Basic Standards for
Residency Training in
Diagnostic Radiology

American Osteopathic Association
and
American Osteopathic College of Radiology

Rev. BOT 02/2003
Rev. BOT 02/2004
Rev. BOT 07/2004
Rev. BOT 02/2006
Rev. BOT 07/2007
Rev. BOT 07/2008
Rev. BOT 03/2009, Effective 07/2009
Rev. BOT 07/2011, Effective 07/2012
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BASIC STANDARDS FOR RESIDENCY TRAINING IN DIAGNOSTIC RADIOLOGY

ARTICLE I. INTRODUCTION
These are the Basic Standards for Residency Training in Diagnostic Radiology as established by the American Osteopathic College of Radiology (AOCR) and approved by the American Osteopathic Association (AOA). These standards are designed to provide the osteopathic resident with advanced and concentrated training in diagnostic radiology and to prepare the resident for examination for certification in diagnostic radiology by the American Osteopathic Board of Radiology (AOBR).

ARTICLE II. MISSION
The mission of the osteopathic diagnostic radiology training program is to provide residents with comprehensive structured cognitive and clinical education that will enable them to become competent, proficient and professional osteopathic diagnostic radiologists.

ARTICLE III. EDUCATIONAL PROGRAM GOALS
The goals of a diagnostic radiology residency training program are to achieve proficiency of the following core competencies:

A. Osteopathic Philosophy and Osteopathic Manipulative
   3.1 The integration of osteopathic principles into the daily practice of diagnostic and interventional radiology.

B. Medical Knowledge
   3.1 Demonstrate competency in the understanding and application of clinical medicine to patient care.
   3.2 Know and apply the foundations of clinical medicine to diagnostic and interventional radiology.
   3.3 Demonstrate a desire to continually improve his/her medical knowledge and that of others.

C. Patient Care
   3.1 Demonstrate the ability to develop a management plan based on radiologic findings and other medical information.
   3.2 Demonstrate proper technique in planning and performing imaging and image-guided procedures.
   3.3 Demonstrate an awareness of psychosocial issues and incorporate health promotion into clinical practice.

D. Interpersonal and Communication Skills
   3.1 Demonstrate effective doctor-patient relationships.
   3.2 Exhibit effective listening, written and oral communication skills in professional interactions with patients, families, and other healthcare professionals.
   3.3 Understanding prioritization of reporting pertinent results to clinical staff and patients.

E. Professionalism
3.1 Demonstrate respect for patients and families and advocate for the primacy of patient’s welfare and autonomy.

3.2 Adhere to ethical principles in the practice of medicine.

F. Practice-Based Learning and Improvement

3.1 Treat patients based upon the most current medical knowledge on diagnostic and therapeutic effectiveness.

3.2 Perform self-evaluations of clinical practice patterns and practice-based improvement activities using a systematic methodology.

3.3 Understand research methods, medical informatics, and the application of technology as applied to radiology.

G. Systems-Based Practice

3.1 Understand national and local health care delivery systems and how they affect patient care and professional practice.

3.2 Advocate for quality health care on behalf of patients and assist them in their interactions with the complexities of the medical system.

ARTICLE IV. INSTITUTIONAL REQUIREMENTS

A. Base Institution

4.1 Must provide Program Director with authority to organize and fulfill administrative and teaching responsibilities to achieve the educational goals.

4.2 Must provide Program Director at least one-half day a week or equivalent protected time to fulfill the responsibilities inherent in meeting the educational goals of the program.

B. Department of Radiology Requirements

4.1 Record systems and teaching file
   a. Must have a system of records for all procedures performed.
   b. Must have a pathologic cross-indexed file that uses standard nomenclature.
   c. Must have current versions of The American College of Radiology (ACR) teaching file or its equivalent available to residents.

4.2 Must provide office space for residents.

4.3 Library resources relevant to radiology and general medicine must be accessible from the radiology department 24 hours a day.

C. Consortium Program

Institutions seeking participation in a diagnostic radiology residency consortium program must meet the following criteria:

4.1 In addition to meeting the consortium requirements in the AOA Basic Documents, the following are required:
   a. All participating institutions must be within a driving distance that allows resident attendance at rounds and conferences (physical or virtual), unless there is a comparable educational experience provided at each institution.
b. The Program Director must spend time at each institution to administer the program.
c. Provide all residents with equal access to all the Program’s educational experiences.

**ARTICLE V. PROGRAM REQUIREMENTS AND CONTENT**

**A. General Program Requirements**

5.1 The diagnostic radiology program shall adhere to a four-year curriculum that meets or exceeds the requirements listed within this document and prepares the resident for specialty certification in diagnostic radiology through provision for a combination of didactic and clinical training opportunities. The nine subspecialty areas of diagnostic radiology are neuroradiology, musculoskeletal radiology, vascular and interventional radiology, cardiothoracic radiology, breast radiology, abdominal radiology (both GI and GU tracts), pediatric radiology, ultrasonography (including obstetrical and vascular ultrasound), and nuclear radiology (including PET and nuclear cardiology).

5.2 This environment must include exposure to both the clinical applications of diagnostic radiology as well as the skills necessary to develop the proper attitudes towards patients, professional staff, and administration of the institution.

5.3 The program will have 100% of graduates participate in the AOBR examination process by completion of residency training.

   a. During the most recent 5-year period, at least 50% of the program’s graduates shall pass without condition the written and oral examination on the first attempt.

**B. Didactic**

5.1 Each subspecialty area of training must have specified reading assignments.

5.2 Residents must be excused from clinical duties to attend planned educational experiences.

5.3 The didactic schedule must include:

   a. A minimum of five hours per week of faculty or guest lecturer presented or supervised formal educational activities. This may include but is not limited to lectures, journal club, multi-specialty conference, tumor board, film conference, or educational media presentation.

      1. In the event that the didactic program is supplemented through involvement in organized radiology didactic educational activities outside of the training institution, a minimum of two hours of the five hours per week of such educational activities must be on site by the faculty.

5.4 Curriculum must also include:

   a. All clinical subspecialty areas and imaging modalities of radiology.

   b. Advanced training in the basic sciences, which shall include didactic learning and clinical experiences (i.e., anatomy, physiology, drug interactions, allergic reactions, etc.).

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

      1. diagnostic radiologic physics, instrumentation, and radiation biology;

      2. patient and medical personnel safety (i.e., radiation protection);
3. mathematics pertaining to the use and measurement of radioactivity
4. the chemistry of by-product material for medical use;
5. biologic and pharmacologic actions of materials administered in diagnostic and therapeutic procedures; and,
6. topics in safe handling, administration, and quality control of radionuclide doses used in clinical medicine.
7. the didactic instruction (or 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; 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.

d. Monthly journal club.

e. Attendance at the American Institute for Radiologic Pathology (AIRP) course.

f. Tumor boards and opportunity to attend autopsies.

C. Clinical Components

5.1 The residency training program in Diagnostic Radiology shall be 48 months in duration (for programs using 4 week rotations, the relative exposure to the subspecialties will be preserved although the total number of rotations will increase to 52) and shall include the following areas of training:

a. General diagnostic radiology-11 months. Training must include relatively equal exposure in chest, gastrointestinal, genitourinary and musculoskeletal.

b. Mammography- 3 months
c. Nuclear radiology- 4 months
d. Pediatric radiology- 3 months
e. Cardiovascular/ interventional- 3 months
f. Neuroradiology- 4 months
g. Diagnostic ultrasound- 3 months
h. Computed tomography- 3 months
i. Magnetic resonance imaging- 3 months
j. Emergency radiology- 2 months
k. Cardiac radiology- 1 month
l. American Institute for Radiologic Pathology (AIRP) course - 1 month
m. Elective- 7 months as approved by the program director
5.2 The volume and variety of patients must ensure that residents experience the full range of radiologic examinations, procedures and interpretation across the nine subspecialty areas of clinical diagnostic radiology.

a. The program’s clinical case volume must be no fewer than 7000 radiologic exams per year per resident.

b. The volume and variety of cases and length of rotations in each subspecialty area must ensure a training experience that develops resident competency in that subspecialty.

c. If subspecialty volume or variety requires supplementation, plans must be developed and implemented to achieve the educational goals.

5.3 Clinical training must:

a. Encompass instruction and experience in all nine subspecialty areas of imaging and interventional procedures of diagnostic radiology.

b. Include both adult and pediatric age groups.

c. Expand on the basic sciences and provide didactic instruction alongside clinical training and experiences in normal anatomy, physiology, and pathology of the major subspecialty areas (e.g., cardiac, including the coronary arteries).

d. Provide a minimum of 700 hours (approximately four months) of documented training and experience in clinical nuclear medicine, which may include the required 80 hours of classroom and laboratory instruction (see V.B.5.4.c).

1. Each resident must participate with preceptors in at least three documented therapies involving oral administration of I-131 in quantities less than or equal to 33 millicuries (mCi) and at least three therapies in quantities greater than 33 mCi. Documentation of the resident’s participation must include the date, diagnosis, and dose of each I-131 therapy.

e. Each resident must have a minimum of 12 weeks of clinical rotations in breast imaging. Each resident must have documentation of the interpretation/multi-reading of at least 240 mammograms within a six-month period meeting MQSA requirements.

5.4 Opportunities shall be provided for the resident to follow patients to surgery and to correlate with pathology to develop an understanding of the gross pathology of surgical specimens.

5.5 Continuity of care during the residency shall be ensured by proper communication between night and day shift residents and attending physicians.

5.6 Morning reviews of important, interesting and critical cases shall occur daily.

5.7 Residents must maintain a record (logs) of all supervised examinations or interventional procedures in which they are involved. Examples of supervised interventional procedures include: image-guided biopsies, drainage procedures, percutaneous access techniques, non-coronary angioplasty, embolization and infusion techniques, etc. The resident's documentation will record the performance status (first assist vs. second assist), interpretation and complications of these invasive/interventional and vascular procedures.

5.8 Each resident must have current certification in basic life support, and/or certification in advanced cardiac life support.
D. Resident Research

5.1 During their training, each resident must participate in an investigative project under faculty supervision. This may take the form of laboratory research, clinical research, or the retrospective analysis of data from patients.

5.2 The results of such projects shall be suitable for publication and presentation at local, regional, or national scientific meetings and may be utilized to meet the requirement for exhibition at an AOCR Annual Convention.

ARTICLE VI. FACULTY AND ADMINISTRATION

A. Program Director

6.1 The program director of the diagnostic radiology residency training program must possess the following qualifications:

a. Membership in the American Osteopathic College of Radiology.

b. Involvement in research and academic pursuits.

6.2 The program director shall have the following responsibilities:

a. Preparation of a Radiology Residency Program Manual outlining the curriculum and educational goals and objectives of the program with respect to knowledge, skills, and other attributes of residents at each level of training and for each major rotation or other program assignment.
   1. Update annually the Manual and distribute to each resident and faculty.
   2. Obtain written confirmation of receipt of the Manual and annual updates from each resident.
   3. The Manual shall be readily available for review.

b. Must establish an attendance policy for all scheduled conferences and maintain a record of attendance for all lectures, journal club, etc.

c. Establish a process to evaluate the residents, faculty, and the diagnostic radiology residency program and submit the required reports to the responsible parties as outlined in the AOA Basic Documents for Postdoctoral Training.

d. Develop an explicit written description of supervisory lines of responsibility for the care of patients to include the performance of radiologic procedures.
   1. This policy will also describe the process which documents direct supervision to indirect supervision.
   2. Such guidelines must be communicated to all members of the program faculty.
   3. Residents must be provided with prompt, reliable systems for communication and interaction with supervisory physicians.
   4. A faculty radiologist must be available at all times in person or electronically for consultation with the resident.

e. Notifies the AOCR of all residents enrolled in the training program on an annual basis.

f. Ensure that residents complete required in service examinations and submit results to the director of medical education and the AOCR.
g. Ensure that the AOA, OPTI and AOCR are informed immediately of major changes in the program, including but not limited to, changes in program directors, institutional ownership and affiliation, radiology department staff or other major administrative changes.

h. Attend program directors meetings (on site or conference call) as required by the AOCR to facilitate Program Director and Faculty development activities.

B. Faculty

6.1 The sponsoring institution, in conjunction with the program director shall appoint a minimum of five (5) full time equivalent faculty members who shall participate in the diagnostic radiology residency program. There must be a minimum of one (1) faculty member for every two (2) resident positions to provide adequate supervision of residents. Part time faculty will be counted based upon the percentage of time of active participation in the teaching program. Locum tenens radiologist cannot qualify as faculty members. Each faculty member must:

a. Maintain current certification by the American Osteopathic Board of Radiology (AOBR) or the American Board of Radiology (ABR).

b. Possess current medical licensure and staff appointment.

c. Be provided with non-clinical time to devote to the educational program to fulfill their supervisory and teaching responsibilities and to demonstrate a strong interest and commitment in the education of residents.

d. Devote time teaching and supervising residents to assure that the curriculum is implemented.

1. Provide a minimum of one formal educational activity per month, averaged over a year. A formal educational activity may include but is not limited to conducting a journal club, tumor boards, imaging case conference, multi-specialty conference, educational media presentation or providing a formal didactic lecture.

2. Participate in viewbox or reading station teaching.

3. Provide training in research techniques and provide guidance and technical support to residents when engaged in research activity.

e. Be organized and have regular documented meetings to review the goals and objectives as well as program effectiveness in achieving them. At least one resident representative will participate in these reviews.

f. Provide timely evaluations and effective feedback to residents on their performance.

g. Supervise the resident in their daily duties in accordance with the program’s supervision policy.

1. All radiologic examinations must be reviewed and the resident’s dictation shall be checked and approved by an attending radiologist.

h. Be on call with the resident and must assume responsibility for all actions of the resident(s) under his/her supervision.

1. Specific responsibilities shall be delegated to the resident at the discretion of the institution and/or department resident supervisory plan.
6.2 Other Instructors

a. Other physician specialists and non-physicians may participate in resident instruction, as determined by the program director, to enhance the educational experience of the residents in classroom/didactic settings, resident rotations on other clinical services, or in multidisciplinary conferences.

b. Non-radiologist physician instructors must have current AOA or ABMS board certification in their specialty, possess current medical licensure and medical staff appointment.

c. Non-physician instructors must have training and experience based qualifications in their field and hold institutional appointments when applicable to their specialty.

C. Other Personnel

6.1 The institution shall have designated administrative and other non-physician staff committed to the program to support teaching in the Diagnostic Radiology residency program.

ARTICLE VII. RESIDENT REQUIREMENTS

A. An applicant for diagnostic radiology residency training must:

7.1 Have successfully-completed an AOA-approved diagnostic radiology preliminary year.

7.2 Be and remain a member of the AOCR during preliminary year and residency.

B. Resident Responsibilities

7.1 Must be a full-time resident of the training institution and must not be a trainee in any other residency training program at the same time.

7.2 The resident is legally, morally, and ethically responsible to pursue exclusively the agreed upon program of training.

7.3 May not act as an unsupervised consultant in radiology and must be designated in such a manner to retain his/her identity as a resident (e.g., name tag, signature block, etc.).

7.4 Shall maintain formal records of all activities related to the educational program.
   a. These records shall be submitted monthly to the program director and DME for review and verification.

7.5 Residents are required to contribute to the teaching file in format and frequency as defined by the Program Director.

7.6 Be responsible to participate in education activities and opportunities that address ethical behavior as formulated by the program, especially the ethical dimensions of the practice of medicine.

7.7 Submit an annual report to the AOCR and the DME. An annual report must be evaluated as a twelve (12)-month period of residency training that must be under contract with a single institution.

7.8 Must present one exhibit at an Annual Convention of the AOCR no later than the Annual Convention of the resident’s third year of training.
   a. An abstract of the exhibit shall be submitted by established AOCR deadlines in the resident's second year of training.
b. The abstract must be submitted according to the AOCR’s Guidelines for Resident Scientific Exhibits.

7.9 Participate in diagnostic radiology related and other conferences including journal club.

7.10 Must complete all AOCR requirements as well as any additional requirements of the individual residency training program or the OPTI each year prior to AOCR approval for that year of training.

7.11 Must participate in the required in service examination as first, second, third year residents and, at the discretion of program director, the fourth year residents.

C. Duty Hours
7.1 In addition to AOA duty hour policy:
   a. When residents perform teleradiology from home, time spent performing teleradiology must be counted toward the weekly duty hour limit.
   b. At home teleradiology assignment or in-house call shall not be more often than every third night averaged over any consecutive four-week period.
   c. Resident independent night call shall not commence until after a minimum of twelve months of training at the same institution. Up to three months of radiology training during the OGME-1 radiology preliminary year may count towards the 12 month requirement for night call.
   d. A resident who works less than a 12 hour shift in house must have a minimum of 2.5 hours off before home call begins.
   e. A home call period of less than 12 hours will have a minimum of one half the total number of call hours applied towards the duty hours. If the number of hours spent interpreting teleradiology cases is greater than one half the home call period, the actual time will apply towards the duty hours. The resident may work a normal next day shift and then follow existing AOA time off policies (minimum of 10-12 hours off).
   f. Any home call period greater than or equal to 12 hours follows regular AOA time off policies.

ARTICLE VIII. EVALUATION
The program must demonstrate an effective plan for continuous improvement of resident performance and competency utilizing regular assessments of the residents, faculty and the program.

A. Resident Evaluations
8.1 Annual Evaluation
   The resident may progress on to the next year of training only after successful performance in all rotations and in the core competencies as documented in the annual report.

8.2 Final Evaluation
   A final evaluation will be completed per AOA Basic Documents for Postdoctoral Training requirements and must attest to the resident’s professional abilities and competency at graduation to independently practice diagnostic radiology.
   a. A copy must be sent to the AOCR office and the program’s OPTI.

B. Faculty Evaluation
8.1 The program director and program faculty shall be peer evaluated at least annually for their teaching, scholarly activities, and development of the program.

8.2 At the end of each rotation the resident shall evaluate in writing their training experience and faculty in a confidential manner.

C. **Program Evaluation**

8.1 There will be a program evaluation committee consisting of the program director, one faculty member and the chief resident to prepare an evaluation of the program at least annually and perform a report as a method for revision and updating of the program.

8.2 Program assessments and measured outcomes for continuous quality improvement shall be done on an ongoing basis, with an annual summative evaluation of the quality of the program.

   a. This information shall be used for program improvement activities.

   b. Documentation of this performance improvement shall be maintained on file and available for program reviews.

8.3 Multiple measures shall be used for program review and evaluation to obtain a comprehensive view of program quality.

8.4 Program directors shall use the results of the required in service examination to improve their individual programs.
Appendix

Advanced Standing Guidelines

I. Advanced Standing for OGME-1 preliminary radiology year

Advanced standing in lieu of preliminary year in radiology may be awarded for any AOA approved first year of training.

Documentation required:

1. A letter from the institution where the first year of GME training occurred stating the specific rotations, their length of time, and also indicate if the individual has/will successfully complete the year of GME training.

II. Advanced Standing for OGME-2-4

Advanced standing for OGME 2-4 in radiology may be awarded for previous Diagnostic Radiology or Nuclear Medicine residency training completed in an ACGME program.

Documentation required:

1. A letter from previous program director(s) and director(s) of medical education confirming that the candidate has/will achieve a specific level of training. The letter must state that the resident will not be breaching a contract.

2. An endorsement from the program director in the program in which the resident desires to transfer recommending advanced standing for a specific block of time.

Requests for advanced standing, and time allotted for such requests will be considered on a case-by-case basis by the AOCR Committee on Evaluation and Educational Standards. No advanced standing credit will be promised, guaranteed, or granted by any person or entity other than the AOCR Committee on Evaluation and Educational Standards. Credit for advanced standing does not supersede any other requirement in the Basic Standards.

A resident is advised to transfer only at the beginning of a contract year. A resident may transfer at any time; however, no credit will be issued for a partial year of training. Advanced standing credit is nontransferable if a resident transfers to another residency training institution.