I. EDUCATIONAL PURPOSE, RATIONALE OR VALUE
This rotation is designed to provide Internal Medicine Housestaff with a broad-based knowledge and experience necessary to take care of the patients with endocrine and metabolic disorders or diabetes. The common endocrine diseases seen in the in-patient consult service and the ambulatory care clinics include benign and malignant thyroid disease, diabetes mellitus, adrenal pathologies, pituitary disorders, polycystic ovary syndrome and osteoporosis.

II. PRINCIPAL TEACHING METHODS:
The resident education is accomplished through supervised patient care and didactic teaching.

1. Supervised direct patient care

1a. In patient consults:
The resident shares the consults with the Endocrine Fellow. When the team receives a request for consultation, the Internal Medicine resident has the priority for the consult. After the resident has seen the patient, he/she reviews the findings at the bedside as well as the consultation report with the fellow. Then the resident and the fellow present and discuss the patient with the attending physician who has ultimate responsibility for the consultative care of the patient.

The attending provides at least three 2-hours consult rounds during the week and one on the weekend. The attending provides on the average 2 hours of didactic teaching per week.

The consult resident interacts with the primary team caring for the patient and is not responsible for the direct care of the patient, only offering consultative service.

1b. Ambulatory care clinics:
The residents have the opportunity to attend the following half day clinics:

Monday morning diabetes clinic: This clinic focuses on the diagnosis and management of type 1 and type 2 diabetic patients and residents get exposure to the use of new therapies (i.e. incretin based therapies) and the state of the art technology including pens, pumps, continuous glucose monitoring.
Monday afternoon thyroid clinic: This clinic provides experience in the management of thyroid diseases, thyroid ultrasound and fine needle aspiration.

Tuesday afternoon general endocrine clinic: This clinic provides care to a wide range of general endocrine patients who have thyroid, adrenal, pituitary, parathyroid disorders. Endocrine clinics have the ultrasound equipment on-site. Residents get the opportunity to observe and perform thyroid ultrasound and ultrasound guided fine needle aspirations.

Wednesday morning polycystic ovary syndrome clinic: This clinic provides exposure to young women with menstrual irregularities, androgen excess, insulin resistance, obesity and metabolic syndrome.

2. Didactic lectures, seminars

2a. Divisional Seminars:
These are held on Thursday afternoons between 4:00 – 5:30 PM.

i. Clinical Conference: Thursday afternoons, 3 h per month
Teaching methods: Various endocrine diseases are discussed by the Division faculty and guest speakers. Disorders that occur at low frequency and are infrequently encountered by a trainee during the program are also discussed. Quarterly joint meetings are held with the Nuclear Medicine and Pathology Departments to review shared patients

ii. Case discussions: Thursday afternoons, 2 h per month
Teaching methods: Interesting and challenging cases are discussed by the Division faculty and when necessary experts from other divisions are invited. The fellow presents the case as a slide presentation. The case is opened to discussion. The fellow reviews the recent literature related to the case. The best approach for the case is discussed based on the recent literature.

iii. Journal club: Thursday afternoons, 1 h per month
Teaching methods: The fellow presents an article, usually as a slide presentation. The articles that improve the understanding of the mechanisms or can influence the current clinical practice are given priority. The relevant articles either supporting or challenging the primary article are briefly reviewed. The resident specifically comments on the validity of the experimental design and on the statistical analytic methods used and provides his/her opinion of the validity and importance of the findings and any apparent flaws.

iv. Research conference: Thursday afternoon, 1 hour per month
Teaching methods: Interactive discussion of presented research among experts on topics of basic and clinical science of endocrinology and metabolism, including experimental design, methodology, statistical analysis and interpretation of data. In addition, those fellows actively participating in either basic or clinical research present their research project to the division at least annually.

2b. Departmental activities:
While on the Endocrine Consult service, the residents are expected to attend the following Departmental teaching:

i. Internal Medicine Grand Rounds: Thursdays 12:00 – 1:00 PM.
ii. **Academic conferences:** Mondays 1:00 – 4:00 PM.

### III. EDUCATIONAL CONTENT

1. **Disease Mix and Patient Characteristics:** The in-patient and out-patient consults are requested by the Primary Care Physicians of Internal Medicine and Family Practice Departments or by other departments such as surgery, vascular surgery, obstetrics and gynecology, psychiatry, ophthalmology, neurosurgery, orthopedic surgery, etc. Patients have a variety of diseases that impact on the endocrine system, diseases of other systems with coexisting endocrine disease, or manifestations of primary endocrine disease such as diabetes mellitus, thyroid or parathyroid disease that warrant hospitalization. Patients will be more than 18 years old (PCOS patients aged >12 y are accepted), including the geriatric age group, and both sexes.

2. **Procedures and Services:** Dynamic endocrine studies and ultrasound-guided fine needle aspiration biopsy of the thyroid are taught. Appropriate laboratory testing, including imagine, are ordered and results reviewed as part of the doctor/patient/attending interaction. Cytological and pathological material are reviewed and analyzed at specific joint conferences (see below). In addition, thyroid and parathyroid sonography are taught in the Endocrinology Clinic.

The Diabetes Clinic has a support service including nursing, certified diabetes nurse-educators, nutritionist and training in use of insulin pumps.

3. **Patient Encounters:** Trainees evaluate patients by history, physical examination, and review of available laboratory and other data. The trainee formulates a differential diagnosis, plan for further evaluation and management. These are reviewed with faculty assigned to teaching rounds. Learning occurs by an iterative process through continuing interaction with faculty, review of pertinent literature and further discussion as new data emerges or changes in the patient’s condition occur as a consequence of recommended treatment. Experience in the inpatient setting will include preparation of appropriate patients with endocrine disease for surgery as well as postoperative management, radiation therapy and/or treatment with iodine I-131. Interaction with professionals from other departments is reviewed and evaluated. For in-patients who have surgery or biopsy, pathology and cytology are reviewed with appropriate specialists in those departments.

### IV. EDUCATIONAL GOALS AND OBJECTIVES

1. **The overall goals and objectives:**

   During the Endocrine Consult Rotation, the resident will gain the following:

   1. Basic endocrine biochemistry, physiology and pathophysiology, which provide the basis for understanding endocrine diseases and their management.

   2. Fundamental information and practical approaches for the diagnosis, management and prevention of endocrine disorders.

   3. The familiarity with the state-of-the-art technology such as insulin pumps, pens, continuous glucose monitoring, thyroid.
4. The practical knowledge and skills to recognize and manage endocrine problems appropriate for a specialist in Internal Medicine.

5. Knowledge and skills necessary for providing cost-effective, ethical and humanistic care of patients with diabetes and disorders of endocrinology and metabolism.

6. Knowledge and skills necessary for critical analysis of the laboratory testing and the endocrine literature.

2. Specific Objectives

During the Endocrine Consult Rotation, the resident will learn:

i. Endocrine biochemistry, physiology and pathophysiology.

ii. Hormone action and inter-relationships.

iii. Diagnosis and management of endocrine diseases including:

   iiiia. History and physical examination with emphasis on examination of the fundi, thyroid, breasts, penis, testes and female reproductive organs.

   iiiib. Selection and interpretation of appropriate endocrine biochemical tests.

   iiiic. Selection and interpretation of appropriate imaging procedures such as sonography, radionuclide scans, computerized axial tomography, magnetic resonance imaging, positron emission tomography, etc. pathology; use of thyroid ultrasound and ultrasound-guided biopsy.

   iiiid. Understanding pharmacotherapy for endocrine disorders and appropriate use of surgery, radiation therapy, treatment with radioisotopes, etc.

iv. Aspects of professionalism, including peer interactions, communication with patients, their families and other health care providers, confidentiality and avoidance of conflict of interest.

v. Understanding of existing and emerging endocrine literature.

vi. Advanced aspects of personal scholarship and self-instruction.

3. Competency based goals:

i. Patient care: Prioritize the daily “work” of the clinic; recognize the relative significance of a patients’ list of medical conditions; recognize the acuity and/or chronic levels of illness; understand the indications, contraindications and risks of common procedures; work with all providers to provide patient-focused care.

ii. Medical Knowledge: Use literature and reference sources to increase knowledge base; demonstrate basic knowledge in the areas of underlying pathophysiology and the clinical aspects of basic disease states; apply knowledge in the treatment of patients.
iii. Professionalism: Establish trust with patients, their families, and staff; exhibit honesty, reliability and responsibility in patient care; demonstrate respect for patients and staff; work to fulfill the needs of patients; accept assignment graciously; attend conferences.

iv. Interpersonal Skills: Write understandable and legible notes; develop ability to listen to patients, their family, mentors and staff and communicate verbally and nonverbally in a productive manner; work effectively as a member of the health care team.

v. Practice Based Learning and Improvement: Understand limitation of knowledge; use references and literature to improve practice patterns; accept feedback and change behavior; asks for help when needed.

vi. Systems Based Practice: Advocate for patients; learn about the health care system/structure and begin to develop mechanisms to utilize ancillary services to benefit patients.

Increasing independence and responsibility: Although, the specific components of the training program itself are not incremental, the residents are trained to assume increasing responsibility and autonomy to become successful independent practitioners.

V. ANCILLARY EDUCATION MATERIALS
1. Reading lists or other materials: The required reading includes the Greenspans’ *Basic and Clinical Endocrinology* and the *Up To Date*.

VI. METHODS OF EVALUATION
1. Resident evaluation: The residents are evaluated for 6 basic competencies using the E*Value.
2. Program evaluation: Residents also evaluate the Rotation using the E*Value.

VII. SUPERVISION
The residents are directly supervised by the endocrinology attending on the endocrinology consult service, the attendings on various Endocrine clinics and the fellow assigned to the service at that time.

VIII. RESIDENT SCHEDULE
1. In patient service: There are daily in-patient rounds. The attending on the service rounds at least three times on the weekdays and once on the weekend. Each round last two hours. The attending provides on the average two hours of didactic teaching per week. On the remaining two weekdays, residents round with the follow on service.
2. Ambulatory clinics: Residents discuss all the patients they see with the attending. The attending verifies history, physical, points out the endocrine-specific physical findings, discusses the appropriate use of laboratory tests, dynamic testing, imaging and the management/treatment plan.

IX. DUTY HOURS
The residents work between 8:00 AM to 5:00 PM from Monday through Friday. The residents do not take calls at night or on weekends.