

## **Division of Endocrinology, Diabetes and Metabolism Fellowship Research Rotation Goals and Objectives**

Subspecialty fellows undertake research rotations during the first and second years of his/her education. The major goals are to provide an introduction to the principles of clinical and laboratory research, gain experience in relevant endocrinologic investigations and perform an investigation into a specific research question. They receive instruction in basic research and in particular, use of molecular biology methods to answer questions relevant to their area of interest. The goal of this program is to instruct fellows to utilize critical thinking skills, analyze the strengths and weaknesses of research and statistics, and the tools to address problems experimentally. Teaching methods include lectures in research methods and statistics as well on direct instruction from faculty members. Fellows are also exposed to other researchers and research trials through the Department of Medicine research conference. Fellows are also instructed in the appropriate communication and criticism of research findings. Evaluation is based on performance and quality of research as assessed by the faculty.

### **GENERAL OBJECTIVES**

1. Acquire basic laboratory skills by lecture and practice.
2. Demonstrate elements of experimental design and data analysis, and acquire experience with investigational procedures necessary for both laboratory and clinical research in endocrinology.
3. Objectively critique endocrinologic literature with regard to experimental design, statistical analysis and appropriate conclusions, and to apply the principles to the design of a personal research project.
4. Participate in the design and execution, under the supervision of a faculty member, of a clinical or laboratory project, suitable for publication.
5. Present a scholarly discussion of the research, supported by appropriate current literature, to an audience of peers.
6. Author or co-author a manuscript or abstract submitted for publication or presentation at a national specialty meeting.

### **MEDICAL KNOWLEDGE**

#### **Goal**

Fellows acquire knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as apply of this knowledge to research questions of clinical significance.

### Specific objectives:

1. First year fellows are expected to:
  - a. List the applicable biochemistry and physiology, including cell and molecular biology, as related to a research question in endocrinology, diabetes, and metabolism.
  - b. List appropriate clinical laboratory, radionuclide, radiographic and molecular biology studies to address a research question.
  - c. Synthesize basic laboratory techniques, including quality control, quality assurance, and proficiency standards.
  - d. List steps to of common assays such as protein and nucleic acid content.
  - e. Maintain good laboratory notes, instrument use, safety, and use of radioactive materials.
  - f. Describe the elements of experimental design and clinical implications of the research project.
  - g. Acquire hands on experience with investigational procedures relevant to endocrinology.
  
2. Second Year Fellows are expected to:
  - a. Apply the applicable biochemistry and physiology, including cell and molecular biology, as related to a research question in endocrinology, diabetes, and metabolism.
  - b. Demonstrate mastery of appropriate clinical laboratory, radionuclide, radiographic and molecular biology studies to address a research question.
  - c. Apply knowledge of basic laboratory techniques, including quality control, quality assurance, and proficiency standards.
  - d. Carry out the elements of experimental design and clinical implications, and apply hands on experience with investigational procedures relevant to endocrinology.
  - e. As the fellow gains experience more advanced techniques will be introduced as required to complete the project they have selected. May include Northern, Southern, and Western blotting, transient transfection assays, mammalian cell culture, cloning, and immunoassays.
  - f. Maintain good laboratory notes, instrument use, safety, use of radioactive materials.

## **PATIENT CARE**

### Goal

Fellows must be able to provide care of human subjects that is compassionate, appropriate, and effective for reliable data generation and for the continued participation of human subjects in research.

### Specific objectives:

First year fellows will develop skills and second year fellows will safely and effectively practice compassionate care of research subjects. This includes the elements of informed consent, inclusion and exclusion criteria, proper handling of personal health information, and appropriate responses to adverse events in a clinical trial.

## **TECHNICAL AND OTHER SKILLS**

1. First year fellows will acquire skills and second year fellows will execute performance of the following:
  - a. Performance and interpretation of laboratory studies required to answer the research question.
  - b. Use critical thinking, statistics, and repetition when data is generated.
  - c. Performance of statistical testing to accept or reject the experimental hypothesis.
  - d. Gain competence in the use of terms hazard ratio, absolute and relative risk.
  - e. Prepare the final results of a research project in a manner suitable for presentation as part of a research seminar or poster, and/or for publication.

## **PRACTICE- BASED LEARNING AND IMPROVEMENT**

### Goal

Fellows investigate and evaluate their care of subjects, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

### Specific objectives:

1. First year fellows
  - a. Gain experience in the role of the principal investigator under the instruction of a faculty member.
  - b. Locate, appraise and assimilate necessary information regarding their research project.
  - c. Discuss the strategies for study enrollment.
  - d. Determine ways that ethically maintain subjects in clinical studies.
  - e. Discuss reasons for potential drop-outs
2. Second year fellows
  - a. Gain mastery of locating, appraising and assimilating necessary information

regarding their research project.

- b. Assess patient enrollment and dropout in clinical studies.
- c. Institute strategies to improve patient enrollment or reduce subject drop out.

## **SYSTEMS BASED PRACTICE**

### **Goal**

Fellows must practice an awareness of and responsiveness to the larger context and system of research in health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Specific objectives:

1. First year fellows:
  - a. Locate, appraise and assimilate evidence from scientific studies related to a systems based issue that impacts patient care.
  - b. Describe ways to analyze systematically the elements in the process, using quality improvement methods.
2. Second year fellows :
  - a. Design and implement a systems based quality improvement project regarding a research project.
  - b. Incorporate formative evaluation feedback into systems based practice.
3. All fellows are expected to:
  - a. Recognize and utilize medical, surgical, and psychological consultation services available within UF Health Jacksonville, as well as methods for patient referral to diabetes education, nutrition, rehabilitation, and social services.
  - b. Identify patient resources within the community relevant to needs of patients with diabetes and disorders of the endocrine system (e.g., educational resources, consumer organizations, advocacy and support groups, and professional societies).
  - c. Retrieve patient records and laboratory data from within the local system, and from referring health care providers, or previous and concurrent sites of patient care.
  - d. Employ appropriate avenues for obtaining laboratory and imaging tests and recommended therapies for patients belonging to contracted health management

organizations and insurance providers.

## **PROFESSIONALISM**

### Goal

Fellows commit to carrying out professional responsibilities and an adherence to ethical principles. Fellows are expected to practice during the first year and continue in the second:

1. Compassion, integrity, and respect for others.
2. Responsiveness to patient needs that supersedes self-interest.
3. Respect for patient privacy and autonomy.
4. Accountability to patients, society, and the profession.
5. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.
6. Commit to scholarship through presentations of conferences, literature reviews or publications related to personal research and clinical cases.
7. Develop effective teaching skills for instruction of patients, peers, and other health care professionals through conference presentations and on an individual level.

## **INTERPERSONAL AND COMMUNICATION SKILLS**

### Goal

Fellows must adhere to interpersonal and communication skills that result in the effective exchange of information and advocacy with subjects, their families, members of the research team and professional associates.

Specific objectives:

1. First and second year fellows are expected to:
  - a. Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds
    1. Use simple nontechnical language for oral and written communications and instructions
    2. Use appropriate interpreters for language barriers and sensory impairments
  - b. Communicate effectively with physicians, other health professionals, and health related agencies in regards to research.
  - c. Maintain comprehensive, timely, and legible laboratory records and source documentation.

3. Present effective research conferences using logical organization and appropriate audio-visual media.
4. Publish at least one original or review manuscript in a medical journal, or present at least one abstract at a regional or national meeting by the end of year 2 of training.