, phosphate, magnesium, PTH, Vitamin D • Calcitonin • Bone formation and associated disorders (e.g., rickets and skeletal dysplasias) • Hypophosphatemia • Hypo and hypercalcemia (William's Syndrome, Hypervitaminosis A) 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Growth Hormone <ul style="list-style-type: none"> • Short stature (e.g. constitutional delay, familial SS) • Obesity • Tall stature • Infants who are small for Gestational Age • Normal growth and development • Hormone assays and lipoprotein metabolism <ul style="list-style-type: none"> • Hormone receptors • Gastrointestinal and atrial natriuretic hormones • Hormone assays • Disorders of androgen and estrogen metabolism (e.g. adolescent reproductive endocrinology) • Disorders of sexual differentiation and development (e.g. Turner syndrome, Klinefelter syndrome, cryptorchidism, hermaphroditism, pseudo-hermaphroditism) • Disorders of parathyroid gland physiology • Disorders of fluid and electrolyte balance • Disorders of nutrition (e.g. anorexia and bulimia nervosa) • Neonatal and childhood hypoglycemia • Endocrine neoplasia 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> Non-endocrine illness impact on endocrine system 			
Medical Knowledge	SPECIALTY SPECIFIC OBJECTIVES			
	Demonstrate knowledge of proper use of laboratory tools and techniques for measurement of hormones in body fluids.			
	Differentiate between normal and pathological states related to endocrinology: <ul style="list-style-type: none"> normal patterns of linear growth and weight gain normal from early and delayed puberty premature thelarche and adrenarche from true precocious puberty Describe Tanner staging in boys and girls Enlarged thyroid Normal age ranges for pubertal onset 			
	Understand the pediatrician's role in preventing morbidity related to endocrine dysfunction in children.			
	Recognize the risks and limitations of the interpretation of laboratory results.			
	Demonstrate an understanding of the physiology, pathology, biochemistry, pharmacology and embryology of the endocrine and related systems.	Lecture Series		
	Demonstrate a basic understanding of the basic principles of hormone action including: <ul style="list-style-type: none"> General classes of hormones; their actions and regulations 	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Types of receptors and second messengers for individual hormones • Defects in hormonal structure, synthesis, release, and target cell • Hypothalamic releasing factors and their affects • Bioassays and Immunoassays (i.e., Ligand displacement, ELISA, IRMA/ICMA) • Resistance syndromes for specific hormones and their diagnosis 			
	<p>Develop knowledge of the basic principles of insulin including:</p> <ul style="list-style-type: none"> • Pathogenesis of diabetes mellitus • Diagnosis and treatment of DKA • Insulin types and their uses • Chronic management of type 1 and type 2 diabetes; roles of diet, exercise, insulin, and oral glyceic agents 	Lecture Series		
	<p>Demonstrate an understanding of current devices in development to improve the lives of diabetic children (e.g. continuous glucose monitoring, insulin pumps, and meters)</p>	Lecture Series		
	<p>Describe the growth hormone (IFG-1) patterns of normal growth and short variants.</p>			
	<p>Discuss the metabolic effects of growth hormone, sex steroids, and insulin-like growth factor I in puberty and beyond.</p>	Lecture Series		
	<p>Compare and contrast the consequences of</p>	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	mutations in pituitary transcription factor genes.			
	Demonstrate an understanding of the role of genetics in pediatric endocrinology: <ul style="list-style-type: none"> • Genetic syndrome with Endocrinopathies • Molecular genetics of Hypothalamic-Pituitary Axis Development • Laboratory methods • Cytogenetics • Enzymology 			
	Describe the aspects of immunology pertinent to understanding endocrine disease and the use of immunoassays.			
	Discuss the interaction of endocrine pathology and psychosocial problems in endocrine patients.			
	Demonstrate an understanding of molecular biology and its impact on pediatric endocrinology: <ul style="list-style-type: none"> • DNA and RNA • Protein synthesis • Manipulation of gene expression 			
	Demonstrate the knowledge of therapy techniques that are necessary for the treatment and management of endocrine disorders (e.g. hormone replacement,			
Practice Based Learning and Improvement	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	Objectives			
Interpersonal and Communication Skills	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			
Professionalism	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			
Systems-Based Practice	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			

Endocrine Oncology Clinic at St. Jude Children’s Research Hospital

During the Endocrine Oncology clinic, the PGY-4 resident is expected to expand and cultivate knowledge and skills acquired during previous training and to achieve the following objectives based on the six general competencies:

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
Patient Care	SPECIALTY SPECIFIC OBJECTIVES			
	Obtain an accurate medical history relevant to pediatric endocrinology disorders.			
	Perform a thorough and systematic physical examination relevant to pediatric endocrinology problems.			
	Formulate a diagnosis of endocrine disorders and when necessary generate a differential diagnosis.			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	Counsel and educate patients and their families concerning diabetes management, hormone treatment, emergency treatment with hydrocortisone, etc.			
	Perform the following diagnostic endocrine procedures including but not limited to: <ul style="list-style-type: none"> • Growth hormone stimulation tests • Oral glucose tolerance test • TSH surge • Metyrapone test • Low dose ACTH test • Lupron stimulation test • Modified GnRH test • Water deprivation test 			
	Provide health care services aimed at preventing health problems or maintaining health: blood glucose monitoring, stress steroid dosing, glucagon administration, dietary services, writing prescriptions, 24 hour emergency service, consultation service for community physicians, etc.			
	Generate and implement patient management plan based on patient information, preferences, up-to-date scientific evidence, and clinical judgement.			
	Interpret the following endocrine tests: <ul style="list-style-type: none"> • Stimulation and suppression tests, including the normal variations that occur 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<p>in laboratory results at different ages and times of day</p> <ul style="list-style-type: none"> • Thyroid function tests • Histopathology slides • Bone age X-ray • Brain MRI 			
	<p>Select appropriate diagnostic procedures for the evaluation of common pediatric endocrinology disorders that involve radiology (e.g. ultrasonography, CT scanning, MRI, and nuclear medicine).</p>	Lecture Series		
	<p>Initiate insulin regimen including carbohydrate counting, calculating insulin sensitivity factor and high sugar correction.</p>			
	<p>Assess diabetes and create treatment plans that are augmented by analysis of hemoglobin Alc.</p>	Lecture Series		
	<p>Properly adjust insulin dosages.</p>	Lecture Series		
	<p>Utilize new strategies in diabetes management such as insulin dose calculator, inhaled insulins, and other therapies.</p>	Lecture Series		
	<p>Prioritize patient care issues.</p>			
	<p>Counsel parents and children about changes expected in puberty and normal variations.</p>			
	<p>Diagnose, evaluate, and manage patients with the following endocrine disorders including but not limited to:</p> <ul style="list-style-type: none"> • Carbohydrate metabolism • Physiology of systemic glucose 	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> metabolism <ul style="list-style-type: none"> • Type 1 and Type 2 diabetes mellitus • Hypoglycemia • Thyroid hormone physiology <ul style="list-style-type: none"> • Fetal and neonatal physiology • Congenital & acquired hypothyroidism • Thyroid hormone resistance • Hyperthyroidism • Thyroid nodules and cancer • Thyroiditis • Thyroid hormone and receptors • Morphologic abnormalities • Impact of non-thyroid illness on thyroid function • Pituitary Gland and Hypothalamus <ul style="list-style-type: none"> • Neuroendocrine regulation of neurohypophyseal function • Disorders of hypothalamic pituitary function (e.g. thyrotropin, corticotrophin, gonadotropins, prolactin, vasopressin, oxytocin) • Treatment of disorders of hypothalamic pituitary dysfunction • Clinical disorders of the posterior pituitary <ul style="list-style-type: none"> • Diabetes insipidus • Adrenal gland 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Cortisol, androgens, estrogens, and aldosterone • Congenital Adrenal Hyperplasia • Catecholamines • Adrenomedullin • Hypoadrenocortism • Hyperadrenocortism • Hyperaldosteronism • Virilizing and feminizing adrenal tumors • Biosynthesis and metabolism • Gonadal disorders <ul style="list-style-type: none"> • Development and differentiation of the reproductive system • Hormone synthesis, secretion, transport, metabolism, and action • Normal sexual maturation • Abnormal development • Undescended Testicle • Gynecomastia • Delayed or precocious puberty • Benign premature adrenarche and thelarche • Mineral Metabolism <ul style="list-style-type: none"> • Calcium, phosphate, magnesium, PTH, Vitamin D • Calcitonin 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Bone formation and associated disorders (e.g., rickets and skeletal dysplasias) • Hypophosphatemia • Hypo and hypercalcemia (William's Syndrome, Hypervitaminosis A) • Growth Hormone <ul style="list-style-type: none"> • Short stature (e.g. constitutional delay, familial SS) • Obesity • Tall stature • Infants who are small for Gestational Age • Normal growth and development • Hormone assays and lipoprotein metabolism <ul style="list-style-type: none"> • Hormone receptors • Gastrointestinal and atrial natriuretic hormones • Hormone assays • Disorders of androgen and estrogen metabolism (e.g. adolescent reproductive endocrinology) • Disorders of sexual differentiation and development (e.g. Turner syndrome, Klinefelter syndrome, cryptorchidism, hermaphroditism, pseudo-hermaphroditism) 			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	<ul style="list-style-type: none"> • Disorders of parathyroid gland physiology • Disorders of fluid and electrolyte balance • Disorders of nutrition (e.g. anorexia and bulimia nervosa) • Neonatal and childhood hypoglycemia • Endocrine neoplasia • Non-endocrine illness impact on endocrine system 			
Medical Knowledge	SPECIALTY SPECIFIC OBJECTIVES			
	Demonstrate knowledge of proper use of laboratory tools and techniques for measurement of hormones in body fluids.			
	Differentiate between normal and pathological states related to endocrinology: <ul style="list-style-type: none"> • normal patterns of linear growth and weight gain • normal from early and delayed puberty • premature thelarche and adrenarche from true precocious puberty • Describe Tanner staging in boys and girls • Enlarged thyroid • Normal age ranges for pubertal onset 			
	Understand the pediatrician's role in preventing morbidity related to endocrine dysfunction in children.			
	Recognize the risks and limitations of the interpretation of laboratory results.			
	Demonstrate an understanding of the physiology,	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	pathology, biochemistry, pharmacology and embryology of the endocrine and related systems.			
	Demonstrate a basic understanding of the basic principles of hormone action including: <ul style="list-style-type: none"> • General classes of hormones; their actions and regulations • Types of receptors and second messengers for individual hormones • Defects in hormonal structure, synthesis, release, and target cell • Hypothalamic releasing factors and their affects • Bioassays and Immunoassays (i.e., Ligand displacement, ELISA, IRMA/ICMA) • Resistance syndromes for specific hormones and their diagnosis 	Lecture Series		
	Develop knowledge of the basic principles of insulin including: <ul style="list-style-type: none"> • Pathogenesis of diabetes mellitus • Diagnosis and treatment of DKA • Insulin types and their uses • Chronic management of type 1 and type 2 diabetes; roles of diet, exercise, insulin, and oral glyceic agents 	Lecture Series		
	Demonstrate an understanding of current devices in development to improve the lives of diabetic children (e.g. continuous glucose monitoring, insulin pumps, and meters)	Lecture Series		

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	Describe the growth hormone (IFG-1) patterns of normal growth and short variants.			
	Discuss the metabolic effects of growth hormone, sex steroids, and insulin-like growth factor I in puberty and beyond.	Lecture Series		
	Compare and contrast the consequences of mutations in pituitary transcription factor genes.	Lecture Series		
	Demonstrate an understanding of the role of genetics in pediatric endocrinology: <ul style="list-style-type: none"> • Genetic syndrome with Endocrinopathies • Molecular genetics of Hypothalamic-Pituitary Axis Development • Laboratory methods • Cytogenetics • Enzymology 			
	Describe the aspects of immunology pertinent to understanding endocrine disease and the use of immunoassays.			
	Discuss the interaction of endocrine pathology and psychosocial problems in endocrine patients.			
	Demonstrate an understanding of molecular biology and its impact on pediatric endocrinology: <ul style="list-style-type: none"> • DNA and RNA • Protein synthesis • Manipulation of gene expression 			
	Demonstrate the knowledge of therapy techniques that are necessary for the treatment and			

Competency	Required Skill(s)	Teaching Method(s)	Formative Evaluation Method(s)	Frequency of Evaluation
	management of endocrine disorders (e.g. hormone replacement,			
Practice Based Learning and Improvement	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			
Interpersonal and Communication Skills	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			
Professionalism	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			
Systems-Based Practice	SPECIALTY SPECIFIC OBJECTIVES			
	See General Pediatric Endocrinology Goals and Objectives			