

ACGME Program Requirements for Graduate Medical Education In Pediatric Radiology

Effective: July 1, 1998

In addition to complying with the Program Requirements for Residency Education in the Subspecialties of Diagnostic Radiology, programs must comply with the following requirements, which may in some cases exceed the common requirements.

I. Scope and Duration of Training

I.A. Definition and Scope of the Specialty

The training program in the subspecialty of pediatric radiology constitutes a supervised experience in the pediatric applications and interpretation of radiography, computed tomography, ultrasonography, angiography, interventional techniques, nuclear radiology, magnetic resonance, and any other imaging modality customarily included within the specialty of diagnostic radiology.

The program should be structured to enhance substantially the subspecialty fellow's knowledge of the applications of all forms of diagnostic imaging to the unique clinical/pathophysiologic problems of the newborn, infant, child, and adolescent. The fundamentals of radiobiology, radiologic physics, and radiation protection as they relate to the infant, child, and adolescent should be reviewed during the pediatric radiology training experience. The program must provide fellows direct and progressively responsible experience in pediatric imaging as they advance through training. This training must culminate in sufficiently independent responsibility for clinical decision making such that the program is ensured that the graduating resident has achieved the ability to execute sound clinical judgment.

I.B. Duration of Training

Prerequisite training for entry into a diagnostic radiology subspecialty program should include the satisfactory completion of a diagnostic radiology residency accredited by the Accreditation Council for Graduate Medical Education (ACGME) or the Royal College of Physicians and Surgeons of Canada (RCPSC), or other training judged suitable by the program director.

I.C. Objectives and Goals

The educational program in pediatric radiology shall meet training objectives so that on completion of the program the fellow is able to:

I.C.1. Understand the developmental and acquired disease processes of the newborn, infant, child, and adolescent that are basic to the practice of pediatric and adolescent medicine.

I.C.2. Perform and interpret radiological and imaging studies of the pediatric patient.

- I.C.3. Supervise and teach the elements of radiography and radiology as they pertain to infants and children.
- I.C.4. Understand how to design and perform research
- I.C.5. Prepare material suitable for presentation and publication.

II. Institutional Organization

A program of pediatric radiology training should function whenever feasible in direct association and/or affiliation with an Accreditation Council for Graduate Medical Education (ACGME)-accredited program in diagnostic radiology.

III. Faculty Qualifications and Responsibilities

III.A. Program Director

The program director must have sufficient academic and administrative experience to ensure effective implementation of these program requirements and should have had at least 5 years of participation as an active faculty member in an accredited pediatric radiology program. The program director must be certified by the American Board of Radiology in radiology or diagnostic radiology and must have received the Certificate of Added Qualifications in Pediatric Radiology granted by the American Board of Radiology, or have appropriate educational qualifications, as so judged by the RRC. The director must devote sufficient time to the program to fulfill all of the responsibilities inherent in meeting the educational goals of the program. The program director is responsible for establishing the curriculum as well as procedures for evaluation of the fellow's competency. Evaluation of the fellow at least quarterly with a formal semiannual meeting with the fellow and written feedback is required. The program director shall select and supervise the fellows and shall select pediatric radiology program faculty members.

III.B. Faculty

There should be sufficient qualified professional personnel to constitute a teaching faculty. The faculty should comprise no fewer than two experienced radiologists, including the program director, who work full-time in pediatric radiology and its related subspecialty areas and are able to devote adequate time to the program. The minimum faculty requirement may be met by the program director and one other full-time equivalent, ie a total of two or more individual faculty members. A ratio of at least one pediatric radiologist for every subspecialty fellow is essential to provide adequate opportunity for teaching and supervision. It is desirable that pediatric radiologists supervise special imaging, such as angiography, interventional radiology, nuclear radiology, computed tomography, magnetic resonance.

IV. Facilities and Resources

IV.A. Space and Equipment

Modern facilities and equipment in adequate space must be available and functioning to accomplish the overall educational program in pediatric radiology. Diagnostic imaging modalities shall include radiography, computed tomography, ultrasonography, radionuclide scintigraphy, angiography, and magnetic resonance imaging. The department must have a minimum of one radiographic/fluoroscopic room, one ultrasound unit, one angiographic room, one CT scanner, one MR unit, and one nuclear radiology gamma camera. All equipment must be up-to-date. There must be justification for continued use of any equipment that is more than 10 years of age.

In general hospitals that treat patients of all ages, pediatric radiology often is a section of the radiology department; similarly, special imaging services of such departments are separate sections. In such cases, there should be recognition within the special imaging sections of the particular needs of the pediatric radiology program. There should be low-dose roentgenographic/fluoroscopic facilities specifically for children and minimizing CT radiation dose in children should be emphasized. The availability of all special imaging services for pediatric radiology fellows is essential.

Laboratory and pathology services must be adequate to permit fellows to enhance their educational experience during the diagnostic imaging and care of patients and obtain timely correlation with diagnostic imaging studies.

IV.B. Inpatient and Outpatient Services

The hospital must have sufficient inpatient and outpatient services in general and subspecialty pediatrics to ensure a broad and in-depth exposure to pediatrics.

IV.C. Library

Learning resources should include access to an institutional and/or departmental library with current journals and textbooks sufficient to cover the specialty of pediatrics and pediatric subspecialties, radiology, and related fields. The library must contain journals and current textbooks on all aspects of pediatric radiology. The institutional library must have a librarian and internet access to electronic database searches. Moreover, the methods of performing such electronic database searches must be taught to fellows. A pediatric radiology teaching file must be available for use by pediatric radiology fellows. This teaching file should contain a minimum of 500 cases that are indexed, coded, actively maintained, and continually enhanced with new cases. Availability of the American College of Radiology pediatric learning file or its equivalent is desirable; this only partially meets the teaching file requirements.

IV.D. Other Accredited Programs

There should be an ACGME-accredited residency in pediatrics, as well as pediatric medical and surgical subspecialty programs, to provide an appropriate patient population and educational resources in the institution. In addition to full-time pediatricians, there should be one or more pediatric surgeons, one or more pediatric pathologists, as well as a broad range of pediatric medical and surgical subspecialists.

V. Educational Program

V.A. Curriculum

The training should consist of didactic and clinical experiences that encompass the scope of pediatric radiology from the neonate to the adolescent. Every organ system should be studied in the contexts of growth and development, congenital malformations, diseases peculiar to infants and children, and diseases beginning in childhood but causing substantial residual impairment in adulthood. The didactic component should promote scholarship, self-instruction, self-evaluation, teaching, and research activity. It should foster the development of analytic skills and judgment. The clinical component should facilitate skillful technical performance of low radiation dose procedures on all organ systems that are examined in the practice of pediatric radiology. The pediatric imaging experience should include both inpatient and outpatient studies.

The fellows must have graded responsibility and supervision in the performance of procedures and the perfection of technical and interpretive skills. It is essential that the pediatric radiology fellow be instructed in common pediatric imaging technical procedures and their indications, limitations, judicious utilization, and risks, including radiation dose considerations. The pediatric radiology fellow must also be instructed in the risks and benefits of pediatric sedation; this includes an understanding of the physician's role in the monitoring and management of pediatric patients during and after sedation for diagnostic and therapeutic procedures. Where the program is conducted in a general hospital, the pediatric radiology fellow must have training in imaging examinations of pediatric patients. The scope of a 1-year training program in pediatric radiology shall include all diagnostic imaging applicable to the pediatric patient. The 1-year training program should include no more than 4 weeks' vacation. The curriculum must include the central nervous, musculoskeletal, cardiopulmonary, gastrointestinal, and genitourinary systems. In each organ system, the effective and appropriate use of imaging modalities, including ultrasound, computed tomography, magnetic resonance, nuclear radiology, and vascular/interventional radiology, should be taught. The fellow is responsible for following the imaging workup of the patient and must be substantially involved in the performance and interpretation of examinations that utilize various modalities. Correlation of radiologic findings with the clinical management and outcome aspects of the pediatric patient is essential.

V.B. Clinical Component

The institution's pediatric population must include patients with a diversity of pediatric illnesses from which broad experience can be gained. The number of pediatric radiology fellows in a program at any given time should reflect the patient census to ensure each trainee of an adequate experience. The program must have sufficient volume and variety of patients to ensure that fellows gain experience in the full range of pediatric radiologic examinations, procedures, and interpretations. There should be no fewer than 7000 pediatric radiologic examinations per year per fellow.

The pediatric radiology training program should provide a minimum number of procedures available per year per resident as follows:

300 fluoroscopic procedures

300 ultrasound examinations

200 body imaging (CT/MR) examinations

The procedures available for the pediatric radiology fellow should not have an adverse impact on the education of the residents of the core diagnostic radiology residency program in the same institution.

The pediatric radiology fellow must have experience in each of the following specialized areas: pediatric neuroradiology; vascular/interventional radiology; and nuclear radiology. There must be direct clinical experience as the primary or secondary operator, which should be supplemented by lectures and conferences. Supervised instruction should be provided by physicians with special expertise in those disciplines. It is acceptable to supplement the pediatric experience with adult patients in some specialties, such as vascular and interventional radiology, to enhance teaching. The program must require fellows to maintain a logbook to document their training in nuclear radiology, neuroradiology, and vascular/interventional radiology. The log should be reviewed periodically with the program director. The logbook should include the patient name, medical record number, and procedure(s) performed. The minimum numbers of procedures per resident performed in these specialized areas of pediatric radiology are as follows:

50 pediatric nuclear radiology studies

200 neuroimaging studies

25 vascular/interventional studies

The fellows should serve as pediatric radiologic consultants, under the supervision and mentoring of faculty pediatric radiologists. The teaching experience should include pediatric- and radiologic-oriented conferences with medical students, residents, medical staff, and health care professionals.

V.C. Didactic Component

Study of clinical and basic sciences as they relate to radiology and pediatrics shall be a part of the didactic program. Subspecialty conferences, seminars, and academic review activities in pediatric radiology must be regularly scheduled. It is essential that the fellow participate in the planning and presenting of conferences. In addition to conferences, study is integrated with the performance and interpretation of roentgenographic and other imaging examinations.

Fellows must attend a minimum of 3 departmental or interdepartmental conferences per week dedicated to pediatric radiology, which may include rounds with pediatric services. A journal club or research club must meet monthly.

The fellow must also be involved in teaching conferences for medical students, radiology residents, other residents rotating on the pediatric radiology service, and other health professional training programs.

V.D. Supervision

The responsibility or independence given to residents should depend on their knowledge, skills, and experience. Additional personnel must be available within an appropriate time interval to perform or to supervise procedures.

V.E. Duty Hours and Conditions of Work

(See Program Requirements for Residency Education in the Subspecialties of Diagnostic Radiology for details concerning duty hour requirements.)

V.F. Subspecialty Fellow Participation in Research

The training program in pediatric radiology should have a research component that will offer the fellow an opportunity to learn the fundamentals of design, performance, interpretation of research studies, and evaluation of investigative methods. Trainees should develop competence in critical assessment of imaging research, patient outcomes data, and the scientific literature.

The fellow should participate in clinical, basic biomedical, or health services research projects and submit at least one scientific paper or exhibit to a regional or national meeting. The fellow should participate in the quality improvement program of the department.

V.G. Other Residents/Fellows

The training program should have close interaction with a diagnostic radiology residency. Shared experience with residents in general pediatrics and with fellows in the pediatric-related subspecialties, ie, surgery, pathology, and cardiology, is strongly encouraged; where appropriate, supervision and teaching by expert faculty in these disciplines should occur.

The subspecialty program in pediatric radiology must not have an adverse impact, such as by dilution of the available clinical material, on the education of the diagnostic radiology residents in the same institution.

VI. Evaluation

The RRC will consider as one measure of a program's quality the performance of its graduates on the examination of the American Board of Radiology for the Certificate of Added Qualifications in Pediatric Radiology. All program graduates should take the examination.

(See Program Requirements for Residency Education in the Subspecialties of Diagnostic Radiology for additional evaluation requirements.)

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