

# University of Utah School of Medicine

Fourth-Year Clinical Elective in

Pediatric Radiology (RDLGY 7063)

## Course Syllabus

### IMPORTANT

You must complete required paperwork for Primary Children's Hospital at least one week prior to your start date. Please contact Alesia Ivers by phone, text (404-368-3220) or email the week prior to your rotation

**Course Coordinator:** Alesia Ivers  
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**Course Director:** Hank Baskin,  
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Fourth-Year Pediatric Radiology Elective (RDLGY 7063)  
at  
Primary Children's Medical Center

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**Prerequisites:** None

**Course Description:** Students with interests in all areas of medicine are encouraged to request this customizable elective. Beyond the foundational didactic and modular learning curriculum, this is a self-driven course that will include exposure to pediatric plain film, fluoroscopy, ultrasound, neuroradiology, body CT, and nuclear medicine. The student is expected to personalize this elective rotation to maximize learning related to their personal specialty interests. The rotation will take place at Primary Children's Hospital (PCH).

**Course Goals:**

- To allow students to explore their personal interests by observing diagnostic and therapeutic imaging exams and procedures in pediatric radiology, especially in relation to their chosen specialty.
- To increase the student's understanding and recognition of common pediatric processes and pathology encountered in pediatric imaging.
- To increase the student's knowledge of the various diagnostic imaging modalities offered by a pediatric radiology department and achieve a better understanding of how to select and sequence the appropriate imaging examinations for specific clinical presentations.
- To gain additional insight into how diagnostic imaging fits into the multidisciplinary approach to patient care and understand the importance of communication, professionalism, and teamwork between clinicians and radiologists relating to patient management.
- Increase the student's understanding of the risks of radiation exposure in the pediatric population and how these risks may be reduced.
- To encourage correlation of diagnostic images with previously learned normal and pathologic anatomy, pathophysiology, growth, and development.
- Introduce students to the indications, contra-indications, patient preparation, post-procedure care, and relative radiation exposure for various diagnostic imaging exams.
- Know the relative costs of different diagnostic imaging exams and be able to plan and sequence exams in an effort to optimize outcomes and provide cost-effective patient care.

*Goals adapted from the University of Tulane's General Radiology Elective*

**Course Format:** Students are encouraged to use their time on this rotation to learn how imaging interacts with and impacts their respective fields of interest. While having some foundational curricular guidance and structure, students will design this rotation to maximize learning and exposure in regard to their personal interests. Examples of various possibilities to achieve this goal are listed below. Students may participate in any areas of interest within the PCH Department of Medical Imaging. Students may also participate in clinical activities related to imaging outside of the department with a consulting physician's approval. Each student will be required to complete an oral/slideshow presentation consisting of either an interesting case they have encountered during the rotation, or they may outline a problem and an algorithmic approach to the work-up with appropriate imaging studies. This is given in the final week of the elective to peers and radiology faculty members.

## **Examples of student interests aligning with pediatric radiology:**

**General Surgery Interests:** In addition to the basic didactic and modular learning, students may be interested to observe percutaneous biopsies and abscess drainages, as well as fluoroscopic examinations used for evaluation of many potentially surgical conditions. Students may also observe sonographic evaluation of surgical conditions such as pyloric stenosis, intussusception, or acute appendicitis. With approval of surgical attendings, students may scrub in on surgical cases that result from these examinations.

**Neurology/Neurosurgery Interests:** In addition to the basic didactic and modular learning, students may observe cases with a pediatric neuroradiologist in the reading room, attend several of the weekly clinical-imaging neuro conferences each week, observe cranial ultrasounds with a sonographer, or involve themselves with other diagnostic examinations and procedures. With the consulting attending's permission, students may observe OR cases involving neurological pathologies encountered in the reading room.

**Orthopedic Interests:** In addition to the basic didactic and modular learning, the student may go to the ER or OR to observe reductions and fixations of fractures under fluoroscopic guidance, observe bone tumor ablations or peripheral vascular procedures performed by IR, watch fluoroscopically guided arthrograms/arthrocenteses, or observe cases with an MSK radiologist in the reading room.

**Emergency Interest:** With the consulting attending's permission, students may observe and take part in night shift duties, an experience that offers a global view of pediatric imaging with unique one-on-one teaching.

**Other Interests:** Students with urologic or OB/GYN interests may observe voiding cystourethrograms, sonographic examinations, or fetal imaging (at the University of Utah). Students with oncologic interests may sit with nuclear medicine trained radiologists to gain a better understanding of various oncologic imaging modalities including PET/CT, SPECT/CT, bone scans, etc.

**Schedule:** Students are encouraged to attend the daily radiology resident lectures at the University of Utah. A schedule of these conferences will be provided. Didactic sessions given by faculty and residents will be held twice weekly. Students are expected to divide the remainder of their time between self-directed study and observing procedures and examinations that they find interesting and pertinent to their chosen fields. Weekends and night shifts are not required.

**Required Texts and or Readings:** Students will be provided a file of case presentations covering the foundational concepts and disease states encountered in pediatric radiology. Students are expected to study these cases throughout the rotation in conjunction with online learning modules from the University of Virginia's online Pediatric Radiology Course (Weblink). An iPad preloaded with the text "*Practical Pediatric Imaging*" will be available in the department for student study. Copies of the didactic session presentations will also be given. Students are encouraged to explore other resources available, such as the database of images from the Cleveland Clinic found at <https://www.cchs.net/pediatricradiology/imagegallery/default.asp>.

**Assessment and Course Grading:** Course grade depends on weekly evaluations, attendance at didactic sessions, and the presentation given during the last week of the elective. There is a fifty-question examination based on the information presented in the faculty lectures and the reading assignment that will be given as a pre- and post-test.

## **Curriculum Objectives:**

Adapted from the University of Virginia's Introduction to Pediatric Radiology Online Course

### Chest

1. Know the components of the pediatric CXR study.
2. Know the approach to reading a pediatric CXR.
3. Identify neonatal pneumothorax, pneumomediastinum, and pulmonary interstitial emphysema.

4. Identify the medical causes of newborn respiratory distress (transient tachypnea, meconium aspiration, neonatal pneumonia, and lung disease of prematurity).
5. Identify the surgical causes of respiratory distress syndrome (congenital diaphragmatic hernia, congenital pulmonary adenomatoid malformation, congenital lobar emphysema, and sequestration).
6. Identify croup, bacterial tracheitis, epiglottitis, and retropharyngeal abscess.

#### Abdominal

1. Identify the radiographic features of esophageal atresia, tracheoesophageal fistula, duodenal atresia, jejunal-ileal atresia, meconium ileus, meconium plug syndrome, Hirschsprung disease, and necrotizing enterocolitis.
2. Identify the radiographic features of esophageal foreign bodies, esophageal stricture, and hypertrophic pyloric stenosis.
3. Identify the radiographic features of malrotation, midgut volvulus, Meckel diverticulum, appendicitis, and intussusception.
4. Identify the radiographic features of biliary atresia, neonate hepatitis, choledochal cyst.

#### Genitourinary

1. Know how to identify and grade vesicoureteral reflux.
2. Identify cystic renal diseases (autosomal recessive polycystic kidney disease and autosomal dominant polycystic kidney disease).
3. Identify congenital urinary abnormalities.
4. Identify hydronephrosis and its causes.
5. Identify genitourinary tumors.

#### Musculoskeletal

1. Identify common types of pediatric trauma.
2. Identify common pediatric hip abnormalities and pathologies.
3. Identify common pediatric lower extremity abnormalities.
4. Identify benign pediatric musculoskeletal lesions.
5. Identify aggressive pediatric musculoskeletal lesions.
6. Identify congenital orthopedic disorders.
7. Identify metabolic disorders on traditional radiographic studies.

#### Neuro

1. Know the normal appearance of a pediatric head US.
2. Identify germinal matrix hemorrhage and its grade.
3. Identify neurofibromatosis, tuberous sclerosis, and Sturge-Weber syndrome.
4. Understand TORCH syndrome, encephalitis, subacute sclerosing panencephalitis, acute disseminated encephalomyelitis, meningitis, and cysticercosis.
5. Identify cerebellar astrocytoma, medulloblastoma, brainstem glioma, and ependymoma.
6. Identify craniopharyngioma, suprasellar astrocytoma, hypothalamic hamartoma, and germ cell tumors
7. Identify pineocytoma and pineoblastoma, germinoma, and tectal glioma
8. Identify intraventricular and hemispheric supratentorial tumors.

#### **General Policies and Procedures:** For information regarding the following:

- Medical Student Code of Ethics
- Standards of Conduct
- Technical Standards
- OEO Contact Information
- Grading System
- Grade or Score Appeal
- Student Attendance and Expectations
- Or Mistreatment

Please visit <http://medicine.utah.edu/studentaffairs/studenthandbooknew.pdf>.