For many years the Pediatric Radiology Division at ACH has been aware of the important role that physician extenders have provided to the UAMS Interventional Radiology Service. When the Radiologist Assistant (RA) program was established at UAMS in 2005, the Pediatric Radiology Department was asked to sponsor and oversee clinical rotations for RA students in the ACH Radiology Department. Pediatric Radiology sponsors for common fluoroscopy studies and pediatric interventional radiology procedures were chosen and RA elective time established. Several RA students have now rotated through the ACH campus. The time spent at ACH provides the trainees an educational experience that has complemented their clinical rotations in various adult hospitals.

After training RA students in this fashion, the ACH Radiology Department realized that there was a need for such a physician extender in their daily practice. Having many years of service as a Radiology Technologist at ACH, Melody Runkel expressed an interest in joining the UAMS Pediatric Radiology practice at ACH. After she received her Bachelor’s Degree, she enrolled for five semesters of classroom instruction focused on imaging studies and interventional skills. In addition, over 1300 clinical rotation hours were required before she graduated from the UAMS RA program, receiving her Masters in Imaging Sciences.

Melody has since passed the national RA registry exam, and is seeking approval from the Arkansas State Medical Board. She needed to have a physician sponsor and a job offer before she could apply for practice approval from the Arkansas State Medical Board. Each RA position is specifically designed by the sponsoring physician.

Melody was hired by UAMS Radiology in July 2009. She can assist in a variety of radiologic tasks under the supervision of the staff Pediatric Radiologist. She performs fluoroscopic exams: UGI, BE, VCU, swallowing studies, G-tube check, and hip aspirations. Her interventional radiology procedures include: GJ exchange, non-sedated PICC placement, lumbar puncture, and drain tube check. Melody coordinates scheduling of studies between RTs and the Pediatric Radiologist, facilitates communication with referring services before and after a radiologic exam, and does follow-up patient care tasks delineated by her supervising physician.
Arkansas Children’s Hospital is the first pediatric hospital in the western hemisphere to acquire a 320 slice computed tomography scanner – the Aquilion ONE. The scanner has been in operation for over a year and has had a dramatic impact on the care of children. Unlike helical scanners, the wide detector array allows for an entire organ to be imaged with a single rotation of the gantry and no helical motion. This allows scans to be completed in as little as 350 msec, reducing the need for sedation in many applications. The scanner also requires much less radiation exposure than 64 slice helical scanners. Radiation effective dose for children undergoing non-gated chest computed tomography angiography has been reduced by up to 70% and almost 50% for children undergoing gated computed tomography angiography. Dynamic pulmonary scanning allows for imaging of the airway and lungs during respiration, allowing for evaluation of trachea-broncho malacia, segmental bronchial abnormalities and air trapping. This is a unique property of volume scanning. Neurovascular imaging has become so rapid that venous contamination has been eliminated and excellent bone subtraction is now routine.

The radiation doses for temporal bone and sinus computed tomography examinations are less than half that for helical studies and so fast that sedation is now rarely performed. Volume scanning has also become the standard of care for infants and toddlers undergoing head computed tomography for suspected child abuse. The scans are performed in less than a second and produce thin collimated images suitable for detailed 3D images. These images allow for detection of common and subtle skull fractures that are not readily identified on classic step and shoot studies. The scanner has met the promise of high resolution imaging at low dose. As a result, the radiologists at Arkansas Children’s Hospital have become leaders in pediatric computed tomography.

The cerebral CTA using the volume technique shows perfect bone subtraction. The exam is status post embolization of a right internal cerebral artery embolism. The exam was performed using 2.6 mSV exposure. (left)

A patent ductus arteriosus and pulmonary sling are present on the 3D volume rendering. The examinations used 0.6 mSV exposure. (right)
When a critical staffing shortage of pediatric radiologists developed several years ago, a former UAMS Radiology resident (1995) and past ACH pediatric radiology fellow offered to rise to the occasion and help her former mentors. Dr. Marianne Neal and her husband Dr. Chip Massey (former UAMS radiology resident (1994) and UAMS neuroradiology fellow) have been part of the Mountain Empire Radiology group in East Tennessee for 11 years. Part time work hours have been ideal for Marianne while raising two children, Sam, age 11 and Annemarie, age 9. With a new house just completed and roots being set in Tennessee, recruitment of the doctors back to central Arkansas was not an option. However, with a spare closet at home, a Comcast high speed connection, a new ACH PACS workstation, and some imagination by many individuals, a new project was launched. After obtaining pediatric radiology staff credentials at ACH, Marianne rejoined our ACH Radiology team.

On her time off from Mountain Empire, Dr. Neal is sent early morning ACH radiographs for staff interpretation. “I love working for UAMS and ACH. I usually start my day between 6:00 and 6:30 am Eastern Time. I feel like I can contribute more to patient care by being able to read the intensive care films soon after they are performed.” On these days the ACH pediatric radiology fellow reviews Dr. Neal’s impressions and then rounds with the referring neonatal team on the ACH campus in Little Rock. The Eastern time zone has given Dr. Neal an early start on reading this group of images. In addition, Dr. Neal is fortunate to have several of her past UAMS medical school classmates, who are familiar with her UAMS training and abilities, working on the referring ACH neonatal service.

Dr. Neal was recently awarded a prestigious honor from Mountain States Health Alliance, a regional healthcare system based in Tennessee. She was awarded the Servant’s Heart Award for Physicians in 2010. This award recognizes individuals who are role models in the philosophy of patient centered care. Dr. Neal was also recently given the Sullivan County Advocacy Center volunteer of the year award for her work in child abuse.

RADIOLOGY’S BEGINNINGS AT ACH

For many years radiology services at Arkansas Children’s Hospital were provided by volunteers from the local medical community, notably, Dr. Joseph Calhoun. Dr. Calhoun was one of the first radiology residents at UAMS. He began his residency in radiology under Dr. Isadore Meschan and finished in June of 1950. Dr. Joe Calhoun became the first Director of Radiology at the Arkansas Children’s hospital serving from 1950-1977. He dedicated his time to reading films for ACH while also working as a staff radiologist at other local hospitals.

In 1976, the UAMS Department of Radiology under the direction of Dr. Glenn Dalrymple, hired Dr. Joanna Seibert for the ACH Department of Radiology. Dr. Seibert became the first full time Board Certified Pediatric Radiologist serving the ACH community. Thirty four years later, Dr. Seibert can still be found reading films in the ACH reading room on Thursdays. Over subsequent years other pediatric radiologists were added to the ACH staff. Today, Dr. Charles James is the director of pediatric radiology at ACH with a staff of 14 pediatric radiologists.

CHILDREN’S RADIOLOGISTS HELP FOUND NEW SOCIETY

A new medical society formed recently to promote excellence in treatment options provided by pediatric interventional radiology. The Society for Pediatric Interventional Radiology (SPIR) will complement the UAMS mission of radiology education and the ACH mission of providing quality care to children. The Society hopes to enhance the understanding of specialized pediatric interventional radiology treatment options among medical communities and other medical societies. This Society has supported an active list - serve where those performing image guided procedures at ACH can seek consultation with those offering related treatment options to children at centers worldwide. The Society held its inaugural meeting in Napa Valley, California, in October 2009.
Since my arrival in Little Rock just two years ago, by my count 17 babies have been born to our residents, fellows and faculty. Do you wonder who will be reading the imaging studies on those kids until they reach adulthood? It may well be the radiologists at the Arkansas Children's Hospital or people they train. There are only some 40 full-service free standing children's hospitals in this country, and ACH is one of the best. The pediatric radiology group under the able leadership of Charles James (known to all as CJ) is an Arkansas Diamond in the crown of the UAMS Radiology Department. This group provides subspecialized pediatric imaging care, as well as image guided interventions, for children throughout the state.

Nevertheless, pediatric radiology has had numerous challenges. Not the least is limited reimbursement. Emphasis on conventional radiographs, limited use of “advanced imaging” and attention to limiting radiation dose can contribute to low revenues. ACH, however, has been great in support of pediatric radiology. ACH also has been very active, and quite successful, in obtaining benevolent funding which has and will benefit radiology. Innovative programs such as the Radiology Assistant program highlighted in this issue helps to secure excellent care with lower cost.

In the past, pediatric radiology often was tagged as being the "trailing edge" of new imaging technology, with high tech items such as CT and MRI filtering into use long after they became standard procedures in adults. With the 320 slice Toshiba Aquilion, ACH breaks this mold in providing true cutting edge technology in a children's hospital.

Pediatric training is fully integrated into our radiology residency program, through the pediatric fellowship, and now with the PEDRAP program, designed for medical students with desire to practice pediatric radiology. Dr Ananth Ravi will be the first to engage on that program, starting this July following his internship. ACH continues to be part of the RA training program as well. The ACH administration under leadership of Jonathan Bates has been very supportive of pediatric radiology, for which we are very grateful.

Although pediatric radiology nationally will continue to face many challenges, ACH and the UAMS Radiology Department are helping to keep it strong for those 17 babies and many others.