BAPTIST®

Memorial Medical Education

AND

MIDSOUTH IMAGING

# INTERVENTIONAL RADIOLOGY RESIDENCY PROGRAM

## Resident Manual

Revised July 2025

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**John Stanfill, M.D. | Associate Program Director**
**Angela Callens | IR/DR Residency Program Manager**
**Kim Adams | IR Residency Program Coordinator**

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# SECTION I: IMPORTANT TELEPHONE NUMBERS

## RESIDENTS

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# FACULTY

This is provided for resident use only. Please do not share this information.

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NOTE: All numbers carry a 901 area code unless otherwise specified.

# BMH-MEMPHIS

| DEPARTMENT/LOCATION | PHONE | FAX |
|---|---|---|
| Admissions | 226-5050 | |
| ED (Major Side) | 226-3020 | |
| ED (Minor Side) | 226-3010 | |
| ED (Peds) | 226-3024 | |
| ED X-Ray | 226-3043 | |
| Fast Track | 226-3032 | |
| Medical Records | 226-5088 | |
| Pneumonia Protocol Hotline | 226-0530 | |
| RADIOLOGY READING ROOMS | | |
| Fluoroscopy | 226-4014 | |
| IP Body 1 | 226-0142 | |
| IP Body 2 | 226-4011 | |
| IP Body 3 | 226-4010 | |
| IP Neuro 1 | 226-5171 | |
| IP Neuro 2 | 226-4070 | |
| IP Nuc Card | 226-4266 | |
| OP Body 1 | 226-5462 | |
| OP Body 2 | 226-4786 | |
| OP Body 3 | 226-0879 | |
| OP Neuro 1 | 226-2806 | |

| DEPARTMENT/LOCATION | PHONE | FAX |
|---|---|---|
| OP Neuro 2 | 226-2809 | |
| OP Nuc Med | 226-2515 | |
| INPATIENT TECH AREAS | | |
| CT - IP | 226-5159 | |
| Diagnostic - IP Sort | 226-6483 | |
| ED X-Ray | 226-3043 | |
| IP Body 1 | 226-0142 | |
| IP Body 2 | 226-4011 | |
| IP Body 3 | 226-4010 | |
| IP Neuro 1 | 226-5171 | |
| IP Neuro 2 | 226-4070 | |
| IR Office | 226-5556 | |
| CT Biopsies | 226-2159 | |
| MRI - IP | 226-2890 | |
| Nuc Med - IP | 226-5162 | |
| US - IP | 226-5174 | |
| OUTPATIENT TECH AREAS | | |
| CT - OP | 226-5686 | |
| CT 3-D Lab | 226-5646 | |
| Diagnostic OR X-Ray | 226-0043 | |
| Diagnostics - OP Sort | 226-5670 | |
| MRI - OP | 226-2808 | |
| Nuc Card | 226-5260 | |
| Nuc Med - OP | 226-5258 | |

| DEPARTMENT/LOCATION | PHONE | FAX |
|---|---|---|
| PET | 226-1355 | |
| US - OP | 226-3702 | |
| RADIOLOGY \| OTHER NUMBERS | | |
| Main Department | 226-4000 | 226-5767 |
| File Room | 226-5169 | 226-2347 |
| Sorting Room | 226-6483 | |
| PACS | 226-2222 | |
| Nina Armstrong \| Specialist – Information Systems | 226-3301 | PGR: 227-7243 (2232) |
| Theresa Sigler \| Manager – Radiology Support | 226-5152 | PGR: 227-7243 (1791) |

# BAPTIST HEART INSTITUTE (MEMPHIS CAMPUS)

| DEPARTMENT/LOCATION | PHONE |
|---|---|
| CV ICU (Rooms 2911-2930) | 226-2998 |
| CV Recovery (Rooms 2901-2910) | 226-2900 |
| Nuc Cardiology | 226-5260 |
| Surg Control Desk | 226-0073 |
| Surg Control Desk | 226-5725 |
| Transplant/CCU (Rooms 2931-2942) | 226-2950 |

# BAPTIST MEDICAL GROUP (BMG)-GERMANTOWN (OUTPATIENT CARE CENTER)

| DEPARTMENT/LOCATION | PHONE |
|---|---|
| Main Number | 757-1350 |
| CT | 701-5624 |
| MRI | 701-5622<br>701-5623 |
| Radiology Department | 701-5620 |
| Reading Room | 701-5626 |
| Ultrasound | 701-5621 |
| X-Ray | 701-5628 |

# BAPTIST MINOR MEDICAL

| LOCATION | PHONE |
|---|---|
| Baptist Minor Med - Bartlett | 385-7817 |
| Baptist Minor Med - Cordova | 753-7686 |
| Baptist Minor Med - Olive Branch | 662-893-1160<br>901-525-1160 |
| Baptist Minor Med - Poplar | 385-7817 |

# BMH-BOONEVILLE

| DEPARTMENT/LOCATION | PHONE | FAX |
|---|---|---|
| 2nd Floor | 662-720-5080 | |
| 3rd Floor | 662-720-5353 | |
| CCU | 662-720-5260 | |
| ER Nursing Station | 662-720-5404<br>662-720-5403 | |
| House Supervisor | 662-554-9544 | |
| Teresa Botts \| Radiology Director | 662-720-5031 | |
| Radiology Main Number | 662-720-5030 | 662-720-5140 |
| Radiology Reading Room | 662-720-5035 | |
| CT | 662-720-5037 | |
| MRI | 662-720-5091 | |
| Nuc Med | 662-720-5029 | |
| Ultrasound | 662-720-3016<br>662-720-5039 | |

# BMH-CARROLL COUNTY (HUNTINGDON, TN)

| DEPARTMENT/LOCATION | PHONE |
|---|---|
| Brad Carey \| Radiology Director | 731-986-7375 |
| Reading Room | 731-986-7355 |
| ER | 731-986-7360 |

# BMH-COLLIERVILLE

| DEPARTMENT/LOCATION | PHONE | FAX |
|---|---|---|
| Main Number | 861-9000 | |
| 2nd-Floor Nursing Station | 861-8730 | |
| 3rd-Floor Nursing Station | 861-8560 | |
| ED Nursing Station | 861-9105 | 861-9104 |
| Health Information Management (HIM} | 861-8953 | |
| ICU | 861-8823 | |
| Security | 861-8818 | |
| Security (11:00 PM – 7:00 AM) | 227-7243 {4500} | |
| Surgery Front Desk | 861-8700 | |
| RADIOLOGY DEPARTMENT | | |
| Brad Smith \| Radiology Director | 861-8907 | |
| Main Department Reading Room | 861-8898 | 861-8897 |
| Mammo Reading Room | 861-8802 | 861-8804 |
| MRI/CT | 861-8912 | |
| Nuc Med | 861-8904 | |
| Radiology Front Desk | 861-8895 | |
| Radiology Tech Pager | 227-7243 {2850} | |
| X-Ray | 861-8919 | |

# BMH-CRITTENDEN (ARKANSAS)

| DEPARTMENT/LOCATION | PHONE |
|---|---|
| Daniel Massey \| Radiology Director | 870-394-7837 |
| Mammo | 870-394-7835 |
| MRI/CT Control Room | 870-394-7831<br>870-394-7832 |
| Nuclear Medicine | 870-394-7836 |
| Physician Work Area | 870-394-7822<br>870-394-7823 |
| Rad Tech Cellphone | 870-394-7683 |
| Reading Room | 870-394-7839 |
| Triage Nurse | 870-394-7826 |
| XR Control Room | 870-394-7833<br>870-394-7834 |

# BMH-DESOTO

| DEPARTMENT/LOCATION | PHONE |
|---|---|
| Main Number | 662-772-4000 |
| Donna Hoppe \| OP Manager | 662-772-3129 |
| Jennifer Davis \| IP Manager | 662-772-3229 |
| Robin Simpson \| Director | 662-772-3127 |
| RADIOLOGY DEPARTMENT | |
| CT \| IP | 662-772-4254 |
| CT \| OP | 662-772-3145 |
| Diagnostic \| IP | 662-772-3226 |

| DEPARTMENT/LOCATION | PHONE |
|---|---|
| Front Desk \| OP | 662-772-3128 |
| Interventional | 662-772-3227 |
| Mammography Front Desk | 662-772-2140 |
| Mammography Tech Station | 662-772-2188 |
| MRI \| IP | 662-772-4023 |
| MRI \| OP | 662-772-3138 |
| Nuc Med | 662-772-4213 |
| Radiology ED | 662-772-4266 |
| Ultrasound \| IP | 662-772-4268 |
| Ultrasound \| OP | 662-772-4127 |
| X-Ray Tech Cellphone | 662-772-2651 |
| RADIOLOGY READING ROOMS | |
| IP | 662-772-3263 |
| Mammography | 662-772-3118 |
| Nuc Med | 662-772-3265 |
| OP | 662-772-4124 |
| Specials | 662-772-3253 |

# BMH-TIPTON

| DEPARTMENT/LOCATION | PHONE | FAX |
|---|---|---|
| Main Number | 476-2621 | |
| 2 East | 475-5200 | |
| 2 West | 475-5290 | |

| DEPARTMENT/LOCATION | PHONE | FAX |
|---|---|---|
| ED | 475-5552 | |
| ICU | 475-5598 | |
| Labor & Delivery | 475-5410 | |
| Observation | 475-5460 | |
| Tiffany Cockman \| Radiology Manager | 475-5350 | |
| Radiology Department | 475-5333 | |
| Reading Room | 475-5534 | 475-5495 |
| Scheduling | 475-5529 | 475-5428 |

# BMH-WOMEN'S

| DEPARTMENT/LOCATION | PHONE | FAX |
|---|---|---|
| Main Number | 227-9000 | |
| House Supervisor | 453-1439 | |
| Assessment | 227-9298 | |
| Labor & Delivery | 227-9299 | 227-9285 |
| Mother/Baby | 227-9499 | 227-9489 |
| NCCU | 227-9396 | 227-9386 |
| NICU | 227-9395 | 227-9385 |
| PACU (Pre- and Post-) | 227-9296 | 227-9284 |
| Peds ER | 227-8830 | |
| Peds Floor | 227-8995 | |
| PICU | 227-8923 | |
| RADIOLOGY | | |

| DEPARTMENT/LOCATION | PHONE | FAX |
|---|---|---|
| CT | 227-9172 | |
| MRI | 227-9185 | |
| Stacey Fletcher \| Radiology Manager | 227-9636 | |
| Nuc Med | 227-9171 | |
| Radiology Department | 227-9170 | |
| Reading Room | 227-9929 | |
| Ultrasound | 453-1474 | |
| Ultrasound | 453-1489 | |
| Ultrasound | 227-9169 | |
| US (Room 214) | 227-9081 | |
| X-Ray/CT | 453-1472 | |

# MCKENZIE MEDICAL CENTER

| DEPARTMENT/LOCATION | PHONE |
|---|---|
| Main Number | 731-352-7907 |
| CT (tech area) | 731-393-7055 |
| Mammo | 731-393-7050 |
| Nuc Med | 731-393-7051 |
| Reading Room | 731-393-7057 |
| Ultrasound (tech area) | 731-393-7054 |
| XR (tech area) | 731-393-7056 |

# MSI CORPORATE OFFICE

| DEPARTMENT/LOCATION | PHONE |
|---|---|
| Main Numbers | 747-1000<br>473-6400 |
| Brian Barbeito – CEO | 473-6406 |
| Anna Rainey – Credentialing | 473-6422 |
| Angela Callens – Residency Coordinator | 226-3001 |

# NEA BAPTIST (JONESBORO, AR)

| DEPARTMENT/LOCATION | PHONE | FAX |
|---|---|---|
| 4 East (Rooms 4201-4236) | 870-936-4050 | |
| 4 West (Rooms 4101-4136) | 870-936-4025 | |
| 5 West (Rooms 5101-5136) | 870-936-5025 | |
| Emergency Nurse Area 1 | 870-936-1150 | |
| Emergency Nurse Area 2 | 870-936-1125 | |
| Emergency Physician Area | 870-936-1137 | |
| ICU 1 (Beds 1-12) | 870-936-2100 | |
| ICU 2 (Beds 13-24) | 870-936-2150 | |
| Inpatient Rehab (Rooms 5201-5224) | 870-936-5050 | |
| Recovery PACU | 870-936-2350 | |
| Women's Center (Rooms 3101-3124) | 870-936-3025 | |
| IMAGING CENTER | | |
| Breast Care Center | 870-936-8035 | |
| Breast Care Nurse | 870-936-8379 | 870-936-1054 |

| DEPARTMENT/LOCATION | PHONE | FAX |
|---|---|---|
| MR Control Room | 870-936-8018 | 870-936-8165 |
| Ultrasound | 870-936-8041 | |
| READING ROOMS | | |
| Mammo Reading Room | 870-936-8028 | |
| Reading Room | 870-936-1096 | |
| Reading Room | 870-936-1105 | |
| Reading Room | 870-936-8030 | |
| Reading Room - Dr. Greg Lewis | 870-936-1104 | |
| RADIOLOGY DEPARTMENT | | |
| Gena Morris \| PACS Admin | 870-936-1094 | |
| IR Main | 870-936-1092 | |
| MRI Control Room | 870-936-1108 | 870-936-1068 |
| Nuc Med (Room 1) | 870-936-1038 | |
| Nuc Med (Room 2) | 870-936-1037 | |
| Secretary's Desk | 870-936-1097<br>870-936-8059 | 870-936-1098 |
| Ultrasound | 870-936-1084<br>870-936-1088 | |
| X-Ray Central Work | 870-936-1086 | 870-936-1057 |

# VASCULAR INTERVENTIONAL PHYSICIANS

| LOCATION | PHONE | FAX |
|---|---|---|
| Clinic | 747-1007 | 531-7199 |

# WOLF RIVER IMAGING CENTER

| LOCATION | PHONE |
|---|---|
| CT | 567-3850 |
| MRI | 567-3851 |
| Reading Room | 567-3848 |
| US | 567-3853 |
| X-Ray | 567-3852 |

# SECTION II: POLICIES & PROCEDURES

Please familiarize yourself with the *Baptist Memorial Medical Education (BMME) Policy and Procedure Manual*, which lays out the medical center's policies on many aspects of resident privileges and responsibilities. In addition, read the following departmental policies carefully; they are the guidelines by which the radiology residency program operates and are revised annually to reflect changes in the program. Failure to comply with institutional and departmental policies can result in revocation or failure of annual renewal of your resident appointment.

## BMME POLICIES & PROCEDURES

### RESIDENT SELECTION GUIDELINES | APPLICANT ELIGIBILITY

Refer to the *BMME Policy and Procedure Manual* for detailed information regarding applicant eligibility.

### MEDICAL LICENSURE

**ARKANSAS:** Currently, the state of Arkansas does not require a medical license for residents (i.e., physicians-in-training). If a medical license is required for residents at any point in the future, Baptist will fund this expense. (This does not apply to residents who need Arkansas licensure for external moonlighting.)

**MISSISSIPPI:** Radiology residents are required to obtain a medical license in the state of Mississippi during their first six months of residency and must complete the USMLE Step 3 or COMLEX Level 3 exam. To that end, residents should submit written verification of successful completion of either exam before the end of their PGY-1 year. Consequences for failure to complete either of these exams before beginning the residency program are discussed in the Resident Salary Policy *(refer to the* BMME Policy and Procedure Manual*)*.

All fees associated with the Mississippi licensure and application will be the responsibility of Baptist. The program will work with residents to complete all necessary documentation.

**TENNESSEE:** Baptist will request and fund licensure exemption expenses for residents who are required to have a license to participate in the program in the state of Tennessee.

### SUPERVISION & ACCOUNTABILITY

In compliance with the Trainee Supervision & Accountability Policy (available in the *BMME Policy and Procedure Manual*), all residents are provided with continuous supervision and consultation by departmental faculty members. All cases performed, interpreted and dictated by residents throughout all years of training will be reviewed and approved by faculty.

For all vascular and interventional cases, faculty will be present in the hospital or clinic to supervise and will participate depending upon the individual resident's level of expertise. For other procedures,

including but not limited to imaging-guided biopsies, lumbar punctures, feeding tube placements and contrast studies, graduated supervision is provided to allow for progressive autonomy. The resident is expected to perform the procedure independently and in a safe manner before completing his/her residency.

## LEVELS OF SUPERVISION

Per the ACGME, "physically present" is defined as, "The teaching physician is located in the same room (or partitioned or curtained area, if the room is subdivided to accommodate multiple patients) as the patient while the resident performs a face-to-face service." The program must define when physical presence of a supervising physician is required.

To promote appropriate resident supervision while providing for graded authority and responsibility, the program must use the following classification of supervision:

- Direct Supervision:
    - The supervising physician is physically present with the resident during key portions of patient interaction

      OR
    - The supervising physician is not physically present with the resident and the supervising physician is concurrently monitoring patient care through appropriate telecommunications technology.
- Indirect Supervision: The supervising physician is not providing physical or concurrent visual or audio supervision but is immediately available to the resident for guidance and to provide appropriate direct supervision.
- Oversight: The supervising physician is available to provide review of procedures/encounters, with feedback provided after care is delivered.

Residents are expected to call or page the designated faculty backup person when needed. Faculty backup is provided 24 hours a day, seven days a week, as indicated on the weekly call schedule. At any given time, there are four faculty radiologists on call in all areas of radiology. Additionally, there is in-house faculty radiology coverage from 7:00 AM until 10:00 PM. There are circumstances in which all residents, regardless of level of training and experience, **MUST** verbally communicate with appropriate supervising faculty. These circumstances include:

- Radiograph performed in the operating room for incorrect instrument or needle count
- Any request for staff review of a radiology case
- Equivocal intracranial hemorrhage
- Resident illness, fatigue or any other situation requiring immediate staffing change *(refer to the Call/Float Policy on page **Error! Bookmark not defined.** for continuation of coverage)*

In accordance with ACGME policy, each subspecialty area has a designated faculty member responsible for the educational content of his or her section *(refer to the table on the next page)*.

| SUBSPECIALTY | EDUCATION COORDINATOR |
|---|---|
| Abdominal Radiology | Dr. Paul Tanner |
| Cardiothoracic Radiology | Dr. Keith Tonkin |
| Mammography | Dr. Heidi Umphrey |
| Musculoskeletal Radiology | Dr. Dexter Witte, III |
| Neuroradiology | Dr. Scott Didier |
| Nuclear Medicine (including PET and Nuclear Cardiology) | Dr. Craig Lipman |
| Pediatric Radiology | Dr. Jonathan Berger |
| Ultrasound (including OB and Vascular) | Dr. James Machin |
| Vascular & Interventional Radiology | Dr. Henry Dalsania |

# CHAPERONES

An assistant or attendant of the same gender as the patient shall be in the room at the patient's side whenever a resident performs an examination that requires personal exposure on the part of the patient. Typical situations include tube insertion for a barium enema, urethral catheterization, perineal sinus tract injection, endovaginal ultrasonography and transabdominal pelvic ultrasound if the pubic area must be uncovered. The proper procedure for these situations is to have in the room an employee such as a technologist, aide, nurse or patient care assistant who is of the same gender as the patient. For barium enema or urethral catheterization, the attendant can be dismissed once the patient is covered again.

# RADIATION MONITORING

Residents enrolled in the Interventional Radiology residency program at Baptist may be subject to an increased risk of exposure to radiation. To monitor exposure, a cumulative radiation exposure report for each resident physician will be compiled so as to include job-related radiation exposure at all Baptist facilities. Evaluation of this report will be performed by the radiation safety officer. GME will oversee residents' radiation exposure levels.

## RESIDENT RESPONSIBILITIES

Resident physicians are required to fulfill the following expectations concerning radiation monitoring:

- The resident is responsible for ensuring that all monitoring equipment received by the resident is worn as required and as appropriate. NO EXCEPTIONS.
- Issued badges will be used for a two-month monitoring period. Badges must be turned in on time at the facility in which they were issued.

- It is the responsibility of the resident to request fetal monitoring badges and monitoring rings when appropriate before a rotation begins. One badge for personal monitoring will be issued at BMH-Memphis for resident use at every Baptist facility in which he or she rotates.
- Resident physicians are not to wear monitoring badges during their personal radiologic examinations (e.g., during an X-ray of the resident's wrist after an injury).

### RADIATION SAFETY OFFICER RESPONSIBILITIES

The radiation safety officer (RSO) for Baptist-Memphis will assist the GME Department as follows:

- The RSO will act as a liaison between GME and the radiation monitoring vendor.
- The RSO will review all cumulative radiation exposure reports to ensure that residents maintain safe exposure levels.
- If a resident's exposure rate reaches ALARA (As Low as Reasonably Achievable) I, the RSO will alert the GME Department in writing within 5 working days.
- If a resident's exposure rate reaches ALARA II, the RSO will verbally notify the GME manager immediately. The RSO will follow this notification with a written notice within 5 working days.

### GME RESPONSIBILITIES

The GME office will monitor the radiation exposure reports received from the radiation safety officer. If the GME office receives notification from the RSO that a resident has reached ALARA I of the bimonthly exposure limit, the GME office will alert the program director and program coordinator, who will evaluate the need to alter the resident's future rotations in radiation areas. If the GME office receives notification from the RSO that a resident has reached ALARA II of the bimonthly exposure limit, the GME office will alert the program director and program coordinator, who will immediately remove the resident from radiation areas until such time as it is determined by the RSO and program director that the resident may safely return to normal duties.

### PROGRAM DIRECTOR RESPONSIBILITIES

The program director (PD) is ultimately responsible for the safety of all residents enrolled in the residency program.

- When the PD is notified by the GME office that a resident has reached ALARA I of the bimonthly exposure limit, the PD will communicate directly with the resident to ensure that he or she is aware of this status.
- When the PD is notified by the GME office that a resident has reached ALARA II of the bimonthly exposure limit, the PD will meet with the resident and RSO within five (5) business days to discuss the meaning of ALARA II status and ensure completion of page 2 of the notification letter by the resident.

# MOONLIGHTING

Moonlighting is defined by the ACGME as voluntary, compensated, medically related work performed beyond a resident's or fellow's clinical experience and educational hours and additional to the work required for successful completion of the program.

- External moonlighting: Performed outside the site where the resident or fellow is in training or at any of its related participating sites
- Internal moonlighting: Performed within the site where the resident or fellow is in training or at any of its related participating sites

It is the responsibility of the program director to ensure that moonlighting activities do not interfere with the emotional well-being of the resident, his/her educational training or the care of patients.

### GUIDELINES

- Residents are not required to moonlight.
- Residents must moonlight on their own time (i.e., on weekends they are not on call, vacation days and after hours).
- Residents must be fully licensed to practice medicine in the state(s) in which they moonlight externally.
- Residents must use their individual DEA number, not the institutional DEA number.
- BMME/BMHCC malpractice insurance does not cover unsupervised medical practice outside the scope of the residency training program. Therefore, residents will need to obtain their own malpractice insurance for the purposes of moonlighting.
- It is the responsibility of the resident and the hiring institution to determine whether the resident has the training skills appropriate for the medical activities that occur during moonlighting.
- Residents will not be allowed to moonlight in the specialty of radiology until the completion of two years of radiology residency training.
- Residents must score above a minimum threshold, generally at least 10%, on the Diagnostic Radiology In-Training (DXIT) exam to be eligible for external moonlighting. This threshold may be adjusted at the discretion of the program director.
- Residents must notify the program director if they are moonlighting. Upon approval, the program director must acknowledge this in writing, and a copy will be kept in the resident's file.
- All moonlighting is counted toward the clinical and educational work-hours limit (80 hours per week averaged over a four-week period). It is the responsibility of the individual resident to ensure this limit is not exceeded by moonlighting activities.
- If the program director feels moonlighting activities are interfering with residency training or patient care, permission to continue moonlighting may be withdrawn.
- If a resident is moonlighting during a routine workday (not on vacation) or while taking "sick" time, permission to continue moonlighting may be withdrawn or the resident may be suspended or terminated.

# CALL/FLOAT

### SHORT FLOAT

Residents will work in the inpatient department at Baptist-Memphis to assist with system coverage alongside staff and other residents. This shift is from 5:00 PM to 4:00 AM Friday through Thursday.

Residents can expect approximately nine weeks of short float distributed throughout the second through fourth years of training.

## NIGHT FLOAT

Residents will work in the inpatient department at Baptist-Memphis to provide system coverage with attending physician backup. This shift is from 10:00 PM to 7:00 AM on specified days, with the schedule evenly split between at least two residents during the monthlong rotation. While on the night float rotation, residents will also participate in clinical research *(refer to Scholarly Activity on page **44** for further details)*.

## EVENING SHIFT

Residents will work with attending radiologists and other residents in the inpatient department at Baptist-Memphis from 5:00 PM to 10:00 PM daily to provide system coverage. Residents, led by the chief resident(s), plan the evening shift schedule on a monthly basis. As an added perk, this shift is considered internal moonlighting and is funded by Mid-South Imaging.

## WEEKENDS (DIAGNOSTIC RADIOLOGY)

Residents will work alongside attending radiologists and residents in the inpatient department at Baptist-Memphis from 8:00 AM to 10:00 PM (or 7:00 AM to 5:00 PM) on Saturday and Sunday. These weekends are evenly assigned by the chief resident(s), with scheduling input from residents. Weekends may be traded or given away if residents maintain adherence to clinical and educational work-hour requirements. Residents can participate in weekend work from their first through fourth years of training. As an added perk, this shift is considered internal moonlighting and is funded by Mid-South Imaging.

## WEEKENDS (INTERVENTIONAL RADIOLOGY)

When assigned to the interventional rotation, residents will pre-round on patients in the morning and participate in rounds with the covering attending. These weekends are evenly distributed between those on the rotation.

## OTHER CALL POLICIES

- Call schedules are maintained by the chief resident(s).
- Residents are permitted to “swap” call shifts when necessary. When a day is changed, it is the responsibility and a requirement of those involved in the change to communicate this change to the chief residents, as well as the program manager in a timely manner. Likewise, the weekly schedule in QGenda will be updated by the program manager.
- If a resident is unable to serve a scheduled call shift because of illness, he or she must immediately notify the program manager and chief resident(s), who can assist the resident in finding coverage. Whenever a call duty is missed, the chief resident(s) must be alerted so the call schedule can be modified appropriately. The program director should also be notified of the missed call and resultant schedule change.
- If the night float resident is ill and unable to work an upcoming assigned shift, the chief resident(s) must be contacted to arrange alternate coverage. If the night float resident becomes acutely ill during the shift, the short float resident will remain on duty and serve on night float for the remainder of that shift. The chief resident(s) must be notified so they can

update the call schedule. As with other illnesses, the program director and program manager must be informed at the earliest opportunity.

NOTE: THE BUYING OR SELLING OF CALL IS PROHIBITED.

# RESIDENT LEAVE

As employees of Baptist-Memphis, residents are entitled to the provisions of the Family and Medical Leave Act (FMLA) after one year of employment. When a resident returns from an extended leave, the program director and resident will work together to establish a make-up schedule to ensure sufficient remediation for missed training and to comply with the individual's educational program for board requirements. In compliance with the BMME Leaves of Absence Policy, residents may not hold other gainful employment while on leave except with prior approval from the program director and the appropriate human resources representative.

*Refer to the* BMME Policy and Procedure Manual *for details on other leaves of absence.*

## FURTHER DETAILS

- If a resident is in need of a sick day, it will be ***his or her responsibility*** to complete the following three steps:
    1. Contact the attending with whom he/she has been scheduled to serve for that day to inform him/her that the resident will not be coming to work.
    2. Contact the program manager (by cellphone) to inform him/her that the resident is ill and will not be at work.
    3. Contact the program coordinator and/or chief residents if coverage is needed so another resident can be reassigned.
- Each radiology resident receives twenty-three (23) personal time off (PTO) days per academic year (July 1-June 30) for vacation, holidays and sick time. Unused vacation days may **NOT** be carried over from one academic year to the next. All vacation dates must be approved by the program manager. Vacation requests may be denied if too many residents request vacation for the same time period. Residents should take care not to save all vacation days for the end of the academic year but rather use them throughout.
- Residents may be pulled to cover professional, sick or maternity leave only when needed to meet the minimum coverage levels.
- Vacation time taken during a required core curriculum rotation may mandate additional training in that subspecialty during allotted elective time. If more than one week during the breast imaging or nuclear radiology rotations is missed due to vacation, meetings or sick time, additional elective time will be used to make up for the missed time. This is an ACGME requirement.
- Vacations (as with half-wellness days) must be requested through QGenda. **Do not make travel reservations (or appointments) unless you already have approval.**
- All time off requests must be made 2 weeks in advance unless there are extenuating circumstances which must be talked through with the program manager/coordinator for approval.

- All requests for PTO during May and June must be made by December 31 of the previous year. **These are requests only. Do not make travel plans until approved.**
- Any PTO taken during Mammography or Nuclear Medicine rotations will have to be made up.
- No more than 1 week off may be taken during any given month.
- American Board of Radiology (ABR) policy limits the total amount of leave for illness, vacation or other nonprofessional purposes to a maximum of 24 calendar weeks (120 working days) in a 4-year residency. To remain board-eligible when a longer leave of absence is taken, a resident will be required to serve additional residency training beyond the usual 4-year period. In some cases, this could delay eligibility to take the subsequent board examination.
- Accrued sick and vacation time will be used before beginning medical or personal leave without pay.

# WELL-BEING

Psychological, emotional and physical well-being is critical in the development of competent, caring and resilient physicians and requires proactive attention to life inside and outside of medicine. Well-being requires that physicians retain joy in practicing medicine while managing their own real-life stresses. Self-care and responsibility to support other members of the health care team are important components of professionalism. They are also skills that must be modeled, learned and nurtured in the context of other aspects of residency training.

## CLINICAL & EDUCATIONAL HOURS

Baptist Memorial Medical Education (BMME) Department of Radiology policy on resident clinical and educational work hours strictly adheres to Accreditation Council for Graduate Medical Education (ACGME) institutional requirements as follows:

- Work hours are limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call and clinical and moonlighting activities.
- Residents are assigned one day (24 hours) in seven free (averaged over a four-week period and inclusive of call) from all clinical and educational responsibilities.
- An eight (8)-hour time period will remain free between all daily shifts and call.
- Continuous, on-site duty will not exceed 24 hours. The resident may remain for an additional four (4) hours to check out cases or to participate in didactic activities. As a general rule, radiology residents will not have any 24-hour in-house call as seen in other residencies.

## WELLNESS HALF-DAY

Although radiology residents have schedule flexibility for daytime appointments while on short float, residents also will be given a “wellness half-day” twice annually on an elective month or nonessential rotation. This half-day may be used in the morning for a noon arrival time to attend the daily didactic conference before the scheduled rotation, or in the afternoon for departure at 1:00 after the noon didactic lecture. This must be approved by the program manager and scheduled 30 days in advance. This

half-day is used for the sole purpose of medical, mental health or dental appointments and will not count towards the resident's personal time off (PTO).

## WELLNESS COMMITTEE

The BMME Well-Being Committee comprises representatives of all programs (faculty and residents), GME administrative leaders, the DIO and the Baptist Best Health director.

The committee will meet at least quarterly and approve well-being activities and initiatives at both the system and program levels. (Funding for specific program-level activities must be within the program's budget.)

The Radiology residency program has developed an internal Wellness Committee comprised of the program manager and at least 1 resident representative from each PGY level and 1 chief resident. They will try to meet at least quarterly to discuss ideas for wellness events.

## FATIGUE EDUCATION & MITIGATION

Faculty and residents are educated in recognizing the signs of fatigue and sleep deprivation via annual didactic noon conferences and other educational opportunities, including but not limited to periodic Grand Rounds and dissemination of information via email.

It is the responsibility of appropriate individual faculty to evaluate and recognize signs of fatigue in residents with whom they are working. If faculty believe there are negative effects in patient care, it is their responsibility to remove the resident from patient care activities and send the resident home if appropriate. If they feel this is not safe because of excessive fatigue, the resident should retire to the call room for rest or be driven home by someone assigned by the faculty member. The program director or program manager should be notified immediately. A trainee who needs safe transportation home due to fatigue or illness may use a taxi service and submit the original receipt to the GME office for reimbursement of cab fare.

## WELLNESS EDUCATION

To further promote resident wellness, in addition to education on fatigue management, residents will receive annual training regarding burnout, depression and substance abuse through didactic lectures and other educational opportunities, including but not limited to periodic Grand Rounds and dissemination of information via email.

Once-monthly, resident conference will be devoted to wellness topics that may include not only the annual education above but also talks on financial wellness and stress management, in addition to opportunities to discuss issues with the chief resident(s), who can then bring concerns to the program director.

## EMPLOYEE ASSISTANCE PROGRAM

The CONCERN Employee Assistance Program (EAP) is provided to all Baptist employees without cost. CONCERN offers confidential assistance with many issues, including:

- Marital/family relationships
- Alcohol or drugs
- Emotional concerns
- Grief

- Gambling
- Elder care
- Financial problems

If the issue requires assistance from a specialist, CONCERN counselors will provide informed referrals.

### PHYSICIAN IMPAIRMENT

Please refer to the *BMME Policy and Procedure Manual*'s Resident Health Policy for detailed information regarding physician impairment.

### PROMOTING TEAMWORK AND RESIDENT CLASS COHESION

Throughout the academic year, the faculty will sponsor resident and faculty gatherings that allow development of camaraderie outside the workplace. In addition to a resident welcome party at the beginning of each academic year, a holiday party will be held in December. An end-of-year dinner in June celebrates the graduating residents and provides another opportunity for resident and faculty fellowship.

### PROMOTING A POSITIVE WORK ENVIRONMENT

Although the hospital provides meals for residents while they are on duty, Mid-South Imaging also provides multiple drinks and snacks in the program coordinator's office for resident consumption throughout the day.

# RESIDENT BENEFITS

*The following information represents the BMME Benefits Policy.*

The following provides a brief summary of Baptist Memorial Health Care Corporation (BMHCC) benefits program available to resident physicians employed in Graduate Medical Education (GME) residency programs within the Baptist system. More detailed information on each of these plans is available in the Human Resources Department or the GME Office. Changes to benefits may be made at any time and will be communicated to residents as soon as possible.

### HEALTH, DENTAL & VISION BENEFITS

Baptist offers residents, their spouses and dependent children the opportunity to participate in health, dental and vision plans. Coverage is effective as follows:

- If a resident begins residency on the first day of the month (e.g., July 1st), health, dental and vision benefits begin on that day.
- If a resident begins residency after the first of the month (e.g., July 2nd), health, dental and vision benefits begin on the first day of the following month (in this example, August 1st).

Residents' health insurance premiums are paid by Baptist Memorial Hospital (BMH) in the following manner: The amount required by each resident for Consumer-Driven Health Plan (CDHP) insurance premiums Dental (High) insurance premiums, and Vision insurance premiums based on his or her plan rates (e.g., employee-only, employee and spouse, employee and children, family).

Initial insurance coverage requests and changes to health, dental and life insurance policies due to a "qualifying change in family status" must be received by a human resources representative within thirty (30) days of either employment or the change in status. Any additional expenses incurred due to late submission of required documentation will be the sole financial responsibility of the resident.

Annual adjustments may be made during "open enrollment" and will be effective on January 1st of the following year.

If an employee terminates employment for reasons other than gross misconduct, the employee may continue coverage as permitted. Additional information about continuation of health care coverage is available through the Baptist Human Resources Department. Health, dental and vision benefits are not subject to the Consolidated Omnibus Reconciliation Act (COBRA) of 1985, as amended.

## HEALTH SAVINGS ACCOUNT (HSA)

Any employee who enrolls in the Consumer-Driven Health Plan (CDHP) is also eligible for a Health Savings Account. HSAs allow the participant to set aside money to pay for qualified medical expenses, save on taxes and invest, all in one account. For information about HSAs, contact the Human Resources Department or Employee Benefits Office.

## FLEXIBLE SPENDING ACCOUNT (FSA)

Flexible Spending Accounts (FSAs) offer employees a tax-free way to reimburse themselves for health care and dependent care expenses. Contributions to accounts are deducted from pay before taxes are withheld, so taxable income and taxes paid are lower.

Employees may deposit up to a designated dollar amount in an Health Care Spending Account and/or a Dependent Care Spending Account. Dollars set aside in the FSA must be used in that same calendar year or be forfeited. To obtain more information prior to enrolling in an FSA, refer to the FSA handbook, available in the Human Resources Department.

## SOCIAL SECURITY

Baptist shares equally with our employees in contributions toward the United States Social Security Program. This provides retirement as well as death and disability benefits for employees and their dependents. Details on contribution amounts as well as available benefits may be obtained from the Human Resources Department.

## BASIC LIFE/AD&D INSURANCE

Life insurance and accidental death and dismemberment (AD&D) insurance are available to all full-time employees after ninety (90) days of continuous service. The entire premium for this coverage is paid by the organization. A designated beneficiary will receive a benefit in the event of the resident's death. The amount of coverage provided is one and a half times the employee's base annual salary, up to $50,000. The coverage amount doubles in the event death is due to an accident.

The Basic Life Insurance Plan includes an Accelerated Life Benefit, which allows terminally ill employees to receive up to one-half of the life insurance benefit before death. To receive this benefit, the employee must submit a statement from a physician certifying life expectancy of less than one (1) year.

An employee's coverage will cancel if his or her employment status goes from full time to part time. Upon termination, an employee may choose to continue this policy on an individual basis.

Upon termination of employment or completion of residency, an employee may continue basic life coverage at the rate in force prior to termination.

## VOLUNTARY LIFE INSURANCE

Full-time employees have the opportunity to purchase additional life insurance coverage for themselves as well as coverage for their spouse and/or dependent children. Coverage may be purchased to cover the employee at one, two, three, four or five times their annual salary rounded to the next higher $1,000, up to a maximum of $1,000,000 (guaranteed issue amount of $300,000 without a physical examination). A spouse may be covered for one-half the employee's coverage amount, (with a guarantee issue amount of $50,000). Dependent children may be covered at $10,000 up to twenty-six (26) years of age.

Upon termination of employment or completion of residency, an employee may continue coverage at the rate in force prior to termination.

## ACCIDENT INSURANCE

Employees and their families may elect to enroll in the Accident Insurance Plan. Benefits are payable when a covered person receives treatment for off-the-job injuries sustained in a covered accident. This plan pays benefits directly to the employee, unless chosen otherwise, to help with expenses incurred due to an injury, to help with ongoing living expenses or for any other purpose.

## LONG-TERM OR SERIOUS ILLNESS COVERAGE

Employees and their families can elect to enroll in any of several programs designed to provide resources and financial assistance during long-term or serious illnesses.

Critical illness insurance provides a lump sum cash benefit to help pay for out-of-pocket medical expenses or any other bills that need attention, including rent or groceries.

Life-Time Benefit Term Insurance with Long-Term Care provides financial support and resources to cover the cost of long-term care needed as the result of an accident, illness, or aging.

Cancer Guardian is a program designed to provide genetic testing, dedicated resources, and technology needed to effectively navigate cancer while improving chances of survival.

## PET HEALTH INSURANCE

Employees can elect to carry pet insurance which provides coverage for a wide range of veterinary services, such as wellness visits, vaccinations, surgical procedures, medical care following accidents and illnesses, and more.

## LIABILITY INSURANCE

Baptist is self-insured for professional liability coverage (up to $5 million retention and $25 million aggregate per claim) at all Baptist Metro facilities. This coverage provides legal defense and protection against awards from claims reported or filed after the completion of one's residency if the alleged acts or omissions were within the scope of the education program.

## DISABILITY INSURANCE

Disability insurance is provided for all residents beginning ninety (90) days after the first day of employment. Additional coverage is at the resident's own expense.

## CONCERN: EMPLOYEE ASSISTANCE PROGRAM/MENTAL HEALTH SERVICES

*Refer to the Well-Being Policy for further details*.

## PHYSICIAN IMPAIRMENT

In certain circumstances, Baptist will work with the appropriate state program(s) to assist residents with chemical dependency or behavioral issues. All employees must comply with the Drug- and Alcohol-Free Workplace Policy. Consequences of this policy are strictly enforced up to and including termination. *(Refer to the Well-Being Policy for additional information.)*

## PHYSICIAN SUPPORT

There is a 24/7 physician on call to provide support and confidential referral. Dial 901-227-3663 (CARE ONE).

## TRANSITIONAL DUTY PROGRAM

Baptist provides transitional duty whenever practicable as a benefit to employees who sustain injuries that are work-related. This program allows employees to return to work as quickly as possible in a temporary assignment designed in accordance with the employee's physical abilities, as determined by his or her physician. Transitional duty facilitates a speedy recovery while allowing the employee to receive his/her full salary and remain productive. This benefit is limited to ninety (90) days.

## WORKERS' COMPENSATION

Workers' compensation may be provided to employees who sustain injuries/illnesses in the course of employment. Work-related incidents should be reported to management immediately so that timely reporting can occur and instructions regarding medical treatment obtained, when appropriate.

Once an incident is reported, it is the responsibility of management to investigate each situation to determine the nature/cause of the injury or illness so that future occurrences can be avoided.

Baptist adheres to all federal and state regulatory guidelines concerning workers' compensation. Employees and managers should contact their designated human resources/employee health representatives to ensure appropriate compliance with said guidelines. If employees are unable to work as a result of an on-the-job injury/illness, benefits will be provided in accordance with state regulations. If available, sick leave should be used during the workers' compensation eligibility determination period.

## BEREAVEMENT (FUNERAL) LEAVE

*Refer to the GME Leaves of Absence Policy*.

## CREDIT UNION

Employees may elect to participate in the Employee Credit Union, which is owned, controlled and managed by its members in compliance with state and federal laws. The credit union offers a convenient way to save money and obtain loans. In addition, it offers major credit cards, Christmas Club, auto loans, home loans, IRAs, and a number of other services patterned to individual needs.

## MEALS

Each hospital will provide a meal plan for residents in compliance with ACGME requirements. Program coordinators will update residents regarding meal availability at each hospital.

## UNIFORMS

Each resident has the opportunity to receive two (2) lab coats per academic year. These coats are available only through a Baptist-selected vendor in specific styles and with specific embroidery options. Residents should work with the program coordinator to ensure that a purchase is eligible.

## ON CALL/LIVING QUARTERS/LAUNDRY

On-call quarters are available at each Baptist facility in which residents are required to serve twenty-four (24)-hour shifts. Additionally, each facility has at least one on-call room available for use by residents who may be too fatigued to return home following the end of a shift. Residents are responsible for laundering their own lab coats.

## LACTATION ROOMS

On-call rooms can be used as lactation rooms at each hospital. Program coordinators will notify residents of other options, if available.

## PARKING

Parking is provided without charge or funded by Baptist in areas specified by each individual hospital. All Baptist employees are required to comply with the Baptist Parking Policy. Program coordinators will notify residents of any parking rules specific to a work location.

## PUBLIC VOTING RIGHTS

Employees are encouraged to vote in all municipal, state or federal elections and on referendums. Residents should consider early voting options to help ensure their ability to participate in elections. If an employee does not have sufficient time prior to a shift's start or after a shift's end to vote in compliance with all applicable regulations, then time off for a specified period may be granted without loss of wages or benefits, though the organization may specify the hours of absence. Any application for leave must be made at least 24 hours before the day of the election.

## PTO

All residents receive one hundred and eighty-four (184) personal time off (PTO) hours that are "front-loaded" at the beginning of the academic year. These hours do not "roll over" to the next academic year. PTO will be automatically taken on holidays unless a resident is assigned to a curricular duty (clinical or academic) that can be documented in the schedule to show that the resident was working on assignment. Refer to program-specific policies on leaves of absence for information concerning requests for PTO and when PTO can be taken during curricular assignments.

## SCHOLARLY BENEFITS

All residents are eligible for reimbursement of up to four thousand and three hundred ($4300) during the residency program for academic materials, live or online board review materials, conference(s) or course(s) if approved by the program director and submitted in accordance with the BMHCC Travel Policy.

Invited presentations at conferences must be preapproved by the program director and designated institutional official (DIO) if time off and reimbursement for travel and lodging are required.

The cost of the USMLE, COMLEX and other board exams required by the program will be reimbursed by Baptist once proof of a passing score is provided to the program coordinator and only if the resident is employed by Baptist inclusive of the exam completion and receipt of passing score dates.

## MOVING

A one-time reimbursement of up to two thousand dollars ($2,000) for moving expenses is provided to residents upon entering the program in accordance with the provisions listed below:

- Relocation to the program site area from greater than thirty (30) miles' distance or thirty (30) minutes' travel time
- Expenses covered will include:
    - Mileage for personal vehicles payable at the then-current rate
    - Moving truck rental fees (excluding any damage to the vehicle)
    - Storage unit cost for no more than one (1) month
    - Airfare, meal allowance and hotel accommodations for moving purposes only and in compliance with the standard BMHCC Travel Policy
- Original, itemized receipts (required for reimbursement)

## INTERVIEWS

When preapproved by the program director, residents are permitted time off with pay without using PTO for NO MORE than ten (10) days' absence during one program residency year to interview for fellowship or employment positions. If the interview is virtual and only slated to last half a day, then the resident is required to report to work for the other half of the day (resident is required to submit their interview itinerary to the program coordinator so that their schedule will be known). If additional time off for interviews is needed, residents can use PTO if approved by the program director or program manager. Special attention must be given to ensure that residents remain in compliance with specialty board requirements concerning absences.

## ADDITIONAL BENEFITS

*The following information represents benefits provided by Mid-South Imaging.*

MSIT will determine additional benefits on a recurring annual basis. Currently, benefits include the following:

- Drinks/snacks in the program coordinator's office
- $3,000 allowance for American Institute for Radiologic Pathology (AIRP) course only if attended in person

- $1,000 annual book fund
- Laptop at the start of residency
- $5,000 conference allowance (total over the 4-year residency)
- Internal moonlighting opportunities, including paid evening and weekend shifts

# PERFORMANCE EVALUATION & PROMOTION

## SUMMARY OF EVALUATIONS

**Resident Evaluations:** Faculty on the resident's assigned rotation will directly observe, evaluate and frequently provide feedback on resident performance throughout the rotation. Evaluations will be documented at the completion of each rotation/assignment in New Innovations, where they will then be available for review by the residents. These evaluations include measurements of performance in appropriate clinical competencies and will be discussed with the individual resident by the program director during each semiannual resident review meeting. Any unsatisfactory evaluations received will be reviewed immediately with the resident rather than after the usual six-month period and appropriate action taken. Faculty evaluations of residents are immediately available to the resident and may be reviewed at any time. Residents also will be periodically evaluated by their peers and by the radiology technologists. This information will be included in the semiannual summaries.

**Rotation Evaluations:** Each month, residents evaluate via New Innovations each rotation to which they are assigned. These evaluations are reviewed twice a year by the program director and may be discussed with the appropriate section's educational director. All comments provided by residents concerning rotations are confidential.

**Faculty Evaluations:** Residents will anonymously evaluate faculty members only twice annually to aid in confidentiality. Evaluations are reviewed by the program director and discussed with the faculty at least annually.

**Program Evaluations:** Residents and faculty will evaluate the residency program on an annual basis. These evaluations are summarized and forwarded to the program director. All comments by the residents and faculty concerning rotations are confidential.

**Self-Evaluations:** Residents will perform self-assessments through New Innovations. These will be reviewed with the resident by the program director.

## PROGRAM-SPECIFIC

**Resident Performance Evaluation**: The radiology residency provides an objective performance evaluation based on the ACGME competencies and radiology Milestones. Multiple evaluators will be used. The information will be provided to the CCC for its synthesis of progressive resident performance toward unsupervised practice.

The program director (or his or her designee) will meet with each resident at least semiannually to review the resident's progress, assist in developing an individualized learning plan and help develop plans for residents who are failing to progress. If remediation is necessary, then procedures outlined in the Remediation & Discipline Policy will be followed *(see page 40)*.

Each resident may review the evaluations at any time.

Final evaluation of each resident will be performed as per the ACGME Radiology Program Requirements, section V.A.2.

**Resident Promotion**: Reappointment and promotion to the subsequent year of training requires satisfactory progress in scholarship and professional growth as indicated by cumulative evaluations by faculty and as documented in the semiannual resident evaluations. This includes demonstrated proficiency appropriate for the current program year in each of the ACGME competencies and most of the corresponding Milestones.

Additionally, all requirements as Baptist employees must be met, including but not limited to:

- Annual competency education (HealthStream)
- Employee health requirements (TB, flu, etc.)

ACLS (advanced cardiovascular life support) and BLS (basic life support) certification

# CLINICAL COMPETENCY COMMITTEE (CCC)

The Clinical Competency Committee is composed of 3 or more faculty members from the program's specialty and may include any of the following:

- Assessment specialists
- Medical Director/Service Chief
- Faculty from outside the program
- Nurses
- Other non-physician members of the medical team
- Chief residents who have completed their core residency program and are Board eligible

The chair will be elected by the CCC at the first meeting of each year. The chair may be the program director or any other program faculty on the CCC.

## RESPONSIBILITIES

The CCC is responsible for oversight of the program's residents to the extent delineated herein. The committee should:

- Review all resident evaluations semiannually
- Prepare and ensure the semiannual reporting to the ACGME of each resident's Milestones evaluation
- Advise the program director regarding residents' progress, including any promotions, remediations or dismissals

The committee is expected to provide honest, thoughtful evaluations of each resident and participate in consensus decisions about the trainee's competency level. It is expected that CCC recommendations may provide an "early warning" system for residents who may not be progressing as expected. The committee will provide feedback and suggestions to the program director concerning any gaps, redundancies or opportunities in the current evaluation tools.

CCC members must receive orientation and training concerning evaluation/assessment tools and understand their relationship to the Milestones. This training should include a discussion of the Milestones levels and agreement on the meaning assigned to each tool's rating.

The CCC chair will provide guidance for the committee to attain its goals of reaching a consensus recommendation for academic and Milestones progress of the program's residents.

The program director will retain final authority concerning residents' progress and semiannual evaluation summaries.

### PROCEDURES

Utilizing the materials identified below, the CCC will review each resident's performance and progress during the previous interim, provide a recommendation to the program director concerning the resident's advancement and offer suggestions for action when warranted.

Decisions made by the CCC are generally formed by consensus. In the event that the CCC is unable to reach a consensus, documentation in the minutes provided to the program director will include unbiased information about the differing opinions and specific items in contention so as to allow the program director to make an independent judgment concerning the issue with sufficient input from the CCC.

Meeting, minutes will be taken and submitted to the CCC chair within five (5) working days following the meeting. Minutes will be retained as legal documentation and kept confidential within the CCC. Minutes will include the following items:

- Meeting date, time, and location
- Attendance
- Documentation of the discussions concerning each resident's performance including concise summary and any action or follow-up items
- Documentation of "action items" as appropriate

Documentation utilized by the CCC:

- Curricular goals and objectives by rotation
- Current program and institutional policies
- In-training exam (ITE) results
- Detailed evaluations of residents from all sources
- Evaluations of residents summarized by Milestones
- Standardized reports of resident performance to compare to the national average
- Program, rotation and resident action/remediation plans

# PROGRAM EVALUATION COMMITTEE (PEC)

Members of the Program Evaluation Committee (PEC) are appointed by the program director to conduct and document the Annual Program Evaluation (APE) as part of the program's continuous improvement process. At a minimum, the PEC includes two faculty members from the program (one of whom is a core faculty member) and one resident from within the program, and the Designated Institutional Oficial

(DIO) or his/her representative. Optionally, the PEC may include other internal or external reviewers and administrators.

## RESPONSIBILITIES

The PEC will meet at least annually and actively participate in:

- Act as an adviser to the program director through program oversight
- Review the program's self-determined goals and progress towards meeting them
- Provide guidance concerning ongoing program improvement, including development of new goals based upon outcomes
- Review of the current operating environment to identify strengths, challenges, opportunities, and threats as related to the program's mission and aims

## PROCEDURES

The PEC will review, evaluate and formally document the systematic evaluation of the curriculum at least annually. The committee is responsible for completion of the Annual Program Evaluation (APE). The PEC will monitor and track resident performance, faculty development, graduate performance (including resident completion of the certification process), program quality and progress on all program action plans.

Minutes will be taken at each meeting and submitted to the program director within five (5) working days. Minutes will include the following items:

- Meeting date, time, and location
- Attendance
- Documentation of the discussions concerning program performance, including recommendations for revisions
- Documentation of the creation of Action Plans as appropriate

Documentation utilized by the PEC:

- ACGME requirements (program goals and objectives)
- ACGME accreditation, progress and communication letters
- ACGME survey reports (both faculty and resident)
- Faculty scholarly activity summaries
- Program didactic calendars showing resident attendance
- Program graduates' certification progress
- Program action plans
- Rotation goals and objectives
- Resident portfolios and case logs
- Resident progress reports
- Resident scholarly activity summaries
- Resident clinical and educational work-hours reports (including moonlighting)

# REMEDIATION & DISCIPLINE

## RESIDENT DISCIPLINE

Academic performance and professional deficiencies as well as related remediation and consequences are discussed with each resident when appropriate. *(Refer to the* BMME Policy and Procedure Manual *for detailed information.)* Disciplinary policies are typically utilized for serious acts that require immediate action. These policies include the following:

- Due Process Policy (BMME manual)
- Non-Renewal of Agreements Policy (BMME manual)
- BMHCC policies (available on the intranet)

## ACADEMIC REMEDIATION

Residents must progress in the ACGME competencies as determined by the Clinical Competency Committee (CCC). The CCC will advise the program director, who ultimately will be responsible for determining when to enact a performance alert and review (PAR) or a decision on academic deficiency and remediation (ADR), repeat academic year, non-renewal of agreement, denial of certificate of completion or dismissal.

## DISCIPLINARY ACTION (OTHER THAN ACADEMIC)

Residents in any Baptist Memorial Hospital (BMH) GME program are employees of Baptist Memorial Health Care Corp. (BMHCC) and therefore subject to Baptist's policies and procedures. Copies of all applicable policies and procedures are available online and through the Baptist Memorial Hospital Human Resources Department. Violations of these policies will be subject to disciplinary action up to and including termination. These actions are not subject to the BMME Due Process Procedure. Appeals for dismissal in these circumstances may be available if provided in BMHCC policy.

# DISASTER POLICY

Please refer to the *BMME Policy and Procedure Manual* for detailed information regarding program procedures in the event of an emergency situation, catastrophic event or natural disaster.

# PROGRAM POLICIES & PROCEDURES

## PROFESSIONAL CONDUCT

Residents are expected to maintain a high level of professional conduct. Professionalism is one of the six ACGME clinical competencies in which residents must demonstrate proficiency in order to successfully complete residency. Professionalism includes maintaining a professional appearance as well as demonstrating a high standard of moral and ethical behavior.

### COMMUNICATION

- Communicate effectively and professionally with patients, colleagues, referring physicians and other members of the health care team concerning imaging appropriateness, informed consent, safety issues and results of imaging tests or procedures
- Provide clear and concise communication in the form of the study report or appropriate documentation in the electronic medical record
- Communicate all critical findings as well as unexpected findings, if appropriate
- Notify all appropriate personnel immediately concerning any call schedule changes

### CONFIDENTIALITY

- All residents and staff must comply with federal HIPAA guidelines. Baptist requires all residents to complete an annual online course documenting knowledge of HIPAA.
- Respect patient privacy at all times. Avoid using patients' names and personal information in public places. Shred all documents with personal information.
- Confidential information may NEVER be posted or communicated by other means (either electronic, verbal or written) for entertainment purposes *(see also BMHCC Confidential Information Policy).*

### HONESTY

- All information written in the report or electronic medical record must be accurate and complete. Any medical errors or adverse patient outcomes must be documented honestly and disclosed to the patient and/or family.
- Intentional erroneous communication for personal gain will not be accepted. This includes misrepresentation for any of the following:
    - Exam/course attendance
    - Conference attendance
    - Illness/shift attendance
- Falsification of a document and cheating on an examination are considered gross misconduct and reasons for immediate dismissal.

### APPEARANCE

- Project a professional, confident and caring image

- Be well-groomed, professionally attired and practice good hygiene *(see also BMHCC Institutional Appearance Standards Policy)*

### DEDICATION

- Possess a sound work ethic
- Follow a diligent reading regimen
- Develop a good working relationship with colleagues and consultants
- Teach fellow residents and medical students as required
- Comply with all ACGME requirements
- Be punctual for all shifts, meetings, conferences, etc.

### RESPECT

- Act respectfully to all patients, families, other health care workers and non-clinical employees
- Respond sensitively to patients' and co-workers' culture, age, gender and disabilities

# ABR BOARD Examinations

It is the responsibility of each resident to carefully monitor American Board of Radiology (ABR) dates and deadlines, and to respond promptly to correspondence from the ABR. Residents will take the computerized core exam at the end of their third year of training. The certifying exam may be taken 15 months after the completion of residency. For further information, please visit the ABR website at www.theabr.org.

# LEARNING PORTFOLIO

With assistance from the program coordinator, each resident will maintain a learning portfolio. It will include the following:

- Case procedure log
- Medical licensure
- Documentation of attendance at conferences, meetings, etc.
- Documentation of federal requirements, including the Mammography Quality Standards Act (MQSA) and guidelines from the Nuclear Regulatory Commission (NRC)
- Documentation of compliance with departmental and hospital policies, HIPAA, the Joint Commission, etc.
- Test results, including the in-service training exam
- Formal evaluation of the quality of reports
- Quality assessment (QA)/quality control (QC) learning activity
- Scholarly activity
- Resident self-assessment and learning plan

The portfolio will be reviewed by the program director at each biannual meeting and must be up-to-date at that time.

# PROCEDURE LOGS

All residents are responsible for recording each interventional procedure performed during their five-year residency. This electronic log in the ACGME app will be reviewed during each semiannual resident meeting with the program director.

All procedures, including breast biopsies, interventional procedures, hysterosalpingograms, drains and other biopsies, must be recorded. Entries should include the following:

- Date of procedure
- Type of procedure
- Resident's role (e.g., performed, assisted, observed)
- Results/complications

No patient identifiers (e.g., name, medical record number [MRN]) will be included.

As required by the ACGME, residents also will document the number of specific diagnostic radiology studies read during residency training. These will be recorded quarterly in an online Google document maintained by the individual resident and accessible to the program director and associate program director.

# CONFERENCE ATTENDANCE

As a resident, you are expected to attend noon conferences. The conference schedule is rotated so that each lecture will be given every eighteen (18) months.

Conference attendance is **MANDATORY**.

Mandatory conference attendance includes both didactic and case conferences as well as Grand Rounds. Excused absences include attendance at meetings or the four-week AIRP course, vacation or sick leave, night float and short float. **It is each resident's responsibility to sign in each day**. These records are kept on file and reviewed monthly. The program coordinator makes every attempt to coordinate missed conferences with the official call and vacation schedules, but ultimately, it is the resident's responsibility to make sure the program coordinator is aware of conferences that are missed for an acceptable reason.

*You should make every effort to attend conferences, as the didactic curriculum is the foundation of your training.*

# CONFERENCE PRESENTATIONS

For residents who enjoy teaching, additional conference presentations are encouraged. Each academic year, one or two fourth-year residents will be given the opportunity to serve as an educational chief resident. These residents will be allowed to participate in the teaching core and provide regular conferences, with appropriate compensation as junior teaching faculty.

# SCHOLARLY ACTIVITY

The ACGME requires residents to participate in scholarly activity. Radiology residency curricula will include minimum standards for the fulfillment of requirements, including:

- **Presentation/Publication:** This project will be completed during the first, second or third year of residency. This should be the work of one or two residents, with guidance provided by core faculty. All Baptist resources will be available to the resident as appropriate. Completion of at least one regional presentation during each of the first three years of training is strongly encouraged.
- **Quality Improvement Project:** This project will be completed during the fourth year of residency, with support and guidance from the program director. This may be a group project.
- **Clinical Research:** During each night float rotation, all residents will create a presentation for either the biannual Memphis Roentgen Society meeting or annual Tennessee Radiological Society meeting. This presentation will count toward the presentation/publication requirement listed above and can also be used for state or national meetings in lieu of the regional meeting. All research involving Baptist patient information must be preapproved by the Baptist Clinical Research Institute (BCRI) before information can be gathered. Residents are requested to contact the BCRI at (901) 226-1689 (study coordinator's phone number) at the earliest opportunity to avoid a delay.

# REIMBURSEMENT FOR PROFESSIONAL DEVELOPMENT

As discussed in the benefits section, BMHCC allots each resident a reimbursement of up to $4,600 total to be used only for program/specialty material, board review study material and/or board review conference attendance within the continental United States. Baptist also will fund the registration fee for the four-week AIRP Radiologic Pathology Correlation Course.

Mid-South Imaging also allots each resident a total allowance of $5,000 for professional development conference expenses and $3,000 for AIRP in Washington, DC (only if attended in person). This financial support also is intended to assist residents in attending meetings such as Radiological Society of North America (RSNA), American Roentgen Ray Society (ARRS) and other approved courses sponsored by subspecialty societies.

Reimbursable expenses include:

- Registration, travel, meals and lodging for attending professional medical courses
- Medical journals and books
- Medical education DVDs and videos
- Annual ABR dues incurred during the residency program

Residents must provide detailed receipts for all reimbursement requests, including meals. IRS rules prohibit tax-free reimbursements for travel expenses of a physician's family member(s) in connection with a professional development conference/seminar. The resident may request reimbursement only for expenses incurred for his/her attendance; any other expenses must be paid by the resident personally.

To ensure reimbursement from the appropriate organization, each resident must follow the guidelines set forth by BMME or Mid-South Imaging as appropriate. The program director must approve all travel before a resident attends a conference or educational meeting.

# FACULTY DEVELOPMENT

Core faculty will complete a minimum of two (2) hours of faculty development (FD) per year. FD opportunities, including those online, will be made available by either the Graduate Medical Education (GME) designated institutional official (DIO) or program director (PD). FD activities are not required to be approved as continuing medical education (CME) and need only be approved by the PD.

Faculty will provide documentation of attendance or review of activities to the PD and program coordinator for documentation.

Opportunities to attend faculty development conferences must be discussed with and approved by the PD and DIO if reimbursement from the general GME fund is desired. Faculty may use their own CME account for FD activities if available and appropriate.

Faculty members seeking reimbursement from Baptist GME for FD conferences must follow the BMME Travel Policy (S.Fl.3009.09), including pre-approval forms. Pre-approval forms must be signed by the following individuals at least two weeks before the planned departure date:

- Traveler (faculty)
- Supervisor of accreditation and finance
- Program director
- DIO

# SECTION III: COMPETENCY-BASED GOALS & OBJECTIVES

## OVERALL PROGRAM EDUCATION GOALS

**Dr. John Braun, Program Director**

### INTRODUCTION

It is the goal of the Interventional Radiology residency program at Baptist-Desoto and its affiliated institutions to prepare physicians for the practice of radiology in academic and/or private practice. A combination of state-of-the-art equipment, subspecialty-trained faculty and high patient volume provides an exceptional learning environment for radiology residents.

At the completion of the training program, it is expected that a matriculating resident will be well-prepared to enter a general radiology practice anywhere in the country. This program is devoted to producing residents who have a strong fund of knowledge and excellent technical skills required in the field of radiology.

Residents will progress through the program over the five-year period, assuming greater degrees of responsibility later in the training program. Major rotations are developed along the lines of subspecialization, since tertiary care is typical in a busy multispecialty practice. Subspecialty training is maintained where possible and when appropriate to allow for more focused learning. However, our program also includes areas of exposure over a community-type setting to afford residents the opportunity to experience a more typical radiology workday as might be found in a smaller hospital.

Our program offers a current library of STATdx and RADPrimer resources. Stipends are also available for the purchase of additional books and other educational materials. Conferences are prepared by staff on a daily basis. Additional resident training includes Journal Club and interesting case conferences, which are presented monthly.

In summary, the training program strives to prepare residents in the field of radiology for both academic and private practice. In the recent past, the avenue to practice has included additional fellowship training for almost all graduating residents.

### GENERAL COMPETENCIES

#### Patient Care & Procedural Skills

- Provide patient care through safe, efficient, appropriately utilized, cost-effective, quality-controlled diagnostic and/or interventional radiology techniques and effectively

communicate results to the referring physician and/or other appropriate individuals in a timely manner

- Perform, under preceptor supervision, at least three therapies each involving the administration of I-131 in quantities less than or equal to 33mCi as well as greater than 33mCi, patient selection, informed consent, dose calculation, patient counseling and patient follow-up
- Interpret or multi-read at least 240 mammograms within PGY-3/PGY-4 years
- Maintain basic life support (BLS) and Advanced Cardiac Life Support (ACLS) certification throughout residency
- Accurately document procedures in a secure online log

## Medical Knowledge

- Acquire and synthesize medical knowledge in all radiology subspecialties
- Engage in continuous learning and apply appropriate state-of-the-art diagnostic and/or interventional radiology techniques to meet the imaging needs of patients, referring physicians and the health care system

## Professionalism

- Commit to high standards of professional conduct, demonstrating altruism, compassion, honesty and integrity
- Follow principles of ethics and confidentiality, and consider religious, ethnic, gender, educational, socioeconomic and other differences when interacting with patients and other members of the health care team

## Interpersonal & Communications Skills

- Communicate effectively with patients, colleagues, referring physicians and other members of the health care team concerning appropriate imaging, informed consent, safety issues and results of imaging tests or procedures

## Practice-Based Learning & Improvement

- Develop the habits of lifelong learning and improvement through an understanding of the performance improvement process, journal reading and analysis, and research methods and performance

## Systems-Based Practice

- Understand how the components of the local and national health care system function interdependently and how changes to improve the system involve group and individual efforts
- Optimize coordination of patient care both within one’s own practice and within the health care system in an effort to improve patient outcomes

- Consult with other health care professionals and educate health care consumers regarding the most appropriate utilization of imaging resources

# FIRST YEAR (PGY-2/PRG-1)

## Patient Care & Procedural Skills

- Complete radiation and fluoroscopy training
- Participate in daily readout
- Develop skills to perform independent image interpretation
- Understand the requirement and purpose of the procedure log
- Maintain a procedure log with fluoroscopy times
- Maintain BLS and ACLS certification
- Obtain computer system logins
- Effectively use computer systems (PACS, PowerScribe, Epic)
- Adhere to resident clinical and educational work-hour limits

## Medical Knowledge

- Attend and participate in daily radiology conferences
- Complete assigned readings for conferences as directed
- Attend multidisciplinary conferences
- Take the American College of Radiology (ACR) in-training exam in February and score above the 50th percentile
- Participate in monthly Journal Club. Participate in monthly IR conference.
- Complete online physics modules/independent study time

## Professionalism

- Comply with institutional and departmental requirements (e.g., appropriately utilize and return radiation badges, adhere to appearance standards)
- Regularly attend daily/weekly resident conferences
- Maintain resident portfolio
- Work in a professional manner with hospital personnel, including radiology technologists and nurses

## Interpersonal & Communications Skills

- Review the ACR communication standard
- Review the departmental critical finding policy

- Present at Journal Club
- Communicate important findings to referring physicians, including documentation as outlined in the critical findings policy
- Become proficient in the use of PowerScribe's voice recognition system
- Present at resident-directed conferences

## Practice-Based Learning & Improvement

- Consider research options
- Attend Journal Club presentations (evidence-based medicine)
- Participate in quality improvement meetings
- Join local and national organizations (e.g., Tennessee Radiological Society [TRS], American Roentgen Ray Society [ARRS], Radiological Society of North America [RSNA], ACR), Society of Interventional Radiology (SIR)
- Participate in and present at multidisciplinary conferences
- Identify potential practice quality improvement (PQI) projects
- Participate in scholarly activity/research
- Attend Grand Rounds

# SECOND YEAR (PGY-3/PRG-2)

## Patient Care & Procedural Skills

- Begin participation in independent evening and night float responsibilities
- Maintain a procedure log with fluoroscopy times
- Maintain BLS and ACLS certification
- Effectively use computer systems
- Adhere to resident clinical and educational work-hour limits

## Medical Knowledge

- Take the ACR in-training exam and score above the 50th percentile
- Attend daily radiology conferences
- Complete assigned readings for conferences as directed
- Participate in monthly Journal Club. Participate in monthly IR conference.

## Professionalism

- Comply with institutional and departmental requirements
- Regularly attend daily/weekly resident conferences

- Maintain resident portfolio

## Interpersonal & Communications Skills

- Communicate important findings to referring physicians and hospital personnel
- Present at Journal Club
- Work with first-year radiology residents, offering guidance and fluoroscopy training

## Practice-Based Learning & Improvement

- Consider research options
- Present at Journal Club
- Prepare and present at resident-directed conferences
- Participate in quality improvement meetings

## Systems-Based Practice

- Participate in scholarly activity/research
- Present at local, regional or national meeting
- Attend Grand Rounds

# THIRD YEAR (PGY-4/PRG-3)

## Patient Care & Procedural Skills

- Participate in independent evening and night float responsibilities
- Maintain a procedure log with fluoroscopy times
- Maintain BLS and ACLS certification
- Effectively use computer systems
- Adhere to resident clinical and educational work-hour regulations

## Medical Knowledge

- Take the ACR in-training exam and score above the 50th percentile
- Attend daily radiology conferences
- Complete assigned readings for conferences as directed
- Participate in Journal Club. Participate in monthly IR conference.
- Attend at least one radiology review course
- Attend AIRP course
- In the second half of the year, begin final preparation for the core exam

- Pass the ABR Core Exam

## Professionalism

- Comply with institutional and departmental requirements
- Regularly attend daily/weekly resident conferences
- Maintain resident portfolio

## Interpersonal & Communications Skills

- Communicate important findings to referring physicians and hospital personnel
- Present at Journal Club
- Present at resident conferences
- Work with first-year radiology residents, offering guidance and fluoroscopy training

## Practice-Based Learning & Improvement

- Consider research options
- Present at Journal Club
- Prepare and present at resident-directed conferences
- Participate in quality improvement meetings

## Systems-Based Practice

- Join local and national organizations
- Participate in multidisciplinary conferences (e.g., radiology-pathology), including Clinical Pathology Conference (CPC) Grand Rounds
- Attend RSNA, ARRS, SIR meeting
- Participate in scholarly activity/research
- Present at local, regional or national meeting

# FOURTH YEAR (PGY-5/PRG-4)

## Patient Care & Procedural Skills

- Participate in independent evening and night float responsibilities.
- Maintain a procedure log with fluoroscopy times
- Maintain BLS and ACLS certification
- Effectively use computer systems
- Adhere to resident clinical and educational work-hour regulations

- Perform intermediate to advanced IR procedures with appropriate supervision
- Participate in pre-procedure consultations and post-procedure follow-ups, collaborating with oncology, surgery, and other specialties
- Recognize and assist in managing complications of IR procedures, including vascular injuries, contrast reactions, and post-procedural infections, with appropriate escalation and communication to the care team
- Begin to teach and supervise junior residents (PGY-2 to PGY-4) in basic IR procedures, ensuring proper technique and patient safety under faculty guidance
- Maintain a procedure log documenting cases as outlined in the ACGME Program Requirements for Graduate Medical Education in Interventional Radiology

## Medical Knowledge

- Take the ACR in-training exam and score above the 50th percentile
- Attend daily radiology conferences
- Complete assigned readings for conferences as directed
- Participate in Journal Club. Participate in monthly IR conference.
- Create and give lectures to junior residents
- Demonstrate solid knowledge of vascular anatomy and pathophysiology relevant to intermediate IR procedures
- Interpret imaging studies (e.g., CTA, MRA, and cone-beam CT) to assist in procedural planning and execution, providing appropriate differential diagnoses for moderately complex cases
- Understand the indications, contraindications, and evidence-based applications of intermediate IR therapies
- Discuss the principles of radiation physics and safety as applied to fluoroscopy, working to optimize imaging protocols under faculty guidance
- Begin to learn about emerging IR technologies

## Professionalism

- Comply with institutional and departmental requirements
- Regularly attend daily/weekly resident conference
- Maintain resident portfolio
- Demonstrate leadership potential in multidisciplinary teams, fostering a culture of respect and collaboration
- Show accountability by ensuring timely completion of procedure reports, follow-up notes, and communication of important findings
- Exhibit cultural sensitivity in caring for diverse patient populations, addressing barriers to care with compassion and professionalism
- Begin to mentor junior residents in maintaining professionalism, particularly during challenging clinical situations

## Interpersonal & Communications Skills

- Present at Journal Club
- Present at resident conferences
- Help train junior residents and visiting medical students
- Present project at local, regional or national meeting
- Participate in effective handoffs to ensure continuity of care during transitions, particularly for post-procedure follow-up and on-call responsibilities
- Present cases in multidisciplinary conferences, articulating clinical rationale and procedural details with increasing confidence
- Generate accurate and timely procedure reports that meet clinical documentation standards
- Begin to provide constructive feedback to junior residents and technologists to enhance team performance and patient safety

## Practice-Based Learning & Improvement

- Complete a research project
- Present at Journal Club
- Prepare and present at resident-directed conferences
- Participate in quality improvement meetings
- Participate in quality improvement projects related to IR procedures, such as contributing to protocol optimization and patient outcome initiatives
- Critically appraise scientific literature to inform evidence-based practice, presenting findings at journal clubs or departmental conferences
- Begin to mentor junior residents in case-based learning, sharing insights from cases and procedural experiences
- Actively incorporate feedback from faculty and peers to improve procedural techniques and clinical decision-making
- Track personal procedure outcomes and begin to compare them to established benchmarks

## Systems-Based Practice

- Join local and national organizations
- Participate in multidisciplinary conferences
- Participate in scholarly activity/research
- Present at local, regional or national meeting
- Participate in multidisciplinary care by contributing to tumor boards, vascular conferences, and other collaborative meetings in developing patient-centered treatment plans
- Understand principles of cost-effective care, learning to select appropriate imaging and interventions to optimize resource utilization

- Learn about payer and billing requirements, working toward accurate documentation of procedures and indications to support appropriate CPT and ICD-10 coding
- Collaborate with faculty and hospital administration in implementing safety protocols and quality metrics in the IR suite

# FIFTH YEAR (PGY-6)

## Patient Care & Procedural Skills

- Participate in independent evening and night float responsibilities.
- Maintain a procedure log with fluoroscopy times
- Maintain BLS and ACLS certification
- Effectively use computer systems
- Adhere to resident clinical and educational work-hour regulations
- Independently perform and supervise complex IR procedures
- Lead pre-procedure consultations and post-procedure follow-ups, coordinating multidisciplinary care with oncology, surgery, and other specialties
- Manage complications of IR procedures, including recognition and treatment of vascular injuries, contrast reactions, and post-procedural infections, with prompt communication to the care team
- Supervise and teach junior residents (PGY-2 to PGY-5) in basic and intermediate IR procedures, ensuring proper technique and patient safety
- Maintain a procedure log documenting, as outlined in the ACGME Program Requirements for Graduate Medical Education in Interventional Radiology

## Medical Knowledge

- Take the ACR in-training exam and score above the 50th percentile
- Attend daily radiology conferences
- Complete assigned readings for conferences as directed
- Participate in Journal Club
- Create and give lectures to junior residents
- Demonstrate comprehensive knowledge of vascular anatomy and pathophysiology relevant to complex IR procedures
- Interpret advanced imaging studies (e.g., CTA, MRA, and cone-beam CT) to guide procedural planning and execution, providing accurate differential diagnoses for complex cases
- Understand the indications, contraindications, and evidence-based applications of advanced IR therapies
- Discuss the principles of radiation physics and safety as applied to fluoroscopy and cone-beam CT, optimizing imaging protocols to balance diagnostic quality and patient safety
- Stay current with emerging IR technologies

# Professionalism

- Comply with institutional and departmental requirements
- Regularly attend daily/weekly resident conference
- Maintain resident portfolio
- Lead with integrity in multidisciplinary teams, fostering a culture of respect and collaboration.
- Demonstrate accountability by ensuring timely completion of procedure reports, follow-up notes, and communication of critical findings.
- Exhibit cultural sensitivity in caring for diverse patient populations, addressing barriers to care with compassion and professionalism.
- Mentor junior residents in maintaining professionalism under pressure, particularly during on-call or emergent situations.

# Interpersonal & Communications Skills

- Present at Journal Club
- Present at resident conferences
- Help train junior residents and visiting medical students
- Present project at local, regional or national meeting
- Lead effective handoffs to ensure continuity of care during transitions, particularly for post-procedure follow-up and on-call responsibilities
- Present cases confidently in multidisciplinary conferences, articulating clinical rationale and procedural details to colleagues across specialties
- Generate concise, accurate, and timely procedure reports that meet billing and clinical documentation standards
- Provide constructive feedback to junior residents and technologists to enhance team performance and patient safety

# Practice-Based Learning & Improvement

- Complete a research project
- Present at Journal Club
- Prepare and present at resident-directed conferences
- Participate in quality improvement meetings
- Lead quality improvement projects related to IR procedures, such as reducing procedure times or improving patient outcomes through protocol optimization.
- Critically appraise scientific literature to inform evidence-based practice, presenting findings at journal clubs or departmental morbidity and mortality (M&M) conferences
- Mentor junior residents in case-based learning, sharing insights from complex cases and procedural challenges

- Incorporate feedback from faculty and peers to refine procedural techniques and clinical decision-making.
- Track personal procedure outcomes and compare them to national benchmarks, identifying areas for improvement.

## Systems-Based Practice

- Join local and national organizations
- Participate in multidisciplinary conferences
- Participate in scholarly activity/research
- Present at local, regional or national meeting
- Coordinate multidisciplinary care by leading tumor boards, vascular conferences, and other collaborative meetings to develop patient-centered treatment plans.
- Advocate for cost-effective care, selecting appropriate imaging and interventions to optimize resource utilization while maintaining high-quality outcomes.
- Navigate payer and billing requirements, ensuring accurate documentation of procedures and indications to support appropriate CPT and ICD-10 coding.
- Collaborate with hospital administration to implement safety protocols and quality metrics in the IR suite.

# ROTATIONS

## ABDOMINAL RADIOLOGY:
## GI/GU RADIOLOGY & INPATIENT FLUORO

**Dr. Paul Tanner, Section Head**

# Introduction

Radiology residents' rotation through the outpatient center forms the basis of the GI (gastrointestinal) and GU (genitourinary) experience, with additional exposure on more general rotations and ER/float. The inpatient fluoroscopy rotation provides an inpatient perspective on the traditional fluoroscopic procedures.

At the conclusion of each rotation, either inpatient (Inpatient Fluoro) or outpatient (GI/GU), the resident should demonstrate competence in the areas of knowledge-based goals, technical skills and decision-making goals as outlined for each year level.

It is expected that the resident will have read the reading materials listed.

The extent to which the resident has met the objectives and his or her general performance during the rotation will be evaluated at the end of each month.

# Patient Care & Procedural Skills

## Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to achieve the following objectives.

### 1ST & 2ND YEARS IN TRAINING

Gastrointestinal:

- Be able to perform a standard upper gastrointestinal series
- Be able to perform a standard single column barium enema
- Be able to perform a double contrast barium enema
- Be able to localize the terminal ileum in small bowel series as well as work out more proximal disease
- Be able to make minor modifications to the standard examinations to best delineate pathology
- Supervise speech pathology modified barium swallows
- Be able to converse with the patient in a professional and courteous manner to answer questions posed or obtain consent if necessary

Genitourinary:

- Inject for an IVP (intravenous pyelogram) and determine levels for tomograms
- Understand basic gray-scale controls for a standard renal ultrasound
- Perform basic multiplanar reconstructions on CTA (computed tomography angiography) renal examinations

### 3RD & 4TH YEARS IN TRAINING

Gastrointestinal:

- Be able to perform all GI studies done at Baptist-Memphis
- Be able to modify the standard examinations to best delineate pathology
- Be able to limit radiation exposure to the patient by judicious use of fluoroscopy and the least number of images taken

Genitourinary:

- Be familiar with more advanced functions, including Doppler ultrasound controls, obtaining velocity, acceleration and resistive indices
- Perform more complex reconstruction functions, including curved MPR (multiplanar reconstruction) and 3-D reconstructions with sliding MIPs (maximum intensity projection) and volume rendering

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to achieve the following objectives.

### 1ST & 2ND YEARS IN TRAINING

Gastrointestinal:

- Be familiar with the sequence of images to obtain for a standard upper GI and lower GI enema examination, including the rationale for each image taken
- Understand issues related to barium versus water-soluble contrast
- Understand issues related to air distention and contraindications
- Formulate basic differentials for esophageal, gastric, small bowel and colonic pathologic processes
- Demonstrate increasing knowledge of radiation issues and outline potential strategies for decreasing the overall dose
- Understand basic physics of fluoroscopy and complete the appropriate RSNA physics modules

Genitourinary:

- Demonstrate knowledge of basic GU anatomy across different imaging modalities

- Demonstrate increasing familiarity with a normal range and distinguish pathologic conditions from normal via imaging modalities, including IVP, US, CT and MR
- Be able formulate basic differentials for common GU pathology
- Demonstrate increasing knowledge of radiation issues and outline potential strategies for decreasing the overall dose

### 3RD & 4TH YEARS IN TRAINING

Gastrointestinal:

- Be familiar with all GI examinations, including bariatric examinations, T-tube injections, fistula injections, GJ (gastrojejunostomy) tube injections and colostomy/ostomy injections, as well as standard examinations; be able to formulate the best approach to delineate the problem
- Formulate advanced differentials for esophageal, gastric, small bowel and colonic pathologic processes
- Demonstrate increasing knowledge of radiation issues and outline potential strategies for decreasing the overall dose

Genitourinary:

- Demonstrate increasing knowledge of GU anatomy across different imaging modalities
- Demonstrate increasing familiarity with a normal range and distinguish pathologic conditions from normal via imaging modalities, including IVP, US, CT and MR
- Be able to formulate more sophisticated differentials for common GU pathology
- Demonstrate increasing knowledge of radiation issues and outline potential strategies for decreasing the overall dose

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel
- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to achieve the following objectives.

### 1ST & 2ND YEARS IN TRAINING

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness

- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

Gastrointestinal:

- Determine if barium or water-soluble contrast should be utilized
- Determine if glucagon should be administered to evaluate an area
- Determine whether a single- or double-contrast enema examination should be done

Genitourinary:

- Determine the best protocol to answer the question posed
- Be able to determine whether the patient can safely receive contrast for the examination

### 3RD & 4TH YEARS IN TRAINING

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness
- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

Gastrointestinal:

- Consult with increasing confidence with the referring physician
- Be able to select and suggest the appropriate examination to evaluate a particular indication

Genitourinary:

- Demonstrate increasing skill in selecting the appropriate CT or MR protocol and for modifying the standard protocol to best evaluate the specific GU issue
- Demonstrate increasing skill in modifying the standard IVP to best delineate pathology while minimizing the dose to the patient
- Demonstrate an increasing ability to guide logical imaging pathways to attain the correct diagnosis and confer pertinent information to the referring physician
- Demonstrate the ability to handle contrast reactions as well as contrast-related issues (e.g., metformin side effects)

## Reading List

- *Grainger & Allison's Diagnostic* Radiology (GI and GU sections)
- Ralph Weissleder's *Primer of Diagnostic Imaging*
- Jacob Mandell's *Core Radiology: A Visual Approach to Diagnostic Imaging*
- Marc Levine's *Double Contrast Gastrointestinal Radiology*
- Reed Dunnick's *Textbook of Uroradiology*

- Ronald Zagoria's *Genitourinary Radiology: Radiology Requisites*
- Carol Rumack and Deborah Levine's *Diagnostic Ultrasound* (GU section)
- Edward Lee et al.'s *Computed Body Tomography with MRI Correlation* (GU section)

# BODY COMPUTED TOMOGRAPHY

**Dr. Daniel Eastlack, Section Head**

## Introduction

Radiology residents rotate through body computed tomography for at least 16 weeks (4 rotations) during their four-year residency. Examinations include chest, abdomen, pelvis and musculoskeletal applications. In addition to these dedicated body weeks, residents gain additional exposure to body CT as part of more general rotations and call/ER/float.

At the conclusion of each four-week rotation, the resident should demonstrate growing proficiency in the clinical competencies outlined below, showing noticeable improvement with increasing experience.

It is expected that the resident will have read the reading materials listed.

The extent to which the resident has met the objectives and general performance during the rotation will be evaluated at the end of each month.

## Patient Care & Procedural Skills

### Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to achieve the following objectives.

#### 1ST ROTATION (PGY-2/PRG-1)

- Learn to direct CT studies, understanding CT protocols and contrast media usage
- Learn to recognize the findings of life-threatening conditions and respond urgently
- Understand the pre-medication regimen for contrast-sensitive patients, including drugs, doses and dose scheduling
- Learn to evaluate and treat contrast extravasations
- Learn to handle issues or concerns regarding metformin
- Learn to coordinate activities in the reading room, including providing direction for the technologists, providing consultation for other clinicians and answering the phone
- Learn to converse with patients in a professional and courteous manner to answer questions posed or obtain consent if necessary

#### 2ND ROTATION (PGY-2/PRG-1 OR PGY-3/PRG-2)

- Learn to perform multiplanar reconstructions as well as curved multiplanar reconstructions
- Learn to transfer examinations between the PACS, teaching file and 3-D workstation
- Become increasingly proficient in directing CT studies in most patients, understanding CT scanning protocols and contrast media usage

- Understand the pre-medication regimen for contrast-sensitive patients, including drugs, doses and dose scheduling
- Evaluate and treat contrast extravasations
- Handle issues or concerns regarding metformin
- Coordinate activities in the reading room, including providing direction for the technologists, providing consultation for other clinicians and answering the phone
- Converse with patients in a professional and courteous manner to answer questions posed or obtain consent if necessary
- Apply ACR communication guidelines for and notify the referring clinician of urgent, emergent or unexpected findings, then document in dictation

### 3RD ROTATION (PGY-3 – PGY-5/PRG-2 – PRG-4)

- Perform multiplanar reconstructions as well as curved multiplanar reconstructions
- Transfer examinations between the PACS, teaching file and 3-D workstation
- Direct CT studies in most patients, understanding CT scanning protocols and contrast media usage
- Become facile with more advanced CT imaging protocols, such as enterography
- Coordinate activities in the reading room, including providing direction for the technologists, providing consultation for other clinicians and answering the phone, serving in a more supervisory role

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to achieve the following objectives.

### 1ST ROTATION (PGY-2/PRG-1)

- Demonstrate knowledge of anatomy in the chest, abdomen, pelvis and extremities
- Become familiar with a normal range and distinguish pathologic processes from normal

### 2ND ROTATION (PGY-2/PRG-1 OR PGY-3/PRG2)

- Demonstrate knowledge of anatomy in the chest, abdomen, pelvis and extremities; be familiar with the sectional anatomy of the organs as well as demonstrate increasing knowledge of smaller arterial and venous branches
- Establish differential diagnoses for pathologic processes
- Accurately interpret most body CTs, including body angiography
- Interpret basic post-processing (3-D) images
- Understand basic physics of the multidetector scanner and complete appropriate RSNA physics modules

- Understand average radiation exposure for each exam and level of risk

### 3RD ROTATION (PGY-3 – PGY-5/PRG-2 – PRG-4)

- Discuss CT technology and its application, including dosimetry
- Accurately interpret complex body CT examinations, including angiography
- Interpret complex post-processing (3-D) images

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel
- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to:

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness
- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

# Reading List

- Richard Webb, William Brant and Nancy Major's *Fundamentals of Body CT*
- *Grainger & Allison's Diagnostic Radiology*
- Ralph Weissleder's *Primer of Diagnostic Imaging*
- Jacob Mandell's *Core Radiology*
- Edward Lee et al.'s *Computed Body Tomography with MRI Correlation* (reference)

# BODY IMAGING (DESOTO & COLLIERVILLE)

**Dr. Randy Horras, Section Head (DeSoto)**
**Dr. Shannon Gulla, Section Head (Collierville)**

## Introduction

Radiology residents rotate through both Baptist-DeSoto and Baptist-Collierville during the course of their residency. These months provide a more general radiology experience in a community hospital-based setting. With the exception of the first-year rotation in Collierville, these rotations are intended for more senior residents and provide opportunities for increased autonomy.

At the conclusion of each rotation, the resident should demonstrate competence in the areas of knowledge-based goals, technical skills and particularly decision-making goals as outlined below.

It is expected that the resident will have read the reading materials listed.

The extent to which the resident has met the objectives and general performance during the rotation will be evaluated at the end of each month.

### 1ST-YEAR RESIDENT ROTATION (COLLIERVILLE)

This rotation provides the first-year resident with initial exposure to mammography. *(See Breast Imaging on page 76 for that component of the rotation.)* When not in mammography in Collierville, the first-year resident will receive a more general introduction to radiology with experiences in radiography, fluoroscopy, CT, ultrasound and often nuclear medicine and MR as well.

### NON-1ST-YEAR RESIDENT ROTATION (DESOTO & COLLIERVILLE)

These rotations will allow the more experienced residents an opportunity for increased autonomy in CT, ultrasound, radiography, fluoroscopy and MRI. Residents on these rotations should demonstrate increased mastery of the goals and objectives detailed below.

## Patient Care & Procedural Skills

### Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to achieve the following objectives.

### 1ST ROTATION (PGY-2/PRG-1)

- Be able to determine whether the patient can safely undergo an examination and/or receive contrast, if appropriate
- Be able to treat allergic reactions to contrast
- Be able to evaluate and treat contrast extravasations

- Be able to converse with patients in a professional and courteous manner to answer questions posed or obtain consent if necessary
- Be able to perform all standard GI fluoroscopy examinations
- Be able to perform all standard GU examinations
- Be able to utilize basic ultrasound controls to check examinations performed
- Be aware of imaging options for the pregnant patient, balancing indications and risk

### SUBSEQUENT ROTATIONS (PGY-3 – PGY-5/PRG-2 – PRG-4)

- Be able to determine whether the patient can safely undergo an examination and/or receive contrast, if appropriate
- Be able to treat allergic reactions to contrast
- Be able to evaluate and treat contrast extravasations
- Be able to converse with the patient in a professional and courteous manner to answer questions posed or obtain consent if necessary
- Be able to perform all standard GI fluoroscopy examinations
- Be able to perform all standard GU examinations
- Be able to utilize basic ultrasound controls to check examinations performed
- Be aware of imaging options for the pregnant patient, balancing indications and risk
- Be able to utilize advanced functions in ultrasound, including vascular applications (color Doppler, power Doppler, etc.) (non-first-year residents)
- Be able to perform advanced 2-D and 3-D reconstructions of CT and MR datasets (non-first-year residents)
- Give preliminary reads on standard exams (non-first-year residents only)

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to achieve the following objectives.

### 1ST ROTATION (PGY-2/PRG-1)

- Demonstrate knowledge of anatomy in the chest, abdomen, pelvis and extremities; be familiar with the sectional anatomy of the organs as well as demonstrate increasing knowledge of smaller arterial and venous branches
- Become familiar with a normal range and distinguish pathologic processes from normal

### SUBSEQUENT ROTATIONS (PGY-3 – PGY-5/PRG-2 – PRG-4)

- Demonstrate knowledge of anatomy in the chest, abdomen, pelvis and extremities; be familiar with the sectional anatomy of the organs as well as demonstrate increasing knowledge of smaller arterial and venous branches
- Become familiar with a normal range and distinguish pathologic processes from normal
- Establish differential diagnoses for pathologic processes
- Develop strategies to minimize radiation exposure from medical imaging
- Be aware of potential adverse outcomes for imaging examinations and procedures performed and develop strategies to minimize those possibilities
- Prioritize examinations in order of performance and interpretation based on their acuity and probability of positive findings

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel

- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to:

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness
- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

# Reading List

- *Grainger & Allison's Diagnostic Radiology*
- Ralph Weissleder's *Primer of Diagnostic Imaging*

# BODY IMAGING (WOMEN'S HOSPITAL)

**Dr. Jonathan Berger, Section Head**

## Introduction

Radiology residents rotate for two or four weeks through Baptist Women's Hospital as an elective. This rotation focuses on studies performed in both inpatient and outpatient settings, with examinations geared toward women, with the exception of mammography. Procedures include obstetrical ultrasound, hysterosalpingography and hysterosonography.

In addition to these dedicated weeks, residents gain additional exposure to many aspects of women's imaging as part of more general rotations and call/ER/float. This rotation also allows the resident time for a focused ultrasound experience, which should include scanning behind a registered sonographer. Exposure to pediatrics is also available.

At the conclusion of the two- or four-week rotation, the resident should demonstrate adequate progress in the clinical competencies outlined below.

It is expected that the resident will have read the reading materials listed.

The extent to which the resident has met the objectives and general performance during the rotation will be evaluated at the end of each month.

## Patient Care & Procedural Skills

### Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to:

- Be able to consent patients for and perform hysterosalpingogram and hysterosonogram
- Be able to determine whether the patient can safely undergo the procedure, including administration of contrast, if appropriate
- Be able to treat allergic reactions to contrast
- Be able to evaluate and treat contrast extravasations
- Be able to converse with patients in a professional and courteous manner to answer questions posed or obtain consent if necessary

## Medical Knowledge

### Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents should meet the objectives for all current and prior training levels and are expected to:

- Demonstrate knowledge of the anatomy of the female reproductive system, including uterine anomalies
- Demonstrate increasing knowledge of obstetrical imaging, including appropriate studies during each trimester of gestation and imaging of antepartum and postpartum obstetrical pathology
- Become familiar with the current recommendations for evaluating non-obstetric pathology in pregnancy (i.e., appendicitis, pulmonary embolism)
- Become familiar with a normal range and distinguish pathologic processes from normal
- Establish differential diagnoses for pathologic processes
- Complete the appropriate RSNA physics modules in ultrasound

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel
- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete.
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to:

- Determine the best protocol to answer the questions posed
- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness
- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

# Reading List

- 2016 RSNA digital presentation: Gayatri et al.'s "Hysterosalpingography: Indications, Techniques and Contraindications"
- *Grainger & Allison's Diagnostic Radiology*
- Ralph Weissleder's *Primer of Diagnostic Imaging*

# BODY MAGNETIC RESONANCE IMAGING

**Dr. James Machin, Section Head**

# Introduction

Radiology residents rotate through body magnetic resonance imaging as an elective of two or four weeks in duration. Examinations include the chest, abdomen, pelvis and occasionally musculoskeletal applications.

In addition to these dedicated body weeks, residents gain additional exposure to body MRI as part of more general rotations and call/ER/float. At the conclusion of the two- or four-week rotation, the resident should demonstrate adequate progress in the clinical competencies outlined below.

It is expected that the resident will have read the reading materials listed.

The extent to which the resident has met the objectives and general performance during the rotation will be evaluated at the end of each rotation.

# Patient Care & Procedural Skills

## Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to:

- Be able to perform multiplanar reconstructions as well as curved multiplanar reconstructions
- Be able to transfer examinations between the PACS, teaching file and 3-D workstation
- Be able to determine whether the patient can safely enter the scanner or receive contrast for the examination
- Be able to treat allergic reactions to contrast
- Be able to evaluate and treat contrast extravasations
- Be able to converse with patients in a professional and courteous manner to answer questions posed or obtain consent if necessary

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents should meet the objectives for all current and prior training levels and are expected to:

- Demonstrate knowledge of anatomy in the chest, abdomen, pelvis and extremities; be familiar with the sectional anatomy of the organs as well as demonstrate increasing knowledge of smaller arterial and venous branches
- Become familiar with a normal range and distinguish pathologic processes from normal
- Establish differential diagnosis for pathologic processes
- Understand basic physics of MRI and complete the appropriate RSNA physics modules

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel
- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to:

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness
- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

# Reading List

- Christopher Roth and Sandeep Deshmukh's *Fundamentals of Body MRI*
- *Grainger & Allison's Diagnostic Radiology*
- Ralph Weissleder's *Primer of Diagnostic Imaging*

# BREAST IMAGING

**Dr. Heidi Umphrey, Section Head**

## Introduction

Radiology residents rotate through Breast Imaging for 12 weeks (three one-month rotations) during their residency. At the completion of the three rotations, the resident should be able to demonstrate competence according to the criteria outlined for each rotation.

It is expected that the resident will have read the reading materials listed.

The extent to which the resident has met the objectives and general performance during the rotation will be evaluated at the end of each month.

## Patient Care & Procedural Skills

### Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to achieve the following objectives.

#### 1ST ROTATION (PGY-2/PRG-1)

- State guidelines for screening mammography
- Describe the workup of breast cancer
- Accurately perform a complete diagnostic workup of an abnormal screening, including interventional procedures and patient referral for final care based on biopsy findings
- Interpret and report screening mammograms (with or without tomosynthesis) with the help of computer-assisted detection software
- Perform breast ultrasound examinations with assistance
- Assist with localizations, ultrasound and stereotactic-guided biopsies, and cyst aspirations

#### 2ND ROTATION (PGY-3 & PGY-4/PRG-2 & PRG-3)

- Describe the workup of more complex breast cancer patients
- Accurately perform a complete diagnostic workup of an abnormal screening, including interventional procedures and patient referral for final care based on biopsy findings
- Interpret and report screening mammograms (with or without tomosynthesis) with the help of computer-assisted detection software
- Perform breast ultrasound examinations without assistance
- Perform localizations, ultrasound and stereotactic-guided biopsies, and cyst aspirations with minimal assistance

### 3RD ROTATION (PGY-4 & PGY-5/PRG-3 & PRG-4)

- Describe basic sequences used in breast MR
- Interpret and report screening mammograms (with or without tomosynthesis) with the help of computer-assisted detection software
- Perform breast ultrasound examinations without assistance
- Perform localizations, ultrasound and stereotactic-guided biopsies, and cyst aspirations with minimal assistance
- Successfully localize tumors with the appropriate in-vivo marker clips

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to achieve the following objectives.

### 1ST ROTATION (PGY-2/PRG-1)

- Describe the pathophysiology of breast cancer
- Identify relevant anatomic structures on various breast imaging modalities
- Diagnose more straightforward breast cancer cases
- Accurately interpret screening and more straightforward diagnostic mammograms (with or without tomosynthesis)
- Accurately interpret breast ultrasounds

### 2ND ROTATION (PGY-3 & PGY-4/PRG-2 & PRG-3)

- Diagnose more complex breast cancer cases
- Accurately interpret screening and more complex diagnostic mammograms (with or without tomosynthesis)
- Accurately interpret breast ultrasounds

### 3RD ROTATION (PGY-4 & PGY-5/PRG-3 & PRG-4)

- Identify relevant anatomic structures on breast MR examinations
- Diagnose more complex breast cancer cases
- Describe MR findings of benign and malignant breast disease
- Accurately interpret most breast MR examinations

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality, identify sources of artifact and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel
- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences,

completing work in a timely fashion and not leaving at the end of the day until all work is complete

- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to:

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness
- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

# Reading List

- *BI-RADS Atlas*
- RSNA physics modules on mammography

# CARDIOTHORACIC & CARDIOVASCULAR RADIOLOGY

**Dr. Keith Tonkin, Section Head**

## Introduction

Cardiothoracic imaging is at least peripherally involved in many rotations throughout residency. However, residents also will spend time at least twice on focused cardiothoracic rotations ranging in duration from two to four weeks. This rotation provides a higher level of exposure to high-resolution chest CT and cardiac MRI in both inpatient and outpatient settings in comparison with the standard body or call rotations. This rotation is supervised by members of the cardiothoracic radiology section.

Residents are expected to take an active role and seek out cardiothoracic cases in the PACS throughout the hospital system. Residents should make every effort to read all available high-resolution chest CTs, cardiac CTs or MRIs and cardiovascular CT or MR angiography cases. Reading additional studies is always encouraged when cardiothoracic or cardiovascular cases are not available for review.

## Patient Care & Procedural Skills

### Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to achieve the following objectives.

#### 1ST ROTATION (PGY-2/PRG-1)

- Understand CT and MR protocols and contrast media usage with respect to imaging the chest
- Learn to recognize the findings of life-threatening conditions and respond urgently
- Understand the pre-medication regimen for contrast-sensitive patients, including drugs, doses and dose scheduling
- Learn to evaluate and treat contrast extravasations
- Learn to handle issues or concerns regarding metformin
- Learn to coordinate activities in the reading room, including providing direction for the technologists, providing consultation for other clinicians and answering the phone
- Learn to converse with patients in a professional and courteous manner to answer questions posed or obtain consent if necessary

#### 2ND ROTATION (PGY-3 – PGY-5/PRG-2 – PRG-4)

- Perform multiplanar reconstructions as well as curved multiplanar reconstructions
- Transfer examinations between the PACS, teaching file and 3-D workstation
- Direct CT and MRI exams in most patients, understanding scanning protocols and contrast media usage

- Understand the pre-medication regimen for contrast-sensitive patients, including drugs, doses and dose scheduling
- Evaluate and treat contrast extravasations
- Handle issues or concerns regarding metformin
- Coordinate activities in the reading room, including providing direction for the technologists, providing consultation for other clinicians and answering the phone
- Converse with patients in a professional and courteous manner to answer questions posed or obtain consent if necessary
- Apply ACR communication guidelines and notify the referring clinician of urgent, emergent or unexpected findings, then document in dictation

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to achieve the following objectives.

### 1ST ROTATION (PGY-2/PRG-1)

- Identify normal anatomy as it appears on chest radiography, CT or MRI
- Identify common normal variants
- Discuss and identify the stages of pulmonary venous hypertension
- Understand/identify catheter/line positions on chest radiograph (normal and abnormal) and understand/identify the appearance of pneumothorax on supine and erect chest radiography
- Discuss and identify basic components of airspace patterns and interstitial patterns on chest radiograph
- Discuss/identify the main types of aortic dissection on cross-sectional imaging and understand their importance
- Complete physics lectures on radiography and computed tomography

### 2ND ROTATION (PGY-3 – PGY-5/PRG-2 – PRG-4)

- Recognize/discuss basic patterns of lung pathology, including focal and diffuse diseases, various patterns of airspace-filling or interstitial processes
- Recognize/discuss common abnormalities in cardiac contour and pulmonary vascularity and understand physiologic mechanisms for these
- Recognize/discuss mediastinal contour abnormalities and provide brief differentials for abnormalities based on appearance and position
- Discuss the appropriate workup of the solitary pulmonary nodule
- Discuss the role of chest CTs in evaluating basic clinical/radiographic problems
- Appropriately protocol chest CT exams to address specific questions

- Understand the specific indications for non-contrast CT versus contrast-enhanced CT
- Correlate clinical, laboratory and histopathologic data with radiographic findings
- Understand basic principles of cardiac MRI with regards to anatomic and physiologic imaging techniques
- Understand basic principles of high-resolution CT of the lung with regards to basic disease patterns and differential diagnoses
- Understand the major clinical questions for which HRCT (high-resolution computed tomography) provides useful data
- Fully supervise the performance of chest CT exams and CT angiography, including coronary angiography

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel
- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to:

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness
- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

# Reading List

- James Chen's *Essentials of Cardiac Imaging*
- Richard Webb and Charles Higgins' *Thoracic Imaging: Pulmonary and Cardiovascular Radiology*
- Richard Webb et al.'s *High-Resolution CT of the Lung*
- Grainger & Allison's *Diagnostic Radiology*

# EMERGENCY RADIOLOGY & NIGHT FLOAT

**Dr. John Stanfill, Section Head**

## Introduction

Resident experience in emergency radiology occurs predominantly during night float rotations at Baptist-Memphis. Residents will spend approximately four months on night float during the course of the four-year residency, beginning after the first full year of radiology training. During these rotations, the resident can expect to devote half the month to working nights and the other half to clinical research.

Attending radiologists are available for backup during the evenings, but the autonomy allows for growth in interpretive skills, time management and confidence. Additional experience in emergency radiology will be obtained on a continual basis during routine rotations throughout training.

At the conclusion of each float rotation, the resident should demonstrate increasing proficiency in the clinical competencies outlined below.

It is expected that the resident will have read the reading materials listed.

The extent to which the resident has met the objectives and general performance during the rotation will be evaluated at the end of each month.

## Patient Care & Procedural Skills

### Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to:

- Be able to determine whether the patient can safely undergo an examination and/or receive contrast, if appropriate
- Be able to treat allergic reactions to contrast
- Be able to evaluate and treat contrast extravasations
- Be able to converse with patients in a professional and courteous manner to answer questions posed or obtain consent if necessary
- Be able to utilize advanced functions in ultrasound, including vascular applications (color Doppler, power Doppler, etc.)
- Be able to perform advanced 2-D and 3-D reconstructions of CT and MR datasets
- Give preliminary reads on standard exams

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

- Demonstrate knowledge of anatomy in the chest, abdomen, pelvis and extremities; be familiar with the sectional anatomy of the organs as well as demonstrate increasing knowledge of smaller arterial and venous branches
- Become familiar with a normal range and distinguish pathologic processes from normal
- Demonstrate knowledge of critical findings on radiography, CT and ultrasound
- Demonstrate knowledge of critical findings on MRI
- Understand options for imaging the pregnant patient, including risks, benefits and alternatives; be able to consent the patient, if necessary
- Establish differential diagnosis for pathologic processes
- Develop strategies to minimize radiation exposure from medical imaging
- Be aware of potential adverse outcomes for imaging examinations and procedures performed and develop strategies to minimize those possibilities
- Prioritize examinations in order of performance and interpretation based on their acuity and probability of positive findings

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel
- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to:

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness

- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

## Reading List

- *Grainger & Allison's Diagnostic Radiology*
- Ralph Weissleder's *Primer of Diagnostic Imaging*

# INTERVENTIONAL RADIOLOGY

## (VASCULAR & NONVASCULAR)

**Dr. Henry Dalsania, Section Head**

## Introduction

The interventional radiology (IR) rotation takes place at Baptist-Memphis and Baptist-DeSoto. This is a very demanding rotation, providing experience in vascular and nonvascular procedures as well as hospital rounding and clinic visits. This is a one-month rotation served once each post-graduate year. Residents may obtain additional IR experience during both float coverage and as an elective month.

No more than two residents will be scheduled for this rotation each month.

- During months when only one resident is scheduled for IR, that resident will serve solely in vascular interventional radiology, except as noted below.
- When two residents are scheduled to serve IR during the same month, each resident will spend two alternating weeks each in nonvascular interventional and vascular interventional radiology. If the resident assigned to vascular interventional radiology is absent, the other resident will be moved to that side, except as noted below.

NOTE: First-year residents must receive early and adequate training in thoracentesis and paracentesis. Therefore, all paracentesis and thoracentesis procedures performed in nonvascular interventional radiology during the first-year resident's first month will be performed by the resident. It is expected that this exposure will provide sufficient training for the first year to master these basic competencies. If training is insufficient, the resident will perform additional paracentesis and thoracentesis as needed during his/her second IR rotation.

The rotation and weekly schedules are determined by the program director. Supervision on the vascular side will be provided exclusively by physician staff in the interventional radiology section. Supervision on the nonvascular side will be provided by both interventional radiology and nonvascular interventional physician faculty of the body section.

No more than one resident at a time will be assigned to Baptist-DeSoto for the interventional radiology rotation. That resident will assume sole responsibility for both vascular and nonvascular procedures. All procedures will be performed under the supervision of interventional radiology physician staff.

At the conclusion of each rotation, the resident should demonstrate growing proficiency in the clinical competencies outlined below, showing noticeable improvement with increasing experience.

It is expected that the resident will have read the reading materials listed.

The extent to which the resident has met the objectives and general performance during the rotation will be evaluated at the end of each month.

# Patient Care & Procedural Skills

## Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to demonstrate progressive competence as described below.

### 1ST ROTATION (PGY-2/PRG-1)

- Performance of a central line under fluoroscopic and ultrasound guidance
- Performance of a common femoral venous puncture
- Performance of a single wall puncture of the common femoral artery
- Correct access site compression after arteriography
- Performance of image-guided biopsy
- Performance of a paracentesis
- Performance of a thoracentesis
- Obtain pertinent patient information from the PACS system and EMR (electronic medical records) prior to performing an invasive procedure
- Correctly enter orders in the medical record prior to and following interventional procedures
- Learn to coordinate activities in the interventional suite, including providing direction for the technologists, providing consultation for other clinicians and answering the phone
- Learn to converse with patients in a professional and courteous manner to answer questions posed or obtain consent if necessary
- Demonstrate the ability to monitor and follow patients assigned during the rotation and have at hand pertinent clinical information such as chest tube or drain output, findings from follow-up imaging, etc.
- Understand different levels of supervision and document appropriately in the medical record
- Demonstrate the ability to obtain informed consent

### 2ND ROTATION (PGY-3/PRG-2)

- Manual dexterity in using a pigtail catheter to go around the aortic bifurcation
- Manual dexterity using Omni Selective, Cobra and SOS Omni catheters
- Basic skills in suturing: interrupted, running and subcuticular suturing techniques; know when to use absorbable and non-absorbable sutures
- Performance of ultrasound-guided puncture of the internal jugular vein
- Ability to perform a tunneled dialysis catheter placement in the internal jugular vein
- Demonstrate safety with sharps and timely removal of sharp objects from the tray and placement in the sharps box
- Knowledge of the function of the Pleur-evac system and Heimlich valve

- Ability to dictate in a clear, succinct and time-efficient manner

### 3RD ROTATION (PGY-4/PRG-3)

- Ability to place an IVC filter
- Ability to safely reform a Simmons catheter and know which one to use for the situation at hand
- Ability to perform pulmonary arteriography and knowledge of appropriate catheter use
- Ability to perform ultrasound-guided percutaneous nephrostomy and biliary drainage
- Coordinate activities in the interventional suite, including providing direction for the technologists, providing consultation for other clinicians and answering the phone, serving in a more supervisory role

### 4TH ROTATION (PGY-5/PRG-4)

- Ability to perform an antegrade femoral puncture
- Ability to perform graded ultrasonic compression to treat a puncture site pseudoaneurysm
- Ability to perform post-traumatic embolization of pelvic bleeders
- Ability to perform visceral arteriography
- Ability to perform lung biopsies and place Heimlich valves for post-lung biopsy pneumothorax

### ALL SUBSEQUENT ROTATIONS FOR IR SPECIFIC RESIDENTS

- Integrated IR residents should be able to perform all IR related procedures prior to graduating

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to demonstrate progressive competence as described below.

### 1ST ROTATION (PGY-2/PRG-1)

- Name the pertinent labs that must be known prior to performing an arteriogram, biliary drainage and percutaneous nephrostomy or abscess drainage
- Describe the superficial and deep venous system of the upper and lower extremity
- Describe the arterial anatomy of the lower extremity, pelvis and abdomen
- Name the indications for central line placement

### 2ND ROTATION (PGY-3/PRG-2)

- Name the arterial anatomy of the external and internal iliac arteries

- Name the venous anatomy of the chest, abdomen and pelvis, identifying collateral pathways between the azygous system, SVC (superior vena cava) and IVC (interior vena cava)
- Name and identify the renal arterial branches and describe Brodel's avascular zone and its relationship to percutaneous nephrostomy
- Describe the intrahepatic and extrahepatic biliary system and anatomy; describe the specific biliary complications that can result from laparoscopic gallbladder removal
- Describe the risk factors for pneumothorax secondary to percutaneous lung biopsy
- Describe the risk factors for hemoperitoneum secondary to liver biopsy
- Describe different types of aneurysms (e.g., atherosclerotic, mycotic, post-traumatic) and give an example of each
- Discuss when thrombolytics are helpful in chest tube drainage
- Discuss the indications for gastrostomy, gastrojejunostomy and jejunostomy tube placement
- Knowledge of the appropriate choice of antibiotics for bacterial coverage prior to percutaneous nephrostomy, biliary drainage and abscess drainage
- Knowledge of deep venous disease, including the indications for venography, duplex ultrasound, MR venography and therapeutic treatment options
- Knowledge of visceral arterial anatomy and common normal variants such as replaced right hepatic artery, left gastric/hepatic, etc.

## 3RD ROTATION (PGY-4/PRG-3)

- Knowledge of peripheral vascular disease, including risk factors, evolution of atherosclerotic plaque and site of plaque formation
- Knowledge of methods of evaluating the patient with peripheral vascular disease from noninvasive to invasive modalities (e.g., history, physical, pulse volume recordings, duplex sonography, CT and MR angiography, diagnostic arteriography)
- Knowledge of complications of diagnostic arteriography and methods of reducing the incidence of these complications and their management
- Knowledge of contrast agents (ionic and nonionic) and indications and medical protocol for premedication prior to contrast administration
- Ability to recognize various contrast agent reactions and appropriate treatment regimens
- Describe the various access routes for hemodialysis: Cimino-Brescia fistula, bridge and loop Gore-Tex dialysis grafts, and dialysis catheters
- Describe when a temporary dialysis catheter is warranted and when a tunneled dialysis is indicated; name access sites appropriate for placement
- Name the central vein in which it's considered malpractice to place a temporary or tunneled dialysis catheter
- Describe when metallic stents would be indicated to preserve access for continued dialysis
- Name risk factors for contrast-induced nephrotoxicity
- Discuss when it is appropriate to remove an abscess tube and what factors must be known prior to removal and if imaging is needed

- Discuss the indications and contraindications for IVC filter placement; describe the currently available FDA-approved filters and their respective advantages and disadvantages
- Discuss the checklist to be assessed prior to proceeding with a pulmonary arteriogram
- Draw a left bundle block pattern as it would appear on a 12-lead EKG; define when a temporary pacer is required prior to pulmonary arteriography; discuss the contraindications to pulmonary arteriography
- Discuss the advantages of tunneled catheters for therapy versus PICC lines versus ports; discuss when each would be appropriate or inappropriate

## 4TH ROTATION (PGY-5/PRG-4)

- Knowledge of the mechanism of angioplasty
- Knowledge of complications of angioplasty
- Knowledge of indications for vascular stent placement
- Knowledge of indications for renal angioplasty and stent placement
- Knowledge of indications for biliary stent placement
- Knowledge of indications and contraindications for TIPS placement
- Knowledge of indications for gastrostomy tube placement
- Discuss various embolic agents that are clinically available (i.e., liquids, particulates, coils); discuss when each type of agent is clinically indicated and contraindicated
- Discuss post-embolization syndrome
- Discuss the arterial blood supply to the uterus and ovaries; describe the incidence of ovarian failure after uterine artery embolization
- Discuss cholesterol embolization, its causes and treatments (if any)
- Discuss hypercoagulable states
- Discuss heparin-induced thrombocytopenia
- Discuss anticoagulants (e.g., unfractionated heparin, low molecular weight heparin, coumadin) and where in the coagulation cascade each works; discuss antiplatelet agents (e.g., ReoPro, Aggrastat, integrilin, clopidogrel)
- Discuss the types of portal hypertension (i.e., dynamic, presinusoidal, sinusoidal, postsinusoidal) and causes of each; discuss the hepatic venous anatomy and indications for free and wedged hepatic venous hemodynamic assessment
- Discuss the complications that can occur during tunneled dialysis catheter placement, specifically how to lessen the incidence of air embolism and treatment if this were to happen
- Discuss the dangers of local thrombolytic therapy and discuss compartment syndrome as it relates to reperfusion of a threatened ischemic extremity
- Discuss when local thrombolytic treatment is contraindicated; discuss why echocardiography is a necessary test prior to initiating local thrombolytic therapy in acute ischemia secondary to embolic disease
- Discuss different sclerosing agents for lymphoceles or cysts

- Define pelvic congestion syndrome, how it's analogous to varicocele formation in males and treatment options

### ALL SUBSEQUENT ROTATIONS FOR IR SPECIFIC RESIDENTS

- Integrated IR residents must have complete medical knowledge of all IR related diseases prior to completion of training

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel
- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to:

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness
- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

# Reading List

- Karim Valji's *Vascular and Interventional Radiology* (comprehensive overview of vascular and interventional radiology without overwhelming detail)
- Krishna Kandarpa et al.'s *Handbook of Interventional Radiologic Procedures* (excellent small handbook, with good line drawings and an outline of procedures for interventional radiology)
- Peter Rogers et al.'s *Pocket Radiologist: Interventional Top 100 Diagnoses* (small handbook with concise descriptions of common interventional procedures, including types of antibiotics, appropriate catheters and wires; also comes in a PDA version)
- Saadoon Kadir's *Teaching Atlas of Interventional Radiology: Diagnostic and Therapeutic Angiography*
- Stanley Baum and Michael Pentecost's *Abrams' Angiography: Interventional Radiology*, Volumes 1-3 (first two volumes cover angiography by leaders in the field; the third volume describes virtually every procedure in interventional radiology)

- Constantin Cope, Dana Burke and Steven Meranze's *Atlas of Interventional Radiology* (great illustrations; covers both vascular and nonvascular)
- Wilfrido Castaneda-Zuniga et al.'s *Interventional Radiology* (two-volume multi-authored text that covers essentially all of interventional radiology)
- Amil Gerlock and Mansour Mirfakhraee's *Essentials of Diagnostic and Interventional Angiographic Techniques* (small paperback with good coverage on how to do a femoral artery puncture, how to exchange an occluded catheter, how to retrieve a foreign body, how to correct a knotted catheter; nice line drawings)
- Stewart Reuter, Helen Redman and Kyung Cho's *Gastrointestinal Angiography* (excellent reference for visceral angiography; very good illustrations)
- Journal of Vascular and Interventional Radiology

# MUSCULOSKELETAL IMAGING

**Dr. Dexter Witte, III, Section Head**

## Introduction

Radiology residents rotate through the musculoskeletal section for a total of 12 weeks (generally 3 rotations) during their four-year residency. Rotations begin with imaging modalities, with procedure sections added on in senior residency years.

At the end of each four-week rotation, the resident should be able to demonstrate competence in the areas of knowledge-based goals, technical skills and decision-making according to the criteria outlined for each rotation.

It is expected that the resident will have read the reading material listed at the end of the objectives for that rotation.

The extent to which the resident has met the objectives and general performance during the rotation will be evaluated at the end of each month.

## Patient Care & Procedural Skills

### Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to achieve the following objectives.

#### 1ST ROTATION (ER/PLAIN RADIOGRAPHY) (PGY-2/PRG-1)

- Learn to screen, prescribe and supervise routine radiographic procedures and appropriate contrast media usage
- Make appropriate decisions with regards to clinical relevance of imaging findings
- Consult with the ordering physician concerning patient history and imaging findings
- Learn to coordinate activities in the reading room, including providing direction for the technologists, providing consultation for other clinicians and answering the phone
- Learn to converse with patients in a professional and courteous manner to answer questions posed or obtain consent if necessary

#### 2ND ROTATION (ADVANCED MSK [MUSCOSKELETAL] IMAGING) (PGY-2 – PGY-3/PRG-1 – PRG-2)

- Perform fluoroscopically guided procedures, including arthrography and anesthetic joint injections
- Perform CT-guided bone and soft-tissue biopsies
- Coordinate activities in the reading room, including providing direction for the technologists, providing consultation for other clinicians and answering the phone

- Converse with patients in a professional and courteous manner to answer questions posed or obtain consent if necessary
- Apply ACR communication guidelines and notify the referring clinician of urgent, emergent or unexpected findings, then document in dictation

### 3RD ROTATION (ADVANCED MSK IMAGING) (PGY-3 – PGY-5/PRG-2 – PRG-4)

- Perform fluoroscopically guided procedures, including arthrography and anesthetic joint injections
- Perform CT-guided bone and soft-tissue biopsies

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to achieve the following objectives.

### 1ST ROTATION (ER/PLAIN RADIOGRAPHY) (PGY-2/PRG-1)

- Demonstrate knowledge of normal osseous anatomy
- Discuss plain radiographic protocols at our institution, including patient positioning and techniques
- Become familiar with a normal range and distinguish pathologic processes from normal
- Given an abnormal image, describe the abnormality using appropriate terminology and give a differential diagnosis
- Understand indications for more advanced imaging such as CT/MRI

### 2ND ROTATION (ADVANCED MSK IMAGING) (PGY-2 – PGY-3/PRG-1 – PRG-2)

- Discuss MRI and CT physics as they relate to MSK imaging
- Given a normal study, describe normal anatomy and imaging appearance
- Given an abnormal image, make the appropriate findings and give a differential diagnosis
- Understand the contraindications to MRI
- Understand the basic physics of the multidetector scanner and complete the appropriate RSNA physics module
- Understand average radiation exposure for each exam and level of risk

### 3RD ROTATION (ADVANCED MSK IMAGING)
### (PGY-3 – PGY-5/PRG-2 – PRG-4)

- Discuss MRI and CT physics as they relate to MSK imaging
- Given a normal study, describe normal anatomy and imaging appearance
- Given an abnormal image, make the appropriate findings and give a differential diagnosis
- Understand the contraindications to MRI

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel
- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to:

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness
- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

# Reading List

- Clyde Helms' *Fundamentals of Skeletal Radiology*
- BJ Manaster's *Musculoskeletal Imaging: The Requisites*
- Anne Brower's *Arthritis in Black and White*
- Clyde Helms et al.'s *Musculoskeletal MRI*
- Donald Resnick's *Bone and Joint Imaging*

# NEURORADIOLOGY

***Dr. , Section Head***

## Introduction

Radiology residents rotate through the neuroradiology section for a total of 24 weeks (6 rotations) during their four-year residency. The number of rotations per year varies from one to two. Rotations begin with the basic imaging modalities but also include image-guided procedures.

At the end of each four-week rotation, the resident should be able to demonstrate competence in the areas of knowledge-based goals, technical skills and decision-making according to the criteria outlined for each rotation.

It is expected that the resident will have read the reading material listed.

The extent to which the resident has met the objectives and general performance during the rotation will be evaluated at the end of each month.

## Patient Care & Procedural Skills

### Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to achieve the following objectives.

#### 1ST ROTATION (CT/MYELOGRAPHY) (PGY-2/PRG-1)

- Demonstrate proficiency in performance and interpretation of lumbar puncture, both diagnostic and therapeutic
- Demonstrate proficiency in performance and interpretation of lumbar myelography and, to a lesser degree, thoracic and cervical myelography
- Learn to direct CT studies, understanding CT protocols and contrast media usage
- Learn to recognize the findings of life-threatening conditions and respond urgently
- Understand the pre-medication regimen for contrast-sensitive patients, including drugs, doses and dose scheduling
- Learn to evaluate and treat contrast extravasations
- Learn to handle issues or concerns regarding metformin
- Learn to coordinate activities in the reading room, including providing direction for the technologists, providing consultation for other clinicians and answering the phone.
- Learn to converse with patients in a professional and courteous manner to answer questions posed or obtain consent if necessary

### 2ND ROTATION (MRI) (PGY-2 – PGY-3/PRG-1 – PRG-2)

- Screen, prescribe and supervise routine MR imaging
- Dictate neuroimaging studies after reviewing with an attending neuroradiologist
- Learn to recognize the findings of life-threatening conditions and respond urgently
- Given an appropriate abnormal image, recognize basic neuropathology and provide a differential diagnosis
    - Emphasis for this rotation will be on the more common pathologic states and those anticipated to be encountered while on call. In this regard, emphasis will be on spinal and cranial trauma, cerebral infarction, cerebral hemorrhage, hydrocephalus and brain herniation.
- Learn to coordinate activities in the reading room, including providing direction for the technologists, providing consultation for other clinicians and answering the phone
- Learn to converse with the patient in a professional and courteous manner to answer questions posed or obtain consent if necessary
- Give preliminary reads on standard exams, particularly CT exams
- Provide guidance and procedural training for first-year radiology residents

### 3RD & 4TH ROTATIONS (ADVANCED CT AND MR IMAGING) (PGY-3 – PGY-5/PRG-2 – PRG-4)

- Given an appropriate abnormal image, recognize advanced neuropathology and provide a differential diagnosis
- Given appropriate films, demonstrate a thorough knowledge of the vascular anatomy of the central nervous system
- Given an appropriate CT or MR angiogram, be able to provide interpretation of common abnormalities
- Discuss major pathologic conditions of the cerebral vasculature, with an emphasis on atherosclerosis and aneurysm
- Provide guidance and procedural training for junior radiology residents

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to achieve the following objectives.

### 1ST ROTATION (CT/MYELOGRAPHY) (PGY-2/PRG-1)

- Given normal CT or myelographic images, demonstrate a proficient knowledge of anatomy of the presented area
- Discuss the basic principles of CT physics

- Describe CT imaging protocol and how the protocols would be modified for specific disease processes

### 2ND ROTATION (MRI) (PGY-2 – PGY-3/PRG-1 – PRG-2)

- Given normal MR images, demonstrate proficient knowledge of the anatomy of a presented area
- Demonstrate increased ability to recognize pathology and discuss a differential diagnosis
- Discuss the basic principles of MRI physics
- Understand the contraindications to MRI

### 3RD & 4TH ROTATIONS (PGY-3 – PGY-5/PRG-2 – PRG-4)

- Given appropriate images, demonstrate a thorough knowledge of the vascular anatomy of the central nervous system
- Given an appropriate CT or MR angiogram, be able to provide an interpretation of common abnormalities
- Discuss major pathologic conditions of the cerebral vasculature, with an emphasis on atherosclerosis and aneurysm

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care

- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel
- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to:

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness
- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

# Reading List

- Robert Grossman and David Yousen's *Neuroradiology: The Requisites*
- Anne Osborn's *Diagnostic Neuroradiology*

- Anne Osborn's *Diagnostic Imaging: Brain*
- Anne Osborn's *Diagnostic Cerebral Angiography*
- Scott Atlas' Magnetic *Resonance Imaging of the Brain and Spine*
- James Barkovich's *Pediatric Neuroimaging*
- Peter Som et al.'s *Head and Neck Imaging*
- Pearse Morris and Ann Kim Morris' *Practical Neuroangiography*
- Randy Jinkins and Claudia da Costa Leite's *Neurodiagnostic Imaging: Pattern Analysis and Differential Diagnosis*

# NUCLEAR MEDICINE & MOLECULAR IMAGING

**Dr. Craig Lipman, Section Head**

## Introduction

Radiology residents rotate through at least 16 weeks of dedicated nuclear medicine. These months provide the core experience, though experience is also gained on call/float, with cases reviewed by nuclear medicine faculty the next morning. During a rotation month, the resident will spend time on general nuclear medicine (including PET [positron emission tomography]) and cardiac nuclear medicine.

At the conclusion of each rotation, the resident should demonstrate competence in the goals outlined below.

It is expected that the resident will have read the reading materials listed.

The extent to which the resident has met the objectives and general performance during the rotation will be evaluated at the end of each month.

## Patient Care & Procedural Skills

### Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to achieve the following objectives.

#### 1ST ROTATION (PGY-2/PRG-1)

- Identify basic nuclear radiology equipment and describe pertinent quality control measures
- State appropriate indications for commonly ordered nuclear medicine studies
- Describe basic concepts of radionuclide therapy for thyroid carcinoma and hyperthyroidism, including radiation safety issues
- Be facile with PACS, Vitrea, Epic, etc.
- Interpret the following types of nuclear radiology studies: bone, V/Q (ventilation/perfusion), hepatobiliary, GI bleeding, thyroid, parathyroid and basic renal scans
- Correlate findings with radiographs and other imaging studies and prescribe additional studies when appropriate
- Coordinate activities in the reading room, including providing direction for the technologists, providing consultation for other clinicians and answering the phone

### 2ND ROTATION (PGY-2 – PGY-3/PRG-1 – PRG-2)

- Summarize concepts of SPECT (single-photon emission computed tomograph) imaging, including quality control, image acquisition and study interpretation
- Describe pharmacologic interventions in nuclear radiology, including morphine/cholecystokinin hepatobiliary imaging, ACE inhibitor (Captopril) renography, Diamox brain imaging, Lasix renography and Reglan gastric emptying
- Describe the indications for PET imaging and tumors for which PET is of more limited use, proper patient preparation and technical factors associated with PET acquisition
- Accurately interpret radionuclide scans related to infection and tumor such as Octreoscan, CEA-Scan, leukocyte scan, Gallium scan, MIBG scan, Thallium brain scan and hemangioma studies, and HMPAO brain scans
- Give preliminary reads on standard exams

### 3RD ROTATION (PGY-3 – PGY-4/PRG-2 – PRG-3)

- Summarize Nuclear Regulatory Commission (NRC) rules concerning radionuclide imaging and therapy, completing a radiation safety review in the department with a nuclear medicine physicist
- Distinguish between the different nuclear cardiology examinations, including exercise versus pharmacologic stress tests, MUGA (multiple-gated acquisition) studies and types of radiotracers used, including T1-201, Tc-99m sestamibi and Tc-99m teboroxime
- Accurately interpret most nuclear cardiology examinations
- Perform and log the required number of radionuclide treatments for hyperthyroidism and cancer
- Give preliminary reads on standard exams

### 4TH & SUBSEQUENT ROTATIONS (PGY-4 – PGY-5/PRG-3 – PRG-4)

- Identify radionuclide therapy for controlling bone pain
- Describe the basic concepts in radiolabeled antibody imaging and therapy
- Accurately interpret most nuclear cardiology examinations
- Perform and log the required number of radionuclide treatments for hyperthyroidism and cancer
- Use and describe staging systems for lung cancer and head and neck cancer using PET to identify lymph node stations
- Give preliminary reads on standard exams

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to achieve the following objectives.

### 1ST ROTATION (PGY-2/PRG-1)

- Participate in quality control processes as outlined by NRC requirements
- Describe physical properties of commonly used radionuclides
- State organ localization and clinical uses of common radiopharmaceuticals
- Discuss quality control of Technetieum-99m
- Prioritize examinations in order of performance and interpretation based on their acuity and probability of positive findings

### 2ND ROTATION (PGY-2 – PGY-3/PRG-1 – PRG-2)

- Describe physical characteristics of commonly used radionuclides
- State organ localization and clinical uses of common radiopharmaceuticals
- Discuss quality control of Technetieum-99m
- Participate in quality control processes as outlined by NRC requirements

### 3RD ROTATION (PGY-3 – PGY-4/PRG-2 – PRG-3)

- Describe physical characteristics of commonly used radionuclides
- State organ localization and clinical uses of common radiopharmaceuticals
- Discuss quality control of Technetieum-99m

### 4TH & SUBSEQUENT ROTATIONS (PGY-4 – PGY-5/PRG-3 – PRG-4)

- Identify the different systems used for PET acquisition (e.g., coincidence detectors, dedicated PET systems and PET/CT systems)
- Describe the indications and use of PET agents in nuclear cardiology, including F-18 FDG (Fludeoxyglucose), Rubidium and ammonia

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel
- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to:

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness

- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

## Reading List

- James Thrall's *Nuclear Medicine: The Requisites*
- Fred Mettler and Milton Guiberteau's *Essentials of Nuclear Medicine Imaging*

# PEDIATRIC IMAGING (BMH CHILDREN'S HOSPITAL)

**Dr. Jonathan Berger, Section Head**

## Introduction

Residents will rotate through the BMH Spence & Becky Wilson Children's Hospital for two weeks to focus on studies performed in both inpatient and outpatient settings. Procedures will include pediatric radiography, ultrasound, CT, MRI and fluoroscopy. This rotation also will allow the resident time for focused ultrasound experience, which should include scanning behind a registered sonographer.

At the conclusion of the rotation, the resident should demonstrate adequate progress in the clinical competencies outlined below.

It is expected that the resident will have read the reading materials listed.

The extent to which the resident has met the objectives and general performance during the rotation will be evaluated at the end of the rotation.

## Patient Care & Procedural Skills

### Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to:

- Be able to perform the most common pediatric fluoroscopic exams, including esophagram-upper gastrointestinal exam, modified barium swallow, contrast enema and VCUG (voiding cystourethrogram)
- Be able to determine whether the patient can safely undergo a procedure and the most appropriate contrast material for a particular exam/procedure
- Demonstrate a basic ability in evaluating pathology with ultrasound in the pediatric population (e.g., neonatal head ultrasound, neonatal spine ultrasound, hip ultrasound, appendix ultrasound and ultrasound of superficial soft-tissue masses)
- Be able to treat allergic reactions to contrast
- Determine the best procedure/protocol to answer the clinical question posed
- Understand the principles of "Image Gently" to minimize radiation exposure in the pediatric population, including using/recommending the most appropriate imaging procedures/protocols

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents should meet the objectives for all current and prior training levels and are expected to:

- Identify normal vs. abnormal findings on chest and abdomen radiographs in pediatric patients in the outpatient, ER and inpatient/ICU settings
- Become familiar with a normal range and pathologic findings in NICU/premature patients, in particular critical findings requiring emergent physician communication
- Identify normal vs. abnormal findings on skeletal, skull and spine radiographs, in particular common anatomic variants seen in the pediatric population; be familiar with the principles of skeletal development as it relates to the radiographic appearance of the osseous structures in pediatric patients of varying ages
- Identify normal vs. abnormal findings on ultrasound exams specific to the pediatric population (i.e., neonatal head ultrasound and hip ultrasound)
- Be able to determine when advanced imaging techniques (CT/MR) are indicated in the pediatric population based on clinical history and/or abnormal findings on radiography, ultrasound and/or fluoroscopy
- Become familiar with clinical indications for the most common pediatric fluoroscopic exams (i.e., esophagram-upper GI exam, contrast enema, VCUG); identify normal and abnormal findings on these exams
- Establish differential diagnoses for pathologic processes in the pediatric population
- Complete the appropriate RSNA physics modules in ultrasound

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
- Facilitate the learning of students and other health care professionals
- Incorporate formative feedback into daily practice, positively responding to constructive criticism
- Follow up on interesting or difficult cases without prompting and share this information with the appropriate faculty and fellow residents

# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
- Practice cost-effective use of time and support personnel
- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues

# Professionalism

## Goals & Objectives

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

- Understanding of the need for respect for patient privacy and autonomy
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

Residents must demonstrate interpersonal and communications skills that result in the effective exchange of information and teamwork with patients, their families and professional associates. Residents are expected to:

- Know the importance of accurate, timely and professional communication
- Generate reports on most examinations with appropriate structure, content, accuracy and timeliness

- Communicate effectively with physicians and other health professionals
- Obtain informed consent with the utmost professionalism
- Work effectively as a member of the patient care team

# Reading List

- Lane F. Donnelly's *Fundamentals of Pediatric Imaging*
- Asim F. Choudhri's *Pediatric Neuroradiology: Clinical Practice Essentials*
- Cleveland Clinic pediatric radiology education modules (https://www.cchs.net/onlinelearning/cometvs10/pedrad/default.htm)
- RSNA physics modules
- Image Gently (https://www.imagegently.org)
- ACR Appropriateness Criteria guidelines (https://www.acr.org/Clinical-Resources/ACR-Appropriateness-Criteria)
- AAP (American Academy of Pediatrics) guidelines on child abuse (https://www.aap.org/en-us/about-the-aap/Committees-Councils-Sections/Council-on-Child-Abuse-Neglect/Pages/Child-Abuse-Neglect.aspx)

# PEDIATRIC IMAGING (LEBONHEUR)

**Dr. Harris Cohen, Radiologist-in-Chief, LeBonheur Children's Hospital**

## Introduction

Residents will rotate through LeBonheur Children's Hospital for three one-month intervals to focus on studies performed in both inpatient and outpatient settings. Procedures will include pediatric radiography, ultrasound, CT, MRI and fluoroscopy. These rotations also will allow the resident time for focused ultrasound experience, which should include scanning behind a registered sonographer.

At the conclusion of each rotation, the resident should demonstrate adequate progress in the clinical competencies outlined below.

It is expected that the resident will have read the reading materials listed.

The extent to which the resident has met the objectives and general performance during the rotation will be evaluated at the end of each rotation.

## Patient Care & Procedural Skills

### Goals & Objectives

Residents must be able to provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health. Residents are expected to:

- Be able to perform the most common pediatric fluoroscopic exams, including esophagram-upper gastrointestinal exam, modified barium swallow, contrast enema and VCUG
- Be able to determine whether the patient can safely undergo a procedure and the most appropriate contrast material for a particular exam/procedure
- Demonstrate a basic ability in evaluating pathology with ultrasound in the pediatric population (e.g., neonatal head ultrasound, neonatal spine ultrasound, hip ultrasound, appendix ultrasound and ultrasound of superficial soft-tissue masses)
- Be able to treat allergic reactions to contrast
- Determine the best procedure/protocol to answer the clinical question posed
- Understand the principles of "Image Gently" to minimize radiation exposure in the pediatric population, including using/recommending the most appropriate imaging procedures/protocols
- Determine bone ages on the basis of radiographic findings

# Medical Knowledge

## Goals & Objectives

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents should meet the objectives for all current and prior training levels and are expected to:

- Identify normal vs. abnormal findings on chest and abdomen radiographs in pediatric patients in the outpatient, ER and inpatient/ICU settings
- Become familiar with a normal range and pathologic findings in NICU/premature patients, in particular critical findings requiring emergent physician communication
- Identify normal vs. abnormal findings on skeletal, skull and spine radiographs, in particular common normal anatomic variants seen in the pediatric population; be familiar with the principles of skeletal development as it relates to the radiographic appearance of the osseous structures in pediatric patients of varying ages
- Identify normal vs. abnormal findings on ultrasound exams specific to the pediatric population (i.e., neonatal head ultrasound and hip ultrasound)
- Be able to determine when advanced imaging techniques (CT/MR) are indicated in the pediatric population based on clinical history and/or abnormal findings on radiography, ultrasound and/or fluoroscopy
- Become familiar with the clinical indications for the most common pediatric fluoroscopic exams (i.e., esophagram-upper GI exam, contrast enema, VCUG); identify normal and abnormal findings on these exams
- Establish differential diagnoses for pathologic processes in the pediatric population
- Complete the appropriate RSNA physics modules in ultrasound

# Practice-Based Learning & Improvement

## Goals & Objectives

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

- Assess images for quality and suggest methods of improvement
- Demonstrate independent self-study using various resources, including texts, journals, teaching files and other resources on the internet
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# Systems-Based Practice

## Goals & Objectives

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Understand how their image interpretation affects patient care
- Provide accurate and timely interpretations to decrease the length of hospital and emergency department stays
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted
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# Professionalism

## Goals & Objectives

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- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing work in a timely fashion and not leaving at the end of the day until all work is complete
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities and sexual orientation
- Respect, compassion, integrity and responsiveness to patient care needs that supersede self-interest

# Interpersonal & Communications Skills

## Goals & Objectives

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# Reading List

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- RSNA physics modules
- Image Gently (https://www.imagegently.org)
- ACR Appropriateness Criteria guidelines (https://www.acr.org/Clinical-Resources/ACR-Appropriateness-Criteria)
- AAP (American Academy of Pediatrics) guidelines on child abuse (https://www.aap.org/en-us/about-the-aap/Committees-Councils-Sections/Council-on-Child-Abuse-Neglect/Pages/Child-Abuse-Neglect.aspx)
- Cohen HL, Miller S. Disorders of sex differentiation. In: Coley B (ed). *Caffey's Pediatric Diagnostic Imaging*. (13th ed). Elsevier. Philadelphia. 2018; 1185-1192.
- Cohen HL, Miller S. Abnormalities of the male genital tract. In: Coley B (ed). *Caffey's Pediatric Diagnostic Imaging*. (13th ed). Elsevier. Philadelphia. 2018;1193-1200.
- Cohen HL, Raju AD. Abnormalities of the female genital tract. In: Coley B (ed). *Caffey's Pediatric Diagnostic Imaging*. (13th ed). Elsevier. Philadelphia. 2018;1201-1211.
- Cohen HL, Raju AD. Amenorrhea and abnormalities of puberty. In: Coley B (ed). *Caffey's Pediatric Diagnostic Imaging*. (13th ed). Elsevier. Philadelphia. 2018;1212-1218
- Choudhri A, Cohen HL, Siddiqui A, Pande V, Blitz A. Twenty-five diagnoses on midline images of the brain: From fetus to child to adult. *RadioGraphics*. 2018;38:218-235
- Maller V, Cohen HL. Neurosonography: Assessing the premature infant. *Pediatric Radiology*. 2017;47(9),1031-1045. DOI 10.1007/s00247-017-3884-z
- Sintim-Damoa A, Majmudar A, Cohen HL, Parvey L. Pediatric ovarian torsion: Spectrum of imaging findings. *RadioGraphics* 2017;37: 1892-1908.
- Supplemental materials in the form of ACR Self-Assessment Modules

# SECTION IV: REQUIRED FORMS

The forms in this section should be completed during training and returned to the residency coordinator prior to program completion. While they can be printed from this manual, copies are also available in the coordinator's office. When completed, they can be placed in the red folder on the coordinator's office door to be filed appropriately.

- **MRI/CT/Ultrasound Techniques Evaluation:** This form can be completed anytime during training, but most techniques should be done during the Baptist Women's rotation, as there is dedicated time in the afternoon for ultrasound scanning and learning other modalities.
- **Nuclear Medicine Techniques Proficiency Evaluation:** This form should be completed during nuclear medicine rotations.
- **RSNA Physics Module Completion:** While some modules might be completed during the first year, this form should be completed in your second and/or third year of radiology residency training to aid you in your study of radiology physics.
- **ABR NRC Training Form B:** This should be completed during rotations in nuclear medicine and will be submitted (along with Form A, completed by the program director) to the American Board of Radiology (ABR). Although the completed form is not required for the resident to take the ABR exam, including its nuclear medicine section, this form is necessary to document completion of the required training and work experience. This allows the candidate to receive an authorized user (AU)-eligible designation on his/her certificate after the exam. Candidates who fulfill all the requirements and pass all their ABR exams will receive an ABR certificate that contains the additional designation "AU-eligible." This means the person is eligible through the ABR pathway to be approved by the NRC or Agreement State Program as an AU of medical radionuclides for imaging and localization studies and for oral administration of sodium iodide I-131.
- **Additional Required Documents:** Please note that a procedure log is required. The number of specific diagnostic studies read should also be recorded, as discussed on page **Error! Bookmark not defined.** under "Procedure Logs."

# EVALUATIONS

## MRI/CT/ULTRASOUND TECHNIQUES

Resident Name: _____

| MRI TASK | DATE | TECHNOLOGIST/STAFF |
|---|---|---|
| Observe tech from start to finish with patient (zones) | | |
| Brain MRI/MRA | | |
| Spine | | |
| Liver | | |
| Cardiac | | |

| ULTRASOUND TASK | DATE | TECHNOLOGIST/STAFF |
|---|---|---|
| Abdomen | | |
| Carotid | | |
| Lower-extremity venous | | |
| Pelvic or vaginal | | |

| CT TASK | DATE | TECHNOLOGIST/STAFF |
|---|---|---|
| Any brain/neck CT/CTA | | |
| Coronary CTA (with vital) | | |
| Multiphase body study (liver, renal or pancreas) | | |
| PE protocol | | |

Resident Signature: _____ Date: _____

# NUCLEAR MEDICINE TECHNIQUES PROFICIENCY

| TASK | DATE | STAFF/FACULTY SIGNATURE |
|---|---|---|
| Gamma camera quality control | | |
| PET/CT quality control | | |
| Review QC and elution of Tc-99m generator systems* | | |
| Review safe preparation and measurement of patient dosages* | | |
| Calibrate and operate survey meter | | |
| Calibrate and operate well counter | | |
| Dose calibrator operation and quality control | | |
| Package ordering, receipt and handling | | |
| Daily survey and weekly wipe tests | | |
| Radiation spills and containment procedures | | |
| Radiation signage | | |
| Review quality measures for misadministration/medical event prevention | | |
| Review handling and administration of I-131 therapeutic dosages | | |
| Perform V/Q lung scan | | |
| Perform and process hepatobiliary scan (w/EF) | | |

| |
|---|
| Perform and process myocardial perfusion scan |
| Perform and calculate thyroid uptake and scan |
| Perform and process renal scan |
| Perform and process gastric emptying scan |
| Perform lymphoscintigraphy |
| Perform and process FDG PET/CT |

Resident Name and Signature: _____ Date: _____

# OTHER FORMS

## BASIC RADIOLOGY PROCEDURE PROFICIENCY

Resident: _____

| IR PROCEDURE | STAFF APPROVING PROFICIENCY (Print) | SIGNATURE OF STAFF APPROVING | DATE SIGNED |
|---|---|---|---|
| Paracentesis | | | |
| Thoracentesis | | | |
| Thyroid FNA | | | |
| Organ Core Biopsy | | | |
| Abscess Drain | | | |
| Catheter Exchange over wire | | | |
| US guided Venous Access | | | |
| Arthrograms/joint aspiration/injection | | | |
| Lumbar Puncture | | | |
| Breast Biopsy | | | |

Resident Signature: _____ Date: _____

# ABR NRC TRAINING FORM B

**Form B**

**I-131 Therapy Experience Log**

_____ Resident Name

_____ Program & Number

| Date | Dose Administered | Preceptor (AU) Print & Sign Name |
|---|---|---|
| **33mCi** | | |
| 1. _____ | _____ | _____ **Print Name** |
| | | _____ **Sign Name** |
| 2. _____ | _____ | _____ **Print Name** |
| | | _____ **Sign Name** |
| 3. _____ | _____ | _____ **Print Name** |
| | | _____ **Sign Name** |

| Date | Dose Administered | Preceptor (AU) Print & Sign Name |
|---|---|---|
| **>33 mCi** | | |
| 1. _____ | _____ | _____ **Print Name** |
| | | _____ **Sign Name** |
| 2. _____ | _____ | _____ **Print Name** |
| | | _____ **Sign Name** |
| 3. _____ | _____ | _____ **Print Name** |
| | | _____ **Sign Name** |

# SECTION V: SUPPLEMENTAL MATERIAL

## BRIEF ROTATION RESPONSIBILITIES

### BODY CT/US

- 8:00 AM start time
- Read inpatient/ER CT and US
- Help out with fluoro

### BODY MRI

- 8:00 AM start time
- Read all body MRI

### CHEST

- 8:00 AM start time
- Read all appropriate chest and cardiac CT/MR

### COLLIERVILLE MAMMO

- 8:00 AM start time (only select days)
- Read screens, diagnostics and DEXA

### DESOTO

- 8:00 AM start time
- Perform fluoro
- Read DeSoto inpatient and ER exams

### DESOTO MAMMO

- 8:00 AM start time
- Read screens, diagnostics and DEXA
- Participate in procedures/biopsies

### INPATIENT FLUORO

- 7:00 AM start time
- Perform inpatient fluoro studies
- Read ER/inpatient plain films
- Help out with body CT/US

### INPATIENT NEURO

- 7:00 AM start time
- Perform myelograms and lumbar punctures
- Read inpatient/ER neuro CT/MR
- Read Collierville MR
- Read Collierville CT after noon

### INTERVENTIONAL RADIOLOGY

- 7:00 AM start time (do H&Ps)
- 8:00 AM (vascular or nonvascular)

### MSK

- 8:00 AM start time
- Read all appropriate MSK studies
- Observe and perform procedures

### NUCLEAR MEDICINE

- 8:00 AM start time
- Outpatient nucs or nuc card (sometimes Collierville)
- Read all NM and PET studies throughout the system

## OUTPATIENT (CT/US)

- 8:00 AM start time
- Read outpatient CT, US and MR
- Help with outpatient US and fluoro

## OUTPATIENT FLUORO (GI/GU)

- 8:00 AM start time
- Perform fluoro
- Help with outpatient CT and US

## OUTPATIENT NEURO

- 8:00 AM start time
- Read outpatient neuro MR/CT
- Read DeSoto neuro MR and spine CT

# BILLING & DICTATION HANDOUT

- CPT codes (Current Procedural Terminology): Refer to the exam performed. This is charged based on completion of the exam by the technologist. Each exam has its own technical charge.
- ICD-10 codes (International Classification of Diseases, 10th revision): There is a list of allowed diagnoses (including signs and symptoms) for each CPT code. The billing office reads the report and places an ICD-10 code on the report. This is the professional charge for the exam.
- Global billing: The technical and professional fees are billed together. Here, everyone sinks or swims together.
- Split billing: Used by most places we read. The technical charge goes to the hospital bill. The professional charge is billed separately by us to the patient. Here, the hospital usually gets paid; whether you get paid or not is often up to you.
- Billing procedure:
    - Billing office reads the report, looking for ICD-10 codes in the following order: 1) dictated indications, 2) body of report/conclusion, 3) any other medical records. To avoid fraudulent billing, the billing office has been strongly urged to use **physician-entered information only**. The report prints in the billing office the day after it is signed. It is billed immediately and doesn't wait for clinic/ED notes, discharge summary, etc. Particularly for inpatients, this limits the amount of information available to the billing office if the report itself isn't codable.
    - The coder doesn't try to find the "best indication" for an exam, only an indication or finding that can be used as an ICD-10 code for that CPT exam. This is why it is important not only to have a dictated indication for each exam but to have a good indication for that exam.
    - Exams with abnormal findings are usually easy to bill successfully.
    - Normal exams are very difficult to bill successfully without the appropriate dictated indication. This means diagnoses, symptoms or signs referable to the body part being examined.

## CXR (CHEST X-RAY) EXAMPLES

| | |
|---|---|
| Indication: Pneumonia | Finding: pneumonia — OK |
| Indication: Fever | Finding: pneumonia — OK |
| Indication: Pneumonia | Finding: normal chest — not OK |
| Indication: Fever and Cough | Finding: normal chest — OK |

# 10 EASY STEPS TO BETTER DICTATING

1. Don’t be ashamed of wanting to get paid for doing good work. If you did a good job, you’ve earned it.
2. Billable reports are often better reports overall because they have more clinical information (e.g., “pneumonia” vs. “recent abdominal surgery for gastric cancer” in a patient with postoperative atelectasis).
3. Use signs and symptoms when possible in acute cases rather than diagnoses, particularly when the exam is normal and doesn’t support the diagnosis (e.g., “cough,” not “pneumonia”). There are often signs and symptoms in the “Admit Diagnosis” part of the request, so use them when appropriate.
4. Signs and symptoms need to be “body part-specific” (e.g., “right knee pain,” not “pain”). You are allowed to make reasonable conclusions about why an exam is ordered, but you can’t simply invent a better one.
5. Imaging reports (CT, US, MR) often have good clinical information; you don’t usually have to look things up on Epic (e.g., “follow up rib fractures” based on a chest CT report instead of “MVC” or “trauma”).
6. Use listed diagnoses when they pertain to the area being examined (e.g., “stroke” is good for a head CT, not for a CXR; “HTN” works for CXRs, not for a CT; “malignancy” is good for pretty much everything).
7. Some things on the image are their own diagnoses (e.g., “CABG clips” means CAD, “VAD” means CHF, “tracheostomy tube” means respiratory failure, “ventriculostomy catheter” means evidence of recent surgery).
8. Call minor abnormalities, especially when the indication for the exam isn’t body part-specific (e.g., minor atelectasis on a portable CXR in a head injury patient is still an ICD-10 diagnosis).
9. Exams done for line or tube placement are difficult to bill, even though they are clinically indicated. Look for something else.
10. Not everything can be billed from the report; some things simply can’t be billed at all but are still medically indicated. The coders will look at the rest of the medical record and see what they can do. You don’t have to do all of their work for them, but remember that their pay comes from your pocket.