



## **BODY IMAGING**

*Tampa General Hospital*

**Rotation Director:** Raj Kedar, M.D.

**General Goals and Overview:** On this rotation, the resident will learn to interpret CT and MR and examinations of the chest, abdomen, and pelvis. The resident will also participate in CT-guided biopsy and drainage interventions.

### **Daily Work:**

The rotation in "Body Imaging" begins immediately after the completion of morning conference and concludes at 5:00 p.m. or when the work is completed, whichever is later.

On their first rotation, the resident should review all non-ED ordered CT examinations of the chest, abdomen, and pelvis. Examinations ordered by the ED will be read by the ED radiologist. On their second "Body Imaging" rotation, residents should also read any body MR exams done during the day. All CT and MR examinations should include correlation with relevant prior exams on PACs to help with accurate interpretation of the current exam. The resident should review prior discharge dictations and relevant pathology and surgical reports from the electronic medical records. The resident should then review the examinations and form their own impressions. At this point, all cases will be reviewed with the attending. At mid-day and at the conclusion of the day the resident should review and sign all of their reports, making sure their queue is empty on the computer system before leaving work. Any unexpected or emergent findings should be communicated to the referring physician during the course of the day. All studies should be dictated prior to leaving for the day and within 24 hours of the performance of the exam. Residents are expected to help referring physicians interpret studies performed at Tampa General Hospital.

The residents will be responsible for performing interventional procedures in CT. Interventional procedures include lung, abdominal, and bone biopsies, and abscess drainages. On the evening before the procedure, the resident should review upcoming cases for the following day to assure that all examinations and laboratories are in order. If the relevant studies are not present, they should be retrieved or restored.

On the morning of the procedure, the cases will be reviewed with the attending to decide the appropriate approach to a lesion. The plan for the procedure (patient position, side of lesion, area to be scanned and collimation) should then be communicated to the CT technology staff. The resident will obtain informed consent from the patient. Informed consent includes 1) an explanation of the procedure, 2) expected benefits of the procedure, 3) risks of the procedure and 4) alternatives to the procedure. These all need to be documented. Pre-procedure assessments should be completed by the resident and the appropriate documentation completed in the radiology holding area before the procedure. The

assessment should include review of the indications for the procedure, relevant blood work and a brief physical exam.

All procedures are performed with the attending present. After the procedure, outpatients are observed in the holding area and inpatients are returned to the floor. A procedure note should be left in the chart.

Dictations of procedures should include a brief history and indication for the procedure, the findings on the localizing CT images, the type and amount of anesthesia used and note of the follow-up period in the radiology holding area. The size and number of lesions, the type and gauge of needle (or catheter) and number of passes made should be included in the dictation. The resident should dictate that the attending radiologist was present during the entire procedure for all interventional cases. All interventional procedure are dictated at the conclusion of the procedure, these should never be dictated on the following day.

### **Suggested Reading:**

1. Fundamentals of Diagnostic Radiology. William E. Brant, Clyde A. Helms. 3<sup>rd</sup> edition.
2. Fundamentals of Body CT. W. Richard Webb, William E. Brant, Nancy M. Major. 3<sup>rd</sup> edition.

### **Educational Goals and Objectives:**

#### *First Year Residents*

##### Patient Care:

- Become familiar with CT protocols
- Be able to manage contrast reactions

##### Medical Knowledge:

- Describe the basic physics of computerized tomography
- Describe Hounsfield units, window and level settings
- Describe proper CT protocols for specific disease processes
- Describe dynamic vs. equilibrium phase imaging and differentiate between these entities
- Describe normal thoracic parenchymal, mediastinal and vascular anatomy
- Describe normal abdominal and pelvic anatomy
- Describe normal musculoskeletal anatomy
- State indications for aortic dissection CT and the protocol to be followed with this examination
- Describe the differences between conventional axial CT and helical CT

#### Interpersonal and Communication Skills:

- Appropriately obtain informed consent
- Appropriately communicate and document in the patient record urgent or unexpected radiologic findings
- Produce radiologic reports that are accurate, concise and grammatically correct
- Communicate effectively with all members of the health care team

#### Practice-based Learning and Improvement:

- Identify, rectify and learn from personal errors
- Incorporate feedback into improved performance
- Efficiently use electronic and print resources to access information

#### Professionalism:

- Demonstrate respect for patients and all members of the health care team
- Serve as a role model for medical students
- Respect patient confidentiality
- Present oneself as a professional in appearance and communication.
- Demonstrate a responsible work ethic with regard to work assignments

#### Systems-based Practice:

- Demonstrate knowledge of how radiologic information is integrated with the other parts of the health care system in the treatment of the patient
- Demonstrate knowledge of ACR standards and appropriateness criteria
- Demonstrate knowledge of cost-effective imaging practices

### *Second and Third Year Residents*

#### Patient Care:

- Develop a management plan based upon CT findings and clinical information.
- Demonstrate proper technique in planning and performing CT procedures
- Know the appropriate indications for CT examinations and alternatives depending on the suspected diagnosis.
- Appropriately protocol CT cases based upon the indication for the examination
- Minimize adverse reactions to iodinated contrast through appropriate patient selection and medication.

#### Medical Knowledge:

- Respond logically and with competence as a CT Radiology consultant.
- Describe volume, doses and administration rates of contrast for CT examinations.
- Provide a differential diagnosis for thoracic, abdominal, musculoskeletal, and vascular pathology
- Indications for CT-guided chest interventions.
- Indications for abdominal and pelvic CT interventions
- Indication and techniques of CT-guided abscess drainages and biopsies.
- Orient and supervise the proper imaging investigation of a patient or of a specific disease.

#### Interpersonal and Communication Skills:

- Appropriately obtain informed consent
- Appropriately communicate and document in the patient record urgent or unexpected radiologic findings
- Produce radiologic reports that are accurate, concise and grammatically correct
- Effectively teach junior residents and medical students
- Communicate effectively with all members of the health care team

#### Practice-based Learning and Improvement:

- Identify, rectify and learn from personal errors
- Incorporate feedback into improved performance
- Efficiently use electronic and print resources to access information

#### Professionalism:

- Demonstrate respect for patients and all members of the health care team
- Serve as a role model for junior residents and medical students
- Respect patient confidentiality
- Present oneself as a professional in appearance and communication.
- Demonstrate a responsible work ethic with regard to work assignments

#### Systems-based Practice:

- Demonstrate knowledge of how radiologic information is integrated with the other parts of the health care system in the treatment of the patient
- Demonstrate knowledge of ACR practice guidelines for CT examinations
- Demonstrate knowledge of cost-effective imaging practices
- Understand treatment implicated by findings on CT (e.g. what is the next treatment that should occur based on the CT findings).

#### **Evaluation:**

These are the evaluation mechanisms used to evaluate the resident and determine that the program goals and objectives are met.

#### Evaluation Forms

- Monthly rotation evaluation by faculty
- Evaluation by CT and MR technology staff

#### Exams

- ACR inservice exam
- Mock Oral Board exam

#### Portfolio

#### Procedure Logs

The residents will also be evaluated on:

- Attendance during CT rotation.
- Efficiency during CT rotation.
- Knowledge of CT protocols.
- Knowledge of CT anatomy, physiology and pathology.
- Knowledge of proper prescription of CT examinations.
- Ability to provide a reasonable differential diagnosis for a CT imaging finding and suggest the next most appropriate step in the work-up of the patient.
- Ability to appropriately perform CT-guided interventions.
- Efficiency in dictating studies.
- Quality of dictations.
- Interactions with referring physicians.
- Affability with coworkers, CT technologists, administrative assistants, nursing staff and radiology support staff.