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THE BRISTOL-MYERS SQUIBB CHILDREN'S HOSPITAL
at Robert Wood Johnson University Hospital

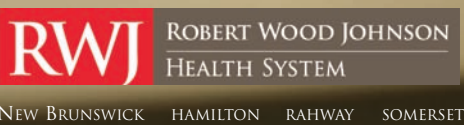
FALL 2015

PHYSICIAN Connection

A PUBLICATION OF ROBERT WOOD JOHNSON UNIVERSITY HOSPITAL



Care for Babies Born Too Soon
**Orthopedic Surgery:
Leg Lengthening**
Pediatric Dentistry Services



NEW BRUNSWICK HAMILTON RAHWAY SOMERSET

Leading the way to health.



As another year comes to a close, we take this opportunity to reflect back on some milestone moments that defined 2015 on New Jersey's only academic pediatric health campus, which includes The Bristol-Myers Squibb Children's Hospital (BMSCH) at Robert Wood Johnson University Hospital, Rutgers Robert Wood Johnson Medical School, The Child Health Institute of New Jersey, PSE&G Children's Specialized Hospital, Ronald McDonald House and our physician partners in the community.

First, it's important to recognize the significant investment and commitment each organization has made to encourage a collaborative approach to pediatric care. Each has supported the implementation of programs and operations that value alignment and promote intra-facility coordination at all levels. This forward-thinking, partnership-based care resulted in many extraordinary achievements and accomplishments in the areas of physician recruitment, technological advancements, innovative procedures, newly developed programs, research and more.

One example: Rutgers Robert Wood Johnson Medical School and BMSCH sought out more opportunities to work together in physician recruitment. The combined reputation of both institutions enables us to attract the most talented medical leaders in pediatric health. We highlight this in our feature on David Sorrentino, MD, who recently joined us as the newly appointed head of the school's Division of Neonatal/Perinatal Medicine and Medical Director of the children's hospital's Neonatal Intensive Care Unit. Dr. Sorrentino provides an engaging dialogue for referring doctors that includes the launch of several new family-centered care initiatives in the NICU, trends in neonatal medicine and his vision for the future of neonatology on our campus and beyond.

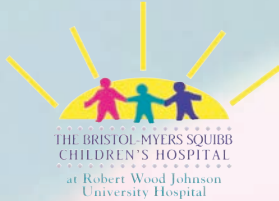
We are also proud to report the first successful orthopedic limb lengthening surgery using magnetic technology recently took place at the Center for Advanced Pediatric Surgery at BMSCH and was performed by our community physician partner, Thomas McPartland, MD, who is an innovator in his field. Hear how this revolutionary new device is transforming surgery by replacing painful external fixators with less invasive magnets and remote controls to yield positive outcomes.

We also offer a glimpse into the future by sharing some new initiatives for 2016, like building a legacy at BMSCH for quality and safety, and improving the process for pediatric transfers.

Lastly, take a moment to learn more about a service that isn't talked about much, but is making great strides, and advancing the field of pediatric dentistry. We invite you to read more and enjoy another issue of *Physician Connection*.

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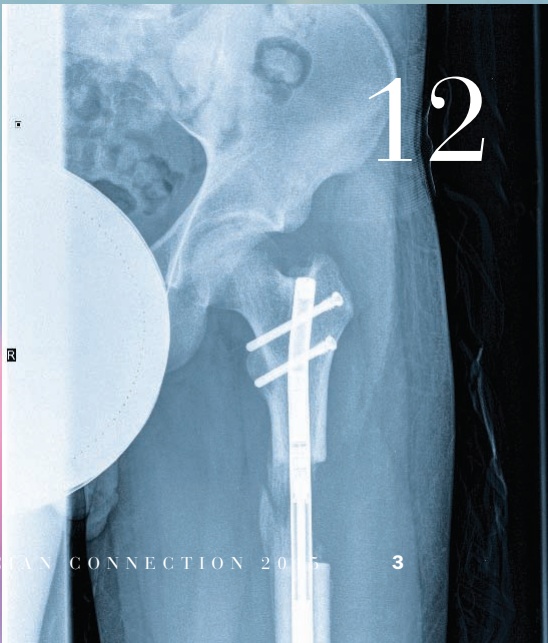
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David Sorrentino, MD

Comprehensive, Advanced Care for Babies Born Too Soon

EVERY YEAR, approximately 10 to 15 percent of infants born in the U.S. are admitted to a neonatal intensive care unit (NICU) for many reasons, including prematurity, breathing and heart problems, birth defects, and infections. For a newborn requiring this kind of intensive medical attention, the best place to be is at a hospital offering comprehensive, advanced neonatal care.

Under the leadership of board-certified neonatologist David Sorrentino, MD, Assistant Professor of Pediatrics and Chief, Division of Neonatal-Perinatal Medicine at Rutgers Robert Wood Johnson Medical School, the NICU at The Bristol-Myers Squibb Children's Hospital (BMSCH) at Robert Wood Johnson University Hospital provides the highest level of care for New Jersey's smallest and sickest babies born at just 22 weeks gestation on.

"Our major focus is building upon our commitment to top-quality, family-centered neonatal care," says Dr. Sorrentino. "Our NICU is equipped to diagnose and treat the full range of

neonatal health issues. The babies are our patients but we care for the entire family as well, providing information and counseling and helping to support them until their babies are ready to go home."

The Level III NICU, part of a state-designated Regional Perinatal Center, cares for 400 to 500 infants a year. With 37 beds and a strong team of seven neonatologists, nurses, and other highly skilled staff available around the clock, the NICU offers the latest advances in technology and high-quality care for infants either born here or transported from other area facilities not equipped to provide this type of complex care. Full-term newborns with respiratory problems, congenital defects, infections or other serious problems are also treated in the NICU at BMSCH.

Trends in Neonatal Treatment

Dr. Sorrentino explains that neonatology is trending toward less aggressive, invasive therapies. "This 'kinder and gentler' approach — for example, using non-invasive ventilation in treating respiratory problems — delivers optimal outcomes and is associated with less lung

damage," he says. "We adhere to best practices in the field."

Patients are referred through the School's Division of Maternal-Fetal Medicine Department, which identifies mothers who are at risk for preterm birth. "Generally, the earlier a baby is born, the higher the risk of complications," states Dr. Sorrentino. Newborns weighing less than 3 pounds, or 1,500 grams (the unit of weight most commonly used to weigh preterm babies) face a myriad of health problems, including chronic lung disease, intracranial hemorrhage, and necrotizing enterocolitis, an infection of the intestines. Infants at any gestational age can be at risk for congenital anomalies such as gastroschisis, a defect occurring early in gestation in which the intestine eviscerates through the abdominal wall.

"Gastroschisis is diagnosed on ultrasound during an OB evaluation," Dr. Sorrentino says. "We connect the parents to a pediatric surgeon right here at the hospital who can repair the defect after birth. One of our strengths is that we offer excellent surgical support and pediatric subspecialists in our Center for Advanced

Pediatric Surgery." Another high-tech innovation in the NICU includes hypothermia treatment to help infants with hypoxic or ischemic brain injury. Cooling the infants' core temperature can help protect the brain against ongoing injury and limit the long-term morbidities associated with perinatal insult.

Promoting Family-Centered Care

Keeping parents involved in a preterm newborn's care builds trust and provides reassurance. To that end, Dr. Sorrentino plans to implement many family-centered initiatives, including a Webcam program featuring streaming newborn video for parents. Each baby in the NICU will have a camera. Families will be able to see their babies when they cannot be at the bedside, and can watch the video from any device with internet access. The Webcam program is expected to make its debut in early 2016.

Another ongoing program that he plans to expand is kangaroo care, a method of holding a baby that involves skin-to-skin contact with a parent for as many hours as is possible. "Kangaroo care is great for bonding and studies have found it has many physiological benefits as well," says Dr. Sorrentino.

These benefits include stabilization of the heart rate, improved breathing, and more rapid weight gain.

Breast milk is the gold standard of feeding, particularly for preterm babies. A major endeavor of the NICU will be the implementation of a comprehensive breast milk tracking system. Mothers' expressed breast milk will be bar-coded, ensuring freshness and reducing the risk of administering breast milk to the wrong infant. "Nationally, there is a 1 to 2 percent rate of breast milk errors, which is not acceptable," says Dr. Sorrentino. "We're excited about this program as a safe, efficient way of managing feeding in the NICU."

Quality control and safety are at the core of the team's work. From physicians to nurses and technicians, the staff practices the latest evidence-based medicine with outcomes that exceed regional and national benchmarks.

"In terms of quality, we're providing the highest standard of neonatal care and we continue to strive for improvement," says Dr. Sorrentino. "Our goal is nothing less than to be the best NICU in the state." ■

'Rising Star' Builds Life-Saving Programs for Preterm Infants

David Sorrentino, MD, has always wanted to be a pediatrician. As an undergraduate he shadowed a neonatologist in a NICU for a day and knew right away that he'd found his life's calling. "I was impressed with early intervention and how it can help improve outcomes for preterm babies," he says.

Dr. Sorrentino served as Assistant Professor of Pediatrics at Robert Wood Johnson Medical School from 2003 to 2006, following fellowship training in neonatal-perinatal medicine at St. Christopher's Hospital for Children at Drexel University School of Medicine in Philadelphia. He returned to St. Christopher's Hospital and went on to lead the affiliate nursery at Reading Hospital where he oversaw the redesign and expansion of the NICU and helped develop multiple neonatal programs and a pediatric hospitalist program. He served as Chief of Neonatology at Reading Hospital in Pennsylvania from 2009 to 2015.

In June 2015 Dr. Sorrentino became Director of the NICU at BMSCH and returned to the faculty at Rutgers Robert Wood Johnson Medical School, where he oversees the state's only neonatal fellowship. He's been a Castle Connolly and *Philadelphia Magazine* Top Doctor and has earned awards as Fellow Educator of the Year and Physician Educator of the Year at Robert Wood Johnson Medical School.

"We've come a long way in neonatology," he says. "In the early 1900s, infant mortality was 10 percent. In 2001, it was .1 percent. A hundredfold decrease in 100 years is a wonderful achievement."



Pediatric Transfer Center Improvements

THE PRACTICE of pediatric interfacility transport continues to grow at a rate of approximately 10 percent a year at The Bristol-Myers Squibb Children's Hospital (BMSCH) at Robert Wood Johnson University Hospital (RWJ). To provide the highest-level service and efficiency, BMSCH launched an improved pediatric transfer center this fall. While the phone number remains the same — 1-866-66-BMSCH — the expanded services will expedite transport time and quickly triage the patient to the appropriate service.

The new pediatric center shares space with the adult transfer center at RWJ, and is staffed with ICU-trained nurses with background and experience in pediatrics. They will handle incoming calls 24/7. In the past, calls came directly to BMSCH's Pediatric Intensive Care Unit. Administrative staff answered most calls and sometimes more than one call was required to mobilize a transport. An important goal of the new center is to mobilize the transport team from a single point of contact which means only one call will be required from the referring physician.

Transport teams have evolved into mobile pediatric ICUs capable of delivering high-quality critical care. BMSCH has two such vehicles to transport the sickest children at any time of the day or night. "When a call comes in, the transfer center nurse assesses the situation and sends a specially trained pediatric team based on the patient's medical needs," says Steven Horwitz, MD, Instructor of Pediatrics at Rutgers Robert Wood Johnson Medical School and Medical and

Director of the Pediatric Transport and Outreach Program at BMSCH. "If the patient has breathing problems, a respiratory specialist accompanies the team. If the patient needs ICU-level care, an ICU nurse goes on the call. This team can stabilize the patient right in the field with IVs, breathing tubes, whatever the child needs."

He adds that the transfer center nurses will give medical advice and direct callers to a physician for consultation if necessary. They can direct the mobile units to the Emergency Department, PICU, or inpatient pediatric floors, and handle administrative details related to the patient's care.

A high-quality, efficient transport system benefits referring physicians and institutions as well as patients. The American Academy of Pediatrics reports that pediatric patients transported by specialty teams are less likely to have problems in transport, including less likelihood of an airway issue, cardiopulmonary arrest and loss of intravenous access. Studies also show less likelihood of mortality in patients transported via pediatric specialty teams. ■

For pediatric patient transport, please call 1-866-662-6724.

Ambulance Runs Are His Calling



Steven Horwitz, MD

Steven Horwitz, MD, understands the demands of transporting critically ill patients. He went on numerous ambulance runs in his native South Africa, where he volunteered as a paramedic and firefighter before becoming a physician. "I worked in finance at the time but realized I enjoyed my paramedic work more than crunching numbers," he says.

Following a fellowship in pediatric critical care at Columbia University, where he spent even more time volunteering on a transport team, he joined the medical staff at BMSCH in 2014.

"If a pediatric patient at another facility needs a higher level of care, we are here for them," he says. "We handled approximately 1,100 calls last year and will answer even more calls this year. Our new system can accommodate this steady growth and enable us to continue to provide efficient, high-quality care."

Pediatric Nephrology: Kidney Stones

A SEVEN-YEAR-OLD patient presented to a pediatrician with complaints of severe back pain. During the exam the patient reported there was a pinkish tinge in the urine. While many disorders can trigger back pain, the urine color was the key symptom to identifying the real diagnosis. The pediatrician suspected kidney stones and an ultrasound confirmed the diagnosis.

“The incidence of urolithiasis, or kidney stones, is well-documented in adults but much less so in children,” says Joann Spinale Carlson, Assistant Professor of Pediatrics at Rutgers Robert Wood Johnson Medical School and Medical Director of Pediatric Kidney Transplantation at The Bristol-Myers Squibb Children’s Hospital (BMSCH) at Robert Wood Johnson University Hospital (RWJ). “But we are definitely seeing more of them.”

While there is no exact data about the incidence of urolithiasis in children, many kidney specialists report seeing more children with this condition in recent years, according to the National Institute of Diabetes and Digestive and Kidney Diseases. A recent study indicates there has been a five-fold increase in the incidence of pediatric kidney stones in the past decade.

The Role of Diet and Heredity

Dr. Spinale Carlson, one of two pediatric nephrologists practicing at BMSCH, sees patients in the hospital’s outpatient clinic and inpatient renal service. “Kidney stones in children can be hereditary and are usually influenced by diet. Some medicines, including the seizure medication topiramate (Topamax), and excessive amounts of calcium and vitamin D, can increase formation of stones,” she explains. “Stones form when

minerals in the urine become highly concentrated, and then solid.” The most common types of kidney stones are calcium oxalate due to elevated urine calcium. Calcium phosphate, uric acid, struvite, and cysteine stones are less common.

“Not drinking enough fluid and eating a lot of high-sodium foods are both associated with kidney stone production,” she says. “So the high-sodium foods children love, including hot dogs, pizza, fast food, ketchup, pretzels, and crackers, should be eaten in moderation.” Fruits and vegetables will decrease the risk of stones, but unfortunately children often do not eat enough of these foods.

Once a diagnosis is made, treatment options begin with dietary management. (See box for more information.) If dietary intervention is not effective, kidney stones can be prevented with medications. Surgery and lithotripsy may be needed even in young children if stones grow too large to pass naturally. Through diet education and possible medications, we try to prevent the need for surgery.

Diagnosing Urolithiasis

A physician suspecting kidney stones in a child should take a thorough medical history, including a family history, since the disorder frequently runs in families. A diet history is also important in assessing stone risk factors. Diagnosis of kidney stones involves a full metabolic workup and an ultrasound, an excellent screening test that avoids radiation exposure. There are times where additional imaging is needed to confirm the size and location of stones. Symptoms may include pain in the abdomen, flank, or pelvis, urgency in urinating, and hematuria (blood in the urine). Even microscopic amounts of blood in the urine are cause for

concern and the patient should be referred to a pediatric nephrologist for evaluation. Many patients have no symptoms and stones can remain in the same place for years.

“A stone may stay in the kidney or travel down the urinary tract,” says Dr. Spinale Carlson. “A small stone can be passed, but not a very large one. If the stone blocks the passage of urine from the kidney, an intervention for removal might be needed.” If a child passes a kidney stone, she advises saving it if possible so it can be analyzed. Identifying the type of kidney stone can help formulate effective treatment. At BMSCH, we value a team approach, where pediatric nephrologists often are the main providers, working closely with pediatric urology, radiology and nutrition specialists.

With pediatric kidney stones on the rise, plans are underway to establish a dedicated kidney stone clinic at BMSCH, bringing together a team of specialists to offer comprehensive care. “A patient diagnosed with kidney stones will generally need to be followed over time,” states Dr. Spinale Carlson. “Creating a stone center will enable us to offer high-quality, multidisciplinary treatment in a single-stop approach.” ■

Halt the Salt, Drink More Water

Watch that sodium. A sodium intake of 1,000 to 1,500 mg per day is recommended. The average intake of sodium in the U.S. is 2,307 mg for 2 to 5 year olds, 3,260 mg in 8 to 12 year olds, and 3,486 mg in 13 to 18 year olds, according to data from the CDC. Limit high-sodium foods, including frozen dinners, fast foods (burgers, pizza, chicken fingers), condiments, processed meats and cheeses.

Hydrate, hydrate, hydrate. The amount of fluid recommended per day is 40 to 50 ounces for children ages 1 through 6; 60 to

70 ounces for children ages 7 through 14; and 80 ounces for children 15 years of age and older.

Limit dietary oxalates. These foods include beans, chocolate, nuts, sesame seeds and paste, soy products, and some vegetables, including beets, many greens, and sweet potatoes. We recommend eating these foods in moderation.

Follow the RDA for calcium. The amount of calcium recommended per day is 700 mg for children ages 1 through 3;

1,000 mg for children ages 4 through 8; and 1,300 mg for children ages 9 through 18.

Increase fruits and vegetables, particularly those high in potassium. These include avocados, broccoli, potatoes, bananas, tomatoes, oranges, and apricots.

Building a Legacy of Keeping Kids Safe

What Can Go Wrong

To reduce harm in the hospital, serious safety events or SSEs are tallied. And there are ten hospital-acquired conditions or HACs:

1. Adverse drug events (ADE)
2. Catheter-associated urinary tract infections (CAUTI)
3. Central line-associated bloodstream infections (CLABSI)
4. Injuries from falls and immobility
5. Obstetrical adverse events (OBAE)
6. Peripheral intravenous infiltration and extravasations (PIVIEs)
7. Pressure ulcers (PU)
8. Surgical site infections (SSI)
9. Ventilator-associated pneumonia (VAP)
10. Venous thromboembolism (VTE)

Jessica Lise, PharmD, and Vicki Craig, MD

FIRST, DO NO HARM. Every health care provider is taught this fundamental bioethical principle but hospital statistics clearly show that things can go wrong, especially in caring for pediatric patients. “We want to be the leader in New Jersey for providing safe care for our children,” says Vicki L. Craig, MD, Assistant Professor and Interim Chief of the Division of Pediatric Critical Care at Rutgers Robert Wood Johnson Medical School and The Bristol-Myers Squibb Children’s Hospital (BMSCH) at Robert Wood Johnson University Hospital (RWJ).

Working with a team led by Yi-Horng Lee, MD, Associate Professor and Chief of Pediatric Surgery at Rutgers Robert Wood Johnson Medical School and BMSCH, Jessica Lise, PharmD, Performance Improvement Coordinator at RWJ and Linda

Palkoski, MPH, RN, CCRN, NE-BC, Nursing Director of the Pediatric Intensive Care Unit at BMSCH, Dr. Craig is laying the groundwork for participation in two national quality and safety initiatives that are “working to eliminate preventable harm to children who are admitted to this hospital.” A Certified Professional in Healthcare Quality (CPHQ), Dr. Craig explains that considerable financial and human resources have been invested to make this happen. “It is important for physicians to know that our hospital is taking the lead to make this major commitment.”

A first step was taken in September 2015 when BMSCH joined 80 children’s hospitals in a nationwide effort called Solutions for Patient Safety (SPS). “We are the only hospital in the state that has made the decision to be part of this national learning collaborative,” says Dr. Craig.

The strategy focuses on reducing harm by preventing readmissions, serious safety events and ten hospital-acquired conditions, or HACs (see sidebar). Dr. Lise explains, “We are launching a culture of safety that includes not just nurses and doctors but everyone in housekeeping, the lab, the pharmacy and in all ancillary services that touch patients. The more data we have, the easier it will be to identify where we are really good as well as opportunities for improvement.”

BMSCH is taking a second step this year to improve care by joining the pediatric version of the American College of Surgeons National Surgical Quality Improvement Program (NSQIP®). “This is the most robust clinical outcome database for pediatric surgical patients in the world,” says Dr. Lee.

“NSQIP will provide us with information on our

pediatric surgical patients that we haven’t previously had access to,” explains Dr. Lise. “Data is collected when patients are admitted and also on their outcomes 30 days after discharge.” Participating hospitals have data access to cases along with detailed reports and comparisons to similar patients at other hospitals. NSQIP also offers an annual professional forum and interactive educational sessions with experts known as Surgeon Champions.

“These efforts demonstrate our commitment in an outcome-driven quality improvement process,” Dr. Lee states. “We live in a transparent world where we can no longer simply say that we are the best in providing health care in any given area; we have to prove it. We have to be honest with the public and with ourselves. Participation in these programs will allow us to benchmark ourselves against all the other leading children’s hospitals in the country

and come up with an actionable plan to improve our process and patient outcome.”

“Our Surgeon Champion for this program is Dr. Lee,” says Dr. Craig. “I have the experience working with collaborative groups and implementation of programs but he has been the physician leader for getting us into NSQIP.” In addition, without the support of BMSCH’s Administrative Director Cindy Ferraro, MSN, RNC, AND-C, Chief Administrative Officer Warren Moore, FACHE, and Surgeon-in-Chief Joseph G. Barone, MD, participation in these initiatives would never have happened.

At BMSCH, health care workers, especially nurses, recognize the importance of taking safety and quality steps. “When our nurses started to see the results in the care provided to patients who had better outcomes and fewer complications, they

jumped right on board,” Dr. Craig says. Take blood stream infections (BSIs) for example. Dr. Craig engineered a plan to reduce BSIs and as a result, in 2012, *Consumer Reports* named BMSCH one of the top five Pediatric Intensive Care Units with the lowest central line infection rates out of 92 U.S. hospitals. The hospital changed the way central lines are managed, standardizing each step with extra attention to detail, from tubing, dressing, gloving, and masking, as well as when, where and how often lines are used or changed. “We make a great effort to enter that line as few times as possible for medication and blood work,” says Dr. Craig.

On this quest for patient safety, Dr. Lise sees “hard but rewarding work. We are giving our staff the tools to help them do their jobs better.” ■

Orthopedic Surgery: Leg-Lengthening Taps the Magic of Magnets

AN 18-YEAR-OLD presented with a leg length discrepancy of 6 cm (2½ inches) and walked with a pronounced limp. The patient could not participate in athletics and movement was highly restricted. Thorough evaluation determined the patient was an ideal candidate for a groundbreaking new type of surgical procedure being performed in the Center for Advanced Pediatric Surgery at The Bristol-Myers Squibb Children's Hospital (BMSCH) at Robert Wood Johnson University Hospital (RWJ).

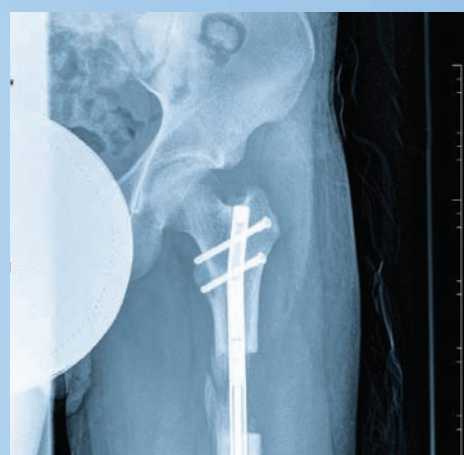
The patient and family met with BMSCH orthopedic surgeon Thomas McPartland, MD, for nearly a year before making the decision to undergo distraction osteogenesis, or limb-lengthening surgery. While distraction osteogenesis is not new, this particular procedure had a unique twist: the lengthening was done utilizing new, highly specialized, remote-control magnet technology. It is the first time this magnetic system has been used in New Jersey.

Limb length discrepancy can arise from congenital or acquired etiologies, including growth plate arrest, malunion, nonunion, bone loss from open fractures, osteomyelitis, or tumor. It can be in the femur, the tibia, or both. While slight differences in leg length are fairly common, significant differences can greatly affect quality of life.

"This patient's discrepancy is in the left femur. It's shorter, probably the result of a congenital anomaly," says Dr. McPartland, who is also a Clinical Assistant Professor of Orthopedic Surgery at Rutgers Robert Wood Johnson Medical School. "The patient has dealt with the problem since first learning to walk, and as is frequently the case, it became worse over time." Through the years the patient compensated on gait and used a shoe lift.

Improved Treatment Through Technology

The standard treatment for limb length discrepancy is a long and painful process involving adjustable external fixation systems surgically attached to the leg. The bone is cut and



the system gradually spreads the segments apart, facilitating the growth of new bone. The new magnet system, called the PRECICE Intramedullary Limb Lengthening System from Ellipse Technologies, is a less invasive alternative. It operates through magnetic interaction between the implant and an external remote controller: a portable, hand-held unit that lengthens the implant.

"This technology has many benefits for patients," says Dr. McPartland. "There are no devices protruding from the body, so the patient has less pain and anxiety. Patients feel better and sleep better. There is less chance of infection, shorter hospital stays, and shorter rehabilitation as well."

The Lengthening Process

This particular case was performed in June 2015, at the dedicated Center for Advanced Pediatric Surgery on the seventh floor of BMSCH. A telescopic rod was implanted into the marrow cavity of the femur through a hole in the proximal end of the femur and fixed with four pegs.

Following the surgery the young patient spent nine days recovering on one of BMSCH's pediatric inpatient units where post-surgical care was provided and the lengthening process proceeded under the watchful eye of both surgeon and staff. Dr. McPartland monitored the lengthening process daily. The remote control was programmed to accurately lengthen the bone

based on the surgeon's prescription. The magnet was placed against the leg and activated, moving the rod precisely .33 mm. The treatment was repeated three times a day, lengthening the bone approximately 1mm a day.

The patient was discharged with a remote control and detailed instructions for home use. The patient was initially scheduled to go into a rehabilitation facility but adapted so well to the lengthening regimen that this step was deemed unnecessary.

This patient continued the lengthening process at home under Dr. McPartland's close supervision and did well. There was occasional pain, but it was reported to be mild and tolerable. "The lengthening stretches the skin, muscles, and tendons simultaneously. So there will be some stiffness, which is helped by physical therapy and daily stretching exercises," says Dr. McPartland. "We took our cues from the body's response. When the patient reported feeling pain, we would slow the process down, adjusting use of the magnet to twice a day." The lengthening results were achieved by mid-September, with continued weekly monitoring throughout the process.

The patient is now on partial weight-bearing and walking with crutches. Dr. McPartland estimates six months before the patient can put full weight on the leg and a year before being able to resume athletic activity. Approximately a year post-surgery, when mature bone formation has occurred, the rod will be removed.

It's an exciting 'first' for physician, patient, and the advancements we continue to make every day at our Center for Advanced Pediatric Surgery and on our pediatric academic health campus, says Dr. McPartland: "I never want to be a pioneer. I don't like to be the first person to do something. But this procedure has a proven track record and I'm glad to report the patient is doing so well. It's great that we can offer this type of surgery to patients." ■



Distraction Osteogenesis: Origins and Use Today

Siberian physician Gavril Ilizarov pioneered distraction osteogenesis in the early 1950s, fashioning early corrective devices from spare bicycle parts. He later used a complex array of metal rings and screws to pull bones into place, becoming internationally known for the repair of complex fractures. Modern-day limb-lengthening orthopedists, including Dr. McPartland, still reference Ilizarov and his principles have stood the test of time.

Today, distraction osteogenesis is used for limb lengthening, limb reconstruction, extremity deformity correction, and complex fracture treatment. The procedure requires specialized orthopedic fellowship training and a well-trained OR and nursing staff to care for the patient pre- and post-operatively.



Philip Engel, DMD

Stephen Hoffmann, DDS

Maxim Sulla, DDS

CENTER FOR ADVANCED PEDIATRIC SURGERY

Pediatric Dentistry: Haven for Oral Health Care



A 20-MONTH-OLD infant visiting a dentist for the first time presented with severe early childhood caries, the result of going to bed with a bottle each night. The child needed extensive treatment but was too young to spend hours in a dentist's chair.

Another patient, an 8-year-old with severe autism, sees a dentist for serious tooth decay. Like many parents of autistic children, the mother had been unable to provide proper dental hygiene. The child's behavior was hyperactive with limited response to verbal instructions. What's the best way to manage these patients?

While tooth decay is largely preventable, it remains the most common chronic disease among children ages 2 to 11 years, according to the Centers for Disease Control and Prevention. Some children cannot get the dental care they need in a traditional office setting — either because they are too young, have behavioral

issues triggered by fear or anxiety, have special needs, or are otherwise medically compromised. For these children, the solution lies in the Center for Advanced Pediatric Surgery at The Bristol-Myers Squibb Children's Hospital (BMSCH) at Robert Wood Johnson University Hospital (RWJ).

The Center offers high-quality, patient-centered oral health care for infants, children, and adolescents as well as young people with special needs. Overseeing the program is oral surgeon Philip Engel, DMD, Clinical Assistant Professor of Surgery and Chief of the Division of Oral Maxillofacial Surgery at Rutgers Robert Wood Johnson Medical School and Stephen Hoffmann, DDS, Chief of the Section of Pediatric Dentistry. "Our pediatric team includes 17 attending dentists, all of whom have private practices in the Middlesex and Somerset county areas. They bring cases here that they are unable to do in a traditional office because of the patients' unique needs," says Dr. Hoffmann.

"A wide range of pediatric patients are treated here under general anesthesia: from the two-year-old who needs a root canal but cannot sit still in a dentist's chair, to the five-year-old with severe dental anxiety, to the patients who are autistic, developmentally delayed, in a wheelchair, or who have other special needs," explains Dr. Engel. "Many dentists advise doing this work in a single operating room visit."

The Center for Advanced Pediatric Surgery was recently renovated to include a dental surgical suite with high-quality technical and imaging equipment. A second operating room can be modified for dental procedures. Approximately 120 pediatric dentistry procedures have been performed here this year, according to Dr. Hoffmann.

"We can care for children with unique needs without trauma or stress," says Dr. Engel. "That's advantageous for the patient and parents." ■

Providers Offer Care with Compassion

NOT EVERY CHILD will need oral surgery, but many do, says Dr. Engel. "In terms of pediatric care, the five oral maxillofacial surgeons on staff are responsible for treatment of trauma to the teeth and jaws, management of impacted teeth and complex extractions, and treatment of pathology," states Dr. Engel.

He adds that use of surgical facilities at BMSCH for dental procedures is on the rise. "Ten years ago we only had three pediatric dentists," he observes. "We are performing more procedures under general anesthesia as more families become aware of this option."

Dr. Hoffmann treats many children with special needs and other patients he describes as pre-cooperative — cognitively unable to cooperate during treatment. "For the pre-cooperative child, dentistry can be a stressful, frightening event," he says. "We employ the 'tell-show-do' approach, but some patients don't respond well. Treatment in a surgical setting under anesthesia can often bridge the gap until the child matures and learns to cooperate."

He supports the concept of the American Academy of Pediatric Dentistry's dental home for children, to include all aspects of oral health. "Children who have a dental home are more likely to receive the preventive and routine oral health care they need," he explains. Parents and other care

providers are encouraged to establish a dental home for every child by age one. Hoffmann points out that the dental home also alleviates fear and anxiety by exposing children to oral health care at an early age.

A third member of the team, pediatric dentist Maxim Sulla, DDS, treats children from infancy to adolescence, many with special needs. "Our goal is always to treat these patients in our office, but sometimes that's not possible," he notes. "We offer high-quality care for these children in the operating room."

Dr. Sulla recently cared for a severely handicapped 8-year-old who had a feeding tube and tracheotomy and was in a wheelchair. "Until now the family had been unable to find a dentist to treat their child, who had extensive tooth decay," he says. "We suggested treatment in the hospital, where we have state-of-the-art imaging technology and the services of an outstanding pediatric anesthesia team. It could be done in a single procedure, avoiding stress." The parents were relieved that their child would receive the necessary treatment in an appropriate setting.

Dr. Sulla points out other excellent services offered at the Center for Advanced Pediatric Surgery, including an experienced child life team and outstanding nurses. "The staff understands the unique needs of our patients. They are compassionate and caring." ■

Child-Friendly Sedation

WHEN YOU'RE TAKING a photo, the slightest movement by your subject can cause blurring, shadows, and an overall lack of clarity. The same holds true for providers attempting to capture scans or MRIs of a pediatric patient who is anxious and doesn't have the ability to remain perfectly still.

For these children, or others having diagnostic or therapeutic procedures, sedation ensures that the child is better able to tolerate the procedure. Sedation occurs on multiple levels: from minimal sedation, in which the patient responds to verbal commands, to moderate or deep sedation for painful or invasive procedures. The sedation team at The Bristol-Myers Squibb Children's Hospital (BMSCH) at Robert Wood Johnson University Hospital is specially trained to offer all levels of sedation with two goals in mind: alleviate anxiety and avoid pain.

"It's natural for a child to be anxious when facing a procedure," says Jennifer Owensby, MD, Medical Director of the Pediatric Sedation Service at BMSCH. "They're frightened and are sometimes too young to understand the need to stay still. With invasive procedures, there is pain involved. In these situations, moderate sedation is a great option. It's easier on parents as well."

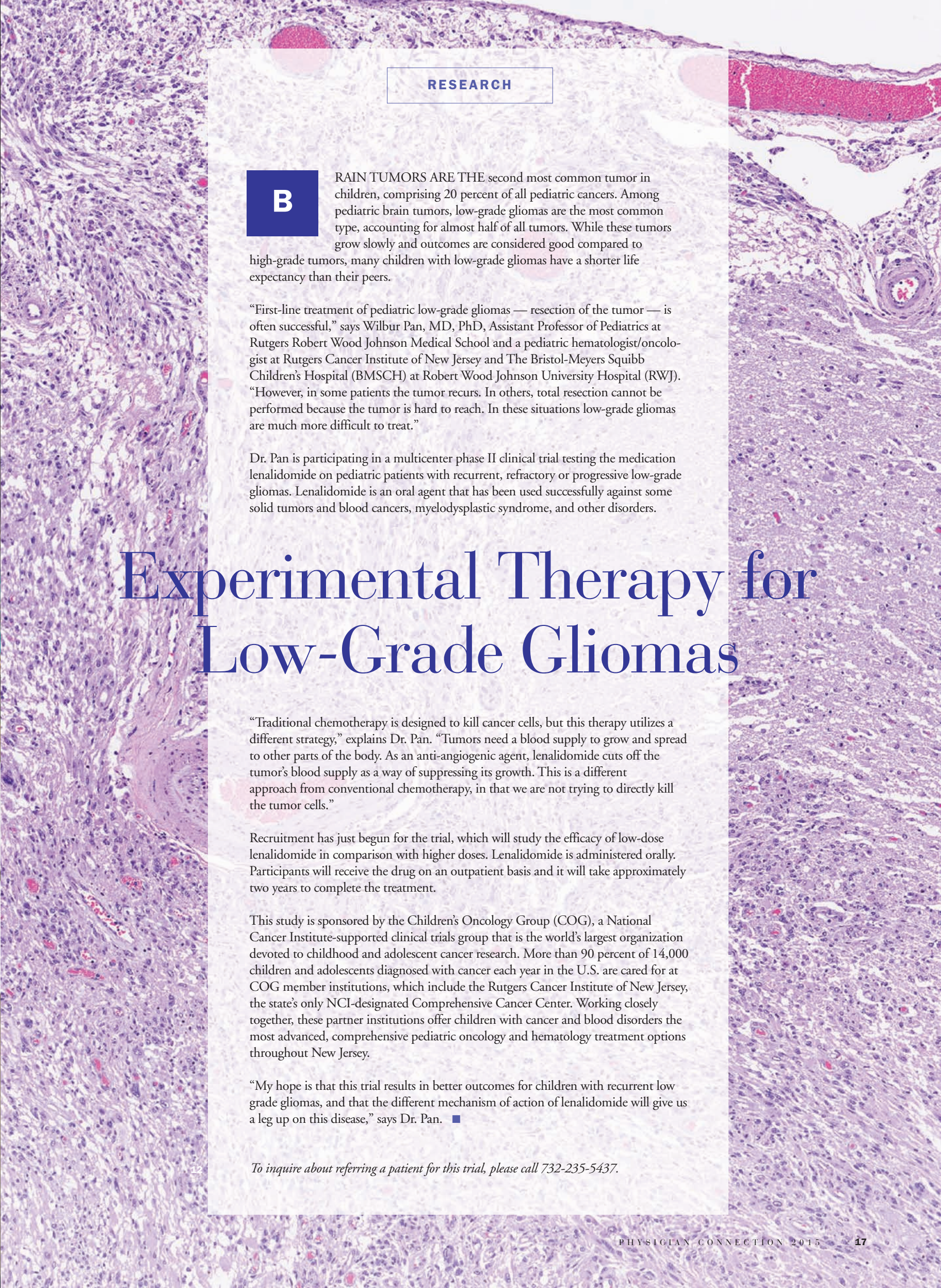
Dr. Owensby, who is also Assistant Professor of Pediatrics at Rutgers Robert Wood Johnson Medical School, explains some unique aspects of a child's anatomy that require special attention during sedation. "A child's airway is smaller in diameter and shorter in length than an adult's and located in a more anterior position," she says. "Our team has expertise in managing the airway properly during sedation."

A wide range of procedures may be facilitated through sedation, from tests such as echocardiogram or EEG lead placement, through invasive and potentially painful procedures, such as spinal taps, bone marrow biopsies, and joint injections. Additionally, sedation may be used when treating fractures and wounds. The team provides sedation for many pediatric cancer patients who require frequent spinal taps, perhaps as often as once a week. Sedation is also helpful in caring for children with developmental disabilities, who may be too anxious or agitated to lie still.

The most common medications used in pediatric mild sedation, fentanyl, midazolam, and propofol, do not cause nausea. Sedation is administered by board-certified pediatric intensivists in BMSCH's Center for Advanced Pediatric Surgery and patients are closely monitored during and after the procedure. The hospital's anesthesia department oversees the sedation program.

Moderate sedation isn't new, but its use has grown tremendously over the past twenty years as patients have become more aware of it, explains Dr. Owensby. "Sedation is not for every child, or every procedure," she adds. "Each patient and situation is evaluated individually."

Dr. Owensby describes a recent patient: a three-year-old with an abscess on her stomach. "If you so much as put your head in the doorway, the patient started crying. So we used mild sedation to perform her surgery. There was no anxiety and the procedure was completed quickly. She woke up right away, had a snack, and went home." ■



BRAIN TUMORS ARE THE second most common tumor in children, comprising 20 percent of all pediatric cancers. Among pediatric brain tumors, low-grade gliomas are the most common type, accounting for almost half of all tumors. While these tumors grow slowly and outcomes are considered good compared to high-grade tumors, many children with low-grade gliomas have a shorter life expectancy than their peers.

"First-line treatment of pediatric low-grade gliomas — resection of the tumor — is often successful," says Wilbur Pan, MD, PhD, Assistant Professor of Pediatrics at Rutgers Robert Wood Johnson Medical School and a pediatric hematologist/oncologist at Rutgers Cancer Institute of New Jersey and The Bristol-Meyers Squibb Children's Hospital (BMSCH) at Robert Wood Johnson University Hospital (RWJ). "However, in some patients the tumor recurs. In others, total resection cannot be performed because the tumor is hard to reach. In these situations low-grade gliomas are much more difficult to treat."

Dr. Pan is participating in a multicenter phase II clinical trial testing the medication lenalidomide on pediatric patients with recurrent, refractory or progressive low-grade gliomas. Lenalidomide is an oral agent that has been used successfully against some solid tumors and blood cancers, myelodysplastic syndrome, and other disorders.

Experimental Therapy for Low-Grade Gliomas

"Traditional chemotherapy is designed to kill cancer cells, but this therapy utilizes a different strategy," explains Dr. Pan. "Tumors need a blood supply to grow and spread to other parts of the body. As an anti-angiogenic agent, lenalidomide cuts off the tumor's blood supply as a way of suppressing its growth. This is a different approach from conventional chemotherapy, in that we are not trying to directly kill the tumor cells."

Recruitment has just begun for the trial, which will study the efficacy of low-dose lenalidomide in comparison with higher doses. Lenalidomide is administered orally. Participants will receive the drug on an outpatient basis and it will take approximately two years to complete the treatment.

This study is sponsored by the Children's Oncology Group (COG), a National Cancer Institute-supported clinical trials group that is the world's largest organization devoted to childhood and adolescent cancer research. More than 90 percent of 14,000 children and adolescents diagnosed with cancer each year in the U.S. are cared for at COG member institutions, which include the Rutgers Cancer Institute of New Jersey, the state's only NCI-designated Comprehensive Cancer Center. Working closely together, these partner institutions offer children with cancer and blood disorders the most advanced, comprehensive pediatric oncology and hematology treatment options throughout New Jersey.

"My hope is that this trial results in better outcomes for children with recurrent low grade gliomas, and that the different mechanism of action of lenalidomide will give us a leg up on this disease," says Dr. Pan. ■

To inquire about referring a patient for this trial, please call 732-235-5437.

DEFINITIONS OF CHILD-FRIENDLY SEDATION

(as defined by the American Academy of Pediatrics and the American Society of Anesthesiology)

MINIMAL	MODERATE	DEEP	GENERAL ANESTHESIA
Anxiolysis: normal response to verbal command	Light sleep: purposeful response to light tactile stimulation	Deep sleep: not easily aroused, purposeful to painful stimulation	Not arousable to painful stimulation

Sherine E. Gabriel, MD, MSc

Rutgers Robert Wood Johnson Medical School Welcomes New Dean

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HERINE E. GABRIEL, MD, MSc, was named Dean of Rutgers Robert Wood Johnson Medical School in July 2015. She joins the medical school after more than thirty years

at the Mayo Clinic, where she most recently was dean of Mayo Medical School. She also served as chair of the Mayo Clinic's Department of Health Sciences Research, Medical Director of its international office, Medical Director of its Office for Strategic Alliances and Business Development and a member of the Executive Board.

An established NIH-funded investigator in the epidemiology of rheumatic diseases, Dr. Gabriel has published her research in more than 250 peer-reviewed journals addressing the costs, determinants, and outcomes of rheumatic diseases. She is recognized in particular for her epidemiologic studies examining the risks of connective tissue diseases among women with breast implants, population-based studies characterizing the epidemiology of rheumatic diseases, and her studies defining the economic impact of rheumatoid arthritis. Dr. Gabriel was appointed by the U.S. Government Accountability Office to the Methodology Committee of the Patient Centered Outcomes Research Institute (PCORI) and served as the committee's first chair.

Dr. Gabriel will lead the medical school in embracing innovative approaches for teaching, clinical care, research and community health that build on a vision to enhance medical education and health care delivery. ■

Spotlight: Warren E. Moore, FACHE Chief Administrative Officer

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arren Moore, FACHE, has 25 years of experience in the health care field. He began his career in partnerships and mergers for a Fortune 500 company where he turned four under-performing hospitals into high performers. His areas of expertise include business development, strategic planning and the implementation of strategic initiatives.

Mr. Moore has served as the Executive Vice President and Chief Operating Officer at Children's Specialized Hospital for the past 16 years. Under his strategic leadership, Children's Specialized has expanded both the breadth and depth of services offered to encompass 13 sites and more than 26,000 children served in 2014.

Mr. Moore joins a unique health care leadership model that partners administrators and clinicians with the goal of identifying best practices, promoting innovation and collaboration, improving patient outcomes, and increasing operational efficiency and standardization.

As Chief Administrative Officer of BMSCH, Mr. Moore is uniquely qualified to shape how pediatric care is delivered on New Jersey's only academic pediatric health campus. We focus on providing a continuum of care for our pediatric patients and their families and are committed to thoughtful collaboration in managing our current operations and planning future growth. Our facilities, conveniently located near each other, offer one-stop care to those who need it. They include BMSCH, an inpatient acute care children's hospital; the Child Health Institute (CHI), which provides outpatient services and conducts groundbreaking research; and CSH. Also on campus is a Ronald McDonald House for families.

Mr. Moore holds a Bachelor of Science degree in business management from the University of Maryland and a Master's degree in health and human service administration from Rider University. He is a member of the Board of Directors of the Ronald McDonald House and a Fellow of the American College of Healthcare Executives.

"It's an exciting time to be part of the leadership team at BMSCH," says Mr. Moore. "As the premier provider of pediatric health care in the state, we have a shared vision to deliver innovative services and unparalleled family-centered care."



Welcoming New Physicians

- George Kaliyadan, MD
- Maria Kim, DO
- Kavita Patel, MD
- Swati Pawa, MD
- Sally Radovick, MD
- Monique Richards, MD
- David Sorrentino, MD