

## Endocrinology

### Competency Based Goals and Objectives

**COMPETENCY 1. Patient Care.** Provide family centered patient care that is developmentally and age appropriate, compassionate, and effective for the treatment of health problems and the promotion of health.

1. Explain the findings on clinical history and examination that suggest a disease of endocrine origin and require further evaluation and treatment.
  - ◆ 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.
2. Perform Tanner staging (SMR) and explain the sequential physiologic events associated with puberty.
3. Interpret clinical and laboratory endocrine tests to identify endocrine disease including:
  - ◆ bone age
  - ◆ vitamin D, calcium, phosphate and alkaline phosphatase,
  - ◆ glucose, insulin, hemoglobin A1C
  - ◆ T<sub>4</sub>, free T<sub>4</sub>, TSH,
  - ◆ parathyroid hormone
  - ◆ serum and urine electrolytes and osmolality
  - ◆ cortisol and ACTH,
  - ◆ FSH, LH, estradiol, testosterone, cortisol, rennin, adrenal androgens and precursor hormone levels,
  - ◆ growth hormone,
  - ◆ imaging studies (MRI, CT Scan, Ultrasound, and thyroid scans) and bone densitometry.
4. Diagnose, explain the pathophysiology of, and manage the following endocrine conditions:
  - ◆ Abnormal newborn metabolic screening, including hypothyroidism, congenital adrenal hyperplasia, PKU, and galactosemia
  - ◆ Premature adrenarche
  - ◆ Premature thelarche
  - ◆ Delayed puberty due to chronic disease or anorexia nervosa
  - ◆ Exogenous obesity
  - ◆ Familial short stature, constitutional delay of growth or puberty
  - ◆ Short stature variants not meeting criteria for hormone therapy
  - ◆ Gynecomastia in a pubertal male
  - ◆ Infant of mother with gestational diabetes
  - ◆ Transient hypocalcemia of a newborn
  - ◆ Transient hypoglycemia of a newborn
5. Identify, explain the pathophysiology of and provide consultative management for the following endocrine conditions:

- ◆ Adrenal insufficiency
  - ◆ Ambiguous genitalia, hypogonadism, and micropenis
  - ◆ Central and nephrogenic diabetes insipidus and psychogenic polydipsia
  - ◆ Congenital adrenal hyperplasia
  - ◆ Delayed or precocious puberty
  - ◆ Diabetes mellitus type I (diabetic ketoacidosis (DKA), long-term management)
  - ◆ Endocrine and genetic causes of obesity
  - ◆ Genetic syndromes and familial inheritance patterns with endocrine abnormalities
  - ◆ Hirsutism, hyperandrogenism, and polycystic ovaries
  - ◆ Hypoglycemia in childhood and adolescence
  - ◆ Metabolic bone disease including rickets and skeletal dysplasias
  - ◆ Abnormalities of calcium, phosphorus, or magnesium homeostasis
  - ◆ Short stature variants meeting criteria for hormonal treatment
  - ◆ Tall stature and excessive growth syndromes
  - ◆ Thyroid dysfunction and goiters
  - ◆ Diabetes mellitus type II
6. Provide preventive counseling to parents and patients with specific endocrine conditions about:
    - ◆ The need for influenza vaccination in children with certain endocrine disorders (hypoadrenalism, diabetes mellitus, hypopituitarism, chronic steroid use, and Cushing Syndrome).
    - ◆ The association of chronic steroid use and decreased bone density.
    - ◆ The importance of diabetes control for prevention of long term complications such as retinopathy, neuropathy, nephropathy, and gastroparesis.
  7. Diagnose and manage uncomplicated diabetes mellitus with or without the assistance of an endocrinologist.
  8. Understand the general pediatrician's role in the diagnosis and management of patients with congenital and acquired hypothyroidism and hyperthyroidism.

**COMPETENCY 2. Medical Knowledge.** Understand the scope of established and evolving biomedical, clinical, epidemiological and social-behavioral knowledge needed by a pediatrician; demonstrate the ability to acquire, critically interpret and apply this knowledge in patient care.

1. Identify the individual at risk for developing endocrine dysfunction through routine endocrine counseling and screening of all patients and parents, addressing:
  - ◆ Normal variations in growth (including genetic short stature and constitutional growth delay).
  - ◆ Expected and normal variations in body changes during puberty. Information should be ethnic group specific.
  - ◆ The importance of vitamin D supplements in breast-fed infants and select populations with low intake of vitamin D, calcium, or phosphorus.
  - ◆ Diabetic screening for patients with symptoms of polyuria, polydipsia and polyphagia.
  - ◆ Diabetic, hypercholesterolemia, and hypertriglyceridemia screening for any child who is obese.
  - ◆ Newborn metabolic screening when appropriate.
2. 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.

3. Identify early puberty and differentiate it from premature thelarche and premature adrenarche.
4. Describe the hypothalamus-pituitary-peripheral gland axis along with their stimulatory and inhibitory feedback mechanisms.
5. Describe Calcium and Phosphorus homeostasis, vitamin D metabolism, parathyroid hormone functions, and their interrelationships.
6. Determine if the following presenting signs and symptoms are caused an endocrine disease process and determine if the patient needs treatment or referral.
  - ◆ Fatigue
  - ◆ Vomiting/Weight loss
  - ◆ Short and tall stature
  - ◆ Obesity
  - ◆ Polydipsia
  - ◆ Hypoglycemia
  - ◆ Hyperglycemia
  - ◆ Hypocalcemia
  - ◆ Early or delayed puberty
  - ◆ Acanthosis nigricans
  - ◆ Headaches
  - ◆ Dizziness
  - ◆ Diplopia and blurred vision
  - ◆ Polyuria
7. 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
8. Develop an efficient approach to finding information resources related to endocrinology to obtain rapid information that is relevant to a presenting patient problem.

**COMPETENCY 3. Communication Skills.** Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates.

1. Talk to family members about sensitive issues that relate to a patient's illness.
2. Write an effective and timely consultation note that summarizes the findings and recommendations of the endocrine service and clarifies the continued role and responsibility of the consultant.
3. Work effectively as a member of the endocrinology team.
4. Develop effective approaches for teaching students, colleagues, other professionals and lay groups.
5. Maintain comprehensive, timely, and legible medical records.

**COMPETENCY 4. Practice-based Learning and Improvement.** Demonstrate knowledge, skills and attitudes needed for continuous self-assessment, using scientific methods and evidence to investigate, evaluate, and improve one's patient care practice.

1. Identify standardized guidelines for diagnosis and treatment of endocrine diseases and learn the rationale for adaptations that optimize treatment.
2. Identify personal learning needs systematically organize relevant information resources for future reference and plan for continuing data acquisition as needed.

3. Seek and incorporate feedback and self-assessment into a plan for professional growth and practice improvement.

**COMPETENCY 5. Professionalism.** Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.

1. Demonstrate personal accountability to the well being of all patients,
2. Be honest and use integrity in one's professional duties.
3. Reflect on your own biases toward particular illness or patient groups and take steps to assure that these biases don't interfere with the care you deliver.
4. Appreciate the psychosocial impact of endocrine diseases on the child, family, parents work, and child's school.
5. Meet high standards of legal and ethical behavior.

**COMPETENCY 6. Systems-Based Practice.** Understand how to practice quality health care and advocate for patients within the context of the health care system.

1. Know the availability of and importance of support groups and camps available for children with diabetes mellitus.
2. Clarify how documentation and billing/charges differ for consultations vs. referrals vs. on-going management of children with endocrine diseases.
3. Demonstrate sensitivity to the costs of clinical care for children with endocrine diseases.
4. Recognize and advocate for families who need assistance to deal with systems complexities, such as lack of insurance, multiple medication refills and multiple appointments with the endocrine service and other providers.
5. Consider potential sources of medical error for children with endocrine disorders.