

# Innovations in Orthopedics

# Rady Children's

Hospital  
San Diego

*Rady Children's - A comprehensive system  
focused solely on children.*



## PEOPLE

### Dr. Kathleen Rickert, former fellow, joins team



Kathleen Rickert, M.D., a 2016-17 fellow in the Division of Orthopedics & Scoliosis at Rady Children's Hospital-San Diego, has joined the team. She will be treating a wide variety of patients, including those with cerebral palsy and lower extremity deformities, such as varus/valgus deformities resulting from trauma or congenital conditions.

Her research interests are trauma and lower extremity alignment/growth abnormalities. She has made numerous podium presentations at national and international meetings, and her research has been published in peer-reviewed publications.

Dr. Rickert's professional memberships include the Pediatric Orthopaedic Society of North America, the American Orthopaedic Association's Emerging Leadership Program, the American Academy of Orthopaedic Surgeons and the Ruth Jackson Society. Among her honors and awards, she received a Piedmont Orthopaedic Society grant in 2015. That same year, she earned the Ralph Coonrad Traveling Fellowship Award.

Dr. Rickert completed her residency at Duke University Hospital and attended medical school at the University of Arizona, where she also graduated magna cum laude with a Bachelor of Science in molecular and cellular biology.



## PROGRAMS

### Orthopedics program achieves #3 ranking in national survey

The Division has been ranked the No. 3 pediatric orthopedic program in the nation for 2017-18 by *U.S. News & World Report* in its comprehensive survey of the best children's hospitals.



Programs were ranked based on various measures of clinical care. Eighty-five percent of each hospital's score comes from data collected through a detailed clinical survey of children's hospitals, such as success with complex fractures, surgical complications and infection prevention.

The remaining percent reflects nominations from pediatric specialists and subspecialists who responded to surveys in 2015, 2016 and 2017 and recommended the hospital for serious cases in their specialty.



## RECOGNITION

### Dr. Newton honored with prestigious clinical award

[Peter Newton, M.D.](#), chief of the Division and director of the Scoliosis Service, was honored with a Whitecloud Award from the Scoliosis Research Society during its 2017 International Meeting on Advanced Spine Techniques (IMAST) in South Africa. He received the Clinical award for his paper "Two-Year Outcomes of Spinal Growth Tethering vs. Posterior Spinal Fusion for Scoliosis Flexibility vs. Reliability."



Named after Dr. Thomas E. Whitecloud, who helped found the IMAST meeting, the awards are given to the best basic science and clinical papers. Nominees are selected by the IMAST Committee from the submitted 2016 abstracts for the IMAST and the SRS Annual Meeting. The nominees are then invited to submit their paper's manuscript, which is reviewed by the IMAST committee. During the meeting, attendees vote for their favorite presentation via the IMAST app, and the popular vote and manuscript scores are taken into consideration by the IMAST committee, which select the final winners.

Throughout his career, Dr. Newton has published more than 140 studies. Among his clinical and research areas of focus are spine surgery, scoliosis without spinal fusion and orthopedic



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biomechanics.



## INNOVATIONS

# Patient-specific 3-D models reduce surgery time, benefit patients

A recent study by the Division's orthopedic surgeons and University of California, San Diego bioengineers found that patient-specific 3-D models helped train surgeons and significantly shortened surgery times for a three-plane proximal femoral osteotomy (TPFO) in slipped capital femoral epiphysis (SCFE). SCFE is the most common hip disorder in children ages 9-16, affecting about 11 in 100,000 children in the United States annually.

In the study, [V. Salil Upasani, M.D.](#), operated on 10 patients, half of which he planned the surgeries using the 3-D printed models. The models were not used for the other five patients. Separately, another group of five patients were treated by



3-D printed custom-made models of the hip joint

other surgeons in the Division without using the models. In the group where the models were used, surgeries were about 25 percent shorter (by 38-45 minutes) compared to the control groups.

Typically, before these surgeries are performed, physicians study X-rays of the hip taken from different angles, which they use to plan the bone cuts. During the TPFO, fluoroscopy illuminates the surgery site to help guide the physician. Not only are these methods time consuming, but they expose the child to radiation. Additionally, physicians don't have a physical model to educate patients and their families or practice the surgery beforehand. The models also provide a financial benefit. According to the researchers, the shorter procedure time translates into at least \$2,700 in savings per surgery.

To make the models, Dr. Upasani collaborated with two UC San Diego students, a bioengineering professor from the Jacobs School of Engineering at UC San Diego and their colleagues. Commercially available software was used to process CT scans of the patients' pelvis to create a computerized model of bone and growth plate for 3-D printing. The models allowed the surgeons to practice and visualize surgery before operating on the patients.

Due to the study's positive results, the Division acquired its own 3-D printer. A 3-D printer costs approximately \$2,200, and physicians can make a model for each surgery for about \$10. Dr. Upasani notes that after seeing the advantages of the models, it's

now difficult to imagine planning surgeries without them.

The study was published in the *Journal of Children's Orthopaedics*. [Read the full article.](#)

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