

# Fellowship in Pediatric Radiology

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**\*\*Fellow's Manual\*\***

(revised 6/11)

# Table of Contents

## (1) History and overall organization

Disclaimer

Division-sponsored benefits

## (2) Competency-based Educational Goals

Curriculum in Pediatric Radiology

## (3) Didactic Program – Rotation Descriptions

General Pediatric Radiology

Pediatric Neuroradiology

Musculoskeletal Radiology

Nuclear Medicine

Interventional Radiology

## (4) Sample rotation schedule

Opportunities and resources for research and outside study

ALARA concept

## (5) Global Competency-based Training Objectives

Summary of educational resources to fulfill training objectives

Explanatory notes concerning educational resources

QA/QI project description

## (6) Other resources

Conference schedule

Library list

Telephone list

Guide for the Caregiver of the Hospitalized Child

Radiology Report Format

## (7) Evaluation and Assessment

Description of evaluations

Documentation procedures and requirements

Competency based summary of evaluated activities

Learning portfolio

Evaluation forms

(8) Evaluations of the fellow by others

(9) Evaluations performed by the fellow of faculty and program

(10) Divisional and Institutional Policies regarding Fellows

Supervision

Interaction with Diagnostic Radiology residents

Duty hours

Moonlighting policy

Graduation

Termination

Grievance procedure

Guidance for the use of Portable Electronic Devices (HIPAA)

Guidance for use of Social Networking (HIPAA)

## History and Overall Organization of the Fellowship

John Phillips Dorst MD, professor of Radiology and Pediatrics, came to Johns Hopkins from Cincinnati Children's Hospital in 1964 to organize the first division of Pediatric Radiology in the Russell H. Morgan Department of Radiology and Radiological Science. He directed the division from 1966 until 1990. Even then, he remained on the consulting staff until his retirement in 1995. He was a masterful radiologist and superb teacher throughout his career, with more than 50 scientific publications. He was one of the early members of the Society for Pediatric Radiology and served on its board. His particular area of interest was skeletal dysplasia, and he was a close collaborator with Victor McKusick, MD, the renowned geneticist. He was also strongly dedicated to resident and fellow education. Twenty fellows were trained by him, several of whom went on to be chairs of divisions and departments at other academic institutions and to be officers in the Society for Pediatric Radiology.

The 1-year Pediatric Radiology Fellowship training program was accredited by the ACGME (Accreditation Council for Graduate Medical Education) in 1998 and has been re-accredited regularly. The fellow spends 8.5 months in general pediatric radiology which includes plain radiography; GI, GU and other fluoroscopy; Body CT, MRI and ultrasound; and pediatric neuroradiology (including CT, MRI and ultrasound—20 scheduled days during the 8.5 months). Rotations are spent in each of the following departmental divisions: Musculoskeletal (one 2-week block), Nuclear Medicine (two 2-week blocks), and Interventional Radiology (2 weeks + 10 days). (See the sample rotation schedule.) In each of these areas, the fellow is expected to attain the ability to work independently and his/her progress is monitored regularly. The fellow is supervised by a pediatric radiologist or other subspecialist at all times and gains increasing responsibility throughout the year. All of the fellow's reports are countersigned by an attending radiologist.

The fellowship program has evolved over the years to comply with increasing ACGME (Accreditation Council for Graduate Medical Education) requirements for more stringent structure and documentation. But the philosophy of the program is unchanged: the program aims to train specialists in pediatric radiology who will practice with the highest standards of performance and professionalism; will be dedicated members of the specialty and engage in ongoing learning and improvement; and will become vital members of healthcare teams that advance the health and well-being of children.

## Disclaimer

This is a description of the scope, goals and expectations of the fellowship as of the revision date. However, the resources and service requirements of the division may change during the year due to external circumstances, and the fellowship must adapt. Decisions by the chair of the division, the chair of the department, the fellowship director, the American Board of Radiology, and the ACGME can all have an impact on aspects of the fellowship and will supersede what is written here. Updates will be communicated as quickly as possible, electronically and in print. The printed version in the office will always be the reference text.

## Division-Sponsored Benefits

Health insurance for the fellow and the fellow's spouse and children will be paid for by the division, up to the amount required to belong to SHP, the health insurance program for University students. If the fellow wishes to purchase a more expensive plan, the fellow pays the difference.

If the fellow already receives health benefits (through a spouse, for example) then the division will pay for the fellow's parking fees for the year.

The fellow receives a Clinical Practice fund that can be used for meeting expenses, tuition, and books. The amount varies by year and is set by the Chairman's Office; the fellow will be notified of the amount at the beginning of the year. Personal computer equipment and software can be purchased with this fund if it meets certain requirements.

The fellow is strongly encouraged to attend the Society for Pediatric Radiology educational course and annual meeting. The division will sponsor the expenses of one additional meeting for the fellow (e.g. RSNA, ARRS, or subspecialty meeting) at the discretion of the Division Chair. If the fellow is presenting at such a meeting, sponsorship is more likely to be forthcoming.

## Summary of Competency-based Educational Goals

The ACGME mandates that all training programs provide professional education leading to competency in 6 areas. To that end, this program has formulated the following educational goals, with training objectives designed to help attain these goals (specific goals addressed by each objective are indicated):

### GOALS

By the end of the year the fellow should have competency in the following areas, as indicated by the ability to:

**Medical Knowledge (MK):** Attain a knowledge base of pediatric medical/surgical problems and related anatomy (Curriculum description: next pages); use it to recognize normal and abnormal radiologic findings and compose an age-appropriate differential diagnosis.

**Patient Care (PC):** Plan and perform radiologic procedures skillfully, with attention to patient well-being while minimizing radiation dose; determine appropriateness of imaging procedures and efficiently integrate them into the patient's ongoing clinical care through consultation and coordination with other caregivers

**Professionalism(PRO):** Project a competent, concerned, compassionate professional image; respect diversity; exercise collegiality; demonstrate a commitment to life-long learning

**Interpersonal and Communication Skills (ICS):** Communicate effectively with mentors, radiology and clinical colleagues, co-workers and patients and families verbally, by telephone, and through written reports to insure understanding of all aspects of the fellow's radiology practice; develop skills in teaching to convey knowledge to colleagues and students through observation, instructional resources and practice

**Practice-based Learning and Improvement(PBLI):** Critically evaluate current methods and published research to improve radiology practice; identify personal limits in knowledge and expertise, set learning and improvement goals, identify and perform appropriate learning activities, integrate evaluations and suggestions for change; participate in education of other health professionals as well as students, residents and families; show ability to be a self-motivated life-long learner

**Systems-based Practice (SBP):** Assimilate communications and archiving systems within the hospital (phones, paging, PACS, EPR, clinical service structure, HAL) to better coordinate patient care and act as part of the health care team; utilize other resources and ancillary professionals (such as nurse, radiographer, sonographer, information technologist and radiation physicist) to enhance patient care and safety; participate in identifying system errors and implementing potential systems solutions

# Curriculum in Pediatric Radiology

## RADIATION EFFECTS

Biologic Effects of Diagnostic Radiation on Children

Acute and Late Biologic Effects of Radiation Therapy in the Management of Childhood Cancer

## PRENATAL AND NEONATAL IMAGING

### PRENATAL AND NEONATAL AIRWAY

Anatomy, Embryology, and Physiology of the Airway

Prenatal Diagnosis and Treatment of the Face, Neck and Airway

Congenital Anomalies and Acquired Lesions of the Neonatal Airway

### FETAL AND NEONATAL LUNG AND THORAX

Anatomy, Embryology and Physiology

Prenatal Diagnosis and Therapy of Chest Anomalies

Congenital and Acquired Lesion (Most Causing Respiratory Distress) of the Neonatal Lung and Thorax

Tumors, Tumor-like Conditions (masses), and Miscellaneous Lesions

### PRENATAL AND NEONATAL ABDOMINAL, PELVIC, AND RETROPERITONAL IMAGING

Embryology, Anatomy, and Physiology of the Gastrointestinal and Genitourinary Tracts

Prenatal Diagnosis and Therapy of Abdominal, Pelvic, and Retroperitoneal Abnormalities

Indications and Techniques for Neonatal Abdominal Imaging

Congenital Anomalies of the Gastrointestinal Tract

Congenital and Acquired Abnormalities of the Liver and Biliary System

Tumor and Tumor-like Conditions of the Gastrointestinal Tract, Liver and Biliary System

Necrotizing Enterocolitis

Miscellaneous Conditions of the Gastrointestinal and Hepatobiliary Systems

The Dilated Urinary Tract

Tumors and Tumor-like Conditions of the Urinary Tract

### Vascular Diseases of the Kidneys

Urinary Tract Infection

Miscellaneous Urinary Tract Disorders

The Adrenal Gland

The Genital Tract

### PRENATAL AND NEONATAL DISEASE OF THE HEART AND GREAT VESSELS

Embryology, Physiology, and Anatomy of the Fetal Heart

Prenatal Diagnosis and Treatment of Congenital Heart Disease

Neonatal Congenital Heart Disease Requiring Intervention in the First 28 Days

### PRENATAL AND NEONATAL CENTRAL NERVOUS SYSTEM DISEASE

Embryology and Anatomy of the Central Nervous System

Prenatal Diagnosis of Central Nervous System Anomalies

Neonatal Brain Imaging

Embryology, Anatomy, and Physiology of the Spine

Prenatal Diagnosis and Therapy of Fetal Spine Anomalies

Ultrasonography of the Neonatal Spine Canal

## NEURORADIOLOGY

### THE SKULL

Anatomy of the Skull

Craniosynostosis, Selected Craniofacial Syndromes, and Other Abnormalities of the Skull

Traumatic Lesions of the Skull

Infections of the Calvaria

Neoplasms and Neoplasm-like Lesions of the Skull

## THE FACE AND CRANIAL STRUCTURES

The Orbit

The Nose

The Sinuses

Temporal Bone and Ear

The Mandible

## THE BRAIN

Introduction

Imaging Modalities

Congenital Abnormalities

Inherited Metabolic and Neurodegenerative Brain Disorders

Pediatric Head Trauma

Brain Infections

Intracranial Neoplasms

Intracranial Vascular Abnormalities

Stroke

Hydrocephalus

## THE VERTEBRAE

The Normal Vertebrae

Congenital Malformations

Vertebral Trauma

Infections of the Vertebrae and Disk Spaces

Neoplasms of the Vertebrae

Miscellaneous Spinal Disorders

## SPINAL CORD

Imaging Modalities

Congenital Abnormalities of the Pediatric Spine

Trauma

Spinal Cord Infections

Tumors and Tumor-like Conditions

Vascular Lesions

## THE RESPIRATORY SYSTEM

### THE NECK

Neck and Upper Airway

### THE AIRWAY

Larynx and Cervical Trachea

### THE LUNGS

Normal Lung and Clinical Anatomy

Congenital Lung Malformations

Diseases of the Bronchi and Pulmonary Aeration

Interstitial Lung Disease

Pneumonia and Pulmonary Infection

Immune Disorders

Systemic Diseases and Other Miscellaneous Conditions with Lung Involvement

Lung Masses

### THE MEDIASTINUM

Mediastinum

## THE CHEST WALL, PLEURA, AND DIAPHRAGM

- Chest Wall
- Pleura
- Diaphragm

## THE HEART AND GREAT VESSELS

- Chest Radiography in Pediatric Cardiovascular Disease
- Pediatric Cardiothoracic CT Angiography
- Magnetic Resonance Imaging for Congenital Heart Disease
- Echocardiography
- Nuclear Cardiology
- Introductory Cardiac Embryology

### CONGENITAL HEART DISEASE

- Systemic to Pulmonary Arterial Shunts
- Right Heart Lesions
- Left Heart Lesions
- Abnormalities of the Great Artery Origins
- Congenital Great Vessel Abnormalities
- Surgical Considerations for Congenital Heart
- Syndromes and Chromosomal Anomalies

### ACQUIRED CARDIOVASCULAR DISEASE

- Myocardial and Valvular Disease
- Pericardial Disease
- Coronary Artery Disease in Children
- Acquired Great Vessel Abnormalities
- Cardiac Involvement by Systemic Diseases
- Cardiac Tumors

## THE ABDOMEN, PELVIS, AND RETROPERITONEUM

### IMAGING TECHNIQUES

- Gastrointestinal Tract
- Genitourinary Diagnostic Procedures
- Oncology: Imaging Gastrointestinal and Genitourinary Tumors

### ABDOMINAL WALL AND PERITONEAL CAVITY

- Abdominal Wall and Its Abnormalities
- The Peritoneal Cavity

### HEPATOBIILIARY SYSTEM

- Introduction to the Hepatobiliary System
- Congenital Abnormalities
- Infections of the Liver
- Diffuse Parenchymal Disease
- Vascular Abnormalities of the Liver
- Acquired Biliary Tract Disease
- Hepatic Tumors and Tumor-like Conditions
- Liver Transplantations in Children

### THE SPLEEN

- The Spleen

### THE PANCREAS

- The Pancreas

### THE ESOPHAGUS

- The Normal Esophagus
- Congenital Esophagus Malformations
- Disorders of Deglutition, Peristalsis, and the Velopharyngeal Portal
- Acquired Esophageal Lesions
- Disorders of the Esophagogastric Junction
- Miscellaneous Esophageal Abnormalities

#### THE STOMACH

- The Stomach: Normal Anatomy and Imaging Techniques
- Congenital Gastric Abnormalities
- Hypertrophic Pyloric Stenosis
- Gastritis, Gastropathy, and Ulcer Disease
- Tumors and Tumor-like Conditions, Bezoars, and Varices

#### THE DUODENUM AND SMALL INTESTINE

- The Duodenum and Small Intestine: Normal Anatomy and Imaging Techniques
- Duodenum: Congenital Anomalies
- Duodenum: Acquired Obstruction
- Duodenum: Inflammatory Conditions
- Duodenum: Tumors and Tumor-like Conditions
- Small Intestine
- Small Intestine: Tumors and Tumor-like Conditions

#### THE COLON

- Normal Anatomy and Congenital Disorders
- Functional Disorders
- Intussusception
- Inflammatory and Infectious Diseases
- Colon Tumors and Tumor-like Conditions

#### THE ADRENAL, KIDNEY AND RETROPERITONEUM

- The Adrenal and Retroperitoneum

#### THE KIDNEY

- Normal Renal Anatomy, Variants, and Congenital Anomalies
- Infections
- Urolithiasis and Nephrocalcinosis
- Renal Neoplasms
- Renal Failure and Transplantation
- Renal Vascular Disorders

#### LOWER URINARY TRACT

- The Ureter and Vesicoureteral Reflux

#### THE BLADDER AND URETHRA

- The Bladder and Urethra

#### THE REPRODUCTIVE ORGANS

- Anomalies of Sex Differentiation
- Abnormalities of the Male Genital Tract
- Abnormalities of the Female Genital Tract
- Abnormalities of Puberty and Amenorrhea

#### ABDOMINAL TRAUMA

#### MUSCULOSKELETAL SYSTEM

## IMAGING OF THE SOFT TISSUES

- The Soft Tissues
- Soft Tissue Neoplasms
- Vascular Anomalies of the Soft Tissues

## NORMAL SKELETAL ANATOMY

- Normal Anatomy, Growth, and Development
- Anatomic Variants

## CONGENITAL MALFORMATIONS

- Congenital Malformations of Bone
- Skeletal Dysplasias
- Selected Syndromes and Chromosomal Disorders

## METABOLIC AND ENDOCRINE DISORDERS

- Metabolic Bone Disease
- Endocrine Disorders
- Bone Mineral Density Assessment

## TRAUMA

- Skeletal Trauma
- Child Abuse
- Sports-Related Injury in Children

## OSTEOCHONDROSES

## DISORDERS IN ALIGNMENT

## INFECTIONS

## BONE TUMORS

- Benign
- Malignant

## BONE MARROW

- Imaging of Normal and Abnormal Bone Marrow

## BONE CHANGES IN DISEASES OF BLOOD

## THE JOINTS

- The Joints – Anatomy and Imaging
- Developmental Dysplasia of the Hip

## PEDIATRIC INTERVENTIONAL RADIOLOGY

- Patient Management

## RESPIRATORY

- Empyema and Thoracic Abscess Drainage
- Bronchial Artery Embolization

## NEURORADIOLOGY

- Neurologic Interventions

## HEART, GREAT VESSELS, AND VASCULAR ACCESS

- Pediatric Vascular Procedures: Arterial and Venous
- Vascular Anomalies in Children
- Vasculitis in Children and Adolescents

## ABDOMEN AND GASTROINTESTINAL TRACT

- Imaging-Guided Biopsy in Pediatric Patients
- Gastrostomies and Gastrojejunostomies in Children
- Drainage of Infected Abdominal Fluid Collections
- Interventional Radiology of the Liver and Biliary System

## URINARY TRACT AND RETROPERITONEUM

- Pediatric Genitourinary Intervention

Interventional Radiology of Renovascular Disorders  
MUSCULOSKELETAL  
Pediatric Musculoskeletal Interventional Procedures

# Pediatric Radiology Fellow Rotation in General Pediatric Radiology

Educational Goals: By the end of the rotation, the fellow will have gained experience in these competency areas and be able to show:

**Patient Care:** Competent management of patients in the fluoroscopy suite (including positioning, restraint, dose reduction through coning and shielding, attention to temperature, oxygenation and hydration), best performance of fluoroscopy examinations (GI, GU and respiratory tracts), best performance of ultrasound examinations (chest, abdomen, pelvis; ability to perform sonography as well as critique sonographer-obtained images) utilizing gray-scale and duplex Doppler, best performance of CT examinations (chest, abdomen, pelvis) with most efficacious use of IV and oral contrast, prevention and management of IV contrast reactions, best performance of Body MR examinations with most appropriate protocoling and use of IV and oral contrast as well as management of sedation and recovery.

**Medical Knowledge:** Reliable recognition of normal and abnormal radiologic findings in musculoskeletal, GU, GI, respiratory and cardiovascular systems with interpretation appropriately influenced by patient age, sex, prior imaging findings and coexisting medical problems; composition of a reasonable differential diagnosis

**Practice-based Learning and Improvement:** Recognition of sub-standard images and how to avoid them

**Interpersonal and Communications Skills:** Concise and accurate radiologic reports, facility with clinical rounds and telephone consults, lucid discussion of clinical material in conferences and assigned presentations, ability to talk with patients and families to secure cooperation and informed consent.

**Professionalism:** Dedication to the highest standards of performance, promoting collegial atmosphere with ancillary professionals, protecting patient confidentiality

**Systems-based Practice:** Ability to act as a consultant, integrating clinical and radiological findings to suggest best imaging algorithm, ability to organize workflow for best balance of patient care demands and personnel resources

Duration: 8.5 months, distributed through the year.

Evaluation: quarterly evaluations by all faculty, 360 degree evaluations at 6 months and 12 months from technologists and nurses, performance in midday conferences, quality of reports.

Supervising faculty member: Jane Benson MD

Other participating faculty: Thierry Huisman MD, Melissa Spevak MD, Renée Flax-Goldenberg MD, Aylin Tekes MD, Ulrich Willi MD.

Curriculum: In the general rotation, the fellow spends time assigned to fluoroscopy, plain films, cross-sectional imaging and pediatric neuroradiology, usually on a daily basis, paired with an attending. Occasionally, on the pediatric neuroradiology rotation, the fellow may be paired with

a neuroradiology fellow. The division also accepts pediatric residents and medical students for elective rotations as observers, and these individuals also form a part of the educational experience. Midday conferences (case and didactic) as well as morning clinical rounds (NICU, PICU and Emergency Department) are attended and eventually conducted by the fellow. There must be completion of all the modules in the SPR on-line curriculum and completion of case-associated assigned reading.

Division Resources: Film-based teaching file in the reading room. Recent textbooks and journals in the office and reading room. Internet resources available through each workstation, including journal articles through PubMed (using the institutions's comprehensive subscription portal), the SPR modules and RadPrimer (an interactive web-based teaching file).

Duty Hours: Division hours and call responsibility as outlined under Duty Hours. All studies accessioned by 5pm are read that day. Average hours: 50.

# Pediatric Radiology Fellow Rotation in Pediatric Neuroradiology

Educational Goals: By the end of the rotation, the fellow will have gained experience in these competency areas and be able to show:

**Patient Care:** Proper management of pediatric patients in the MRI suite, demonstrating knowledge of sedation and restraint; knowledge of MRI CNS protocols and their use, appropriate use of IV-gadolinium contrast, best performance of ultrasound examinations (brain, spine) utilizing gray-scale and duplex Doppler, best performance of CT examinations (head, spine) with most efficacious use of IV contrast, prevention and management of IV contrast reactions.

**Medical Knowledge:** Reliable recognition of normal and abnormal radiologic findings in the central nervous system with interpretation appropriately influenced by patient age, sex, prior imaging findings and coexisting medical problems; composition of a reasonable differential diagnosis

**Practice-based Learning and Improvement:** Recognition of sub-standard images and how to avoid them

**Interpersonal and Communications Skills:** Concise and accurate radiologic reports, facility with clinical rounds and telephone consults, lucid discussion of clinical material in conferences and assigned presentations, ability to talk with patients and families and secure cooperation and informed consent.

**Professionalism:** Dedication to the highest standards of performance, promoting collegial atmosphere with ancillary professionals, protecting patient confidentiality

**Systems-based Practice:** Ability to act as a consultant, integrating clinical and radiological findings to suggest best imaging algorithm

Duration: 20 work-days, distributed through the year, plus participation in cases presented at midday conferences.

Evaluation: quarterly evaluations by pediatric neuroradiology faculty (as part of the general quarterly evaluation process), case presentations at midday conference, quality of reports.

Supervising faculty member: Thierry Huisman MD

Other participating faculty: Aylin Tekes MD, Izlem Izbudak MD

Curriculum: The pediatric neuroradiology service is shared by the Pediatric Radiology Division (3 weeks per month) and the Neuroradiology Division (1 week per month). During the weeks when Pediatric Radiology has responsibility, the Pediatric Radiology fellow shares rotation with fellows from neuroradiology, taking the service between 2 and 3 days per month. On those days the fellow has the responsibility to protocol, monitor and dictate all pediatric head and spine MRI scans, and dictate all head and spine CT and US, attended by Dr. Huisman, Dr. Tekes or Dr. Izbudak. The number of cases per day totals between 25-35. Trauma, craniofacial malformations, congenital brain and spine malformations, brain hemorrhage and its consequences in the

premature infant, CNS infection, and tumors are all represented in the patient case-load. Case-related reading will be assigned by the faculty.

Division Resources: Recent textbooks and journals in the office and reading room, internet resources available through each workstation.

Duty Hours: MRI protocoling begins at 7am. All studies done before 5pm are read that day. Night and weekend call is through the General Pediatric Radiology service only. Average hours: 50.

## Pediatric Radiology Fellow Rotation in Interventional Radiology

Educational Goals: By the end of the rotation, the fellow will have gained experience in these competency areas and be able to show:

**Patient Care:** Understanding of basic angiographic techniques, how to reduce radiation dose to the patient and to him/her self, the clinical aspects of patient assessment, management and follow-up

**Medical Knowledge:** Knowledge of indications for vascular and non-vascular interventional procedures and how they affect the clinical course of the patient, familiarity with some of the pharmacologic tools used in pediatric procedures: contrast agents, sedatives, analgesics, antibiotics, embolization materials and thrombolytic agents and their appropriate use for various pathologic entities.

**Practice-based Learning and Improvement:** an appreciation for how procedures are modified depending on patient condition and success with prior procedures

**Interpersonal and Communications Skills:** Concise and accurate radiologic reports, facility with clinical rounds and telephone consults, lucid discussion of clinical material in conferences and assigned presentations, ability to talk with patients and families and secure cooperation and informed consent.

**Professionalism:** Dedication to the highest standards of performance, promoting collegial atmosphere with ancillary professionals, protecting patient confidentiality

**Systems-based Practice:** Ability to act as a consultant, integrating clinical and radiological findings to suggest best imaging algorithm

Evaluations: At the end of the rotation, the supervising faculty member will fill out the fellow evaluation form supplied by Pediatric Radiology. The fellow will keep accurate case logs of all pediatric cases participated in, observed, dictated or discussed.

Duration: four weeks, divided as: two contiguous weeks, followed by 10 sequential Wednesdays (the day of the week on which most pediatric studies are performed)

Supervising faculty member: Sally Mitchell M.D.

Curriculum: The Cardiovascular Diagnostic Laboratory (CVDL) performs trunk and extremity angiography, as well as interventional catheter work (abscess drainages and nephrostomies under ultrasound, embolizations, thrombolysis) in adult and pediatric patients. The total case load in a month is between 400-450 cases. The fellow spends the elective assisting Dr. Mitchell in the assessment, performance, interpretation, and follow-up of 20-25 pediatric patients. When a pediatric patient is not available, the fellow observes and assists in adult cases. Since all cases in CVDL are closely monitored by faculty, attending contact is about 12 hours per day. The fellow is given progressive responsibility for patient management at the discretion of the attending. All fellows and residents on the service (6-8 persons) attend a daily didactic conference given by

faculty and senior fellows. Pediatric vascular conference occurs monthly; pediatric case material is also included in other conferences. Suggested reading for the fellow: Handbook of Interventional Radiologic Procedures by Krishna Kandarpa and John E. Aruny. Specific articles will be recommended based on procedures being done.

Division Resources: The Laboratory extends on a single floor through two adjacent buildings. It has its own patient preparation and recovery area, in addition to procedure rooms. Patients are admitted to the inpatient floors by the CVDL service, or come to the service through consultation. The conference room also houses the division library of 4 journals and 20 reference books. A Teaching File is being developed. The fellow also has access to the main radiology library, the medical school library, and internet reference portals.

Duty Hours: The fellow is expected at 7am conference M-F where cases are discussed and plans are made for those with ongoing treatment. Cases (performance, interpretation, dictation) and patient care activities occupy the rest of the day. If a case continues past 9pm, the fellow will be expected back in the division 10 hours after it ends. Daily hours can be adjusted, through close monitoring with Dr. Mitchell, to stay within the guidelines established for the IR fellows.

Total weekly hours: 60-80.

## Pediatric Radiology Fellow Rotation in Nuclear Medicine

Educational Goals: By the end of the rotation, the fellow will have gained experience in these competency areas and will know:

**Patient Care:** How exams are performed, the actions of the nuclear pharmacologic agents, and what methodological modifications must be made to tailor an exam to a specific patient or clinical problem; specifics of pediatric patient management that differ from adult management: restraint, sedation and recovery.

**Medical Knowledge:** The clinical indications and contraindications for PET/CT and conventional nuclear medicine exams (ex: bone scans, gastric emptying, MIBG, and renal scans) in children; how to interpret exams, recognizing abnormal findings, and formulating a differential diagnosis.

**Practice-based Learning and Improvement:** How to distinguish actual findings from artifacts; how to minimize artifacts through adjustments in technique

**Interpersonal and Communications Skills:** What is included in a concise and accurate report; ways to explain the exam that will successfully secure parental informed consent while de-fusing anxiety.

**Professionalism:** The highest standards of performance, while promoting collegial atmosphere with ancillary professionals, protecting patient confidentiality

**Systems-based Practice:** Ability to act as a consultant, integrating clinical and radiological findings to suggest best imaging algorithm

Evaluations: At the end of the rotation, the supervising faculty member will fill out the fellow evaluation form supplied by Pediatric Radiology. The fellow will keep accurate case logs of all pediatric cases seen and discussed.

Duration: four weeks, in two 2-week blocks

Supervising faculty member: H. Ziessman MD

Other participating faculty: Z. Szabo MD, F. Bengel MD, P. Ladenson MD, D. Wong MD, U. Willi MD

Curriculum: The Nuclear Medicine division performs an average of 922 conventional isotope-aided scans and 209 PET scans per month, of which about 84 are in pediatric patients. The Pediatric Radiology fellow works with the Nuclear Medicine fellows (2) and residents (1-2) on the service as they assist in performance and interpretation of exams. Responsibility for producing the final report can be taken as experience permits. Faculty participates in exam read-out for about 4 hours each day during which the fellow's level of judgment and technical skill are continually assessed. Supplementary experience can be gained from reviewing the on-line file of all the clinical cases since 2001. Supplemental reading is expected (suggested texts: Atlas

of Clinical Positron Emission Tomography, Second Edition, Barrington, Maisey, and Wahl; The Requisites, Nuclear Medicine 3rd edition, Ziessman, O'Malley, and Thrall, Mosby 2005; Pediatric Nuclear Medicine, 2nd edition, Treves ST, Editor, Springer Verlag, 1995). The fellow is also expected to attend and participate in these regularly scheduled conferences: Daily: Clinic; Weekly: PET, Physics; Semi-monthly: Procedure; Monthly: Follow up, Journal club, Resident subject review, QA, Thyroid, Cardiac, PET/CT, Pediatric GU, Pediatric (other)

Division Resources: The division has space in the hospital and outpatient building sites. There is a dedicated PACS for the division and all exams are filmless. The reading rooms are equipped with electronic reading stations and dictation terminals as well as projectors and screens for conferences. Currently, there is no library specifically dedicated to Nuclear Medicine. However, the fellow has access to the Radiology department library and the Welch Medical library through internet portals to on-line journal subscriptions.

Duty Hours: The division is open M-F 7:30am-7:30pm. There is no call responsibility for the fellow; call through the General Pediatric Radiology service only.

Total weekly hours: about 55.

## Pediatric Radiology Fellow Rotation in Musculoskeletal Radiology

Educational Goals: By the end of the rotation, the fellow will have gained experience in these competency areas and be able to show:

**Patient Care:** Understanding of CT and MRI techniques to examine soft tissues, bones and joints, familiarity with some of the pharmacologic tools used in pediatric procedures: contrast agents, sedatives.

**Medical Knowledge:** Knowledge of indications for MR vs CT examination of bones and joints and clinical and historical signals that aid evaluation of urgency for imaging.

**Practice-based Learning and Improvement:** How procedures are modified depending on patient condition and the clinical questions

**Interpersonal and Communications Skills:** Concise and accurate radiologic reports, facility with clinical rounds and telephone consults, lucid discussion of clinical material in conferences and assigned presentations, ability to talk with patients and families and secure cooperation and informed consent.

**Professionalism:** Dedication to the highest standards of performance, promoting collegial atmosphere with ancillary professionals, protecting patient confidentiality

**Systems-based Practice:** Ability to act as a consultant, integrating clinical and radiological findings to suggest best imaging algorithm

Evaluations: At the end of the rotation, the supervising faculty member will fill out the fellow evaluation form supplied by Pediatric Radiology. The fellow will keep accurate case logs of all pediatric cases participated in, observed, dictated or discussed.

Duration: two weeks.

Supervising faculty member: John Carrino M.D.

Curriculum: The fellow will come to the rotation with a knowledge of normal maturation-related pediatric musculoskeletal anatomy. The aim of the curriculum is to demonstrate the unique perspective of Musculoskeletal Radiology as a discipline and impart to the fellow some of the refinements in CT and MR imaging protocol and interpretation that lead to diagnosis and to better communication with Orthopedic colleagues. Imaging of bone and soft-tissue tumors, trauma, athletic injury, osteomyelitis, septic arthritis, and post-surgical changes are explored. Proper nomenclature and descriptive terms are stressed. Reference text: Atlas of Orthopaedics and Sports Medicine – David W. Stoller, 2008 (available in the Pediatric Radiology Library)

Division Resources: A Teaching File is being developed. The fellow also has access to the main radiology library, the pediatric radiology library, the medical school library, and internet reference portals.

Duty Hours:

Total weekly hours: 45-50.

## Sample Rotation Schedule for the Pediatric Radiology Fellowship

July – Orientation, General Radiology (plain film, fluoro, CT, US)

August -- General Radiology (plain film, fluoro, CT, US, neuroradiology)

September -- General Radiology (plain film, fluoro, CT, US, Body MR) – two weeks

Vacation – two weeks

October – Nuclear Medicine – two weeks

General Radiology (plain film, fluoro, CT, US, Body MR, neuroradiology) – two weeks

November – MSK Radiology – two weeks

December -- General Radiology (plain film, fluoro, CT, US, Body MR)

January -- Nuclear Medicine – two weeks

General Radiology (plain film, fluoro, CT, US, Body MR) – two weeks

February – Interventional Radiology (2 weeks)

February –March - April -- General Radiology (plain film, fluoro, CT, US, Body MR, neuroradiology) 4 days/week; Interventional Radiology 1 day/week for 10 weeks

May -- General Radiology (plain film, fluoro, CT, US, Body MR) – two weeks

Vacation – two weeks

June -- General Radiology (plain film, fluoro, CT, US, Body MR, neuroradiology)

## Opportunities and Resources for Research and Outside Study

Scholarly Project: During the 8.5 months of general pediatric radiology and neuroradiology rotations, the fellow has 1/2 day per week to pursue academic interests. This time may be used to conduct clinical or laboratory research. Opportunities exist in all areas of radiology to collaborate in such research. In addition, there are opportunities in pediatrics and its subspecialties and related fields. The trainee is given specific suggestions and contacts early in the year to help in this endeavor. The fellow is expected to produce at least one scholarly project during the year.

The fellow will attend international, national or regional meetings as described under Division-sponsored Benefits, with expenses at least partially paid by the division.

Outside rotations: As described at the beginning of this handbook, pediatric radiology at this institution is a division, not its own department. Because much of the specialty is practiced at dedicated children's hospitals, the fellow is given the opportunity to experience this mode of practice by doing portions of general and specialty rotations at such a hospital. Arrangements are made individually at the fellow's instigation. Institutions with ACGME-approved fellowships in Pediatric Radiology are preferred sites. Some money is available to aid with living expenses.

Elective time: The fellow may take up to 3 months of elective time in a subspecialty area (e.g. cardiac, neuroradiology, fetal, molecular imaging) or in such areas as informatics, quality and safety, education or research. The length and content of the elective is determined in discussion with the fellow, the program director and the division chair. Mentorship, monitoring of progress and suitable outcome evaluation format must be addressed in any proposal for elective time.

## ALARA (As Low As Reasonably Achievable) Concept

Reduction of radiation dose is emphasized at many levels. The fellow is assumed to have the basic level of understanding of radiation physics afforded by diagnostic radiology residency. A module concerning fluoroscopy safety, found in the on-line JHMI curriculum, help refresh this.

Refinements in that understanding needed for pediatric radiology practice are emphasized during the fellowship. Two modules in the on-line Society for Pediatric Radiology curriculum are devoted to this.

Critique of fluoroscopic studies includes review of fluoro time, coning, shielding and number of exposures vs last-image-hold images.

The operation of the fluoroscope itself is reviewed, to insure that the fellow understands how to optimize the settings.

When planning an imaging work-up, no- or low-dose studies (US, MRI, nuclear medicine) are favored over CT, x-ray and fluoro where appropriate, and the advantages/disadvantages are discussed.

Weight and age-based CT protocols are in place in the CT technical areas. Review of individual CT exams includes noting the appropriateness of mA and kV levels to the child's age and weight.

The fellow's evaluation forms for diagnostic and interventional fluoroscopy study skills include recording of fluoro time and skin dose.

## Global Training Objectives and the Competencies Addressed

### By the end of the first quarter, the fellow will have:

Read the Fellows' Manual and understood the scope and expectations of the fellowship.(PRO, SBP, PBLI, ICS)

Read the Division Handbook and observed the mode of practice of this division of Pediatric Radiology. (MK, PC)

Read Making the Most of Being Mentored by Gordon F. Shea (PRO, PBLI)

Completed on-line instructional and compliance modules as required by the JHMI (PRO)

Obtained Basic Life Support qualification (PC, PRO)

### By the end of the second quarter, the fellow will have:

Completed all of the Society for Pediatric Radiology's online curriculum modules (MK, PRO)

Completed on-line instructional courses to enhance teaching skills (PRO, ICS)

### By the end of the year the fellow will have:

Participated in the performance and/or reporting of sufficient numbers of pediatric imaging examinations and procedures to constitute a full range of experience, as illustrated in the Curriculum (MK, PC, SBP, PBLI)

Developed a reporting style that is succinct, accurate and informative, combining patient history with radiologic findings to formulate a clinically relevant interpretation and recommendations for further imaging (ICS)

Kept an accurate log book for nuclear medicine, musculoskeletal and interventional studies (including US guided hip aspiration and fluoro-guided intussusception), delineating level of participation (PBLI)

Taken part in a research project and submitted it for publication and/or presented it at a divisional, departmental, local or national meeting (PBLI)

Taken part in a QA project that has implications for daily practice and presented it at a divisional conference (PC, SBP)

Developed an educational project for radiology residents or medical students(lecture, film quiz, case conference) and presented it to its intended audience . (PBLI)

Attended all division conferences and presented at least one case follow-up conference and at least one journal club (MK, PBLI)

Attended at least one interdepartmental clinical conference per week and presented in at least one in each area. (ICS, SBP, PC)

Documented procedural competencies, conference attendance and presentations with completed evaluation sheets. (PRO, ICS, PBLI)

Completed all requested evaluations of the program and the faculty; documented daily clinical activities and logged duty hours. (PRO)

Attended a national, international, and/or regional pediatric radiology meeting. (MK, PBLI)

Completed supplementary textbook reading as directed by faculty to further understand ongoing clinical cases. (MK)

Participated in one semi-annual and two quarterly reviews and a final evaluation (PBLI)

## Summary of educational resources to fulfill training objectives

This is a chart whose format requirements cannot be accommodated in the electronic form of the Manual. Please see the printed copy in the office.

## Explanatory Notes Concerning Educational Resources

On-Line Curriculum: The didactic program includes the online curriculum developed by the Pediatric Radiology division at the Cleveland Clinic Foundation, under a grant from and endorsed by the Society for Pediatric Radiology's Research and Education Foundation. It comprises 60 modules on topics covering the breadth of pediatric radiology practice, written by 75 experts in the field. Each module comes with a pre-and post test that the learner must pass to complete the module and obtain a certificate. The fellow's certificates are kept in his/her file.

Faculty Lectures and Case Conferences: A morning lecture and/or a case conference are given by a pediatric radiology faculty member 3 times per month for the radiology residents in the main departmental lecture hall. The didactic lecture may be reprised in the division (modified for the faculty and fellow in the audience) and the case material is available on the division's shared computer space. An 18-month curriculum is planned for the residents.

Midday conferences: There are 3 weekly midday conferences of current cases (fluoro, plain films, CT, US, MR) in the division reading room, attended by the fellow and available faculty. Discussion may involve critique of images, summary of the patient's clinical course, exploration of the pathology in a "mini-lecture".

A fourth midday conference time alternates between didactic lectures by in-house and invited faculty (some of which are CME-designated), Journal Club, and Case Follow-up Conference

### Interdisciplinary Clinical Conferences

The fellow participates in subspecialty conferences throughout the year. These are listed in Part 6. Each conference has a faculty preceptor. The fellow will help prepare and give one clinical conference per week, arranged with the faculty on the fellow's sign-up sheet in the office. The faculty preceptor will fill out an evaluation form for the fellow to turn in.

### Other Educational Resources:

A library of current textbooks is kept in the division office and reading room (see list following).

The Welch Medical Library of the School of Medicine maintains an extensive subscription to online journals available directly through Pub Med, when this site is accessed through departmental computers (or the VPN when outside the hospital).

The fellow is entitled to a free one-year subscription to Pediatric Radiology journal.

### QA/QI Project Description

The fellow is expected to do a QA/QI project during the year and present it at a conference time for the faculty. Depending on the content and scope of the project, others

(e.g. technologists, administrators, nurses) could be invited to the presentation also. If suitable, the project could be submitted as an abstract and/or a publication.

The project can tackle a service problem that impedes workflow, address a potential to improve patient experience in the division, suggest a change in technique that will decrease patient dose, explore a communication problem with the clinicians, use a new technology development in a novel way that improves patient care. Discuss your ideas with the faculty: problems often have a history. Dr. Paul Nagy, the department's specialist in QA/QI, can be contacted to help with methodology. For projects involving radiation dose, contact Dr. M. Mahesh, the department's radiation physicist.

The project should be organized like a research paper:

Introduction: explore the background of the problem –how did it evolve into this?  
Discuss any prior attempts to change the system. Look at prior literature.

Materials and Methods: describe the problem, get baseline metrics

Results: show how the problem would change or be solved with the intervention you propose

Discussion: talk about ways to implement your solution; discuss the impact on patient care; suggest further ways to look at the problem.

### Teaching Responsibilities

In addition to performing clinical duties, the trainee is informally encouraged to provide guidance and instruction to the medical students and radiology and pediatric residents throughout the year as they rotate through the division. If the fellow has a specialty interest, he/she can give one of the didactic morning resident conferences. The fellow is expected to give at least one Morning Case Conference for the residents. There is a 1-month general radiology elective for medical students which is offered throughout much of the year in which radiology faculty, residents and fellows from all the Radiology divisions give didactic lectures. The fellow may be asked to give a one hour lecture or case conference for this course. There are evaluation forms for these activities (see Part 7: "Documentation Requirements")

### Developing Teaching Skills

Several online resources are available through the School of Medicine and can be accessed by going to [http://www.hopkinsmedicine.org/fac\\_development/teaching/](http://www.hopkinsmedicine.org/fac_development/teaching/). Three courses in particular are suggested to enhance presentations and improve instructional interactions:

Giving Feedback

Case Method Teaching

Advanced Powerpoint

Compliance with Institutional Requirements:

All clinical fellows at the Johns Hopkins University School of Medicine must complete a series of on-line instructional modules in their first month. These are listed in the Resources chart in Part 5 and on the GMEC website at

[http://www.hopkinsmedicine.org/bin/q/j/Education\\_Modules\\_05\\_12\\_2010\\_WORD.pdf](http://www.hopkinsmedicine.org/bin/q/j/Education_Modules_05_12_2010_WORD.pdf)

The fellow should also be BLS-certified. This is done at institution-wide GME-sponsored Orientation. ACLS courses are offered throughout the year.

## List of Conferences

NICU – Radiology conference – daily

PICU – Radiology conference – daily

Pediatric Emergency Department conference – daily

Pediatric Radiology division case conference – 3 per week

Pediatric Radiology didactic resident conference – 12 per year

Pediatric Radiology resident case conference – 24 per year

GI – Radiology clinical conference – 3 per year

Nephrology – Radiology clinical conference – twice per month

Pediatric Nuclear Medicine conference – twice per month

Surgery – Radiology clinical conference – monthly

Pulmonary – Radiology clinical conference – 2 per year

Pediatric Radiology didactic divisional conference – weekly, divided among/presented by:

    CME Didactic conferences/divisional and invited faculty

    Non-CME didactic conferences /divisional faculty and fellow

    Pediatric Radiology journal club /divisional faculty and fellow

    Pediatric Radiology problem case follow-up M&M conference /divisional faculty and fellow

Neonatal Intensive Care – Neuroradiology conference – weekly

Pediatric Neuro-oncology conference – weekly

Pediatric Tumor Board – weekly

Pediatric ENT conference – once per month

Vascular Anomalies conference – once per month

Pediatric Neuroradiology case conference (for neuroradiology fellows) – once per month

Pediatric Urology – Radiology – weekly

Pediatric M&M Conference

Trauma M&M Conference

## LIBRARY LIST

TITLE	AUTHOR(S)	YEAR
Atlas of Pediatric Orthopaedic Surgery (3rd edition)	Morrissy, R., Weinstein, S.	2001
Caffey's Pediatric Diagnostic Imaging (10th edition, vol. 1)	Kuhn, J., Slovis, T., Haller, J.	2004
Index for Roentgen Diagnoses including Diagnostic Ultrasound (Revised 3rd edition)	American College of Radiology	1975
Medical Radiology/Diagnostic Imaging/Pediatric Uroradiology	Baert, A., Sartor, K., Fotter, R.	2001
Primer of Diagnostic Imaging (3rd edition)	Weissleder, R., Wittenberg, J., Harisinghani, M.	
An Atlas of Anatomy (2nd edition)	Grant, J.B.	1947
Diagnostic Imaging of Child Abuse (2nd edition)	Kleinman, P.	1998
Bone Dysplasias: An Atlas of Constitutional Disorders of Skeletal Development	Spranger, J., Wiedemann, H., Langer, Jr., L.	
The Developing Human: Clinically Oriented Embryology (2nd edition)	Moore, Keith L	1973
Radiology Of The Kidney	Davidson, Alan J. M.D.	1985
A Radiographic Standard Of Reference	Pyle, Idele S., PhD , Hoerr, Norman	1969

For The Growing Knee L. PhD ,MD

Atlas Of Pediatric Radiology	Javad, Jannat MD , Malayeri,Ashkan-Akhavan MD.	2004
Practical Pediatric Imaging: Diagnostic Radiology Of Infants And Children (3rd edition)	Kirks Donald,R. , Griscom Thorne ,N	1998
Atlas Of Normal Roentgen Variants That May Simulate Disease (7th edition)	Keats Theodore, E.MD , Anderson Mark,W.MD	2001
Radiology Of Syndromes, Metabolic Disorders, And Skeletal Dysplasias (4th edition)	Taybi Hooshang , Lachman Ralph ,S.	1996
The Radiologic Clinics Of North America Radiographic Manifestation Of Common Congenital Anomalies (edition9 )	Oh, Kook Sang MD Guest Editor	1991
Magnetic Resonance Imaging Of Congenital Heart Disease	Barry D. Fletcher ,Mark D . Jacobstein	1996
Magnetic Resonance Imaging Clinics Of North America Pediatric - Pediatric Musculoskeletal MRI Imaging	Marilyn J .Siegel ,MD	1996 1998
Diagnosis Of Bone And Joint Disorders (4th edition volume 4,12 )	Resnick,Donald MD	
The Hand In Radiologic Diagnosis/With Gamuts And Pattern Profiles (2nd edition,	Poznanski , Andrew K . MD	

volume 1,2)

Radiologic Clinics Of  
North America /  
Multislice Helical CT Of  
The Thorax ( volume 4  
)

Clinical Pediatric  
Urology (2nd ,3rd  
edition volume 1,2 )

The Radiologic Clinics  
Of North America  
Imaging Of Obstructive  
Pulmonary Disease

Golden's Diagnostic  
Radiology Pediatric  
Radiology (section 15)  
(2nd edition)

Practical Gamuts And  
Differential Diagnosis  
In Pediatric Radiology

Dynamic Radiology Of  
Abdomen, Normal and  
Pathologic Anatomy  
(2nd edition)

Pediatric  
Cardiovascular  
imaging

Stollers' Atlas Of  
Orthopaedics And  
Sports Medicine

Physicians' Desk  
Reference PDR ( 61st  
edition )

CT And Imaging Of  
The Whole Body  
(volume 1,2 edition 4 )

Diagnostic Imaging:  
Pediatric

Boiselle, Phillip M .MD

Panayotis P.Kelalis M.D., Lowell  
R.KingM.D A.Barry Belman M.D.

W. Richard Webb , M.D

Robbins, Laurence M.D.,  
Davis, Laurence A M.D. ,Shearer  
, Loretta M.D.

Sang, Kook OH, Ledesma-  
Medina, Jacyline, Bender, Thomas  
M., Girdany, Bertram R.

Meyers, Morton A

Tonken, Ina Lynn M.D.

Stoller, David W. M.D. FACR

La Gow, Better

Haaga , John R. , Gilkeson , Robert  
C. Lanzieri , Charles F.

Barkovich, Jeffrey , Manaster ,  
Gurney , Zimmerman

1976 1982

1992

2008

2007

2003

2007

Neuroradiology ( 1st  
edition )

Defferential Diagnosis In Pediatric Radiology Ebel, Klaus-Dietrich M.D. ,Blickman ,Hans M.D. 1999

Radiology Of The Kidney Allen J . Davidson ,MD 2006

Selected topics In  
MR.Neuroimaging

Magnetic Resonance Imaging Clinics (volume 14#2 ) 2006

Medical Radiology/Diagnostic Imaging/ Imaging In Pediatric Skeletal Trauma K.J,Johnson , E.Bache ( editors ) 2008

Medical Radiology/Diagnostic Imaging/Emergency Pediatric Radiology Hi, Carty (editor) 2008

The Human Central Nervous System (4th edition ) R.Nievienuhuys, J.Voogd , C.VanHeizen 1965

Magnetic Resonance Imaging In Orthopaedics And Sports Medicine ( 3rd edition ) (volume # 1& 2 Lower & Upper Extremity ) Stoller,David W. M.D. FACR 2007

Telephone numbers 7/1/11

0=550;2=502;3=283;4=614;5=955;6=516;7=287(443)

Radiology Technologist work areas

Peds 5-7717, Fluoro rm 3 5-7713

GOR 5-5178

Tower 5-2818

Tower room 4 2-6744

JHOC OR 4-3976

JHOC 4<sup>th</sup> floor 5-6474

Rubenstein 7-9021

JHOC DEXA 5-9492

Park ED 5-5126, 4-0899

Adult ED 5-2176

MR 5-4316, 5-4265

KKI 443-923-2701

Radiology Desk areas

Peds/Neuro 5-6175; waiting room phone 5-1367

Ultrasound JHH 5-5811

Tower 5-6126

CT scanners

JHH 5-5050; PET-CT 2-4770

ED 4-5223

JHOC3 5-4671

7<sup>th</sup> floor JHH 2-1954/5

Radiologist reading areas

Peds main reading room 5-6454

Neuro war room 7-6297

MSK secretary (knows where people are) 2-6996

JHOC 5 2-6981

Nuclear Medicine JHH 5-8426

JHOC4 5-9487

ED censor 5-2174

MR – JHH 5-4317; Peds Neuro 2-9985

US – 5-7488

Ultrasound

JHH front desk 5-5811, sonographers 2-6205

JHOC work area 5-7070, 5-8099

Peds US Rm 2 – 2-3239

Customer Service

JHOC 5-6760, 5-6766

JHH (443-28)7-7378

Radiologist offices

Main office—Iris Bellamy 5-6141 Benson 5-6456

Spevak 4-3201, Flax 2-9143, Tekes 2-6631

Fax numbers

Ped rad office 2-3633, Peds reading room 4-1833

Radiology Paggers

US portables 3-2947, Peds xray portables 3-2958

Pediatricians

Park ED docs area 5-7330

Neill Team: CM6; covers GI&card nights/wkends

Zinkham team: CM9; covers pulm&heme n/we  
ED walk-in 5-5680 (desk), 5-5710, 2-0500, 4-1070  
Harriet Lane Clinic -Rubenstein 7-8925/6  
Harriet Lane Adolescent Clinic Rubenstein 7-8924  
Bayview NICU 0-0441  
Alec Hoon 410471-7277, Eric Levey 410408-6697  
Ivor Berkowitz – 410-591-5646  
Jay Shapiro – 301-693-1736

#### Surgeons

GPS clinic 5-9582  
GPS PA Margaret Knight  
Peds Ortho PA Peggy Wilckens  
GPS Intern 3-6660, GPS senior 3-3981  
ENT clinic 5-9357  
Neurosurg—Carson 57888; Jallo 57851; Ahn 27700  
PA's: Carol James, Judy Gates, Stephanie Chen,  
Heather Long

#### Pediatric Offices

Gearhart 5-5358  
Heme 5-6132  
Onc 5-8751  
Pulmonary 4-5637  
GI nurses 5-9163 Lynn Mattis  
GI 5-8765, fax 5-1464  
Nephrology 5-2467  
GPS 5-5210

#### Clinical areas – Nursing stations

Park ED 5-5680 (access to peds ED walk-in side)  
JHOC Recovery room 5-9487

#### JHH recovery (PAC-P) 5-5722

NICU CM2 5-5255  
Osl 2 Newborn nursery 5-5829  
CM4 5-5240  
CM6 5-5250  
PICU7 5-5260  
Onc CM8 5-2442, Onc clinic 4-2455/6, 5-8752  
PCRU Bla 3- 5-5245  
KKI 3<sup>rd</sup> floor 443-923-9433  
KKI OT/PT 443-923-9290  
KKI operator 443-923-9200  
General OR's

Desk Blalock 5-8075

Desk Carnegie 5-6520

#### JHH OR #16 4-1394; 7-5124

Ortho Clinic JHOC5 5-3870

Urology clinic 5-6108

#### Off-site Peds Clinics

KKI Feeding Clinic 443-923-2739

nurse prac 410-331-0014

East Baltimore Med Ctr desk 410-522-9800

Nurses station 410-522-9052

After hours 410-879-2929

Wyman Park 410-338-3290

Berea Health Ctr 410-522-9957

Highlandtown HC 410-558-4900

Other Useful numbers

Translator service 4-4685

Adult outpatient appointments 5-5464 (redirect calls)

Huisman cell 443-498-8529

Sally Mitchell 410-382-4911

**A Guide for the Caregiver of the Hospitalized Child**  
**Explanations of age related issues, stressors and behaviors.**  
**Caregiver interventions to help children and families cope with**  
**hospitalization and medical procedures.**

Prepared by the Child Life Department at  
Children's Hospital Orange County  
Orange, California, USA

January 2004

Elana TenHuisen, M.S., CCLS  
Manager, Child Life Department

And

Andrea Mangione Standish, B.S., CCLS  
Child Life Educator

For more information contact (714) 532-8473





## TODDLERS – 1 to 3 years

### Developmental Issues ♦

- Seeks independence
- Developing language skills
- Learns new skills such as walking and toilet training
- Mobility is means to learning
- Threatened by changes in routine
- Short attention span



### Hospital Stressors ♦

- Separation from parent and fear of abandonment
- Stranger anxiety
- Unfamiliar environment
- Loss of autonomy and mobility
- Change in routine
- Back-laying position frightens toddlers
- Respond fearfully to sudden movements or loud noises

### Coping Behaviors ♦

- Regression of recently learned developmental skills
- Clinging behavior
- Temper tantrums

### Interventions ♦

- Encourage parent presence and participation
- Allow for motor activity
- Maintain daily schedule
- Offer choices when possible
- Expect treatment to be resisted
- Provide simple explanations

### Pain Management/Comforting Techniques ♦

- Light up toys
- Music
- Encouraging statements
- Bubbles
- Favorite object
- Singing
- Videos
- Comfort Positioning



## SCHOOL AGE – 6 to 12 years

### Developmental Issues ♦

- Heavily involved with peers
- Develops concrete thinking
- Active learners, invent and design things
- Increased participation in self-care
- Well-developed language skills and concept of time
- Concerns about body image



### Hospital Stressors ♦

- Loss of bodily control
- Enforced dependence
- Loss of competence
- Fears body mutilation and deformities
- Fears loss of bodily functions and/or body parts
- Fears pain
- Fears death
- Fears anesthesia

### Coping Behaviors ♦

- Guilt (better able to test reality of situation, although fantasies have not entirely disappeared)
- Acting out
- Regression
- Depression
- Withdrawal
- Cognitive mastery

### Interventions ♦

- Offer choices when possible
- Teach coping strategies that encourage mastery
- Help child recognize aspects of their effective coping
- Encourage child participation in care
- Give child tasks to help
- Give specific information about body part affected
- Identify and correct misconceptions
- Respect child's modesty
- Provide age-appropriate activities that foster sense of accomplishment

### Pain Management/Comforting Techniques ♦

- Humor/Jokes
- Music
- Encouraging statements
- Deep breathing
- Favorite object
- Singing
- Videos
- Comfort Positioning

## ADOLESCENT – 13 to 18 years

### Developmental Issues ♦

- Socialization is important
- Rapidly changing body image
- Body image relates to self-esteem
- Need for privacy
- Increasing independence and responsibility
- Struggle to develop self-identity
- Use of deductive reasoning and abstract thought



### Hospital Stressors ♦

- Lack of trust
- Loss of independence and control
- Threat of change in body image
- Restriction of physical activities
- Loss of peer acceptance and/or fear of rejection
- Threat to bodily competence
- Threat to future competence
- Fear of death

### Coping Behaviors ♦

- Defense mechanisms
- Intellectualization
- Conformity
- Uncooperative behavior

### Interventions ♦

- Respect and maintain privacy
- Involve adolescent in care and decisions
- Allow peers to visit
- Communicate honestly
- Discuss potential psychological and physical changes
- Address long-term issues in follow-up
- Provide opportunity for follow-up discussion and guidance as needed

### Pain Management/Comforting Techniques ♦

- Humor/Jokes
- Music
- Encouraging statements
- Deep breathing
- Videos/DVDs
- Guided Imagery

## Radiology Report Format

Reports in Pediatric Radiology follow ABR guidelines. The function of the report is to communicate the results of an exam in a way that sheds light on the clinical problem that prompted the ordering of the exam. It can also synthesize information from prior or concurrent exams and offer recommendations for further imaging that could be helpful. Each report is organized in a way that promotes logical unfolding of information for the clinician and insures completeness for the billing auditor.

The **electronic header** includes the date, exam type, and exam code. Check the header to make sure it accurately reflects what was done—mis-coding by the technologist occurs and the easiest time to change it is BEFORE any reporting is done. Also check that the accession number in the header matches the set of images you are reading.

**Indication:** The reason for the exam should be a symptom or sign. “r/o [diagnosis]” is not a billable indication. However, the clinical question prompted by the symptom or sign can be stated also.

**Exam, number of views, time of exam:** All important for correct billing.

**Comparison:** These studies may be listed here or cited in the Findings section. Don’t rely exclusively on what the PACS pulls for you. This will find only the ones that are labeled the same as the study under review and may overlook a more recent applicable exam (ex: a current chest xray can be compared with the chest portion of a recent shunt survey). RadAssistant or the exam list at the lower left on the Portal screen provides a more realistic exam list.

**Technique:** When the exam was a procedure, how it was done may be summarized here (e.g. for CT). OR, particularly for a multi-step exam like a fluoro, you can include this in the “Findings” section, recording the progress of the exam and what was found at each step.

**Findings:** The objective reading or description of the exam, what anatomic structures and pathologic processes the “shadows” represent, what the study SHOWS. Pertinent negative findings that relate to the specific clinical question can also be included.

**Impression:** Here is where the exam stops being a lab test and becomes a consultation. You should interpret your findings as they relate to the clinical problem and offer your opinion of what the study MEANS. You can couch your degree of certainty in such language as: consistent with, can indicate, diagnostic of, etc. If there are other imaging modalities that might be helpful, you can suggest them. True, there are some studies where the findings ARE the impression (the ET tube has a new position, the pneumothorax is still there) and for those, the findings paragraph might be dispensed with or folded into the impression, as long as the paragraph is not too detailed and the primary message comes through. Even in these instances, though, there is benefit to distilling the two or three sentences of findings into an impression phrase that

highlights the main message (“Central placement of catheter.” “Worsening edema.”) [Please note: the RIS requires the word “Impression”. If you do not supply it, the RIS will append this word to your report and it will appear that something was left out. Forestall clinician calls by using the RIS-recognized format!]

## Evaluations and Assessment Methods...

**...of the Fellow:** The fellow's performance is under constant scrutiny. Since every study and report is gone over and countersigned by the supervising attending, there is ongoing feedback and constructive criticism.

Formal trainee evaluations are done by all the pediatric radiology faculty quarterly during the year-long training program. This consists of a competency-based electronic questionnaire. The same questionnaire is also filled out by the supervising faculty member in each of the 3 specialty rotations. Any indication that the fellow is "below competency" in any area is immediately and specifically discussed with the fellow by the program director. Otherwise, full reviews of all evaluations are done at 3, 6, 9, and 12 months into the program with the fellow.

In addition, items from the patient care, communication and professionalism categories are compiled on an evaluation form and given to technologists and nurses for feedback about the fellow. This is done at 6 months and just prior to the final 12-month evaluation at the end of the year.

The fellow's skills are also formally assessed in performance of selected fluoroscopic, interventional and ultrasound procedures and in the presentation of cases, lectures and journal article discussions.

A final, summary letter is composed that reflects the fellow's performance through the year and assesses the fellow's ability to practice the specialty competently and independently and his/her commitment to life-long learning. Since the goal of the program is to graduate highly competent specialists, the standards to which the fellow is held are quite rigorous. Credentialing officers from the fellow's future employers will receive honest opinions of the fellow's performance in the program. A mediocre final evaluation can adversely affect the fellow's ability to get a particular job.

**...of the Faculty:** The fellow submits electronic evaluations of the pediatric radiology faculty once per year, pooled with the residents' evaluations to insure anonymity. These are communicated to the faculty through departmental channels.

**...of the Program by the faculty:** The faculty talks about matters pertaining to fellow education and progress informally throughout the year at weekly staff meetings. The fellow at any time can submit a program issue for discussion, and is invited to attend the meeting where it is discussed. These discussions are documented in the staff meeting minutes. Each faculty member fills out an evaluation questionnaire concerning the program as a whole at 6 months and near the end of the year.

**...of the Program by the fellow:** The fellow also formally evaluates the fellowship program twice yearly at 6 months and at the end of the year. (Please note: The final program evaluation will not be read by the program director until AFTER the fellow has graduated. This insures that the fellow can be perfectly frank and fear no repercussions.) Since with so few trainees there is no way that it can be entirely anonymous, items have

been phrased carefully so that the fellow can make honest assessments in a constructive manner. The 6-month evaluation is discussed at the second quarterly evaluation meeting between the program director and the fellow.

All program evaluations are then summarized and discussed at a faculty meetings at the end of the year to map out future improvements to the program. The fellow will be asked to attend at least a portion of that meeting. The fellow's final program evaluation is opened and discussed at a staff meeting at the beginning of the next year and documented in meeting minutes.

## Documentation Requirements

The fellow is expected to provide the documentation of all service, teaching and learning activities. (This reflects an aspect of Professionalism that will be an integral part of the fellow's future working life.) Multiple tools are used and require updating. They will be reviewed as part of the fellow's Quarterly Evaluations.

Service hours are logged electronically in E-Valu.

Daily clinical service area is ticked in the Clinical Activity Log. This insures that any developing imbalance in experience can be addressed.

Benchmarks List (Clinical Skills and Competencies) – this tallies the procedural evaluations and the Teaching Conference participation. Enter the date of completion or participation for each. Turn in the form(s) after they have been completed and signed by your preceptors and read and signed by you. The Quarterly Report Review date will be filled in by the Fellowship Director

Interdisciplinary Conference Sign up and Tally Sheet – The faculty preceptors (See the Tally Sheet) and the fellow jointly fill out the Sign-up Sheet. The aim is to be involved in one interdisciplinary conference per week, covering all the conferences at least once. After the conference takes place, enter a check mark on the Tally Sheet and turn in the Interdisciplinary Conference Evaluation Form that your preceptor has filled out and signed, and that you have read and signed also.

Case Logs: Even though the ACGME no longer has a requirement for certain numbers of interventional and nuclear medicine cases, the fellow should keep a spreadsheet of patient, medical record number, diagnosis, procedure, and degree of involvement. This can aid the fellow in obtaining privileges in outside hospitals in the future. After review with the Fellowship Director, protected health information can be removed and the log retained for accreditation.

M&M Forms: If an error (systems failure, reading discrepancy, etc.) is discovered during the course of noon conference or daily work, it is documented and addressed with this form.

Noon Conference Database: The fellow acts as scribe during the case conferences and then enters the patient information in a spreadsheet. Because of the amount of protected health information, the database is stored on a non-networked hard drive in the office.

## Summary of evaluation instruments, the competencies addressed by each, and the format retained in the fellow's portfolio

This is a chart whose format cannot be accommodated by this electronic version of the Fellow's Manual. Please refer to the printed version in the office.

## Learning Portfolio

The fellow and Fellowship Director will jointly contribute to the Portfolio, as mandated by the ACGME. The format that we currently use is accessed through E-Valu. Ms Bellamy can assist you in setting up your portfolio.

Elements to be included in the portfolio:

Application materials: CV, test certificates

Certificates from JHMI on-line training and BCLS training

Transcript from SPR on-line curriculum

Record of conference attendance and presentations (copies of evaluations)

Teaching activities – conferences given, lectures, journal club (copies of evaluations)

QA project summary

Anonymized evaluations and comments from quarterly reviews

Scholarly products

At the end of the fellowship, the fellow will take away the portfolio to add to during professional life and use as a basis for credentialing and licensure. A copy will be archived in Pediatric Radiology for review by the ACGME as part of their re-accreditation procedure.

Fellow's Checklist of Skills and Competencies  
(Mark each with the date completed)

Fellow: \_\_\_\_\_

Fluoroscopy Skills:

UGI

Contrast enema

VCUG

Interventional Skills:

Air enema for intussusception reduction (actual or simulation)

Hip aspiration under US

Feeding tube insertion

Line injection

Ultrasound Skills:

Abdomen US

Neonatal head US

SPR Modules completed

Evaluated Teaching Conferences:

Medical Students

Resident Case Conference

Thursday Case Conference -- MSK

Thursday Case Conference -- NM

Thursday Case Conference -- IR

Journal Club

Thursday Follow-up Case Conference

QA Project Presented

Dictated report scoring:

Quarter 1:

Quarter 2:

Quarter 3:

Quarter 4:

## Interdisciplinary Conference Tally Sheet

GI – Radiology clinical conference – 3 per year; RFG

Nephrology – Radiology clinical conference – twice per month; UW

Pediatric Nuclear Medicine conference – twice per month; UW

Surgery – Radiology clinical conference – monthly; JB

Pulmonary – Radiology clinical conference – 2 per year; JB

Neonatal Intensive Care – Neuroradiology conference – weekly; TH/AT

Pediatric Neuro-oncology conference – weekly; TH/AT

Pediatric Tumor Board – weekly; MS

Pediatric ENT conference – once per month; TH/AT

Vascular Anomalies conference – once per month; AT

Pediatric Neuroradiology case conference (for neuroradiology fellows) – once per month; TH/AT

Pediatric Urology – Radiology – weekly; UW

Pediatric M&M Conference – when invited; varies

Trauma M&M Conference – monthly, participation varies; JB

## Electronic Evaluation Forms from E-Valu

Faculty, of the fellow

Health Professional, of the Fellow

These are shown in the print version of the Fellow's Manual in the office.

**Pediatric Radiology Fellow Evaluation Form  
Clinical Interdisciplinary Conference Participation**

Pediatric Radiology Fellow: \_\_\_\_\_

Conference: (check one)                      Date of conference: \_\_\_\_\_

- GI \_\_\_\_\_
- Pediatric Surgery \_\_\_\_\_
- Nephrology \_\_\_\_\_
- Nuclear Medicine \_\_\_\_\_
- Tumor Board \_\_\_\_\_
- Neuroradiology-Neonatology \_\_\_\_\_
- Neuroradiology-Oncology \_\_\_\_\_
- Pediatric M&M Conference \_\_\_\_\_
- Other: \_\_\_\_\_

Faculty member writing the evaluation: \_\_\_\_\_

Please circle the degree of agreement with the following statements:

1. The fellow interacted well with the clinical staff, showed poise and professionalism.  
Strongly disagree    Disagree    Neutral    Agree    Strongly agree    Not Applicable
  
2. The fellow researched the cases completely, presented cogent clinical history.  
Strongly disagree    Disagree    Neutral    Agree    Strongly agree    Not Applicable
  
3. The fellow showed the images competently, pointed out critical findings and explained their relevance.  
Strongly disagree    Disagree    Neutral    Agree    Strongly agree    Not Applicable
  
4. The fellow's didactic points were well-chosen and presented clearly.  
Strongly disagree    Disagree    Neutral    Agree    Strongly agree    Not Applicable
  
5. Questions from the audience were answered clearly, correctly and with authority.  
Strongly disagree    Disagree    Neutral    Agree    Strongly agree    Not Applicable
  
6. Technical aspects (PACS, Powerpoint, etc) were handled smoothly.  
Strongly disagree    Disagree    Neutral    Agree    Strongly agree    Not Applicable

Comments: How could the fellow improve?

Please complete and give to the Fellowship Program Director or Coordinator, Nelson B-173.

I have read the evaluation form and the comments.

\_\_\_\_\_  
Fellow

\_\_\_\_\_  
Date

# Fellowship Written Report Review

Fellow: \_\_\_\_\_

Quarter 1 \_\_\_\_\_ Quarter 2 \_\_\_\_\_ Quarter 3 \_\_\_\_\_ Quarter 4 \_\_\_\_\_

Date

chosen: \_\_\_\_\_

Report	#Major disagreements	#Minor disagreements	Acceptable format?
--------	----------------------	----------------------	--------------------

1	_____	_____	_____
---	-------	-------	-------

2	_____	_____	_____
---	-------	-------	-------

3	_____	_____	_____
---	-------	-------	-------

4	_____	_____	_____
---	-------	-------	-------

5	_____	_____	_____
---	-------	-------	-------

6	_____	_____	_____
---	-------	-------	-------

7	_____	_____	_____
---	-------	-------	-------

8	_____	_____	_____
---	-------	-------	-------

9	_____	_____	_____
---	-------	-------	-------

\_\_\_\_\_

Date \_\_\_\_\_ Evaluator: \_\_\_\_\_

Definitions:

Major disagreement: Missed finding with clinical relevance (e.g. clinician call needed; diagnosis changed)

Minor disagreement: Missed or mis-described finding with limited or no clinical relevance; diagnosis unchanged.

Acceptable format: Y/N-- Indication stated appropriate for exam. Exam identified, number of views (if relevant). Findings clearly described and interpreted. Clinician interaction noted.

I have reviewed this compilation and resolved any questions.

\_\_\_\_\_  
Fellow

\_\_\_\_\_  
Date

## Fellowship Ultrasound Checklist Neonatal Head

Fellow:

Sonographer Evaluator:

Date Completed:

Fellow speaks with patient/family, exhibits professionalism Y N

Fellow washes hands and/or dons gloves before touching patient Y N

Fellow chooses correct transducer for patient size Y N

Images:

Coronal frontal lobes \_\_\_\_\_

Coronal foramen of Monro \_\_\_\_\_

Coronal white matter \_\_\_\_\_

Sagittal midline \_\_\_\_\_

Sagittal right lateral ventricle \_\_\_\_\_

Sagittal left lateral ventricle \_\_\_\_\_

Coronal posterior fontanelle \_\_\_\_\_

Axial trans-temporal \_\_\_\_\_

Fellow positions patient appropriately for each image Y N

Fellow pays attention to patient condition and comfort Y N

Images acceptable to faculty evaluator Y N

Faculty evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

I feel confident that I could perform this examination unsupervised.

Fellow signature: \_\_\_\_\_

## Fellowship Ultrasound Checklist Abdomen

Fellow:

Sonographer Evaluator:

Date Completed:

Fellow speaks with patient/family, exhibits professionalism Y N

Fellow washes hands and/or dons gloves before touching patient Y N

Fellow chooses correct transducer for patient size Y N

Liver images:

Sagittal showing right lobe length, with measurement \_\_\_\_\_

Transverse, left lobe \_\_\_\_\_

Sagittal gallbladder \_\_\_\_\_

Spleen, sagittal \_\_\_\_\_

Left kidney, sagittal \_\_\_\_\_

Right kidney, sagittal \_\_\_\_\_

Pancreas, transverse \_\_\_\_\_

Fellow positions patient appropriately for each image Y N

Fellow pays attention to patient condition and comfort Y N

Images acceptable to faculty evaluator Y N

Faculty evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

I feel confident that I could perform this examination unsupervised.

Fellow signature: \_\_\_\_\_

## Fellowship Interventional Skills Assessment: Line Injection

Fellow: \_\_\_\_\_

The fellow completed the following actions competently:

Reviewed prior imaging, lab results and clinical history with referring physician and decided on appropriateness of exam; obtained technical assistance. Y N

With patient and parents in the fluoro suite, performed time-out: right patient, right exam. Y N

Explained risks and benefits clearly, obtained informed consent, completed paperwork. Y N

Selected the correct equipment and assembled equipment correctly. Y N

Washed hands and/or donned gloves before touching patient. Y N

Used aseptic technique to access line, flush and inject contrast. Y N

Used appropriate patient positioning and immobilization techniques. Y N

Correctly interpreted imaging and reacted by modifying methods. Y N

Fellow is attentive to patient dose

Makes sure magnification is off Y N

Uses lowest pulses/sec compatible with visibility Y N

Minimizes localizing fluoro Y N

Collimates field Y N

Total skin dose \_\_\_\_\_ mGy/ Fluoro time \_\_\_\_\_ sec

Interacted appropriately with technologist, nurse, parents and patient during the exam. Y N

Explained findings to parents/patient after the exam. Y N

Fellow pays attention to patient condition and comfort during exam Y N

Images obtained are diagnostic quality and document the exam Y N

Date of evaluation \_\_\_\_\_ Faculty

Evaluator: \_\_\_\_\_

I feel confident that I could perform this examination unsupervised.

Fellow signature: \_\_\_\_\_

## Fellowship Interventional Skills Assessment: Air Enema for Intussusception Reduction

Fellow: \_\_\_\_\_

The fellow completed the following actions competently:

Reviewed prior imaging, lab results and clinical history with referring physician and decided on appropriateness of exam; makes sure Pediatric Surgery is alerted, obtained technical assistance.  
Y N

With patient and parents in the fluoro suite, performed time-out: right patient, right exam. Y N

Explained risks and benefits clearly, obtained informed consent, completed paperwork. Y N

Selected the correct equipment for patient size and assembled equipment correctly. Y N

Washed hands and/or donned gloves before touching patient. Y N

Inserted catheter and secured it in place. Y N

Used appropriate patient immobilization techniques. Y N

Insufflated colon in a diagnostic fashion; maintained anal seal. Y N

Correctly interpreted imaging and reacted by modifying methods. Y N

Fellow is attentive to patient dose

Makes sure magnification is off Y N

Uses lowest pulses/sec compatible with visibility Y N

Minimizes localizing fluoro Y N

Collimates field Y N

Total skin dose \_\_\_\_\_ mGy/ Fluoro time \_\_\_\_\_ sec

Interacted appropriately with technologist, nurse, parents and patient during the exam. Y N

Demonstrated knowledge of proper use (indication, reconstitution, administration) of glucagon.  
Y N

Explained findings to parents/patient after the exam. Y N

Fellow pays attention to patient condition and comfort during exam Y N

Images obtained are diagnostic quality and document the exam Y N

Date of evaluation \_\_\_\_\_ Faculty

Evaluator: \_\_\_\_\_

I feel confident that I could perform this examination unsupervised.

Fellow signature: \_\_\_\_\_

## Fellowship Interventional Skills Assessment: Hip Aspiration under Ultrasound

Fellow: \_\_\_\_\_

The fellow performed the following actions competently:

Reviewed prior imaging, lab results and clinical history with referring physician and decided on appropriateness of exam. Y N

Determined who would take responsibility for the sample. Y N

Arranged for the aspiration to take place, coordinating sonographer, sedation, supplies Y N

With the patient and parents in the room, conducted a time-out: right patient, right exam. Y N

Explained risks and benefits clearly, obtained informed consent, completed paperwork. Y N

Re-imaged to confirm site of aspiration. Y N

Coordinated actions with the sedation physician. Y N

Assembled sterile field, prepped and draped area. Maintained sterile precautions throughout. Y N

Administered local anesthetic. Y N

Handled transducer, biopsy guide and needle with sufficient skill to hit the intended target. Y N

Fellow pays attention to patient condition and comfort during exam Y N

Withdrew a diagnostic sample. Y N

Cleaned and dressed the wound site. Y N

Disposed of all sharps in correct container. Y N

Disposed of other trash. Y N

Interacted appropriately with patient and parents. Y N

Interacted appropriately with other members of the health care team. Y N

Delivered the sample to the designated recipient. Y N

Images obtained are diagnostic quality and document the exam Y N

Date Completed: \_\_\_\_\_ Faculty evaluator  
signature: \_\_\_\_\_

I feel confident that I could perform this examination unsupervised.

Fellow signature: \_\_\_\_\_

## Fellowship Interventional Skills Assessment: Feeding Tube Insertion

Fellow: \_\_\_\_\_

The fellow completed the following actions competently:

Reviewed prior imaging, lab results and clinical history with referring physician and decided on appropriateness of exam; obtained technical assistance. Y N

With patient and parents in the fluoro suite, performed time-out: right patient, right exam. Y N

Explained risks and benefits clearly, obtained informed consent, completed paperwork. Y N

Selected the correct tube for patient size, flushed tube, insured stent is removable. Y N

Washed hands and/or donned gloves before touching patient. Y N

Inserted tube in the nose using appropriate lubrication, advanced it to the stomach. Y N

Used appropriate patient positioning and immobilization techniques. Y N

Fellow pays attention to patient condition and comfort during exam Y N

Correctly interpreted imaging and reacted by modifying methods. Y N

Advanced tube to intended position, documented with image +/- contrast injection. Y N

Fellow is attentive to patient dose

Makes sure magnification is off Y N

Uses lowest pulses/sec compatible with visibility Y N

Minimizes localizing fluoro Y N

Collimates field Y N

Total skin dose \_\_\_\_\_ mGy / Fluoro time \_\_\_\_\_ sec

Interacted appropriately with technologist, nurse, parents and patient during the exam. Y N

Explained findings to parents/patient after the exam. Y N

Images obtained are diagnostic quality and document the exam Y N

Date of evaluation \_\_\_\_\_ Faculty

Evaluator: \_\_\_\_\_

I feel confident that I could perform this examination unsupervised.

Fellow signature: \_\_\_\_\_

## Fellowship Fluoroscopy skills checklist – Voiding Cystourethrogram

Fellow:

Fellow speaks with patient/family, exhibits professionalism Y N

Fellow washes hands and/or dons gloves before touching patient Y N

Fellow positions patient appropriately for each image Y N

Fellow pays attention to patient condition and comfort during exam Y N

Fellow tailors the exam to patient condition and clinical problem Y N

Fellow is attentive to patient dose

Makes sure magnification is off Y N

Uses lowest pulses/sec compatible with visibility Y N

Minimizes localizing fluoro Y N

Collimates field Y N

Total skin dose \_\_\_\_\_ mGy/ Fluoro time \_\_\_\_\_ sec

Images:

Bladder – early filling \_\_\_\_\_

Ureterovesical junction – right \_\_\_\_\_

Ureterovesical junction – left \_\_\_\_\_

Renal beds \_\_\_\_\_

Urethra \_\_\_\_\_

Date Completed: \_\_\_\_\_ Faculty Evaluator: \_\_\_\_\_

I feel confident that I could perform this exam unsupervised.

Fellow: \_\_\_\_\_

## Fellowship Fluoroscopy skills checklist – Contrast enema

Fellow \_\_\_\_\_

Fellow speaks with patient/family, exhibits professionalism Y N

Fellow washes hands and/or dons gloves before touching patient Y N

Fellow positions patient appropriately for each image Y N

Fellow pays attention to patient condition and comfort during exam Y N

Inserts and secures rectal tube competently Y N

Fellow tailors the exam to patient condition and clinical problem Y N

Fellow is attentive to patient dose

Makes sure magnification is off Y N

Uses lowest pulses/sec compatible with visibility Y N

Minimizes localizing fluoro Y N

Collimates Y N

Total skin dose \_\_\_\_\_ mGy/ Fluoro time \_\_\_\_\_ sec

Images:

Rectum AP \_\_\_\_\_

Rectum lateral \_\_\_\_\_

Sigmoid \_\_\_\_\_

Splenic flexure \_\_\_\_\_

Hepatic flexure \_\_\_\_\_

Cecum \_\_\_\_\_

Date completed: \_\_\_\_\_ Faculty evaluator: \_\_\_\_\_

I feel confident that I could perform this examination unsupervised.

Fellow signature: \_\_\_\_\_

## Fellowship Fluoroscopy skills checklist – Upper GI

Fellow:

Fellow speaks with patient/family, exhibits professionalism Y N

Fellow washes hands and/or dons gloves before touching patient Y N

Fellow positions patient appropriately for each image Y N

Fellow pays attention to patient condition and comfort during exam Y N

Fellow tailors the exam to patient condition and clinical problem Y N

Fellow is attentive to patient dose

Makes sure magnification is off Y N

Uses lowest pulses/sec compatible with visibility Y N

Minimizes localizing fluoro Y N

Collimates field Y N

Total skin dose \_\_\_\_\_ mGy/ Fluoro time \_\_\_\_\_ sec

Images:

Esophagus AP \_\_\_\_\_

Esophagus lateral \_\_\_\_\_

Pylorus/duodenal bulb \_\_\_\_\_

Duodenal-jejunal junction \_\_\_\_\_

Date Completed: \_\_\_\_\_ Faculty Evaluator: \_\_\_\_\_

I feel confident that I could perform this exam unsupervised.

Fellow: \_\_\_\_\_



Other comments and suggestions: Please use the back of this sheet to write on. Your comments are welcome! Please return this sheet to Dr. Benson at the end of the lecture, by campus mail (address to “Dr. Jane Benson – Central Radiology”), or bring to Nelson B-173. Thank you!

I have reviewed this evaluation and have resolved any questions I had.

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Fellow

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Date

## Electronic Evaluation forms from E-Valu:

...of the program, by the fellow

...of the faculty, by the fellow

These forms are printed in the hard-copy version of the Fellow's Manual in the office.

## Supervision During Clinical Training and the Assumption of Graded Responsibility

The ACGME recognizes 3 levels of supervision:

**Direct Supervision:** The supervising physician is physically present with the fellow and patient.

**Indirect Supervision:**

--with direct supervision immediately available – The supervising physician is physically within the confines of the site of patient care, and is immediately available to provide direct supervision.

--with direct supervision available – The supervising physician is not physically present within the confines of the site of patient care, but is immediately available via phone, and is available to provide direct supervision.

**Oversight:** The supervising physician is available to provide review of procedures and encounters with feedback provided after care is delivered.

During the regular workday, the attending radiologists are physically present and provide direct supervision or indirect supervision with direct supervision immediately available. The pediatric radiology fellow is assumed to have the basic knowledge of the field afforded by the residency training already completed and indirect supervision will suffice for most reading of completed exams. Still, however, the fellow will begin by performing procedures under direct supervision. It is assumed that there will be rapid advancement through the other levels of supervision. When the fellow is providing care in the hospital at night, the attending will still be able to provide direct supervision from home by phone and through internet link to Ultravision PACS. Every report is reviewed and countersigned by an attending radiologist, most usually on-site, in person and same-day. For care provided overnight, sign-off can be that night if required, but more usually the next morning.

The fellow is expected to learn to handle the overall imaging management in most and eventually all the pediatric diseases and conditions. As the year goes on, the fellow assumes more responsibility with continued support from the attending staff. The fellow also takes call from home and responds to the requests of the radiology residents when the situation requires a more experienced provider, again with attending backup, graduating from indirect supervision to oversight by the end of the year.

Situations at night that mandate a call to the attending:

1. When there is request for an interventional procedure: UGI on a newborn, intussusception reduction, hip aspiration.

2. When there is reluctance on the part of the pediatric clinical attending to accept a reading by the fellow. This may be because a decision to go to the operating room rests on the reading, or because the clinical impression does not support the radiological interpretation.

The attending radiologist then determines the level of supervision that is needed for that particular occasion.

### Interaction with the Diagnostic Radiology Residents

Residents in the departmental residency program are assigned to pediatric radiology for 1-3 week periods throughout their 4 year program. They are given assignments daily based on their experience and the skills appropriate to teach them in each year of their training. They eventually take first call in the hospital at night and handle initial evaluations of pediatric patients.

The pediatric radiology fellow may help or provide back-up for the resident occasionally but more usually works in parallel with him/her during the day on a separate clinical rotation, with access to the levels of direct/indirect attending supervision described above.

When the fellow is on call from home at night, the in-house radiology resident will call the fellow first when there is a pediatric problem. The fellow then consults with the attending pediatric radiologist by phone if there continues to be a question or before undertaking any procedure.

## Vacations, Holidays and Duty Hours

The fellow is entitled to 22 days personal leave or vacation. The fellow also gets any University holidays observed by the Hospital (Christmas Day, New Year's Day, Martin Luther King Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day).

The fellow's duty hours fall within the ACGME requirements. The Pediatric Radiology division is open from 8:00am-5:00pm Monday to Friday. All the exams that are done before 5pm are read that day, with maximum continuous duty of 13 hours. No work day will begin within 10 hours of the end of the preceding work day. In-house on-duty time averages 50 hours per week, though it may approach 65 hours if a weekend is included. Rotations in other divisions have slightly different hours, as outlined in the rotation descriptions below.

The fellow will be expected to take call with an attending one weekend per month, reading studies in-house for a few hours then answering call from home. Call from home with attending back-up is required one week-night per week. On-call from home averages 15 hours per week. On-call from home is not included in the 80-hour limit, but any time spent in the hospital when called in DOES count toward the 80 hours. The 10-hour rule does NOT apply, however. Pediatric radiology call responsibility is coordinated with any specialty rotation responsibility to stay within duty hour stipulations.

If the fellow is unduly fatigued after a night on call, the fellow may come in late or leave early at the discretion of the attending radiologist of the day and the Fellowship Director.

### Moonlighting

Moonlighting is not encouraged. If there are financial exigencies that make it imperative for the fellow to moonlight, then this is evaluated on a case-by-case basis. Care is taken to delineate the number of hours that can be devoted to moonlighting, so that the duty-hour limit is not exceeded. If the fellow's performance begins to slip, however, the situation is re-evaluated, and the moonlighting must stop.

## Divisional and Institutional policies concerning Fellow advancement, graduation, discipline, termination and appeal

### **In meeting the goals and objectives as outlined in this Manual, the fellow should then be able to:**

Demonstrate the ability to practice Pediatric Radiology competently, independently, and at a level that is well beyond that of a Board-certified general radiologist.

Demonstrate a commitment to life-long learning and improvement in the specialty.

Take and pass the Certificate of Added Qualification in Pediatric Radiology, when eligible.

**Please Note: It is the policy of the Graduate Medical Education Committee of the Johns Hopkins University School of Medicine that “The Certification of completion of programs is awarded only on satisfactory completion of all program requirements and is not guaranteed.”**

**([http://www.hopkinsmedicine.org/som/gme/GME\\_Policies/performance\\_issues.html#academic](http://www.hopkinsmedicine.org/som/gme/GME_Policies/performance_issues.html#academic))**

### Grievance Procedure

Should the fellow have on-going difficulties with a specific faculty member or ancillary staff member within the division that is impeding his or her professional progress in the fellowship, the issue is addressed through the following chain of responsibility: the faculty member or staff person in question, the fellowship director (together with the staff person’s supervisor if applicable), the division director. The fellow always has access to the services of the Faculty and Staff Assistance Program, with promise of full confidentiality.

Should the grievance qualify under the definition outlined in the School of Medicine Faculty Policies handbook, then that resolution procedure shall supersede the above outline.

### Performance Measures Qualifying for Dismissal, including but not limited to:

- Falsifying application materials.
- Failure to attain minimum standards of performance and improvement.
- Criminal behavior.
- Unprofessional conduct including inability to work as a team member.
- Academic dishonesty including falsifying data and plagiarism.

The fellow will be given a written warning at a meeting designed to come up with a program of amelioration. If this program is not followed, a second evaluation meeting will take place and termination will be discussed.

If the fellow is terminated, a letter will be formulated giving the dates of service and the circumstances of dismissal that the fellow may use as desired.

Full copies of GMEC policies are printed in the red binder in the office and are also found at [http://www.hopkinsmedicine.org/som/gme/GME\\_Policies](http://www.hopkinsmedicine.org/som/gme/GME_Policies)

# Guidance for Use of Portable Electronic Devices

[Johns Hopkins HIPAA Office 6/21/11]

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The use of portable electronic devices (Blackberries, Androids, iPhones, iPads, etc. = "PEDs")<sup>1</sup> has grown rapidly. However, the ease of use and always present nature of PEDs does not exempt them from ethical and legal (HIPAA) obligations regarding protecting the privacy of patients and the confidentiality of patient information.

PEDs have remarkable capabilities and are extremely convenient. They also are easy to lose and very attractive to thieves. Loss or theft of a PED containing unencrypted patient information (Ping messages, e-mails, etc.) constitutes a HIPAA "breach" of confidentiality of information that triggers various reporting and formal notice obligations.

PEDs that are personally-owned are not controlled through the Johns Hopkins IT Department. It is the responsibility of the individual user to ensure any Protected Health Information (PHI) sent or received via his or her PED or any PHI stored on his or her PED is secured.

Misuse of PEDs involving patient information may result in disciplinary action and possibly the ruining of a career.

The following is some generic guidance for use of PEDs.

1. All PEDs that contain or may contain PHI, even through text messages or emails, should have a PIN or a password or other authentication (e.g., pattern). Use a PIN or password that is challenging to guess and that is at least four characters in length. Do not share your PIN or password or pattern with anyone else.
2. Set your PED to "lock" automatically after sitting idle for a maximum of 60 seconds.
3. Do not retain e-mails, texts or other matters containing PHI on a PED any longer than necessary. Delete unnecessary PHI promptly and set up email and text messaging limits. Most PED's can be configured to keep only a day or two's worth of email.
4. Some PEDs are encrypted (e.g. Blackberry, iPad, iPhone 3GS or later); some are not (e.g. most Android devices). If you are likely to have sensitive information, including possible patient or plan member information in emails or texts, buy an encrypted device. If you buy an iPad or iPhone, encryption is built in, and you don't need to do anything further regarding encryption. If you buy a Blackberry

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<sup>1</sup> This Guidance does **not** address laptop and notebook computers.

or other device, you may need to configure encryption and should check with your network service provider or the device website.

5. If you plan to download applications (“apps”) onto your PED, do not store PHI in DropBox or any other file storage application. Such applications have a tendency to distribute information among multiple devices, some of which may not be encrypted or otherwise secure.
6. Be careful regarding which apps you download on to your PED. Run a quick check on the Internet to identify malicious or unreliable apps. Update your apps regularly, and if you no longer need an app, delete it.
7. Go to your PED manufacturer website to determine whether your PED can be configured to remotely deactivate. This feature would be used to lock down the PED and make it unusable in the event it was lost, stolen or compromised. Configure your PED if this feature is offered.
8. If you believe your PED has been lost, stolen or compromised, report it to your Johns Hopkins IT contact or Corporate Security, if appropriate. If your PED contained patient or plan member information, also report the event immediately to [hipaabreaches@jhmi.edu](mailto:hipaabreaches@jhmi.edu).

Promptly, and if able to, remotely wipe all data on the device to protect any PHI from being compromised. If your device was already configured to synchronize with the Johns Hopkins email (Exchange) server, then you have the capability to remotely “wipe” your device of data. Access your webmail through [my.johnshopkins.edu](http://my.johnshopkins.edu), click “Options” in the upper right hand corner and select “phone.” Your device should be displayed, and there should be a command for remote wipe. In the event you had previously configured your PED for remote deactivation, go to your PED manufacturer website to remotely deactivate your PED.

9. When you are ready to dispose of your PED, remove all PHI by a “hard reset” which erases the content stored on the device. Go to your PED manufacturer website for instructions on secure disposal of a device.

See also:

1. Johns Hopkins Institutions Information Technology Policies—  
[www.it.jhu.edu/policies/itpolicies](http://www.it.jhu.edu/policies/itpolicies)
2. Johns Hopkins Health System Policy & Procedure FIN109
3. Johns Hopkins Health System Corporation and The Johns Hopkins Hospital Human Resources Policy Manual—Personal Communication device Use

# Guidance for Use of Social Networking

[Johns Hopkins HIPAA Office 6/21/11]

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The use of social networking is becoming an increasingly popular method of communication. However, the ease of use of social networking does not exempt it from ethical and legal (HIPAA) obligations regarding protecting the privacy of patients and the confidentiality of patient information.

Even though users may not disclose names and other specific patient identifiers, because the use of social networking is so routine, there is a tendency to include enough information in individual postings on social networking sites that the patient is often identifiable, at least to some.

For example, a resident who has just completed a difficult shift may post on her social networking page how difficult it was to deal with the death of a child who injured his head while riding a bike. If the newspaper had recently run a story of that event, the combination of information could constitute a HIPAA violation.

Misuse of social networking involving patient information may result in disciplinary action and possibly the ruining of a career.

The following is some generic guidance for use of social networking sites to assist in protecting the privacy and confidentiality of our patients.

1. Avoid any discussion of specific patients, patient information and specific patient events on Facebook, Twitter, Patients Like Me and other social networking sites.
2. Do not assume that by not mentioning a patient's name or other identifiers (for example, saying "a middle aged male with heart disease" instead) sufficiently de-identifies the patient to others.
3. Never post images of patients or of their conditions, wounds or the like, patients' families or patient care areas on a social networking site. Use of cell phone cameras in patient care areas by workforce members is against hospital policies.
4. Be careful of "friending" patients on social media and having any public exchange with them that may relate to their medical care or their visit to Hopkins. Even disclosing that an individual is or was a patient is an inappropriate disclosure of Protected Health Information (PHI).

5. Use privacy settings to safeguard content to the fullest extent possible and to limit the number of users who may access your information. Check your privacy policies routinely. It is common for social media sites to change privacy policy frequently.
6. Be careful when downloading applications from social media sites, many such applications include malicious code. As a general rule, you should only load applications that you know of and are searching for, not ones that pop-up on a site.
7. Remember that you are responsible for the content of your own posts, including any legal liability incurred (e.g., HIPAA) and once something has been posted on a social media site, it is no longer private and can no longer be protected.

See also the Johns Hopkins Social Media Guidelines at:

[www.hopkinsmedicine.org/webcenter](http://www.hopkinsmedicine.org/webcenter)