American Osteopathic
Board of Radiology

Pamela A. Smith
Executive Director

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January 25, 2006

U.S. Nuclear Regulatory Commission
ATTN: Mr. Thomas H. Essig, Chief
Materials Safety and Inspection Branch (MS T8F3)
11545 Rockville Pike
Rockville, MD 20852

Dear Mr. Essig

I am writing in response to your e-mail of December 8, 2005, requesting further input from the American Osteopathic Board of Radiology (AOBR) regarding its application seeking recognition of its certification processes by the U.S. Nuclear Regulatory Commission (NRC). The AOBR is seeking recognition in the following sections in the specialties as indicated:

Subpart D--Unsealed Byproduct Material--Written Directive Not Required

§ 35.190 Training for uptake, dilution, and excretion studies. (Diagnostic Radiology and Radiology)

§ 35.290 Training for imaging and localization studies. (Diagnostic Radiology and Radiology)

Subpart E--Unsealed Byproduct Material--Written Directive Required

§ 35.390 Training for use of unsealed byproduct material for which a written directive is required. (Diagnostic Radiology, Radiology & Radiation Oncology)

§ 35.392 Training for the oral administration of sodium iodide I-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries). (Diagnostic Radiology, Radiology & Radiation Oncology)

§ 35.394 Training for the oral administration of sodium iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries). (Diagnostic Radiology, Radiology & Radiation Oncology)

Subpart F--Manual Brachytherapy

§ 35.490 Training for use of manual brachytherapy sources. (Radiation Oncology)

Subpart G--Sealed Sources for Diagnosis

§ 35.590 Training for use of sealed sources for diagnosis. (Diagnostic Radiology, Radiology and Radiation Oncology)

Subpart H--Photon Remitting Remote Afterloader Units, Teletherapy Units, and Gamma Stereotactic Radiosurgery Units

§ 35.690 Training for use of remote afterloader units, teletherapy units, and gamma stereotactic radiosurgery units. (Radiation Oncology)

We have addressed each issue of your e-mail of December 8, 2005, below:

No. 1

The AOBR website states the training and experience requirements for 10 CFR 35.190 and 10 CFR 35.290 including required topics.

No. 2

The training and experience required for 10 CFR 35.390 has been revised to remove reference to a minimum number of hours of classroom and laboratory training.

No. 3

The AOBR website states the training and experience requirements for 10 CFR 35.390 including required topics.

No. 4

The Basic Standards for Residency Training in Diagnostic Radiology and the Basic Standards for Residency Training in Radiation Oncology, approved by the American Osteopathic College of Radiology and the American Osteopathic Association, (copy attached) requires training programs to meet the current Nuclear Regulatory Commission licensure requirements.

The NRC requires 700 hours which averages 43.75 hours per week for 16 weeks. Duty hours are monitored by the American Osteopathic Association (AOA). Although a required minimum number of hours per week is not specifically addressed, the standards state that a resident shall not be assigned to work physically on duty in excess of eighty hours (80) per week averaged over a four (4) week period, inclusive of in-house night call. In addition, residents study outside the duty hours described above. Residents work on an average of 60 to 80 hours per week and will more than fulfill 700 hours of training in Nuclear Radiology in a 4 month period.

No. 5

Candidates seeking certification from the American Osteopathic Board of Radiology for the following medical uses must meet the specific training and experience requirements as stated below:

10 CFR 35.392 Training for oral administration of sodium iodide I-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries) (10 CFR 35.392 (c)(1) and (c)(2)).

1. Has successfully completed eighty (80) hours of classroom and laboratory training, applicable to the medical use of sodium iodide I-131 for procedures requiring a written directive. The training must include:
   a. Radiation physics and instrumentation
   b. Radiation protection
   c. Mathematics pertaining to the use and measurement of radioactivity
   d. Chemistry of byproduct material for medical use
   e. Radiation biology; and
2. Work experience, under the supervision of an authorized user, who meets the requirements in 35.390(a), 35.390(b), 35.392, 35.394, or before October 24, 2005, 35.930, 35.932, or 35.934, or equivalent Agreement State requirements. A supervising authorized user, who meets the requirements in 35.390(b) must also have experience in administering dosages as specified in 35.390(b)(1)(ii)(G)(1) or (2). The work experience must involve –
   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 byproduct material

e. Using procedures to contain spilled byproduct material safely and using proper decontamination procedures
f. Administering dosages to patients or human research subjects, that includes at least three (3) cases involving the oral administration of less than or equal to 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131.

10 CFR 35.394 Training for oral administration of sodium iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries) (10 CFR 35.394 (c)(1) and (c)(2)).

1. Has successfully completed eighty (80) hours of classroom and laboratory training, applicable to the medical use of sodium iodide I-131 for procedures requiring a written directive. The training must include:
   a. Radiation physics and instrumentation
   b. Radiation protection
   c. Mathematics pertaining to the use and measurement of radioactivity
   d. Chemistry of byproduct material for medical use
   e. Radiation biology; and
2. Work experience, under the supervision of an authorized user, who meets the requirements in 35.390(a), 35.390(b), 35.394, or before October 24, 2005, 35.930, or 35.934, or equivalent Agreement State requirements. A supervising authorized user, 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). The work experience must involve –
   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 byproduct material
   e. Using procedures to contain spilled byproduct material safely and using proper decontamination procedures
   f. Administering dosages to patients or human research subjects, that includes at least three (3) cases involving the oral administration of greater than 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131.

No. 6

The AOBR website states the training and experience requirements for 10 CFR 35.590 including required topics.

No. 7

The AOBR has revised the training and experience in response to 10 CFR 35.490 and 10 CFR 35.690 to remove a breakdown of the minimum number of hours candidates must spend in a structured educational program, work experience and clinical experience. The website includes the corrected training and experience as stated below:

35.490 Training for the use of manual brachytherapy sources (10 CFR 35.490 (b)(1) and (b)(2)).

1. Complete a structured educational program in basic radionuclide handling techniques applicable to the use of manual brachytherapy sources.
2. Complete 3 years of supervised clinical experience in radiation oncology, under an authorized user who meets the requirement in 35.490, or before October 24, 2005, 35.940, or equivalent Agreement State requirements, as part of a formal training program approved by Program and Trainee Review Committee of the American Osteopathic Association.

35.690 Training for use of remote afterloader units (10 CFR 35.690 (b)(1) and (b)(2)).

1. Complete a structured educational program in basic radionuclide techniques applicable to the use of a sealed source in a therapeutic medical unit.
2. Complete 3 years of supervised clinical experience in radiation therapy, under an authorized user who meets the requirement in 35.690, or before October 24, 2005, 35.960, or equivalent Agreement State requirements, as part of a formal training program approved by Program and Trainee Review Committee of the American Osteopathic Association.

No. 8

In accordance with 10 CFR 35.190(a)(2) and 35.290(a)(2), and 35.390(a)(2) the Diagnostic Radiology certification examination will assess knowledge and competence in the following examination areas:

- Radiological Physics (radiation production and interaction with matter)
- Radiation Biology (health effects)
- Radiation Safety and Protection
- Nuclear Medicine
- Radionuclide handling
- Quality control.
- Clinical use of unsealed byproduct material for which a written directive is required

No. 9

In accordance with 10 CFR 35.490(a)(2) and 35.690(a)(2) the Radiation Oncology certification examination will assess knowledge and competence in the following examination areas:

- Radiological Physics (radiation production and interaction with matter)
- Radiation Biology (health effects)
- Radiation Safety and Protection
- Nuclear Medicine
- Radionuclide Handling
- Quality Assurance
- Treatment Planning
- Clinical use of the following:
    - Manual Brachytherapy
    - Stereotactic Radiosurgery
    - Remote Afterloaders
    - External Beam Therapy

No. 10

The American Osteopathic Board of Radiology will not require a written attestation as a requirement for examination or certification.

No. 11

In the osteopathic profession, the American Osteopathic Board of Radiology reviews and approves the eligibility of candidates whose training has been reviewed and approved by the American Osteopathic College of Radiology (AOCR). In 1982, the AOCR training standards for diagnostic radiology and radiology were revised to require 6 months training in nuclear medicine to comply with licensing requirements of the NRC. AOCR Basic Standards for Residency

Training in Diagnostic Radiology and the Basic Standards for Residency Training in Radiology (last certification in Radiology was approved in 1990) have met or exceeded NRC requirements since that date. The NRC approved the application from the AOBR to be a recognized board in 1982. Therefore, the AOBR requests an effective date of 1982 for recognition of its certification examinations in Radiology and Diagnostic Radiology.

In 1993, the Basic Standards for Residency Training in Radiation Oncology were revised to include the requirement that the training must comply with any current Nuclear Regulatory Commission requirements for training. Therefore, the AOBR requests an effective date of 1993 for recognition of its certification examination in Radiation Oncology.

The nuclear medicine requirements for candidates approved for examination by the American Osteopathic Board of Radiology appears on our website at www.aocr.org/certification/diagnostic radiology.html and www.aocr.org/certification/radiation oncology.html. A copy of the requirements as they appear on the website is also enclosed with this letter.

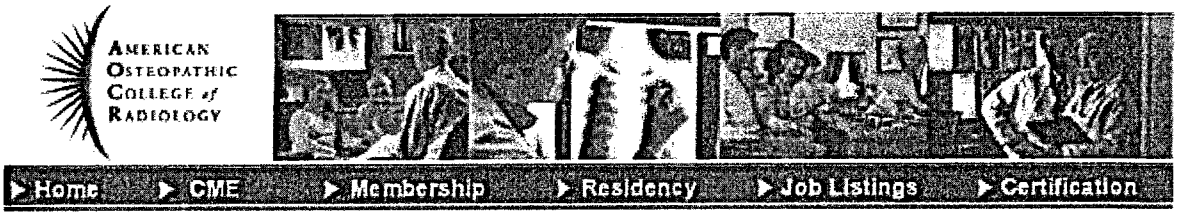
Thank you for the opportunity to submit this additional information in support of AOBR's application for recognition by the Nuclear Regulatory Commission. Please do not hesitate to contact me if additional information is required.

Sincerely

Pamela A. Smith
Executive Director

ENC

cc Kenneth P. Tarr, DO, Chair
Mark S. Finkelstein, DO, Vice Chair
Roy M. Teng, DO, Secretary-Treasurer
Paul J. Chase, DO, Nuclear Medicine Section Chair
Thomas M. Anderson, DO, Radiation Oncology Section Chair



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DIAGNOSTIC RADIOLOGY

Definition

DIAGNOSTIC RADIOLOGY is that branch of radiology which deals with the utilization of all modalities of radiant energy in medical diagnosis and therapeutic procedures utilizing radiologic guidance. This includes, but is not restricted to, imaging techniques and methodologies utilizing radiations emitted by x-ray tubes, radionuclides, ultrasonographic devices, and radiofrequency electromagnetic radiation emitted by atoms.

Qualifications of Applicants for Examination

- The applicant must be a graduate of an AOA accredited college of osteopathic medicine. All training must be completed in the United States.
- The applicant must be licensed to practice in the state where his/her practice is conducted.
- The applicant must be able to show evidence of conformity to the standards set forth in the Code of Ethics of the American Osteopathic Association.
- The applicant is required to be a member in good standing of the American Osteopathic Association or the Canadian Osteopathic Association for the two (2) years immediately prior to the date of certification.
- The applicant must have satisfactorily completed a one-year AOA-approved internship.
- The applicant beginning their residency training on July 1, 1989, and thereafter is required to have four (4) or more years of AOA-approved training in diagnostic radiology.
- The applicant beginning their residency training prior to July 1, 1989, is required to have three (3) or more years of AOA-approved training in radiology or diagnostic radiology.
- The applicant must have AOCR approval of all completed training.
- The resident is expected to remain in one program for all years of training. If a transfer to another program is necessary or desired, that transfer must be prospectively approved by the AOCR and notification sent to the AOBR.

- The applicant must complete the requirements of training and experience as stated in the Basic Standards for Residency Training in Diagnostic Radiology which includes 700 hours of nuclear medicine training as defined here.

Eligibility for Examination

- Candidates will be considered for the Physics portion of the written examinations only when they are in their second year of training. Successful candidates will be eligible to sit for the Diagnostic Imaging written examination during their third year of training.
- If the candidate has not already passed the Physics examination, he/she may take both the written Physics and Diagnostic Imaging examinations together during their third or fourth year of training or at any examination following training.
- A second opportunity to pass the written Physics examination is offered to candidates who fail the Physics examination in the fall. The exam is scheduled prior to the oral examinations and is offered to any candidate who failed the Physics examination at the previous sitting.
- Candidates who have passed the written examinations are eligible to take the oral examinations during their fourth year of training or at any examination following training.

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Candidates seeking certification from the American Osteopathic Board of Radiology must have completed the training and experience requirements for NRC licensure as stated below:

Training for update, dilution and excretion studies (10 CFR 35.190 (a)(1), (c)(1), (c)(1)(i) and (c)(1)(ii)).

1. Complete 60 hours of training and experience including a minimum of eight (8) hours of classroom and laboratory training, in basic radionuclide handling techniques and radiation safety applicable to the medical use of unsealed byproduct material for uptake, dilution, and excretion studies that includes the topics listed below:
   a. Classroom and laboratory training in the following areas:
      i. Radiation physics and instrumentation
      ii. Radiation protection
      iii. Mathematics pertaining to the use and measurement of radioactivity
      iv. Chemistry of byproduct material for medical use; and
      v. Radiation biology
   b. Work experience, under the supervision of an authorized user who meets the requirements in 35.190, 35,290, 35.390, or before October 24, 2005 – 35.910, 35.920, or 35.930 or equivalent Agreement State requirements, involving –
      i. Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys
      ii. Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters
      iii. Calculating, measuring, and safely preparing patient or human research subject dosages
      iv. Using administrative controls to prevent a medical event involving the use of unsealed byproduct material
      v. Using procedures to contain spilled byproduct material safely and using proper decontamination procedures; and
      vi. Administering dosages of radioactive drugs to patients or human research subjects

Training for imaging and localization studies (10 CFR 35.290 (a)(1), (c)(1)(i) and (c)(1)(ii)).

1. Complete 700 hours of training and experience, including a minimum of 80 hours of classroom and laboratory training, in basic radionuclide handling techniques applicable to the medical use of unsealed byproduct material for imaging and localization studies. The training and experience must include, at a minimum:
   a. Classroom and laboratory training in the following areas:
      i. Radiation physics and instrumentation
      ii. Radiation protection
      iii. Mathematics pertaining to the use and measurement of radioactivity
      iv. Chemistry of byproduct material for medical use
      v. Radiation biology

b. Work experience, under the supervision of an authorized user, who meets the requirements in 35.290, or 35.290(c)(1)(ii)(G) and 35.390, or before October 24, 2005, 35.920, or equivalent Agreement State requirements, involving –
   i. Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys
   ii. Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters
   iii. Calculating, measuring and safely preparing patient or human research subject dosages
   iv. Using administrative controls to prevent a medical event involving the use of unsealed byproduct material
   v. Using procedures to safely contain spilled radioactive material and using proper decontamination procedures
   vi. Administering dosages of radioactive drugs to patients or human research subjects; and
   vii. 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

Training for use of unsealed byproduct material for which a written directive is required (10 CFR 35.390 (b)(1)(i) and (b)(1)(ii)).

1. Complete 700 hours of training and experience in basic radionuclide handling techniques applicable to the medical use of unsealed byproduct material requiring a written directive. The training and experience must include
   a. Classroom and laboratory training in the following areas:
      i. Radiation physics and instrumentation
      ii. Radiation protection
      iii. Mathematics pertaining to the use and measurement of radioactivity
      iv. Chemistry of byproduct material for medical use
      v. Radiation biology
   b. Work experience, under the supervision of an authorized user, who meets the requirements in 35.390, or before October 24, 2005, 35.930, or equivalent Agreement State requirements. A supervising authorized user, who meets the requirements in 35.390(b) or, before October 24, 2005, 35.930(b), must also have experience in administering dosages in the same dosage category or categories (i.e., 35.390(b)(1)(ii)(G) as the individual requesting authorized user status. The work experience must involve –
      i. Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys
      ii. Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters
      iii. Calculating, measuring and safely preparing patient or human research subject dosages

iv. Using administrative controls to prevent a medical event involving the use of unsealed byproduct material

v. Using procedures to safely contain spilled byproduct material safely and using proper decontamination procedures

vi. Administering dosages of radioactive drugs to patients or human research subjects involving a minimum of three cases in each of the following categories for which the individual is requesting authorized user status –

a) Oral administration of less than or equal to 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131 for which a written directive is required

b) Oral administration of greater than 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131

c) Parenteral administration of any beta emitter or a photon-emitting radionuclide with a photon energy less than 150 keV for which a written directive is required

d) Parenteral administration of any other radionuclide, for which a written directive is required.

Training for oral administration of sodium iodide I-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries) (10 CFR 35.392 (c)(1) and (c)(2)).

1. Has successfully completed eighty (80) hours of classroom and laboratory training, applicable to the medical use of sodium iodide I-131 for procedures requiring a written directive. The training must include:
   a. Radiation physics and instrumentation
   b. Radiation protection
   c. Mathematics pertaining to the use and measurement of radioactivity
   d. Chemistry of byproduct material for medical use
   e. Radiation biology; and
2. Work experience, under the supervision of an authorized user, who meets the requirements in 35.390(a), 35.390(b), 35.392, 35.394, or before October 24, 2005, 35.930, 35.932, or 35.934, or equivalent Agreement State requirements. A supervising authorized user, who meets the requirements in 35.390(b) must also have experience in administering dosages as specified in 35.390(b)(1)(ii)(G)(1) or (2). The work experience must involve –
   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 byproduct material
   e. Using procedures to contain spilled byproduct material safely and using proper decontamination procedures

f. Administering dosages to patients or human research subjects, that includes at least three (3)cases involving the oral administration of less than or equal to 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131.

Training for oral administration of sodium iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries) (10 CFR 35.394 (c)(1) and (c)(2)).

1. Has successfully completed eighty (80) hours of classroom and laboratory training, applicable to the medical use of sodium iodide I-131 for procedures requiring a written directive. The training must include:
   a. Radiation physics and instrumentation
   b. Radiation protection
   c. Mathematics pertaining to the use and measurement of radioactivity
   d. Chemistry of byproduct material for medical use
   e. Radiation biology; and
2. Work experience, under the supervision of an authorized user, who meets the requirements in 35.390(a), 35.390(b), 35.394, or before October 24, 2005, 35.930, or 35.934, or equivalent Agreement State requirements. A supervising authorized user, 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). The work experience must involve –
   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 byproduct material
   e. Using procedures to contain spilled byproduct material safely and using proper decontamination procedures
   f. Administering dosages to patients or human research subjects, that includes at least three (3)cases involving the oral administration of greater than 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131.

Training for use of sealed sources for diagnosis (10 CFR 35.590 (b) and (c)).

1. Complete eight (8) hours of classroom and laboratory training in basic radionuclide handling techniques specifically applicable to the use of the device. The training must include –
   a. Radiation physics and instrumentation
   b. Radiation protection
   c. Mathematics pertaining to the use and measurement of radioactivity
   d. Radiation biology
2. Complete training in the use of the device for the uses requested

In accordance with 10 CFR 35.190(a)(1) & (c)(1), 35.290(a)(1) & (c)(1), 35.390(b)(1), 35.392(c)(1) & (c)(2), 35.394 (c)(1) & (c)(2), and 35.590(b) & (c) the following examination areas of the **Diagnostic Radiology** certification examination listed under "Physics of Medical Imaging, Biological Effects and Safety" assess knowledge and competence in the following areas:

- Radiological Physics (radiation production and interaction with matter)
- Radiation Biology (health effects)
- Radiation Safety and Protection
- Nuclear Medicine
- Radionuclide Handling
- Quality Control.
- Clinical use of unsealed byproduct material for which a written directive is required

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RADIATION ONCOLOGY

Definition

RADIATION ONCOLOGY is that branch of radiology that consists of the treatment of human disease by the use of roentgen rays, radium, natural and artificial radioactive substances.

Qualifications of Applicants for Examination

- The applicant must be a graduate of an AOA accredited college of osteopathic medicine. All training must be completed in the United States.
- The applicant must be licensed to practice in the state where his/her practice is conducted.
- The applicant must be able to show evidence of conformity to the standards set forth in the Code of Ethics of the American Osteopathic Association.
- The applicant is required to be a member in good standing of the American Osteopathic Association or the Canadian Osteopathic Association for the two (2) years immediately prior to the date of certification.
- The applicant must have satisfactorily completed a one-year AOA-approved internship.
- The applicant beginning their residency training on July 1, 1999, and thereafter, is required to have four (4) or more years of AOA-approved training in radiation oncology.
- The applicant beginning residency training prior to July 1, 1999 is required to have three (3) or more years of AOA-approved training in radiation oncology
- The applicant must have AOCR approval of all completed training.
- The resident is expected to remain in one program for all years of training. If a transfer to another program is necessary or desired, that transfer must be prospectively approved by the AOCR and notification sent to the AOBR.

- The applicant must complete the requirements of training and experience as stated in the Basic Standards for Residency Training in Radiation Oncology which includes 700 hours of nuclear medicine training as defined here.

Eligibility for Examination

An applicant is eligible to sit for the radiation oncology written examination *during the final year of training or at any examination following training.*

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Candidates seeking certification from the American Osteopathic Board of Radiology must have completed the training and experience requirements for NRC licensure as stated below:

Training for use of unsealed byproduct material for which a written directive is required (10 CFR 35.390 (b)(1)(i) and (b)(1)(ii)).

1. Complete 700 hours of training and experience in basic radionuclide handling techniques applicable to the medical use of unsealed byproduct material requiring a written directive. The training and experience must include
   a. Classroom and laboratory training in the following areas:
      i. Radiation physics and instrumentation
      ii. Radiation protection
      iii. Mathematics pertaining to the use and measurement of radioactivity
      iv. Chemistry of byproduct material for medical use
      v. Radiation biology
   b. Work experience, under the supervision of an authorized user, who meets the requirements in 35.390, or before October 24, 2005, 35.930, or equivalent Agreement State requirements. A supervising authorized user, who meets the requirements in 35.390(b) or, before October 24, 2005, 35.930(b), must also have experience in administering dosages in the same dosage category or categories (i.e., 35.390(b)(1)(ii)(G) as the individual requesting authorized user status. The work experience must involve –
      i. Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys
      ii. Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters
      iii. Calculating, measuring and safely preparing patient or human research subject dosages
      iv. Using administrative controls to prevent a medical event involving the use of unsealed byproduct material
      v. Using procedures to safely contain spilled byproduct material safely and using proper decontamination procedures
      vi. Administering dosages of radioactive drugs to patients or human research subjects involving a minimum of three cases in each of the following categories for which the individual is requesting authorized user status –
         a) Oral administration of less than or equal to 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131 for which a written directive is required
         b) Oral administration of greater than 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131
         c) Parenteral administration of any beta emitter or a photon-emitting radionuclide with a photon energy less than 150 keV for which a written directive is required

d) Parenteral administration of any other radionuclide, for which a written directive is required.

Training for oral administration of sodium iodide I-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries) (10 CFR 35.392 (c)(1) and (c)(2)).

1. Has successfully completed eighty (80) hours of classroom and laboratory training, applicable to the medical use of sodium iodide I-131 for procedures requiring a written directive. The training must include:
   a. Radiation physics and instrumentation
   b. Radiation protection
   c. Mathematics pertaining to the use and measurement of radioactivity
   d. Chemistry of byproduct material for medical use
   e. Radiation biology; and
2. Work experience, under the supervision of an authorized user, who meets the requirements in 35.390(a), 35.390(b), 35.392, 35.394, or before October 24, 2005, 35.930, 35.932, or 35.934, or equivalent Agreement State requirements. A supervising authorized user, who meets the requirements in 35.390(b) must also have experience in administering dosages as specified in 35.390(b)(1)(ii)(G)(1) or (2). The work experience must involve –
   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 byproduct material
   e. Using procedures to contain spilled byproduct material safely and using proper decontamination procedures
   f. Administering dosages to patients or human research subjects, that includes at least three (3)cases involving the oral administration of less than or equal to 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131.

Training for oral administration of sodium iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries) (10 CFR 35.394 (c)(1) and (c)(2)).

1. Has successfully completed eighty (80) hours of classroom and laboratory training, applicable to the medical use of sodium iodide I-131 for procedures requiring a written directive. The training must include:
   a. Radiation physics and instrumentation
   b. Radiation protection
   c. Mathematics pertaining to the use and measurement of radioactivity
   d. Chemistry of byproduct material for medical use
   e. Radiation biology; and

2. Work experience, under the supervision of an authorized user, who meets the requirements in 35.390(a), 35.390(b), 35.394, or before October 24, 2005, 35.930, or 35.934, or equivalent Agreement State requirements. A supervising authorized user, 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). The work experience must involve –
   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 byproduct material
   e. Using procedures to contain spilled byproduct material safely and using proper decontamination procedures
   f. Administering dosages to patients or human research subjects, that includes at least three (3)cases involving the oral administration of greater than 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131.

Training for the use of manual brachytherapy sources (10 CFR 35.490 (b)(1) and (b)(2)).

1. Complete a structured educational program in basic radionuclide handling techniques applicable to the use of manual brachytherapy sources.
2. Complete 3 years of supervised clinical experience in radiation oncology, under an authorized user who meets the requirement in 35.490, or before October 24, 2005, 35.940, or equivalent Agreement State requirements, as part of a formal training program approved by Program and Trainee Review Committee of the American Osteopathic Association.

Training for use of sealed sources for diagnosis (10 CFR 35.590 (b) and (c)).

1. Complete eight (8) hours of classroom and laboratory training in basic radionuclide handling techniques specifically applicable to the use of the device. The training must include –
   a. Radiation physics and instrumentation
   b. Radiation protection
   c. Mathematics pertaining to the use and measurement of radioactivity
   d. Radiation biology
2. Complete training in the use of the device for the uses requested

Training for use of remote afterloader units (10 CFR 35.690 (b)(1) and (b)(2)).

1. Complete a structured educational program in basic radionuclide techniques applicable to the use of a sealed source in a therapeutic medical unit.
2. Complete 3 years of supervised clinical experience in radiation therapy, under an authorized user who meets the requirement in 35.690, or before October 24, 2005, 35.960, or equivalent Agreement State requirements, as part of a formal training program approved by Program and Trainee Review Committee of the American Osteopathic Association.

In accordance with 10 CFR 35.390(b)(1), 35.392 (c)(1) & (c)(2), 35.394 (c)(1) & (c)(2), 35.490(b)(1) & (b)(2), 35.590(b) & (c), and 35.690(b)(1) & (b)(2) the following examination areas of the **Radiation Oncology** certification examination listed under "Physics of Medical Imaging, Biological Effects and Safety" assess knowledge and competence in the following areas:

- Radiological Physics (radiation production and interaction with matter)
- Radiation Biology (health effects)
- Radiation Safety and Protection
- Nuclear Medicine
- Radionuclide Handling
- Quality Assurance
- Treatment Planning
- Clinical use of the following:
  - Manual Brachytherapy
  - Stereotactic Radiosurgery
  - Remote Afterloaders
  - External Beam Therapy

BASIC STANDARDS FOR RESIDENCY TRAINING IN DIAGNOSTIC RADIOLOGY

American Osteopathic Association

and the

American Osteopathic College of Radiology

AOA/Adopted, 1991
Revised, BOT 1992
Revised, BOT 7/1993
Revised, BOT 2/1994
Revised, BOT 7/1994
Revised, BOT 2/1995
Revised, BOT 7/1996
Revised, BOT 2/1998
Revised, BOT 3/1999
Revised, BOT 2/2000
Revised, BOT 1/2001
Revised, BOT 7/2001
Revised, BOT 2/2003
Revised, BOT 2/2004
Revised, BOT 7/2004

Basic Standards for Residency Training in

Diagnostic Radiology

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BASIC STANDARDS FOR RESIDENCY TRAINING IN DIAGNOSTIC RADIOLOGY

STANDARD I
MISSION

To provide and expand upon fundamental interpretive, interactive and interventional skills within an educational environment conducive to the development of a compassionate and competent osteopathic diagnostic radiologist.

STANDARD II
EDUCATIONAL PROGRAM GOALS AND OBJECTIVES

A. GOALS AND OBJECTIVES

The goals of a diagnostic radiology residency training program are to:

1. Provide learning experiences to promote a broad understanding of the role of diagnostic radiology as it relates to other medical disciplines.
2. Develop measurable objectives to assess the progression of the resident during the four-year training program.
3. Provide the diagnostic radiology resident with progressive responsibilities commencing with introductory training and progressing to independent professional interpretation and consultation in all modalities of diagnostic radiology.
4. Provide the opportunity to develop the teaching skills of residents in diagnostic radiology
5. Provide the opportunity to develop interpersonal and communication skills and professional leadership and management skills.
6. Provide the opportunity to develop interest in and understanding of research in diagnostic radiology.
7. Prepare the resident to meet certification eligibility requirements of the AOA through the American Osteopathic Board of Radiology.
8. Develop the interest in lifelong learning in medical education and the understanding that lifelong learning and research are essential in diagnostic radiology.
9. Demonstrate a commitment to carrying out professional responsibility, adherence to ethical principles and sensitivity to a diverse patient population.
10. Demonstrate and apply knowledge of osteopathic principles and manipulative treatment (OMT) appropriate to the specialty of radiology.

STANDARD III
INSTITUTIONAL REQUIREMENTS FOR PROGRAM APPROVAL

A. INSTITUTIONAL REQUIREMENTS

1. Be accredited by the American Osteopathic Association/Healthcare Facilities Accreditation Program (HFAP) or Joint Committee on Accreditation of Healthcare Organizations (JCAHO) and affiliated with an Osteopathic Postdoctoral Training Institution (OPTI) accredited by the American Osteopathic Association (AOA).
2. Document that the program meets the policies and procedures of the OPTI with which it is affiliated.
3. Meet all the requirements as formulated in the **AOA Basic Documents for Postdoctoral Training.**
4. The residency training program shall only commence after it has received the approval of the AOA's Executive Committee of the Council on Postdoctoral Training (ECCOPT)

5. Institutional facilities and resources must be adequate to provide educational opportunities to the resident. The institution is responsible for assuming the financial, technical and educational support for the program. The institution must provide the necessary space, facilities and learning environment for the establishment and maintenance of an AOA-approved program.
    a. The institution shall have the following facilities:
        i. A medical library which is properly staffed and maintained by a qualified librarian. This library shall include access to current standard medical reference texts and medical journals or their electronic version, and computer-assisted literature search and internet capabilities, e.g. Medline. Maintain an adequate medical library containing carefully selected current texts (a list of recommended diagnostic radiology residency textbooks are available upon request from the AOCR office), medical journals and other appropriate publications covering the entire field of radiological sciences as well as the various branches of general medicine and surgery. The library shall be in the charge of a qualified person who shall act as custodian of its contents and arrange for the proper cataloging and indexing that will facilitate investigative work by the residents. It is recommended that the diagnostic radiology library be housed within the department rather than in the general institution library. There must be a reference library for residents available on a 24 hour basis within the department.
        ii. Conference room(s) which are available for formal instruction.
        iii. Sleeping and lounge facilities and food facilities.
        iv. Faculty and administrative office space.
        v. Office space for residents.
6. The institution shall have a radiation safety program which includes:
    a. A designated radiation safety officer.
    b. Adequate monitoring and protection for all personnel and patients exposed to radiation.
    c. Standards for protection of personnel and patients that shall be in compliance with federal and state regulations.
7. Must provide a written policy and procedure for the selection of residents. Admission to a residency program shall not be influenced by race, sex, religion, creed, national origin, age, sexual orientation, marital status, veteran status, disability or other legally protected status. This policy applies to all phases of employment, including, but not limited to, recruitment, employment, placement, promotion, demotion, transfer, and administration of wage, salary, and benefits administration
8. Must retain resident logs and other resident records for a minimum of five years beyond the resident's completion of his/her program.
9. Shall execute a contract with each resident in accordance with the **AOA Basic Documents for Postdoctoral Training.**
10. Upon satisfactory completion of the training program, the institution shall award the resident an appropriate certificate of completion. The certificate shall confirm the fulfillment of the program requirements, starting and completion dates of the program and the name(s) of the training institution(s) and the program director(s). A copy of the certificate of completion or a letter of verification of completion must be submitted to the AOCR.
11. The institution must adopt formal policies and the residents must be provided a current edition of these policies. There must be a resident manual that will include, but is not limited to:
    a. The rules and regulations stating the resident's duties and responsibilities.
    b. Leave policies.

c. Financial arrangements, including housing, meals, and other benefits, as may be determined by the institution and described in the resident contract.
d. Institutional policies and procedures for the supervision and evaluation of residents, due process (e.g., grievances, disciplinary action, academic deficiencies, or failure) and appeal processes.
e. Policies governing outside activities of a professional nature.
f. Institutional policies regarding contract renewal, contract interruption or cancellation, and the number of diagnostic radiology residency positions offered each year of training.
g. Institutional duty hours policies.

12. To fulfill requirements of the basic standards or enhance training, the program director may arrange for required rotations with affiliated training sites.
    a. A program seeking to fulfill its requirements through affiliations with other AOA or ACGME accredited institutions must formulate formal affiliation agreements with these training sites. Affiliation agreements shall be signed by representatives of both the base institution and the affiliated training sites and maintained on file with the DME at the base institution.
    b. Affiliation agreements must reflect desired educational goals and objectives of the rotation.
    c. Residents on rotation at affiliated training sites shall remain under contract to the base institution.
    d. Resident training logs shall reflect training and service to the affiliate site and shall be included in the resident records at the base institution.
    e. Written evaluation of the resident's performance at the affiliated site must be submitted by the on-site faculty to the program director at the base institution
13. There must be effective, anonymous assessment of the diagnostic radiology residency program by the resident to the institution at least annually.

B. DEPARTMENT OF RADIOLOGY REQUIREMENTS

To be considered for approval of a residency program in diagnostic radiology, the department must:

1. Have a minimum of five (5) full time equivalent appointed faculty members from the Department professional staff regardless of the size of the program. Beyond this basic complement, there must be a minimum of one (1) core faculty member for every one and one-half (1.5) resident positions to provide adequate supervision of residents. The core faculty member must be a physician who is certified in diagnostic radiology by either the AOA through the American Osteopathic Board of Radiology (AOBR) or by the American Board of Radiology (ABR). Part time teaching faculty will be counted based upon the percentage of time of active participation in the teaching program.
2. Have an adequate system of records for all procedures performed and a satisfactory pathologic cross-indexed file that uses standard nomenclature. The American College of Radiology (ACR) teaching file must also be present and kept current. It is recommended that the ACR teaching file be an interactive computer based system. It is also recommended that facilities be available for clinical photography use in the teaching program. Residents are required to contribute to the teaching file regularly.
3. Provide adequate space and an atmosphere conducive to resident study and conferences.
4. Provide sufficient patient volume and variety to properly train a minimum of three residents in diagnostic radiology. Procedures must be of sufficient scope and variety to assure the resident a comprehensive program in contemporary imaging procedures.
5. Ultrasound and computerized tomography sections shall be under the direct control of the department of diagnostic radiology. It is recommended that the nuclear radiology and MRI sections come under the jurisdiction of the department of diagnostic radiology.

6. Have diagnostic equipment of modern design and shall meet the requirements and standards of federal, state and local regulations, shall be consistent with the workload of the institution, and include a designated angiographic/interventional special procedures room with rapid imaging capability.
7. There shall be adequate and documented quality control and active Quality/Performance Improvement programs.
8. All radiologic technologists shall be appropriately trained and licensed where required.

C. CONSORTIUM REQUIREMENTS

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

1. Have a minimum of two (2) institutions participating that meet the following criteria:
   a. A minimum of one (1) institution must meet the teaching faculty qualification as stated in Standard III, C 1.
   b. All other institutions must have at least three (3) full-time equivalent board certified radiologists appointed to the teaching faculty of the program.
   c. A member of the teaching faculty of each participating institution must be designated to assume responsibility for the day-to-day activities of the Program at that institution, with overall coordination by the Program Director.
   d. All participating institutions must be within a reasonable driving distance to make resident attendance at rounds and conferences practical, unless there is a comparable educational experience at each institution.
   e. Have a designated base institution that is responsible for the administration and core education of the program.
   f. The program director must be privileged and spend sufficient time at all participating institutions.
2. Have all residents follow an acceptable confirmed schedule for rotations with a minimum of fifty percent (50%) of the time spent being within the consortium facility with a minimum of five (5) radiologists.
3. Provide adequate scope and variety of training to all diagnostic radiology residents in the consortium.

STANDARD IV
PROGRAM REQUIREMENTS AND CONTENT

A. Introduction

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 program must provide an environment which is conducive to resident education. 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.

B. General Competencies

Programs must define the knowledge, skills, behaviors and attitudes required and provide educational experiences for residents to demonstrate competency within the following:

- Patient Care
- Medical Knowledge
- Practice-Based Learning and Improvement
- Interpersonal and Communication Skills
- Professionalism
- System-Based Practice
- Osteopathic Philosophy and Osteopathic Manipulative Treatment

C. Didactic

1. Each area of training must have appropriate reading assignments. Resident lecture schedule guidelines complete with appropriate reading assignments are **available upon request from the AOCR office.**
2. The didactic component of instruction will include:
   a. Advanced training in the basic sciences, which shall include didactic learning and clinical experiences (i.e., anatomy, physiology, drug interactions, allergic reactions, etc).
   b. Documented training in radiologic physics, radiation biology and radiation protection to meet current Nuclear Regulatory Commission (NRC) licensure requirements.
   c. Regularly scheduled journal club.
   d. Attendance at the AFIP Radiological Pathology Review Course is required in addition to this clinical experience.
   e. Exposure to issues which the resident will face as a practicing clinician, including health policy, managed care, health administration, medical ethics, medical liability and practice management.
   f. Instruction by the department of diagnostic radiology as well as integration of training with other departments, in the relationship of clinical radiology with other departments such as surgery, pathology, medicine and pediatrics.
   g. Opportunities for the resident to follow patients to surgery for the purpose of correlating radiologic findings and to follow cases to pathology to develop an understanding of the gross pathology of surgical specimens.
   h. The resident shall review gross and microscopic findings of tissue in cases of special interest to the department of diagnostic radiology, attend autopsies, especially those of interest to the department of diagnostic radiology and participate in clinicopathologic and tumor conferences.
3. Residents must be excused from clinical duties to attend planned educational experiences.
4. No more than fifty percent of the conferences may be planned and presented by residents.

D. Clinical Components

1. A sufficient volume and variety of patients must be available to ensure that residents experience the full range of radiologic examinations, procedures and interpretations across the breadth of clinical diagnostic radiology. The volume of cases in each subspecialty must be sufficient to ensure and adequate training experience in that subspecialty. If subspecialty volume is less than adequate, the program director must develop and implement plans to provide adequate exposure.
2. The residency training program in diagnostic radiology shall be 48 months in duration and shall include the following areas of training.
    a. General diagnostic radiology – 11 months
        1. Chest – 3 months
        2. Gastrointestinal – 3 months
        3. Genitourinary – 2 months
        4. Musculoskeletal – 3 months
    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. Armed Forces Institute of Pathology (AFIP) - 1.5 months
    m. Selective – 6.5 months as approved by the Program Director and the DME
3. Clinical training must encompass adequate instruction and experience in all aspects of imaging and interventional procedures commonly accepted in the practice of diagnostic radiology. This training must include both adult and pediatric age groups. The program must 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). The clinical training experience must be supervised by the program faculty and allow for the progressive development of the resident in his/her assumption of responsibility for patient care.
4. Documentation (written or electronic) of supervised interventional procedures must be maintained by the resident in a formal record of their educational program (e.g., image-guided biopsies, drainage procedures, percutaneous access techniques, non-coronary angioplasty, embolization and infusion techniques, etc). The resident's documentation will record the performance (primary vs. assistant status), interpretation and complications of these invasive/interventional and vascular procedures. The documentation will also record a categorized summary of the non-interventional examinations that the resident is personally involved in the interpretation thereof.
5. Each resident must have training in basic life support, and training in advanced cardiac life support is highly recommended (or per institutional requirements).

E. Resident Research

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. 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.

STANDARD V
FACULTY AND ADMINISTRATION

A. PROGRAM DIRECTOR POSITION

The sponsoring institution shall designate an osteopathic diagnostic radiologist as program director for the program who has sufficient clinical time for program administration and clinical instruction. Appointments are subject to the approval of the American Osteopathic College of Radiology (AOCR) and subsequent registry by the AOA.

1. The program director of the diagnostic radiology residency training program must possess the following qualifications:
   a. Be certified as a radiologist by the AOA, through the AOBR.
   b. Be a full-time radiologist, capable and interested in conducting a broad program in diagnostic radiology, and spend sufficient time at the primary training site to adequately administer and supervise the program
   c. Shall meet the continuing medical education requirements of the AOA and the AOCR.
   d. Meet the standards of the position as formulated in the **AOA Basic Documents for Postdoctoral Training.**
   e. Membership in the American Osteopathic College of Radiology
   f. Involvement in research and academic pursuits.

2. The program director shall have the following responsibilities:
   a. Preparation of a written statement 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. This statement must be distributed to residents and members of the teaching faculty and maintained through periodic review and updating. It should be readily available for review.
   b. Update annually the residency program manual and shall distribute the residency program manual to each resident at the commencement of his/her residency training program.
   c. Prepare and implement, with the assistance of the faculty, a comprehensive, well-organized, and effective curriculum, both academic and clinical, which includes the presentation of core specialty knowledge supplemented by the addition of current information. This program design and structure of educational experiences will be reviewed and approved as part of the AOA accreditation process.
   d. Provide the resident with all documents pertaining to the training program as well as the requirements for the satisfactory completion of the program.
   e. Must establish an attendance policy for all scheduled conferences and maintain a record of attendance for all lectures, journal club, etc.
   f. Ensure that appropriate formal consortium or affiliation institutional and educational agreements for outside rotations necessary or desirous to meet the program objectives are executed and on file.
   g. Evaluate the residents, faculty, and the diagnostic radiology residency program and submit the required reports to the responsible parties as outlined by the American Osteopathic Association.
   h. Submit at a minimum, a quarterly resident evaluation to the director of medical education (DME). Evaluations must be signed by both the resident and the

program director and become part of the resident's record and the Program's files. Annual reports shall be submitted to the AOCR. The program director should ensure that a certificate of completion or a letter of verification of completion is submitted by the DME to the AOCR. The institution shall retain copies of all required reports.

i. Supervision of residents through explicit written descriptions of supervisory lines of responsibility for the care of patients. Such guidelines must be communicated to all members of the Program faculty. Residents must be provided with prompt, reliable systems for communication and interaction with supervisory physicians. A faculty radiologist must be available at all times for consultation with resident.

j. In coordination with the DME, the program director has the responsibility for all schedules and allowance for appropriate time for residency training, including lectures, educational sessions, and study time.

k. Working with the DME, the program director supports the predoctoral and postdoctoral education and training at the institution.

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

m. Obtains documentation of resident evaluation on all outside rotations.

n. Ensure that the program complies with the standards, policies and procedures of the AOA.

o. Prepare for and participate in the AOA evaluation of the program in cooperation with the Division of Postdoctoral Training and the designated evaluator.

p. Ensure that residents complete AOCR required examinations and submit results to the AOCR.

q. Inform the AOA, OPTI and AOCR 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. Any organizational or structural change that may affect a residency training program must be approved in writing by the AOCR prior to implementation. Requests for change must include the educational impact of any request and documentation that the educational process will not be compromised by said change.

r. Participate on AOCR Program Director Conference calls or ensure an appropriate designee will be present to participate and disseminate information.

s. Attend program directors meetings as required by the AOCR to facilitate Program Director and Faculty development activities.

B. FACULTY

1. The sponsoring institution, in conjunction with the program director shall appoint a minimum of five (5) full time equivalent appointed faculty members who shall participate in the diagnostic radiology residency program.

   a. Faculty members must be certified or an active candidate in the process of certification by the AOBR or the ABR and to also include recertification within the prescribed time frame of the certifying body. Credentials must be retained on file and available to the on-site evaluator.

   b. Core faculty must be provided with sufficient non-clinical time to provide instruction to residents and perform periodic resident and Program evaluation. Additionally, all appointed faculty must regularly participate in the academic education program, with documented participation in formal lectures, case conferences, journal clubs and mock board review.

c. Faculty must participate in regional or national professional and scientific societies continuing medical education programs, and are encouraged to make presentations at the organizations' meetings.
d. Guidance and technical support (e.g., research design, statistical analysis) should be offered to residents involved in scholarly activity.
e. Locum tenens radiologists cannot qualify as core faculty members.

2. The institution shall have administrative and other non-physician staff committed to the program to support teaching in the diagnostic radiology residency program.
3. Faculty must adhere to institution specific code of ethics and AOA code of ethics.
4. The teaching faculty must 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 should participate in these reviews.
5. There must be timely and effective feedback to residents on their performance.
6. Faculty is required to supervise the resident in their daily duties in accordance with the programs supervision policy.

a. The residency is an educational experience and must be designed by the institution to offer structured and supervised exposure to promote learning rather than service. An opportunity must exist for residents to be supervised and evaluated throughout their training with availability of teaching staff scheduled within the program. Residents will be responsible to attending physicians for assignment of responsibility.
b. A radiologist must be on call with the resident and must assume ultimate responsibility for all actions of the resident(s) under his/her supervision. Specific responsibilities shall be delegated at the discretion of the institution and/or department. All radiologic examinations must be reviewed and resident's dictation shall be checked and approved by an attending radiologist.
c. Night call shall not commence until after a minimum of six months of training unless taken with a more senior resident.
d. Residents shall be given gradual increases in their responsibility, commensurate with their ability.
e. Continuity of care during the residency shall be ensured by proper communication between night and day shift residents and attending physicians. Morning reviews of important, interesting and critical cases shall occur daily.

STANDARD VI
RESIDENT REQUIREMENTS

A. An applicant for diagnostic radiology residency training must:
   1. Be a graduate of an AOA-accredited college of osteopathic medicine and have successfully completed an AOA-approved internship.
   2. Be and remain a member of the AOA and the AOCR during residency.
   3. Be appropriately licensed in the state in which training is conducted.
   4. Arrange for the provision of official transcripts by the College of Osteopathic Medicine and Hospital Administration of internship and/or previous residency training.
   5. Sign an annual residency contract with the institution
   6. Be a full-time resident of the training institution; must not be engaged in any other residency training program.

B. The resident is legally, morally, and ethically responsible to pursue exclusively the agreed upon program of training. The resident shall not engage in any outside activities of a professional nature during residency training except those approved by the program director and designated institutional authorities. Such activities must not interfere with the resident's participation in the training program. The resident 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.

C. The resident shall progressively assume increasing responsibility for patient care during the residency program, so that by the senior year, the resident must be able to assume complete management of all assigned cases.

D. Increased competency in diagnostic radiology is based on experience and number and variety of cases managed in the diagnostic radiology department. Such experience is gained through participation in highly specialized rotations as deemed necessary by the program director. It is required that by the completion of a four-year diagnostic radiology residency program, each resident will have participated in organized rotations as defined in Curriculum and Instruction.

E. Shall adhere to established policies and procedures for residency training, as outlined in the **AOA Basic Documents for Postdoctoral Training,** this document, and in the institution's resident manual and the residency program manual.

F. The resident shall maintain formal records of all activities related to the educational program. These records shall be submitted monthly to the program director and DME for review and verification. Copies of these records shall be kept on permanent file by institution and shall be available at the time of the inspection. These records should document the fulfillment of the requirements of the program, describing the volume, variety and scope, and progressive responsibility on the part of the resident for diagnostic radiology cases and procedures performed under supervision.

G. The resident is 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.

H. Residents in the program will learn teaching skills by actively participating in the process of instructing interns, medical students and other residents.

I. The resident must 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. A certificate of completion must be submitted with the final year's annual report in order to be considered for program completion approval.

J. The resident 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. An abstract of the exhibit is due by January 15 of the resident's second year of training. The abstract must be submitted according to the AOCR's Guidelines for Resident Scientific Exhibits.

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

L. 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. Residents in a consortium must submit verification of completion of training from the consortium.

M. First, second and third year residents must participate in the ACR In-Training Examination and submit results to the AOCR.

N. Duty hours in the program must be educationally oriented. As outlined in the **AOA Basic Documents for Postdoctoral Training**, the following duty hours must be followed during the training program:

1. Duty Hours:
   a. The resident shall not be assigned to work physically on duty in excess of eighty hours (80) per week averaged over a four (4) week period, inclusive of in-house night call.
   b. The resident shall not work in excess of twenty-four (24) consecutive hours inclusive of morning and noon educational programs. Allowance for, but not to exceed up to six (6) hours for inpatient and outpatient continuity, transfer of care, educational debriefing and formal didactic activities may occur. Residents may not assume responsibility for a new patient after twenty-four (24) hours.
   c. If moonlighting is permitted, all moonlighting will be inclusive of the eighty (80) hour per week maximum work limit and must be reported.
   d. The resident shall have alternate week forty-eight (48) hour periods off or at least one (1) twenty-four (24) hour period off each week.
   e. Upon conclusion of twenty-four (24) hour duty shift, residents shall have a minimum of twelve (12) hours off before being required to be on duty again. Upon completing a lesser hour duty period, adequate time for rest and personal activity must be provided.
   f. All off-duty time must be totally free from assignment to clinical or educational activity.
   g. Those rotations requiring the resident to be assigned to emergency department duty shall not be assigned longer than twelve (12) hour shifts.
   h. The resident and training institution must always remember the patient care responsibility is not precluded by this policy. In the case where a resident is engaged in patient responsibility which cannot be interrupted, additional coverage should be provided to relieve the resident involved as soon as possible.
   i. The resident may not be assigned to call more often than every third night averaged over any consecutive four (4) week period.
   j. The training institution shall provide an on-call room for residents, which is clean, safe, quiet and comfortable, so to permit rest during call. A telephone shall be present in the on-call room. Toilet and shower facilities should be

present in or convenient to the room. Nourishment shall be available during the on-call hours of the night.

k. When residents take call from home and are called into the hospital, the time spent in the hospital must be counted toward the weekly duty hour limit.

l. When residents perform teleradiology from home, time spent performing teleradiology must be counted toward the weekly duty hour limit.

2. Moonlighting Policy

Any professional clinical activity (moonlighting) performed outside of the official residency program may only be conducted with the permission of the program administration (DME/Program Director). A written request by the resident must be approved or disapproved by the Program Director and DME and be filed in the institution's resident file. All approved hours are included in the total allowed work hours under AOA policy and are monitored by the institution's graduate medical education committee. This policy must be published in the institution's housestaff manual. Failure to report and receive approval by the program may be grounds for terminating a resident's contract.

O. Advanced Standing Policy:

To receive advanced standing in radiology, candidates must:

1. Have successfully completed at least one year of residency training in Nuclear Medicine.
2. Submit documentation from previous program director(s) confirming that the candidate has achieved a specific level of training.
3. Receive an endorsement from the current program director 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. The committee on evaluation and educational standards of the AOCR will review all applications and make appropriate recommendations to its board of directors and other appropriate approval bodies. Advanced standing credit is applicable only for training received at the training institution at which the resident is currently in training at the time of request. Advanced standing credit in non transferable if a resident transfers from the current residency training institution

P. Transfer Policy:

The following residency transfer policy allows a resident to be eligible to receive credit for the total of four years of residency training and thus be eligible to sit for the American Osteopathic Board of Radiology Certification Examination if all required documentation if filed by the appropriate dates.

1. The AOCR must receive a letter from the current program director stating that the resident will satisfactorily complete the appropriate level of training at the end of the contract year. The letter must also state that the resident will not be breaching a contract with the current institution.
2. The resident must submit a letter from the program director at the institution from which the resident would like to transfer stating at what level of training the resident will be accepted into the program. This must be done prior to transferring to the program.
3. Documentation as defined in items 1 and 2 must be submitted to the AOCR for review no later than 90 days prior to the requested transfer date. No credit will be given unless the appropriate documentation has been submitted and approved by the AOCR prior to the transfer and the AOCR has approved the transfer.

4. The AOCR must receive a letter from the Director of Medical Education from the institution from which the resident transferred stating the resident has satisfactorily completed the number of years of training applicable to that resident. The letter must also confirm that the resident did not breach a contract with that institution. The letter must be received in the AOCR office within thirty (30) days of the resident's transfer. Failure to receive such letter within thirty (30) days can result in loss of credit for training at that institution.
5. If the resident will receive training in an ACGME institution, the resident must register the ACGME program with the AOA within 30 days.
6. Upon completion of the program the resident must submit the official institutional certificate of completion from the institution at which the resident completed training. The resident must also submit a letter from the program director where the resident completes residency training stating the resident has satisfactorily completed the diagnostic radiology training program.
7. 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.

STANDARD VII
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
   1. Individual Rotation Evaluations
      The program director or designated faculty member will complete written evaluations of resident performance on a rotation or a monthly basis. These evaluations should utilize methods to accurately assess resident's competence in patient care, interpersonal and communication skills, systems-based practice, medical knowledge, practice-based learning and improvement, professionalism, and osteopathic manipulative theory. This must include evaluations from all affiliated training sites and supplemented rotation sites.

   2. Quarterly Evaluation
      Completed performance evaluations must be shared by the program director with the resident at least quarterly or more frequently if a resident's performance is substandard.
   3. Annual Evaluation
      The resident may progress on to the next year of training only after satisfactory performance in all rotations and in the core competencies as documented in the annual report.
   4. The program director must document that residents needing remediation or counseling as a result of evaluation are given it in a timely manner. There must be documentation of follow up evaluations of these residents.
   5. Final Evaluation
      Upon successful completion of the program, a final evaluation will be performed for each resident by the program director and be maintained by the institution in the resident's permanent file. A copy will also be sent to the AOCR office. This final evaluation will attest to the resident's professional abilities and competency at graduation to independently practice diagnostic radiology.
   6. All evaluations must be signed by the program director (or designated faculty on individual rotation evaluations) and the resident to document that evaluation and

counseling have occurred as required. Copies of evaluations should be made available to the resident.

B. Faculty Evaluation
   1. The program director and program faculty should be peer evaluated at least annually for their teaching, scholarly activities, and development of the program.
   2. The resident shall complete an evaluation of the rotation and faculty at the completion of each rotation. The evaluations must be processed in a cumulative manner to protect the confidentiality of the resident and reported to the faculty on an annual basis.

C. Program Evaluation
   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 prepare a report as a method for revision and updating of the program.
   2. Program assessments and measured outcomes for continuous quality improvement should be done on an on going basis, with an annual summative evaluation of the quality of the program. Evaluative information should be used for program improvement, and documentation of same should be on file
   3. Multiple measures should be used for program review and evaluation to obtain a comprehensive view of program quality. Recommended methods include performance on certifying examination; post graduate professional performance satisfaction surveys; resident persistent rate in the program; percent of graduates completing the program on time; placement of graduates; professional accomplishments of program graduates.
   4. All program directors shall use the results of the ACR In-Training examination to improve their individual programs; they shall also make the results available to the AOCR and residency inspectors along with the improvements they have made to their program as a result thereof. The program director will make results available to the director of medical education
   5. To have 100% of graduates participate in the AOBR examination process by completion of residency training. During the most recent 5-year period, at least 50% of its graduates should pass without condition the written and oral examination on the first attempt.

Appendix I

Core Competency of Medical Knowledge for Diagnostic Radiology

Definition
Residents are expected to demonstrate and apply knowledge of accepted standards of clinical medicine as it applies to the practice of radiology; remain current with new developments in medicine, specifically as applicable to the specialty of radiology, and participate in lifelong learning activities, including research.

Required Competencies

- Demonstrate sufficient knowledge of medicine and apply this knowledge to radiological studies in a clinical context to generate meaningful differential diagnoses
- Demonstrate progressive acquisition of radiological knowledge
- Demonstrate knowledge of the principles of research design and implementation
- Generate a clinically appropriate diagnostic treatment plan
- Demonstrate the ability to use all relevant information resources to acquire evidence-based data
- Understand how radiologic equipment can be used to generate appropriate and diagnostic images

Suggested Educational Content

- Didactic lectures and self-directed learning on the science and practice of radiology
- Participation in departmental and inter-departmental case conferences
- Participation in the clinical activities of the radiology department
- Departmental or institutional training programs on research design and implementation

Suggested Methods for Evaluation

- Global ratings by faculty
- Program-developed written and/or computer generated examinations
- Raphex physics examination
- ACR In –Training examination
- AOBR Physics of Medical Imaging, Biological Effects and Safety
- AOBR Diagnostic Imaging examination
- Diagnostic Radiology Oral AOBR examination