

Top Technology Teams With Advanced Caring at Helen DeVos Pediatric Radiology

By Patrice Mindock

It takes more than topnotch medical training or the ability to hold a child's hand to ensure the smallest patient's comfort and alleviate fears regarding advanced diagnostic imaging techniques. It takes an extra dose of caring and commitment. At Helen DeVos Children's Hospital, a team of pediatric specialists in the full-service pediatric radiology department is committed to making children comfortable before, during and after procedures.

"As with most pediatric specialties, this is a calling," said Bradford W. Betz, M.D., Division Chief, Pediatric Radiology and partner with Advanced Radiology Services. "Children and adults have different medical and emotional needs, so it makes sense to separate their imaging for different comfort levels and overall efficiency. Our multidisciplinary team includes pediatric radiologists, pediatric physician assistants, pediatric technologists in all imaging modalities, pediatric nurses and child life specialists. All have the extra training needed to be most effective in caring for children. A dedicated team with the understanding of children and their emotional and physical needs is what makes our department so successful."

There are few full-time pediatric radiologists in practice — approximately 900 in the U.S., according to Dr. Betz's estimates — and he and his partners are the only ones in West Michigan. "What distinguishes a pediatric radiologist from others in our field is the expertise in differentiating the pathology of childhood

illnesses from the complexity of normal anatomic development," Dr. Betz notes. "Because children come in all sizes, recognizing subtle abnormalities in children, such as growth plate injuries or abnormal brain development, can be extremely challenging."

From the nature-themed, child-friendly décor to the fiber-optic simulated night sky and age-appropriate toys, the pediatric radiology department at Helen DeVos Children's Hospital exudes a sense of playfulness and relaxation for the patients — and their anxious parents. That high-touch comfort combines with high-tech diagnostics, including neonatal magnetic resonance imaging (MRI), positron emission tomography (PET) and portable CT scanning.

Children also have access to new advanced magnetic resonance technology through Spectrum Health Butterworth Hospital, with the recent addition of two 3.0 Tesla (3T) MRI scanners. Both are located at the Spectrum Health Medical Center and readily accessible to patients at Helen DeVos Children's Hospital. The latest MR imaging techniques can also correct for patient motion. "Imaging can be difficult with children who often cannot hold still for an MRI," Dr. Betz says. "When we can adjust for motion, patients can be diagnosed and treated more quickly, without having to perform repeat scans, or the need to sedate them in some cases."

The stronger magnet is also key to advanced imaging techniques involving the brain. "This technology is perfect for use with children

because of its speed and greater anatomic detail," Dr. Betz adds. Special applications used with 3T MRI include functional MRI (fMRI) and diffusion tensor imaging, which are being used to understand brain disorders and plan for delicate neurosurgery. "fMRI enables the pediatric neurosurgeons to localize the eloquent areas of the brain preoperatively, which gives them more confidence when they do their resections," Dr. Betz notes. "Kids have to be awake and cooperative to do fMRI. However, thanks to our highly trained support team, we've been able to use this technique for children as young as age 6."

Advances in MRI perfusion imaging combined with magnetic resonance angiography (MRA) can determine noninvasively whether children with various congenital

A radiographer talks with a patient before performing an X-ray in West Michigan's only pediatric radiology department.



malformations like Moya Moya syndrome might require revascularization surgery. Moya Moya is a rare idiopathic disorder leading to irreversible blockage of the major blood vessels to the brain. Dr. Betz and his team are also in the process of validating a noninvasive MRI determination of liver iron for those children who are at high risk of iron overload due to inborn errors of metabolism or multiple blood transfusions. Currently, children have to be admitted, sedated and then biopsied to get results.

In an extra effort to make patients more relaxed during lengthy imaging procedures, the hospital is one of only a few in the nation to offer specially designed video goggles compatible with MRI equipment. These goggles allow patients to watch a movie or listen to music and will not disrupt the imaging process. If sedation is necessary for an imaging exam, a pediatric intensivist or hospitalist along with a sedation nurse will directly supervise the sedation procedure.

The team works closely with child life specialists, who ensure children and their families have access to education and activities to minimize the possible psychological strain sometimes associated with the health care experience. Child life specialists collaborate with the health care team to provide an experience that addresses the unique psychosocial needs of each patient and family. "They are instrumental in preparing and calming children and their parents before and during the imaging process," Dr. Betz said. "This interaction and the elimination of that fear have significantly decreased the need to sedate children in the 4- to 8-year-old age group."

According to Dr. Betz, the pediatric radiology service at Helen DeVos Children's Hospital incorporates three key components: the best imaging technology, pediatric expertise at all staffing levels and a child-friendly environment. The pediatric imaging emphasis is on speed to eliminate the need to sedate younger patients, anatomic detail for smaller bodies and lower radiation doses. The use of

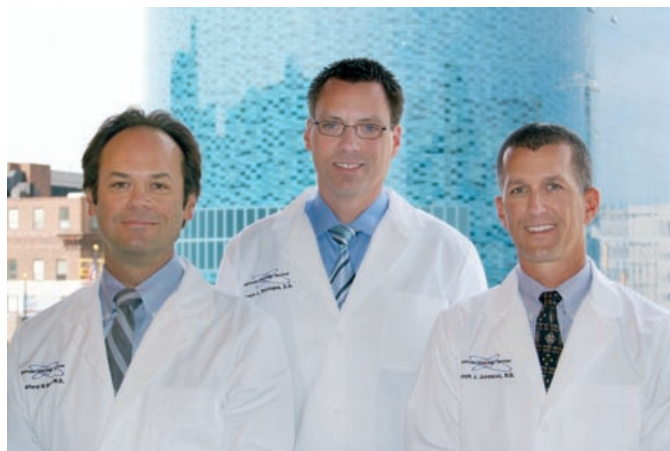


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Bradford Betz, M.D.; Steven Bezinque, D.O.; and Joseph Junewick, M.D., are West Michigan's only pediatric radiologists and are eager for the opening of the new Helen DeVos Children's Hospital in 2011, pictured in the background.

nonionizing radiation (ultrasound and MRI) is the preferred methodology with available access to 64-slice CT and other technology that uses ionizing radiation if necessary. An on-site 3-D postprocessing lab is available for all complex CT and MRI scans.

According to a recent survey by the Society for Pediatric Radiology, the hospital is among those reporting the lowest ionizing radiation doses for exams of pediatric patients. As part of the ALARA (As Low As Reasonably Achievable) radiation safety committee at the hospital, Dr. Betz keeps that goal of low dosage in mind as a best practice benchmark. (Note: See Hollingsworth, C.; et al. "Helical CT of the body: A survey of techniques used for pediatric patients." *AJR* 2003; 180: 401-406.) "Diagnostic imaging saves lives," he stresses. "The last thing we'd want to see is a concerned parent withholding consent for doing a scan because of concern about radiation. We have lowered our doses as far as we can without impacting the quality of the images."

Dr. Betz eagerly anticipates the new 206-bed freestanding Helen DeVos Children's Hospital, now under construction in Grand Rapids. "We have completely redesigned our workspace to be even more child friendly," he stresses. "Locating us in an area central to other services that use radiology such as the pediatric emergency department means children will not have to be transported long distances for imaging." Located on the corner of Michigan Street and Bostwick Avenue in downtown Grand Rapids, the new hospital is slated to open in 2011.

Helen DeVos Children's Hospital is West Michigan's largest children's hospital, serving children and families throughout Michigan. Visit www.devoschildrens.org for more information. ■

Bradford W. Betz, M.D., Division Chief, Pediatric Radiology at Helen DeVos Children's Hospital is board certified in diagnostic radiology and pediatric radiology, with a special interest in neuroradiology and advanced MR imaging. He received his M.D. from Loyola University in Chicago and completed his residency at Duke University Medical Center in Durham, NC. Dr. Betz also completed his fellowship in pediatric radiology at Children's Hospital Medical Center in Cincinnati, OH. He is also a partner in Advanced Radiology Services, P.C., serving client medical centers across Southwest Michigan.

Along with Dr. Betz, other key staff in the pediatric radiology department at Helen DeVos Children's Hospital include:

- **Steven L. Bezinque, D.O.**, board certified in diagnostic radiology and pediatric radiology, with a special interest in musculoskeletal imaging and ultrasound
- **Joseph J. Junewick, M.D.**, board certified in diagnostic radiology and pediatric radiology, with a special interest in emergency radiology and molecular imaging
- **Jeffrey E. Hagedorn, PA-C**, with national and state of Michigan board certification, along with a special interest in fluoroscopy
- **Shauna Boughey, CCLS**, Certified Child Life Specialist

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