Research and Awards

The **Department of Radiology at Nationwide Children's Hospital** presented 15 abstracts at the recent Society for Pediatric Radiology 2018. The abstracts covered a broad spectrum of topics including research in advanced free-breathing neural, body, and cardiac MRI techniques to reduce the need for sedation for pediatric imaging, development of novel quantitative imaging biomarkers for liver and cardiac fibrosis, clinical studies in CT to reduce radiation exposure in vulnerable populations, novel functional methods for chronic hepatobiliary pathology with ultrasound and nuclear medicine, as well as quality-improvement projects highlighting the utility of daily department huddles, incident reporting, and the benefits of Child-life MRI simulation in reducing sedation rates.

The highlight of the week was NCH winning the prestigious **John Caffey Award** for the Best Scientific Research Poster for the following work:
Free-Breathing Motion Insensitive 3D T1 Weighted Post Contrast Spine and Abdominal 3Tesla MRI using a Golden Angle Radial Acquisition.

Congratulations to **Harry Hu Ph. D.**, our director of research and his team of collaborators from NCH and NYU, who are taking us increasingly closer to our cherished dream of making motion-insensitive MRI in unsedated children a reality.
Houchun Harry Hu Ph. D.
Thomas Benkert Ph. D.
Ramkumar Krishnamurthy Ph. D.
Mark Smith
Dr. Jerome Rusin
Dr. Aaron McAllister
Dr. Jeremy Jones
Dr. Brent Adler
Dr. Cody Young
Dr. Kathryn Milks
Dr. Rajesh Krishnamurthy
Kai Tobias Block Ph. D.

Congratulations to **Dr. Anna Lillis** on winning the Society of Pediatric Radiology Seed Grant for her proposal on respiratory gated CT of the airway in children and comparison with dynamic volume CT angiography and bronchoscopy. Apart from its potential to improve precision and further reduce radiation exposure for airway evaluation, it holds promise for assessment of interstitial lung disease as well.

Lastly, NCH is poised to take on an important role in leading imaging research over the next 4 years, with **Dr. Rajesh Krishnamurthy** becoming the Chair of the Pediatric Imaging Research Committee for the American College of Radiology from 2018-2022.

3D Printing

'Double Outlet Right Ventricle in your Hands' with 3-D Printed Models 4/25/18

3D Printing at NCH conducted the first hands-on teaching workshop – "**DORV in your hands**" for the fellows and residents in radiology and cardiology. The objective of the course was to give a better understanding of the structural anatomy and the relationship of the ventricular septal defect to the different forms of DORV using 3D printed models. The other objective was to use the models for the surgical planning of the cases.

The workshop was attended by 22 residents and fellows and was well received. The participants proposed that these workshops be repeated over the coming months.

The 3D Lab Featured on 10TV

On May 30th, the **Radiology 3D Lab** was featured in a story on WBNS 10TV. The feature related how the 3D Lab allowed Dr. Satya Gedela plan the surgery of patient Michael Conely, who suffered from migraine headaches as a result of a slow-growing brain tumor.

News and Updates

Schedule Changes

There have been significant changes to the Radiologist schedule recently. These changes are wide reaching and there have been many questions. Please click here to get a complete breakdown of each area and what the time and expectations will be.

Employee Recognition and a Pro Tip

This month we would like to recognize Marysville techs, **Ashley Stooksbury** and **Laci Faust** who used their creativity during an exam that resulted in a positive outcome for their patient. Great job!

Reverse Oblique foot view to visualize lateral 4/5 toes

A quick pro-tip on one way you can try and visualize the lateral 4th and 5th toes if isolating one or both of them is not possible is to try and over-rotate the patient's foot when they are in the lateral position. This is sometimes called a reverse oblique. In this specific case below, a patient had a large laceration between their 4th and 5th toes and isolating each of them in a true lateral position was not possible. Marysville techs, Ashley Stooksbury and Laci Faust decided to try over-rotating the patient's foot when they were in a lateral position so that the 5th and 4th toes could lay out in more of a lateral position. This proved to be a successful technique in visualizing the lateral 5th toe for the radiologist interpretation.

Research, Publications and Awards

Congratulations to Dr. Benjamin Thompson and Ram Krishnamurthy for their article accepted in Academic Radiology, entitled "Magnetic resonance elastography of the liver in children and adolescents: assessment of regional variations in stiffness."

SPR is now accepting abstracts for the 2020 Annual Meeting and Postgraduate Course! The submission deadline is October 27. Next year's conference will be held in Miami, Florida May 9 – 15, 2020. Good Luck to all who make a submission!

Compliance and Policies

There have been changes to the NCH Tuberculosis (TB) Testing and Surveillance policy. The new recommendations are that all health care workers should complete TB education annually in The Learning Center. Health care workers caring for a patient with suspected or confirmed TB should follow appropriate Airborne Precautions. Any health care worker with symptoms or signs compatible with TB or who have had contact with someone with active TB outside of work should be evaluated promptly by Employee Health. Epidemiology will continue to monitor for TB exposures.

To view the new policy click here.

Good Catches

Scheduling Primary Care Physician ordered CT Head w/wo for indication that did not warrant contrast, scheduling recognized the issue and had order changed to a non-contrast.

Offsites Patient had and Upper GI and Small Bowel Follow Through order and patient's symptoms only indicated that the Upper GI was needed. Technologist contacted ordering physician and radiologist and got Small Bowel Follow through canceled.

IR Special tube required for an IR Patient and this was discovered, and the proper tube ordered for the procedure.

CT CT Chest was protocolled with the Pectus protocol and not a standard chest, CT Tech performing exam was set up for a standard chest, CT Tech working with performing Tech noticed the Pectus protocol and prevented patient from receiving incorrect dose of contrast.

GR Femur and Knee x-rays order on a Gen Rad patient, the Technologist was able to get entire area of interest on the Femur images and the XR Knee was canceled.

NM Patient was scheduled for a NM PET Scan with anesthesia and was waiting to receive an IV. Anesthesia personnel provided incorrect information to the parents of the patient. NM Technologist discovered the mistake and went to the floor to inform the parents. The parents requested the VAT Team and the NM Tech was able to coordinate this to prevent any delay in starting the procedure.

MR Patient was scheduled for an MRI Brain but MRI Technologist discovered that the patient had 2 cochlear implants during MRI pre-screening and they are trying to get the patient rescheduled for CT so that they can safely be scanned.

US US patient was scheduled for an Head but diagnosis indicated soft tissue exam more appropriate and order changed to Facial/Scalp.

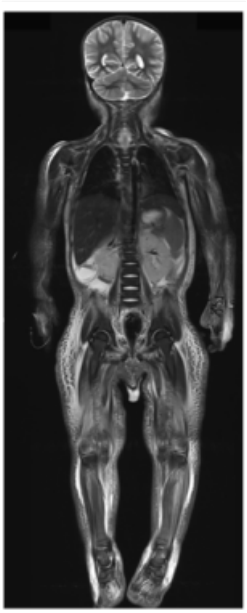
Pro Tips

Let's talk about Whole Body Imaging for MRI. For whole body MRIs there are 3 main protocols based on 3 distinct patient populations:

1. **Cancer Screening Predisposition**
(MR Whole-Body Screen Predi)
    a. LiFramani P3
    b. Nijmegen Breakage Syndrome

2. **CRMO**
(Chronic Recurrent Multifocal Osteomyelitis)
(MR Whole Body CRMO)

3. **Neurofibromatosis –NF1**
(MR Whole Body NF)



Cancer Screening Predisposition and Neurofibromatosis follow the same imaging protocols.

The tumor screening protocol is looking for tumors. This will include the DWIBS (Diffusion Weighted Imaging using Background Suppression), but please only send the subtracted images! If you send all the DWIBS data it will be thousands of images and can crash PACS.

The CRMO protocol is looking for osteomyelitis. This should ideally include all the bones including fingers and toes. Also, no DWIBS should be done for this protocol but sagittal sequences of the spine are necessary because disease is often in the vertebral bodies.

Each of these protocols has an order to match it and will require a specific diagnosis in the "Reason for Exam" field in order for the radiologist to properly protocol the exam. The goal is to reduce confusion and to properly image patients with each diagnosis.

Please reference the full Protocol on Whole Body Imaging for more information.

Jerry Moody Conference Room: Remodel

The conference technology in D1835, the Jerry Moody conference room, has been updated and simplified. All commonly used functions have been reduced to a single screen.

A "Cheat Sheet" explaining how to use the system (now much easier) has been placed in the conference room. This includes information on how to access a prescheduled Skype meeting, how to dial an outside number, how to record a conference, and how to present content from the PC, PACS or a laptop.

Do you want a conference recorded? You can schedule a recording by e-mailing **Brad Hoehne** ahead of time. Access to the ability to create "last minute" recordings has been given to radiology doctors.

3D Case of the Month

Pharyngeal arches or branchial arches (BA) (Greek branchial=gill) are paired tissue bands found in the anterior region of the embryo below the developing brain and form the predecessors for the head and neck structures. Anomalies of the branchial arches are the second most common congenital head and neck anomalies in children. First and second arch anomalies are more common than third, fourth and sixth. Clinically BA anomalies present as cysts, fistulae, sinus tracts or cartilaginous remnants with clinical and radiological findings. If they present as a cyst surgical excision is the most common line of curative treatment.

A 4-year-old female patient with left middle ear mass extending inferiorly into the left level II neck mass - with a possible first branchial cleft cyst - was referred by Dr. P. Malhotra from the ENT department to the department of radiology for MRI and CT scans and a 3D printed model. The model was required to depict the relationship of the cyst to the temporal bone, the mandible and other adjacent structures.

The cyst, skull base with the temporal, sphenoid bone and the mandible were segmented as separate entities and printed as a single composite model, *Figure 1*. For easy delineation of the anatomical structures, the skull and mandible models were printed in clear, the abnormal anatomy in the skull base at the junction of the cyst, the canal, was printed in magenta, and the cyst itself was printed in white as shown in *Figure 2*. The surgeon used the model for pre-operative clinical evaluation and surgical planning.

Figure 1
Virtual model skull, mandible and cyst

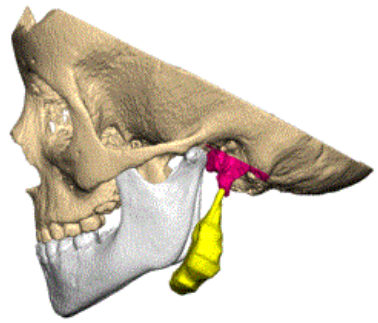


Figure 2
3D Printed model skull, mandible and cyst

Reference
Adams A, Mankad K, Offiah C, et al. Branchial cleft anomalies: a pictorial review of embryological development and spectrum of imaging findings. *Insights Imaging.* 2016; 7:69–76.

News and Updates

NCH and Radiology News

NCH CEO **Tim Robinson** completed a successful walk through of the MRI area in September.

Gen Rad tech **Laci Faust** will be making the move to the new Mansfield radiology site that will begin seeing patients this month.

Department Openings

We currently have the following openings in the department:

1.0 FTE – Radiology RN Clinical Leader

.8 FTE Radiology Staff RN

.4 FTE Radiology Gen Rad Tech in Marysville – Monday and Tuesdays 4 PM – CL, Friday 5 PM – 9 PM

NCH to Host SPR Conference

SPR The Society for Pediatric Radiology

Our department will be hosting an important international conference organized by Nationwide Children's Hospital and the Society of Pediatric Radiology (SPR) in October at NCH.

The **17th SPR Hands-on course** in pediatric cardiovascular MR, which is now in its 17th iteration, will happen on October 15-17, 2019, and will include hands on sessions at the scanners, hands on post-processing sessions, case based discussions, and fundamental lectures, all mentored by expert internationally renowned faculty from radiology and cardiology.

Additionally, the 15th SPR Advanced Symposium in pediatric cardiovascular MR will occur on Oct 18-20, 2019. For the first time, we announced combined sessions between the SPR Advanced Symposium on Pediatric Cardiovascular Imaging and 3DI3, The International Symposium on 3D Imaging for Interventional Catheterization in CHD. By bringing the entire scope of invasive and non-invasive imaging in pediatric cardiovascular imaging under a shared program, this international meeting will be the first of its kind to explore the synergy between MR/CT and interventional imaging in pediatric cardiovascular disease, and aim to break down siloes that have traditionally separated us from focusing together on patient-centric outcomes.

More information can be found at
https://sprcourse.nationwidechildrens.org

Research, Publications and Awards

Harry Hu was invited to speak at the Signa Masters 2019 Americas Summit in on "Non-Contrast MR Perfusion in Pediatrics." This is an exclusive, collaborative forum that brings together a community of experts from around the world to discuss the latest developments in Neuro, MSK, Body and Cardiac imaging.

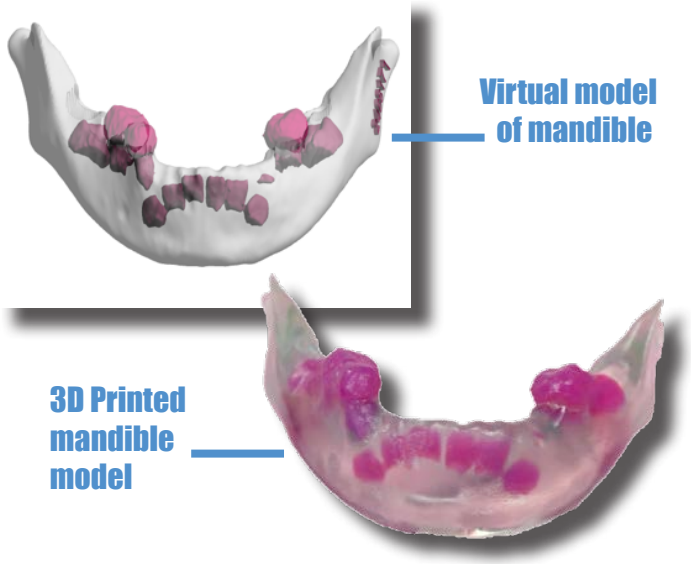
Abstract Submissions

Garima Suman, **Dr. Jerome Rusin**, and **Harry Hu's** article "*Multi- Delay Arterial Spin Labeling MRI of Cerebral Blood Flow: Preliminary Clinical Experience in Pediatrics*" was published by Pediatric Neurology in August 2019. Congratulations!

Harry Hu, **Dr**. **Mai-Lan Ho,** and **Dr. Jerome Rusin** have had their paper "*DEC - Advanced Neuroimaging In Traumatic Brain Injury: An Overview*" accepted for publication in the December 2019 - Image modalities for neurosurgical disease / Josh Osbun, Ralph Dacey, Dan Barrow, Amit Saindane, Christopher Nimsky issue of Neurosurgical Focus.

News from PAIR: The 3D LAB

3D printing of micrognathia in Pierre Robin syndrome prior to reconstructive surgery



A 2-year-old patient with Pierre-Robin Syndrome and micrognathia attending the Plastic and Reconstructive surgery department was referred by Dr. Pearson to the Department of Radiology 3D printing lab for a 3D model/print of the mandible. A virtual 3D model of the mandible was printed at a 1:1 replica. The precise delineation of a location of the unerupted teeth within the mandible will help the surgeon in planning the osteotomy, and placement of the distractors in a location that avoids key anatomical structures. The model will also help in pre surgical selection of the appropriate size of the distractor before surgery, thereby reducing the surgical and anesthetic time and ensuring device availability. Device use can also be simulated by the model using the usual surgical tools and screws.

The 3D Printing Lab in the Department of Radiology has a state of the art 3D Printer the CONNEX-3 OBJECT 350 along with a full complement of 3D modeling and printing software. The printer prints at 16-micron layers in a high-quality mode and 30-micron layers in a digital mode. Multicolor and multi material printing capabilities of the printer allow for variation of material properties within a single print to suit the intended application.

We welcome everyone to visit the lab and get an overview of the capabilities and applications. For more information, contact **Dr. Jayanthi Parthasarathy**, Associate Director of 3D Printing. 614-722-2614 and at Jayanthi.Parthasarathy@nationwidechildrens.org

Walk the Wall Recap, October 26

We had a Walk the Wall this morning with 2 complex issues being presented—Contrast Reactions in Radiology and Post Mortem Imaging. Thank you to all staff that worked on these issues and to the presenters! Great Job!

Research Highlights

- Master Research Agreement with Toshiba executed

- Master Research Agreement with Siemens nearly complete

- Imaging Research Office reviewed 36 studies since April, working closely with Clinical Research Services and IRB

- PRISMA research MRI fully operational with structured fee and scheduling policies for research usage

- Free-breathing motion-robust sequences now part of standard protocol on PRISMA and Skyra

- 3D printing laboratory now in full operation

- Pediatric Advanced Imaging Resource under construction, obtaining a variety of FDA-approved post processing software.

- Radiology is leading 6 prospective and 16 retrospective studies.

15 scientific abstracts for oral presentation were submitted by the NCH imaging team before the deadline of 10/29/2017 for the national meeting of the Society of Pediatric Radiology, representing a broad spectrum of clinical endeavors, including cardiovascular, musculoskeletal, neuroradiology, body imaging, and quality/safety. Thanks to all our innovators and researchers, as well as to our Imaging Research team led by Harry and Ram for shepherding this through. Special recognition goes to involvement of technologists in 5 of the abstracts, and to our QIS and informatics teams for their strong participation.

Research questions can be directed to the Imaging Research Office ImagingResearchOffice@nationwidechildrens.org

Annual Report

The Department of Pediatric Radiology at Nationwide Children's Hospital is one of the nation's premier clinical imaging programs with subspecialty expertise in abdominal, cardiac, chest, fetal/neonatal, musculoskeletal, neuroimaging, nuclear medicine and image-guided diagnosis and therapy.

Radiology staff are encouraged to peruse this document, outlining the goals and accomplishments of our department at this location on the Radiology Shared drive: **g:\\Radilogy_Reports\Radiology 2016-17 Annual Report.pdf**

News and Updates

Immersive IS

On October 19, former NBA player **Michael Redd** (3rd from left) and **Will Burrus** (3rd from right), founder of a Columbus-based Virtual Reality company called Immersive.IS visited the Department of Radiology at Nationwide Children's Hospital to look at our Child Life facility where we perform mock MRI simulations for some of our patients. In particular, the duo was interested in the Virtual Reality MRI simulator that the Department of Radiology and the Research Informatics group at NCH (RISI members John Luna, Yungui Huang, and Simon Lin) had recently developed. The Radiology team led by our director for research, Harry Hu, PhD, Chief Dr. Rajesh Krishnamurthy, and child-life specialists Arleen Karczewski and Whitney Garrett demoed the system to Mr. Redd, Mr. Burrus, and Dr. Steve Allen, and explained the department's strategic initiative to such innovative approaches to reduce sedation for diagnostic imaging in children.

PAIR/3D Lab

During the week of October 8 - October 12, the Radiology 3D Printing Lab hosted a series of daily open houses. Staff and curious patients and family visited the lab and learned about the use of 3D modeling and printing in education and surgical planning. They were able to see, and hold, the many models that the lab had produced over the previous year. Many visitors tried the lab's haptic device, a 3D mouse, that staff uses to virtually visualize models and to finalize the them before printing

This year's open house week marks the end of a successful year in the 3D Printing Lab and was well attended.

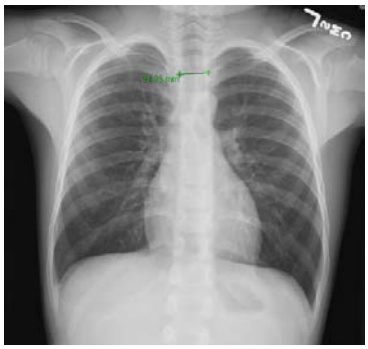
Pro Tips

Radiographic Hanging Protocols

Definition
A Hanging protocol is the series of actions performed to arrange images for optimal softcopy viewing. The term originally referred to the arrangement of physical films on a light box or hanging of films on a film alternator. Now the term also includes the concept of displaying softcopy images on a PACS workstation.

What does this mean for us?
Hanging protocols are the order and orientation with which projections are transmitted to PACS. Radiologists develop individual habits in the way they read their studies so by standardizing the way in which exams appear on PACS we actually facilitate their reading patterns! In other words, by standardizing the way in which projections are oriented, we can eliminate unnecessary reading variables and the chance of diseases or pathologies being missed is greatly reduced.

PA/LAT Chest
a. Send PA first
b. Always orient the patient facing the viewer
c. Left lateral is oriented with patient facing the viewer's right



Click here for the full article and a fun game with animal radiographs!

Research, Publications and Awards

Dr. Ben Thompson's work has been accepted in the NCH journal, *Pediatric Quality & Safety.* Other authors include **Dr. Jennifer Lundine** (first author), Dominic **Holliman-Wade, Lauren Madhoun**, and **Dr. Gregory Bates.**

"Standardization of Radiologic Procedures for Pediatric Video Fluoroscopic Swallow Studies: A Service-Based Quality Improvement Initiative"

News and Updates

William Shiels Foundation and WFPI Observerships

We have instituted an international scholarship in pediatric imaging in conjunction with the World Federation for Pediatric Imaging, an Alliance of global, regional and national Pediatric radiology organizations, called the '**William Shiels Foundation-WFPI Observership in Pediatric Imaging**' in honor of Dr. Shiels. The Shiels Foundation, which was started by the family and well-wishers of Bill within and outside NCH, is committed to supporting this program for at least 5 years, and longer based on the program's success. We feel that supporting a grassroots approach to expert-driven, practical training of motivated imaging trainees in parts of the world underserved by formal educational opportunities in pediatric radiology is the right way to honor Dr. Shiels's memory.

The model is based on identifying a center of excellence in each country which is led by a WFPI member, and then supporting them to set up a training program using educational resources from NCH/ Shiels Foundation, as well as the SPR and WFPI. The scholarship also provides for support for the training program and the candidate so that they can commit to a 3 month hands on training program with a set curriculum that is tailored to meet the needs of each individual country/region.

The first WFPI Shiels Foundation Observership began in April in Chandigarh, India led by Professor Kushalijt Sodhi. It was a competitive process with 14 applicants.

Applications are now open for the next Observership program in Argentina and plans are finalizing for programs in the Philippines, Lebanon, South Africa, and Nigeria. We are looking for further funding so that this process may be scaled in numbers, and to other countries where there is a dearth of training in pediatric imaging, and a desperate need.

The Shiels Foundation is in the process of creating a streaming online curriculum created by our experts that will focus on pediatric imaging education for radiologists, pediatric trainees, technologists, and analysts. It will be shared worldwide. We are looking for experienced radiologists, technologists and imaging professionals who are passionate about global education and are interested in participating in this project to create imaging education modules, including acquisition and processing protocols for each modality. If you are interested in helping, please contact Dr. Krishnamurthy.

See the following Facebook page to read the love and support for Dr. Shiels that occurred when this program was announced.

https://www.facebook.com/WFPIeducation/

Many thanks to the NCH Foundation and the NCH Education Office for making this possible.

Rajesh Krishnamurthy, MD
Radiologist-In-Chief,
William E. Shiels Chair of Radiology Nationwide Children's Hospital,
Clinical Professor of Radiology, Ohio State University

PAIR and 3D-LAB

PAIR and PAIR lab recently started its **Tumor Imaging Metrics** (TIM) program in collaboration with Hem/Onc/BMT department. **Adam Bobbey** and **Ram Krishnamurthy** lead the efforts from imaging, with **Angela Montgomery** being the analyst in charge. **Garima Suman** is also part of the imaging team involved in tumor imaging metrics.

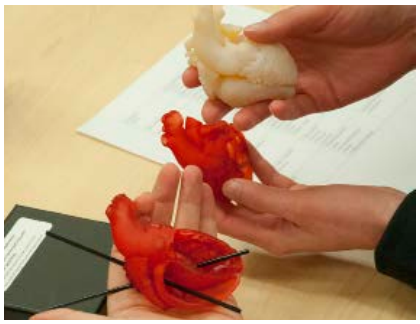
Learning Congenital Heart Defects with 3D Printed Models

Dr. Jayanthi Parthasarathy and **Dr. Raj Krishnamurthy** will be proctoring a session on the use of 3D printed models in learning about Double Outlet Right Ventricle (DORV) defects in hearts using 3D printed models on **May 5 at Noon in D1835** (the Jerry Moody conferenece room.)

Congenital heart diseases are the most common significant birth defects requiring surgical treatment in the majority of cases. Understanding of pathologic anatomy is crucial in surgical decision-making and performing surgical procedures.

Learning cardiac morphology has traditionally relied on pathologic specimens removed during autopsy, or at the time of transplantation. However, pathologic specimens are rare, and hardly represent the whole spectrum of diseases. 3D printed models from the CT and MR angiograms of the patients with congenital heart disease are great resources for teaching and can revolutionize education.

In this hands-on session, 3D printed models of hearts are used for comprehensive understanding of the entire morphologic spectrum of double outlet right ventricle. The session will consist of a 15-minute introductory lecture, followed by 40-minute hands-on proctored observation and 5-minute evaluation. The models are set up as self-learning kits, but experts on congenital heart disease imaging, pathology and surgery will be available for guidance, and answering questions throughout the session.



Research, Publications and Awards

Our department had seven oral presentations and 12 posters accepted for the 62nd Society for Pediatric Radiology (SPR) Annual Meeting & Postgraduate Course held in San Francisco, California. SPR takes place between April 30 and May 4. We will highlight this in the June edition so make sure to check back then!

Research and Awards

Two abstracts submitted by Harry Hu and Ram Krishnamurthy have been selected as finalists for the John Caffey Award for Best Scientific Exhibit at the 2018 Society of Pediatric Radiology meeting.

The presentation titles are:

Enabling Free-Breathing Real-Time Cine in Pediatric Patients with Compressed Sensing

Free-Breathing Motion Insensitive 3D T1-Weighted Post-Contrast Spine and Abdominal MRI Using a Golden Angle Radial Acquisition

Congratulations to **Dr. Anna Lillis** for an excellent and enlightening presentation at Pediatric Grand Rounds along with her co-panelists from the Vascular Anomaly Clinic, Drs. Buvana Setty and Gayle Gordillo. Dr. Lillis spoke on central conducting lymphatic channel imaging and interventions making a real impact.

Congratulations to **Dr. Brent Adler** and graduate student **Diana Messer**, Their Poster abstract titled, ***The Influence of Age on Pediatric Fracture Healing: A Radiographic Approach*** was reviewed by the Abstract Poster Committee and has been accepted for display during the Society for Pediatric Radiology Annual Meeting and Postgraduate Course in Nashville, Tennessee.

3D Printing for Congenital Heart Defects

Congenital heart defects occur in 7.5 of 1000 live births. Most structural defects cause hemodynamic and functional consequences and require surgical repair. Recent advances in imaging with ultrasound, CT and MRI have led to improved image acquisition leading to better understanding of the defects. However, this requires the physician to apprehend the 2D images as a 3D volume in his or her mind.

Advanced image processing combined with state of the art in-house 3D printing has recently given surgeons a high fidelity, patient-specific anatomical physical model prior to the surgical procedure. The model gives the surgeon a tactile model in his or her hands various possible surgical solutions to find the most appropriate one for the particular patient.

To this end, a complex congenital heart defect case with Double Outlet Right Ventricle (DORV), malposition of great arteries, 2 VSDs remote/uncommitted inlet VSD and apical muscular VSD with normal venous return was referred by Dr. L. Cripe of the Heart center (NCH) to the Department of Radiology 3D Printing lab. The goal was to provide a set of models for the physicians to evaluate the outflow and inflow tracts, the relationship of the VSD to the great arteries and plan VSD closure.

Source images for creating the model were obtained from CT Cardiac CHD anatomical protocol. The images were acquired as volumetric, prospective ECG-gated target mode CT acquisition with contrast and transferred as DICOM data to the lab through PACS. Aorta, pulmonary artery, pulmonary vein, blood pool and myocardium were segmented using the tools available in Vitrea™ and MIMICS™. The virtual model was then exported to Freeform™ for further modeling to slice the model to show the outflow tracts and the relationship of the VSD to the aorta and pulmonary artery. The blood pool model and the coronal and sagittal sections of the models were then printed in flex material in multiple colors assigned to the blood pool, aorta, and pulmonary artery and superior vena cava (SVC).

The model was found to be very useful in understanding the relationship of the VSD's to the great arteries and planning the complicated surgical procedure.

A teaching session "**DORV in your hands"** with 3D printed models of various types of Double Outlet Right Ventricle defects was conducted by Dr. R. Krishnamurthy, Dr.T. Shinoka and Dr .J. Parthasarathy on March 25. This is the first of a series of sessions. The workshop was well attended by fellows and residents from Cardiology and Radiology.

Upcoming events:

"Twisted hearts in your hands" teaching session on May 23, 12:00 PM to 1:00 PM in D1835

News and Updates

Radiology Presentation

CT techs **Sarah Beagle** and **Stacie Arnold** presented at the Ohio Health and Columbus Radiology CT Conference which was held October 12. From the pediatrics perspective, they covered immobilization, contrast timing, gauge/types of needles, hand vs power injection, PSI and rates. They will present a second time on November 16.

Nice job ladies!

SPR Cardiac Course at NCH

From October 17-19 Radiology hosted the **Society of Pediatric Radiology (SPR) Hands-On Course in Pediatric Cardiovascular MR**. By all accounts, it was a big success, with attendees providing feedback stating that it raised 'bold and provocative ideas' about the future of radiology. It brought together important stakeholders (both physicians and scientists) from radiology, cardiac MR, cardiac CT, intervention catheterization, and cardiothoracic surgery.

The attendees enjoyed the camaraderie and the incredible hospitality showed by the NCH family. This course had the largest number of attendees to the SPR course in its 17 year history, with 150 attendees from all over the world.

Radiology Outreach

Our radiology team showed off their pediatric expertise at our **NCH Getting to Know Kids** event. Each group shared their enthusiasm for pediatrics with local college students.

Congratulations on a job well done!

Goodbye to Harry

Research director **Harry Houchun Hu** is leaving NCH to pursue new opportunities. As director of research, scientist, and friend, Harry left an indelible mark on NCH in the 2.5 years he has been here. We are grateful for all that he has accomplished, and all the lives he has touched.

Good luck, Harry!

Research, Publications and Awards

Congratulations to **Bhavani Selvaraj** *(pictured)* and **Harry Hu** on their recent publication in Cognitive, Affective, & Behavioral Neuroscience entitled "*Age-related differences in neural activation and functional connectivity during the processing of vocal prosody in adolescence.*"

Congratulations to **Garima Suman**, **Dr. Jerome Rusin** *(pictured)*, and **Harry Hu** on their publication "*Multidelay Arterial Spin Labeling MRI in the Assessment of Cerebral Blood Flow: Preliminary Clinical Experience in Pediatrics*" which was published in PlumX Metrics in August.

News

The 3D Lab was prominently featured in an article in the Columbus Dispatch on February 4, 2018. See the article here.

This 3-D model of a 4-month-old baby's heart, with a hole between the ventricles, allowed doctors to map out the surgery before it was done at Nationwide Children's Hospital.
Photo: Joshua Bickel, Columbus Dispatch

Case of the Month: 3D Printing of Congenital Heart Defect

In the United States, about 1% of all babies born every year have critical CHDs 1. The structural defects of the heart lead to abnormal blood flow and resultant hemodynamic consequences. 2D and 3D reconstruction give the surgeons and radiologists an understanding of the complex defects. 3D printing goes a step further of providing a physical life-size model of the heart with sections created to give surgeons and the radiologists the best visualization of the defects. Here is a link for more information on this 3D Printing Congenital Heart Defect case.

Mission Work and Global Education by the Radiologists

Dr. Summit Shah has engaged in global health work
He has taken several trips with PODEMOS to El Progreso, Honduras with portable ultrasound and as part of an interdisciplinary team of physicians, dentists, pharmacists, and students as well as trips to Reynosa, Mexico with Manos Juntas also using a portable ultrasound machine.

Kathryn Milks participated in a month-long mission trip to Kenya in 2015. With the help of World Medical Missions, she volunteered at the AIC (African International Church) in Kijabe, Kenya providing ultrasound services to children, adults, and expectant mothers. There were no trained sonographers on site, so the ultrasounds were performed and interpreted by the radiographers. Kathryn brought ultrasound protocols and teaching files of common diagnoses to the techs to help provide a more standardized and comprehensive ultrasound service. Performing 20+ ultrasounds per day with some small ultrasound-guided procedures was also a great learning experience for her!

Publications and Awards

The IR team published an article in *Ped Rad, January edition* on ballistic foreign body removal. Injuries from air guns often result in retained foreign bodies. This is a common problem in children and adolescents. These foreign bodies can cause pain and infection if not removed in a timely manner. Removal of these foreign bodies with image guidance is an effective procedure that can reduce and even prevent the need for these children to be sent to the OR. Read the entire article found in Pediatric Radiology *Image-Guided Percutaneous Removal of Ballistic Foreign Bodies*

Large Animal sheep studies, in collaboration with **Dr. Chris Breuer** from Surgery, are underway on the PRISMA MRI.

3D modeling and 3D printing in surgical planning of cloacal malformations **J. Parthasarathy, D. G. Bates, D. Halleran, A. Gasior, M. Levitt, R. Wood** has been accepted for presentation at CARS 2018 in Berlin (Computer Assisted Radiology and Surgery).

Three presentations were accepted for the 2018 ISMRM / SMRT meeting:

1) *Feasibility and Evaluation of Multi-Delay Quantitative 3D GRASE pCASL MRI in Children at 3 Tesla*
Harry Hu (NCH co-authors Dr. Rusin, Dr. McAllister, Dr. Jones, Dr. Bhavani, and Dr. Ram Krishnamurthy)

2) *Free-Breathing Motion Insensitive T1-Weighted Spine MRI in Children Using a Radial Acquisition at 3 Tesla*
Harry Hu (NCH co-authors Dr. Rusin, Dr. McAllister, Dr. Jones, Dr. Bhavani, and Dr. Ram Krishnamurthy)

3) *Free Breathing MR Enterography in Children Using a Radial Acquisition at 3 Tesla*
Mark Smith's abstract has been accepted as the SMRT 3rd Place Clinical Proffered Paper Award winner for oral presentation at the 2018 27th Annual Meeting of the Society for MR Radiographers & Technologists (SMRT).

News and Updates

Visiting Professor Dr. Claudia Hillenbrand

On Monday, March 4th at noon in D1835, Radiology will welcome visiting professor **Dr. Claudia Hillenbrand, Ph. D.** who will be giving a presentation titled **"Automated Liver Iron Quantification for the Pediatric Patient."**

Dr. Claudia Hillenbrand is an associate faculty member at St. Jude Children's Research Hospital in Memphis, TN. She graduated in physics from the University of Würzburg Germany, and then went on to join the MRI lab of Jeffery Duerk and Jonathan Lewin in the Radiology Department of Case Western Reserve University in Cleveland, OH. While at Case, she developed innovative catheter coil concepts and sequences for interventional MRI. In 2005, Dr. Hillenbrand joined St. Jude, where she currently is heading a team of translation MRI research scientists in the Department of Diagnostic Imaging. Her current research efforts are devoted to developing and evaluating non-invasive, quantitative MRI tests for assessment of changes in tissue, bone, and vascularity in response to disease, treatment, and intervention in children with catastrophic illnesses (i.e., cancer and sickle cell disease). Her primary focus is in MR based quantification of iron, fat, and tissue stiffness mainly of the liver. Dr. Hillenbrand has pioneered the use of ultra-short echo time (UTE) imaging in hepatic iron quantification in patients with massive iron overload and successfully completed two MR iron biopsy calibration trials together with her clinical collaborators. Dr. Hillenbrand has a track record of federal research funding, over 60 peer-reviewed journal articles, and several patents.

Quality Improvement

Have a quality improvement project on your mind?
All staff is invited to submit quality improvement projects to the new RedCap submission form!

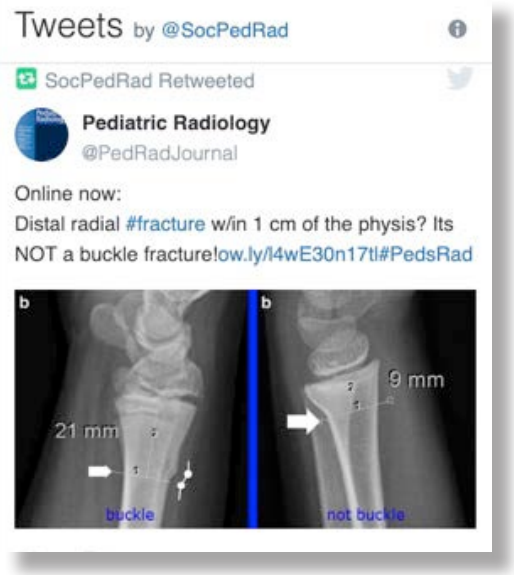
For more information on the process and what is required, click here.

To submit a project, click here.

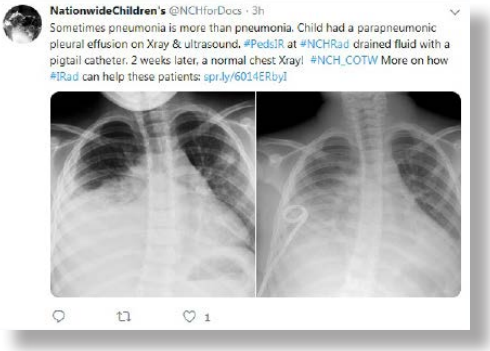
Tweets for Education

Did you know that our Radiologists regularly post on, or are featured on, Twitter?

Dr. Lynne Ruess and Dr. Benjamin Iles (rotating resident) had their paper "*Differentiating stable buckle fractures from other distal radius fractures: the 1-cm rule*" featured recently.



Here at NCH, there are various twitter accounts. Dr. Leah Braswell, @LeahBraswellMD, and Dr. Summit Shah, @SummitHShah, contribute twice a month to @NCHforDocs. This affords our department the opportunity to connect with Radiologists and technologists all over the world.



Other Twitter handles that offer interesting and educational information regarding Radiology are:

Society of Pediatric Interventional Radiology
@SocPedsIr

American Society of Radiologic Technologists
@ASRT

The Society of Pediatric Radiology
@SocPedRad

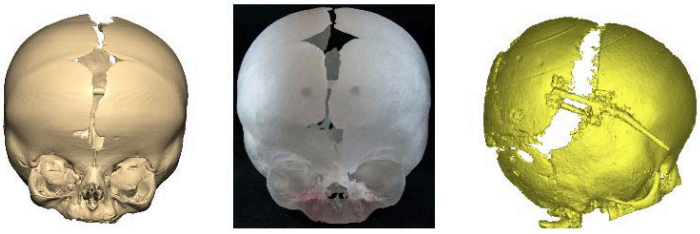
Pediatric Imaging

PAIR and 3D-LAB

Cranial Distraction Planning in Craniosynostosis with 3D printed models

Apert's Syndrome is a complex congenital defect involving anomalies of the head and face, and webbing of the hands and feet. Anomalies of the skull due to early closing of the cranial sutures - craniosynostosis results in a short from back to front, wide on the sides, and overly tall midfacial deficiency due to maxillary and dental defects are part of the complex maxillary and mandibular relationship. Children with Apert's syndrome undergo several corrective surgeries from infancy to adolescence or early adulthood until growth seizes. Corrective cranial reconstruction surgery is of prime importance to allow for normal brain growth in craniosynostosis.

Distraction osteogenesis for cranial reconstruction is the current choice of treatment and is being done by Dr. Pearson within the Plastic and Reconstructive surgery department at NCH. For successful correction of the defect, the surgeon makes an osteotomy and places the two-foot plates of the distractor on the bone after making an osteotomy. Location, trajectory and parallelism of the distractor is of utmost importance for best outcomes in craniofacial surgery which is a combination of function and esthetics. A 3D physical model of the cranium forms an essential part of the surgical planning process. The model is a patient specific, high fidelity replica of the skull and is used by the surgeon as a template to plan the osteotomy and appropriate distractor. Two 7 m/o patients with Apert's syndrome were referred by Dr. Pearson for printing. CT data was segmented to create a virtual model (a). Additional support structures and connectors were added in the interior of the skull to maintain the integrity of the skull during surgery planning process. Nonanatomical structures were printed in color for differentiation (b). The surgeon typically marks the location of the osteotomy during the surgical plan and also defines the location and trajectory and ensures parallelism of the distractors. Figure (c) shows the post-op CT reconstruction with the distractors in situ for one patient. Since correction of the anomalies happens over a several years, models are an efficient way to track patient's anatomical changes from time to time and give the surgeons better insight into the surgical plan at every time point.



(a) (b) (c)

Figures a, b and c: Pre-op virtual, 3D-printed and post-op skull model of a patient with craniosynostosis

Good Catches

Offsites: A patient registered under the wrong name, it was caught and the correct registration was performed.

NM: Respirator box had no date recorded for when it was checked; Biomed missed checking the fridge in Hot Lab, both were communicated to the correct department and were both checked and re-labeled.

Registration: Patient was scheduled for an MRI no contrast but the script stated MRI dual, it was corrected.

IR: A research case was canceled for IR but was not canceled in OP time, IR brought to patient's attention so they did not come unnecessarily to an appointment.

CT: A 3-year-old patient was scheduled for a CT with sedation, CT was able to coordinate without sedation.

US: A patient was scheduled for 2 exams and the appropriate exam was confirmed and performed.

Gen Rad: A patient was sent in for a follow up bone survey. It turned out that the patient already had the follow up performed as an inpatient and the order was a duplicate order. It was then found that another exam needed to be performed at that visit that was not seen at the time of registration.

Offsites: A patient came in for an exam, techs noticed that one of the scripts was expired, they contacted the ordering physician who stated it was no longer needed.

Scheduling: A CT ordered by OSU was ordered on the wrong patient, it was caught that the patients were different ages but with similar names. The correct script was sent over for the correct patient.

Gen Rad: The studies of a pair of related research patients were conflated and the patients were improperly scheduled for twice the appropriate number of X-rays. This was caught and corrected for these patients. The procedure was changed for other future pairs in the same study.

Research, Publications, and Awards

Research Highlights

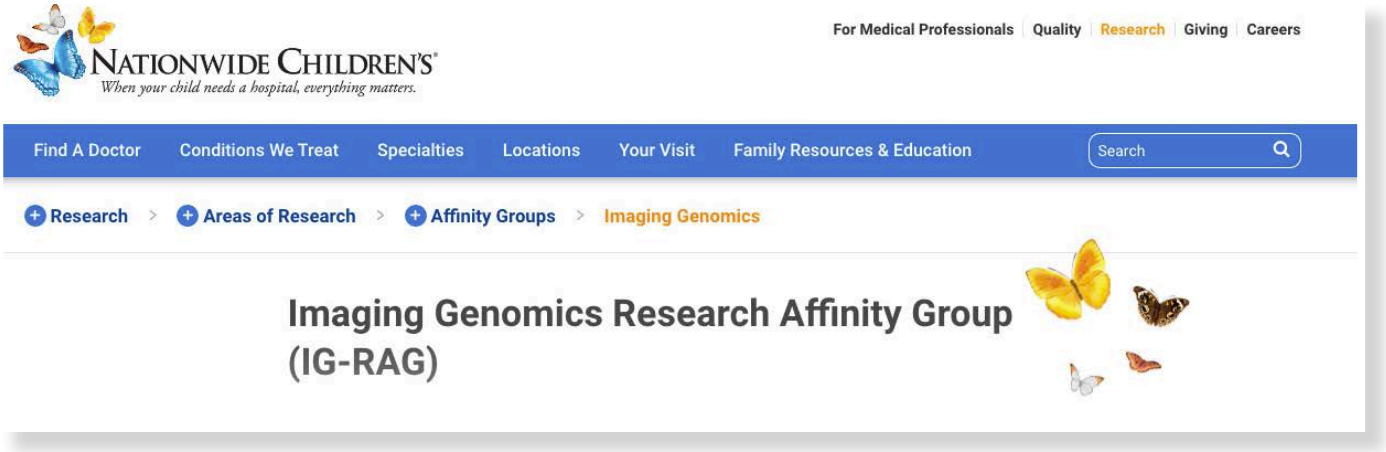
In the new academic year, the IRO is establishing innovative programs and initiatives across the NCH enterprise. Our newest focus is on **Research Quality Improvement**, with weekly IRO Manager Roundtables and a streamlined "Rapid Review" intake system. Our activities are geared toward real-time engagement of clinical managers for various sections and modalities, encouraging diverse insights and approaches to optimizing research workflow, process improvement, and effective scaling of imaging research.

The **Imaging Innovation and Research Series** is off to a great start with the inaugural session, "Vascular Anomalies from Head to Toe," featuring guest speaker Anna Lillis and the Hemangioma and Vascular Anomalies Clinic. Please join us for future CME-accredited noon conferences, offered the first Mondays of each month in D1835 and Skype. We have an exciting slate of talks planned by your imaging colleagues, clinical collaborators, and visiting speakers.

The **Imaging Genomics Research Affinity Group** is now featured on the Research Institute website at this link. This is a university-wide group that fosters interdisciplinary collaborations and provides support to investigators interested in translational omics research, big data analytics, and precision medicine.

Hyperfine Research and the MRI team have partnered to bring portable ultra-low-field MRI to the NCH Simulation Center and ICU patient environment. Mark Smith will be the lead MRI physicist, and Mai-Lan Ho and Jeremy Jones will be investigators on this project, with the support of MRI clinical manager Chris Gerity.

The **Advanced Neuroimaging Core** is under active development to bring cutting-edge neuroradiology MRI acquisition and analysis capabilities to NCH. Projects for 2020 include research into deep learning for synthetic CT, multi-omics work on neuro-oncology databases, and neuro MRI technical development.



3D Printing

The 3D lab has undertaken two special projects in recent weeks.

The first was undertaken at the request of Family and Volunteer Services. At NCH, families who lose their loved ones are given a memorial handprint or footprint of their child. Families will now be able to touch the hand or foot of their departed.

The lab is producing CAPR helmet mounting posts. This part is a consumable element of hospital PPE, which, with the emergence of Covid-19, are in short supply. The 3D Lab's Connex 350 printer has proven to be the perfect tool for quickly producing dozens of these important parts.

Research, Publications, and Awards

SPR

Although SPR is not meeting in person, there are several abstracts that were submitted and a few who will be doing electronic presentations instead of the normally scheduled oral presentation.

Iodinated Contrast Extravasation During CT in a Pediatric Population
Authors: **Donna Kring**, **Garima Suman**, **Jessica Morrison**, and **Dr. Rajesh Krishnamurthy**

Estimating time since injury of healing long bone fractures in young children
Authors: **D. Messer**, **Dr. Brent Adler**, **Dr. Lynn Ruess**, **F.W. Brink**, **H. Xiang**, **A.M. Agnew**

Hemodynamic Assessment of Anomalous Aortic Origin of a Coronary Artery (AAOCA) in Children Using Patient-Specific Flow Models
Authors: **Hoda Hatoum**, **Dr. Rajesh Krishnamurthy**, **Jayanthi Parthasarathy**, **Dorma Flemister, Carlos M. Mery**, **Silvana Molossi**, and **Lakshmi Prasad Dasi**

Free-Breathing 3D Golden-Angle Radial Sparse Parallel Dynamic Contrast-Enhanced MRI (GRASP) for Diagnosis of Terminal Ileitis in Pediatric Small Bowel Crohn Disease (CD): A Supplement or Alternative to Conventional MR Enterography (C-MRE)?
Authors: **Dr. Mitchell Rees**, **Garima Suman**, **Ramkumar Krishnamurthy**, **Dr. Raj Krishnamurthy**

Advanced imaging utilization and cost patterns in children over an eight-year period from a large pediatric accountable care organization.
Authors: **Dr. Summit Shah**, **Ramkumar Krishnamurthy**, **Ling Wang**, **Dr. Rajesh Krishnamurthy**

Geographic and income disparities in pediatric utilization of advanced imaging
Authors: Ramkumar Krishnamurthy, Dr. Summit Shah, Ling Wang, Dr. Rajesh Krishnamurthy

An imaging hip surveillance program with standardized reporting for children with cerebral palsy.
Authors: **Dr. Kathryn Milks**, **Erin Mesi**, **Dr. Lynne Ruess**, **Dr. Amanda Whitaker**

Standardizing QI in Head and Abdomen CT's to Improve Technologist Performance and Diagnostic Quality of Exams
Authors: **Jamie McEnneny**, **Jessica Morrison**, **Erin Mesi**, **Dr. Cody Young, Dr. Lisa Martin**

Imaging of the Urethra: Radiologic Anatomy in Fluoroscopic Urethrography
Author: **Dr. Ben Thompson**

Patient specific 3D-printed modeling for risk-stratification in Anomalous Aortic Origin of a Coronary Artery (AAOCA): material selection, model creation and validation
Authors: **Dr. Jayanthi Parthasarathy**, **Hoda Hatoum, Dorma Flemister**, **Carlos M. Mery**, **Silvana Molossi**, **Lakshmi Prasad Dasi**, and **Dr. Rajesh Krishnamurthy**

Dr. Mark Hogan was an invited speaker for an IR case based session.

The Society of Pediatric Radiology has made the **SPR 2019 Virtual Meeting** available free of cost to those who attended the sessions. There was good representation from our department at this meeting, so there is a good sprinkling of folks across the department who have access to this valuable resource.

Research Highlights

Research Alumni Update

Our emeritus research director, **Harry Hu**, has moved to Hyperfine Research, where he currently works with portable low-field MRI units. Harry is in discussions with our new research director **Mai-Lan Ho** and Neuroradiology Chief **Jeremy Jones** to bring this technology to NCH as the first pediatric clinical test site.

Research Publications

Jeremy Jones, **Bhavani Selvaraj**, and **Mai-Lan Ho** had their invited review article, *"Pediatric Functional Neuroimaging: Practical Tips and Pearls,"* published in AJR.

Skully

Patient Lift Training

The hospital is requiring all staff to be trained on the Guldmann (ceiling) lifts and the Hoyer (mobile) lifts if they are in your area.

With the increased restrictions on close contact, we are modifying how this material is being taught to staff. Please review the lift documents with the links. *(Links will work within the NCH network only.)* Some of the documents may need to be viewed on a hospital PC, but the videos are on YouTube and should be able to be viewed on any device. Please watch both videos that show you the proper ways to use a patient lift, there is one for each lift. Once things go back to "normal," lift super users will hold sessions to do the hands on training for both lifts.

The Hoyer Lift Battery

Please contact your department's lift super user(s) if you have any questions.

A New Hoyer Lift

We received the new Hoyer lift for Radiology on April 17. It is kept in the same location as the previous lift, the T-1153 storage room. This unit is battery operated and there is a spare battery and charger located in the storage room as well. One noted difference is that the movement to open the legs wider is no longer a foot petal, but is now located on the hand remote. There are no slings kept with the unit, departments will each need to order their own supply. Contact your departments lift super user for any questions.

The Hoyer Lift

Great Feedback/Employee Recognition

The Imaging Research Office would like to acknowledge two outstanding members of our team for their extraordinary contributions to radiology research in 2020. Please join us in congratulating Amanda and Mark for their exceptional performances!

Amanda Heater – *Clinical Research Program Coordinator*
Amanda stepped up as our interim research admin during a critical time period, and has recently accepted the position of Radiology Clinical Research Program Coordinator. In both her admin and research roles, she always displays a positive, "can-do" attitude and incredible enthusiasm for learning and growing. While running IRO meetings, Amanda has demonstrated incredible efficiency in streamlining the research intake process, as well as an astute instinct for handling complex issues. During the current research downtime, Amanda is hard at work with research billing, IRB training courses, and her tasks as study coordinator. We are so lucky to have her with us!

Mark Smith – *Research MRI Physicist*
Mark is a true gem, eager to help with any problem no matter what time of day or night. With recent short staffing, Mark has singlehandedly served as our go-to MRI physicist, ACR accreditation specialist, and technologist trainer for research and advanced neuroimaging. He is happy to help troubleshoot MRI sequences and protocols on short notice for a variety of investigators. He is also a talented teacher and doesn't hesitate to take on additional responsibilities outside his job description. Mark has many incredible years of experience and insight, and is always a joy to work with.

Kids Say the Darndest Things

I had a 5-year old that, as I was performing a supine abdomen exam on him, looked up at the collimator light and saw the " + " and said "Hey! That's what Jesus died on!" - Cindy Forrest

A 5 y/o boy told me "the xray felt good" What do you mean I asked, "At first I was scared but then it felt good" -Emilie Bartow

Do you have a funny story about something your child said about your job, or something that a patient said about their radiology exam that just made you smile? We would like to share things that kids have said about Radiology that just made you laugh. Please email The Beam with anything you would like to share. We will do our best to include it all.

Research, Publications, and Awards

Where Clinical Meets Research

MRI physicist **Mark Smith** has been busy creating instructional manuals for MRI technologists in advanced neuroimaging, and documenting MRI artifacts for education. These will be presented at a future date for the education of all our radiologists and technologists.

Neuroradiology chief **Jeremy Jones** has been working with MRI and CT clinical managers, **Chris Gerity** and **Jess Morrison**, to optimize our scanner fleet in order to provide consistent and high-quality imaging results for all of our patients at NCH, no matter where they are scheduled.

New Conferences

The **Imaging Innovation and Research Series** will be starting in July 2020 as a CME-accredited noon conference, first Monday of each month in D1835. This is an educational conference designed to inform radiologists, technologists, and clinicians across the NCH enterprise about new technology updates, clinical applications, and best practices. Course directors are **Mai-Lan Ho** and **Mark Smith**, and conference administrator is **Audrey Holston.**

In honor of Asian Heritage Month, the **Asian Pacific American Network (APAN) Employee Resource Group** hosted a highly successful "Leadership Series" every week in May covering these topics: "Senior Exemplars," "Technology and Translation," "Rising Stars," "Future of Medicine." The inaugural episode featured chair **Raj Krishnamurthy**, talking about his experiences in India and how he came to be a cardiac imager. **Brad Hoehne** assisted with recording sessions for posterity.

Additional programming for 2020 will include "Work-Life Balance" and "Mentor-Mentee Conversations." Events are open to the entire NCH community. Contact APAN chair **Mai-Lan Ho** with ideas, suggestions, or to join the leadership team.

New Programs

The **Imaging Genomics Research Affinity Group (IG-RAG)** is in the process of being created within the Research Institute. This is a formal partnership between Radiology and the Institute for Genomic Medicine, which will support integrated diagnostic services for clinicians and researchers; research/educational conferences; young investigator seed grants; and visiting professorships. Contact IG-RAG faculty lead Mai-Lan Ho or program coordinator Amanda Heater with any questions.

Imaging Registry for Orphan and Rare Diseases (I-ROAR) is the recipient of an American College of Radiology Innovation Fund Grant under the direction of **Raj Krishnamurthy**. Co-investigator **Mai-Lan Ho** is leading the neuroradiology component of I-ROAR, with a multicenter pilot project that will collect standardized imaging, genetic, and clinical data for rare neurogenetic patients from the top ten children's hospitals in North America.

The multi-disciplinary **Hemangioma and Vascular Anomalies Clinic (HVMC)**, staffed by interventional radiologists **Anna Lillis**, **Leah Braswell**, and **Jim Murakami**, provides care to patients with challenging vascular disorders. Only the best and most specialized children's hospitals have the volume and expertise to direct vascular anomalies clinics, and many unique interventional procedures are offered by our team at NCH for these children with often disabling and life-altering anomalies.

Anna Lillis and a few other members of the HVMC team have taken the initiative to prepare NCH's application for the **Consortium of iNvestigators of Vascular AnomalieS** (CaNVAS), which will enable us to join the ranks of elite children's hospitals performing multicenter clinical research studies on vascular anomalies. With the move toward genetic diagnosis and targeted therapies, this work aligns wonderfully with the goals of I-ROAR and IG-RAG.

News and Updates

CPR Update

The **American Heart Association** has released updated guidelines for CPR expiration dates. If you expired in March, April, May, or June your will have an extended expiration date listed below. Starting in July if you expire, you will need to renew your CPR.

There is a temporary option for Recertification. If you sign up for a Radiology CPR class you will be assigned a Learning Center Course to watch the video. Once you have completed the course you can attend a scheduled hands on training with a CPR Instructor. For more information on how you can get recertified, please contact Kelly Doyle for main campus, and Linda Barleycorn for offsites.

Recommended Renewal Date on Card (end of month)	New Renewal Due Date with 120-day Extension (end of month)
March 2020	July 2020
April 2020	August 2020
May 2020	September 2020
June 2020	October 2020

Research, Publications, and Awards

Certifications and Credentials

Eric Diaz, MD, CIIP recently received his certification from the American Board of Imaging Informatics (ABII)

What does it mean to be ABII Certified?

A certification, from the American Board of Imaging Informatics (ABII), demonstrates that an individual has mastered the necessary technical, clinical, and business knowledge and skill sets to invest in quality improvement, be at the forefront of the profession, and innovate within the field of imaging informatics. A CIIP is proficient in fields of procurement, project management, operations, communications, training and education, image management, information technology, systems management, clinical engineering, and medical imaging informatics. As a result, a CIIP is prepared to address the unique and important clinical, management, and technological challenges of enterprise imaging.

What inspired you to become certified in Imaging Informatics?

During my residency and fellowship in Cincinnati, I was fortunate to have been introduced to the concept of imaging informatics by one of my attendings and mentors, Alexander Towbin, MD. His excellent leadership and efforts over the years in clinical operations and imaging informatics have resulted in continued quality improvement and value for patients. I asked him what avenues to pursue to learn more in these areas and he mentioned the Society for Imaging Informatics in Medicine (SIIM). After joining SIIM, I saw there was so much to learn and was excited by the opportunity to get a certification, which I knew was rapidly becoming the industry standard. I knew CIIP training would give me additional valuable skills to help make a difference in providing best care to children in pediatric radiology.

Will you take on any additional tasks/roles at work with this certification?

My certification has already enabled me to play a more valuable role in multiple ongoing projects and complex issues. I was able to make some significant contributions to the recent roll out of our new quantitative cardiovascular post-processing software. I am also playing an active role in the ongoing radiology PACS replacement as one of the radiology super users. I can say without a doubt that my CIIP training has helped me gain a better perspective and understanding of the entire workflow, standards, technologies, and processes used in these radiology deployment projects. I am confident that my CIIP certification will continue to help me make innovative contributions and quality improvements to all facets of enterprise imaging on the path to best outcomes.

Is there anything else you would like to comment on in regards to this certification?

The Society for Imaging Informatics in Medicine (SIIM) is a great place to start to learn more about imaging informatics, educational resources, national conferences, and the Journal of Digital Imaging (JDI). Conferences are a great place to network with physicians, clinical staff, hospital management, technologists, engineers, IT professionals, and even industry specialists. It is truly an honor to be considered a part of this professional network where CIIP diplomates are engaged in lifelong learning, staying current in the field and implementing best practices.

Sarah Cline RT(R), CRA, Clinical Manager of Radiology and Fluoroscopy, passed her test and is now a CRA (Certified Radiology Administrator). The CRA designation speaks volumes about high standards of achievement attained for medical imaging leadership. It is the only professional credential tailored specifically for radiology administrators, focusing on management in human resources, asset resources, finance, operations, and communication. Medical imaging management is a profession with a well-defined set of skills and knowledge required for excellence.

Research Highlights

The **Imaging Genomics Research Affinity Group** has been funded by the Research Institute. This will help support and grow many exciting programs at NCH for which Radiology plays a critical role, including the ACR I-ROAR (Imaging Registry for Orphan and Rare Diseases); Hemangioma and Vascular Malformations Clinic (HVMC); Center for Gene Therapy; Ohio Perinatal Research Network (OPRN); and NCI-CONNECT (Comprehensive Oncology Network Evaluating Rare CNS Tumors). Please stay tuned for exciting hospital-wide events, visiting speakers, and other opportunities made possible by this program.

The Imaging Innovation Conference will take place every 1st Monday of the month from 12-1 PM in D1835. This is a CME-accredited conference featuring educational speakers who are growing new imaging-related programs around NCH. Please contact the IRO if you are interested in contributing! Here is a preliminary speaker lineup for 2020:

July 6: "Vascular Anomalies from Head to Toe"
Anna Lillis, MD, PhD, and Mai-Lan Ho, MD

August 3: "Pediatric Neuroimaging—Where Are We Going?"
Mai-Lan Ho, MD, and Mark Smith, RT (MR), MS

September 7: "Innovation in Cardiac Imaging"
Eric Diaz, MD, and Ram Krishnamurthy, PhD

October 5: "Peripheral Nerve and Plexus Imaging"
Kathryn Milks, MD, and Diana Rodriguez, MD

November 2: "MRI Quality Assurance and Artifacts"
Mark Smith, RT (MR), MS

December 17: "The Many Faces of Skeletal Dysplasias"
Brent Adler, MD

Listening First and Taking Action: Stand Against Racism. Stand for Health Equity

It was liberating to see so many people stand up for black lives. My hope is that the momentum continues. Nationwide Children's Hospital stands on, equity, justice, dignity, respect, and peace. If you as an individual believe in these values, let's spread them outside our hospital walls.

-Talaysia Jameson, Radiology Patient Access Representative

I have sometimes suggested to friends that they watch a good documentary and they respond "I don't need to; I already know about that". The value of a good documentary is not just that it informs, but that it makes you care. You can know something in your head, yet not be moved to action. When you know something in your heart, you act.

A couple of weeks ago I lived my own documentary. I was eating in a restaurant on High Street (while practicing social distancing, of course), and I noticed a commotion outside. It was a protest and I wanted to see if it was about the murder by police of George Floyd. I had seen the story on the news for the past few days, one of the few to break through the COVID coverage. When I got out there, I noticed that people on the street were talking excitedly. I asked what happened and they told me a man had spit on the protestors from the balcony on the roof of the building across the street. Then I noticed a Black man standing in the street yelling up at him to come down and say that to his face. Then he cried "you just don't understand! You just don't understand!" It was such a raw, authentic expression of pain. I felt his anguish. I recognized him as my favorite coach from Orange Theory. I wanted/needed to comfort him. I waited for cars to pass and crossed the street. By then others had come out of Orange Theory to hug him and bring him inside. I was too late to offer comfort and he didn't need me, but I needed to do something for him, for all of us. I knew about the murder of George Floyd and countless others for four centuries in this country, I am a member of NAACP, I donated money, and I believed in the fight, but it hadn't been my fight. Not until that moment, when I felt another human being's deep lifelong, generations-long pain as if it were my own. What hurts him, hurts me. At that moment, it became my fight too. I joined a protest that afternoon and every day that I could since.

-Ellen Chung, Radiologist

I am Hispanic and to some extent whether knowingly or not I have felt the scrutiny that comes from being a person of color. I would be lying to myself, if I said I can relate to Black people, because I, for some reason, have also held a privilege of being able to "modify" how I present myself so that I seem educated, worthy, and just defeat whatever stereotype someone may have of me. Black people do not get this slight bit of opportunity prior to being killed for "looking like someone".

This is shameful but even within my own background I have heard anti-black comments "why didn't anyone stand up for immigrants" as if only the protest of a White person matters? We are part of the "people of color" community. To those comments I have had to say "if a Black person who is from the U.S is not cared for by their own country; how do you expect them to care about us?" We are part of this fight for equality. I was fortunate enough to grow up in a Black community, it has been a great part of my growth and who I have become as a person, they have represented me in some ways even though we were different in others. My stand comes from all of this and more. My son, daughters, and husband are Black, but even they have experienced what privilege and racism can be. Some dismiss their experience as a Black person because they are lighter complexion and others think that they are not a threat for that same reason. How is that fair?

As a reminder, yes all lives do matter, but if that were the case and that same theme was used across the board we would not be doing this today – this dismisses the pain and loss the Black community feels. This is why I stand.

-Cindy Denny, Radiology Patient Access Representative

Thanks to all of you who responded with your thoughts on this issue. The current moment has galvanized broad constituencies calling for change, and healthcare workers lending their social stature and voice is a powerful variable. At the gathering on June 11 at noon many of us came together on the front lawn of the hospital—masked and physically distancing, of course—those who couldn't attend in person, joined us wherever they were. During this time, we kneeled together in silence and solidarity for 8 minutes and 46 seconds to mark George Floyd's tragic death. We also broadened our focus to embrace all Black children impacted by these tragic events and all forms of racism. NCH has made its diversity and equity commitment central to its strategic plan. Let us to join forces in this journey. There is much work to do, both in our world and in our field, to achieve the equity needed for a better future for us all.

-Raj Krishnamurthy, Chief Radiologist

Racism, Diversity + Inclusion and Health Equity Support and Resources

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Photos

Anti-Racism Resources

NCH Video (LAC and Primary Care Sites)

Pediacast Episode 464: Racism is a Public Health Crisis