



Curriculum in Pediatric Radiology (revised 11/19/12)

Faculty point person: Lisa H Lowe, MD

Diagnostic Radiology: Wake Forest University Medical Center

Fellowship: National Children's Medical Center, George Washington University

Other Children's Mercy Hospital teaching faculty in Pediatric Radiology:

Douglas C Rivard, DO (Radiologist-in-Chief)

James Brown, MD

Stephen T Welch, MD

Cynthia Taylor, MD

Tim Zinkus, MD

Anne W. Moore, MD

Brent Cully, MD

Kristen Fickenshler, MD (Director, Pediatric Radiology Fellowship)

Neil Mardis, DO

Dave Neilsen, MD

Emily Kucera, MD

Kay North, DO

Brenton Reading, MD

Joshua Knowlton, MD (Director, Medical Student Rotations)

Tony Lawrence, MD

Megan McDonald, DO

Laura Dinneen, MD

Amy Dahl, MD

Brian Dunoski, MD

Stephanie Bolger-Thuet, DO

Chris Keup, MD (fellow 2012-13 and faculty 2013)

Core lecture series in Pediatric Radiology

Core lectures - Weekly year round 7:30am didactic or case based conference at CMH

1. Pediatric Chest imaging in neonates and young children
2. Pediatric Musculoskeletal imaging in neonates and young children
3. Pediatric Ultrasound – head, spine, pylorus, hips
4. Pediatric ENT – temporal bone, salivary glands, face
5. Imaging Child abuse head to toe, including pitfalls and controversies
6. Pediatric Genitourinary in neonates and young children
7. Pediatric Nuclear medicine basics
8. Pediatric acute abdomen in neonates and young children
9. Pediatric abdomen – liver disease, renal masses
10. Pediatric Neuroradiology – Basics of brain and spine
11. Pediatric Neuroradiology – Advanced imaging techniques
12. Pediatric Ultrasound – Head and transcranial Doppler
13. Pediatric Spine imaging
14. Pediatric hypoxic ischemic injury

This curriculum is supplemented by the following interdisciplinary lectures:

| | |
|------------------------|---------------------------------------|
| 1. Weekly Tues morning | Neonatal |
| 2. Weekly Friday noon | Radiology interesting case conference |
| 3. Weekly Monday noon | Professor rounds/case presentations |
| 4. Biweekly Thurs noon | Journal club |
| 5. Weekly | Child neurology/neuroscience |
| 6. Monthly | Surgical pathology |
| 7. Monthly | Brain tumor |
| 8. Monthly | Child abuse |
| 9. Monthly | Gastrointestinal and Renal/urology |
| 10. Monthly | Cancer conference |
| 11. Monthly | ENT |
| 12. Monthly | Seizure |
| 13. Monthly | Rehabilitation |
| 14. Monthly | Vascular malformations/Dermatology |

Pediatric Radiology – Rotation 1

General overview

Radiology resident rotations in Pediatric Imaging will include at least 3 months during the residency program, all of which will be at Children’s Mercy Hospitals and Clinics. The specific goals include objectives required for every level of training with graded supervision by the attending faculty. All aspects of Pediatric radiology will be incorporated into the residency, including Pediatric Neuroimaging, Pediatric Nuclear Medicine and Pediatric Interventional Radiology.

Resident responsibilities:

1. The resident is involved in the daily conduct of Pediatric Radiology services. At the start of every working day, the resident should be familiar with the patient schedule and anticipate needs for any procedures. The resident will check requisitions to evaluate for appropriateness of requested procedure or if additional exams/protocol needs to be performed. Absent clinical indication or seemingly in-appropriate requests will be clarified and discussed with referring physician.
2. The resident assigned to Pediatric Radiology is expected to be available for consultation by pediatric imaging technologists, clinicians and other health care professionals during regular office hours except during conference times, when attending faculty will cover.
3. Examinations should be checked by the resident before the patient leaves the department if requested to do so by the supervising faculty.
4. Questions should be referred to the supervising faculty to which the resident is assigned.
5. Preliminary reports may be written for emergency room studies and patients who are going to clinic appointments on the same day of the examination when appropriate. This is communicated to attending radiologist and documented in the final report with name, date and time of such a communication.
6. Review of cases with the supervising faculty will be conducted as many times in the day as necessary to keep an efficient work flow.
7. All examinations should be dictated by the end of every working day.
8. The resident will check his/her reports prior to final verification by supervising faculty.

Staff responsibilities:

1. Supervising faculty should be available at all times for any questions or consultations needed by the resident.
2. Supervising faculty should review all cases with the resident before the end of the day.

3. Supervising faculty should provide the resident with constructive feedback in any problem areas encountered during the rotation as well as through rotation evaluations.
4. Supervising faculty should sign resident-generated reports in a timely manner and inform the resident of any major changes he/she made.

Resident evaluation: CMH faculty use New Innovations software to complete electronic evaluations, which are based on the 6 ACGME core competencies. Residents are also evaluated by 1-2 technologists and 10 patients while on each month of Pediatric Radiology rotation. See the resident handbook for further details.

PEDIATRIC RADIOLOGY - Rotation 1 – Goals and Objectives

I. Patient care:

- (a) Residents are required to complete an on line Patient Care, Radiation Safety module at least biannually.
- (b) The resident should have knowledge of indications for the examinations requested. When the reason for the examination is not clear, the resident should effectively communicate with the patient or referring physician until this is clarified.
- (c) The resident should be familiar with available medical records and how to access them for purposes of patient care.
- (d) All studies should be reviewed with supervising faculty attending.
- (e) Preliminary reports should be made available to all referring clinicians if needed prior to final review of cases. If there is a significant discrepancy between the preliminary reading and final reading, the resident should notify the referring clinician immediately.

II. Medical Knowledge:

At the end of the rotation, the resident should be able to:

- (a) Identify normal/abnormal airways on chest x-ray of the infant or older child.
- (b) Identify abnormalities requiring emergent surgical management. Learn to interpret pediatric chest radiographs in infants and older children.
- (c) Identify normal vs. abnormal skeletal structures (esp. extremities on a bone survey).
- (d) Describe the proper procedure for fluoroscopy of an infant/older child.
- (e) Establish bone age on the basis of radiographic findings.
- (f) Make preliminary review of outpatient and pediatric ICU films and discuss findings with the radiologist, then dictate as directed.
- (g) Assist the technologist in preparation of the patient for fluoroscopic examination (e.g., enemas, etc.)
- (h) Residents must complete Pediatric Professionalism training on the day of arrival to CMH. Signed form must be placed in the resident portfolio.**
- (i) Residents must obtain 10 patient surveys (see Teri Carver, Admin Asst at CMH 234-3273) evaluations while doing fluoroscopy at CMH to be placed in the resident portfolio.**
- (j) Residents must pass image and written exam on Pediatric Radiology with a score of 70% or better. Certificate of passage of the exam should be placed in the resident portfolio.**
- (k) Complete at least 25 the following “Junior Radiology Resident Curriculum” modules on the COMET website URL - <https://www.cchs.net/pediatricradiology> (Certificates of completion should be placed in the resident portfolio):**
 - a. **Introduction to the Pediatric Knowledge Techniques**
 - i. **Lines and Catheters**
 - b. **ACGME General Competencies**
 - i. **Patient Care (if not already done)**

- ii. Radiation safety (if not already done)
 - c. Chest
 - i. Childhood Pneumonia
 - ii. Neonatal Chest
 - iii. Pulmonary Edema
 - d. Esophagus and Airway
 - i. Esophageal Atresia
 - ii. Esophageal Foreign Body
 - iii. Gastroesophageal Reflux
 - e. GI
 - i. Appendicitis
 - ii. Blunt Abdominal Trauma
 - iii. Congenital Duodenal Obstruction
 - iv. Hypertrophic Pyloric Stenosis
 - v. Intussusception
 - vi. Jejunal and Ileal Stenosis/Atresia
 - vii. Malrotation and Midgut Volvulus
 - viii. Newborn Low Intestinal Obstruction
 - ix. Omphalocele, gastroschisis, and diaphragmatic hernia
 - x. Pneumoperitoneum
 - f. Genitourinary
 - i. Duplication of the Collecting System/Ureters
 - ii. Multicystic Dysplastic Kidneys
 - iii. Posterior Urethral Valves
 - iv. Testicular Torsion
 - v. Ureteropelvic Junction Obstruction
 - vi. Vesicoureteral Reflux
 - g. Musculoskeletal
 - i. Child abuse: Skeletal Trauma
 - ii. Childhood fractures
 - iii. Legg-Calve-Perthes Disease
 - iv. Septic Arthritis and Toxic Synovitis
 - v. Slipped Capital Femoral Epiphysis
 - h. Neuroradiology
 - i. Child Abuse: Cerebral Trauma
 - ii. Newborn Cranial Ultrasound

III. **Practice Based Learning and Improvement:**

- (a) Residents are required to complete an on line Fluoroscopic Procedures and Radiation Safety module at least biannually.
- (b) The resident should demonstrate evidence of independent reading and learning through the use of printed and electronic sources.
- (c) Follow-up of abnormal or interesting studies should be accomplished through communication with the referring physician and/or patient medical records.
- (d) Residents should assist with preparation and presentation of cases for pediatric interdisciplinary conferences when requested by the attending physician.
- (e) The resident should be competent in using the PACS and Powerscribe systems in the daily accomplishment of the work load and instruct others in its use.

IV. **Interpersonal Communication Skills:**

- (a) The resident should be able to communicate effectively results of studies to referring clinicians whenever needed. For emergent studies, reports to referring clinicians should be made in a timely manner.

- (b) The resident should be able to effectively convey the findings of examinations through accurate dictation of reports.
- (c) Residents should discuss fluoroscopic procedures and study results with children and their families when requested to do so by supervising faculty.

V. **Professionalism:**

- (a) *Residents are required to read a professionalism module upon arrival to peds radiology. The module should be signed, dated and placed in the portfolio.*
- (b) Recognize limitations in personal knowledge and skills, being careful to not make decisions beyond the level of personal competence.
- (c) Residents should be able to explain the nature of the examination or findings in an examination to patients and their families when needed.
- (d) Residents should observe ethical principles when recommending further work-up for cases.
- (e) Promptness and availability at work are expected of every resident.
- (f) Residents should dress appropriately at work, wearing a name badge at all times.
- (g) Pediatric radiology technologists and other health workers should be treated with respect as part of the health care team.
- (h) Patient confidentiality should be observed at all times.

VI. **System Based practice:**

- (a) Residents should be familiar with departmental procedures necessary in the performance of the examination.
- (b) Residents should learn appropriate language to be used in communicating to clinicians through reports or consultations so proper management decisions can be made.
- (c) Proper dictations should be made with indications, technique, findings and conclusions
- (d) Residents should dictate and correct their reports in a timely fashion to avoid delay in patient disposition.
- (e) Residents should assist in facilitating examinations whenever possible.
- (f) Resident should recognize the role that nuclear medicine plays in the management of patient's illness and make proper recommendations when needed.
- (g) Residents are encouraged to make suggestions to improve methods and systems utilized in radiology should be made whenever appropriate.

Reading list: Focus on life threatening and urgent diagnoses – trauma, acute abdomen, acute intracranial imaging

1. Donnelly LF. Fundamentals of Pediatric Radiology. WB Saunders Co. 2001.
 - a. Read this book 3 times.
2. Pediatric Radiology Curriculum on line Modules. <https://www.cchs.net/pediatricradiology/>
3. Barkovich JA. Pediatric Neuroradiology, 3rd Ed.
 - a. Chapter 2 Normal Development of the Neonatal and Infant Brain, Skull, and Spine. Lippincott Williams and Wilkins. Philadelphia, PA 2005
4. CMH CD Rom web based Emergency cases – Head to Toe – Check out form Teri Carver
5. Pediatric Cervical Spine imaging – Article in your “orientation” manual
6. Malrotation and Midgut Volvulus – Article by Strouse provided in your “orientation” manual
7. Child abuse – Article by Lonergan in your “orientation” manual

PEDIATRIC RADIOLOGY - Rotation 2

General overview

Radiology resident rotations in Pediatric Imaging will include at least 4 months during the residency program, all of which will be at Children's Mercy Hospitals and Clinics. The specific goals include

objectives required for every level of training with graded supervision by the attending faculty. All aspects of Pediatric radiology will be incorporated into the residency, including Pediatric Neuroimaging, Pediatric Nuclear Medicine and Pediatric Interventional Radiology.

Resident responsibilities:

1. The resident is involved in the daily conduct of Pediatric Radiology services. At the start of every working day, the resident should be familiar with the patient schedule and anticipate needs for any procedures. The resident will check requisitions to evaluate for appropriateness of requested procedure or if additional exams/protocol needs to be performed. Absent clinical indication or seemingly in-appropriate requests will be clarified and discussed with referring physician.
2. The resident assigned to Pediatric Radiology is expected to be available for consultation by pediatric imaging technologists, clinicians and other health care professionals during regular office hours except during conference times, when attending faculty will cover.
3. Examinations should be checked by the resident before the patient leaves the department if requested to do so by the supervising faculty.
4. Questions should be referred to the supervising faculty to which the resident is assigned.
5. Preliminary reports may be written for emergency room studies and patients who are going to clinic appointments on the same day of the examination when appropriate. This is communicated to attending radiologist and documented in the final report with name, date and time of such a communication.
6. Review of cases with the supervising faculty will be conducted as many times in the day as necessary to keep an efficient work flow.
7. All examinations should be dictated by the end of every working day.
8. The resident will check his/her reports prior to final verification by supervising faculty.

Staff responsibilities:

1. Supervising faculty should be available at all times for any questions or consultations needed by the resident.
2. Supervising faculty should review all cases with the resident before the end of the day.
3. Supervising faculty should provide the resident with constructive feedback in any problem areas encountered during the rotation as well as through rotation evaluations.
4. Supervising faculty should sign resident-generated reports in a timely manner and inform the resident of any major changes he/she made.

Resident evaluation: CMH faculty use New Innovations software to complete electronic evaluations, which are based on the 6 ACGME core competencies. Residents are also evaluated by 1-2 technologists and 10 patients while on each month of Pediatric Radiology rotation. See the resident handbook for further details.

PEDIATRIC RADIOLOGY - Rotation 2 – Goals and Objectives

I. **Patient care:**

- (a) Residents are required to complete an on line Patient Care, Radiation Safety module at least biannually.
- (b) The resident should have knowledge of indications for the examinations requested. When the reason for the examination is not clear, the resident should effectively communicate with the patient or referring physician until this is clarified.
- (c) The resident should be familiar with available medical records and how to access them for purposes of patient care.
- (d) All studies should be reviewed with supervising faculty attending.

- (e) Preliminary reports should be made available to all referring clinicians if needed prior to final review of cases. If there is a significant discrepancy between the preliminary reading and final reading, the resident should notify the referring clinician immediately.

II. **Medical Knowledge:**

At the end of the rotation, the resident should be able to:

- (a) Describe positioning techniques and technical factors leading to optimum chest, abdomen, GI and GU radiographs of the infant and older child.
- (b) Establish bone age on the basis of radiographic findings.
- (c) Add to knowledge base in chest radiology and congenital diseases of the heart through continued reading of films and case reviews.
- (d) Perform fluoroscopic procedures with the assistance of the radiologist.
- (e) Dictate films (esp. chest, abdomen, GI, GU) with assistance of the radiologist.
- (f) Residents must pass image (and written exam if written boards not yet passed) exam on Pediatric Radiology with a core of 80% or better. Certificate of passage of the exam should be placed in the resident portfolio.**
- (g) Residents must obtain 10 patient surveys (see Teri Carver, Admin Asst at CMH, 234-3273) while doing fluoroscopy at CMH to be placed in the resident portfolio.**
- (h) Complete the following "Senior Radiology Resident Curriculum" modules on the COMET website. URL - <https://www.cchs.net/pediatricradiology> (Certificates should be placed in the resident portfolio):**
 - a. Introduction to the Pediatric Knowledge Techniques
 - i. Radiation safety (if not already done)
 - b. Cardiac
 - i. Acyanotic congenital heart disease
 - ii. Coarctation of the Aorta and Hypoplastic Left Heart
 - iii. Cyanotic Congenital Heart Disease
 - c. Chest
 - i. Bronchopulmonary foregut malformations
 - ii. Ganglioneuroma
 - iii. Scrotal neoplasms
 - d. GI
 - i. Newborn jaundice
 - e. Genitourinary
 - i. Neuroblastoma, Ganglioneuroblastoma, ganglioneuroma
 - ii. Scrotal neoplasms
 - iii. Wilms and other renal tumors
 - f. Musculoskeletal
 - i. Child abuse: Skeletal Trauma
 - ii. Developmental dysplasia of the hip
 - iii. Ewings sarcoma
 - iv. Langerhans Cell Histiocytosis
 - v. Osteosarcoma
 - vi. Ricketts
 - g. Neuroradiology
 - i. Chiari Malformation
 - ii. Child Abuse: Cerebral Trauma
 - iii. Congenital anomalies of the pediatric face
 - iv. Childhood stroke
 - v. Hydrocephalus
 - vi. Malformations of cortical development
 - vii. Pediatric Neck masses
 - viii. Spine: The sacral dimple

- ix. **Temporal Bone anatomy and pathology**
- x. **The holoprosencephalies**
- xi. **The Orbit**
- xii. **TORCH infections**
- h. **Syndrome**
 - i. **Trisomy 21**
- i. **Systemic Conditions**
 - i. **Leukemia and Lymphoma**

III. **Practice Based Learning and Improvement:**

- (a) Residents are required to complete an on line Fluoroscopic Procedures and Radiation Safety module at least biannually.
- (b) The resident should demonstrate evidence of independent reading and learning through the use of printed and electronic sources.
- (c) Follow-up of abnormal or interesting studies should be accomplished through communication with the referring physician and/or patient medical records.
- (d) Residents should assist with preparation and presentation of cases for pediatric interdisciplinary conferences when requested by the attending physician.
- (e) The resident should be competent in using the PACS and Powerscribe systems in the daily accomplishment of the work load and instruct others in its use.

IV. **Interpersonal Communication Skills:**

- (a) Residents should be able to communicate effectively results of studies to referring clinicians whenever needed. For emergent studies, reports to referring clinicians should be made in a timely manner.
- (b) The resident should be able to effectively convey the findings of examinations through accurate dictation of reports.
- (c) Residents should discuss fluoroscopic procedures and study results with children and their families when requested to do so by supervising faculty.

V. **Professionalism:**

- (a) Residents are required to complete an on line professionalism module at least biannually.
- (b) Recognize limitations in persona skill and knowledge, always making sure dictations and consultations are check by the radiologist in charge.
- (c) Recognize limitations in personal knowledge and skills, being careful to not make decisions beyond the level of personal competence.
- (d) Residents should be able to explain the nature of the examination or findings in an examination to patients and their families when needed.
- (e) Residents should observe ethical principles when recommending further work-up for cases.
- (f) Promptness and availability at work are expected of every resident.
- (g) Residents should dress appropriately at work, wearing a name badge at all times.
- (h) Pediatric radiology technologists and other health workers should be treated with respect as part of the health care team.
- (i) Patient confidentiality should be observed at all times.

VI. **System Based practice:**

- (a) Residents should be familiar with departmental procedures necessary in the performance of the examination.
- (b) Residents should learn appropriate language to be used in communicating to clinicians through reports or consultations so proper management decisions can be made.
- (c) Proper dictations should be made with indications, technique, findings and conclusions

- (d) Residents should dictate and correct their reports in a timely fashion to avoid delay in patient disposition.
- (e) Residents should assist in facilitating examinations whenever possible.
- (f) Resident should recognize the role that nuclear medicine plays in the management of patient's illness and make proper recommendations when needed.
- (g) Residents are encouraged to make suggestions to improve methods and systems utilized in radiology should be made whenever appropriate.

Reading list: Focus on common, but not life threatening diagnoses – Chest, MSK, GU, nuclear pediatric imaging, nonemergent neuroimaging.

- 1. Pediatric Radiology Curriculum on line Modules. <https://www.cchs.net/pediatricradiology/>
- 2. Donnelly L. Pocket Radiologist: Pediatric Radiology: Top 100 diagnoses, AMIRSYS, 2003.
- 3. Blazer S. PocketRadiologist: Pediatric Neuroradiology: Top 100 diagnoses, AMIRSYS 2003.
- 4. Siegel M. Pediatric sonography. Lippincott, Williams and Wilkins. Philadelphia, PA 2002.
 - a. Read head, hip, spine and pyloric chapters as needed
- 5. Read either a Pediatric chapter from an adult Nuclear Medicine text, or read the GU, Bone and tumor imaging chapters from a Pediatric Nuclear Medicine textbook.

PEDIATRIC RADIOLOGY - Rotation 3 and optional 4, 5, or 6

General overview

Radiology resident rotations in Pediatric Imaging will include at least 4 months during the residency program, all of which will be at Children's Mercy Hospitals and Clinics. The specific goals include objectives required for every level of training with graded supervision by the attending faculty. All aspects of Pediatric radiology will be incorporated into the residency, including Pediatric Neuroimaging, Pediatric Nuclear Medicine and Pediatric Interventional Radiology.

Resident responsibilities:

- 1. The resident is involved in the daily conduct of Pediatric Radiology services. At the start of every working day, the resident should be familiar with the patient schedule and anticipate needs for any procedures. The resident will check requisitions to evaluate for appropriateness of requested procedure or if additional exams/protocol needs to be performed. Absent clinical indication or seemingly in-appropriate requests will be clarified and discussed with referring physician.
- 2. The resident assigned to Pediatric Radiology is expected to be available for consultation by pediatric imaging technologists, clinicians and other health care professionals during regular office hours except during conference times, when attending faculty will cover.
- 3. Examinations should be checked by the resident before the patient leaves the department if requested to do so by the supervising faculty.
- 4. Questions should be referred to the supervising faculty to which the resident is assigned.
- 5. Preliminary reports may be written for emergency room studies and patients who are going to clinic appointments on the same day of the examination when appropriate. This is communicated to attending radiologist and documented in the final report with name, date and time of such a communication.
- 6. Review of cases with the supervising faculty will be conducted as many times in the day as necessary to keep an efficient work flow.
- 7. All examinations should be dictated by the end of every working day.
- 8. The resident will check his/her reports prior to final verification by supervising faculty.

Staff responsibilities:

1. Supervising faculty should be available at all times for any questions or consultations needed by the resident.
2. Supervising faculty should review all cases with the resident before the end of the day.
3. Supervising faculty should provide the resident with constructive feedback in any problem areas encountered during the rotation as well as through rotation evaluations.
4. Supervising faculty should sign resident-generated reports in a timely manner and inform the resident of any major changes he/she made.

Resident evaluation: CMH faculty use New Innovations software to complete electronic evaluations, which are based on the 6 ACGME core competencies. Residents are also evaluated by 1-2 technologists and 10 patients while on each month of Pediatric Radiology rotation. See the resident handbook for further details.

PEDIATRIC RADIOLOGY - Rotation 3 (optional 4-6) – Goals and Objectives

1. ***Patient care:***

- (a) Residents are required to complete an on line Patient Care, Radiation Safety module at least biannually.
- (b) The resident should have knowledge of indications for the examinations requested. When the reason for the examination is not clear, the resident should effectively communicate with the patient or referring physician until this is clarified.
- (c) The resident should be familiar with available medical records and how to access them for purposes of patient care.
- (d) All studies should be reviewed with supervising faculty attending.
- (e) Preliminary reports should be made available to all referring clinicians if needed prior to final review of cases. If there is a significant discrepancy between the preliminary reading and final reading, the resident should notify the referring clinician immediately.

2. ***Medical Knowledge:***

At the end of the rotation, the resident should be able to:

- (a) Identify normal vs. abnormal findings on skeletal, skull (and contents), and spine radiographs.
- (b) Add to knowledge base in all areas of pediatric radiology through continued study, review of ACR cases and film reading.
- (c) Perform fluoroscopic exams except when complications are anticipated.
- (d) Participate in performance and interpretation of pediatric nuclear medicine and interventional studies under faculty supervision.
- (e) **Residents must pass image exam on Pediatric Radiology with a core of 90% or better. Certificate of passage of the exam are placed in the resident portfolio.**
- (f) **Residents must obtain 10 patient surveys (see Teri Carver, Admin Asst at CMH, 234-3273) while doing fluoroscopy at CMH to be placed in the resident portfolio.**
- (g) **Residents must read Dr. Lowe's on line CMH discussions of the following topics and complete pretests.**
 - a. **Dermatology – Radiology**
 - i. **Update on classification of vascular malformations**
 - b. **Ultrasound**
 - i. **Head ultrasound**
 - ii. **Transcranial Doppler head ultrasound**
 - c. **Neuroimaging**
 - i. **Spine Imaging**
 - ii. **Sensorineural hearing loss in children**

- iii. **Midface anomalies and syndromes**
 - iv. **Advanced Pediatric neuroimaging: Introduction to MR spectroscopy**
 - v. **Neuroimaging of Nonaccidental trauma: Pitfalls and Controversies**
 - d. **ENT imaging:**
 - i. **Pediatric Parotid and Periparotid disease**
 - ii. **Submandibular and sublingual disease**
3. **Practice Based Learning and Improvement:**
- (a) Residents are required to complete an on line Fluoroscopic Procedures and Radiation Safety module at least biannually.
 - (b) The resident should demonstrate evidence of independent reading and learning through the use of printed and electronic sources.
 - (c) Follow-up of abnormal or interesting studies should be accomplished through communication with the referring physician and/or patient medical records.
 - (d) Residents should assist with preparation and presentation of cases for pediatric interdisciplinary conferences when requested by the attending physician.
 - (e) The resident should be competent in using the PACS and Powerscribe systems in the daily accomplishment of the work load and instruct others in its use.
4. **Interpersonal Communication Skills:**
- (a) Residents should be able to communicate effectively results of studies to referring clinicians whenever needed. For emergent studies, reports to referring clinicians should be made in a timely manner.
 - (b) The resident should be able to effectively convey the findings of examinations through accurate dictation of reports.
 - (c) Residents should discuss fluoroscopic procedures and study results with children and their families when requested to do so by supervising faculty.
5. **Professionalism:**
- (a) Residents are required to complete an on line professionalism module at least biannually.
 - (b) At the end of the rotation, the resident should be able to make preliminary decisions on all matters of film interpretation and consultation, recognizing and obtaining assistance with situations that require the expertise of the radiologist.
 - (c) Recognize limitations in personal knowledge and skills, being careful to not make decisions beyond the level of personal competence.
 - (d) Residents should be able to explain the nature of the examination or findings in an examination to patients and their families when needed.
 - (e) Residents should observe ethical principles when recommending further work-up for cases.
 - (f) Promptness and availability at work are expected of every resident.
 - (g) Residents should dress appropriately at work, wearing a name badge at all times.
 - (h) Pediatric radiology technologists and other health workers should be treated with respect as part of the health care team.
 - (i) Patient confidentiality should be observed at all times.
6. **System Based practice:**
- (a) Residents should be familiar with departmental procedures necessary in the performance of the examination.
 - (b) Residents should learn appropriate language to be used in communicating to clinicians through reports or consultations so proper management decisions can be made.
 - (c) Proper dictations should be made with indications, technique, findings and conclusions
 - (d) Residents should dictate and correct their reports in a timely fashion to avoid delay in patient disposition.

- (e) Residents should assist in facilitating examinations whenever possible.
- (f) Resident should recognize the role that nuclear medicine plays in the management of patient's illness and make proper recommendations when needed.
- (g) Residents are encouraged to make suggestions to improve methods and systems utilized in radiology should be made whenever appropriate.

Reading list: Focus on filling in gaps in knowledge and study by taking cases in an oral board format.
Review material learned on previous rotations in pediatric radiology.

1. Complete/Review Pediatric Radiology Curriculum on line Modules at URL <https://www.cchs.net/pediatricradiology/> if not already done so
2. Kuhn JP, Slovis TL, and Haller JO. Caffey's Pediatric Diagnostic Imaging, 10th ed. Elsevier Health Sciences 2007. Read chapter on heart and fill in any gaps in knowledge.
3. Complete ACR Pediatric case files if not already done so.
4. Read either a Pediatric chapter from an adult Nuclear Medicine text or read the GU, Bone and tumor imaging chapters from a Pediatric Nuclear Medicine textbook.