

## **MEDICAL EXPERT**

### **A. Knowledge**

1. Embryology
  - a) Embryology of sexual differentiation in both sexes.
  - b) Embryology of the thyroid gland.
2. Anatomy
  - a) Basic anatomy/histology associated with each major endocrine organ.
3. Physiology
  - a) Principal elements of physiology underlying each of the major endocrine axes.
  - b) Physiological principles underlying Type 1, Type 2 diabetes and lipid metabolism.
4. Principles of Normal Growth
  - a) Understand the principal determinants of normal growth, including fetal growth, and the impact of disease states on growth parameters.
  - b) Be able to plot and interpret patient data on growth and height velocity charts in relation to normal and pathological states.
  - c) Have a clear understanding of normal variant growth patterns and a strategy for distinguishing these from pathological states.
5. Principles of Normal Sexual Maturation
  - a) Have a clear understanding of the sequence of normal sexual development for both sexes and be able to evaluate a child born with a disorder of sexual differentiation.
  - b) Appreciate change in activity/regulation of the gonadal axis as a function of age in both sexes.
  - c) Distinguish normal variations of sexual development from pathological variants.
  - d) Be able to evaluate and distinguish central precocious puberty vs. peripheral causes clinically and with appropriate biochemical testing.
6. Specific Disease States - Clinical Presentation, Relevant Genetics, Evaluation and Treatment
  - a) Diabetes – Type 1
    - Epidemiology and genetics associated with this condition.

- Be able to manage a new presentation of Type 1 diabetes with or without diabetic ketoacidosis.
  - Understand the basics of dietary management, including carbohydrate counting, insulin/carbohydrate ratios.
  - Be familiar with both standard insulin regimens and basal-bolus therapies, including insulin pumps.
  - Be able to operate blood glucose monitoring equipment.
  - Be able to manage acute presentations including intercurrent illness, hypoglycemia and diabetic ketoacidosis.
- b) Diabetes – Type 2
- Understanding clinical elements used to distinguish Type 1 from Type 2 diabetes.
  - Knowledge of genetic and environmental risk factors for Type 2 diabetes.
  - Interpretation of oral glucose tolerance testing.
  - Familiarity with dietary and pharmacologic management principles.
- c) Anterior Pituitary
- Deficiency states
  - Overactivity states (e.g., adenomata)
  - Craniopharyngioma - embryology, clinical presentation, imaging, management
- d) Posterior Pituitary
- Diabetes insipidus
- e) SIADH
- Perioperative fluid management issues in patients with disorders of water balance.
- f) Thyroid
- Congenital hypothyroidism and hyperthyroidism
  - Autoimmune thyroid diseases
  - Thyroid malignancies
- g) Calcium
- Hypocalcemia
  - Hypercalcemia
  - Determinants and evaluation of skeletal health.
- h) Adrenal
- Normal adrenarche
  - Benign premature adrenarche
  - Peripheral precocious puberty
  - Congenital adrenal hyperplasia
  - Identification and management of adrenal insufficiency (primary, secondary or tertiary)
  - Cushing's syndrome - differential diagnosis and evaluation

- Adrenal carcinomata
  - Pheochromocytoma - clinical presentation including relevant genetics, laboratory evaluation, imaging tools, perioperative management
- i) Gonadal
- Specific disorders associated with delayed/absent activation of this axis vs. premature activation
  - Gonadal tumors
  - HCG – production tumors
  - Genetic disorders altering gonadal regulation/function
- j) Dyslipidemias
- Common genetic forms
  - Secondary forms
  - Whom to screen
  - Interpretation of lab tests
  - Principals of lifestyle and pharmacologic management
- k) Genetic syndromes
- Turner's syndrome
  - Klinefelter's syndrome
  - Multiple endocrine neoplasia syndromes
- l) Obesity
- Relevant physiology
  - Endocrine causes
  - Evaluation of associated risks
  - Management options

## **B. Technical Skills**

1. History
  - a) Demonstrate ability to take a focused history in relation to an endocrine presentation, identifying both pertinent positives and negatives and incorporating family history as necessary.
2. Physical Examination
  - a) Perform focused physical examination relevant to the endocrine system of interest.
3. Interpretation of Common Endocrine tests
  - a) Have an understanding of the principles underlying various endocrine tests including provocative testing of specific endocrine axes.
4. Appreciate the limitations of certain tests.
5. Order endocrine testing in a logical, cost-effective manner.

## 6. Imaging Studies

- a) Understanding the application of basic imaging strategies including MRI, CT scanning, U/S and nuclear medicine to the evaluation of endocrine disorders.
- b) Understand the uses of bone age determinations in the evaluation of endocrine disease.

### **COMMUNICATOR**

1. Able to explore, in a sensitive manner, the psychosocial impact on patient/families of disorders of growth, sexual development and chronic disease.
2. Demonstrates the ability to communicate effectively with patients and families regarding diagnosis, prognosis and management of endocrine disorders.
3. Demonstrates ability to communicate verbally and in writing the endocrine assessment of patients.

### **COLLABORATOR**

1. Demonstrates ability to work effectively with allied health professionals.
2. Consults effectively with other physicians.

### **MANAGER**

1. Sets realistic priorities and uses time effectively in order to optimize professional performance.
2. Orders endocrine testing in a logical, cost-effective manner.

### **HEALTH ADVOCATE**

1. Demonstrates an understanding of the pediatrician's role in patient advocacy.
2. Recognizes and responds appropriately in advocacy.

### **SCHOLAR**

1. Demonstrates a commitment to continuous learning. Develops and implements an effective personal learning plan.
2. Is able to critically appraise relevant medical literature.
3. Facilitates learning of patients, families and junior trainees.

**PROFESSIONAL**

1. Demonstrates integrity, honesty, compassion and respect for patients and families.
2. Demonstrates an awareness of own limitations and seeks advice where necessary.
3. Demonstrates respect for patient confidentiality.
4. Meets deadlines, is punctual and provides patient follow-up.

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