

Revolutionary imaging technique for pediatric spine patients

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For the first time, pediatric spinal patients in upstate New York have access to new imaging technology that dramatically decreases their radiation exposure while producing more precise images with better information for orthopaedic specialists. The EOS® machine is especially useful for pediatric patients with scoliosis or long-bone issues and have to undergo multiple scans over their lifetime.

With a growing number of pediatric spinal patients traveling to Golisano Children's Hospital at the University of Rochester Medical Center for the highly specialized care of pediatric [orthopaedic surgeons](#), the Department of Imaging Sciences and the Department of Orthopaedics

saw the need for the precision of the EOS machine. The machine is not available anywhere else in upstate New York. Among its many attributes, it:

- Reduces radiation exposure by at least 1/3 in each scan, exponentially reducing exposure for patients requiring repeat scans over a lifetime
- Produces images that are actual size without any distortion
- Produces a scan from the front and side at the exact same time, so the images are completely matched and can be used to create three-dimensional reconstructions
- Scans are immediately available for physician interpretation, cutting down on wait-time for patients

Johan G. (Hans) Blickman, M.D., Ph.D., Radiologist-in-Chief of Golisano Childrens Hospital, said another benefit of the machine is the ease with which children and adolescents can get in and out of the machine, even if using a wheelchair. They are able to stand or sit in the exact same position as previous scans, allowing radiologists and orthopaedic surgeons to more precisely compare growth and changes over time. The machine scans without magnification, so there is no distortion or educated guessing of measurements.

"The spine shown is the spine as it really is because there is virtually no magnification," Blickman said.

James O. Sanders, M.D., Chief of Pediatric Orthopaedics, said the machine has helped him in better visualizing some of the spinal defects in his patients.

"A lot of our deformities are very complex and this allows us to do some assessments of the complex deformities. It gives us very accurate measurements," Sanders said.

Having the EOS® machine is another feather in the cap of an incredibly successful pediatric orthopaedic team. The program has been ranked among the nation's best by U.S. News & World Report for five years running, and it added a new pediatric orthopaedic surgeon with expertise in complex hip issues in infants, children and adolescents. In recent years, inpatient services have been further enhanced by a dedicated team of specially trained nurses who work with pediatric orthopaedic patients and understand their specific needs. The Pediatric Orthopaedic outpatient clinic has moved to a dedicated, child- and family-focused space within Building D at Clinton Crossings and the team also sees patients South Pointe Landing in Greece.

The addition of the EOS® machine is one of many steps the Department of Imaging Sciences has taken to reduce radiation exposure while capturing what can be life-saving images. URMC and its affiliates are not only ACR-accredited, but also adhere to two fundamental safety principles: first, that no imaging exam should be performed unless there is a clear medical benefit that outweighs any associated risks, and second, that radiation dosing for every scan is "as low as reasonably achievable" while still providing a useful picture (commonly referred to as the ALARA principle). Software updates on CT scanners have reduced exposure for all patients and special protocols are in place for young children, whose still-developing organs are more susceptible. Future plans for imaging improvements in pediatric care include a PET/MRI machine in the new Golisano Children's Hospital currently under construction. That machine also aims to reduce [radiation exposure](#) while adding to URMC's imaging capabilities.

Provided by University of Rochester Medical Center

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