CURRICULUM for ENDOCRINOLOGY

Trainee's Name _____________________ **Date** ______________

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
9-12	Inpatient consults	Endocrine Clinic	Inpatient consults	Diabetes Clinic (Once it starts) Inpatient consults	Inpatient consults
Noon	Conference	Conference	Conference	Grand Rounds	Conference
1-5 P	Review Topic of the Day	Review Topic of the Day	PMD Office Practice	Review Topic of the Day	Review Topic of the Day

I. Objectives

Patient Care
- Takes a complete -focused history and physical examination and gathers appropriate data for presentation to consultant
- Written work is complete and organized in a problem-centered format
- Develops own appropriate problem-based diagnostic and therapeutic plans and offers them to consultant

Knowledge
- Commitment to CME; demonstrates that he/she reads about patients' illnesses
- Demonstrates adequate knowledge for common inpatient and outpatient endocrine conditions
- Applies knowledge appropriately and effectively using systematic Bayesian reasoning

Communication
- Caring, respectful behaviors
- Works and communicates effectively and collegially with nursing and ancillary staff
- Organized consultant-appropriate oral presentations

Practice-based learning
- Appreciates the limitations of his/her medical knowledge and asks for help when needed
- Independent study and learns from mistakes
- Responsive to constructive criticism
- Produces at least one original research article that is relevant to diagnostic or therapeutic strategies in active patients

Professionalism
- Vigorous patient advocate; knows ALL the relevant facts about patients
- Honesty, reliability, responsibility, cooperativeness and timeliness
- Shows respect, compassion, and integrity in working with patients, peers and attendings, and staff
- Follows the rules of the residency program (e.g., work hour regulations)
- Attends the formal educational venues within the residency (60% attendance)

Systems-based practice
- Trainee's suggestions, during presentations, are cost-effective and demonstrate proper use of available inpatient (e.g. tests) and outpatient resources (e.g. home healthcare)

☐ has successfully achieved the above-listed objectives of this rotation OR
☐ has not successfully achieved the objectives highlighted above.

Electronic Signature of Attending Physician ________________________

☐ I had the opportunity to review my evaluation objectives form with the attending physician. I had sufficient opportunity to meet the above objectives during the rotation.

Electronic Signature of Resident ________________________

II. Educational Purpose of Rotation:

The purpose of the Endocrinology elective is to expose and instill a reasonable working knowledge and problem-solving skill-set required to optimally diagnose and care for patients with endocrine diseases.

A) Knowledge - Trainees will learn the skills necessary to diagnose and manage common endocrine diseases, including:

1. Diabetes (pathogenesis, diagnosis, inpatient and outpatient management, counseling)
2. Thyroid disorders (pathogenesis, diagnosis and management of hyper- and hypothyroidism)
3. Adrenal disorders (pathogenesis, diagnosis and management of hyper- and hypoadrenalism)
4. Pituitary disease
5. Bone and calcium homeostasis including Osteoporosis
6. Cardiometabolic Risk Factors: Recognition: Treatment Approaches and Guidelines
7. Reproductive endocrinology (basic understanding of axes and when to refer to endocrinologist vs. gynecologist)

B) Skills: From the experiences gained during the rotation, the resident will:

1) Refine his/her skills in medical history taking especially as pertains to Endocrinology problem-solving. He/she will master relevant review of systems and physical diagnosis, 2) Learn to prioritize tasks, 3) Use time efficiently , 4) Learn the principles of medical decision making, 5) Learn to cost-effectively order diagnostic studies and provide therapeutic interventions.

C) Attitudes: Desirable attitudes. He/she should:

1) Assume responsibility for aiding in patients' endocrinology management – knowing every detail of their Endocrinology-relevant history (including old records), physical examination, laboratories, diagnostic/therapeutic plan, 2) Access the opinions of attending physicians and consultants ONLY AFTER thinking about a case and offering their best effort at synthesis and a plan, 3) Appreciate the role of and when to consult the Endocrinologist.

III. Principal Teaching Methods: Residents will learn by seeing between 2-5 inpatient consults daily and 5- 8 patients in the office once or 2x weekly., presenting them to the attending consultant, followed by discussion. The resident will ALWAYS offer his/her diagnostic and therapeutic plan for correction and/or refinement by the attending physician. The resident will read articles from the references that are germane/applicable to their patients' problems. Residents will follow-up inpatients on whom they've completed a consultation until resolution or discharge to understand the course of disease. Daily required conferences/activities include:

1. Resident's Morning Report – Daily (11am - noon or as scheduled)
2. Office - Once weekly with Private Endocrinologist in addition to weekly Endocrine and Diabetes Clinic
3. Noon conference lecture series – 5 days/week, July-September is a repeating course of core topics, while October-June includes specialty and sub-specialty lectures comprising a 2-year cycle that covers most fundamental topics for each discipline.

IV. Patient Characteristics – The Endocrinology office practice is amongst the busiest in Bridgeport/Fairfield. Patients referred for assessment include nearly equal numbers of men and women, ranging in age from 2 to over over 70 years and of average age in the mid 40's. The socioeconomic demographic of the office-based practice is middle and upper, middle-class and insured. The mix of patient pathologies include an abundance of diabetes and sufficient numbers of thyroid, adrenal, pituitary, calcium and reproductive axis problems to provide an excellent breadth and depth of exposure.

V. Procedures - Residents will observe aspiration of thyroid nodules as can be arranged.

All endocrine imaging studies, will be reviewed with Endocrine Attending and Radiology attending. This included MRIs, CT scans, thyroid scans, bone densitometries

VI. References – *Harrisons, Principles of Internal Medicine: Trainees are expected to read all sections of Harrisons (or similar text) referable to the Endocrinology. Computerized data-bases available throughout the hospital at every terminal: Up-to-Date and MD-Consult. All trainees are expected to use one of these or similar resources to master topics that are germane to their patients every day. *The Endocrinology MKSAP (sign-out in program director's office) is mandatory reading. Endoctext.com ** is an web based endocrine text which the resident should become familiar with. When 'key endocrine topic articles' are published in the medical literature these will be discussed with the resident

VII. Residents will be expected to pick one endocrine topic or article of their interest and give an information presentation of this in the 3or 4th week of their rotation.

V. Methods of Evaluation

Residents and interns are evaluated by the office Endocrinologist attending physicians with whom they work during the 4-week rotation.
All evaluations will be performed on-line, by email, using the E-value system. A resident shall not receive credit for a rotation until he has evaluated the rotation, attending and the degree to which he had opportunity to complete the objectives.

More Comprehensive List of Topics

Topics that the trainee is expected to master-

- Calcium and bone disorders/nephrolithiasis
  - Hypercalcemia
    - Causes and treatment (Including familial hypocalciuric hypercalcemia and overproduction of PTH-related peptide).
    - Hyperparathyroidism-clinical features; when and how to treat
    - MEN syndromes-diseases in each syndrome, genetics
    - Vitamin D metabolism
  - Hypocalcemia
    - Hypoparathyroidism, hypovitaminosis D (rickets), vitamin D dependent and Vitamin D resistant syndromes, plus pseudohypoparathyroidism and pseudopseudohypoparathyroidism
  - Osteoporosis
    - Prevalence and cost
    - Secondary causes (Elevated thyroxine, steroids)
    - Treatment (Diphosphonates, Calcitonin, HRT & SERMs, PTH analogues, fluoride)
    - Bone markers
    - Interpretation of DEXA scans
  - Paget's Disease
    - When and how to treat
  - Nephrolithiasis
    - Causes-frequency and pathophysiology
  - How to evaluate the following
    - Hypercalciuric syndromes
    - Hyperuricosuria (uric acid and calcium stones)
    - Renal tubular acidosis
    - Hyperoxaluria
    - Reduced inhibitors (citrate, magnesium)
    - Treatment
- Pituitary
  - Residents should be able to evaluate:
    - Hypothalamic-pituitary axis, anatomy, normal physiology
    - Causes of hyopituitarism. Anterior, posterior and hypothalamic conditions.
    - Hypersecretions of thepituitary hormones and syndromes
    - Treatment of pituitary lesions
    - Hypothalamic-pituitary axis
      - Anatomy
      - Blood supply (anterior, posterior pituitary, hypothalamus)
      - Effects of pituitary stalk section
    - Causes of hypopituitarism
      - Pituitary diseases (mass, surgery, infiltration, radiation, infarction, apoplexy, empty sella, genetic diseases)
      - Hypothalamic diseases (mass, radiation, infiltrative disease, infection, trauma)
    - Hypersecretions of pituitary hormones and syndromes
      - Hyperprolactinemia, Acromegaly and Gigantism, Cushing's disease, SIADH, TSH, LH, FSH producing tumors
    - Treatment of pituitary lesions (medical-bromocryptine, somatostatin), surgical, radiation.
  - Testing of Pituitary integrity, posterior pituitary-ADH reserve and function, serum and urine Na+ osmolality, urine output.
  - ACTH reserve - AM cortisol determination. Cortrosyn, Metopirone, Insulin Stimuli.
  - GH reserve-insulin tolerance test, L-dopa, IGF
  - TSH reserve-TSH Free T4
  - LH, FSH reserve-FSH, estradiol, testosterone, LH
  - Prolactin.
  - Testing of Acromegaly
  - GH Fasting
  - IGH-1
  - Glucose suppression test,
  - Testing in Cushing's disease

- 24 hr urine free cortisol
- ACTH, cortisol levl
- dexamethasone suppression test
- cavernous sinus sampling.
- Testing in Prolactinoma (Prolactin)
- Testing in SIADH
- Serum Na/osmolality; urine Na/osmolality

Diabetes Mellitus/Hypoglycemia

- What are the new criteria for diagnosing diabetes mellitus and impaired gluose tolerance? How can type I and type II be distinguished from each other?
- What is the pathophysiology of the development of type I diabetes? What are the genetic factors and environmental factors that contributes to its development?
- What is the pathophysiology of type II diabetes? What is the significance of the insulin resistance syndrome? What metabolic abnormalities are generally seen in type II diabetes?
- Spend at least one session with Diabetes Educator (CDE) to understand the day to day complexities of glucose control

Thyroid Disorders

- Thyroid function testing-know how to diagnose subclinical hypo-and hyperthyroidism. Understand the thyroid/hypothalamic-pituitary feedback system and thyroid binding proteins and how they affect thyroid function testing. Be familiar with use and interpretation of thyroid uptake and scans.

Hyperthyroidism

- Know the causes of hyperthyroidism and how to distinguish each;
  - Graves disease, multinodular goiter (plummer's disease), thyroiditis (Hashimoto's, subacute, postpartum, silent, iodine-induced, including amiodarone)
  - toxic adenoma
  - Euthyroid hyperthyroxinemia
  - hyperemesis gravidarum
  - Discuss advantages/disadvantages of various therapies for hyperthyroidism and know how to treat thyroid storm
  - Know pathophysiology and treatment of exopthalmus
  - Be conversant with alternate therapies for Graves disease in pregnancy and childhood.

Hypothyroidism

- When does one treat subclinical disease?
- How much and which replacementpreparations should be used?
- How does one confirm a patient is hypothyroid if already on therapy?
- How to treat myxedema coma

Amiodarone and thyroid function

Thyroid Nodules/Cancer

- How frequent are nodules?
- How frequently are nodules malignant?
- When and how does one evaluate thyroid nodules
  - Ultrasound and scanning
  - Thyroid biopsy
  - Radiation risk
  - Role of thyroid suppression
- What are types of malignancy and their relative mortality risk?
- How does one treat papillary cancer?

Gonadal Disorders

- Gynecomastia
  - Understand prevalence in different age groups and findings on physical examination in evaluating clinical relevance of gynecomastia
  - Commondifferential diagnostic possiblities including:
    - Side effects of medications
    - Causes of gynecomastia by unprescribed and illicit compounds
    - Gynecomastia in HIV/AIDS
    - Prostate cancer and gynecomastia
    - Diagnosis of tumors as causes of gynecomastia
    - Kleinfelter's and other gonadal disorders
    - Treatment options for gynecomastia
- Male Hypogonadism
  - Differential diagnosis of hypogonadism in males
    - Primary hypogonadism-testicular failure

Secondary (hypogonadotrophic) hypogonadism
Diagnostic evaluation
Hypothalamo-pituitary-gonadal axis
Seminal fluid analysis
Signs, symptoms, and complications of hypogonadism
Treatment strategies

Hirsutism/Polycystic Ovary Syndrome
Definitions
Metabolic and endocrine alteration in PCOS
Hyperinsulinism, obesity, diabetes as part of the PCOS spectrum
Causes and treatment options for hirsutism
Treatment options for infertility
Treatment options for insulin resistance

Lipid Disorders
Understanding of CVD risk factors
Guidelines for Lipid management
Understand the correct mechanism of action and use of drugs for treating lipid disorders

Faculty:

John Machledt, MD
Maria Guoth, MD
Jonathan Fillmore, MD
Glenn Rich, MD
Bruce Wainer, MD

Purpose/Overview-

The nature of Endocrinology has changed significantly over the last few years. There are very few patients admitted for endocrine evaluation. Therefore, the teaching program has been adapted to conform to these realities. A large part of teaching now takes place in an outpatient setting. This may, initially, seem challenging to a new resident. However, we believe that, with a little effort, you will be able to learn as much about the pathophysiology and treatment of endocrinologic disease as ever before.

Patient-Based Experience-

Endocrine Clinic. This takes place on the second Friday of each month in the Primary Care Center (The Clinic). Since there are, at most, only two clinics during your rotation, it is imperative that you be present for these clinics, without exception. Patients are scheduled to arrive at 8:30 a.m., so you should arrive no later than 8:45 a.m. Each patient must be presented to the attending physician assigned to the clinic.

Inpatients. You will see each general service patient consult and write an appropriate consultative note on the white consultation sheet. An attending Endocrinologist will review each case with you. You will also see as many private consults as practicable. Whenever possible, you will be asked to see the patient before the attending physician and write a consultative note in the progress notes. It is important to read appropriate material about each case as you see it, so that you will have a broad knowledge of as many areas of Endocrinology as possible by the time you complete your rotation.

Patient-Based Teaching-

Outpatient teaching. Residents will visit the offices of attending endocrinologists. Since considerable effort is being made to schedule endocrine consultation visits in these physicians' office, for maximum teaching benefit, every effort should be made to attend these sessions.

Walk-rounds will be conducted each morning, Monday through Thursdays, at which time old and new consults will be seen. Didactic teaching will occur during this time when appropriate teaching material is not available.

Didactic Component-

Endocrine Conference. These are held at 12 noon on the fourth Tuesday of each month. Residents will be expected to present appropriate cases at the beginning of these didactic sessions. Yale Endocrine Conference (New Haven) is held on Fridays from 12 noon to 2:00 p.m., from September through May. Efforts will be made to get you to these conferences at least every other Friday. Other presentations may be made at Morning Report throughout the year.

Since not all endocrine diseases may be encountered during a given time period, we have developed a curriculum which outlines what we feel you should know about each endocrine disease by the end of your rotation. Hopefully, you will have seen patients that will call to memory most of these topics. If you find certain areas have not been covered near the end of your rotation, please let us know so that the topic can be discussed with you before you leave. Up-to-date references on each topic have been included.

You can sign out the most recent MKSAP regarding advances in endocrinology from the program director's office. You will also be given the Endocrine Self-Assessment Program 2000 that contains 160 case studies of various endocrine problems to challenge you. You should read all these before completing your time on the service. An examination may be offered at the end of your rotation to ensure that you have mastered the topics outlined in the curriculum and accompanying material.