Baptist Medical Center

DIAGNOSTIC RADIOLOGY
RESIDENCY HANDBOOK
2016-2017
# TABLE OF CONTENTS

Introduction 5  
Radiology Residents 2016-17 6  
Program Personnel and Resources 7  
Resident Recruitment and Educational Goals for the Program 8  
Daily Work Schedule 11  
Appointment of Fellows and Other Learners 12  
Rotation for Visitors 12  
Residency Rotation Curriculum/Goals & Objectives 13  
   Fluoroscopy 14  
   Ultrasound 15  
   Chest/Abdomen/Pelvis 16  
   Nuclear Medicine 17  
   Physics, Radiation Biology, and Radiation Protection 24  
   Vascular and Interventional Radiography 25  
      Neuro 27  
   Cardiovascular 30  
   Computed Tomography (CT) 31  
   Abdomen 34  
   Chest 34  
   IC/NM (Medical Plaza Imaging Center) 35  
   Mammography 36  
   Pediatric Rotations 38  
   Emergency Radiology 39  
   PET-CT (INTEGRIS Cancer Institute of Oklahoma) 40  

Policies and Procedures  
   Miscellaneous 39  
   Eligibility Requirements 40  
   Duty Hours 41  
   Supervision and Resident Responsibility 43  
   Moonlighting 46  
   Use of Residency Library Materials 46  
   Scholarly Activity Requirement 47  
   Journal Club 48  
   Learning Portfolio 50  
   Conferences 51  
   Procedure Logs 52  
   ACGME Resident Case Logs 52
TABLE OF CONTENTS (CONTINUED)

Policies and Procedures (Continued)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leave Time</td>
<td>56</td>
</tr>
<tr>
<td>On-Call Rotation</td>
<td>56</td>
</tr>
<tr>
<td>Alertness Management/Fatigue Mitigation</td>
<td>58</td>
</tr>
<tr>
<td>Chief Residents</td>
<td>59</td>
</tr>
<tr>
<td>Process to Deal Confidentially with Resident Problems or Concerns</td>
<td>59</td>
</tr>
<tr>
<td>Evaluations and Resident Advancement</td>
<td>60</td>
</tr>
<tr>
<td>Diagnostic Radiology Milestone Project</td>
<td>62</td>
</tr>
<tr>
<td>Vendor Policy</td>
<td>63</td>
</tr>
<tr>
<td>Professionalism</td>
<td>64</td>
</tr>
<tr>
<td>Non-Routine Communication of Urgent Findings</td>
<td>65</td>
</tr>
<tr>
<td>ABR Examination Information</td>
<td>66</td>
</tr>
<tr>
<td>ABR Certificates</td>
<td>73</td>
</tr>
<tr>
<td>Advice to Maximize Your Residency Experience</td>
<td>80</td>
</tr>
</tbody>
</table>
INTRODUCTION

The Diagnostic Radiology Residency Program has established this Diagnostic Radiology Residency Handbook as a reference and guide for residents of the Diagnostic Radiology Residency Program.

The Diagnostic Radiology Residency Handbook functions as a supplement to the INTEGRIS Graduate Medical Education Handbook, which is the official policy manual for all Graduate Medical Education programs at INTEGRIS facilities. If inconsistencies are identified between this Diagnostic Radiology Residency Handbook and the INTEGRIS Graduate Medical Education Handbook, the INTEGRIS Graduate Medical Education Handbook will be the overriding document.

The Diagnostic Radiology Residency Handbook will be updated annually. Individual policies may be updated more frequently. It is the responsibility of the resident to determine that he or she is relying on the most current version of any particular policy.
RADIOLOGY RESIDENTS FOR ACADEMIC YEAR 2016-2017

Jacob Azurdia, MD  
University of Vermont, College of Medicine  
PGY 2

John Farag, DO  
Touro College of Osteopathic Medicine, NY  
PGY 2

Alyssa Logsdon, MD  
University of Oklahoma, College of Medicine  
PGY 2

Omar Samarah, MD  
University of Kansas, School of Medicine  
PGY 2

Craig Benning, DO  
Kansas City University of Medicine and Biosciences  
PGY 3

Brett Hyatt, DO  
William Carey University, College of Osteopathic Medicine  
PGY 3

Ghazi, Payam, MD  
Tehran University of Medical Sciences & Health Services  
PGY 3

Sejong Lee, MD  
University of Texas Medical Branch School of Medicine  
PGY 3

Saniya Ahmad, MD  
University of Oklahoma College of Medicine  
PGY 4

Spencer Clark, DO  
Touro University-Nevada College of Osteopathic Medicine  
PGY 4

Catherine Fusilier, MD  
Louisiana State University School of Medicine in Shreveport  
PGY 4

Vishal Kadakia, MD  
Chicago Medical School at Rosalind Franklin University of Medicine & Science  
PGY 4

Bryan Peck, MD  
University of Oklahoma College of Medicine  
PGY 4

Sherazad Islam, MD  
Texas Tech University School of Medicine  
PGY 5

Evelyn Lorents, MD  
University of Oklahoma College of Medicine  
PGY 5

Jeremy Theisen, MD  
University of Oklahoma College of Medicine  
PGY 5
PROGRAM PERSONNEL AND RESOURCES

1. Program Director: Clint Williamson, MD
2. Designated Institutional Officer (DIO): Chelsey Gilbertson, DO
3. Medical Education Manager: Shannon Thompson
4. Program Coordinator: Natasha Fanson
5. Faculty:
   i. David Bohn MD, Abdominal Imaging and Musculoskeletal radiology
   ii. David Burger MD, Breast radiology and Fluoroscopy*
   iii. Mark Evans MD, Musculoskeletal radiology
   iv. Vince Farhood MD, Ultrasound
   v. Manuel Fortes MD, VIR, Interventional Neuroradiology and Neuroradiology
   vi. Rob Gcluzer MD, Musculoskeletal radiology*
   vii. Charles Groves MD, Breast radiology
   viii. Murray Hamilton MD, Cardiothoracic radiology*
   ix. Kerri Kirchhoff MD, Breast radiology
   x. Stephen Lee MD, VIR
   xi. Allen Molloy MD, VIR
   xii. Jimmy Nguyen MD, Abdominal radiology
   xiii. Georgianne Snowden MD, Neuroradiology and Interventional Neuroradiology*
   xiv. Ken Stokes MD, VIR
   xv. Chad Thompson, MD, VIR*
   xvi. Iwan Tjauw MD, Neuroradiology
   xvii. Vikas Vij MD, Neuroradiology*
   xviii. Clint Williamson MD, Nuclear radiology*
   xix. Natalie Williamson MD, Ultrasound*
   xx. Faridali Ramji MD, Pediatric radiology* (at OU)

   * denotes faculty member who is responsible for the educational content of that subspecialty area

6. Physics instruction: OUHSC Physicists
RESIDENT RECRUITMENT AND EDUCATIONAL GOALS FOR THE PROGRAM

The purpose of the INTEGRIS Baptist Medical Center Diagnostic Radiology Residency Program is to recruit and produce knowledgeable radiologists who will provide excellent patient care and meaningful consultations for referring physicians. Our graduates will be prepared to present lectures, and discuss radiology issues at medical scientific meetings, to participate in training programs in their communities, and to advise the public on radiologic topics such as screening mammography. Our graduates will be familiar with recent scientific literature and be able to analyze articles critically, as part of an overall commitment to lifelong learning.

In the four years of residency training, the maximum period of training in any one of the nine subspecialty areas shall be 16 months. The nine subspecialty areas are neuroradiology, musculoskeletal radiology, vascular and interventional radiology, cardiothoracic radiology, breast radiology, abdominal radiology, pediatric radiology, ultrasonography (including obstetrical and vascular ultrasound) and nuclear radiology (including PET and nuclear cardiology).

Residents entering training on July 1, 2010 or thereafter must be provided appropriate clinical rotations and formal instruction in all subspecialties of diagnostic radiology and in the core subjects pertaining to diagnostic radiology (e.g. medical physics, physiology of contrast media, etc.) before taking the American Board of Radiology (ABR) Core Examination (given after 36 months of diagnostic radiology training at the end of PGY-4).

During the final year of diagnostic radiology training (PGY-5), these residents should be allowed, within program resources, to select and participate in rotations, including “general radiology,” that will reflect their desired areas of concentration as they enter practice.

The following educational goals are to be distributed to radiology residents and faculty annually. Our residents will be instructed in the ACGME identified competencies, with the expectation that residents will demonstrate progressive performance improvement appropriate to his or her education level.

1. Patient Care and Procedural Skills:
   a. 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. The residents should provide patient care through safe, efficient, appropriately utilized, quality-controlled diagnostic and/or interventional radiology techniques. The resident must communicate effectively and in a timely manner the results of procedures, studies, and examinations to the referring physician and/or other appropriate individuals.
   b. Practice performance measurement:
      i. Global faculty evaluation (to include evaluation of knowledge about safety issues such as radiation doses, MRI safety, correct patient-exam site verification)
      ii. Case/procedure logs
iii. Direct observation of selected procedures and other critical processes (such as obtaining informed consent)
iv. 270 or 360 degree evaluations

2. Medical Knowledge
a. Residents must demonstrate knowledge of established and evolving biomedical, clinical, and epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents must demonstrate competence in their knowledge of the subspecialty clinical didactic content and general didactic content.
b. Practice performance measurement:
   i. Global faculty evaluation (which includes the six competencies)
   ii. Yearly objective testing (mock boards, ABR in-service examination, ABR core examination)
   iii. Journal club participation with emphasis on skills accessing, interpreting and applying best evidence in the radiology literature to patient care.

3. Practice-Based Learning and Improvement
a. 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 life-long learning.
b. Practice performance measurement:
   i. Global faculty evaluation
   ii. Documentation of participation in quality assurance and regulatory activities

4. Interpersonal and Communication Skills
a. Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. Residents are expected to communicate effectively 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.
b. Practice performance measurements:
   i. Global faculty evaluation
   ii. 270-360 degree evaluations
   iii. Evaluation of quality of radiology reports
   iv. Direct observation of communication issues (e.g., informed consent, speaking with patients about adverse events or outcomes of imaging tests, consultations with referring clinicians, interactions with non-physician members of the health care team.)
RESIDENT RECRUITMENT AND EDUCATIONAL GOALS FOR THE PROGRAM (CONTINUED)

5. Professionalism
   a. Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles, and sensitivity to a diverse patient population. Residents are expected to commit to high standards of professional conduct, demonstrating altruism, compassion, honesty and integrity. Residents must follow principles of ethics and confidentiality and consider religious, ethnic, gender, educational and other differences in interacting with patients and other members of the healthcare team.
   b. Practice performance measurements  
      i. Global faculty evaluation  
      ii. 270-360 degree evaluations  
      iii. Verify status of medical license  
      iv. Documentation of compliance with institutional and departmental policies (e.g., conference attendance, HIPPA, TJC, dress code)

6. Systems-Based Practice
   a. 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 will understand how the components of the local and national healthcare system function interdependently and how changes to improve the system involve group and individual efforts. Residents will optimize coordination of patient care both within one’s own practice and within the healthcare system. Residents will consult with other healthcare professionals, and educated healthcare consumers, regarding the most appropriate utilization of imaging resources.
   b. Residents must participate in program specific and institutional quality improvement and patient safety activities. Participation will include bimonthly Patient Safety/Process Quality Improvement committee meetings, and participation in other committees, such as radiation safety committee, medical staff committees and review of complications and deaths.
   c. Practice performance measurements:
      i. Global faculty evaluation  
      ii. Documentation of resident participation in analysis of systems-based problem  
      iii. Documentation of active participation in multi-disciplinary conferences.
DAILY WORK SCHEDULE

7 am  Teaching file review (most often computer based) – recommended
       Interventional service
       Conferences:

       Breast conference
       Radiology Pathology conference
       Liver Transplant conference
       GI conference

       GU conference
       Lung conference
       Neuro conference
       Neuro Tumor conference (intermittently)

8 am - 5 pm Most days

Call: Call resident will begin their day at 8 am (or at 7 am if required by a conference or rotation requirement) and work until 8 pm.

Night shift: Night shift resident will begin their shift at 8 pm and work until after checkout the following morning (approximately 8:30 – 9:30 am)

Beginning in September, first year residents who have had a fluoroscopic rotation will begin rotating Saturday morning coverage 8 am-12 pm. This includes performing any fluoroscopic exams, reading plain film and ER inpatient CT/US.

Weekend and holiday: One resident will work 8 am-8 pm and a second resident will work 8 pm-8 am (approximately, following checkout). First year residents will also work 8 am-12 pm on Sundays after September of their first year.

First year weekend call expectations include: reading as many cross-sectional imaging exams as possible during their time at work - to be checked by staff. Be mindful of "STAT" exams or those with life threatening positive findings (i.e. P.E., dissection, etc) and have staff check those out immediately. If you are caught up, grab plain films (CXR, Abd., MSK) to hone your skills. You may also be required to performed flouro exams on occasion. If Lakeside US calls you to read exam, make sure you call results after checking out with staff.

Vascular/interventional rotation may have later finishing times. The residents are expected to stay to complete work in progress. Residents are expected to check in with VIR staff about the day’s work list and responsibilities. All fluoroscopic procedures completed prior to 4 pm conference must be checked out with staff and dictated prior to the performing resident leaving for the day.

If a fluoroscopic study will extend into the evening/night hours, the resident who started the exam must discuss the case with the resident on call and leave a detailed note detailing pertinent findings seen so far, indications for exam, altered anatomy due to surgery, etc.
APPOINTMENT OF FELLOWS AND OTHER LEARNERS

Radiology Associates, LLC offers an imaging fellowship based in its outpatient-imaging center.

Our program allows for limited rotations from other programs including but not limited to the OU College of Medicine, Emergency Medicine residency at INTEGRIS Southwest, Great Plains Family Medicine residency, and Ultrasound fellowship at INTEGRIS Canadian Valley.

These rotating learners are a welcome addition to our residency, as they increase awareness of the indications, strengths and limitations of imaging studies. They provide an opportunity for radiology residents to act as teachers, and they act as teachers to our radiology residents. The presence of these learners should foster an environment of teamwork and heighten awareness of the need to work within an interdisciplinary team to provide care to patients.

The presence of these learners should not interfere with our appointed residents’ education. If you believe their presence is a problem, please discuss your concerns with your program director or another faculty member.

The presence of these learners is reported to the DIO and GMEC in accordance with our sponsoring institution guidelines.

ROTATIONS FOR VISITORS

Resident, Physician Assistant, Medical Student, and Extern rotations in Diagnostic Radiology must be approved in advance by the Program Director. Anyone from an outside institution must register through the Graduate Medical Education Office.

Each medical student or resident rotating through the program is expected to present a brief 15-30 minute presentation about a radiology topic of interest to the residents at noon conference during their last week. This should be arranged through the chief residents. A copy should be mailed to the program coordinator and Program Director for review. This will be used in determining rotation evaluation.
RESIDENCY ROTATIONS

Overview:

The resident is expected to check the schedule on their service each night before leaving and each morning on arrival, review the medical records of the patients scheduled to determine the appropriateness of the requested study for the particular patient and clinical problem. The resident should read about the study and/or clinical problem in advance and discuss questions with staff and/or other residents. Notebooks concerning various radiologic procedures are available for reference.

Residents are assigned to one specific rotation per month but may occasionally be asked to assist with other services. If two procedures are scheduled on a service simultaneously, a resident may ask one of the other residents to help. Please ask the other resident directly.

While residents have a specific rotation assignment each month, it is expected that a spirit of teamwork and a desire for learning by doing will lead each resident to interpret studies outside his or her specific rotation in response to shifting examination volumes.

The sections that follow describe the expectations for residents during each rotation.
FLUOROSCOPY

These residents must be in the department and ready to perform studies at 8 am. These residents will:

1. Perform all barium swallows, dysphagiagrams, upper GIs, small bowel studies, barium enemas (or the same studies when gastrografin is used).
2. Interpret accompanying abdomen or acute abdomen series when a patient comes for a fluoroscopic study.
3. Interpret intraoperative studies, including cholangiograms, retrograde pyelograms, cystograms, etc.
4. Perform all intravenous urograms, sialograms, cystograms, arthrograms, myelograms, retrograde urethrogram performed in the Radiology Department.
5. Perform or assist in all hysterosalpingograms.
6. Read as many ER studies as possible, with emphasis on chest, abdominal and musculoskeletal imaging.
7. Be familiar with the fluoroscopy manual.

It is expected that residents will work together in a cooperative manner to ensure both residents have a fair share of the workload and an adequate exposure to many kinds of fluoroscopic studies. When the fluoroscopic schedule is caught up, it is expected that the residents on the fluoroscopy rotation will interpret examinations from other modalities such as CT, US or plain film. It is expected that residents will not leave the hospital for the day until the fluoroscopy studies they performed have been checked out by staff and dictated. If a study (such as a small bowel exam) goes beyond 4 pm, the resident who began the study must discuss the case with the on call resident and leave a detailed note prior to leaving the hospital for the day.

Fluoroscopic examinations on pediatric patients MUST be reviewed with staff prior to releasing the patient from the department, particularly if the resident performing the examination has yet to do a pediatric radiology rotation.

Please try to get NICU patients back to the floor as soon as possible, preferably staying in the department for less than an hour.

The staff members of the residency committee have decided that in order to increase patient safety by decreasing the risk of aspiration, if there is a large amount of gastrografin residual in the stomach following a fluoroscopic study, the resident performing the examination should place an NG tube and remove as much gastrografin as possible.
ULTRASOUND

1. Interpret ultrasound exams at all INTEGRIS locations.

2. Learn to operate ultrasound equipment. Specifically to understand the use of variable transducers as they relate to types of exams.

3. Perform routine examinations with a senior technologist present. (Please be aware that when you dictate CT or US guided biopsy

4. Attend all ultrasound department conferences.

5. Prepare interesting cases for presentation. Resident must prepare at least four interesting cases to present to other residents during their resident conferences.

6. As with all rotations, if US volume is low, the resident is expected to read studies from other services.

First year residents are expected to scan patients and check out those cases with staff. Other year residents are strongly encouraged to scan patients as well. You should spend at least 1 week a year performing exams as the schedule allows. This can be arranged through lead technologist, Karen Killebrew, at 949-4121.
CHEST/ABDOMEN/PELVIS

1. Interpret CT examinations of the chest, abdomen, and pelvis at all INTEGRIS locations, including CT chest, HRCT chest, CT PE protocol, CT abdomen/pelvis, and CT renal stone protocol. It is expected that the resident will use the patient’s radiographs as a comparison when looking at CT examinations to improve radiographic interpretation skills.

2. Interpret as many inpatient, outpatient, and ER radiographs as possible with assigned staff, review, approve, and perform CT guided biopsies of the chest, abdomen, and pelvis.


4. As in all rotations, if volume is low, resident is expected to pitch in by interpreting ultrasound, nuclear medicine, MRI, and radiographs.

5. The biopsy/CT resident is responsible for maintaining and updating the CT biopsy log book which is kept in the CT/bx room. This includes adding patient sticker and appropriate information, with follow-up pathology/cytology reports.

6. This log book is an excellent source of material for Radiology/Pathology conference and for AFIP cases, case reports, etc.

7. Be familiar with ACR appropriateness criteria for CT imaging for the most common indications.

8. Be knowledgeable about ways to reduce radiation exposure to patients by changing imaging parameters.

9. Be familiar with “Image Gently” and “Image Wisely” movements to reduce radiation exposure.
NUCLEAR MEDICINE

1. Interpret nuclear medicine procedures at all INTEGRIS locations.

2. Participate in performance/reading of nuclear medicine studies at each of the following facilities.
   - INTEGRIS Baptist Medical Center
   - Medical Plaza Imaging
   - Children’s Medical Center of Dallas
   - Integris Cancer Institute of Oklahoma (ICIO)

3. Observe radiopharmacy procedures at INTEGRIS Baptist Medical Center (2 mornings during residency)

4. Contact the chief technologist of each site daily to assure participation in as many studies as possible.

5. Attend and maintain a record of all thyroid therapy cases.
   You must perform 3 low dose and 3 high dose I-131 therapies (NRC regulations).
   You must maintain accurate logs regarding these therapies.


7. Learn how the nuclear medicine instruments work (one week).

8. To ensure a broad diversity of experience in Nuclear Medicine participate in (and keep a log which must be available for inspection) an average of 2 studies per day.

9. As in all rotations, if work volume on Nuclear Medicine is slow, the resident is expected to read studies from other services, such as CT, US, fluoroscopy, or plain film.

10. Nuclear Cardiology Exams are performed/read by the Cardiologist at IBMC. You are expected during your NM rotation, to watch at least 20 Cardiac NM exams and log them in your resident log book.

11. During your month of rotation, you are expected to prepare three interesting cases to present to fellow residents +/- staff at conference.
Nuclear Regulatory Compliance

ABR training in nuclear medicine - compliance with NRC regulations

The U.S. Nuclear Regulatory Commission (NRC) has established guidelines for physicians who wish to achieve the status of Authorized User (AU) of radioisotopes. The ABR is committed to compliance by:

1. Providing information about the required components of training and experience
2. Requiring from program directors a written attestation that the proper training has been given, and a case log of I-131 therapy work experience supervised and attested to by appropriate AU-preceptor(s); and
3. Testing knowledge of the required subjects

The ABR requires a resident training program to fulfill the NRC requirements for training and experience of radiology residents as does the Diagnostic Radiology Residency Review Committee (see reference to these requirements below). The ABR endeavors to meet those requirements within the context of an overall balanced radiological curriculum and with a set of didactic, laboratory and clinical experiences in nuclear medicine that ensure safe and effective use of radionuclides by board-certified radiologists. The ABR believes that these items are important components of a responsible education for radiologists and that they contribute to the safety of medical practice in ways that are broadly supported by organized medicine, regulators, and the public.

■ NRC training and experience requirements

Candidates seeking certification for diagnostic radiology must meet the specific training and experience requirements described in 10 CFR 35.290 (c)(1)(i) and (c)(1)(ii); 10 CFR 35.392 (c)(1) and (c)(2); and 10 CFR 35.394 (c)(1), (c)(2), and (c)(3). Radiation safety, radionuclide handling and quality control, and related topics specified in 10 CFR 35.290, 10 CFR 35.392, and 10 CFR 35.394 must be covered.

Detailed information regarding 10 CFR 35.290, 35.392, and 35.394 may be found via the NRC Electronic Reading Room, which provides access to the NRC Regulations, Frequently Asked Questions and other pertinent references.

Specifically, each candidate for AU status through the ABR pathway must have completed a minimum of 700 hours of training and experience in imaging and localization studies, which must include 80 hours of classroom and laboratory training in basic radionuclide handling techniques applicable to both the medical use of unsealed byproduct material for imaging and localization studies and the medical use of sodium iodide I-131 for procedures requiring a written directive. In addition, each candidate must also meet the training and experience requirements specified in §35.392 and §35.294 for medical uses of radioiodine I-131 (≤33 mCi and >33 mCi, respectively) requiring a written directive. The training and experience must include, at a minimum, the following:

1. Classroom and laboratory training (minimum of 80 hours) under the direction of an Authorized User in the following areas:
   a. radiation physics and instrumentation
   b. radiation protection
   c. mathematics pertaining to the use and measurement of radioactivity
   d. chemistry of by-product material for medical use
   e. radiation biology
Nuclear Regulatory Compliance (continued)

2. Work experience for imaging and localization studies (§35.290) under the supervision of a preceptor AU who meets the requirements in §35.57, §35.290, or §35.290(c)(1)(ii)(G), or equivalent Agreement State requirements, involving the following:

   a. ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys
   b. performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters
   c. calculating, measuring, and safely preparing patient or human research subject dosages
   d. using administrative controls to prevent a medical event involving the use of unsealed by-product materials
   e. using procedures to safely contain spilled radioactive material and using proper decontamination procedures
   f. administering dosages of radioactive drugs to patients or human research subjects
   g. eluting generator systems appropriate for preparation of radioactive drugs for imaging and localization studies, measuring and testing the eluate for radionuclidic purity, and processing the eluate with reagent kits to prepare labeled radioactive drugs
   h. Residents must demonstrate hands-on work experience when they perform the supervised work experience requirements. Observation alone is not sufficient.

3. Work experience for the oral administration of sodium iodide I-131 (§35.392 and §35.394), requiring a written directive:

   A. Experience under §35.392 must be obtained under the supervision of an AU who meets the requirements in §35.390, 35.392, 35.394, or equivalent Agreement State requirements. A supervising AU who meets the requirements in §35.390 (b) must also have experience in the oral administration of sodium iodide I-131, for which a written directive is required.

   This work experience must involve the following:

   a. ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys
   b. performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters
   c. calculating, measuring, and safely preparing patient or human research subject dosages
   d. using administrative controls to prevent a medical event involving the use of unsealed byproduct materials
   e. using procedures to safely contain spilled radioactive material and using proper decontamination procedures
   f. administering doses to patients or human research subjects that include at least three cases involving the oral administration of ≤33mCi of sodium iodide I-131 and three cases involving the administration of >33mCi of sodium iodide I-131.
Nuclear Regulatory Compliance (continued)

**I-131 case experience documentation**

1. Regarding §35.392, the ABR requires that candidates must have completed a minimum of three cases that involve administration of \( \leq 33\text{mCi} \) of I-131 for therapy under an preceptor AU who meets the requirements in §35.390, 35.392, 35.394 or equivalent Agreement State requirements. A supervising AU who meets the requirements in §35.390 (b) must also have experience in the oral administration of sodium iodide I-131 for which a written directive is required. A logbook of these therapies must be kept by the resident and submitted to the ABR in the format given below.

2. Regarding §35.394, the ABR requires that candidates must have completed a minimum of three cases that involve the administration of \( >33\text{mCi} \) of I-131 for therapy under a preceptor AU who meets the requirements in §§35.57, 35.390, 35.394, or equivalent Agreement State requirements. A supervising AU, who meets the requirements in §35.390(b), must also have experience in administering dosages as specified in §35.390(b)(1)(ii)(G)(2). A logbook of these therapies must be kept by the resident and submitted to the ABR in the format given below.

**Forms to be submitted to the ABR**

Two forms are available to document compliance with and completion of the required NRC training and experience. Both completed forms must be submitted on behalf of each candidate in order for the candidate to be eligible for an ABR Diagnostic Radiology Certificate with the *AU-Eligible* designation.

1. ABR Form A (Program Director Attestation)
2. ABR Form B (Candidate I-131 Case Log)

**ABR Form A - Program Director Attestation**

This form is intended to assure the ABR (and, thus, the NRC) that each individual candidate has completed the required training. The program director must submit an attestation form. There should not be blanket approval of a resident class, because the training and experience in NRC-related aspects of nuclear medicine may vary within the group. The decision to provide attestations should be individualized and linked to completion of the NRC curriculum by individual residents.

Under no circumstances should program directors designate as NRC-compliant a candidate who has not completed the full course of study mandated in the NRC curriculum for authorized users. False attestation of completion of training for NRC-noncompliant residents would jeopardize the reputation and integrity of the residency program, the ABR, and the Residency Review Committee (RRC) and would threaten the relationship among these organizations and the NRC.

The ABR reserves the right to audit the manner in which the residents completed the curricular requirements. Whether or not a resident completes the full NRC-mandated curriculum, the resident must have completed 16 or more clinical weeks of nuclear medicine during the four years of training as required by the Diagnostic Radiology RRC and will be responsible to answer NRC-related questions on all ABR examinations. Time away (e.g., vacations, AFIP, etc.) cannot be counted toward the 16-week requirement in nuclear medicine.
Nuclear Regulatory Compliance (continued)

Form B - Candidate I-131 Case Log

Because of HIPAA concerns, no data that might identify a patient are to be included on Form B.

Please note that participation in three I-131 administrations in each of the two categories is required. Because patients requiring I-131 therapy in amounts ≤33 mCi and >33 mCi present in very different clinical settings, and to assure clinical experience with both levels of I-131 administration, each set of three cases must be discrete and listed in the proper category. Thus, administered amounts of I-131 in each category, ≤33 mCi and >33 mCi, must actually be within the appropriate category in the case log. Administered activity >33 mCi of I-131 cannot be used in the category designated for ≤33 mCi of I-131 or vice versa.

Both Form A and Form B are to be submitted by the program director prior to a resident’s graduation.

- **ABR examinations and the NRC curriculum**

  The NRC accepts ABR certification as evidence that a practitioner is properly trained to safely and effectively use radioactive materials in nuclear medicine. Content addressing safety and the handling of radioisotopes as specified by the NRC-required curriculum is embedded in the ABR examinations leading to initial certification in diagnostic radiology, including the Core and Certifying examinations.

  A candidate’s performances on the NRC-related portions of the Core and Certifying examinations jointly comprise the Radioisotope Safety Exam (RISE). The results of the RISE will be determined after a candidate successfully completes and passes the Certifying Examination.

  The ABR recommends that all residency programs ensure that their training in nuclear medicine is compliant with all the elements listed by the NRC and on the ABR website. In this way, all residents will be well prepared and qualified to take the NCR-related portions of the ABR exams, and also will be well prepared to provide nuclear medicine services safely and effectively.

- **The ABR AU-eligible certificate in diagnostic radiology**

  The preceding ABR forms do not have to be completed for a resident to take the ABR exams. Timely submission of the ABR forms, however, documents completion of the required NRC training and allows candidates who fulfill all the requirements listed above on Forms A and B and who pass all their ABR exams, including the RISE content, to receive an ABR certificate that contains the additional designation of AU-eligible. This designation will appear near the left lower corner of the certificate.

  If Forms A and B are not completed and submitted to ABR for a candidate, AU-eligible certificate designation will not be possible, even though the NRC-required training and experience may have been completed, and the examinations passed by the candidate.
Nuclear Regulatory Compliance (continued)

An AU-eligible certificate indicates that the diplomate has fulfilled all the training and experience requirements of the NRC and has passed all the ABR examinations. It means that the person is eligible through the ABR board certification pathway to be approved by the NRC as an Authorized User (AU) of medical radionuclides for imaging and localization studies, and for oral administration of sodium iodide I-131 in amounts ≤33 mCi and >33 mCi requiring a written directive. Such a person can apply to the NRC for Authorized User status, which allows the diplomate to be listed on the institutional or practice site license and to oversee the safe and effective medical uses of radionuclides.

Authorized User status is obtained upon written application to the NRC/Agreement State and also requires submission of an NRC preceptor form that has been completed and signed by the preceptor, who must be an AU. The forms are available on the NRC website.

ABR diplomates who do not have the designation AU-eligible on their certificates also may apply to the NRC for status as an AU via the alternate pathway, but they will be required to provide detailed information to the NRC about their relevant training and experience.

Reference:
NRC-relevant diagnostic radiology RRC program requirements

There must be at least 80 hours of didactic (classroom and laboratory) training under the direction of an authorized user (AU). This training must include the following subjects as they relate to nuclear medicine:

a. diagnostic medical physics, instrumentation, and radiation biology;

b. patient and medical personnel safety (i.e., radiation protection);

c. the chemistry of byproduct material for medical use;

d. biologic and pharmacologic actions of materials administered in diagnostic and therapeutic procedures; and

e. topics in safe handling, administration, and quality control of radionuclide doses used in clinical medicine.

The didactic instruction and work experience must include ordering, receiving, and unpacking radioactive material safely, and performing the related radiation surveys; the safe elution and quality control (QC) of radionuclide generator systems; calculating, measuring, and safely preparing patient dosages; calibration and QC of survey meters and dose calibrators; safe handling and administration of therapeutic doses of unsealed radionuclide sources (i.e., I-131); written directives; response to radiation spills and accidents (containment and decontamination procedures); radiation signage and related materials; and using administrative controls to prevent medical events involving the use of unsealed byproduct material.

Residents must demonstrate hands-on work experience when they perform the supervised work experience requirements. Observation alone is not sufficient.
Quality Control Procedures Worksheet

Name ____________________

§ 35.290 Training for imaging and localization studies

Please complete the following activities and have them attested by the nuclear medicine technologist in the laboratory and fax to 703-995-4433.

(B) Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters;

(1) Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys;

Date Completed _____________

Attestation Signature _____________

(2) Calibrating instruments and performing quality control procedures used to determine the activity of dosages and performing checks for proper operation of survey meters;

Date Completed _____________

Attestation Signature _____________

(3) Calculating, measuring, and safely preparing patient or human research subject dosages;

Date Completed _____________

Attestation Signature _____________

(4) Using administrative controls to prevent a medical event involving the use of unsealed byproduct material;

Date Completed _____________

Attestation Signature _____________

(5) Using procedures to safely contain spilled radioactive material and using proper decontamination procedures;

Date Completed _____________

Attestation Signature _____________

(6) Administering dosages of radioactive drugs to patients or human research subjects;

Date Completed _____________

Attestation Signature _____________

Attester: (must be certified nuclear medicine technologist, authorized user, Radiation Safety Officer, or certified medical physicist)

Name: ____________________

Title: ____________________

Telephone Number: _____________
PHYSICS, RADIATION BIOLOGY, AND RADIATION PROTECTION

Physics instruction is required throughout all four years of residency. In the first three years, the instruction is achieved through a combination of didactic lectures given by OUHSC physicists and through participation in RSNA physics teaching modules. Prior to sitting for the CORE exam, residents will generally attend a physics review course. In the final year of residency, physics instruction will continue in a clinically based approach.

RSNA physics teaching modules may be accessed at:

Residents can become members to access this site for free by completing a questionnaire on the web site.

Residents must complete all modules and include the printed certificates in their learning portfolios.

The required textbook is The Essential Physics of Medical Imaging, 2nd edition, Bushberg, Seibert, Leidholdt, and Boone
Lippincott, Williams & Wilkins, 2002

Additional instruction regarding radiation biology and radiation protection is provided on http://www.radquiz.com/physics/html
VASCULAR AND INTERVENTIONAL RADIOLOGY

1. Perform all angiographic procedures referred to Radiology Associates.

2. Work up all angiography and interventional patients prior to the scheduled procedure. Inpatients should be evaluated the evening prior to the procedure.

3. Perform some CT and US guided biopsies and drainages.

4. Round on and enter progress notes on all inpatients on the interventional service. Check the schedule with the interventional radiology secretary Candi and Megan (945-4232) at the end of each day.

5. Complete dictations daily after reviewing films with staff.

6. Wear a pager during the day.

7. Obtain approval for vacation, in advance, from the Vascular/Interventional staff in addition to other regularly required approval. You may take no more than 1 week vacation while on the interventional service.

8. Maintain a log of all procedures you perform. The log will include all:
   
   a. Neuroradiologic interventions and angiograms
   b. Vascular and interventional procedures
   c. Imaging guided biopsies
   d. Imaging guided drainages
   e. Non coronary angioplasties
   f. Embolization and infusion procedures
   g. Percutaneous introduction techniques
   h. Arthrography and joint aspirations

Logbooks should be maintained on the ACGME web site for procedure tracking. Procedures not tracked on the ACGME web site should be available in a form, which can be permanently placed in your file. Complications must be recorded in the log. The Accreditation Council for Graduate Medical Education requires the logs; you may need these logs to be credentialed to do certain procedures after residency. The Program Director will review the log every 6 months.
9. The resident on the Vascular/Interventional service must report for duty daily at 8am. If a 7am case is scheduled, the resident should come in early to participate in that case.

10. The Vascular/Interventional resident should make an effort to go to the residents’ conferences. However, there will be times that the resident will be involved in a case during conference times and will therefore miss conference.

11. You are required to prepare and present one Vascular/Interventional conference during the course of your rotation. This will usually be scheduled toward the end of the month. This lecture can then be given to the program coordinator as a teaching file case.

12. You will get out of this rotation what you put in to it. It is best if you read up on procedures that are scheduled the night before the procedure is to be done.

13. You will be expected to learn about:
   a. Informed consent
   b. Conscious sedation (including actions and side effects of commonly used medications and means of reversal if indicated)
   c. Sterile technique
   d. Indications, risks, benefits, contraindications and alternatives to interventional and angiographic procedures.
   e. Preprocedure workup of patients
   f. Post procedure care
   g. Performance of angiographic and interventional procedures
   h. Procedural and post procedural pain management

14. Residents will be given graduated responsibility consistent with interest and ability. Residents will generally observe and assist early in the rotation and will be gradually given more responsibility, up to and including performing as primary operator under the immediate supervision of one of the attending staff.

15. The interventional staff looks forward to having you on the service, and to making this an educational experience that will be of benefit regardless of the area of radiology you ultimately decide to practice.
NEURO-INTERVENTIONAL ROTATION

1. Learn the risks of diagnostic catheter angiography and how to consent patient and to perform pre-procedural evaluation

2. Know landmarks for and how to perform femoral arteriotomy and learn possible complications

3. Be able to correctly obtain hemostasis by manual pressure post-procedure

4. Know basic and mid-level cerebral arterial and venous angiographic anatomy and common normal variants

5. Know basic positioning to best display/visualize cerebral and cervical as well as arch arterial anatomy

6. Know range of injection rates and total volumes for each vessel injection

7. Be able to identify arteries and or veins demonstrated on cerebral angiography if asked

8. Know basic radiation safety and how to minimize staff and patient exposure

9. Know indications and contraindications for intra-arterial stroke therapy, and endovascular aneurysm therapy

10. By rotations end, be able to successfully and safely selectively catheterize the right and left common and internal carotid and bilateral vertebral arteries after successful femoral arteriotomy.

11. Choose a neurovascular or neurointerventional case to present or be able to discuss a neurovascular pathology with diagnostic work-up, findings, symptoms and treatment.

12. Be proactive in checking the schedule for cases. It is your responsibility to evaluate imaging, patient history (if available) and know about the pathology suspected or being treated prior to the case.


14. Know basic indications for spinal angiography, epistaxis neurointervention, and carotid and intracranial carotid stenting/PTA.

15. Informal quizzing will take place real time during, before or after cases. Know anatomy.

This rotation will be most useful and educational for you if you get immersed!!
INTEGRIS BAPTIST MEDICAL CENTER –
CLINICAL NEURORADIOLOGY ROTATION

General Objectives:

Diagnosis:

a. Understand relevant anatomy by CT, MR and angiography
b. Be able to describe findings in a clear and concise manner
c. Formulate logical and complete differential diagnoses
d. Recognize and diagnose common neurologic findings such as CVA, hemorrhage, tumor, herniated disc, changes related to trauma, etc.
e. Understand the indications and limitations of neuroimaging for neurological disease
f. Know how to interpret stroke imaging including ASPECT, CT perfusion, basic CT and stroke MRI
g. Know how to age hemorrhage on MRI

General Knowledge:

a. Appropriate fund of knowledge to understand clinical questions
b. Ability to protocol CT, MR exams to answer the clinical questions
c. Be able to provide “wet reading” when supervision not immediately available
d. Comprehend the role of CT and MRI in the diagnosis of CNS disease
e. Comprehend the role of various MRI sequences in the diagnosis of CNS disease
f. Generate an appropriate differential diagnosis, and when relevant provide appropriate follow-up recommendations, based on the imaging findings
g. It is strongly recommend that you review the ABR CORE study guide for topics you may feel weak in. Use this rotation to master specific areas of weakness in neuroradiology.

Practice-based Learning and Improvement:

a. Research topics for presentation at resident conferences based on cases reviewed during the neuroradiology rotation
b. Review and understand scientific evidence, participate in self-evaluation during the different stages of residency, and engage in life-long learning
c. Attendance at all reading sessions that do not conflict with conferences
d. Conduct work in an ethical, professional manner

Patient Safety:

a. Be familiar with MRI safety. Be knowledgeable on knowing resources for MR compatible medical devices.
b. Know the four MRI safety zones.
c. Know the basics of MRI safety in imaging of patients and for personnel.
Consultation:

- Be able to act as an effective consultant with other clinical services
- Present cases in appropriate clinical conferences
- Understand the specific needs of referring clinical services and anticipate these needs when protocling exams and reporting them (for example; sinus CT’s for ENT, or indications for contrast administration)
- Be able to act as a consultant regarding imaging of “Code Stroke” patients to the involved neurologist and ER physicians.
- Be able to accurately assign ASPECT score, interpret CTA and MRA, CT perfusion and “Code Stroke” CT heads.
- The resident must demonstrate communication and interpersonal skills that allows for exchange of information, and collaboration with patients and clinicians

Procedural: neuro-angio and mylography, special ENT biopsies

- Understand indications, contraindications and risks of these procedures
- Be able to consent patient and speak with families in an informative, compassionate manner
- Be able to perform lumbar punctures and myelography. No contraindications. Observe and participate in fluoroscopically-guided lumbar punctures, myelograms, and chemotherapy injections
- Perform basic cerebral angiograms with supervision of staff.
- Learn basic catheters, wires, fluoro –radiation safety specific to these procedures
- Interpret angiograms and myelograms and be able to recognize major arteries, veins and common pathology.
- Round with attending on interventional patients when appropriate
- Be able to perform femoral arteriotomy safely, knowing landmarks to use and possible complications and their treatment. Actively learn how to obtain hemostasis with manual pressure port procedure.
- Know the indications and contraindications for Intra-arterial stroke intervention, risks, and currently used devices.
- Know indications and risks, basic techniques of spinal angiography.
- Know angiographic manifestations of common spinal vascular pathologies.
Lumbar Punctures Policy:

1. Physicians are expected to have attempted a lumbar puncture at the bedside before requesting radiology to do a lumbar puncture. Exceptions can be discussed with a radiologist beforehand.

2. LP is included in core privileges for all current and future Neurologists, effective immediately (Sept. 2015)

3. Neurologists can do LP at bedside and in Out-patient department as desired

4. Neurologists:
   a. Can refer Neuro In-patients to Radiology for an LP on regular weekdays, 8-5/Monday through Friday (without prior LP attempt).
   b. For Outpatients, an attempt at the bedside is strongly encouraged before requesting fluoroscopic guidance as imaging guidance adds ionizing radiation and cost. The Neurologist may call a Radiologist, on a case by case basis, with any exceptions expected to have a difficult LP.

5. Radiology is available, 7 days/week, to perform LP with fluoro after an unsuccessful attempt. (This will be scheduled ASAP depending on acuity of pt and Radiology staffing.)

6. Anesthesia is available for mild sedation, but will not do LP, per se. They are also available for a ‘blood patch’ in the unlikely event that our patient develops a post-spinal HA.
CARDIOVASCULAR ROTATION

During the cardiovascular rotation, the assigned resident is responsible for:

1. checking the Nuclear Cardiology scheduled cases for the week and attending nuclear cardiac stress tests.
2. rotating with Heart Hospital CT scan techs to watch the Cardiac CTA technique.
3. spending time with Chasity Clark (CT technologist lead) in the mornings during cardiac CTAs. Chasity can be contacted at 405-552-0185.

Dr. Jeffrey Nackos provides cardiac educational lectures via teleconference on a monthly basis.

Texts which are useful during the rotation are:
- Pocket Radiologists Cardiac
- Cardiovascular chapter in Purple Primer
- CV section in Mettler
- Case Review Series Cardiac

The cardiac section in the Gold Mine series is a good board review. The Thoracic Radiology website (www.thoracicrad.org) has several power point lectures of approximately 20-30 minutes in length. Also, www.scmr.org has a case of the week series.

Cardiac resident will interpret **15 cardiovascular or thoracic imaging studies per day**.

Goals and Objectives:

1. Observe and perform interpretation of cardiac MR studies.
2. Observe and perform interpretation of CT coronary studies.
3. Observe and perform interpretation of nuclear cardiac studies.
4. Understand cardiac and coronary artery anatomy.
5. Increase competence in interpretation of thoracic radiograph.
6. Spend time with technologists to see how cardiac examinations are performed.
THORACIC RADIOLOGY CURRICULUM
Resident Goals and Objectives

Year 1

After year 1, the resident will be able to:

1. Concisely dictate a chest radiograph report.
2. Use accurate nomenclature on reports and during consultation with referring physicians.
3. Communicate significant or unexpected findings to referring physicians, and document who was called and the date and time of the call.
4. Understand indications for PA, AP, lateral, decubitus, and lordotic chest radiographs.
5. Interpret line placement radiographs, and assess for nonstandard line positions and complications.
6. Assist referring clinicians with patient management.
7. Learn the clinical indications for when a CT or MR may be necessary.
8. Protocol and interpret CT chest exams, including standard, pulmonary embolism, dissection, and high-resolution protocol exams.
9. Know when and when not to give intravenous contrast for CT scans.
10. Know when to obtain help from faculty radiologists.
11. Demonstrate a responsible work ethic.
12. Review recommended study materials, arrive on time, and display a professional demeanor.
13. Successfully perform thoracic biopsies with faculty supervision, and accurately document the procedure in a report.
14. Obtain informed consent for procedures while adhering to safety, confidentiality, and ethical protocols.
Year 2

After year 2, in addition to year 1 goals, the resident will be able to:

1. Build on chest radiograph and CT interpretation.
2. Further develop skills in protocoling CT exams.
3. Monitor CT exams, and determine if additional imaging is necessary when asked by the technologist.
4. Present thoracic radiology cases to other residents and faculty in conferences.
5. Present cases independently, with staff supervision, during multidisciplinary conferences.
6. Participate in quality improvement/quality assurance, and other operational activities.
7. Manage an intravenous contrast extravasation and contrast reaction during a CT exam.
8. Know the proper ACR approved protocols for premedicating patients who have an iodine allergy.
9. Demonstrate knowledge of radiation safety and exposure, and understand CT parameters that contribute to patient radiation safety.
10. Supervise and teach junior residents and medical students.

Years 3 and 4

After years 3 and 4, in addition to years 1 and 2 goals, the resident will be able to:

1. Dictate an accurate report with no major interpretive errors.
2. Have a comprehensive understanding of various CT protocols tailored for specific indications.
3. Become a more autonomous consultant.
4. Correlate clinical information and pathologic data with thoracic imaging.
5. Work independently, and be able to mentor junior residents and students in thoracic radiology.
6. Prepare and present materials for radiology and multidisciplinary conferences, and if applicable for scholarly activities.
COMPUTED TOMOGRAPHY (CT)

1. Interpret CT scans at all INTEGRIS locations.

2. Perform occasional CT biopsies depending on schedule of residents.

3. Assist with the interpretation of musculoskeletal and neuroradiology examinations.

4. As in all rotations, if volume is low, resident is expected to pitch in by interpreting ultrasound, nuclear medicine, MRI, and radiographs.

RADIOLOGY PROCEDURAL PROTOCOL
CT GUIDED LUNG BIOPSY

1. Indications and Scheduling
   a. To allow soft tissue evaluation of lung, pleural, and mediastinal masses
   b. All patients and relevant imaging will be reviewed prior to scheduling with attending.

2. Discussion of Risks
   a. Bleeding
   b. Pain
   c. Infection
   d. Pneumothorax
   e. Allergic reaction to medications

3. Consent
   a. Appropriate Consent & Documentation.
   b. Must observe either completed consent form (including operator, date, patient sticker, procedure, patient’s interpretation, signature of patient or appropriate representative or indication of phone consent, witness signature (X2 in case of phone consent) OR medical necessity order in the chart.

4. Pre-procedure chart and film review
   a. For inpatients, review chart for order from physician, consent signed by patient (or appropriate family member or guardian or phone consent from same) or medical necessity. Order labs in chart for any coagulopathies (if INR >1.5, correction of coagulopathy needs to occur).
   b. For outpatient procedures, review any available bloodwork for coagulopathies, make sure consent has been signed and understood, and determine if order has been faxed to our schedulers and from whom.
   c. Review all relevant studies prior to procedure to determine approach and patient positioning.
RADIOLOGY PROCEDURAL PROTOCOL
CT GUIDED LUNG BIOPSY (CONTINUED)

d. A planning non-contrast ct of the region to be targeted is obtained.

5. Hand hygiene
   a. Observed by washing hands with both an antimicrobial soap and water or with waterless alcohol foam.

6. Sterile technique
   a. Requires use of sterile gloves with cap and mask. Eye protection is mandatory.
   b. A sterile drape is placed after site determined by planning non-contrast ct of region.
   c. Prior to placement of the sterile drape, clean skin at the site (with an appropriate field to include at least the size of the fenestration in the drape plus approximately one inch around that).
      i. With the use of Chloraprep (2% chlorhexidine with 70% isopropyl alcohol), manufacturer recommendation is to scrub the area for at least 30 seconds and remain on the skin to air dry before the area is considered sterile.

7. Materials
   a. GUTS Tray
   b. Sterile Gloves
   c. Cap and Mask
   d. Lead apron
   e. Biopsy Needle (Determine core vs. FNA)

8. Technique
   a. Moderate conscious sedation per protocol should be started prior to any invasive portion of the procedure. After the sterile drape is in place, Lidocaine 1% is injected for local anesthesia, a wheel at the skin and along a track.
   b. A small nick is made at the insertion site with a scalpel if core biopsy only.
   c. Using CT guidance, a needle is advanced into the periphery of the mass and either an aspirate or core obtained and submitted to pathology.
   d. After pathology confirms adequacy a post procedure ct is obtained to evaluate for potential complications.

9. Post Procedure Orders
   a. Stat upright expiratory CXR with comment of “s/p <side> lung biopsy “at 1 and 3 hours after procedure completed.
RADIOLOGY PROCEDURAL PROTOCOL
CT GUIDED LUNG BIOPSY (CONTINUED)

b. The post procedure films will be reviewed and read by the performing resident and diagnostic staff. If for any reason the resident is unable to review film they are responsible to find a substitute.

c. All outpatients will have an estimated time of discharge with the phrase cxr must be cleared prior to discharge.

d. Any patient with a pneumothorax regardless of size or symptoms will be reviewed with the interventional radiologist on call immediately after discovery. The resident will participate in any follow-up procedures such as chest tube placement with the interventional MD or PA.

e. If the patient is to be admitted post procedure, the resident performing the procedure is responsible for orders, notes, and chest tube management in consultation with VIR MD on call. This includes daily rounds, discharge, and follow-up. If patient is to be seen on the weekend, the resident on service will check out to on call VIR MD.

10. Documentation and Dictation
   a. Progress Note to include procedure, any modalities used (US, Fluoro, CT), operator, location of procedure (R or L), how many and type of samples, all medications administered, complications, and post procedure condition of patient.
   b. Dictation per performing resident.
ABDOMEN ROTATION

1. Interpret abdominal radiographs at all INTEGRIS locations.

2. Interpret fluoroscopy radiographs of the abdomen at all INTEGRIS locations.

3. As with all rotations, if abdominal radiograph volume is low, the resident is expected to read studies from other services.

CHEST ROTATION

1. Interpret chest radiographs at all INTEGRIS locations.

2. As with all rotations, if chest radiograph volume is low, the resident is expected to read studies from other services.

3. See the Addendum to the Chest Curriculum on the following page.
Addendum from Collins et al, Academic Radiology, Vol 12, No 2, February 2005

Knowledge-Based Objectives

**Normal Anatomy.**

1. Name and define the three zones of the airways.
2. Define a secondary pulmonary lobule.
3. Define an acinus.
4. Name the lobar and segmental bronchi of both lungs.
5. Identify the following structures on the posteroanterior (PA) chest radiograph:
   - Lungs—right, left, right upper, middle and lower lobes, left upper (including lingula) and lower lobes
   - Fissures—minor, superior accessory, inferior accessory, azygos
   - Airway—trachea, carina, main bronchi
   - Heart—right atrium, left atrial appendage, left ventricle, location of the four cardiac valves
   - Pulmonary arteries—main, right, left, interlobar, truncus anterior
   - Aorta—ascending, arch, descending
   - Veins—superior vena cava, azygos, left superior intercostal (“aortic nipple”)
   - Bones—spine, ribs, clavicles, scapulae, humeri
   - Right paratracheal stripe
   - Junction lines—anterior, posterior
   - Aortopulmonary window
   - Azygoesophageal recess
   - Paraspinal lines
   - Left subclavian artery

6. Identify the following structures on the lateral chest radiograph:
   - Lungs—right, left, right upper, middle and lower lobes, left upper (including lingula) and lower lobes
   - Fissures—major, minor, superior accessory
   - Airway—trachea, upper lobe bronchi, posterior wall of bronchus intermedius
   - Heart—right ventricle, right ventricular outflow tract, left atrium, left ventricle, the location of the four cardiac valves
   - Pulmonary arteries—right, left
   - Aorta—ascending, arch, descending
   - Veins—superior vena cava, inferior vena cava, left brachiocephalic (innominate), pulmonary vein confluence
   - Bones—spine, ribs, scapulae, humeri, sternum
   - Retrosternal line
   - Posterior tracheal stripe
   - Right and left hemidiaphragms
   - Raider’s triangle
   - Brachiocephalic (innominate) artery

**Signs in Thoracic Radiology.**

1. Define, identify and state the significance of the following on a radiograph:
   - air bronchogram—indicates a parenchymal process, including nonobstructive atelectasis, as distinguished from pleural or mediastinal processes
   - air crescent sign—indicates a lung cavity, often resulting from fungal infection or saprophytic colonization
   - deep sulcus sign on a supine radiograph—indicates pneumothorax
   - continuous diaphragm sign—indicates pneumomediastinum
   - ring around the artery sign (air around pulmonary artery, particularly on lateral chest radiograph)—indicates pneumomediastinum
- fallen lung sign—indicates a fractured bronchus
- flat waist sign—indicates left lower lobe collapse
- gloved finger sign—indicates bronchial impaction, which can be seen in allergic bronchopulmonary aspergillosis
- Golden S sign—indicates lobar collapse caused by a central mass, suggesting an obstructing bronchogenic carcinoma in an adult
- luftsichel sign—indicates upper lobe collapse, suggesting an obstructing bronchogenic carcinoma in an adult
- Hampton’s hump—pleural-based, wedge-shaped opacity indicating a pulmonary infarct
- silhouette sign—loss of the contour of the heart, aorta or diaphragm allowing localization of a parenchymal process (eg, a process involving the medial segment of the right middle lobe obscures the right heart border, a lingular process obscures the left heart border, a basilar segmental lower lobe process obscures the diaphragm)
- cervicothoracic sign—a mediastinal opacity that projects above the clavicles is retrotracheal and posteriorly situated, whereas an opacity effaced along its superior aspect and projecting at or below the clavicles is situated anteriorly
- tapered margins sign—a lesion in the chest wall, mediastinum or pleura may have smooth tapered borders and obtuse angles with the chest wall or mediastinum while parenchymal lesions usually form acute angles
- figure 3 sign—abnormal contour of the descending aorta, indicating coarctation of the aorta
- fat pad sign or sandwich sign—indicates pericardial effusion
IC/NM (MEDICAL PLAZA IMAGING CENTER)

1. Read all body, musculoskeletal, and neuroradiology CT and MR studies.

2. Read PET-CT studies.

3. Interpret some ultrasounds and radiographs.

4. Interpret nuclear medicine studies and participate in nuclear medicine procedures.

5. If not busy read plain films. This is a great rotation to interpret many CXRs.

6. Make sure to include these interpretations in your totals.

There will be two residents on the IC rotation each month. If both residents agree, the residents may alternate being on the body side and neuro side. This alternation should be no more frequent than once a week, meaning that each resident will spend a full week on one side before going to the other side. This is intended to provide a better educational experience through intensity and continuity.

The outpatient setting is an exceptional experience and allows a more flexible environment with time to visit with our nuclear medicine technologist and get more time witnessing/participating in morning quality assurance testing for the nuclear medicine lab and equipment.

You will have a large number of CT/MRI exams as well as plain film/US/nuclear medicine exams with one-on-one staff/resident read-outs.

Vacation is strongly discouraged during this rotation.
MAMMOGRAPHY

All mammography at INTEGRIS Baptist Medical Center, stereotactic biopsies, ultrasound-guided biopsies, and breast ultrasounds are performed at the Comprehensive Breast Center. The resident will:

1. Participate in all breast localization procedures.
   a. Review all prior studies for breast localization with staff. Staff will check you, at least one, preferably two days before the procedure. Review the approach you will use with the staff. Some surgeons prefer the anterior approach unless there are complications.
   b. Show the needle localization to the staff. Draw a circle around the lesion. Label the orientation of the study.
   c. Review any complications or problems immediately.
   d. Review breast localization images to ensure the lesion is removed. Note the adequacy of the surgical margins.

2. Review and participate in reporting of screening studies.

3. Attend all problem solving mammography cases.

4. Participate in stereotactic biopsies.

5. Participate in breast ultrasound and ultrasound guided breast interventional procedures. Practice ultrasound guided biopsy with a phantom.

6. Participate in review and reporting of breast MR studies.

7. Practice US guided biopsies on chicken breast phantom. You may use money from your book fund to purchase the chicken.

MQSA Breast Imaging Experience Requirements

The RRC for Diagnostic Radiology requires 3 months of breast imaging. The latest RRC regulations state “There must be a minimum of 12 weeks of clinical rotations in breast imaging. Each resident should have documentation of the interpretation of at least 240 mammograms within a 6-month period within the last 2 years of the residency program.”
MAMMOGRAPHY (CONTINUED)

Residents completing radiology residency must fulfill the following requirements as initial qualifications for interpreting mammograms:

A. Be licensed to practice medicine in at least one state.
B. Have a minimum of 60 hours of documented medical education in mammography, which shall include:
   i. Instruction in the interpretation of mammograms and education in basic breast anatomy, pathology, and physiology;
   ii. technical aspects of mammography; and
   iii. quality assurance and quality control in mammography. Hours spent in residency specifically devoted to mammography will be accepted if documented in writing by the appropriate representative of the training institution.
C. Be board certified in Diagnostic Radiology.
   a) If the radiologist has become appropriately board certified at the first allowable time, they must have interpreted or multi-read at least 240 mammographic examinations under the direct supervision of an interpreting physician in any 6-month period during the last 2 years of a diagnostic radiology residency.
   b) If they are not board certified at the first allowable time, he or she must have interpreted or multi-read at least 240 mammographic examinations within the 6-month period immediately before the date that he or she qualifies as an interpreting physician. This interpretation or multi-reading shall be under the direct supervision of an interpreting physician.
PEDIATRIC ROTATIONS

1. Children's Hospital of Oklahoma: Two months General Pediatric Radiology
   The supervising attending at Children’s Hospital will assign rotation duties and activities.

2. Children’s Medical Center of Dallas: One month
   The supervising attending will determine rotation specifics. The rotation should include pediatric:
   - CT
   - MRI
   - Ultrasound
   - Nuclear Medicine
   - GI
   - GU
   - Radiographs
   - Cardiac angiography
   - Cardiac ultrasound
   - Peripheral angiography

3. No vacation or personal time can be taken on these away rotations unless approved in advance by the IBMC Radiology Residency Program Director.

4. The resident on the Dallas rotation will take four nights of call, which will not occur on a Friday, Saturday, or Sunday.

5. The other 3 weeks of the Dallas rotation will consist of a normal pediatric radiology schedule including fluoro, body CT/MR/US, MSK and neuro.
EMERGENCY RADIOLOGY

There are at least two residents on this service every month. One resident will work the night shift; the other resident will be off. Night shift begins at 8 pm and ends following checkout the next morning (approximately 9:30 am). Generally, the night shift resident will work 3 or 4 nights in a row, and the other resident will be off. Subsequently, the first resident will be off and the second resident will work. Residents can work no more than 6 nights of consecutive night float duty, as per the new ACGME common program requirements.

Call: Call resident begins the morning at 7 or 8 am, depending upon lectures and clinical responsibilities. The call resident attends all the scheduled lectures for that day, and then works until 8 pm. Any studies which the call resident interprets after the staff radiologist has left for the night should have a note regarding the preliminary findings typed into the information box on PACS. This note should also include the name of the person to whom the report was given and the time. These studies will be reviewed the following morning by the attending. The resident will be notified by staff of significant misses.

Weekend call: Call resident arrives at 8 am on Saturday or Sunday and works until 8 pm (Night shift starts at 8pm). Any study that the call resident interprets after the staff radiologist has left for the night should have a note regarding the preliminary findings typed into the information box on PACS. This note should also include the name of the person to whom the report was given and the time.

Studies for which a preliminary report is rendered will have the preliminary report typed into PACS with the name of the person who received the report and the time. Naturally, the residents should go over these studies with staff if there are questions about the exam, and residents who wish to dictate these studies are encouraged to do so.
PET-CT (INTEGRIS CANCER INSTITUTE OF OKLAHOMA)

1. Interpret radiographs, US, CT, MRI, and PET/CT studies on oncologic and nononcologic patients.

2. Learn about imaging findings related to cancer treatment.

3. Learn about cancer staging and follow-up.


5. When ICIO schedule is completed, interpret imaging at other INTEGRIS facilities.

6. Demonstrate awareness of contrast induced nephrotoxicity, nephrogenic systemic sclerosis, and radiation dose.

7. Your day begins at 8 am; 7 am for multi-disciplinary conferences. Generally, you will be finished at 5 pm.

8. Vacation is strongly discouraged during this rotation.
POLICIES AND PROCEDURES

MISCELLANEOUS

1. Before checking a case with a staff radiologist:
   a. Obtain a history
   b. Compare study to prior relevant studies
   c. Review prior reports
   d. Review the case carefully and complete assessment
   e. Develop reasonable diagnosis and/or differential diagnosis
   f. Determine which, if any, additional studies may be helpful for problem solving
2. Call reports of significant findings directly to referring physicians. Examples: free intraperitoneal air in a patient who has not had abdominal surgery, pneumothorax, and intracranial bleed.
3. Please be aware that when you dictate CT or US guided Bx you must include in the report verbiage "inadequate FNA tissue, pathologist requested a core sample" when the charge sheet is marked for both a core and FNA BX. the word "core biopsy" must be used in the dictation to bill for that.
4. Assist referring physicians with study interpretation at night.
5. Carry pager at all times when on duty. (Residents are responsible for pagers assigned to them. Notify Graduate Medical Education Office of any lost or damaged pager.)
6. Do not leave valuables unattended.
7. Submit all receipts for out-of-town travel to the Graduate Medical Education office. The hospital maintains strict requirements for certain travel activities and documentation of all travel to obtain reimbursement. (See Travel Policy).
8. You may read your residency file at any time. The file must stay in the Graduate Medical Education Office.
9. Check and dictate any studies you have completed before you leave for the day. If you have a study, such as a SBFT, which is still in process at the close of the day, you must discuss the case with the on call and/or swing resident and leave a detailed note before you leave.
10. Residents who have to retake the CORE Exam or even condition a section will not be allowed additional study time. Residents will be allowed to switch rotations with their fellow residents’ permission.
11. You are required to maintain BLS certification, ACLS certification is recommended.
12. Program specific requirements are available at www.acgme.org
13. Please remember that your handwritten notes about cases, saved images, computer-generated lists, and work logs may contain identifiable patient information. This patient health information MUST be kept confidential.
14. Use secure SPOK mobile service for transmitting any patient information to another clinician.
ELIGIBILITY CRITERIA

Prior to beginning this residency in Diagnostic Radiology, the resident will have successfully completed a year of clinically oriented graduate medical education. The PGY-1 year must be spent:

1. ACGME or RCPSC or equivalent organization accredited program in internal medicine, pediatrics, surgery or surgical specialties, obstetrics and gynecology, neurology, family medicine, emergency medicine, or any combination of these OR a transitional year accredited by the ACGME or equivalent organization.
2. During the clinical year, elective rotations in diagnostic radiology must occur only in radiology departments with an ACGME-accredited diagnostic radiology residency program and cannot exceed two months.
3. The program director is responsible for verifying that the resident accepted into the diagnostic radiology program has successfully completed the clinical year.

In addition, residents must meet eligibility requirements as outlined in the INTEGRIS Graduate Medical Education handbook regarding licensure, etc.

Resident transfers: Before accepting a resident who is transferring from another program, the program director must obtain written or electronic verification of previous educational experiences and a summative competency-based performance evaluation of the transferring resident.
DUTY HOURS

INTEGRIS Health Hospitals, through the Graduate Medical Education Committee, provide ongoing oversight of the work environment of residents and specifically of the compliance of the residency programs with the accreditation requirements of the ACGME or AOA as applicable.

The Graduate Medical Education Committee will oversee the program specific implementation of the Duty Hour Requirements of the Common Program Requirements of the ACGME, the Policies and Procedures for Residency Training of the AOA and the implementation of any additional program specific requirements of any specific Review Committee of the ACGME, or specialty affiliate of the AOA, as applicable.

It shall be the responsibility of the Program Director to establish program specific policies, rotations, and call schedules consistent with the duty hour requirements of the ACGME, the AOA and applicable Review Committee of the ACGME or AOA specialty affiliate. The duty hour requirements must apply to all institutions through which residents rotate. Appropriate back-up support must be available when patient care responsibilities are especially difficult and prolonged.

Duty Hours are defined by the ACGME as follows:

“…All clinical and academic activities related to the residency program, i.e. patient care (both inpatient and outpatient), administrative duties relative to patient care, the provision for transfer of patient care, time spent in-house during call activities, and scheduled academic activities, such as conferences. Duty hours do not include reading and preparation time spent away from the duty site.”

The ACGME common program requirements and the AOA policies and procedures for residency training include the following duty hour requirements:

1) Residents must be scheduled for no more than 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities and all moonlighting. The four-week period applies specifically to four week blocks and is not a “rolling four week average”.
2) Residents must have at least one full day (24 hours) out of seven free of patient care responsibilities, including with no assigned call activities, averaged over a four-week period.
3) Residents must be assigned call duties no more frequently than every third night averaged over a four-week period.
4) Night float must be scheduled for no more than 6 consecutive nights.
5) Continuous time on-call must be limited to 24 hours, with an additional 4 hours maximum for transfer of care, continuity of care arrangements (both inpatient and outpatient), educational debriefing, and didactic activities.
6) Residents must not assume responsibilities for new patients or any other new clinical care activities after the 24-hour period noted in 5) above. “New patient” is defined by each Review Committee in Program Specific Requirements.
DUTY HOURS (CONTINUED)

7) Minimum Rest Period: ACGME PGY1 residents should have a minimum of 10 and must have a minimum of 8 hours off between duty hour periods. ACGME Intermediate Level Residents (RRC defined) should have a minimum of 10 hours and must have 8 hours off between duty hour periods and must have a minimum of 14 hours off following 24 hour call. ACGME Upper Level Residents (RRC defined) may have more extended work duty hour periods and returns to the hospital in less than 8 hours if required to address patient care needs. All extensions and returns must remain within the 80 hour work week and include one day in seven free of patient care. AOA Residents must have a minimum of 12 hours off duty and call following a 20-24 hour shift, and 10 hours off following a 12-19 hour shift.

8) For residents who take call from home, hours spent in the hospital must be counted in the weekly duty hour totals noted above. Call from home is not subject to every third night limitation, but is subject to the 24 hour off per 7 days limitation defined in 2) above. At home call must however be reasonable. Excessive service demands and/or excessive resident fatigue will require adjustment to at home call schedules. Returns to the hospital do not trigger a new “off duty period”.

9) Time spent in patient care activities outside the residency program (i.e. moonlighting) also counts toward the duty hour totals noted above.

10) Duty hour shifts during Emergency Medicine rotations will be no longer than 12 hours, with 2 additional hours for the transfer of care and educational activities.

11) The Graduate Medical Education Office and/or specific Residency Program Office will provide all call schedules to the applicable institutional staff.

It shall be the responsibility of the Program Director to monitor residents for the effects of sleep loss and fatigue, and to respond when fatigue may be detrimental to resident performance and well being, or may affect patient care. Back-up support and/or schedule changes must be implemented to address undue resident fatigue. The supervising faculty member, in consultation with the Program Director, as indicated, may adjust downward an individual work schedule of a resident who appears excessively fatigued. Taxi vouchers to transport a resident to his/her home are available through the Residency Coordinator of the applicable residency program upon request for any post call residents.

The Graduate Medical Education Committee will oversee the implementation of duty hour requirements noted above and will perform additional activities as noted below to promote patient safety and an appropriate educational and work environment for residents.

1) Monitor, through a structured process, program specific duty hour compliance. Review program adjustments needed/made to remain in compliance with duty hour requirements.

2) Provide an annual report to the Medical Executive Committees of INTEGRIS Baptist Medical Center, INTEGRIS Southwest Medical Center and INTEGRIS Bass Baptist Health Center and the Boards of Directors of the facilities of program specific compliance with duty hour requirements and any recommendations concerning actions needed to bring specific programs into compliance with the requirements.
DUTY HOURS (CONTINUED)

3) Establish and oversee the implementation of a moonlighting policy (See the Moonlighting Policy).
4) Oversee program specific monitoring of the effect of moonlighting on resident performance (It shall be the responsibility of the Program Director to establish and maintain the program specific monitors of moonlighting and to withdraw approval for moonlighting if resident performance is negatively affected).
5) Evaluate home call requirements as needed to avoid unnecessary service demands and resident fatigue.
6) Establish a system to educate faculty and residents concerning the effects of sleep deprivation, the signs of fatigue, and process changes possible to prevent and/or manage fatigue. It shall be the responsibility of the Program Director to adopt fatigue mitigation processes appropriate for the specific residency program.
7) Review the availability of faculty to provide supervision / consultation for residents as needed specifically to avoid undue fatigue and to provide safe patient care.
8) Establish any needed additional institutional policies and procedures required to monitor and support the physical and emotional well-being of residents, to promote an educational environment and associated patient safety.

SUPERVISION AND RESIDENT RESPONSIBILITIES

1. The faculty is responsible for the quality of resident teaching and the quality of patient care. The Program Director is responsible for oversight of the faculty. Faculty members on call at night will be immediately available by pager, cell phone or home phone number. These numbers will be readily available to the residents on after hour’s duty. The faculty call schedule will be available to the residents.

2. No resident is to perform any procedure without staff supervision until he/she has demonstrated competence in doing that procedure under staff supervision.

3. Major vascular/interventional procedures (including, but not limited to, arteriograms, biliary drainage procedures, CT or ultrasound guided biopsies, abscess drainages and nephrostomies) will be performed only under the direct supervision of the staff. Progressively increasing responsibility will be given to the resident. Prior to performing an arteriogram, the resident will review the patient’s medical record and discuss the objectives with the staff radiologist. The staff radiologist and resident will both attend the arteriogram. The resident will dictate the case following discussion with the staff.

4. Myelograms, arthrograms, and other invasive procedures will also be performed under the direct supervision of the staff.
SUPERVISION AND RESIDENT RESPONSIBILITIES (CONTINUED)

5. No other procedure including but not limited to UGI, BE, IVU, will be performed by a resident without supervision until the resident has observed the procedure multiple times, fully understands the procedure, and has performed the procedure competently while supervised. Progressively graded responsibility will be given to the resident. Initially, all residents observe fluoroscopy; after becoming familiar with the positions and routines, the resident will perform fluoroscopy with another physician in the room. Subsequently the resident will perform the procedure independently then review it with staff.

6. Each resident will have a minimum of twelve (12) full months in the program before being assigned to night independent duty. However, no one will take night call if the Program Director feels he/she is not ready. Each resident will take an exam before taking call. Before taking call each resident will spend several early evenings in the hospital to learn routines and observe the call resident at work.

7. There are three staff radiologists on call, one on general radiology one on vascular/interventional radiology, and one on interventional stroke call. Each will be immediately available by pager, cell phone or home phone number. The vascular/interventional staff radiologist will come in for all vascular/interventional procedures. The general staff radiologist will come in when requested and will have a teleradiology setup at home. The resident is responsible to call the attending for any question, which requires clarification before morning for appropriate patient care. A referring physician may request that an attending review any case at their discretion.

8. At night and during certain other times, a resident may render a preliminary report when the resident is confident about the diagnosis, and the case is appropriate to his/her level of training and experience. However, all studies will be checked as soon as is practical by the staff and never later than the morning after the night on call. The resident is responsible to call the staff radiologist for any question, which should be answered prior to morning to ensure safe patient care.

9. If the attending report is different from the resident preliminary report, the resident must call the amended report to the patient’s physician, and document this change with the physician and time notified in the report.

10. No final report will be issued until the staff radiologist has reviewed the images.

11. The staff in charge of a subject area will develop guidelines for performing procedures; the guidelines may include written curricula, manuals, handouts, conferences, and other training materials.

12. Senior residents are expected to act in a supervisory and teaching capacity toward the junior residents and medical students.
SUPERVISION AND RESIDENT RESPONSIBILITIES (CONTINUED)

13. Residents will have faculty assess their performance on common and anticipated procedures. These assessments will be documented on forms created for this purpose. These forms are available in the GI closet and online on New Innovations. Once these forms have been completed, the resident must place them in his or her learning portfolio under “Patient Care” and these forms are also to be given to Shannon Thompson for inclusion in the resident’s file.

Following documented competence, direct supervision is not required for the following:

- Performance of diagnostic LP
- Performance of thoracentesis
- Performance of paracentesis
- Placement of PICC line

14. Residents’ abilities will be evaluated based on specific criteria. When available, national standards-based criteria will be used. It is anticipated that as “Milestones” criteria are developed by the Review Committee for Diagnostic Radiology and ABR, that those criteria will form the basis of evaluation.

Guidelines for circumstances and events in which residents MUST communicate with appropriate supervising faculty members, as related to patient care/ procedural skills

Residents must communicate in a timely fashion with appropriate supervising radiology faculty members when:

1. The resident is performing a diagnostic lumbar puncture, paracentesis, thoracentesis, or placement of PICC line. Other interventions would be performed only under direct supervision of a supervising faculty member
2. The resident is aware of a complication or possible complication of a radiology diagnostic or interventional procedure
3. The resident is aware that a patient is having or may be having a contrast reaction
4. The resident is aware that a patient has fallen or may have fallen or had a similar source of potential injury in the department
5. A nonradiology faculty member requests faculty radiology involvement, despite the best efforts of the resident to meet the physician’s expectations
6. The resident has a question which will or could directly impact patient care and the resident is unable to resolve the issue in a timely fashion without faculty assistance
7. The resident should not hesitate to contact appropriate supervising faculty if patient safety is at issue
MOONLIGHTING

First-year residents are not permitted to moonlight during the first six months of residency.

Requests to moonlight will be reviewed on an individual basis. As a general guideline, the resident will be expected to be progressing as appropriate for his/her level of training. First-year residents will also be expected to score above 50% on the ACR in-service exam. Fourth-year residents who fail the CORE exam or need to condition a section are not allowed to moonlight until they have retaken the exam and shown passing results.

All moonlighting must be approved in advance in writing by the Program Director. The moonlighting request form can be found on New Innovations.

Hours spent moonlighting must be documented (on New Innovations) and are included in the Duty Hour restrictions and are counted towards the 80 hour maximum weekly hour limit.

Moonlighting is a privilege. The residency committee may withhold or suspend moonlighting privileges should patient safety or resident education be compromised. The residency committee has the right to withhold permission to moonlight.

See INTEGRIS Graduate Medical Education Handbook for additional information.

USE OF RESIDENCY LIBRARY MATERIALS

The Radiology Residency Library includes a large number of texts, journals, slide sets, CDs, and DVDs. Materials available in the library should be used in the library. Certain educational resources (particularly CDs and DVDs) and computer equipment are maintained in the Graduate Medical Education office, and must be checked out through the Residency Coordinator. Borrowed CDs, DVDs, or computer equipment must be returned to the Graduate Medical Education office.
SCHOLARLY ACTIVITY REQUIREMENT

The Accreditation Council for Graduate Medical Education requires that all residents participate in scholarly activity during the residency program.

Residents will receive training in critical thinking skills and research design through lectures and journal club.

All residents MUST complete a scholarly project with a faculty mentor. Scholarly activity may take the form of a publication (book chapter, publications in peer-reviewed journals, and online publications, such as “ACR Case in Point”) or presentation at a local or national meeting. The activity may focus on laboratory research, clinical research, the analysis of disease processes, imaging techniques or practice management issues.

The results MUST be published or presented at institutional, local, regional or national meetings.

The program does provide support such as access to the medical library, librarian assistance, physicist assistance and/or statistical assistance as needed.

The results of the scholarly activity must be included in the resident’s learning portfolio for evaluation.

A routine part of the residency includes case presentations at various conferences: Radiology/Pathology, for example. Presentations should be concise thorough summaries of the patient or issue under discussion.

Occasionally residents may be required to give longer lectures on various radiology topics. Upper level resident training and supervision of lower level residents and medical students is a requirement for all residents.
JOURNAL CLUB

Journal club will be scheduled once a month, every month. Every month, a staff member will be assigned to proctor journal club, and a resident or residents will be assigned to select and present journal articles for discussion.

The resident assigned to journal club will consult with the assigned staff radiologist to select an appropriate article to be presented. After the journal article has been agreed upon, the article is to be distributed to the other residents as soon as possible, but no later than seven days prior to the conference. It is expected that all residents will have carefully read the articles prior to the conference.

Goals of journal club:

- Acquire, disseminate, and apply new medical information
- Teach and assess critical appraisal skills for reading and writing a scientific paper
- Promote lifelong learning skills in evidence-based medicine
- Improve reading habits
- Provide an interactive and social opportunity for peer-to-peer learning
- Improve small group participation, presentation and communications skills
- Emphasis on original research articles, but good review articles also accepted
- Discussion of statistics and principles of evidence-based medicine
- Active participation with interactive discussion format

Standardized Checklist of Review Criteria

1. What type of study is this article? (consult the definitions in glossary of study design at http://www.ajo.com)
   a. Randomized or non-randomized clinical trial
   b. Interventional case series or case report
   c. Cohort study or case-controlled study
   d. Cross-sectional study
   e. Observational case series or case report
   f. Experimental study
   g. Meta-analysis of literature

2. Review the manuscript sections
   a. Title: Is the title accurate, concise, and complete?
   b. Introduction: Are the purposes of the study, the research rationale, and the hypothesis described? Is the pertinent literature reviewed and cited accurately?
JOURNAL CLUB (CONTINUED)

3. Design
   a. Methods: Is the description of the study methodology accurate, complete and appropriate? Does the method section inadvertently contain results or discussion? Do the methods adequately describe:
      i. Setting (multi-center, institutional, referral, academic, or clinical practice)
      ii. Patients or study population including patient numbers, one or both sides of the body, selection procedures, inclusion/exclusion criteria, randomization, allocation and masking
      iii. Intervention or observation procedure(s): (treatments and controls)
      iv. Main outcome measures (primary, secondary, other).

   b. Human Subject Participation in Experimental Investigations: Does the manuscript describe the approval from the appropriate Institutional Review Board (IRB) or equivalent monitoring agency? Was appropriate informed consent obtained from the patients or subjects?

   c. Use of Animals in Biomedical Research: Does the manuscript describe the animal care protocol, name the institution that sponsored the study, and identify relevant IRB approval? Does the research conform to the generally accepted principles of animal maintenance and care?

   d. Statistics: Was the statistical analysis valid? When P values are used, is the actual P value (for example P=.032) provided or is an inequality used (for example, P<.05)? In the reporting of the basic summary statistics, are the mean and standard error, as well as the confidence limits, provided to help the reader understand the conclusions of the study? Are the statistical models used (analysis of variance, covariance, multiple regressions) specified?

   e. Results: Are the outcomes and measurements provided in an objective sequence? Are the data provided in a clear and concise manner? Do the tables and figures accurately summarize the data or add to the information presented in the text? Do the data report confidence intervals (usually at the 95% interval) and exact P values or other indications of statistical significance?

   f. Discussion: Does the discussion accurately describe the results? Does it identify any statistically or clinically significant limitations or qualifications of the study? Do the authors accurately state the conclusions of the study? Are there overgeneralizations or undue speculations in the discussion? Is equal emphasis given to positive and negative findings?

Some material adapted from ACGME Bulletin
LEARNING PORTFOLIO

Each resident is required to maintain their individual learning portfolio in the binders provided by the program. Each resident must keep the portfolio up to date, and bring it for review by the program director at each six month evaluation with the program director.

The learning portfolio must document, at a minimum:

1. Patient Care and Procedural Skills
   a. Case/procedure logs
   b. ACGME log print outs
   c. I-131 logs
   d. Mammography logs

2. Medical Knowledge
   a. Documentation of conferences attended, courses/meetings attended, self-assessment modules completed, etc
   b. Documentation of compliance with regulatory-based training requirements in nuclear medicine and breast imaging
   c. Documentation of performance on yearly in-service examination

3. Practice-Based Learning and Improvement
   a. Annual resident self-assessment and learning plan

4. Interpersonal and Communication Skills
   a. Formal evaluation of quality of dictated reports

5. Professionalism
   a. Documentation of compliance with institutional and departmental policies (e.g. HIPAA, JCAHO, patient safety, infection control, dress code, etc.)
   b. Status of medical license

6. Systems-Based Practice
   a. Documentation of a learning activity that involves deriving a solution to a system problem at the departmental, institutional, local or national level

7. Scholarly Activities
   a. Documentation of scholarly activity, such as publications, announcement of presentations, etc.

8. Other
   a. Any materials pertinent to the educational experience of residency training.
CONFERENCES

1. Attendance at conferences is required except when post-call, on vacation, on interventional/angiography or PEDS, at Children’s Hospital, ICIO or AIRP rotation. Attendance at conferences is considered in your evaluation. The Chief Residents will prepare a list of conferences each month. Conferences are designed to enhance the clinical education of the residency.

2. Residents are required to present cases at interdisciplinary conferences.

3. Resident attendance in conferences will be documented.
NEW INNOVATIONS PROCEDURE LOGS

Types of studies and procedures to be logged

Vascular/Interventional procedures, including biopsies and drainages

ACGME RESIDENT CASE LOGS

Your ACGME case log MUST be kept updated. Your case logs will be compared to others in your class and other residents of your level from previous years. Your case log numbers are expected to be similar or greater in number than your peers.

Also, please be advised that the program director will do random checks of work production by searching the PACS system. Residents should attach their names to studies they dictate on the PACS system.

Residents who are not on vacation, at conference, at AIRP, sick, on post-call days of the emergency rotation, or otherwise legitimately excused MUST participate in patient care EVERY DAY. This is a requirement that is based on Medicare requirements. This work must be documented, whether by attaching your name to studies on PACS or keeping logs of VIR procedures or mammography cases, etc. This requirement is related to the core competencies of patient care and professionalism.

The average first year resident has 1356 cases on the ACGME case log.
The average second year resident has 2722 cases on the ACGME case log.
The average third year resident has 2318 cases on the ACGME case log.
The average fourth year resident has 2972 cases on the ACGME case log.

Data from the ACGME indicates that the average graduate from a diagnostic radiology residency program will have read **9000 examinations**. It is expected that our residents’ work experience will meet or exceed that number.
ACGME RESIDENT CASE LOGS (CONTINUED)

Online ACGME Case Logs:

Examinations:
- Chest X-ray (71010, 71020-71034)
- CT Abd/Pel (72192, 74150, 74160, 74170, 74176-74178)
- CTA/MRA (71275, 71555, 72191, 72198, 74175, 74185, 70544-70549, 70496, 70498, 73725, 73706)
- Image Guided Bx/Drainage (32555, 32557, 49083, 49405-07, 75989, 76942, 77012)
- Mammography (G0202, G0204, G0206, 77055-77057)
- MRI Body (71550, 71595, 71597, 71481-83)
- MRI Brain (70551-53)
- MRI Lower Extremity Joints (73721-23)
- MRI Spine (72141-42, 72146-49, 72156-58)
- PET (78491-92, 78608-09, 78814-16)
- US Abd/Pel (76700, 76770, 76830, 76856-57)

The Resident Case Log System for Operative Log Reporting is an Internet based case log system utilizing CPT codes and ICD9 codes to track resident experiences. The Residency Review Committee (RRC) has indexed these codes into categories for evaluation. All valid CPT and ICD9 codes have been added to the ACGME Resident Case Log System. RRC identifies the codes that pertain to the specific specialty, and chooses the category in which it counts (area and type). Those codes that the RRC is not tracking at this time are placed into an area and type called miscellaneous or unassigned and will display on the reports as “miscellaneous” or “unassigned”.

The resident should enter encounters/procedures and choose codes that accurately reflect the encounter/procedure performed or the code that most closely matches the procedure done. Some entries may fall into the unassigned category. You can generate a full detail report on a weekly or monthly basis to review the unassigned procedures to make sure that they are being reported correctly. When you run the report, choose the appropriate resident and in the area select “unassigned”. The residents also have this capability so they can run the report as well (see report section for more details).

Any valid code can be entered into the application, but only those codes the RRC has selected will be counted for experience.

While some programs prefer to have administrative personnel enter resident experience, this application was designed to allow residents to enter data on a regular basis at their convenience. Entry can be done on the internet at any time 24 hours a day.

The site is secured by encryption certificates obtained through the Verisign Corporation and is backed up daily.

Case logs, duty hour logs, and New Innovations Faculty Evaluations should be evaluated at least monthly.
LEAVE TIME

Please see the INTEGRIS Graduate Medical Education Handbook regarding information about leave. In addition note the following:

1. The timing of leave is at the discretion of the Program Director.
2. Emails must be completed and approved by the Chief Residents. Request leave by emailing the Chief Residents. The Chief Residents will reply to the email with approval and copy the residency coordinator and system director.
3. Residents taking leave are responsible for notifying appropriate staff members of their absence.
4. Leave is generally not allowed during the rotation at Children’s Medical Center of Dallas.
5. Any leave taken during the Children’s Hospital of Oklahoma rotation must be arranged in advance with the Facility Program Director and with the Chief Residents at INTEGRIS Baptist Medical Center.
6. Leave is limited in June and July.
7. Leave is limited to one week during IR, ICIO and IC rotations. The resident must arrange resident coverage for ICIO and IC rotations.
8. Leave is not allowed during the ACR – In Training Examination. In addition, leave is limited when residents are taking any exams. See “Examinations” for exam dates.
9. Fourth-year residents are allowed to take two weeks of vacation at the end of June. Leave without pay will not be allowed.
10. Requests for leave time must be received by the GME office no later than the Friday prior to the week for which the vacation is requested. No requests will be approved retroactively. Violations will be referred to the Program Director. Compliance with this policy reflects the core competency of professionalism.

ON-CALL ROTATION

There will be in-house resident coverage 24 hours a day 7 days a week.

On the weekday following a night shift, the resident may leave after cases are checked and dictated and any other responsibilities are completed.

The resident may not leave the hospital grounds while on call unless directed to do so by the staff radiologist on call. While on call, the resident must be immediately available by phone. Residents are not to send other residents home before their shifts are over without staff permission.

Night Call:

Be professional. Treat patients, support staff, technicians, colleagues, attendings, and referring physicians with respect. The role of the physician is to provide care for the patient. When working at night, offer to help the physician interpret radiographs even before they ask.
ON-CALL ROTATION (CONTINUED)

Preliminary reports on call:

It is recommended that preliminary reports of on call studies be dictated by the on-call resident in Powerscribe as soon as reasonably possible after the report is called. Please be sure to include in this preliminary report to whom the report was called and when. After this preliminary dictation is completed, please click the “Approve” button. This will allow access to your preliminary report to other interested parties (and hopefully will decrease the number of phone calls made to you about the exams you have seen).

In the check-out session with your staff, show the staff member your preliminary dictation as you go over the images. If minor corrections to your report (such as minor changes in wording, correction of typographical errors, etc) are advised by your staff member, it is acceptable for these corrections to be made in the preliminary report before the staff member signs the report on his or her queue.

On the other hand, in those uncommon situations in which there IS a significant difference in the interpretation of the preliminary report and the final report, follow this procedure: The preliminary report is NOT to be substantially altered. Instead, the resident will call the patient’s attending physician and discuss with them the new interpretation. AT THE BOTTOM OF THE PRELIMINARY REPORT ALREADY DICTATED, dictate the new interpretation and document to whom this revised report was called and when.

The rationale behind this process is to ensure an accurate reflection of the content of preliminary reports and also to provide an accurate timeline of what was said to whom and when.

Additional comments:

1) To complete preliminary report when on call, write your impression, to whom you spoke, and the approximate time of your verbal report on the information box on PACS.

2) Residents MAY NOT pay other residents to take call.

3) All meals are free for residents at INTEGRIS Baptist Medical Center when on call.

Staff log for significant on call report discrepancies:

A simple log sheet will be placed at the read-out stations for the purpose of monitoring the incidence of “significant differences” between staff and resident on call dictations. You are responsible for telling staff the total number of on call cases. Staff will fill in the rest.
ALERTNESS MANAGEMENT/FATIGUE MITIGATION

Residents and faculty will receive ongoing training in fatigue and its effects, mitigation and management. Primary teaching tools will be the LIFE and SAFER curricula.

Residents who are scheduled to be on call may elect to use the hour from 4 to 5 pm to take a nap, if they feel fatigued.

Should a resident become unable to perform his or her duties due to impairment from fatigue or illness, he or she is immediately excused from duty. Should this occur during the night float rotation, the resident on short call that night will come in as backup. Should this occur during short call, the night float resident will come in early.

The hospital will provide taxi service to residents who are too fatigued to drive home safely. It is the resident’s responsibility to make that determination. If necessary, this can be coordinated through the GME office.
CHIEF RESIDENTS

Co-Chief Residents from March 1, 2016 to February 28, 2017:
Jeremy Theisen, MD and Vishal Kadakia, MD

DUTIES OF CHIEF RESIDENT

1. Write call schedule. All call schedules must be written in accordance with Program and Institutional policy, and submitted to the Residency Coordinator by the 10th of the month prior to call schedule month.
2. Assign short evenings with the on call resident toward the end of the first year.
3. Write monthly lecture schedule. All lecture schedules must be submitted to the Residency Coordinator by the 10th of the month prior to the schedule month.
4. Serve as a role model and mentor for junior residents.
5. Assist in New Resident Orientation.
6. Assist in management of resident activities (e.g. maintenance of logs).
7. Facilitate communication between residents and staff physicians.
8. Assist the Program Director in the communication of new policies and procedures to all residents.
9. Facilitate communication between and resolve minor disagreements between residents.
10. Promote an academic environment.
11. Chief resident or his/her designated alternate must attend the GMEC meeting. The GMEC meeting is held in the Bennett Room at 7 am the second Thursday of the month except July.

PROCESS TO DEAL CONFIDENTIALLY WITH RESIDENT PROBLEMS OR CONCERNS

Please feel free to discuss any residency related issue with your program director. Alternately, residents may approach any staff member of the residency committee, any faculty member, Shannon Thompson, Natasha Fanson, or Dr. Shirley Dearborn through the GME office. These channels will almost always allow for dealing with issues that may arise. Residents who feel their concerns have not or cannot be addressed through these channels may contact Dara Wanzer in the Legal Department.

Residents may also contact the President of INTEGRIS Mental Health, a psychiatrist, who has agreed to serve as independent confidential consultant for residents.

Consultations provided by the President of INTEGRIS Mental Health will be informal and will not be considered a formal psychiatric evaluation or psychiatric care.

To schedule an appointment, the resident should call (405) 717-9800.
EVALUATIONS AND RESIDENT ADVANCEMENT

RESIDENTS:
Residents will be evaluated using objective tools in each ACGME-identified competency. Multiple evaluators will be used.

Each resident will receive a competency based evaluation at the end of each rotation.

Each resident will have a documented semi-annual evaluation of performance.
This evaluation will include:
- Global faculty evaluation (all competencies)
- 270 evaluations of interpersonal skills/communication skills and professionalism
- Learning portfolio (please see handbook section regarding learning portfolio)

The residents’ case logs will also be reviewed.

The residents’ files including their evaluation material is available for resident review any time the GME office is open. Rotation evaluations are available for resident review online at any time.

Residents will be advanced to positions of higher responsibility only on the basis of their satisfactory progressive professional growth and scholarship. Residents experiencing performance difficulties or receiving unfavorable reviews will receive more frequent reviews of performance. Please see the INTEGRIS Graduate Medical Education Handbook for details regarding the processes used for residents experiencing performance deficiencies.

At the end of training, the program director must provide a summative evaluation which will become a part of the resident’s permanent record. This evaluation will include information regarding the resident’s performance during the final period of training and verify that the resident has demonstrated sufficient competence to enter practice without direct supervision.

FACULTY:
At least annually, the program will evaluate faculty performance as it relates to the program. This evaluation will include review of the faculty members’ clinical teaching abilities, commitment to the educational program, clinical knowledge, professionalism and scholarly activities. The evaluation will also include annual written confidential evaluations by the residents.
EVALUATIONS AND RESIDENT ADVANCEMENT (CONTINUED)

Faculty specifically will be evaluated on:

Availability
Adequate review of and feedback concerning the resident’s work
Response when contacted during resident’s on-call period
Clinical knowledge and skills
Familiarity with current literature
Function as a role model
Ability to stimulate interest and learning
Frequency of rounds (check-out)
Directive versus coaching role
Skill and guidance in procedural areas

The program director must provide each faculty member with an annual evaluation. The evaluation will include an assessment of clinical knowledge, teaching ability, commitment to the program, and scholarly activity. Anonymous, summative information obtained from the residents’ evaluation will be included.

PROGRAM EVALUATION AND IMPROVEMENT:

The program will conduct a formal, systematic evaluation of the curriculum annually. Other areas which will be tracked include: resident performance, faculty development, graduate performance, including performance on the ABR examinations, and program quality.

The faculty and residents will have the opportunity to evaluate the program confidentially and in writing at least annually.

The results of the faculty and resident assessments will be used with other program performance indicators to identify areas in need of improvement. If deficiencies are found, a written plan of action to address the performance issues will be developed. This action plan will be reviewed by the faculty and documented in the meeting minutes.
The Milestones are designed only for use in evaluation of resident physicians in the context of their participation in ACGME accredited residency or fellowship programs. The Milestones provide a framework for the assessment of the development of the resident physician in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

**MILESTONE REPORTING**

The milestones are designed for programs to use in semi-annual review of resident performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into diagnostic radiology residency through graduation. In the initial years of implementation, the Review Committee will examine milestone performance data for each program’s residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

For each reporting period, review and reporting will involve selecting the level of milestones that best describes each resident’s current performance level in relation to milestones. Milestones are arranged into numbered levels. Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels. A general interpretation of levels for diagnostic radiology is below:

**Level 1:** The resident demonstrates milestones expected of one who has had some education in diagnostic radiology.

**Level 2:** The resident is advancing and demonstrating additional milestones.

**Level 3:** The resident continues to advance and demonstrate additional milestones; the resident consistently demonstrates the majority of milestones targeted for residency.

**Level 4:** The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.

**Level 5:** The resident has advanced beyond performance targets set for residency and is demonstrating “aspirational” goals, which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.
DIAGNOSTIC RADIOLOGY MILESTONE PROJECT (CONTINUED)

Additional Notes

Level 4 is designed as the graduation target but does not represent a graduation requirement. Making decisions about readiness for graduation is the purview of the residency program director (see the following NAS FAQ for educational milestones on the ACGME’s NAS microsite for further discussion of this issue: “Can a resident graduate if he or she does not reach every milestone?”). Study of milestone performance data will be required before the ACGME and its partners will be able to determine whether Level 4 milestones and milestones in lower levels are in the appropriate level within the developmental framework, and whether milestone data are of sufficient quality to be used for high stakes decisions.

Answers to Frequently Asked Questions about the NAS and milestones are available on the ACGME’s NAS microsite: http://www.acgme-nas.org/assets/pdf/NASFAQs.pdf.

VENDOR POLICY FOR RADIOLOGY RESIDENTS

On occasion, vendors may provide educational materials to the residents, provided that:

1. The educational materials provided are of scientific merit and pertain to the practice of radiology

2. They provide information about imaging, contrast agents, or disease process, etc. in a manner with no bias toward a particular vendor’s product.

3. Any materials provided will have disclosures regarding financial relationships between the authors of the materials and the vendor’s company.

4. All vendor/resident contacts are approved in advance by the program director.

Unsolicited gratuities

PROFESSIONALISM

The program director and institution must ensure a culture of professionalism that supports patient safety and personal responsibility. Residents and faculty members must demonstrate an understanding and acceptance of their personal role in the following:

Assurance of the safety and welfare of patients entrusted to their care

Provision of patient- and family-centered care

Assurances of their fitness for duty

Management of their time before, during, and after clinical assignments

Recognition of impairment, including illness and fatigue, in themselves and in their peers

Attention to life-long learning

The monitoring of their patient care performance improvement indicators

Honest and accurate reporting of duty hours, patient outcomes, and clinical experience data

Responsiveness to patient needs that supersedes self-interest including, when appropriate, the transition of that patient’s care to another qualified provider

By signing below, I demonstrate my understanding and acceptance of my personal role in the above values.

________________________________________
Signature

________________________________________
Date
Non-Routine Communication of Urgent Findings

Urgent Finding

Patient (optional)

Provider

Provider's Clinic

Staff

"SAFAR" exam

"Non-SAFAR" exam

Operator or Preferred Contact

Preferred Contact

Phone/VOicemail

Paper

Already known

communication in the radiology report. The following is not routine communication that is included in the radiology report:

- If the patient is seen by a different provider and the findings are included in the radiology report, the following is not routine communication in the report:
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AMERICAN BOARD OF RADIOLOGY (ABR) REQUIREMENTS

Requirements

Five years of approved training

- **One Year in Clinical Training**

  The first postgraduate year must be ACGME- or RCPSC- accredited clinical training in internal medicine, pediatrics, surgery or surgical specialties, obstetrics and gynecology, neurology, family practice, emergency medicine, transitional year, or any combination of these. Credit for accredited training in other specialties may be granted on an individual basis after submission of the appropriate documents to the ABR.

  If there is an elective in diagnostic radiology, it must be in a department with an ACGME-accredited diagnostic radiology residency program and cannot be longer than two months. No more than a total of three months may be spent in radiation oncology and/or pathology.

- **Four Years in a Diagnostic Radiology Program**

  The program must be approved for training in diagnostic radiology by the Residency Review Committee (RRC) for diagnostic radiology of the ACGME, or by the Royal College of Physicians and Surgeons of Canada (RCPSC).

  - A minimum of four months of the four-year diagnostic radiology training program must be spent in nuclear medicine.
  - A minimum of three months must be spent in mammography/breast imaging.
  - No more than 16 months may be spent in any one subspecialty or in research. Those considering careers in research may want to participate in the Holman Research Pathway.

- **Obtain Certification within the Six-Year Board Eligibility Period**

  At the completion of training, the ABR officially recognizes candidates as “board eligible” for a period of six full calendar years, through December 31 of the sixth year. Certification must be acquired during this time. Please see the Board Eligibility Policy for further details.

  The requirements to attain board certification are:

  - Graduate from an ACGME- or RCPSC-accredited diagnostic radiology residency training program.
AMERICAN BOARD OF RADIOLOGY (ABR) REQUIREMENTS (Continued)

- Pass the ABR Core and Certifying examinations. A resident is eligible to take the Core Examination in the 36th month of diagnostic radiology training, and must take the examination at the first administration offered. A candidate who has begun training at a date other than July 1 is eligible to take the Core Examination after 36 months of training and must take the examination at the first administration offered after eligibility is attained. Any request for delay requires application for an exception and approval by the ABR. Please contact the ABR office at 520-790-2900 or ic@theabr.org for specific procedures for requesting an exception. In the 15th month after the completion of diagnostic radiology residency training, a candidate is eligible to take the Certifying Examination.

■ Transferring

Residents are expected to remain in the same program for all four years. If a resident wishes to transfer for any reason, that transfer must be approved by the initial program director as well as by the new program director. A list of the satisfactorily completed rotations must be provided to the new program director, who can accept all or some of them. A resident has the right to know how much additional training will be required in the new program. If a program director states that a resident has not successfully completed one or more rotations, that statement must have the signatures of two other faculty members from the same program, supporting the claim of unsatisfactory completion.

■ Leaves of Absence

Leaves of absence and vacation may be granted to residents at the discretion of the program director in accordance with local rules. Within the required period(s) of graduate medical education, the total such leave and vacation time may not exceed:

<table>
<thead>
<tr>
<th>6 calendar weeks (30 working days)</th>
<th>for residents in a program for one year</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 calendar weeks (60 working days)</td>
<td>for residents in a program for two years</td>
</tr>
<tr>
<td>18 calendar weeks (90 working days)</td>
<td>for residents in a program for three years</td>
</tr>
<tr>
<td>24 calendar weeks (120 working days)</td>
<td>for residents in a program for four years</td>
</tr>
</tbody>
</table>
If a longer leave of absence is granted, the required period of graduate medical education must be extended accordingly.

The ABR leave policy is based on educational requirements and is not affected by other institutional, state, or federal policies.

- **Cardiac Life Support Certification**
  All residents must have basic cardiac life support certification. Advanced cardiac life support certification is encouraged.

- **High Moral and Ethical Standards**
  The American Board of Radiology expects residents and fellows in training, candidates for initial certification, and its diplomats to uphold fundamental moral and ethical principles.

- **Proof of Valid State Licensure or Canadian Equivalent**
  For those in training, a training license is acceptable.

- **Failure to Qualify**
  If a program director fails to indicate in writing that a resident will have the required training and will have achieved adequate professional qualifications before the examination, documentation of the reason(s) must be submitted, along with evidence that the resident has been appropriately apprised of these deficiencies. If a program director states that a resident has not successfully completed one or more rotations, that statement must have the signature of two other faculty members from the same program, supporting the claim of unsatisfactory completion.

- **Special Circumstances**
  In special instances, these requirements may be modified by a majority vote of the entire Board of Trustees, or by the Executive Committee of the Board acting in its stead.

- **Appealing a Decision**
  The applicant must provide the Executive Committee of the Board with a written statement supporting the appeal. The Executive Committee may ask the program director to submit a written response to the applicant's appeal.
Final Decision

Within a reasonable time frame, the Executive Committee must reach a final decision in determining the candidate's admissibility to the examination. The final decision of the Board is based on the applicant’s professional record, training, and accomplishment in the field of diagnostic radiology, as well as on the results of examinations.

Revocation of Certificate

Certificates issued by this Board shall be subject to revocation in the event that:

- the certificate was issued contrary to or in violation of any rule or regulation of the ABR;
- the person to whom the certificate was issued was not eligible to receive it;
- there is substantial misstatement or omission of a material fact to the ABR in an application or in any other information submitted to the ABR;
- any license of the person to practice is not, or ceases to be, a valid and unrestricted license to practice within the meaning set forth in the Rules and Regulations of the ABR (in the event a diplomate's license to practice is suspended, revoked, or restricted in any state in which the diplomate practices, holds a license, or has held a license, the diplomate's board certification may be revoked or suspended);
- there is a violation of rules and regulations relating to the Core, Certifying, or Maintenance of Certification examinations and applications to take the examinations;
- the person is found presenting or distributing, or aiding or assisting another person(s) to present or distribute, a forged document or other written instrument purporting to have been issued by or under the authority of the ABR to evidence that a candidate, diplomate, or any other person(s) is currently or was previously certified by the ABR, when that is not the case, or claims orally or in writing, or assists another person(s) to claim, that a candidate, diplomate, or any other person(s) is currently or was previously certified by the ABR, when that is not the case;
- the person engages in any conduct that materially disrupts any examination or that could reasonably be interpreted as threatening or abusive toward any examinee, proctor, or staff; or
- there is failure to cooperate with the ABR or its Hearing Committee at any point during the investigation of a matter arising under Article X of the ABR Bylaws.
AMERICAN BOARD OF RADIOLOGY (ABR) REQUIREMENTS (Continued)

Before any such certificate shall be revoked, a notice shall be sent by registered or certified mail to the last known address of the holder of such certificate (as it appears on the records of the ABR). The notice will set forth the act, omission, or conduct alleged or complained of and will give the holder of the certificate a reasonable opportunity to answer in writing. The certificate holder shall have at least 30 days in which to reply. The Board of Trustees may at its discretion make such further investigation as it deems necessary and proper.

The Board of Trustees of this Corporation shall have the sole power, jurisdiction, and right to determine and decide whether or not the evidence or information before it is sufficient to constitute one of the grounds for revocation of any certificate issued by the Board. The decision of the Board of Trustees shall be final.

Fees, Dates and Locations

<table>
<thead>
<tr>
<th>Year</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>October 1-2</td>
<td>Diagnostic Radiology Certifying Exam at Chicago Exam Center, Tucson Exam Center</td>
</tr>
<tr>
<td>2015</td>
<td>November 2-3</td>
<td>Diagnostic Radiology Core Exam at Chicago Exam Center, Tucson Exam Center</td>
</tr>
<tr>
<td>2016</td>
<td>March 23</td>
<td>Diagnostic Radiology Certifying Exam at Chicago Exam Center, Tucson Exam Center</td>
</tr>
<tr>
<td>2016</td>
<td>June 6-7</td>
<td>Diagnostic Radiology Core Exam at Chicago Exam Center, Tucson Exam Center</td>
</tr>
</tbody>
</table>

Registration and Fees

Please note that fees are subject to change.

If your residency start date is ON OR AFTER July 1, 2010
AMERICAN BOARD OF RADIOLOGY (ABR) REQUIREMENTS (Continued)

Registration Process

After you enter residency, your program director or coordinator will submit your name and email address to the ABR as a new resident in the training program.

When your information is received, the ABR will send you notification and information for logging on to myABR to begin the registration process.

If you have not already registered:

- Registrations are accepted by the ABR July 1 – November 30 (no fee due at time of registration).
- Registrations are reviewed by the ABR December 1 – December 31.
- Registration approval notification is sent in January of the year following your registration.

AMERICAN BOARD OF RADIOLOGY (ABR) REQUIREMENTS (Continued)

Annual fees are charged for every year you are in the initial certification process, beginning with your first year of residency. If you do not fully pass the Core or Certifying examination on the first administration, additional exam fees will apply.

You will be sent your annual invoice in January of each year, as long as you are in the certification process. The fee amount is subject to adjustment by the ABR each year. Fees must be paid on myABR. Please note that this fee is not refundable and will be higher if you do not register in PGY2.

<table>
<thead>
<tr>
<th>Fee</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Fee</td>
<td>Charged every year candidates are in the initial certification process, beginning with first year of residency.</td>
<td>$635</td>
</tr>
<tr>
<td>Re-exam fee</td>
<td>If you fail an exam, a re-exam fee may be assessed.</td>
<td>$750</td>
</tr>
</tbody>
</table>
Additional Fees

The following table shows additional fees that may apply.

<table>
<thead>
<tr>
<th>Category</th>
<th>Diagnostic Radiology Exams</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Late Registration Fee</td>
<td>Registration form not filed by due date.</td>
<td>$400</td>
</tr>
<tr>
<td>General</td>
<td>Late Payment Fee</td>
<td>Annual fee not paid by due date.</td>
<td>$100</td>
</tr>
<tr>
<td>Core Exam</td>
<td>Cancellation Fee (up to exam date)</td>
<td>Cancelled appointment after registration period has closed.*</td>
<td>$300</td>
</tr>
<tr>
<td>Core Exam</td>
<td>Exam No-Show Fee</td>
<td>Did not appear for exam after registering for testing site and scheduling exam.*</td>
<td>$500</td>
</tr>
<tr>
<td>Certifying Exam</td>
<td>Cancellation Fee (up to exam date)</td>
<td>Cancelled appointment after registration period has closed.*</td>
<td>$300</td>
</tr>
<tr>
<td>Certifying Exam</td>
<td>Exam No-Show Fee</td>
<td>Did not appear for exam after registering for testing site and scheduling exam.*</td>
<td>$500</td>
</tr>
</tbody>
</table>

*Payment is required to continue in the certification process. Any exam fees paid for the cancelled/missed administration will be applied to the next exam attempt; however, a new annual fee may be due in the interim.

Payment may be made by VISA™, MasterCard™, or American Express™ only. If your payment is declined for any reason, there will be a $100 processing fee.
ABR CERTIFICATES

The Certificate

As you progress through your residency and after completion of training, you will take examinations to qualify for your initial certification in diagnostic radiology.

If you choose to subspecialize after you receive your diagnostic radiology certificate, you can also take exams to qualify for subspecialty certificates in the following disciplines:

- Hospice and Palliative Medicine
- Neuroradiology
- Nuclear Radiology
- Pediatric Radiology
- Vascular and Interventional Radiology

Your certificate remains valid contingent as long as you are meeting the requirements of Maintenance of Certification (MOC).

Throughout the period for which you hold certification, you are expected to continue learning and improving your skills in a personalized program (see ABR MOC information). Your progress will be tracked annually on a rolling three-year “look-back”.

Your initial certification status and MOC status will be publicly reported on our website, as well as on the official public reporting website of the American Board of Medical Specialties (ABMS), www.certificationmatters.org. This shows interested parties that you are keeping up with the latest developments in your field.

The Examinations

The Core Examination is an image-rich, computer-based examination, offered after 36 months of residency training; it covers 18 subspecialty and modality categories. The exam must be passed overall and in each category to receive a passing result.

The Certifying Examination, given 15 months after completion of diagnostic residency training, is also computer based and image rich, and it includes five modules. Three modules are clinical practice areas and may be chosen by the examinee to fit his or her interests, experience, and training. The other two modules, Essentials of Diagnostic Radiology and Noninterprettive Skills, will be taken by all examinees.

Content for the Radioisotope Safety Exam (RISE) is integrated into the Core and Certifying Exams. After the Certifying Exam has been passed, the RISE will be scored. The RISE will not affect the pass results for either exam.
ABR CERTIFICATES (Continued)

Time Limitation for Attaining Initial Certification (Board Eligibility)

Candidates have specific time limits for remaining eligible to be initially certified by the ABR and to maintain their status as board eligible. Board eligibility for those currently in training will begin at the completion of diagnostic radiology residency and extend for six years. For international medical graduates (IMGs), seeking initial certification through an alternative IMG pathway, “end of training” is defined as the end of the four-year period outlined in the Sponsoring Department Agreement.

For candidates who have already completed training, the board eligibility period ends according to the following schedule:

<table>
<thead>
<tr>
<th>End of Training</th>
<th>Termination of Board Eligibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004 or before</td>
<td>December 31, 2014</td>
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<tr>
<td>2005</td>
<td>December 31, 2015</td>
</tr>
<tr>
<td>2006-2010</td>
<td>December 31, 2016</td>
</tr>
<tr>
<td>2011 and afterward</td>
<td>Six full calendar years from end of training</td>
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</tbody>
</table>

After the period of board eligibility ends, candidates failing to successfully complete the initial certification process will no longer be considered by the ABR as board eligible, will no longer be permitted to designate themselves as such for communications or credentialing purposes, and will no longer be reported as such to external agencies in verification letters.
ADVICE TO MAXIMIZE YOUR RESIDENCY EXPERIENCE

1. Every resident needs to study consistently from day one. It is suggested that each resident study two hours per day. Concentrate on studying in the area to which you are assigned that month, but study other areas as well. It is especially helpful to read on diseases or techniques you saw that day or to prepare for cases scheduled for the next day. Once a resident gets behind in his or her studies, it can be very difficult to catch up. Do yourselves a favor and study consistently—this is a habit you will need for the rest of your career.

2. This residency works best when teamwork is stressed. If your assigned duties are caught up, pick up studies in other areas or modalities. Be quick to help out your fellow resident. Be professional and courteous to other members of the radiology team including transcriptionists, technologists, nurses, and others.

3. Be on time with no unexcused absences.

4. Attend and participate in conferences.

5. Do make balance a priority. Everyone needs sufficient rest, relaxation, and fun. Keep your physical health, mental health, spiritual health, and relational health in top shape. Be especially careful not to moonlight so much that your studies or your well-being is compromised. You are expected to work hard and study hard, but keep yourself in good physical and emotional condition. Consult the INTEGRIS Graduate Medical Education Handbook for information regarding services available to you, and or talk to your program director or another staff member.

6. To become a proficient radiologist one must successfully interpret and/or perform many imaging or image guided exams. Remember, the average radiology resident will interpret 9000 exams in 4 years. You benefit most from seeing cases. The more exams you see and interpret, the more experience and interpretive skills you will gain!