ACCELERATING
The Future of Child Health

2015-2016 Annual Report
The Future of Child Health
MORE THAN
1.2 Million
PATIENT VISITS
PER YEAR

Leading in Safety and Reduction in Preventable Harm
- 83% reduction in serious safety events
- 78% decrease in other serious harm
- 25% drop in hospital mortality

Top 6 for NIH Funding Among Freestanding Pediatric Research Facilities

Robust Research Funding
- 2011: $57.9 million
- 2015: $92.5 million

ONCE AGAIN NAMED TO THE HONOR ROLL OF BEST CHILDREN’S HOSPITALS BY U.S. NEWS & WORLD REPORT

NATIONWIDE CHILDREN’S HOSPITAL • 2015-16
HONORS AND ACHIEVEMENTS:

• Once again named to the Honor Roll of Best Children’s Hospitals – and ranked in all 10 specialties – by *U.S. News & World Report*

• America’s largest children’s hospital*

• Home to America’s largest neonatal network *

• America’s largest provider of pediatric surgery *

• Ranked sixth among NIH-funded freestanding pediatric research facilities in the U.S.

• Among the two percent of hospitals re-designated as a Magnet™ organization

• Fully accredited by the Association for the Accreditation of Human Research Protection Programs

• Provide more than $97 million in charity care and community benefit services annually

• More than 110,680 donors contributed more than $91.8 million to support the hospital’s mission

• One of four hospitals recognized by the American Hospital Association – McKesson Quest for Quality

* Based on Children’s Hospital Association Survey of Utilization and Financial Indicators of Children’s Hospitals
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  - Center for Vaccines and Immunity
At Nationwide Children’s Hospital, we’re challenging ourselves to meet the current and future health care needs of children in our community and around the world. For this year’s annual report, we have included the recent news of our growth plans, our achievements, and the advancements impacting the health of children everywhere.

Our year included announcing the details of a $730 million investment in the next phase of growth for the hospital. Over the next six years, we will complete 11 projects focusing on expanding care, enhancing research, building infrastructure and transforming behavioral health. A centerpiece of the expansion is a new freestanding Behavioral Health Pavilion dedicated to providing better care for the needs of our community, as well as to transforming the model of care.

This year we were pleased to announce the recruitment of internationally renowned genomic medicine scientists Elaine Mardis, PhD, and Rick Wilson, PhD, and the founding of the new Institute for Genomic Medicine at Nationwide Children’s. Drs. Mardis and Wilson are among the most respected teams in science today, and their work will be transformational in the acceleration of our genomics program and the translation of genomic knowledge to clinical practice. This news followed another exciting development when, last November, Nationwide Children’s won the 2015 CLARITY Undiagnosed Challenge. Led by Peter White, PhD, director, Biomedical Genomics Core, a diverse team competed with 26 other teams from around the globe to crack genetic codes for undiagnosed patients.

In September 2015, the hospital successfully separated conjoined twins from Uganda during a complex 16-hour procedure. The surgical teams included more than 30 specialists from pediatric surgery, plastic surgery, colorectal surgery, neurosurgery, anesthesiology and nursing. Since 1978, surgeons at Nationwide Children’s have successfully separated five sets of conjoined twins. This type of surgery is an example of the experience and expertise the entire staff brings to their work. It is the combined efforts of numerous departments and specialties that make it possible to generate and deliver extraordinary health care.

We are also pleased to continue leading and collaborating in quality-related efforts. Richard J. Brilli, MD, and Richard E. McClead Jr., MD, will serve as co-editors-in-chief for Pediatric Quality and Safety, a new peer-reviewed journal offering health care professionals a dedicated forum for advancing pediatric health care quality and safety.

Thank you for your interest in Nationwide Children’s Hospital. I hope you enjoy learning more about what we’re doing now and what we’re planning for the future.

Sincerely,

STEVE ALLEN, MD
Chief Executive Officer
Nationwide Children’s Hospital
Nationwide Children’s Hospital continues to hold strong to the principles that have brought us to the forefront of child health. With a vision of achieving best outcomes, acquiring and empowering the best people, and developing best programs, we’re proud of what we’ve accomplished and where we’re headed.

Once again, we have been recognized on the elite Honor Roll of Best Children’s Hospitals by U.S. News & World Report. Our role as a leader in funded pediatric research remains strong and continues to grow, placing us in the top six for NIH funding among freestanding pediatric research facilities.

With the recent announcement of our $730 million campus expansion and the recruitment of some of the brightest minds in medicine, the next phase of our journey has begun. It’s a journey that will lead to improving the lives of children in our community and will have lasting impact throughout the nation.

We are very proud to be the first pediatric hospital in the country to build a state-of-the-art, free standing Behavioral Health Pavilion dedicated to the research, education, and care for youth. Our goal is to spur a national conversation that addresses the critical need for treatment of behavioral and mental health of our children.

It’s important to acknowledge the essential support we receive from our local community, the numerous families, businesses and organizations who have continued to advance our mission for decades. Our national corporate partners play an invaluable role in what we’ve become and where we’re headed as an institution. The list of diverse corporate supporters includes Nationwide, Big Lots, Justice, Thirty-One Gifts, and more.

In the following pages we will look back at the past 12 months and also look ahead to what is on the horizon. With an eye to the future, we can see many accomplishments awaiting us that will provide best outcomes for children in all parts of the world.

ALEX R. FISCHER
Chair
Nationwide Children’s Hospital Inc./Nationwide Children’s Hospital
Board of Directors
NEXT PHASE OF EXPANSION BEGINS

The next phase of growth for Nationwide Children’s has begun. The estimated $730 million investment will fulfill 11 projects over the next six years, developing infrastructure and expanding space for clinical care and advanced research. A centerpiece of the expansion will be America’s largest behavioral health treatment and research center just for children and adolescents. The freestanding Behavioral Health Pavilion is made possible thanks to a transformational $50 million gift from Big Lots and their Foundation. Located on the main campus, the pavilion will foster collaboration with Nationwide Children’s research teams as well as community partner agencies. Groundbreaking is slated for 2017 with completion in 2020.

EXPANDING CARE:
1. Hospital, building out levels two & seven
2a. Livingston Ambulatory Center
2b. Parking Garage for Livingston Ambulatory Center
3. Childcare Center, renovation
4. Livingston Park Enhancements

RESEARCH:
5. Research Building III, building out levels two and three
6. Research Building IV

INFRASTRUCTURE:
7. Faculty Office Building
8. Olde Towne East Office Building & Garage
9. Energy Plant
10. Data Center

BEHAVIORAL HEALTH PAVILION:
11a. Behavioral Health Pavilion
11b. Parking Garage for Behavioral Health
Imagine a day when a family no longer must endure months of testing to find out what ails their child. Imagine a day when doctors can analyze DNA samples to provide accurate diagnoses and treatment personalized to each child, or even use that DNA sample to prevent a disease from ever occurring. That’s the power of genomics.

Nationwide Children’s Hospital has recruited world-renowned researchers Elaine R. Mardis, PhD, and Richard K. Wilson, PhD, marking a transformational milestone for its genomics research program. At the same time, the Nationwide Foundation announced a new $10 million gift to the Nationwide Pediatric Innovation Fund, which supports this ground-breaking research and helped make their recruitment possible.

Dr. Mardis and Dr. Wilson are among the most respected and prolific teams in science today. Collectively, they have played key roles in many of the most notable federally funded genomics research initiatives, including the Human Genome Project, The Cancer Genome Atlas, the Human Microbiome Project and the 1,000 Genomes Project. Most recently they served as co-directors of the prestigious McDonnell Genome Institute at Washington University, one of only four genomics centers funded by the National Human Genome Research Institute.

Dr. Mardis is an internationally recognized expert in cancer genomics who received the 2016 Morton K. Schwartz award from the American Association for Clinical Chemistry. She was included on the 2013 Thomson Reuters’ list of most cited researchers. Among her several prominent roles, she is a member of the Board of Directors for the American Association for Cancer Research as well as the Supervisory Board of Qiagen N.V. She is editor-in-chief of Molecular Case Studies and associate editor of Molecular Cancer Research, Disease Models and Mechanisms, and Annals of Oncology.

Dr. Wilson was named the world’s most cited researcher in 2013 by Thomson Reuters’ ScienceWatch with 15 significantly cited papers. Among numerous honors, he is a fellow of the American Association for the Advancement of Science (AAAS), a member of the International Cancer Genomics Consortium, and recently co-chaired the executive committee for The Cancer Genome Atlas of the National Cancer Institute, where he remains a member of the Steering Committee.

The Nationwide Pediatric Innovation Fund was established by the Nationwide Foundation in 2014 with an initial gift of $10 million to accelerate the most promising pediatric research and clinical discoveries at Nationwide Children’s Hospital. The 2016 gift marks another substantial investment aimed at improving the speed and accuracy of medical diagnosis, potentially saving lives of children around the world.

Elaine R. Mardis, PhD, and Richard K. Wilson, PhD, lead the new Institute for Genomic Medicine.
The new peer-reviewed journal, Pediatric Quality and Safety, has announced plans to launch in late 2016 to begin sharing open-access content focused on quality improvement and patient safety initiatives. Richard J. Brilli, MD, Chief Medical Officer at Nationwide Children’s, and Richard E. McClead Jr., MD, MHA, Associate Chief Medical Officer at Nationwide Children’s, will serve as co-editors-in-chief for the journal. In addition to Dr. Brilli and Dr. McClead, 10 associate editors and an editorial review board with 25 members from leading children’s hospitals from across the U.S. and around the world will oversee the editorial and online publishing. Wolters-Kluwer is the publishing company. Visit Journals.WK.com/PQS for more information.

Dr. Brilli, who also serves as professor of Pediatrics at The Ohio State University College of Medicine, is nationally known for his leadership in safety and quality initiatives. Dr. McClead, emeritus professor of Pediatrics at The Ohio State University College of Medicine, has held prominent roles in numerous quality improvement initiatives at Nationwide Children’s, many of which focused on improving outcomes in neonatology. He also presented the podcast, Children’s on Quality, for more than five years.

Researchers Receive $6.75 Million to Develop RSV Vaccine

Mark Peeples, PhD, and Octavio Ramilo, MD, both principal investigators in the Center for Vaccines and Immunity at the Research Institute at Nationwide Children’s were awarded a $6.75 million grant from the National Institute of Allergy and Infectious Diseases. The grant will be used to develop a vaccine for respiratory syncytial virus (RSV). The virus is the most common cause of bronchiolitis and pneumonia in children younger than one year of age in the United States, making it also the most frequent reason for hospitalization in that age group. Worldwide, RSV is a major cause of infant mortality.

The researchers’ goal is to develop a live, attenuated RSV vaccine that can be given as nose drops to infants, and to improve how vaccine safety and effectiveness is evaluated. Previous research has shown that RSV not only evades the body’s immune response but also suppresses it. With this funding, the multidisciplinary group of researchers can leverage this observation. By gaining a better understanding of how the body responds to RSV infection, and then modifying the components of the virus that affect this response, the researchers hope to develop an optimal live attenuated RSV vaccine.

W. Kenneth Washburn, MD, Leads Transplant Divisions

In March 2016, Nationwide Children’s Hospital and The Ohio State University Wexner Medical Center announced the joint appointment of W. Kenneth Washburn, MD, as director of transplant programs at each hospital. Dr. Washburn is the executive director of the Comprehensive Transplant Center and the Division of Transplantation Surgery at Ohio State. At Nationwide Children’s, he serves as chief of the Division of Transplantation as well as director of the new Abdominal Transplant Program. In these roles, he leads the hospital’s Pediatric Kidney Transplant Program and will establish the first Pediatric Liver Transplant Program. A national authority on liver and kidney transplantation, Dr. Washburn provides national leadership in setting transplant policy and serves on the board of directors of United Network for Organ Sharing.

Megan Letson, MD, Named Chief of Child and Family Advocacy

Megan Letson, MD, was named chief of the Section of Child and Family Advocacy, as well as medical director for the Center for Family Safety and Healing. Child and Family Advocacy, which is housed within the Center for Family Safety and Healing, comprises a team of board-certified child abuse pediatricians and advanced practice nurse practitioners who are nationally recognized experts in child maltreatment with an emphasis on physical abuse, sexual abuse and medical child abuse. The Center for Family Safety and Healing is a multidisciplinary organization that provides coordinated and comprehensive services in the prevention, diagnosis and treatment of family violence. Dr. Letson is an associate professor of Pediatrics at The Ohio State University College of Medicine, and serves as program director for the Child Abuse Pediatrics Fellowship.

Kamran Badizadegan, MD, Leads Pathology and Laboratory Medicine

Kamran Badizadegan, MD, has joined Nationwide Children’s as chief of Pathology and Laboratory Medicine. Prior to coming to Nationwide Children’s, he served as the founding chair of Pathology and Laboratory Medicine at Nemours Children’s Hospital in Orlando, Florida and a professor of Pathology at the University of Central Florida College of Medicine in Orlando. His clinical interests include gastrointestinal pathology, information sciences and diagnostic technologies. He is a member of multiple pathology-related professional societies, a reviewer for peer-reviewed medical journals, and he received the Nemours Physician Excellence Award for Quality in 2014.
Rajesh Krishnamurthy, MD, Named Chief of Radiology

Rajesh Krishnamurthy, MD, has been named the new chief of Pediatric Radiology. An expert in cultivating interdisciplinary care, Dr. Krishnamurthy brings broad clinical expertise, leadership experience and a vision for the future of pediatric radiology on the local, national and international landscape. He articulates expectations for clinical excellence, seamless integration and collaboration between all radiology services and other clinical services at Nationwide Children’s, and combines this with a strong emphasis on creativity, innovation and quality improvement. Dr. Krishnamurthy previously served as the director of research and the director of cardiovascular imaging for the Department of Radiology at Texas Children’s Hospital.

Mitchell Grayson, MD, Appointed Chief of Allergy/Immunology

Mitchell H. Grayson, MD, has joined Nationwide Children’s as chief of the Division of Allergy and Immunology. Dr. Grayson brings a strong background of nationally recognized research and leadership to Nationwide Children’s and has been a member of the Board of Directors for the American Academy of Allergy, Asthma, and Immunology since 2015. Dr. Grayson’s National Institutes of Health-funded research focuses on understanding how viral infections drive development of allergic diseases, such as asthma and food allergies, and developing novel therapies to treat these diseases. His clinical interests include the diagnosis and treatment of asthma, allergic rhinitis, angioedema and anaphylaxis.

Dean Lee, MD, PhD, Leads Cell Therapy Programs

Dean Lee, MD, PhD, has been named the director of the Cellular Therapy and Cancer Immunotherapy Program for Nationwide Children’s Hospital’s Division of Hematology/Oncology/BMT and Center for Childhood Cancer and Blood Diseases. Dr. Lee also serves as the Director of Cellular Therapy at The Ohio State University Comprehensive Cancer Center. The collaboration is dedicated to pursuing clinical trials and translational research to develop innovative immune treatments including the use of advanced cellular therapy. By combining knowledge of the immune system with the power of stem cell transplantation, advanced cellular therapy aims to enhance the body’s immune system to eliminate cancer while reducing the harmful side effects of toxic therapies.
Katherine J. Deans, MD, and Peter C. Minneci, MD

New Treatment Paradigm for Pediatric Appendicitis Care

In the first study of its kind to be conducted and published in the United States, researchers at Nationwide Children’s Hospital found that using antibiotics alone to treat children with uncomplicated acute appendicitis is a reasonable alternative to surgery when chosen by the family.

“Families who choose to treat their child’s appendicitis with antibiotics, even those who ended up with an appendectomy because the antibiotics didn’t work, have expressed that for them it was worth it to try antibiotics to avoid surgery,” said Peter C. Minneci, MD who led the JAMA Surgery study with Katherine J. Deans, MD. The pair are co-directors of the Center for Surgical Outcomes Research and principal investigators in the Center for Innovation in Pediatric Practice in The Research Institute at Nationwide Children’s.

The team found that three out of four children with uncomplicated appendicitis had been successfully treated with antibiotics alone at one year follow-up. Compared to urgent appendectomy, non-operative management was associated with less recovery time, lower health costs and no difference in the rate of complications at one year.

“We believe that the results of our study reflect the effectiveness of offering non-operative management to patients and their families in clinical practice. The patient choice design allows the patient and family’s preference to be aligned with their choice of therapy,” said Dr. Deans. “Most parents are concerned about having surgery, in general. They’re also very concerned about anesthesia. Some parents are very concerned about appendicitis coming back. It’s really a matter of aligning your preferences, your values, what you think is most important to you, with the treatment that is best for you and your family.”

In May of 2016, Nationwide Children’s was approved for a $2.9 million funding award from the Patient-Centered Outcomes Research Institute (PCORI) to expand this study across 10 pediatric institutions. If non-operative management is proven effective, more than 60,000 patients affected with uncomplicated appendicitis per year could be offered a treatment that would allow them to avoid surgery.

CITATION:
Evaluating Pay-for-Performance for Medicaid Children in an ACO

The first evaluation of a pay-for-performance (P4P) program in a pediatric, primary care setting, published in January 2016 in *JAMA Pediatrics*, shows P4P incentives were partially responsible for improvements in quality measures for Partners For Kids, the oldest and largest pediatric Medicaid accountable care organization in the United States.

Study authors from Nationwide Children’s examined a P4P physician incentive program that has been in place at Partners For Kids since 2012. Partners For Kids emerged as a leader in children’s accountable care with its five-year cost and quality outcomes shared in February 2015 in *Pediatrics*.

Nearly 3,000 primary care pediatricians were sorted into three comparison groups to observe differences in their performance on 14 incentivized and seven non-incentivized quality measures, before and after incentives were introduced. Physician classifications included employed (1,737), independent incentivized (2,032), or independent non-incentivized (2,590). Employed providers see patients for an annual salary, while independent providers bill for every visit. The study found that over the pre-and post-incentive four-year period, better scores were seen across all 21 measures for all three physician groups. However, the independent incentivized provider improvements significantly surpassed those of the non-incentivized group for seven of the 21 measures. Of those seven, five were incentivized and two were not, suggesting the program could have had its intended effect on provider performance.

“The implementation of point-of-care clinical decision support within the Electronic Medical Record likely drove a portion of these improvements,” said Sean Gleeson, MD, lead author of the *JAMA Pediatrics* study and president of Partners For Kids.

“Successful ACOs will be those who effectively engage all physicians in the process of increasing value in health care,” said Kelleher K, lead author of the *JAMA Pediatrics* study and president of Partners For Kids.

CITATIONS:

Team Wins CLARITY Undiagnosed Challenge

A team from Nationwide Children’s Hospital won the 2015 CLARITY Undiagnosed Challenge, an international competition to crack genetic codes and solve medical mysteries.

The challenge involved 26 leading genomics teams from seven countries who sought to interpret DNA sequences and provide information to five different families about their conditions that had eluded diagnosis despite multiple doctor visits, tests and genetic studies. Competitors included Stanford University, University of Southern California, Emory University and several international biotechnology institutes. Winners were announced in November 2015.

The Nationwide Children’s team – the only team from a pediatric hospital – was unanimously chosen by an independent panel of judges that included medical geneticists, computer scientists, bioinformaticians and clinical experts. Judges lauded Nationwide Children’s team for its accuracy and comprehensive approach, which produced the most reliable and clinically useful results of all the competition entrants.

Two components were essential to the Nationwide Children’s approach to the challenge: a comprehensive team of experts and a technology developed at the hospital to make genome analysis practical and accurate for clinical use.

“Our diverse team included genomic researchers, bioinformaticians, big data informatics experts, genetic counselors, medical geneticists and clinicians,” explained team leader Peter White, PhD, director of Molecular Bioinformatics and the Biomedical Genomics Core in The Research Institute at Nationwide Children’s. “Bringing these experts together was invaluable for accomplishing our goals, and more importantly for providing some answers to the families involved.”

In addition to the team of scientists and clinicians, another key factor was a novel computational technology developed by White and his team. The technology, affectionately named “Churchill,” allows efficient analysis of a person’s genome for disease-causing gene variations in less than 90 minutes with reproducible results, which makes it a highly practical option for clinical use.

Citation:

Toddler Avoids Transplant, Mended Heart is Second Chance at Life

At two years of age, Zoey Jones was told she would need a heart and lung transplant for her failing organs, a complication due to a congenital single ventricle heart defect. She was referred to Nationwide Children’s Hospital where transplant preparations began, but a second look in the catheterization lab led doctors to believe her heart and lungs were strong enough to avoid transplant altogether.

Instead, Zoey underwent the Glenn operation in 2015, the second of three surgeries to prepare her to live a normal life with her own heart. Following the procedure, Zoey experienced significant results.

“She’s like a whole new little girl,” said Tori Goddard, Zoey’s mom. The family traveled to Nationwide Children’s from their home in Tennessee. They continue to see doctors both at home and at Nationwide Children’s.

“When Zoey came to our Heart Center, we were collecting data and images for her transplant,” said Darren Berman, MD, co-director of Cardiac Catheterization and Interventional Therapy in The Heart Center at Nationwide Children’s. “In the cath lab, we found that blocking some of the blood flow to her lungs by using a vascular plug to close off one of her surgically-placed shunts lowered the pressure in her lung arteries enough that operating might be possible.”

In a discussion with Mark Galantowicz, MD, chief of Cardiothoracic Surgery and co-director of The Heart Center, the medical team decided the risks of the Glenn operation were less than those associated with heart and lung transplant.

The surgery went well, but doctors anticipated that Zoey would spend a long time in the hospital after the Glenn operation. Once again, Zoey proved them wrong. She went home in just 10 days, and doctors and her mom say she’s been thriving.

Citation:
Conjoined Twins Successfully Separated

Twin girls from Uganda, who were born joined at the pelvic and hip region, underwent a complex, 16-hour procedure at Nationwide Children’s Hospital to separate them into two distinct individuals with the opportunity to have healthy and normal lives.

The girls, Acen and Apio, were 11 months old when the procedure took place in September 2015. A surgical team of more than 30 specialists from pediatric surgery, plastic surgery, colorectal surgery, neurosurgery, anesthesiology and nursing performed the operation.

“Because of the delicate job our neurosurgeons had of separating the spinal cord, our team was assisted by neurophysiologic intraoperative monitoring and the technicians were able to tell us which muscles and nerves belonged to Acen and which belonged to Apio,” said Gail Besner, MD, chief of Pediatric Surgery. “This is the first time this specific type of monitoring has been done in a conjoined twins’ separation surgery.”

“Tissue expansion was performed during the months prior to separation in order to ensure that there was sufficient skin to cover their wounds and to complete the reconstruction,” said Richard E. Kirschner, MD, chief of Plastic and Reconstructive Surgery.

“Imaging helped guide our understanding of the twins’ anatomy,” explained Jeffrey R. Leonard, MD, chief of Neurosurgery. “Our primary concern was preservation of neurologic function so they may have adequate leg movement and bowel and bladder function once separated.”

Dr. Besner was the surgeon who separated the twins, yet even after separation, the surgery was still hours from completion. The team that was formerly huddled around one operating table divided into two and additional staff were brought in to assist in reconstruction.

Marc Levitt, MD, surgical director of the Center for Colorectal and Pelvic Reconstruction, and his team focused on making sure the girls would have fecal continence post-surgery, performing two operations for imperforate anus since neither twin was born with an anal opening. Finally, Plastic Surgery covered the wounds where they had previously been conjoined.

Gail Besner, MD

FACULTY HIGHLIGHTS

Steve Allen, MD, Chairs Children’s Hospital Association 2016 Board of Trustees

Steve Allen, MD, CEO of Nationwide Children’s, has been appointed chair of the Board of Trustees of the Children’s Hospital Association. Dr. Allen began his term as board chair on January 1, 2016. Dr. Allen has served on the board since 2011 and chaired the public policy committee and the quality and safety committee prior to being appointed chair. As CEO of Nationwide Children’s, Dr. Allen is credited with leading the hospital’s rise to national prominence. His passion for population health and wellness inspired the hospital’s 2010-2015 strategic plan to create optimal health for every child in the community. Under his leadership, Nationwide Children’s has dramatically improved immunization rates, reduced prematurity rates, decreased readmission rates and increased access to pediatric health care through the hospital’s accountable care organization.

Jonathan Groner, MD, President-Elect of Pediatric Trauma Society

Jonathan Groner, MD, has been chosen to be president-elect of the Pediatric Trauma Society, a national professional organization dedicated to improving outcomes in pediatric trauma. A pediatric surgeon whose practice is devoted to trauma, burns and general pediatric surgery, Dr. Groner is the medical director of the Level 1 Pediatric Trauma Center as well as the Center for Pediatric Trauma Research at Nationwide Children’s. He is a past president of the Central Ohio Trauma System, and served on Ohio’s Emergency Medical Services Board for five years.

Founded in 2011, the Pediatric Trauma Society strives to be a global leader in the field of pediatric trauma through optimal care guidelines, education, research and advocacy.

Insights on Neurocutaneous Syndromes


Dr. Islam, who was lead editor of the book, is co-director of the Tuberous Sclerosis Clinic at Nationwide Children’s. She is also an assistant professor of Pediatrics at The Ohio State University College of Medicine. Dr. Roach is also co-director of the Tuberous Sclerosis Clinic, chief of Neurology, and a professor of Pediatrics and Neurology at Ohio State.

Steve Allen, MD

Monica P. Islam, MD E. Steve Roach, MD
Chiari I Malformations: Advances and Challenges to Care

Neurosurgery Chief Jeffrey Leonard, MD, co-edited the book, Chiari Malformation: An Issue of Neurosurgery Clinics of North America, published in October 2015 by Elsevier. The text covers Chiari malformation – a complex structural defect in the cerebellum – in children and adults and notes that Chiari type 1 malformation (CM-1) impacts patients of all ages. In order to find the appropriate management approach for any patient with CM-1, it is essential to understand the pathophysiology, clinical presentation and radiographic findings. The book is intended to provide important information in a single, concise volume with the most recent updates from leading experts. Dr. Leonard, who is professor of Neurosurgery at The Ohio State University College of Medicine, has authored more than 75 publications, presented invited talks nationally and internationally and held leadership positions in several major neurosurgical organizations.

Dennis McTigue, DDS, Receives Distinguished Service Award

Dennis McTigue, DDS, was honored with the 2016 Distinguished Service Award from the American Academy of Pediatric Dentistry (AAPD), which represents pediatric dentists and general dentists who treat children throughout the U.S., and also serves as a recognized authority on pediatric oral health care. Dr. McTigue is a member of the dental faculty at Nationwide Children’s and a professor of Pediatric Dentistry at The Ohio State University College of Dentistry. The Distinguished Service Award, which is the AAPD’s highest honor, recognizes individuals who have made a major contribution, on a national or international level, over their entire career to advocacy for children, improvement of children’s health or to a health profession related to children.

Sue Hammond, MD, Retires Following 24 Years of Service

Sue Hammond, MD, chief of Pathology, Laboratory Medicine and Clinical Pathology at Nationwide Children’s, retired in spring 2016 after 24 years of service. Dr. Hammond, who also served as Clinical Professor of Pathology at The Ohio State University College of Medicine, is board certified in Anatomic Pathology, Clinical Pathology and Pediatric Pathology. A dedicated leader, clinician and researcher, Dr. Hammond specialized in pediatric malignancies, pediatric clinical laboratory testing, pediatric GI pathology and second malignant neoplasms. She served as the review pathologist for the Childhood Cancer Survivor Study based at St. Jude Children’s Research Hospital, an NIH-funded cohort study of 14,000 survivors of childhood cancer that helped identify secondary malignancies in nearly 2,000 participants. Dr. Hammond has also served as an alternate reviewer for the Pediatric Cooperative Human Tissue Network and the Children’s Oncology Group for soft tissue sarcomas. Other leadership and collaborative roles at Nationwide Children’s include service on the Medical Leadership Development Committee and the Hospital Quality and Performance Improvement Committee.

100 Years of Collaboration

The Ohio State University and Nationwide Children’s Hospital have a long, productive history together. It was 1916 when the OSU College of Medicine’s Department of Pediatrics first became affiliated with the small, but growing Columbus Children’s Hospital.

Since then, patient care, research and teaching programs have expanded dramatically. The depth and strength of the affiliation between OSU and Nationwide Children’s have also grown. Our predecessors would be amazed to see the tremendous achievements profiled in this report that have emerged from their vision.

Our collaborations have resulted in many outstanding clinical and research programs. The OSU Center for Clinical and Translational Science is accelerating the development of scientific discoveries into new therapies. The Primary Care Research Institute is developing innovative new approaches to children’s wellness and health care. The Ohio Perinatal Research Network is striving to become a best-in-class research program in the study of preterm birth and its prevention. Important collaborations have also occurred in regenerative medicine.

Nationwide Children’s is one of OSU’s largest medical training classrooms. At Nationwide Children’s, in fiscal year 2015:

- 173 third-year medical students completed core rotations in pediatrics
- 114 fourth-year medical students completed rotations
- 80 medical students completed required rotations (selectives)
- 34 medical students chose elective rotations

Additionally, 22 first- and second-year medical students are completing their longitudinal clinical placements (Longitudinal Practice) at Nationwide Children’s sites.

On behalf of The Ohio State University College of Medicine, I congratulate Drs. Steve Allen and John Barnard, all of the faculty and staff of the Department of Pediatrics and Nationwide Children’s Hospital for another outstanding year. The future is bright for the years ahead as we are partnering with Nationwide Children’s Hospital to bring new specialty pediatric programs to Ohio and the surrounding region.

Sincerely,

E. Christopher Ellison, MD
Interim Dean 2014-2016
The Ohio State University College of Medicine

K. Craig Kent, MD
Dean
The Ohio State University College of Medicine
Graduate Medical Education

At Nationwide Children’s Hospital, national leadership in children’s health care begins with the education of the next generation of medical professionals. This year, more than 320 residents and fellows received training at the hospital and in collaboration with regional institutions to provide trainees with diverse patient experiences. Our residents and fellows make a difference in the lives of thousands of children every day.

Residency – We provide residents with the comprehensive knowledge base and skills required to pursue rewarding careers and advance the field of pediatrics. Our residencies integrate a remarkable array of hands-on clinical and community experiences with strong mentoring by world-class faculty. Residents are expected to provide excellent patient and family focused care, demonstrate effective communications within our health care teams and have strong interests in research, quality improvement and education.

Fellowship – We offer high-quality, nationally recognized pediatric fellowship programs in a wide range of specialties. With more than 50 fellowship programs available every year, prospective fellows choose Nationwide Children’s for this next stage in their career because of the faculty and their commitment to education; the range of conditions and diversity of patients; and the resources devoted to research and education to advance the practice of pediatric medicine. Our large patient population, with significant volumes of surgical and medical patients, distinguished faculty, and outstanding academic productivity, provides fellows with the tremendous breadth of experience necessary to develop into outstanding academic pediatric specialists.

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2015 RESIDENTS:

- Categorical Pediatrics ............. 94
- Internal Medicine-Pediatrics ............. 40
- Dual Pediatrics ..................... 12

2015 SUBSPECIALTY RESIDENTS:

- Child Neurology ..................... 6
- Medical Genetics ..................... 1
- Pediatrics and Medical Genetics .... 1
- Pediatric Pharmacy .................. 5
- Pediatric Surgery .................... 2
- Sports Physical Therapy Orthopedics .... 1

2015 FELLOWSHIP PROGRAMS:

- Medical Subspecialty Programs .... 27
- Surgical Subspecialty Programs .... 12
- Hospital-Based Residency and Subspecialty Programs .......... 10
Behavioral Health Services at Nationwide Children’s Hospital is a comprehensive service line dedicated to children and adolescents suffering from mental illness and problems of emotion, behavior, development, thought and adaptation to life challenges, including disorders associated with physical illness and trauma. We are committed to partnering with patients, families and referring primary care clinicians and specialists to deliver services of public health relevance and to achieve the best possible clinical outcomes. Because no single discipline or professional can adequately address the needs of every child, our approach is deliberately multidisciplinary and collaborative.

Care is typically delivered by a team composed of a combination of child and adolescent psychiatrists, developmental and behavioral pediatricians, psychologists and neuropsychologists, nurses, social workers and counselors. By working together, we aim to deliver team-based care that transcends the work of individual professionals working alone, incorporates evidence-based practices into high-volume clinical settings and establishes high standards of quality, safety, and customer satisfaction. In addition to being one of the largest outpatient services at Nationwide Children’s, we are also the largest pediatric behavioral health network of any children’s hospital in the country with over 150,000 outpatient visits completed in the last year. By integrating clinical, educational, research and advocacy efforts, we strive to improve the lives of children and families in central Ohio and beyond. The programs within Behavioral Health Services are described below.

Developmental and Behavioral Pediatrics is a division of the Department of Pediatrics at Nationwide Children’s that addresses the emotional, developmental and behavioral needs of children and their families. Outpatient services include comprehensive care delivered by developmental and behavioral pediatricians and advanced nurse practitioners in partnership with other healthcare professionals. See page 61 for a list of faculty, selected publications and grants awarded.

The Child Development Center is an integration of the clinical activities of three entities: Developmental and Behavioral Pediatrics, Intellectual and Developmental Disability psychology (a subsection of Pediatric Psychology), and the Center for Autism Spectrum Disorders (a comprehensive community-based autism treatment program). The Child Development Center offers a wide range of services to address the developmental and behavioral needs of children, adolescents and families. The Center Development Center serves as a site for the Autism Speaks Autism Treatment Network, a network of 17 sites across the United States and Canada.

Over the past year, we have increased our capacity for interdisciplinary assessments with the addition of new psychologists, psychiatry and nurse practitioner staff. This has also increased our ability to provide ongoing medical care and medication management to children and youth with intellectual disabilities and autism disorders. We have also expanded programs such as Triple P Stepping Stones to provide behavioral interventions ranging from low to high intensity and reduce the time between diagnosis and onset of treatment.

Our faculty physicians and psychologists provide support and leadership across a number of related interdisciplinary programs, treating individuals with intellectual and developmental disabilities at Nationwide Children’s and the Nisonger Center of The Ohio State University. Our research work continues with our participation in the renewal of the Autism Intervention Research Network on Physical Health (AIR-P) for a five-year period.

Pediatric Psychology and Neuropsychology is a Section of the Department of Pediatrics at Nationwide Children’s that concentrates clinical services in two primary areas: Pediatric Psychology provides specialized assessment and intervention services that focus on the relationship between cognitive, social, and emotional functioning and physical health, typically for children with co-occurring medical conditions (e.g., cancer, diabetes, sickle cell disease). Pediatric Neuropsychology performs specialized evaluations for children and adolescents with a range of medical and neurological disorders that impact thinking or behavior (e.g., brain tumors, epilepsy, seizure disorders, traumatic brain injury). The section provides care throughout the hospital, including inpatient medical units, medical specialty outpatient clinics and the Psychology Clinic at Nationwide Children’s. Faculty members engage in a diverse range of research activities. Several faculty members are principal investigators in the Center for Biobehavioral Health in The Research Institute at Nationwide Children’s and have received funding from the National Institutes of Health for their research programs.

Our psychologists provide leadership in several programs within the Department of Pediatrics at Nationwide Children’s with roles such as director of Psychosocial Services for the Division of Hematology/Oncology/BMT at Nationwide Children’s, psychosocial leadership in areas of gastrointestinal care and the Newborn Intensive Care Unit, program leadership in the interdisciplinary feeding program for children with feeding aversions, and the comprehensive interdisciplinary pain program. Our psychologists act as liaisons to divisions within the Department of Pediatrics to provide expertise in clinical care and assist in development of research and quality initiatives around the psychosocial care for patients and families. Psychologists working in the Child Development Center are also part of the Section and Division of Psychology.

A variety of training programs exist within Pediatric Psychology and Neuropsychology, including a pediatric practicum program for psychology graduate students from regional universities, an internship in professional psychology accredited by the American Psychological Association and postdoctoral fellowships in pediatric neuropsychology and pediatric psychology. See page 105 for a list of faculty, selected publications and grants awarded.

Psychiatry and Community Behavioral Health is the largest and most clinically diverse section of Behavioral Health. This integrated program of care for pediatric mental disorders was created via collaboration between Nationwide Children’s and The Ohio State University Wexner Medical Center. Services now available include pediatric crisis assessment and treatment services with an expanded Youth Crisis Stabilization Unit at Nationwide Children’s, consultation-liaison services for youth hospitalized at Nationwide Children’s, psychiatric inpatient beds at Nationwide Children’s and Ohio State University’s Harding Hospital; Adolescent Intensive Outpatient Programs at Ohio State; multiple levels of care for eating disorders in collaboration with Adolescent Medicine; the Mood and Anxiety Program with intensive outpatient services; intermediate levels of behavioral health care in the community, courts and schools; a multi-disciplinary treatment program and a novel program to integrate mental health service delivery in primary care settings. Our psychiatry services have also expanded with the opening of our newest outpatient clinic at the Westerville Close To Home Center at 185 W. Schrock Road. In June, Nationwide Children’s announced the details of the phase two master facilities plan, a centerpiece of which is a new, freestanding facility fully dedicated to children and adolescents with mental and behavioral health conditions. As the most comprehensive facility of its kind nationally, the new Behavioral Health Pavilion will house integrated behavioral health services including inpatient beds, a crisis evaluation center with observation beds, a crisis stabilization unit and outpatient programs. The pavilion will serve as a place to train the wide range of disciplines in pediatric mental and behavioral health as well as foster collaboration with Nationwide Children’s research teams and community partner agencies. See page 118 for a list of faculty, selected publications and grants awarded.

Center for Biobehavioral Health: See page 152 for information about the Center for Biobehavioral Health in the Research Institute at Nationwide Children’s Hospital.

TOTAL OF GRANTS AWARDED TO CLINICAL AND RESEARCH FACULTY July 1, 2015 – June 30, 2016 $2,553,506

TOTAL INPATIENT VISITS/CONSULTS: 173,199

TOTAL INPATIENT DISCHARGES: 4,182

TOTAL INPATIENT DAYS: 7,707

FAST FACTS

July 1, 2015 through June 2016

Total Outpatient Visits/Consults: 173,199

Total Inpatient Consults: 4,182

Total Inpatient Discharges: 4,182

Total Inpatient Days: 7,707
HEALTHY WEIGHT AND NUTRITION

The Center for Healthy Weight and Nutrition at Nationwide Children’s Hospital offers a comprehensive approach to weight management programs for both the prevention and treatment of overweight children. One component of the center focuses on programs for the home, school, and community environments in order to ensure the development of healthy lifestyles.

FACULTY

Ihseena U. Eneli, MD, MS, FAAP
Director

FULL-TIME NATIONWIDE CHILDREN’S FACULTY

Aarti Chandawarkar, MD
Carolyn Gunther, PhD
Marc P. Michalsky, MD
Phyllis Jo Polas, DO
Amy R. Sternstein, MD, FAAP
Marnie Wagner MD

As a resource for families and community physicians, the center offers medical assessment clinics for evaluation of overweight children. The center provides a variety of multidisciplinary programs with a physician, psychologist, dietitian, physical therapist and athletic trainer for intensive weight management. In addition, the Center for Healthy Weight and Nutrition offers three bariatric surgery options for those who meet the criteria: the traditional gastric bypass surgery, the new adjustable gastric band surgery, and, most recently, gastric sleeve surgery, which involves significantly reducing the size of the stomach. In 2015, the center became the first nationally accredited adolescent bariatric surgery program in the United States.

The center remains committed to providing educational opportunities at all levels and in several specialties including, a fourth-year medical student elective, a residency elective rotation and a bariatric surgery fellowship. In addition, the center provided training and support to obesity programs around the United States. Finally, the center has received funding for several cutting-edge research efforts on the long-term outcomes of adolescent bariatric surgery, use of protein sparring modified fast for severe obesity, improved care for Latino populations, and risk for obesity, maternal-child feeding dynamics, and the role of psychosocial factors in the development of obesity. The center has also received funding for several cutting-edge research efforts on the long-term outcomes of adolescent bariatric surgery, use of protein sparring modified fast for severe obesity, improved care for Latino populations, and risk for obesity, maternal-child feeding dynamics, and the role of psychosocial factors in the development of obesity.
Clinicians from The Heart Center at Nationwide Children's Hospital and The Ohio State University Wexner Medical Center described the first implantable hemodynamic monitor (IHM) placement in single ventricle Fontan anatomy in a case series published in \textit{Catheterization and Cardiovascular Interventions}. To date, Nationwide Children's is the first pediatric hospital to perform the procedure, while Ohio State's Wexner Medical Center is the first hospital to perform the procedure in a Fontan patient.

While the Fontan procedure has improved the short- and mid-term outcomes for patients born with single ventricle anatomy, long-term complications of Fontan circulation include heart failure. These complications are thought to be secondary to elevated central venous pressure, chronic venous congestion and low cardiac output. This pressure gradient between central venous pressure and a combination of ventricular end diastolic pressure and resistance of flow across the pulmonary vascular bed is critical to cardiac output, according to clinicians from The Heart Center.

Two patients with single ventricle anatomy and Fontan physiology, both with New York Heart Association (NYHA) functional class III heart failure, were implanted with the CardioMEMS® HF System by Darren Berman, MD, co-director of Cardiac Catheterization and Interventional Therapy, and Curt Daniels, MD, director of Adolescent and Adult Congenital Heart Disease, both at The Heart Center at Nationwide Children's.

"Noninvasive studies are unable to determine pressures in Fontan anatomy, thus limiting physicians' understanding of the changes in pressure for a Fontan patient in heart failure," says Dr. Daniels. "Recently, implantable hemodynamic monitors have been used to monitor pressures in patients with left heart disease, and we have shown early safety and feasibility of placement of the IHM in these two cases."

Real-time pulmonary artery catheter tracings were shown to correlate with IHM tracings in Fontan anatomy, and home transmission of the IHM readings were successful. The team will follow these patients to monitor long-term safety, which includes assessment for pulmonary arterial thrombus, and they are hopeful that this will translate to improvements in fluid balance and heart failure symptoms, as well as reduced hospital admissions.

"Our ultimate goal is to improve care for patients with congenital heart disease," says Dr. Daniels. "We are excited to be leading the change to incorporate the use of this tool to learn more about the hemodynamic changes in real life ambulatory situations in Fontan patients."

\textbf{CITATION:}
THE HEART CENTER
The Heart Center at Nationwide Children’s Hospital combines all clinical and research disciplines under one umbrella in order to meet our mission. We are out in front by discovering the causes of disease heart and developing the therapies of the future for our patients by focusing on them one at a time and providing state-of-the-art care that all patients deserve, regardless of age. We support Nationwide Children’s mission to provide our services in a safe environment.

FACULTY

Mark E. Galantowicz, MD
Co-Director
Chief, Cardiovascular Surgery

John P. Cheatham, MD
Co-Director
Cardiac Catheterization and Interventional Therapy

Drew A. Ammons, MD
Aimee Armstrong, MD
Carl H. Backes, MD
Sara Khan, MD

Timothy F. Felix, MD
Co-Director
Chief, Pediatric Cardiology

Aymen N. Naguib, MD
Christopher T. McKee, DO
Patrick I. McConnell, MD

Christina M. Phelps, MD
NATIONWIDE CHILDREN’S HOSPITAL

Daniel G. Rowland, MD
Toshiharu Shinoka, MD, PhD
Janet M. Simsic, MD
Corey Striver, MD

Andrew R. Yates, MD

NATIONAL AND INTERNATIONAL REPUTATION
The Heart Center continues to be recognized as a top congenital heart program in U.S. News & World Report. We remain actively engaged in highly cited research with over 100 publications and an impact factor of 4.529 publication. Our clinical volume saw record growth with over 500 cardiac surgeries performed in 2015 and nearly 15,000 outpatient visits.

In 2015, we recruited Rob Gajarski, MD, as the medical section chief. Dr. Gajarski is internationally recognized as a leader in pediatric heart transplant and heart failure, quality improvement and health care policy. Aimee Armstrong, MD, also joined The Heart Center in 2015 as director of Cardiac Catheterization and Interventions. Dr. Armstrong brings her experience in fetal cardiac interventions. Elisa Bradley, MD, joined us as an adult congenital heart cardiologist with a research focus.

Vida Gag, MD, became the director of the Center for Cardiovascular Research in the Research Institute at Nationwide Children’s. Under his direction, our center has seen record high National Institutes of Health (NIH) prime funding.

Many of our faculty were recognized in 2015 for their national and international leadership, including Karen Teixer, MD, who won the Junior Faculty Leadership Award in the Department of Pediatrics, while John Cheatham, MD, received the Master Fellow Award from the Society for Cardiovascular Angiography and Intervention. Our faculty serve in many capacities on a national level as evidenced by this partial listing:
• Curtis Daniels, MD, Chair, American Board of Internal Medicine Adult Congenital Sub-Board

Robert Gajarski, MD, Senior Vice Chair of Pediatrics, Executive Committee of the American Board of Pediatrics
• Andy Yates, MD, NIH Collaborative Pediatric Critical Care Research Network Steering Committee
• John Cheatham, MD, Nationwide Children’s Associate Administrative Medical Director

Center for Cardiovascular Research: See page 153 for information about the Center for Cardiovascular Research in the Research Institute at Nationwide Children’s Hospital.

TOTAL OF GRANTS AWARDED TO HEART CENTER AND CARDIOVASCULAR RESEARCH FACULTY

JULY 1, 2015 – JUNE 30, 2016

$2,608,190

SELECTED HEART CENTER PUBLICATIONS


### CLINICAL FAST FACTS

**July 2015 through June 2016**

<table>
<thead>
<tr>
<th>Department</th>
<th>Inpatient Discharges</th>
<th>Observation and Outpatient-in-a-Bed Discharges</th>
<th>Total Discharges</th>
<th>Average Length of Stay</th>
<th>Average Daily Census</th>
<th>Total Patient Days</th>
<th>Cardiac ICU</th>
<th>Cardiac ICU Inpatient Discharges</th>
<th>Average Length of Stay</th>
<th>Average Daily Census</th>
<th>Total Patient Days</th>
<th>Total Cardiology Clinic Visits</th>
<th><em>Excludes observation and outpatient-in-a-bed patients.</em></th>
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</thead>
<tbody>
<tr>
<td>Heart Center Inpatient/Observation</td>
<td>773</td>
<td>487</td>
<td>1,260</td>
<td>12.8</td>
<td>27.1</td>
<td>9,900</td>
<td>Cardiac ICU</td>
<td>888</td>
<td>4.9</td>
<td>11.9</td>
<td>4,249</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observation and Outpatient-in-a-Bed Discharges</td>
<td>773</td>
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<td>4.9</td>
<td>11.9</td>
<td>4,249</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Heart Center Inpatient/Observation**

- Inpatient Discharges: 773
- Observation and Outpatient-in-a-Bed Discharges: 487
- Total Discharges: 1,260
- Average Length of Stay: 12.8
- Average Daily Census: 27.1
- Total Patient Days: 9,900

**Cardiac ICU**

- Inpatient Discharges: 888
- Average Length of Stay: 4.9
- Average Daily Census: 11.9
- Total Patient Days: 4,249
- Total Cardiology Clinic Visits: 11,099

**Blood and Marrow Transplant Program**

- Dayton Cardiology Clinic Visits: 221
- East Broad Cardiology Clinic Visits: 139
- Findlay Cardiology Clinic Visits: 76
- Innton Cardiology Clinic Visits: 92
- Kawasaki Clinic Visits: 112
- Lima Cardiology Clinic Visits: 424
- Mansfield Cardiology Clinic Visits: 222
- Marietta Cardiology Clinic Visits: 209
- Marien Cardiology Clinic Visits: 213
- Portsmouth Cardiology Clinic Visits: 168
- Westerville Cardiology Clinic Visits: 478
- Zanesville Cardiology Clinic Visits: 302

**Total Cardiology Clinic Visits:** 15,303

**PROGRAM LEADERSHIP**

- **W. Kenneth Washburn**
  - Director
  - Abdominal Transplant

- **Rolla F. Abu-Arja, MD**
  - Clinical Director
  - Blood and Marrow Transplant Program

- **Mark E. Galantowicz, MD**
  - Surgical Director
  - Heart Transplant, Lung Transplant, and Heart-Lung Transplant Programs

- **Don Hayes Jr., MD, MS, MEd**
  - Medical Director
  - Lung Transplant and Heart-Lung Transplant Programs

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**TRANSPLANT**

The transplant programs at Nationwide Children’s Hospital provide comprehensive services to patients locally, nationally and internationally.

The Blood and Marrow Transplant (BMT) Program uses a family-centered care model in treating children with cancer, inherited immuno-deficiencies, blood disorders and metabolic/genetic disorders. The BMT Program is committed to utilizing hematopoietic cell transplantation as the definitive cure for pediatric and young adult patients with malignant and nonmalignant disorders. Our team is dedicated to optimizing clinical applications of BMT by reducing transplant-associated morbidity and mortality through novel therapies and approaches.

Our Kidney Transplant Program provides comprehensive care for children and adolescents with congenital and acquired kidney and urinary tract disorders leading to end-stage renal disease.

Heart transplants are available for patients with end-stage cardiac failure refractory to medical therapy. Lung transplants are available for patients with advanced pulmonary disease that cannot be treated adequately by traditional means. Heart-lung transplant is available in situations where long-standing heart disease has damaged the lungs to the point that a heart transplant alone would not succeed. Heart-lung transplant may be performed in patients with advanced pulmonary vascular disease or congenital heart disease.
Heart/Lung/Heart-Lung Transplant Program
All thoracic transplant programs are certified by the United Network for Organ Sharing (UNOS), approved by the Ohio Department of Health and Human Services and accepted into the Ohio Solid Organ Transplant Consortium. The thoracic organ transplant program also entails a comprehensive heart failure service and an advanced lung disease program. These programs are enhanced by the mechanical circulatory assist devices that, through innovation, provides state-of-the-art ventricular assist-device support as a bridge to transplant or recovery in selected patients with heart failure as well as ambulatory extracorporeal membrane oxygenation for some patients with end-stage pulmonary disease as a bridge to lung transplant.

Kidney Transplant Program
Kidney transplants are available for children with end-stage kidney disease, whether they are receiving chronic dialysis therapy or close to needing dialysis. Living- and deceased-donor kidney transplantation are both available. The Kidney Transplant Program at Nationwide Children’s is certified by UNOS and the Centers for Medicare and Medicaid Services.

Blood and Marrow Transplant Program
The Blood and Marrow Transplant (BMT) Program at Nationwide Children’s is affiliated with the National Marrow Donor Program (NMDP) and is accredited by the Foundation for Accreditation of Cellular Therapy (FACT). The BMT program is a participating member of the Children’s Oncology Group (COG), Pediatric Blood and Marrow Transplant Consortium (PBMT), and the Blood and Marrow Transplant Clinical Trials Network (BMT CTN). The program actively collaborates in cutting-edge research and investigator-initiated clinical trials with The Ohio State University Comprehensive Cancer Center. Autologous and allogeneic hematopoietic cell transplantation is performed for malignant and nonmalignant disorders in pediatric, adolescent and young adult (AYA) patients. All stem cell sources (peripheral blood, bone marrow, and umbilical cord blood) are administered from related or unrelated donors, including haploidentical donors. The BMT program is supported by the FACT-accredited ApheMS Program at Nationwide Children’s and the Cell Therapy Laboratory at The James Cancer Hospital and Solove Research Institute at Ohio State University.

In the last year, our supportive care services have expanded to include extracorporeal photopheresis (ECP) for patients with chronic graft-vs-host disease through our ApheMS Program. Our BMT Program has experienced unprecedented growth by active networking with regional partners and utilization of a streamlined referral process. We have also welcomed Dean A. Lee, MD, PhD, as director of the Cellular Therapy and Cancer Immunotherapy Program, a clinical and translational research partnership between Nationwide Children’s Hospital and The Ohio State University Comprehensive Cancer Center. Such novel treatment as immune-directed cellular therapy will transform the post-transplant landscape by improving transplant patient outcomes.

SELECTED PUBLICATIONS


Cell therapy programs include theCell Therapy Laboratory at The James Cancer Hospital and Solove Research Institute at Ohio State University.

FAST FACTS
July 2015 through June 2016

Blood and Marrow Transplants:

<table>
<thead>
<tr>
<th>Heart</th>
<th>Lung</th>
<th>Kidney Transplants</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

2015-16 Annual Report

Nationwide Children’s Hospital

2015-16 Annual Report
Department, Section and Center Reports

TRAUMA

Nationwide Children’s Hospital is one of the largest Level 1 Pediatric Trauma centers in the nation to be verified by the American College of Surgeons. We are also one of the few pediatric burn centers in the United States to be verified by the American Burn Association. The trauma program provides clinical care for injured children, a robust quality improvement program to ensure that highest quality of care is provided, and research to improve outcomes through the Center for Pediatric Trauma Research at Nationwide Children’s. Our nationally recognized trauma and burn service provides care for injured children from infancy to adolescence. Pediatric trauma experts are involved in all aspects of patient care, including pre-hospital, Emergency Department, inpatient, operative management and rehabilitation. Our multidisciplinary approach allows us to provide trauma patients with exceptional care. Our center serves as a resource for injury prevention and education for our primary service area and beyond.

FACULTY

Jonathan I. Groner, MD
Medical Director

Kathryn E. Nuss, MD
Associate Medical Director

Rajan Thakkar, MD
Associate Surgical Trauma Medical Director; Associate Burn Medical Director

Renta Fabia, MD
Burn Medical Director

Huiyun Xiang, MD, MPH, PhD
Director

Julie Leonard, MD, MPH
Associate Director

TRAUMA SURGEONS

Jennifer H. Aldrink, MD
Gail E. Besner, MD
Christopher K. Breuer, MD
Katherine J. Draho, MD
Karen A. Diefenbach, MD
Renata B. Fabia, MD, PhD
Brian D. Kenney, MD, MPH
Denis R. King, MD
Marc A. Levitt, MD
Marc P. Michalsky, MD
Peter C. Minneci, MD
R. Lawrence Moss, MD
Benedit C. Niwomeh, MD
Richard Wood, MD

PHYSICIAN TRAUMA LIAISONS

Allan Beebe, MD (Orthopaedics)
Greg Cambier, MD (Anesthesia)
Marcel Casavant, MD (Pharmacist)
Maria Estrada, DO (Critical Care)
Mark Hogan, MD (Radiology)
Jeff Lumney, MD (Critical Care)

David Martin, MD (Anesthesia)
Ellen McManus, MD (Emergency Medicine)
Danial Scheurer, MD (Emergency Medicine)
Eric Srobnik, MD (Neurosurgery)

TRAUMA PROGRAM MANAGER

Kathy Haley, MS, RN

Highlights from the past year:

• Initiation of a Trauma Clinic at Nationwide Children’s to provide outpatient follow-up for injured children
• Election of Jonathan Groner, MD, as incoming president of the Pediatric Trauma Society
• Over 500 car seats provided for Nationwide Children’s patients; numerous seats correctly fitted into vehicles that transport patients
• Level 1 Pediatric Trauma Center re-verification by the American College of Surgeons – only pediatric center in Ohio to have that distinction for over 25 years
• Re-verification as a Pediatric Burn Center by the American Burn Association

The Trauma team provides expertise and leadership locally through the Central Ohio Trauma System and nationally through the Pediatric Trauma Society, the Verification Review Committee of the American College of Surgeons and multiple national speaking engagements.

CENTER FOR PEDIATRIC TRAUMA RESEARCH

RESEARCH CENTER FACULTY

Huiyun Xiang, MD, MPH, PhD
Director

Jonathan I. Groner, MD
Medical Director

Julie Leonard, MD, MPH
Associate Director

Kathryn E. Nuss, MD
Associate Medical Director

Rajan Thakkar, MD
Associate Surgical Trauma Medical Director; Associate Burn Medical Director

Renta Fabia, MD
Burn Medical Director
The Center for Pediatric Trauma Research (CPTR) at Nationwide Children’s Hospital conducts research to support global efforts in achieving the best outcomes for pediatric trauma patients. Using a multidisciplinary approach, CPTR researchers lead innovative projects to assess pre-hospital emergency medical service, acute medical and surgical management, rehabilitation, and family and community services that impact the short- and long-term outcomes of injured patients.

Major Accomplishments

- Julie Leonardi, MD, received funding from the National Institutes of Health (NIH) for a pilot study to develop a pediatric cervical spine injury risk assessment tool.
- Ginger Yang, MD, received funding from the Robert Wood Johnson Foundation to evaluate youth sports TBI laws and measure the public health impact on initial and recurrent concussions.
- Jonathan Groner, MD, was awarded NIH funding as a site principal investigator on a project examining implementation science to increase use of evidence-based pediatric brain injury guidelines.
- Rajan Thakkar, MD, established a translational research lab to evaluate the innate immune response to severe pediatric thermal injury.
- Huiyun Xiang, MD, received funding from the federal Health Resources and Services Administration to examine undertriage rates and transfer patterns of pediatric major trauma patients within statewide trauma systems in the United States.

TOTAL OF GRANTS AWARDED
JULY 1, 2015 – JUNE 30, 2016

Trauma-related research funding spans multiple centers, which include Emergency Medicine, Pediatric Surgery, Center for Injury Research and Policy, and Center for Biobehavioral Health.

$1,209,524

SELECTED PUBLICATIONS


FAST FACTS

July 2015 through June 2016

| Admissions: | 1,091 |
| Patient Days: | 4,186 |
| Average Length of Stay: | 2.0 |
| Blunt Injury Admissions: | 1,329 |
| Penetrating Injury Admissions: | 133 |
| Burn Injury Admissions: | 103 |
| Asphyxial Injury Admissions: | 36 |
| Orthopedic Trauma Admissions: | 680 |
| Neurosurgery Trauma Admissions: | 129 |
| Pediatric Surgery Trauma Admissions: | 722 |
| Other Service Trauma Admissions: | 160 |
The Department of Anesthesiology and Pain Medicine at Nationwide Children’s Hospital consists of fellowship-trained pediatric anesthesiologists who provide anesthesia and pain-management services for pediatric patients of all ages, from neonates through adolescents, requiring all types of surgical procedures, procedural sedation outside the operating room, acute and chronic pain management, and palliative care.

Renata Mikertic, MD
Veronica Miller, MD
Alok Medani, MD
Ayman Naguib, MD
Vidya Ramam, MD
Haleh Saadat, MD
Devin Sanders, MD
Brian Schliss, MD
Robby Sebastian, MD
Megan Smaley, DDS
Timothy Smith, MD
Ahsan Syed, MD
Arlyne Thung, MD
Joshua Ullman, MD
Giorgio Veneziano, MD
Samantha Vizzini, MD
Tariq Wani, MD
Emmett Whitaker, MD
Peter Winch, MD
Arvid Yang, MD

The department includes 41 pediatric anesthesiologists and 42 certified registered nurse anesthetists who provide care at 60 sites per day; a division of cardiac anesthesia that includes six physicians dedicated to the care of patients with acquired and congenital heart disease; an in-house, attending pediatric anesthesiologist available 24 hours a day, seven days a week; and an active acute pain service that provides pain-management services, including novel pharmacologic agents in the pediatric population. Research interests and recent publications from the pediatric cardiac anesthesia faculty, who last year published more than 60 manuscripts in peer-reviewed journals, include methods developed to limit blood transfusions for patients undergoing cardiac bypass, and the neurodevelopmental outcomes of infants following cardiac surgery.

In cooperation with the Section of Urology, the department initiated a spinal anesthesia program that uses spinal anesthesia instead of general anesthesia for many surgical procedures in neonates and infants. We are planning to open two additional operating room sites in spring 2017, and we are developing a liver transplantation program. There is anticipated growth of chronic pain services and complementary and alternative medicine services with expansion of the availability of acupuncture, clinical hypnosis, guided imagery and other services, including development of an intense rehabilitation services program for pediatric patients with complex pain issues.

### TOTAL OF GRANTS AWARDED

**JULY 1, 2015 - JUNE 30, 2016**

$50,000

### SELECTED PUBLICATIONS


Paediatric Anaesthesia.
The Department of Pathology and Laboratory Medicine at Nationwide Children's Hospital provides a wide range of pediatric diagnostic services for hospitalized and ambulatory infant, children and adolescent patients through its main campus Section of Anatomic Pathology, clinical laboratories and outpatient/ reference laboratory testing facilities as well as Nationwide Children's Close To Home™ Centers.

FACULTY

Kamran Badizadegan, MD
Incoming Chief

Sue Hammond, MD
Chief

Kathleen K. Nicol, MD
Ruthann Plau, PhD
Christopher R. Persoon, MD, PhD
Vinay Prasad, MD
Robert E. Pritt, MD
Amy Pyle-Eshle, PhD
Nila Del Carmen Ramirez-Milan, MD
Salkini C. Redmini, PhD
David J. Thornton, PhD

Laboratory sections include the Core laboratory (chemistry and hematology), STAT labs, blood bank, microbiology and virology, cytogenetics, molecular genetics, metabolic disease testing, toxicology, surgical pathology, autopsy service, point-of-care testing and the reference laboratory. These laboratory services are designed to optimize the entire process of specimen collection and transport, laboratory testing, and reporting of results with the ordering physician to ensure appropriate interpretation. Methods for specimen collection and testing are designed to minimize the amount of sample required, and test results are reported with corresponding pediatric-specific reference ranges. We continued to expand our off-site services and currently have 20 Laboratory Service Centers throughout Ohio.

A professional staff of 20 full-time pathologists and doctoral scientists is available for discussion of any aspect of laboratory testing. Twelve pathologists have American Board of Pathology certifications, six with subspecialty Board of Pathology certifications, six with subspecialty

Julie M. Gaston-Foster, MD, directs the Biospecimen Core Resource operation at Nationwide Children’s, supporting The Cancer Genome Atlas project of the National Institutes of Health (NIH) with funding of approximately $10 million per year. Nila Ramirez, MD, directs the comprehensive Biopathology Center (BPC) at Nationwide Children’s, an accredited biobiosesty currently housing the Children’s Oncology Group biobank and other National Cancer Institute-supported biobanks. The BPC receives more than $15 million annually from NIH.

TOTAL OF GRANTS AWARDED

JULY 1, 2015 – JUNE 30, 2016

$12,205,167

SELECTED PUBLICATIONS


JULY 1, 2015 – JUNE 30, 2016

$12,205,167

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NATIONWIDE CHILDREN’S HOSPITAL

ADOLESCENT MEDICINE

The Section of Adolescent Medicine at Nationwide Children’s Hospital provides general and specialty care for adolescents. The staff is expert in all aspects of health care for adolescents, with an emphasis on comprehensive primary care, reproductive health care, eating disorders, LGBTQ youth, substance abuse, health for incarcerated youth, and adolescents with complex health problems.

FACULTY

Steven C. Matson, MD
Chief
Elie D. Belan, MD, MPH
Andrea E. Bonny, MD
Gayathri Chebukumad, MD
Casey B. Carroll, MD, MPH
Fareda W. Haamid, DO
Cynthia M. Holland-Hall, MD, MPH
Erin R. McKnight, MD, MPH

Primary care patients are seen in the Adolescent Medicine Clinic at 495 E. Main St. Consultative clinics are offered for adolescents with gynecologic and reproductive health needs, menstrual bleeding disorders and addiction. The Medical Clinic at the Franklin County Juvenile Detention Facility provides all of the health care needs for youth detained there. The Eating Disorders Program at Nationwide Children’s is a joint endeavor between Adolescent Medicine and Behavioral Health. The staff include Adolescent Medicine physicians, a psychiatrist, counselors, nurses, dietitians and a chef. The levels of care available include partial hospitalization, intensive outpatient therapy, and individual assessments and counseling. The Medication Assisted Treatment for Addiction Program has been helping opioid-addicted adolescents and young adults since 2007. More than 500 patients with opioid and heroin addiction have been treated with substitution therapy using buprenorphine. The BC4Tems Program is providing increased availability of long-acting reversible contraception, including Nexplanon and IUDs. The THRIVE Program at Nationwide Children’s is a multidisciplinary team composed of members from Psychiatry, Behavioral Health, Endocrinology, Adolescent Medicine and Social Work that provides comprehensive care to transgender and gender nonconforming youth. The LGBT Program has adolescent medicine staff working to increase outreach and medical care to LGBT youth in Columbus. Physicians in the section also provide ongoing and consultative care for adolescents who have been admitted to Nationwide Children’s with diverse medical problems such as complicated gynecological conditions and medical complications from eating disorders. An Accreditation Council for Graduate Medical Education Fellowship in Adolescent Medicine has been in place since 2010. We have graduated three fellows, and two of them joined our faculty this past year. One new fellow started in July 2016, and we have two second-year fellows. Faculty awards included Andrea Bonney, MD, receiving the AAMC Minority Faculty Career Development Seminar Scholarship Award from The Ohio State University and the Evelyn G. Laufer Career Development Seminar Scholarship Award from the American Society for Pediatric and Adolescent Gynecology. The Ohio State University and the Evelyn G. Laufer Career Development Seminar Scholarship Award from the American Society for Pediatric and Adolescent Gynecology Annual Clinical and Research Meeting. Elie Belan, MD, received the Champion of Healthcare Award from Columbus Business First and placed second in the Best Poster Competition at the North American Forum on Family Planning.

TOTAL OF GRANTS AWARDED
JULY 1, 2015 – JUNE 30, 2016

<table>
<thead>
<tr>
<th>Grant Type</th>
<th>Total Amount</th>
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<tbody>
<tr>
<td>Federally Funded</td>
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SELECTED PUBLICATIONS


FAST FACTS

July 2015 through June 2016

<table>
<thead>
<tr>
<th>Department/Section/Center</th>
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<tr>
<td>Adolescent Medicine Clinic Visits:</td>
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<tr>
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<td>131</td>
</tr>
<tr>
<td>Adolescent Medicine Eating Disorders Visits:</td>
<td>2,568</td>
</tr>
<tr>
<td>Maternal Recovery Clinic Visits:</td>
<td>890</td>
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<tr>
<td>Dublin Adolescent Medicine Clinic Visits:</td>
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<tr>
<td>Adolescent Medicine Contraception Clinic Visits:</td>
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<td>Total Adolescent Medicine Clinic Visits:</td>
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<tr>
<td>Mobile Outreach Adolescent Medicine Clinic Visits:</td>
<td>16</td>
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<tr>
<td>Inpatient Consults:</td>
<td>47</td>
</tr>
<tr>
<td>Columbus City Schools Adolescent Medicine Clinic Visits:</td>
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ADOLESCENT MEDICINE

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ALLERGY AND IMMUNOLOGY

The Section of Allergy and Immunology at Nationwide Children's Hospital provides comprehensive services for the diagnosis and treatment of patients with allergic and immunologic diseases from birth through age 21. The section participates in an active outpatient clinic program that includes several multispecialty clinics and an urgent referral clinic. The section also provides inpatient consultation services.

OSU-AFFILIATE FACULTY

Casey Curtis, MD
Princess U. Ogbogu, MD
Rakha Ravendran, MD

The Section of Allergy and Immunology includes nine full-time faculty, three affiliate physicians from The Ohio State University Wexner Medical Center, four community-based physicians and two advanced practice nurses. Outpatient clinic locations include Nationwide Children’s main campus and both the Westerville and Hilliard Close To Home Centers. Our providers manage a wide range of allergic conditions including asthma, allergic/non-allergic rhinitis, chronic sinusitis, hives, eczema, angioedema, drug and food allergies, frequent respiratory infections, latex allergy and stingling insect allergy. We provide allergy skin testing; allergy immunotherapy; arsna education/management plans; pulmonary function testing; comprehensive food allergy management, including oral food challenges, and drug allergy testing. We also evaluate children with recurrent or unusual infections and provide complete evaluation and management for those with primary immunodeficiency disorders.

The faculty participates in the Complex Asthma and 22q11 clinics at Nationwide Children’s as well as in multispecialty clinics with other disciplines, including Hematology/Oncology, Otolaryngology (ENT), Dermatology and Gastroenterology. Our section provides inpatient consultation and immediate assistance for health care providers through the physician consult-transfer center. Section members are involved in a wide array of research activities, including multicenter projects. Areas of research include eosinophilic esophagitis, food allergy, traditional and novel immunotherapy techniques, use of technology to improve patient outcomes, primary immunodeficiency, asthma and both allergic and non-allergic rhinitis.

The Allergy and Immunology faculty provides clinical and didactic instruction for The Ohio State University and Nationwide Children’s Allergy and Immunology Fellowship Program, the Nationwide Children’s Pediatric Residency Program and students from The Ohio State University College of Medicine. Faculty and fellows have leadership positions in national allergy and immunology organizations and are invited speakers at local, regional and national conferences.

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SELECTED PUBLICATIONS


Department, Section and Center Reports

AMBULATORY PEDIATRICS

Pediatricians in the Section of Ambulatory Pediatrics at Nationwide Children’s Hospital staff the thirteen Nationwide Children’s Hospital Primary Care Centers located throughout the Columbus area. A multidisciplinary staff provides comprehensive primary care services for a diverse, underserved population of patients. Urgent care services are also provided on the main campus.

FACULTY

Olivia W. Thomas, MD
Chief

Mary Ann Abrams, MD
Ogheneewitiri Akpovwo, MD
Razan Alkhoury, MD
Wendy K. Anderson-Willis, MD
Jayne Barr, MD
Rakhi Gupta Basuray, MD
Kristen Beck, MD
Jennifer Benjamin, MD
Stefanie R. Bester, MD
Brian K. Bowden, MD
Megan Brundrett, MD
Carrie E. Cacioppo, MD
Nicole V. Caldwell, MD
Rachel Campbell, MD
Lauren Carlyle, MD
Milagro P. Castaneda-Viduarre, MD
Aarti Chandawarkar, MD
Linda E. Chun, MD
Katharine Coffman, MD
Craig J. Conard, MD, MPH
Duane R. Copenhagen, DO

William H. Cotton, MD
Ann Crickard, DO
Steven C. Cuff, MD
Melissa Davis, MD
Emily A. Decker, MD
Lois R. Deutch, MD
Tiazi DeVoe, MD
Simmi Dogra, MD
Antoinette P. Eaton, MD
Najwa E. Eldahdah, MD
Iluoma U. Eneli, MD
Susan Friedman, MD
Barbara B. Galantowicz, MD
Lisa A. Gichner, MD
Sean P. Glenson, MD
M. Jane Goldman, MD
Rebecca Grant, MD
Judith A. Gruner, MD
Ghazala Gud, MD
Una Gupta, MD
Jennifer A. Haase, MD
Christopher Hanks, MD
Malika Haque, MD
Allison Heacock, MD
Stephen J. Hersey, MD
Scott Holliday, MD
Candace A. Howell, MD
Lisa Humphrey, MD
Aurelia J. Jackson, MD
Shawn P. Jacquemin, MD
Iram Jafri, MD
Janice James, MD
Sinimol James, MD

Stephen Johnson, MD
Angela V. Jones, MD
Tabitha Jones-McKnight, DO
Raquel M. Jostpille, MD
Tatyana Karakay, MD
Kathi Kemper, MD
James R. Knight, MD
Jack A. Kopchek, MD
Mary Kay Kuuma, MD
Kristina Lehman, MD
Kerren R. Leymaster, MD
Jonathan T. Lucas, MD
Mary A. McIlroy, MD
Lucas McKnight, MD
Douglas J. McLaughlin, MD
Shengyi Mao, MD
Laura Marin, MD
George Messick, MD
Melissa A. Meyer, MD
Belinda M. Mills, MD
Asma Mobin-Uddin, MD
Lauren Morea, DO
Jill Neff, DO
Mary A. Nelin, MD
Barbara Oettgen, MD
Michele Oyorety, MD
Alpa V. Patel, MD
Jan E. Perry, MD
Cheryl R. Pippus, MD
Laura Padhra, MD
Phyllis Polas, DO
Alexander T. Rakowsky, MD
Charles Redman, MD
Jessica Rette, MD
Bredy Ricciardo, MD
Nathan Richards, MD
Richard E. Rodenberg Jr., MD
Rachel A. Rosenfeld, MD
Patricia Fine Rosenstein, MD
Allison Rossetti, MD
Shilpa G. Sangavi, MD, MPH
Sara Schuder, MD
Dana Schulz, MD
Eric Schumacher, DO
W. Andrew Scarry, MD
Robert T. Seese, MD
Ashley Shamsaury, MD
Kachryn K. Shirley, MD
Dorothy Simonsson, MD
Cherelle Smith-Ramsey, MD
Dona A. Speyler, MD
Anele Splinter, MD
Anuja Sripatamarenvarn, MD
Amy R. Sternstein, MD
Kimberly Sterlet, MD
Lisa Stone, DO
Devon Swick, MD
Patricia Temple Gabre, MD
Karen Tenenblatt, MD
Gina R. Thompson, DO
Bonny M. Tiai, MD
Jagdishaaraj K. Urs, MD
Sean M. Vellucci, MD
Andrew W. Wagner, DO
Melissa D. Winterhalter, MD
Tyree Winters, DO
Kimberly Wolf, DO
Christine Zamastil, MD
Rachael Zamotti-Morocco, DO

The Primary Care Centers offer a multidisciplinary focus providing comprehensive care primarily for children from birth to age 21. Available services include well-child and acute care, age-appropriate screenings and education, interpreters and Medicaid enrollment. A Mobile Care Unit provides care for students at urban schools and attends community events throughout the year. A second unit provides care for children in central and southeast Ohio communities.
Our quality improvement initiatives continue to focus on improving care for patients with asthma, treating obesity in children aged 3 to 18 years, improving recognition and treatment of elevated blood pressures in children aged 5 to 18 years and improving well-visits for children aged 3 to 6 years and for adolescents. The rate of primary care patients with asthma visits to the Emergency Department is decreasing and the rate of six months asthma follow-up visits to primary care for these patients is increasing. One area of focus in immunization delivery is getting the HPV vaccine to 9 and 10 year old patients to help with completion of the series of HPV by 13 years of age. Nationwide Children’s has also joined the national AAP collaborative, Project RedDE Group, which is focused on reducing missed diagnoses of adolescent depression, missed diagnoses of elevated blood pressure and delayed diagnoses of actionable laboratory results. Ambulatory physicians staff the Well Baby Nursery at The Ohio State University Wexner Medical Center and Mount Carmel East Hospital and the Center for Healthy Weight and Nutrition, offering medical management of chronic obesity. Educational efforts include primary care training for Ohio State University medical students, Pediatric residents, and Family Medicine residents. Research efforts focus primarily on smoking cessation, obesity prevention and treatment, student and resident education, health literacy and injury prevention.

TOTAL OF GRANTS AWARDED
JULY 1, 2015 – JUNE 30, 2016
$1,431,987

SELECTED PUBLICATIONS


John P. Cheatham, MD
Director, Cardius Catheterization and Interventional Therapy
Co-Director, Heart Center

Selected Publications

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CHILD AND FAMILY ADVOCACY

The Section of Child and Family Advocacy housed within The Center for Family Safety and Healing at Nationwide Children’s Hospital is home to a team of board-certified child abuse pediatricians and advanced-practice nurse practitioners who are nationally recognized child maltreatment experts with an emphasis on physical abuse, sexual abuse and medical child abuse.

The Center for Family Safety and Healing (TCFSH) is a multidisciplinary organization that provides coordinated and comprehensive services in the prevention, diagnosis and treatment of family violence. As a national leader in this important work, a team of more than 120 professionals representing medicine, behavioral health, social services, law enforcement, prosecution and child welfare are co-located at the center to address the complex issues of family violence.

FACULTY

Megan M. Letson, MD, MEd
Chief

Jennifer J. Tscholl, MD
Jonathan D. Thackeray, MD
Kristin G. Crichton, DO, MPH
Farah W. Brink, MD

The Section of Child and Family Advocacy provides comprehensive evaluation and management of child maltreatment, offering inpatient and outpatient services. Key services include the Child Assessment Center, Fostering Connections Program, Post-Injury Clinic, and medical child sexual abuse. The Section remains committed to providing quality educational experiences for trainees, including medical student and pediatric resident electives. The Section continues to attract excellent trainees. Additionally, in collaboration with Pediatric Emergency Medicine, we developed the second combined four-year Child Abuse Pediatrics and Pediatric Emergency Medicine Fellowship in the nation. The first fellow in this combined program started in July 2015.

Members of the section continue to be recognized nationally. Faculty hold leadership positions within the American Board of Pediatrics and Ray Helfer Society for child abuse professionals. Additionally, faculty continue a tradition of national speaking engagements.

TOTAL OF GRANTS AWARDED

JULY 1, 2015 – JUNE 30, 2016

$1,834,897

SELECTED PUBLICATIONS


COMPLEX CARE

The Complex Health Care Program at Nationwide Children's Hospital provides comprehensive, coordinated and holistic care to children and adults with neurodevelopmental disabilities. For some patients with complex issues, we are their primary care doctor and "medical home"; for others, we partner with their medical home to provide expert neurodevelopmental care. In collaboration with other services, we participate in the comprehensive Cerebral Palsy Program, the interdisciplinary Feeding Program, the interdisciplinary Spinal Muscular Atrophy Clinic; neonatal follow-up clinics; the adult Down Syndrome Clinic at the Nisonger Center; and provide medical care to the residents of the Heinzerling Foundation.

Members of our faculty have leadership positions at leading national organizations, including the American Academy of Pediatrics. The American Board of Pediatrics and the American Academy for Cerebral Palsy and Developmental Medicine.

The Cerebral Palsy Program at Nationwide Children's is the lead site for the Cerebral Palsy Research Network. By linking 56 centers in the United States and Canada, we will improve treatments and outcomes for people with cerebral palsy through high-quality clinical research and quality initiatives.

TOTAL OF GRANTS AWARDED JULY 1, 2015 – JUNE 30, 2016

$47,873

SELECTED PUBLICATIONS


FACULTY

Garey Noritz, MD

Chief

Rukshana Ahmed, MD

Wendy Bunde-Hartman, MD

Derek Fletcher, MD

Elisabeth Lucas, MD

Katherine Steingas, MD

Joy Walton, MD

During 2016, we began providing inpatient care to our own patients who had been admitted to the hospital. This has allowed us to improve the continuity of care for Complex Health Care patients, both in and out of the hospital. Development of the comprehensive Pediatric Feeding Program at Nationwide Children’s continues, with increased capability to treat children with feeding disorders as outpatients, and to treat one patient at a time in the intensive program, which is extremely successful in reducing the need for tube feeding. Our faculty continue to be a sought-after resource for families and medical homes. They are leaders in training their colleagues in nursing, physical therapy, speech-language pathology, occupational therapy, and dietetics. In collaboration with other services, we participate in the comprehensive Cerebral Palsy Program, the interdisciplinary Feeding Program, the interdisciplinary Spinal Muscular Atrophy Clinic; neonatal follow-up clinics; the adult Down Syndrome Clinic at the Nisonger Center; and provide medical care to the residents of the Heinzerling Foundation.

CRITICAL CARE MEDICINE

The Section of Critical Care Medicine at Nationwide Children's Hospital provides in-house faculty coverage of the Pediatric Intensive Care Unit (PICU) 24 hours a day and is dedicated to the care of children who have, or are at risk for, life-threatening illnesses across the spectrum of pediatric disease. In addition, this service also contributes actively to the vital missions of research and advanced training in the field of pediatric critical care medicine.

This service cares for more than 2,800 patients per year, covering over 40 PICU beds at Nationwide Children's and contributing to the coverage of the 20-bed cardiothoracic ICU. Therapies such as extracorporeal membrane oxygenation, high frequency oscillatory ventilation, and continuous renal replacement therapies are available at all times. We continue to boast one of the lowest rates of hospital-acquired infection and preventable harm of any PICU in the country. We also staff the Assessment and Consultation Team, a multidisciplinary rapid response team, and the Pediatric Analgesia and Sedation Service.

FACULTY

Mark W. Hall, MD, FAAP, FCCM

Division Chief

Nadeem Khan, MD, FAAP

Section Chief

Ony S. Ayad, MD, FAAP

Richard J. Brilli, MD, FAAP, FCCM

Margaret A. Chase, MD

Melissa G. Chung, MD

Sarah H. Estrada, DO, FAAP

Jill A. Finch, MD

W. Joshua Frazier, MD

Samantha W. Gee, MD, FAAP

Todd J. Karsies, MD

Anthony Y. Lee, MD, FAAP

Ada T. Lin, MD, FAAP

Eric A. Lloyd, MD

Jeffrey E. Lummer, MD

Tensing Max, MD, FAAP

Jennifer A. Musynski, MD

Nicole F. O'Brien, MD

Markita L. Suttle, MD

Andrew R. Yates, MD

The section continues to be a leader in clinical and translational pediatric critical care research. In 2015, Nationwide Children's continued its participation as one of only seven sites in the country to participate in the Collaborative Pediatric Critical Care Research Network, funded by the Eunice Kennedy Shriver National Institute of Child Health and Human Development. Division Chief Mark W. Hall, MD, is a nationally recognized, R01-funded researcher in the field of immunobiology of pediatric critical illness and is leading a multicenter clinical trial of immunostimulation in the setting of pediatric traumas. Nicole O'Brien, MD, is the recipient of a Fulbright Scholarship to conduct research into the epidemiology of pediatric brain injury in the Democratic Republic of the Congo.

Department, Section and Center Reports
Jennifer Muzycki, MD, is a multiple-funded investigator in the area of transfusion biology in pediatric critical illness. Other major research areas include quality and safety, antimicrobial use, palliative care and simulation. We participate in multicenter and single-center observational and interventional research across the spectrum of pediatric critical illness. With this broad scientific portfolio, an in-situ research laboratory within the PICU, and four divisional research coordinators, the section is at the forefront of innovation in the field.

An Accreditation Council for Graduate Medical Education-approved Pediatric Critical Care Medicine Fellowship Program has been in place since 2003. This highly successful program provides rigorous clinical and academic training for the next generation of ICU faculty, accepting four fellows per class into our three-year program. The Critical Care faculty also participates in clinical and didactic instruction for the pediatric and surgical residency programs as well as multiple other fellowship programs. A PICU elective is also provided for fourth-year medical students.

**TOTAL OF GRANTS AWARDED**

**JULY 1, 2015 – JUNE 30, 2016**

$468,724

**SELECTED PUBLICATIONS**


**FAST FACTS**

*July 2015 through June 2016*

<table>
<thead>
<tr>
<th>PICU Admissions</th>
<th>2,674</th>
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<tbody>
<tr>
<td>Average Length of Stay</td>
<td>5.8</td>
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<tr>
<td>Average Daily Census</td>
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<td>Total Patient Days</td>
<td>11,376</td>
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<td>Number of Beds</td>
<td>71</td>
</tr>
<tr>
<td>Inpatient Discharges</td>
<td>2,084</td>
</tr>
</tbody>
</table>

**Dermatology**

The Section of Dermatology at Nationwide Children’s Hospital sees outpatients from birth through age 18 by referral only. Referrals are accepted from all sources. Common skin diseases, allergic skin conditions, systemic skin disorders, birthmarks, nevi, and rare and inherited dermatologic disorders are evaluated and treated.

**Faculty**

Patricia M. Witman, MD

Chief

Esteran Fernández Faith, MD

Katy Harfmann, MD

Joy Lynn Mosser-Goldfarb, MD

During the 2015-2016 academic year, the Section of Dermatology continued its tradition of providing exceptional care for patients with dermatologic concerns, offering access to patients at four sites — main campus, Canal Winchester Close To Home* Center, Dublin Close To Home* Center and Westerville Surgery Center sites — as well as providing inpatient consults at the main campus and offering procedures under anesthesia at the main campus and Westerville-Surgery Centers.

Our faculty educated a multitude of residents from the dermatology and pediatrics residency programs at The Ohio State University College of Medicine, Ohio University and Nationwide Children’s Hospital, and Joy Mosser, MD, was named program director of The Ohio State University Dermatology Residency Program. This academic year also saw the graduation of one fifth and sixth Pediatric Dermatology fellows, Malvith Infan, MD, and Grace L. Lee, MD, from the Pediatric Dermatology Fellowship, which is directed by Patricia Witman, MD. At a time when only 50 percent of positions are filling nationally, Nationwide Children’s Pediatric Dermatology Fellowship successfully matched one candidate, who started in August 2016.

**SELECTED PUBLICATIONS**


**FAST FACTS**

*July 2015 through June 2016*

Canal Winchester Dermatology Clinic Visits: 6,936

Dermatology Clinic Visits: 4,631

Dublin Dermatology Clinic Visits: 3,102

Hemangioma/Vascular Anomalies Clinic Visits: 589

Westerville Dermatology Clinic Visits: 1,815

Total Clinic Visits: 10,888

Inpatient Consults: 140
DEVELOPMENTAL AND BEHAVIORAL PEDIATRICS

The Division of Developmental and Behavioral Pediatrics at Nationwide Children’s addresses the emotional, developmental and behavioral needs of children and their families. Outpatient services include comprehensive care delivered by developmental and behavioral pediatricians and advanced nurse practitioners in partnership with other healthcare professionals. See page 27 for details about all Behavioral Health services.

FACULTY

Daniel L. Coury, MD

Rebecca Baum, MD
Wendelin A. Bunde-Hartman, MD
Kelly J. Kelleher, MD, MPH
Anita R. Narayanan, MD
Karen Ratliff-Schaub, MD, MBOE
Garey H. Noritz, MD
Patricia L. Nash, MD
Anita R. Narayanan, MD
Kelly J. Kelleher, MD, MPH
Wendelin A. Burdo-Hartman, MD
Rebecca Baum, MD

Chief

Daniel L. Coury, MD

FACULTY

SELECTED PUBLICATIONS


FAST FACTS

July 2015 through June 2016

- Child Development Center Visits: ............................................ 12,800
- Center for Autism Spectrum Disorders Visits: .................................... 25,042
- Behavioral Medicine Consultation Clinic Visits: .................................. 5,314
- Multidisciplinary Outpatient Medical Clinic/Outpatient Consultation Visits*: ......................................................... 888
- Developmental Disabilities Clinic Visits*: ............................................. 1,099
- Myelomeningocele Clinic Visits*: ..................................................... 543
- Cerebral Palsy Clinic Visits*: ............................................................ 503

*Clinics under Ambulatory Pediatrics.
In addition to providing clinical and educational excellence, Emergency Medicine has a strong history of clinical research. We recently competed successfully for a leadership role in the Pediatric Emergency Care Applied Research Network (PECARN) and have developed research collaborations with Columbus Department of Fire and other EMS agencies regionally and nationally. The section is committed to the ongoing improvement of health care delivery in the emergency department and in clinical outcomes.

TOTAL OF GRANTS AWARDED
JULY 1, 2015 – JUNE 30, 2016
$909,697

SELECTED PUBLICATIONS


FAST FACTS
July 2015 through June 2016
ED Visits (Includes All Visits Regardless of Disposition): 89,307
Urgent Care Visits
Main Campus Urgent Care: 52,652
Canal Winchester Urgent Care: 10,012
Dublin Urgent Care: 11,798
East Broad Urgent Care: 22,584
Hilliard Urgent Care: 11,859
Marysville Urgent Care: 11,646
Westerville Urgent Care: 30,649
Total Urgent Care Visits: 158,110
Total Emergency Services: 247,417
Guidelines Needed for Counseling Patients on Fertility and Sexual Function

A call for guidelines concerning the sensitive issue of fertility and sexual function counseling was recently published in *Pediatrics* by a multi-institutional team of health professionals. Current guidelines for discussing fertility preservation prior to pediatric cancer treatment do not adequately address ongoing counseling of adolescents about their fertility status. Also, patients who undergo gonadotoxic therapies outside the cancer center, or those born with medical conditions that may impact their future fertility, may not receive this counseling at all.

“There is very little information out there to guide providers about how to initiate conversations about fertility with pediatric patients and families,” says Leena Nahata, MD, medical director of the Fertility and Reproductive Health Program at Nationwide Children’s Hospital and lead author of the call for guidelines. “How do you talk to a nine-year-old about reproductive capacity, and what do you do if the parents do not want to include their children in these discussions?”

Dr. Nahata and her co-authors are in discussions with the AAP about forming a platform to begin the process of guideline creation.

“Providers often don’t know how to bring up this topic,” explains Dr. Nahata, who is also an endocrinologist at Nationwide Children’s. “When a patient is seeing providers from several different disciplines, there’s this sort of bystander effect that happens – the thought that maybe somebody else is talking about it, which means that often no one talks about it.”

The multidisciplinary Fertility and Reproductive Health Program was created by Dr. Nahata and her colleagues at Nationwide Children’s to address these issues and empower parents to talk with their children about their options.

“The mission of the program is twofold,” she says. “One, to help kids who may have fertility preservation options to consider these in a timely fashion. Two, to educate people on their fertility status, potential options down the road, and about sexual function and reproductive health in general.”

According to Dr. Nahata, pediatric providers need to be aware of possible issues with sexual function and fertility in their pediatric patients, especially considering the growing trend of patients staying with their providers well into adulthood.

**CITATION:**
The Section of Endocrinology at Nationwide Children’s Hospital provides comprehensive services for the diagnosis and treatment of medical conditions, hormone disorders and diabetes mellitus in children and adolescents. This includes, but is not limited to, type 1 and type 2 diabetes mellitus, insulin resistance, obesity, metabolic syndrome, hypoglycemia, polyostotic osseous syndrome, disorders of growth and puberty, thyroid hormone and adrenal disorders, disorders of bone metabolism, genetic syndromes with hormone disturbances, diabetes insipidus, and disorders of sexual differentiation and gender identification.

**FACULTY**

Manmohan K. Kamboj, MD

Interim Chief

Saugarn A. Bowden, MD

Monika Chaudhari, MD

Janet Chuang, MD

Rohan K. Henry, MD, MS

Robert P. Hoffman, MD

Justin A. Indyk, MD, PhD

Robert P. Hoffman, MD

Leona Nahata, MD

Kathryn Oheyda, MD

Juan F. Sotos, MD (Emeritus)

**SELECTED PUBLICATIONS**


**FACULTY**

Mannion K. Kamboj, MD

Interim Chief

Saugarn A. Bowden, MD

Monika Chaudhari, MD

Janet Chuang, MD

Rohan K. Henry, MD, MS

Robert P. Hoffman, MD

Justin A. Indyk, MD, PhD

Robert P. Hoffman, MD

Leona Nahata, MD

Kathryn Oheyda, MD

Juan F. Sotos, MD (Emeritus)

The Section of Endocrinology currently has nine active pediatric endocrinologists, five advanced practitioners and four pediatric endocrinology fellows. The section presently sees nearly 15,000 patients per year on an outpatient basis. In 2016, there were 316 patients diagnosed with new-onset diabetes, and approximately 1,800 patients with diabetes mellitus are followed at Nationwide Children’s Hospital on a regular basis.

The section collaborates closely with other disciplines to offer endocrine expertise in the multidisciplinary clinic format to facilitate patient care. At present these include Metabolic Bone Disease, Cystic Fibrosis-Related Diabetes, Prader-Willi Syndrome Clinic, Bone Marrow Transplant Long-term Follow-up Clinic, Muscular Dystrophy Clinic, Thyroid Nodules/Cancer, and High-risk Type 1 Diabetes Mellitus (DM) and Type 2 DM clinics, in addition to fertility consultations, and THRIVE and development of diseases and sex development.

The section has established a multidisciplinary comprehensive care clinic for high-risk patients with T1DM to optimize diabetes management in these patients, and it presently maintains a robust quality improvement portfolio that includes 17 active projects designed to achieve best outcomes for patients with diabetes mellitus and endocrine disorders. As a member of the National T1D Exchange QI Collaborative, the section was selected to further expand the reach of QI best practices nationally.

The Section of Endocrinology is a major referral center for children and adolescents in and beyond central Ohio and is a consultative resource for the Ohio Department of Health Newborn Screening Program for congenital hypothyroidism and congenital adrenal hyperplasia.

**TOTALS OF GRANTS AWARDED**

**July 1, 2015 – June 30, 2016**

**July 2015 through June 2016**

Inpatient Discharges: 2,096

Observation and Outpatient-in-a-Bed Discharges: 704

Total Discharges: 7,628

Average Length of Stay*: 1.8

Average Daily Census*: 2.3

Patient Days*: 844

Prader-Willi Clinic Visits: 95

Inpatient Consults: 389

Total Endo Clinic Visits: 12,772

Canal Winchester Endocrinology Clinic Visits: 430

Diabetes Comprehensive Care Clinic Visits: 147

*Excludes observation and outpatient-in-a-bed patients.

**SELECTED PUBLICATIONS**


Functional GI Disorders Affect 30-40% of Children Worldwide

Many of these children experience misunderstood gastrointestinal conditions.

Nationwide Children’s doctors led an international committee to develop the Rome IV criteria.

Gastroenterology, Hepatology and Nutrition

New Guidelines Help Physicians Better Diagnose, Treat Functional GI Disorders

Nationwide Children’s Hospital doctors led an international committee in developing the criteria for diagnosing and treating widespread, but often misunderstood, gastrointestinal conditions which affect an estimated 30-40% of children worldwide. The guidelines, called the Rome IV criteria, are the fourth version produced by the international Rome Foundation, covering all age groups.

“I compare these disorders to headaches,” says Carlo Di Lorenzo, MD, chief of Gastroenterology, Hepatology and Nutrition at Nationwide Children’s and chair of the six-person Adolescent Committee that developed the Rome IV criteria. “If you have a headache, it doesn’t mean you have a brain tumor or meningitis. In the same way, people may have a bellyache, but they don’t have a blockage or an ulcer. They still are experiencing pain, though, and it is still affecting their lives, sometimes drastically.”

The Rome IV criteria allow physicians to more accurately diagnose and treat the following disorders: cyclic vomiting syndrome, functional nausea and functional vomiting, rumination syndrome, aerophagia, functional dyspepsia, irritable bowel syndrome, abdominal migraine, functional abdominal pain-NOS, functional constipation, and non-retentive fecal incontinence.

“Past guidelines may have led doctors to order a battery of tests to rule out every possible disease, before arriving at a functional GI disorder diagnosis,” explains Dr. Di Lorenzo. “That can be exasperating for patients, and add to the anxiety they are already experiencing. The new criteria make it clear that a diagnosis can be made without extensive tests.”

While causes aren’t always obvious, the last decade of research has shed new light on factors that can lead to functional GI disorders, and physicians say there is a strong link between stress, anxiety, and other psychological issues and the disorders – part of what is known as the “brain-gut connection.” Medications can be effective for some disorders, but so can non-medical treatment options such as counseling, relaxation exercises, acupuncture, and yoga.

“We are treating the whole person, not just the GI tract or a single organ,” says Dr. Di Lorenzo. “We work closely with psychologists, nutritionists, therapists and others to help the child get better.”

CITATION:
GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION

Consistently ranked as a top digestive disorders program by U.S. News & World Report, the Division of Gastroenterology, Hepatology and Nutrition at Nationwide Children’s Hospital provides comprehensive patient care for a broad range of gastrointestinal, liver and nutritional problems. The division strives for excellence in research, teaching and clinical care and maintains a team of physician-scientists committed to the creation of new knowledge in the discipline. Our physicians work with pediatric nurse practitioners to diagnose and treat gastrointestinal and disorders while collaborating with other specialists, such as dietitians and behavioral and developmental psychologists, to provide comprehensive, coordinated care for each child.

FACULTY

Jonathan M. Giusz, MD
Sandra C. Kim, MD
Soma Kumar, MD
Hayat M. Moussa, MD
Carol J. Potter, MD
John M. Russo, MD
Miguel Saps, MD
Aila K. Shakkhallal, MD
Karla K. Vaz, MD
Kent C. Williams, MD
Frederick W. Woodley, PhD
Drsela:G Yacob, MD

The Division of Gastroenterology, Hepatology and Nutrition at Nationwide Children’s provides treatment through multiple multidisciplinary clinics and services for children from all over the world. It has consistently been ranked in the top 10 in the country for the past 10 years by U.S. News & World Report and is nationally recognized for its expertise in a number of gastrointestinal disorders. The Motility Center is a national leader in caring for children with neuro-digestive and functional disorders. Motility Center leadership includes Carlo Di Lorenzo, MD, chief of Gastroenterology, and Desale Yacob, MD, in coordination with members of the Division of Gastroenterology at The Ohio State University. With the recent recruitment of a highly-skilled transplant surgeon, Ken Washburn, MD, the division is developing a liver transplant program as part of a comprehensive Liver Disease Center.

Faculty

Carlo Di Lorenzo, MD
Chief

Ivor D. Hill, MD
Section Chief

Jane P. Balint, MD
John A. Barnard, MD
Brendan M. Boyle, MD, MPH
Steve L. Ciciora, MD
Wallace V. Crandall, MD
Molly C. Dienhart, MD
Jennifer L. Dotson, MD, MPH
Tracey R. Edger, MD, PhD
Steven H. Erdman, MD
Cheryl E. Gariepy, MD

TOTAL OF GRANTS AWARDED

JULY 1, 2015 – JUNE 30, 2016

$236,670

SELECTED PUBLICATIONS


Outcomes in the country in the rehabilitation of children with short bowel syndrome. The Celiac Disease Center at Nationwide Children’s, under Tracy Edger, MD, and Section Chief Ivor Hill, MD, is leading the way in providing more standardized care to improve long-term outcomes for children with celiac disease. Steven Erdman, MD, is a world leader in the care of children with polyposis syndromes, while Miguel Saps, MD, is a leader in the care of children with pain associated with functional gastrointestinal disorders. Other multidisciplinary services provide care for children with esophageal eosinophilic disease, autism and gastrointestinal disorders, muscular dystrophy, congenital heart diseases, and those with cystic fibrosis and auto-immune diseases. A new service for children with pancreatic and biliary disorders was established, led by Cheryl Gariepy, MD, in coordination with members of the Division of Gastroenterology at The Ohio State University. With the recent recruitment of a highly-skilled transplant surgeon, Ken Washburn, MD, the division is developing a liver transplant program as part of a comprehensive Liver Disease Center.

FAST FACTS

July 2015 through June 2016

GI Marysville Clinic Visits: 80
GI Procedure Room Visits: 233
Ironstone Gastroenterology Clinic Visits: 128
Mansfield Gastroenterology Clinic Visits: 247
Schrock Road Gastroenterology Clinic Visits: 135
Westerville Gastroenterology Clinic Visits: 1,699
Zanesville Gastroenterology Clinic Visits: 221
Lima Gastroenterology Clinic Visits: 305
Total GI Clinic Visits: 17,794

*Excludes observation and outpatient-in-a-bed patients.
Department, Section and Center Reports

GENERAL PEDIATRICS

The Section of General Pediatrics at Nationwide Children’s Hospital includes community physicians in pediatrics and internal medicine/pediatrics who are affiliated with Nationwide Children’s. Many of these physicians participate in the Pediatric Education in Community Sites program that provides residents with a very different kind of outpatient experience than that of a traditional hospital-based practice. Beginning in their second year, each resident is assigned to an additional half-day continuity experience in a private practice. This offers thorough exposure to general pediatric practice and reinforces the relationship between Nationwide Children’s and the community physicians.

Robert W. Snyder, MD
Chief

Nikola T. Al-ain, MD
Ilona B. Albrecht, DO
Mary S. Applegate, MD
Nardia S. Ataman, MD
Jennifer E. Bachman, MD
Richard A. Baltisberger, MD
Lauren C. Bar-Lev, MD
Carrie J. Barnes-Mullett, MD
Gregory A. Barrett, MD
Brent M. Barson, DO
Courtney R. Bartsch, MD
Steven M. Bass, DO
Heather A. Battles, MD
Stephen R. Bauer, DO
Sarah A. Behrens, MD
Anne M. Bever, MD
Cynthia J. Black, MD
Kathleen D. Blake, MD
Kimberly K. Blau, MD
Denise L. Blocker, MD
Eileen C. Bolton, MD
Wanda C. Boudinos, MD

Sandra L. Boyle, MD
George W. Brantteiter III, MD
Richard J. Brenn, MD
Steven Randall Brown, MD
James A. Bryant, MD
Michelle S. Burnandia, MD
Jennifer L. Burkam, MD
Shari L. Burns, MD
Jennifer H. Campbell, MD
Patricia A. Cannon, MD
Stephen M. Canowit, MD
Ali M. Carine, DO
Mary B. Cass, MD
Kathleen A. Coulson, MD
Sidney L. Couling, MD
Jeffrey W. Creelius, MD
Elizabeth A. Cridick, DO
Ann M. Croft, MD
Camilla Curren, MD
Omolara Y. Dairo, MD
Amy E. Dreihl, MD
Antonio J. DelRosario, MD
Virginia K. De Vereuil, MD
Praveena V. Dhwale, MD
Salvatore DiCarolo, MD
Kevin M. Dickerson, MD
Bradley E. Dickson, MD
Dawn C. Dillinger, DO
Kent W. Doberry, DO
Lorna E. Donovon, MD
Dennis M. Doodly, MD
James R. Dordaro, MD
Julie M. Dunlea, MD
Kimberly A. Eileman, DO

Alicia D. Fenn, MD
Emily T. Ferguson, MD
Joseph F. Fiala, MD
Lenora A. Firtot, DO
Robert C. Frayhsle, MD
John L. Fortney, MD
Michael R. Franks, MD
Brad E. Fuller, MD
Kathleen T. Fulpal, MD
Patricia T. Gabhe, MD
Raju R. Gaglani, MD
Monica C. Gilbert, MD
Kathryn L. Ginschi, MD
Jamuna C. Gingsos, MD
Charles M. Goldard, MD
Erin L. Goist, MD
Anna C. Gray, MD
Patrick J. Geous, DO
Dawn S. Hackshaw, MD
Dana L. Hamilton, DO
Daniel J. Heinmiller, MD
John S. Heintz, MD
Lawrence P. Heiny, MD
Megan E. Heitzman, MD
Stephen M. Canowitz, MD
Mary S. Cass, MD
Kathleen A. Costlow, MD
Sidney L. Couling, MD
Jeffrey W. Creelius, MD
Elizabeth A. Cridick, DO
Ann M. Croft, MD
Camilla Curren, MD
Omolara Y. Dairo, MD
Amy E. Dreihl, MD
Antonio J. DelRosario, MD
Virginia K. De Vereuil, MD
Praveena V. Dhwale, MD
Salvatore DiCarolo, MD
Kevin M. Dickerson, MD
Bradley E. Dickson, MD
Dawn C. Dillinger, DO
Kent W. Doberry, DO
Lorna E. Donovon, MD
Dennis M. Doodly, MD
James R. Dordaro, MD
Julie M. Dunlea, MD
Kimberly A. Eileman, DO

Celina M. LaBreze-Salmon, MD
Robert C. LaMonte, MD
Robert T. Lee, MD
Kristina M. Lehman, MD
Allen T. Lewis, MD
Michael J. Leymaster, MD
Steve E. Lindner, MD
Bradley A. Lisko, MD
Elizabeh A. Litalie, MD
Anne D. Listerlin, MD
Michael C. Lorz, MD
William W. Long, MD
Eileen M. Mahoney, MD
Jason W. Maullson, MD
Jennifer J. Maurerer, MD
Derek A. McClellan, MD
Donna J. McDonald, MD
Meera R. Melia, MD
George M. Messick, MD
Bruce R. Myers, MD
Bruce R. Myers, MD
Stacy L. Morran, MD
Mark A. Muresan, MD
Jill A. Neff, DO
Mary-Lynn Niland, MD
Autumn M. O'Brien, MD
Adebomi A. Omikunle, MD
Jane S. Oro, MD
Lilliam I. Ortiz, MD
Laura E. Ooshaus, MD
Michelle A. Oyorey, MD
Melissa M. Parsons, MD
Michael A. Perry, MD
Richard A. Petrella, MD
Brad T. Pfeu, MD
Laura D. Phillips-Chou, MD
Domenico Pietropaolo, MD
Sandra M. Pinkham, MD
Laura A. Plachta, MD
Phyllis Jo Polas, DO
L. Robert Polster, MD
M. Bonnie Pugh, MD
Department, Section and Center Reports

FAMILY PRACTICE

The Section of Family Practice at Nationwide Children’s Hospital is responsible for teaching and advising family practice residents from several central Ohio training programs. In addition, these faculty work in multidisciplinary specialties, such as sports medicine, or in community settings amenable to the family practice model.

Ann M. Aring, MD
Krisanna L. Deppen, MD
Anastasia N. Fischer, MD
Bill G. Gegas, MD
Rebecca L. Grant, MD
Theodore R. Jordan, DO
D. Eric Legg, MD
James P. MacDonald, MD, MPH
Thomas L. Pommering, DO
Rens Rivivdean, MD

| FAST FACTS |
| July 2015 through June 2016 |

| Inpatient Discharges: | 104 |
| Observation and Outpatient-in-a-Bed Discharges: | 112 |
| Total Discharges: | 216 |

| Average Length of Stay*: | 5.1 |
| Average Daily Census*: | 1.4 |
| Patient Days*: | 526 |

*Excludes observation and outpatient-in-a-bed patients.
Jonathan Finlay, MB

“This decrease in mortality and morbidity reflects that participating institutions...gained a comfort level and experience managing these toxicities.”
HEMATOLOGY | ONCOLOGY | BLOOD AND MARROW TRANSPLANT

The Division of Hematology/Oncology/Blood and Marrow Transplant (BMT) at Nationwide Children’s Hospital treats patients with any one of a full array of blood disorders, cancers, immunodeficiency disorders, bone marrow failure syndromes and inherited metabolic storage diseases. Our clinical team oversees the comprehensive evaluation, multidisciplinary diagnosis, treatment and long-term management of children, adolescents and young adults with blood disorders and cancer as well as other diseases treated by cellular therapies. In addition to clinical care, through our integrated programs with The Research Institute’s Center for Childhood Cancer and Blood Diseases at Nationwide Children’s and the Biopathology Center at Nationwide Children’s, we seek to transform the way patients with cancer and blood disorders are cared for by fully integrating research, cutting-edge therapies and multidisciplinary teams.

FACULTY

Stacy Flowers, PsyD
Cynthia A. Gerhardt, PhD
Terri L. Guimpero, MD
Jennifer Hansen-Moore, PhD
Edwin M. Horwitz, MD, PhD
Santje Joshi, MD, MBBS
Bryce A. Kerlin, MD
Riten Kamar, MD
Dean Lee, DO
Kathleen L. Lemanski, PhD
Steve Lessnick, MD, PhD
Erin Meyer, DO, MPH
Sarah H. O’Brien, MD, MS
Diana S. Oostrik, MD
Mark A. Ramali, MD
Hemalatha G. Rangarajan, MD
Suzanne M. Reed, MD
Melissa J. Rose, DO
Claire Russell, PhD
Bhavana A. Serty, MD
Niley D. Shah, MD
Kari A. Streby, MD
Kathryn Vannatta, PhD
Elizabeth Varga, MS, LGC
Suzan I. Vear, MD
Anthony D. Villalla, MD
Nicholas D. Vrege, MD
Tammi K. Young-Saleme, PhD
Kristin Zaia, MS, LGC

Randal S. Olhefski, MD
Section Chief

Mohamed Abdel-Baki, MD
Rolla F. Abu-Arja, MD
Anthony N. Avidano, MD
Jeffery J. Auletta, MD
Rajinder P. Bajwa, MD, MBBS
Robyn M. Dennis, MD
Susan E. Creary, MD
Amy L. Dunn, MD
Jonathan L. Finlay, MB, ChB

Division Chief

Timothy P. Cripe, MD, PhD
FACULTY

Randal S. Olhefski, MD
Section Chief

Mohamed Abdel-Baki, MD
Rolla F. Abu-Arja, MD
Anthony N. Avidano, MD
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Robyn M. Dennis, MD
Susan E. Creary, MD
Amy L. Dunn, MD
Jonathan L. Finlay, MB, ChB

Division Chief

Timothy P. Cripe, MD, PhD

TOTAL OF GRANTS AWARDED TO CENTER AND DIVISION CLINICAL AND RESEARCH FACULTY

JULY 1, 2015 – JUNE 30, 2016

$5,188,508

SELECTED PUBLICATIONS


The Division of Hematology/Oncology/Blood and Marrow Transplant (BMT) at Nationwide Children’s Hospital treats patients with any one of a full array of blood disorders, cancers, immunodeficiency disorders, bone marrow failure syndromes and inherited metabolic storage diseases. Our clinical team oversees the comprehensive evaluation, multidisciplinary diagnosis, treatment and long-term management of children, adolescents and young adults with blood disorders and cancer as well as other diseases treated by cellular therapies. In addition to clinical care, through our integrated programs with The Research Institute’s Center for Childhood Cancer and Blood Diseases at Nationwide Children’s and the Biopathology Center at Nationwide Children’s, we seek to transform the way patients with cancer and blood disorders are cared for by fully integrating research, cutting-edge therapies and multidisciplinary teams.

FACULTY

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Cynthia A. Gerhardt, PhD
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Sarah H. O’Brien, MD, MS
Diana S. Oostrik, MD
Mark A. Ramali, MD
Hemalatha G. Rangarajan, MD
Suzanne M. Reed, MD
Melissa J. Rose, DO
Claire Russell, PhD
Bhavana A. Serty, MD
Niley D. Shah, MD
Kari A. Streby, MD
Kathryn Vannatta, PhD
Elizabeth Varga, MS, LGC
Suzan I. Vear, MD
Anthony D. Villalla, MD
Nicholas D. Vrege, MD
Tammi K. Young-Saleme, PhD
Kristin Zaia, MS, LGC

Randal S. Olhefski, MD
Section Chief

Mohamed Abdel-Baki, MD
Rolla F. Abu-Arja, MD
Anthony N. Avidano, MD
Jeffery J. Auletta, MD
Rajinder P. Bajwa, MD, MBBS
Robyn M. Dennis, MD
Susan E. Creary, MD
Amy L. Dunn, MD
Jonathan L. Finlay, MB, ChB

Division Chief

Timothy P. Cripe, MD, PhD

TOTAL OF GRANTS AWARDED TO CENTER AND DIVISION CLINICAL AND RESEARCH FACULTY

JULY 1, 2015 – JUNE 30, 2016

$5,188,508

SELECTED PUBLICATIONS


The Division of Hematology/Oncology/Blood and Marrow Transplant (BMT) at Nationwide Children’s Hospital treats patients with any one of a full array of blood disorders, cancers, immunodeficiency disorders, bone marrow failure syndromes and inherited metabolic storage diseases. Our clinical team oversees the comprehensive evaluation, multidisciplinary diagnosis, treatment and long-term management of children, adolescents and young adults with blood disorders and cancer as well as other diseases treated by cellular therapies. In addition to clinical care, through our integrated programs with The Research Institute’s Center for Childhood Cancer and Blood Diseases at Nationwide Children’s and the Biopathology Center at Nationwide Children’s, we seek to transform the way patients with cancer and blood disorders are cared for by fully integrating research, cutting-edge therapies and multidisciplinary teams.

FACULTY

Stacy Flowers, PsyD
Cynthia A. Gerhardt, PhD
Terri L. Guimpero, MD
Jennifer Hansen-Moore, PhD
Edwin M. Horwitz, MD, PhD
Santje Joshi, MD, MBBS
Bryce A. Kerlin, MD
Riten Kamar, MD
Dean Lee, DO
Kathleen L. Lemanski, PhD
Steve Lessnick, MD, PhD
Erie Meyer, DO, MPH
Sarah H. O’Brien, MD, MS
Diana S. Oostrik, MD
Mark A. Ramali, MD
Hemalatha G. Rangarajan, MD
Suzanne M. Reed, MD
Melissa J. Rose, DO
Claire Russell, PhD
Bhavana A. Serty, MD
Niley D. Shah, MD
Kari A. Streby, MD
Kathryn Vannatta, PhD
Elizabeth Varga, MS, LGC
Suzan I. Vear, MD
Anthony D. Villalla, MD
Nicholas D. Vrege, MD
Tammi K. Young-Saleme, PhD
Kristin Zaia, MS, LGC

Randal S. Olhefski, MD
Section Chief

Mohamed Abdel-Baki, MD
Rolla F. Abu-Arja, MD
Anthony N. Avidano, MD
Jeffery J. Auletta, MD
Rajinder P. Bajwa, MD, MBBS
Robyn M. Dennis, MD
Susan E. Creary, MD
Amy L. Dunn, MD
Jonathan L. Finlay, MB, ChB

Division Chief

Timothy P. Cripe, MD, PhD

TOTAL OF GRANTS AWARDED TO CENTER AND DIVISION CLINICAL AND RESEARCH FACULTY

JULY 1, 2015 – JUNE 30, 2016

$5,188,508

SELECTED PUBLICATIONS


CLINICAL FAST FACTS

July 2015 through June 2016

| Inpatient Discharges: | 1,543 |
| Observation and Outpatient-in-a-Bed Discharges: | 2,815 |
| Total Discharges: | 4,358 |
| Patient Days*: | 10,352 |
| Average Length of Stay*: | 6.7 |
| Average Daily Census*: | 28.4 |
| Inpatient Consults: | 387 |
| Total Surgical Procedures: | 1,024 |
| BMT Transplants: | 58 |
| Apheresis Procedures: | 636 |
| BMT Clinic Visits: | 848 |
| BMT Long-term Follow-up Clinic Visits: | 75 |
| Anticoagulation Clinic Visits: | 207 |
| Dublin Hematology Clinic Visits: | 85 |
| East Broad Sickle Cell Clinic Visits: | 107 |
| Mansfield Hematology/Oncology Clinic Visits: | 49 |
| Chillicothe Hematology/Oncology Clinic Visits: | 23 |
| Dayton Hematology/Oncology Clinic Visits: | 2 |
| Zanesville Hematology/Oncology Clinic Visits: | 46 |
| Hematology/Oncology Clinic Visits: | 9,127 |
| Surgical Oncology Clinic Visits: | 75 |
| Day Hospital Clinic Visits: | 2,015 |

*Excludes observation and outpatient-in-a-bed patients.

HOSPITAL PEDIATRICS AND ADULT HOSPITAL MEDICINE

The Sections of Hospital Pediatrics and Adult Hospital Medicine are part of the Department of Hospital Medicine at Nationwide Children's Hospital. The hospitalists provide inpatient care and manage children with common pediatric illnesses as well as undifferentiated and/or multisystem diseases, serving as the care manager between multiple subspecialists. Our adult hospitalists also serve as consultants for patients with congenital illnesses who are 18 years of age and older and who have been admitted to the hospital.

FACULTY

Jamie R. Macklin, MD
Interim Chief

Sean Anzouni, MD
Jayne A. Barr, MD
Joshua D. Black, MD
Samuel W. Dudley, MD
Ashley K. Fernandes, MD, PhD
Teresa C. Giacomazzi, MD
Allison C. Heacock, MD
Teresa C. Giacomazzi, MD
Ashley K. Fernandes, MD, PhD
Samuel W. Dudley, MD
Joshua D. Black, MD
Jayne A. Barr, MD
Sean Anzouni, MD
Allison C. Heacock, MD

Christine A. Schmerer, MD
Eric R. Schindeler, DO, MBA
Catherine C. Sinclair, MD
Melissa L. Skaggs, MD
Ann-Marie T. Tenisco, MD
Kimberly M. Tarraglia, MD

The Department of Hospital Medicine has worked to improve patient care models within the hospital system, collaborating on many initiatives and improvements, including those related to asthma, ALTE, hyperbilirubinemia, bronchiolitis, and improved patient flow initiatives. We strive to provide evidence-based general pediatric care utilizing family-centered rounding while emphasizing the important roles of the primary care physician and the family in recovery and health maintenance. The department, in conjunction with the Section of Child Psychiatry at Nationwide Children’s, also provides medical care for children and adolescents facing acute mental health crises.

In addition, the department houses the Section of Adult Hospital Medicine, which consists entirely of internal medicine/pediatric physicians who have experience and knowledge of both pediatric and adult diseases. As the number of pediatric care successes continues to climb, more of our pediatric patients with serious congenital diseases are surviving and thriving into adulthood. As part of the Nationwide Children’s mission to enhance care for patients with congenital diseases, the need to provide adult expertise for these patients is clear. The section provides a 24-hour consultation service for these patients, frequent weekend coverage for adult patients with cystic fibrosis and protocols for acute transfer of life-threatening adult conditions. In addition to clinical care, the department recognizes the importance of quality clinical teaching for both residents and medical students in general pediatrics. Educational excellence has driven the group’s bedside teaching and lecture series for the inpatient care of general pediatric patients.
TOTAL OF GRANTS AWARDED
JULY 1, 2015 – JUNE 30, 2016
$801,169

SELECTED PUBLICATIONS

CLINICAL FAST FACTS
July 2015 through June 2016

- Inpatient Discharges: 2,057
- Observation Discharges: 3,217
- Total Discharges: 5,274
- Average Length of Stay*: 3.0
- Average Daily Census*: 16.9
- Patient Days**: 6,102
- Complex Healthcare Clinic Visits: 2,205

*Excludes observation and outpatient-in-a-bed patients.
Researchers Find Features to Accurately Distinguish Adenovirus from Kawasaki Disease in Children

A multidisciplinary team of clinicians and microbiologists at Nationwide Children's Hospital examined and identified specific clinical, laboratory and adenovirus characteristics that may help clinicians differentiate patients presenting with adenovirus versus those with Kawasaki disease (KD), a rare but serious condition in children that is difficult to diagnose due to its resemblance to other common illnesses. KD involves inflammation of the blood vessels, specifically the coronary arteries, and is the most common cause of pediatric acquired heart disease in the developed world.

Published in the Journal of Pediatrics, the study is a follow up to prior research in which detection of adenovirus was found in about 8% of KD patients. Human adenoviruses are responsible for 7-8% of all pediatric respiratory illness and have clinical features that mimic KD.

“Adenovirus can look a lot like KD, but adenovirus requires just supportive care for an otherwise healthy child, while KD requires timely treatment before the tenth day of fever,” says Preeti Jaggi, MD, a physician in the Section of Infectious Diseases at Nationwide Children's and senior author of the study. “Adenoviruses can also be detected incidentally in the nasopharynx in children, which poses an additional challenge for clinicians.”

Dr. Jaggi and her team specifically aimed to clarify the clinical and laboratory characteristics of two groups of patients: those with adenovirus that did not have KD, and those with KD and incidental detection of adenovirus in the nasopharynx. After a thorough clinical classification of patients, they found that adenovirus patients typically had less than four clinical criteria for KD, but sometimes did have high inflammatory markers and prolonged fever.

“We are investigating if blood PCR aids in distinguishing the two illnesses,” says Dr. Jaggi of her team’s future directions in this arena of research. “In addition, we are examining the host blood gene expression profiles in those with Kawasaki disease and in those with adenovirus disease to see if the host immune response can be utilized to differentiate the two conditions.”

The specialists in the Division of Infectious Diseases at Nationwide Children’s Hospital provide expertise in the diagnosis and management of children with all types of acute and chronic infections in both immune-competent and compromised children. Our physicians provide direct care for patients admitted to Nationwide Children’s specialized Infectious Diseases Unit. In addition, our physicians provide clinical consultation for patients with complicated infectious diseases throughout the hospital, in close partnership with their primary care teams. We have developed close clinical and research collaborations with physicians in Hematology/Oncology/BMT; Pediatric Critical Care, Cardiology, Lung and Heart Transplantation, Neonatology and the various surgical departments in order to optimize the infectious diseases-related care of patients. Patients are also evaluated in the ambulatory setting following referral to the Infectious Diseases, Tuberculosis, Congenital/Perinatal, Host Defense, and Immune Deficiency clinics located on the Nationwide Children’s main campus. Research is conducted through the division and in collaboration with the Clinical Microbiology Laboratory, national and international collaborators, and the Center for Microbial Pathogenesis, the Center for Vaccines and Immunity and other centers in The Institute at Nationwide Children’s Hospital.

The Division of Infectious Diseases continues to expand the breadth of our clinical activities to help manage complex infections across the entire hospital, both in the specialized Infectious Diseases Inpatient Unit and the ever-growing Infectious Diseases Consult Service. In working toward our goal of developing a separate consult service to deal with infections in the compromised host, we graduated the first fellow from the country's first and only Host Defense Fellowship. Eunsungkyung Song, MD, will join Monica Andisara, DO, Jeffrey Auleta, MD, and Masako Shimamura, MD, in the Host Defense Program at Nationwide Children’s. Our outpatient services have been expanded by the initiation of a Congenital/ Perinatal Infectious Diseases Clinic to provide expertise in the management of congenital infections, with special interest in congenital CMV and syphilis. Patients undergoing hemoperfusion and solid organ transplants can be evaluated pre-transplant in our expanding Host Defense Clinic.

Under the leadership of Preeti Jaggi, MD, the Antimicrobial Stewardship Program continues to make great strides in optimizing antibiotic usage in both hospital and outpatient settings by assisting physicians in the selection of the most appropriate antimicrobial agent for each type of infection while simultaneously trying to reduce the emergence of antibiotic-resistant bacteria. We have continued to strengthen our research collaborations with colleagues in the Center for Microbial Pathogenesis and the Center for Vaccines and Immunity at The Research Institute, and we have developed novel clinical research programs in a variety of settings, including adenosivirus (Dr. Jaggi, Amy Leber, PhD, and fellow Dr. Song); cytomegalovirus (Pablo Sanchez, MD, Asuncion Mejias, MD, PhD, MSCS); RSV-vaccine development (Dr. Mejias, Octavio Ramilo, MD, and Mark Peeples, PhD); pediatric pneumonia (Rebecca Wallihan, MD, and Dr. Ramilo); and translational and diagnostic/therapeutic clinical trials aimed to optimize clinical outcomes in immunocompromised hosts (Drs. Andisara, Auleta, Shimamura, and Song).

Research: See page 160 for information about the Center for Microbial Pathogenesis, and page 164 for the Center for Vaccines and Immunity, in the Research Institute at Nationwide Children’s Hospital.

TOTAL OF GRANTS AWARDED TO ALL INFECTIOUS DISEASES CLINICAL AND RESEARCH FACULTY

JULY 1, 2015 – JUNE 30, 2016

$10,390,996

SELECTED PUBLICATIONS


MOLECULAR AND HUMAN GENETICS

The Division of Molecular and Human Genetics at Nationwide Children’s Hospital provides diagnostic evaluations for patients with known or suspected genetic diseases, genetic and prenatal counseling for families, and treatment of genetic disorders, including inborn errors of metabolism and next-generation DNA sequencing technologies for whole exome and genome analyses. Clinical services are supported in part by the Ohio Department of Health as a Regional Genetics Center of the State of Ohio, Region IV. Research is conducted in conjunction with the Center for Molecular and Human Genetics in The Research Institute at Nationwide Children’s.

FACULTY

Dennis W. Bartholomew, MD
Chief

Britton D. Rink, MD

Stephanie Santoro, MD, MS
Kim L. McBride, MD, MS

PART-TIME NATIONWIDE CHILDREN’S FACULTY

Jill Pluciniczak, MD

The Division of Molecular and Human Genetics has developed and expanded an Adult Down Syndrome Clinic in cooperation with colleagues in the Department of Genetics at The Ohio State University. Jill Pluciniczak, MD, and Kristin Trusk, MD, have joined our faculty after graduating from our training program. The section provides educational support and training for the master’s-level genetic counseling students from Ohio State, with their first class graduating in June 2016, and the Medical Genetics Residency Program at Nationwide Children’s matched its second combined Pediatrics/Medical Genetics trainee in spring 2016. Section faculty have represented Nationwide Children’s at a national level, with Gail Herman, MD, and Scott Hickey, MD, having leadership roles in the American College of Medical Genetics, while Dennis Bartholomew, MD, is a director for the American Board of Medical Genetics and Genomics.

Research: See page 162 for information about the Center for Molecular and Human Genetics in the Research Institute at Nationwide Children’s Hospital.

TOTAL OF GRANTS AWARDED TO MOLECULAR AND HUMAN GENETICS CLINICAL AND RESEARCH FACULTY JULY 1, 2015 – JUNE 30, 2016

$984,435

SELECTED PUBLICATIONS


Zanesville Genetics Clinic Visits: 104

Cardiogenetics Clinic Visits: 179

*Excludes observation and outpatient-in-a-bed patients.
Weaning Babies with NAS Better and Faster

Adoption of a strict neonatal abstinence syndrome (NAS) protocol has enabled six regional perinatal centers across Ohio to wean babies exposed to opioids in utero off drugs faster, send them home sooner, and lower the use of adjunctive drugs, as evidenced by research published in Pediatrics.

In response to the skyrocketing number of babies born to mothers abusing prescription opioids and heroin across the state in the last decade, Akron Children’s, Cincinnati Children’s and Nationwide Children’s hospitals developed and tested stringent rules and procedures using either methadone or morphine to wean newborns with NAS. All three hospitals saw improvements for newborns and families, as well as health care cost savings.

“The big difference isn’t what drug is used, but how strict the protocol is,” says Mark Klebanoff, MD, principal investigator in the Center for Perinatal Research at The Research Institute at Nationwide Children’s and study author. “We found that having very strict instructions on increasing and decreasing the dose, clear definitions of getting better and training nurses were more important than the drug used.”

The three hospitals, along with Dayton Children’s, Toledo Children’s and University Hospitals Rainbow Babies and Children’s hospitals, agreed to adopt a single standardized inpatient weaning protocol in July 2013. The new adopters saw the same kinds of improvements: the average number of days of morphpine treatment dropped from 34 to 23, stays declined from 32 days to 24 and use of adjunctive drugs to manage seizures, jitters, diarrhea and vomiting dropped from 21 percent of patients to 5 percent.

Due to its success, the protocol has been expanded to 53 hospitals in Ohio. The length of stay for these babies has decreased to around 17 days, versus the 70 or more days that some of the babies remained in the hospital when the protocol first began, according to researchers.

The children’s hospitals are continuing to seek improvement, including studying the use of adjunctive drugs and their protocols, the effects of cuddling and diet to help bring babies off treatment drugs faster, and the impact of the new drug buprenorphine for weaning.

NEONATOLOGY

Nationwide Children’s Hospital is home to one of the largest networks of clinical neonatal care in the United States. The Section of Neonatology at Nationwide Children’s is an integral component of the neonatal program, which includes a full range of family-centered newborn care and innovative clinical and translational research programs, conducted through the Division of Neonatology and in collaboration with the Center for Perinatal Research in The Research Institute at Nationwide Children’s.

Faculty

Leif D. Nelin, MD
Associate Division Chief for Academics

Sudarshan Jadcherla, MD
Associate Division Chief for Academics

Kristina M. Reber, MD
Associate Division Chief

Edward G. Shepherd, MD
Section Chief

Nehal A. Patidar, DO, MS
Ennytis M. Pena, MD
Pablo Sanchez, MD
Ruth B. Seabrook, MD
Vanessa Shanko, MD
Jonathan L. Slaughter, MD, MPH
Michael R. STEGER, MD
Maria M. Talavera, DO
Christopher J. Timon, MD
Jennifer K. Trittmann, MD, MPH
Shera Wilson, MD

COMMUNITY-BASED FACULTY

Craig W. Anderson, MD
Sarah J. CORREY, MD
Cristo Conti, MD
Christine M. Davis, MD
Joshua Goldberg, MD
Barry Halpert, MD
Nancy B. Hansen, MD
Angela L. Isabel, DO
Jeffrey Keyes, MD
Wendy Luce, MD
Randy R. Miller, MD
Richard Moraille, MD
Aparwa S. Naik, MD
Julie M. Richter, MD
John H. Seguin, MD
Michael Shoemaker, MD
Gary E. Snyder, MD
Holly R. Strike, MD
Anthony R. Theile, DO
Allison Vasileff, MD
Craig W. Anderson, MD
Michael Shoemaker, MD
Gary E. Snyder, MD
John H. Seguin, MD
Holly R. Strike, MD

SELECTED PUBLICATIONS


The Section of Neonatology is dedicated to providing integrated perinatal care and research throughout the patient life cycle to reduce infant mortality and morbidities so that children are able to reach their full potential. To achieve this, the section not only provides outstanding care for patients in the Nationwide Children’s Newborn Intensive Care Unit (NICU) but also developed a variety of innovative, unique programs that bring together multidisciplinary groups to provide advanced clinical care and research targeting the most common and most debilitating causes of mortality and morbidity in these babies. These programs include the comprehensive Bronchopulmonary Dysplasia (BPD) Center, the Small Baby Program, the Infant Feeding Disorders Program, and the Congenital Infections Program.

The BPD Center includes both inpatient and outpatient services to address the individualized, highly complex needs of the infant and family with severe BPD. The Infant Feeding Disorders Program provides advanced care and treatment to optimize outcomes for infants with feeding disorders. Furthermore, we have developed the only Neonatal Aerodigestive Program in the country under the leadership of Sudarshan Jadcherla, MD, which brings together a wide range of specialists to develop comprehensive, holistic treatment plans for our most complex patients. The Small Baby Program targets a leading cause of infant mortality and morbidities, namely extremely premature birth (less than 27 weeks’ gestation) using a uniform, interdisciplinary approach to family-centered care. Finally, the Congenital Infections Program was started this year by Pablo Sanchez, MD, and is a multidisciplinary program targeting babies born with congenital viral infections. To ultimately achieve the goal of decreasing infant mortality, the section understands the need to partner with the community to address all causes of infant mortality. One example of working with the community is our active participation in the Ohio Better Births Outcome partnership.

Perinatal Research: See page 163 for information about the Center for Perinatal Research in the Research Institute at Nationwide Children’s Hospital.

TOTAL OF GRANTS AWARDED TO NEONATOLOGY CLINICAL AND RESEARCH FACULTY

JULY 1, 2015 – JUNE 30, 2016

$7,552,634

$7,552,634

Institute at Nationwide Children’s Hospital.
### CLINICAL FAST FACTS

#### July 2015 through June 2016

<table>
<thead>
<tr>
<th>Main Campus</th>
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<tbody>
<tr>
<td>Inpatient Discharges:</td>
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<td>Observation and Outpatient-in-a-Bed Discharges:</td>
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<td>Average Length of Stay*:</td>
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<td>Average Daily Census*:</td>
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<td>Patient Days*:</td>
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<td>BPD-Pulmonary Clinic Visits:</td>
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<td>Dublin BPD Clinic Visits:</td>
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<td>Fetal Medicine Collaborative Clinic Visits:</td>
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<td>Neonatology Clinic Visits:</td>
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<td>Neonatology BPD Clinic Visits:</td>
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<td>Total Discharges:</td>
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<td>Average Length of Stay*:</td>
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<td>Average Daily Census*:</td>
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<tr>
<td>Patient Days*:</td>
<td>37,761</td>
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<tr>
<td>Newborn Intensive Care Unit at Riverside Methodist Hospital</td>
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<tr>
<td>Inpatient Discharges:</td>
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<tr>
<td>Observation and Outpatient-in-a-Bed Discharges:</td>
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<td>Total Discharges:</td>
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<td>Average Length of Stay*:</td>
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<td>Average Daily Census*:</td>
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<tr>
<td>Patient Days*:</td>
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<tr>
<td>Newborn Intensive Care Unit at Grant Medical Center</td>
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</tr>
<tr>
<td>Inpatient Discharges:</td>
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</tr>
<tr>
<td>Observation and Outpatient-in-a-Bed Discharges:</td>
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<td>Total Discharges:</td>
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<td>Average Length of Stay*:</td>
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<td>Average Daily Census*:</td>
<td>14.2</td>
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</tr>
</tbody>
</table>

*Excludes observation and outpatient-in-a-bed patients.

| Newborn Intensive Care Unit at Doctor’s Hospital West |  |  |
| Total Discharges: | 137 | |
| Average Length of Stay*: | 14.5 | |
| Average Daily Census*: | 9.4 | |
| Patient Days*: | 1,980 | |

| Newborn Special Care Nursery at Dublin Methodist Hospital |  |  |
| Total Discharges: | 159 | |
| Average Length of Stay*: | 9.5 | |
| Average Daily Census*: | 4.1 | |
| Patient Days*: | 1,911 | |

| Newborn Intensive Care Unit at St. Ann’s Hospital |  |  |
| Total Discharges: | 404 | |
| Observation and Outpatient-in-a-Bed Discharges: | 1 | |
| Total Discharges: | 404 | |
| Average Length of Stay*: | 10.9 | |
| Average Daily Census*: | 17.5 | |
| Patient Days*: | 6,393 | |

| Newborn Intensive Care Unit at The Ohio State University Wexner Medical Center |  |  |
| Total Discharges: | 764 | |
| Observation and Outpatient-in-a-Bed Discharges: | 7 | |
| Total Discharges: | 771 | |
| Average Length of Stay*: | 19.9 | |
| Average Daily Census: | 41.7 | |
| Patient Days: | 15,234 | |

*Excludes observation and outpatient-in-a-bed patients.
Acute kidney injury: tubular dilation, mild epithelial flattening, loss of brush border and sloughing cells

Nephrology

Nephrotic Syndrome and the Threat of AKI

Acute kidney injury (AKI) is a serious condition that commonly occurs in critically ill patients and is associated with substantial morbidity and mortality. A multicenter study co-authored by clinical researchers at Nationwide Children’s Hospital and the Midwest Pediatric Nephrology Consortium (MWPNC) provides novel insights on the incidence, epidemiology and hospital outcomes associated with AKI in a recent cohort of children hospitalized with nephrotic syndrome.

“Children with nephrotic syndrome are at increased risk of developing life-threatening complications, including infection and thrombosis,” says William E. Smoyer, MD, senior author of the study and director of the Center for Clinical and Translational Research in The Research Institute at Nationwide Children’s. “While AKI is associated with adverse outcomes in hospitalized children, little is known about the epidemiology of AKI in children with nephrotic syndrome.”

The study team found that AKI occurred more commonly than had been previously recognized in children hospitalized with nephrotic syndrome, according to Dr. Smoyer, who is also vice president of Clinical and Translational Research at The Research Institute and a member of the Section of Nephrology at Nationwide Children’s. Development of AKI was associated with lengthier hospital stays and an increased need for ICU admission.

“AKI should be regarded as a third major complication of nephrotic syndrome in children, in addition to infection and venous thromboembolism,” Dr. Smoyer says. “Further collaborative clinical and translational research will allow our consortium to address important clinical problems in pediatric nephrology that could otherwise not be adequately addressed by a single center.”

The MWPNC was co-founded in 2004 by Drs. Smoyer and John D. Mahan, MD, also in the Section of Nephrology at Nationwide Children’s. The goal of the MWPNC is to develop and execute multi-center clinical and translational studies related to pediatric kidney diseases, driving improvements in the care of children with all forms of kidney disease.

The MWPNC now comprises approximately half of all pediatric nephrology programs in North America, spanning 70 centers. The consortium has published 35 manuscripts, with MWPNC studies having been awarded 19 NIH and industry grants totaling more than $6.1 million in direct costs. Currently, the MWPNC has 33 multi-center studies actively enrolling patients, with five additional studies under development.

CITATION:
NEPHROLOGY

The Section of Nephrology at Nationwide Children’s Hospital provides specialized primary and consultative care for children with kidney and urinary tract problems through age 21. Disorders treated include acute kidney injury, chronic kidney disease, congenital anomalies of the kidneys and urinary tract, glomerular disorders, tubular disorders, urinary tract infection, kidney stones, fluid and electrolyte disorders, hypertension and metabolic bone disease. A full range of renal replacement therapy services are available, including hemodialysis, peritoneal dialysis, continuous renal replacement therapy and kidney transplantation.

chronic kidney disease, dialysis, renal transplantation, nephrotic syndrome, hypertension, kidney stones and metabolic bone disorders. During the past year, all six primary research faculty were supported by funding from the National Institutes of Health (NIH), including Andrew L. Schwaderer, MD, who was awarded a National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) R01 award to examine the role of renal tubular intercalated cells in the innate defense of the kidney. Nationwide Children’s is the coordinating center for one of only four national participating clinical centers (Midwest Pediatric Nephrology Consortium) for the Cure Glomerulonephropathy Network, a five-year cohort study of 2,400 adults and children with glomerular disease that is funded by NIDDK.

Research done by the faculty was presented at several national academic meetings, including six oral presentations given between the 2015 American Society of Nephrology Renal Week meeting in November and the 2016 Pediatric Academic Societies Annual Meeting in April. The faculty had 36 unique, peer-reviewed publications, some of which are highlighted below.

Research: See page 155 for information about the Center for Clinical and Translational Research Institute at Nationwide Children’s Hospital.

TOTAL OF GRANTS AWARDED TO NEPHROLOGY AND TO THE CENTER FOR CLINICAL AND TRANSLATIONAL RESEARCH

JULY 1, 2015 – JUNE 30, 2016

$3,500,194

SELECTED PUBLICATIONS


Neurology

Gene Therapy Shows Promise for Sanfilippo Syndrome

No treatment is currently available for mucopolysaccharidosis (MPS) III, a group of four rare, autosomal recessive neuropathic lysosomal storage diseases, also known as Sanfilippo syndrome. However, researchers at Nationwide Children’s Hospital have developed effective adeno-associated viral (AAV)-based gene therapy approaches, targeting the root cause of the disease, for the treatment of MPS IIIA and MPS IIIB.

An interdisciplinary translational research team has also been formed at Nationwide Children’s to bring these gene therapy approaches to clinical trials in patients. The team recently published a toxicology study in *Human Gene Therapy Clinical Development* demonstrating a generally safe and effective profile for systemic AAV gene therapy.

“Caused by a single gene defect, most of the children with this disease do not reach adulthood,” says Kevin Flanigan, MD, attending neurologist at Nationwide Children’s, principal investigator in the Center for Gene Therapy in The Research Institute, and co-author of the study. “This investigational gene therapy approach represents a new treatment paradigm for addressing this relentlessly progressing disease.”

“Importantly, our toxicology studies also identified the upper dosing limit of systemic AAV gene delivery for the treatment of MPS IIIB,” says Haiyan Fu, PhD, lead author of the study and principal investigator in the Center for Gene Therapy. “This will guide safe clinical application in humans.”

Douglas McCarty, PhD, principal investigator in the Center for Gene Therapy and study co-author, notes that the progressive neurodegeneration of MPS IIIB, which begins in early childhood, necessitates effective gene delivery to the brain.

“Our approach is to employ intravenous injection of an AAV serotype that crosses the blood-brain-barrier,” explains Dr. McCarty. “We have also done numerous studies in mice to determine how far into the disease progression we can still achieve possible therapeutic benefits.”

The team has recently received two investigational new drug (IND) approvals from the FDA for Phase 1/2 gene therapy clinical trials for patients with MPS IIIA (ongoing) and MPS IIIB (to be initiated), both at Nationwide Children’s.

**CITATION:**


“Gene Therapy Shows Promise for Sanfilippo Syndrome

“This investigational gene therapy approach represents a new treatment paradigm for addressing this relentlessly progressing disease.”

– Kevin Flanigan, MD
NEUROLOGY

Physicians of the Section of Neurology at Nationwide Children's Hospital deliver comprehensive patient care for children with a wide variety of neurological and neuromuscular diseases and provide state-of-the-art neurophysiological diagnostic testing and intraoperative monitoring. The Section offers outstanding residency and fellowship opportunities and engages in an array of ongoing research activities.

FACULTY

John Mytinger, MD
Adam Otenstorf, MD
Ann Pakalnis, MD
Annap Patel, MD
Margie Ream, MD, PhD
Zarife Sahinli, MD
Laurel Slaughter, MD
Chang-Yong Tsao, MD
Jaime-Dawn Twanow, MD
Jorge Vidaurre, MD
Pedro Winnodry, MD, PhD

The Section has 94 physicians, all of whom are faculty members at The Ohio State University. The group also includes ten nurse practitioners. Members of the section oversee comprehensive programs for children with epilepsy, neuromuscular disease, movement disorders, and headache. Other multidisciplinary programs include the country’s first Batten Disease Center of Excellence, an autonomic dysfunction program, the first pediatric intracranial hypertension (pseudotumor cerebri) clinic, the cerebrovascular disease clinic, the tuberous sclerosis clinic, and a brain tumor program.

Recent program developments include the continued expansion of the epilepsy program with the addition of two new physicians who are trained in epilepsy and neurophysiology. The epilepsy surgery program continues to grow as well. Members of the Section are working closely with our pediatric neurosurgeons to develop a program for surgical treatment of severe spasticity. Ongoing research by Section members has demonstrated the feasibility of gene therapy and gene product replacement for severe genetic neurological diseases such as Batten disease and spinal muscular atrophy.

The child neurology residency program is certified by the ACGME and continues to attract excellent trainees. The Section also offers fellowship training in clinical neurophysiology and neuromuscular disease. We recently expanded the neurophysiology fellowship to include an optional additional year of training in evaluation for epilepsy surgery.

Faculty members publish numerous journal articles and textbooks, especially related to dysfunction of the autonomic nervous system, management of childhood stroke, neuromuscular disease, and epilepsy. Several faculty members serve as national and international leaders in child neurology, including Warren D. Lo, MD, who was elected chair of the Section of Child Neurology of the American Academy of Neurology. Steve Roach, MD, is editor-in-chief of the journal Pediatric Neurology, and members of the Neurology Section also hold nine editorial board positions with other medical journals. Members of the group won several awards during the last year. John Mytinger, MD, was awarded the Heroes in Infantile Spasms Award by the Child Neurology Foundation, and Dr. Roach received the Howe Award, the top honor of the Child Neurology Society.

Research: See page 156 for information about the Center for Gene Therapy in the Research Institute at Nationwide Children’s Hospital.

Neurosurgery: See page 128 to learn about the Division of Neurosurgery at Nationwide Children’s.

TOTAL OF GRANTS AWARDED TO CENTER FOR GENE THERAPY AND NEUROLOGY CLINICAL AND RESEARCH FACULTY

JULY 1, 2015 – JUNE 30, 2016

$19,414,715

SELECTED PUBLICATIONS


Rehabilitation Archives of Physical Medicine and Rehabilitation 2015;96:S129-137.


Rehabilitation Archives of Physical Medicine and Rehabilitation 2015;96:S129-137.


Rehabilitation Archives of Physical Medicine and Rehabilitation 2015;96:S129-137.


Rehabilitation Archives of Physical Medicine and Rehabilitation 2015;96:S129-137.


Rehabilitation Archives of Physical Medicine and Rehabilitation 2015;96:S129-137.


Rehabilitation Archives of Physical Medicine and Rehabilitation 2015;96:S129-137.


Rehabilitation Archives of Physical Medicine and Rehabilitation 2015;96:S129-137.


Rehabilitation Archives of Physical Medicine and Rehabilitation 2015;96:S129-137.

Department, Section and Center Reports

PEDIATRIC PSYCHOLOGY AND NEUROPSYCHOLOGY

Pediatric Psychology and Neuropsychology is a Section of the Department of Pediatrics at Nationwide Children’s that concentrates clinical services in two primary areas: Pediatric Psychology provides specialized assessment and intervention services that focus on the relationship between cognitive, social, and emotional functioning and physical health, typically for children with co-occurring medical conditions (e.g., cancer, diabetes, sickle cell disease); Pediatric Neuropsychology performs specialized evaluations for children and adolescents with a range of medical and neurological disorders that impact thinking or behavior (e.g., brain tumors, epilepsy, seizure disorders, traumatic brain injury). See page 27 for details, and for information about all Behavioral Health services.

FACULTY

Eric M. Butter, PhD
Chief

Ashley Shier, PhD
Micheline Sifea, PhD
Dory Sisson, PhD
Tyanna Snider, PsyD
Jack H. Stevens, PhD
Karen Tabern, PhD
Kristen Trost, PhD
Kathryn A. Vannatta, PhD
Sarah N. VerLee, PhD
Jonathan Wilkins, PhD
Mary Wojnarowski, PhD
Jacqueline Wynn, PhD
Heather L. Vondel PsyD
Tammi K. Young-Salame, PhD

TOTAL OF GRANTS AWARDED TO PEDIATRIC PSYCHOLOGY AND NEUROPSYCHOLOGY
JULY 1, 2015 - JUNE 30, 2016
$947,821

SELECTED PUBLICATIONS

Bodin D, Butter EM, Grote, CL. Postdoctoral training in clinical neuropsychology in America: how did we get here and where do current applicants navigate? The Clinical Neuropsychologist. 2016; [Epub ahead of print]


FAST FACTS

July 2015 through June 2016

Inpatient Consultations: ........................................ 2,719
Outpatient Clinic Visits: ........................................ 6,714
Multidisciplinary Outpatient Medical Clinic Visits/Outpatient Consultation Visits: ......................... 6,177

TOTAL OF GRANTS AWARDED TO PEDIATRIC PSYCHOLOGY AND NEUROPSYCHOLOGY
JULY 1, 2015 - JUNE 30, 2016
$947,821

Eric M. Butter, PhD
Chief

Ashley Shier, PhD
Micheline Sifea, PhD
Dory Sisson, PhD
Tyanna Snider, PsyD
Jack H. Stevens, PhD
Karen Tabern, PhD
Kristen Trost, PhD
Kathryn A. Vannatta, PhD
Sarah N. VerLee, PhD
Jonathan Wilkins, PhD
Mary Wojnarowski, PhD
Jacqueline Wynn, PhD
Heather L. Vondel PsyD
Tammi K. Young-Salame, PhD

TOTAL OF GRANTS AWARDED TO PEDIATRIC PSYCHOLOGY AND NEUROPSYCHOLOGY
JULY 1, 2015 - JUNE 30, 2016
$947,821

SELECTED PUBLICATIONS

Bodin D, Butter EM, Grote, CL. Postdoctoral training in clinical neuropsychology in America: how did we get here and where do current applicants navigate? The Clinical Neuropsychologist. 2016; [Epub ahead of print]

Dempster RM, Alioto A, Williams E...
PHYSICAL MEDICINE AND REHABILITATION

The Section of Physical Medicine and Rehabilitation (PM&R) at Nationwide Children’s Hospital specializes in the diagnosis and management of children with physically disabling conditions. Our physicians are board-certified specialists in PM&R with additional certification in pediatric rehabilitation medicine and are members of the departments of Pediatrics, and Physical medicine and Rehabilitation at The Ohio State University College of Medicine. In addition, Rosalind Batley, MD, is also board certified in electrodiagnostic medicine.

FACULTY

Michelle A. Miller, MD
Chief
Rosalind J. Batley, MD
Karl W. Klamar, MD
Wilawan Nopkhun, MD
Nathan S. Rosenberg, MD
Reginald D. Talley, MD

The Section of Physical Medicine and Rehabilitation is actively involved in the teaching of medical students, medical residents and fellows. Presentations on pediatric rehabilitation, concussion, neuromuscular disorders, spasticity management and pediatric traumatic brain injury were given over the past year at both local and regional levels. Clinically, the section provides medical coverage and leadership for the inpatient rehabilitation unit as well as consultative services throughout Nationwide Children’s. The Inpatient Rehabilitation Unit, located within Nationwide Children’s Hospital, received a three-year accreditation by the Commission on Accreditation of Rehabilitation Facilities, our ninth consecutive accreditation, and offers a comprehensive, pediatric, family-centered rehabilitation program. Our outpatient clinics include cerebral palsy; concussion; myelodysplasia; spasticity management, including botulinum toxin injections and intrathecal baclofen pumps; electrodiagnostic medicine; wheelchair seating and equipment; and general rehabilitation. Services are also provided to the Heinzerling Memorial Foundation.

SELECTED PUBLICATIONS


FAST FACTS

July 2015 through June 2016

Inpatient Discharges: 96
Observation and Outpatient-in-a-Bed Discharges: 1
Total Discharges: 99
Average Length of Stay*: 22.5
Average Daily Census*: 6.1
Patient Days*: 2,209
Inpatient Consults: 402
Physical Medicine Clinic Visits: 5,019
Ortho Center Physical Medicine Clinic Visits: 83
Myelomeningocoele (Spina Bifida) Clinic Visits: 543
Number of Beds: 12

*Excludes observation and outpatient-in-a-bed patients.
In cystic fibrosis, mutant CFTR protein (blue) is trapped in lysosomes, unlike the healthy protein that reaches the cell surface.

Karen McCoy, MD

“It takes collaboration not only across multiple teams and disciplines, but also among institutions from across the country.”

Pulmonary Medicine

Optimizing Care for Patients with Cystic Fibrosis

The Cystic Fibrosis (CF) Program at Nationwide Children’s Hospital cares for patients of all ages through multidisciplinary collaborations between physicians, nurses, dieticians, social workers, pharmacists and respiratory therapists. As one of the largest therapeutic development sites in the country, the CF Program is dedicated to progress toward the best possible care and potential cures for CF.

Their recent participation in a clinical trial led to the FDA approval of Orkambi™ (lumacaftor/ivacaftor), a CF transmembrane conductance regulator modulator. However, the drug is cost-prohibitive and difficult for patients to obtain. To increase patient access to Orkambi™, Karen McCoy, MD, chief of Pulmonary Medicine at Nationwide Children’s, and her team collaborated with the Department of Pharmacy.

The Nationwide Children’s CF Specialty Pharmacy is now one of the only pharmacies in the United States that has access to all CF medications and is working with insurers to increase affordability for patients.

“We have early signs of increased adherence, and anecdotal evidence of reduced frustration and difficulty for families to get the medications they need,” says Dr. McCoy, who co-authored the New England Journal of Medicine study on lumacaftor-ivacaftor. “As we move forward, I expect to find that the specialty pharmacy leads to a quantifiable improvement on the outcomes for some patients.”

Benjamin Kopp, MD, also in the Section of Pulmonary Medicine and the CF Program, led a novel analysis of the CF Foundation Patient Registry to examine whether geographic location influenced hospitalizations for pulmonary exacerbations for CF patients in the United States. His team found significant regional variability in hospitalization length, as well as risks for subsequent hospitalization.

“There is no existing literature regarding this subject,” says Dr. Kopp. “Regional variation should be examined further to determine if benchmarking standards could be achieved nationally.”

Shahid I. Sheikh, MD, member of the Section of Pulmonary Medicine and the CF Program, is lead author of the Annals of Otology, Rhinology & Laryngology publication that describes the Sheikh-Lind scoring system for sinus disease severity for use in adults with CF, which applies to children as well.

“We believe that this system can be used by any specialty with equal ease,” says Dr. Sheikh. “This gives us the opportunity to look at changes in sinus disease severity over time, especially before and after lung transplants and other surgeries when sinus disease is of great significance.”

CITATIONS:


PULMONARY MEDICINE

The mission of the Division of Pulmonary Medicine at Nationwide Children’s Hospital is to provide outstanding clinical care for children and adults with congenital respiratory disorders, including asthma, cystic fibrosis (CF), sleep-related breathing disorders, lung transplant, advanced lung disease care and management of chronic mechanical ventilation. The care model is multifocal. Our mission also includes education of medical and allied health professional trainees and involvement in cutting-edge clinical, basic and translational research.

FACULTY

Karen S. McCoy, MD
Chief

FULL-TIME NATIONAL CHILDREN’S FACULTY

Elizabeth D. Allen, MD
Don Hayes Jr., MD, MS
John Heinze, MD
Melissa Holthander, MD
Stephen E. Kirkby, MD
Benjamin T. Kopp, MD
Kavitha Korah, MD
Anne E. May, MD
Alpa V. Patel, MD
Grace R. Paul, MD
Chandar Ramanathan, MD
Shahid I. Sheikh, MD
Richard D. Shell, MD
Mark L. Splaingard, MD
Rohan A. Thompson, MD
Tiffany L. Turner, MD

Pulmonary Medicine clinicians provide care at the Nationwide Children’s main campus and at Westerville, Dublin and Lima Close To Home℠ Centers. Our 17 physicians collaborated to complete over 10,000 outpatient visits at these four locations. Ranked in the top 10 by U.S. News & World Report, the program excels in patient care, training programs and research. At the cornerstone of Pulmonary Medicine is the nationally recognized Cystic Fibrosis Care Center. The center collaborates with our colleagues in Gastroenterology, Endocrinology, Psychiatry and Otolaryngology to provide the best clinical outcomes for our pediatric and adult CF patients. Recently invited to participate as a national Research and Development Program site, our team is committed to taking the latest research from bench to bedside.

Huge advances have been made with our most unstable patients with asthma. At our Complex Asthma Clinic, we collaborate with our colleagues in Allergy, and, in addition to our school-based asthma program, we provide quality medical care and consistent treatment therapies. A reduction in urgent care and emergency department visits by these medically fragile patients is a noticeable side effect of these two programs.

Our nationally accredited cardipulmonary rehabilitation program is led by our team of physicians; respiratory, massage and exercise therapists; social workers and nurses to provide our patients with the tools necessary to resume normal living after a serious cardiopulmonary event. As evidence of our center having helped hundreds of patients regain their independence, we received reaccreditation in 2016 by the American Association of Cardiovascular and Pulmonary Rehabilitation.

Pulmonary Medicine also has a robust quality-improvement portfolio, conducts clinical research with a broad group of basic-science collaborators, exhibits steadily climbing research productivity and has over 100 publications for 2015.

TOTAL OF GRANTS AWARDED

July 1, 2015 – June 30, 2016

$1,115,301

SELECTED PUBLICATIONS


Kavitha Kotha, MD
Stephen E. Kirkby, MD
John Heintz, MD
Don Hayes Jr., MD, MS

FAST FACTS

July 2015 through June 2016

Inpatient Discharges: 1,393
Observation and Outpatient-in-a-Bed Discharges*: 1,108
Total Discharges: 2,461
Average Length of Stay*: 4.8
Average Daily Census*: 17.8
Patient Days*: 6,902
Inpatient Consults: 412
CF with Endo Clinic Visits: 53
Complex Asthma Pulmonary Clinic Visits: 133
Dublin Pulmonary Clinic Visits: 581
Lung Transplant Clinic Visits*: 96

†Excludes sleep studies.
*Excludes observation and in-a-bed patients.

Cystic Fibrosis Patients: 546
Sleep Disorders Center

Mark L. Splaingard, MD
Medical Director

A. Anish Khabiro, MD
Robert Kowatch, MD, PhD
Lenora M. Lehwald, MD
Anne May, MD
Jack Stevens, PhD
Rohan Thompson, MD

SLEEP DISORDERS CENTER

Accredited by the American Association of Sleep Medicine, the Sleep Disorders Center at Nationwide Children’s Hospital provides inpatient and outpatient consultations and treatment for children with a wide variety of sleep-related problems. Most referrals are for evaluation of abnormal breathing during sleep. Other symptoms may include insomnia, unusual movements at night and excessive daytime sleepiness. As part of the Sleep Medicine Fellowship Program at The Ohio State University College of Medicine, the center provides two months of clinical training to sleep medicine fellows each year, which includes didactic lectures, supervised clinical experience and interpretation of infant and child polysomnographic studies.

The Sleep Disorders Center participates in the training of medical students, pediatric residents, neurology residents, psychology interns, otolaryngology residents, radiology residents, physical medicine and rehabilitation residents, pediatricians, psychiatrists and graduate students at The Ohio State University. Over the past nine years, 30 sleep medicine and pediatric subspecialty fellows have completed required rotations in pediatric

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sleep medicine at the center. Center physicians lecture widely throughout The Ohio State University College of Medicine and The Ohio State University on a variety of topics, including sleep and performance. In 2015, the center performed over 2,100 polysomnographic studies and evaluated over 1,200 children in outpatient sleep clinics. The center has 23 registered polysomnographic technicians and two full-time pediatric nurse practitioners. At Nationwide Children’s, pediatric subspecialists in pulmonology, neurology, and psychiatry, who are also board certified in sleep medicine, review all polysomnographic studies to determine both diagnosis and potential therapies that would benefit each child. Further evaluation and treatment is available through the outpatient Sleep Disorders Clinic.

Staff of the Sleep Disorders Center collaborated on research projects with Nationwide Children’s investigators from Anesthesiology, Critical Care, Gastroenterology, Endocrinology, Neonatology, Neurology, Otorhinolaryngology, Pediatric Surgery, Psychiatry, Psychology, Pulmonary, Plastic Surgery, The Center for Injury Research and Policy at Nationwide Children’s and the Department of Mathematics at Ohio State. Recently published manuscripts include studies on the effect of light therapy in improving depression in hospitalized patients with cystic fibrosis, the effects of gastroesophageal reflux during sleep on children with neurologic disorders, and the role of sleep in the modulation of gastroesophageal reflux and symptoms in obese children.

SELECTED PUBLICATIONS


Sharon Bouz-Talahu, MD, MPH

In vitro Co-Chief

Stacy Payne Andrus, MD, MS

In vitro Co-Chief

Shugrik Aghoghian, MD

Kyla Driest, MD

Gloria C. Higgins, MD (Emeritus)

Edward Oberle, MD


The Pediatric Rheumatology Clinic at Nationwide Children’s serves children with diseases, including juvenile idiopathic arthritis (JIA), systemic lupus erythematosus (SLE), dermatomyositis (DM), spondyloarthropathy, rheumatic fever, vasculitis, scleroderma and any painful musculoskeletal problems. The Clinic conducts more than 6,500 outpatient visits annually and evaluates approximately 1,200 new patients per year. The Division has expanded to include ten pediatric rheumatologists and two nurse practitioners. We are pleased to welcome pediatric rheumatologists Kyla Driest, MD, and Edward Oberle, MD. An additional pediatric rheumatologist, Fatima Barbar-Smiley, MD, joined the division July 1, 2016. Our fellowship includes three categorical pediatric and one internal medicine-pediatrics fellows. Dr. Oberle has recently established a musculoskeletal ultrasound clinic.

Our close collaborations with adult rheumatology at The Ohio State University and with multiple pediatric subspecialists at Nationwide Children’s promote collaborative clinical care and research. Examples include collaborations with Gastroenterology in caring for children with inflammatory bowel disease who have musculoskeletal problems and with Ophthalmology in optimizing uveitis screening in children with JIA.

Our division is engaged in clinical and basic science research projects and participates in several national and international collaborative studies of childhood rheumatic diseases. Investigator-initiated projects include a study of the impact of obesity on joint function in children and adolescents and study of interventions to improve the pediatric-to-adult health care transition process. The division is currently participating in Childhood Arthritis and Rheumatology Research Alliance (CARRA), Pediatric Rheumatology Collaborative Study Group (PRCG) and Pediatric Rheumatology International Trials Organization (PRINTO). We participate in a quality improvement network, the Pediatric Rheumatology Care and Outcomes Improvement Network (PR-COIN). Our division is home to the open-access RheuAtlas, and Charles Spencer, MD, is the co-editor of Pediatric Rheumatology.

RHEUMATOLOGY

The Division of Pediatric Rheumatology at Nationwide Children’s Hospital provides comprehensive, compassionate, evidence-based clinical care to children with musculoskeletal and rheumatic diseases; conducts research on these diseases; educates students, residents and pediatricians; and helps physicians in other countries develop needed pediatric rheumatology services. The division is involved in several quality improvement projects to improve outcomes for children with rheumatic disease and partners with patients and families in these efforts.

FACULTY

Sharon Bouz-Talahu, MD, MPH

In vitro Co-Chief

Stacy Payne Andrus, MD, MS

In vitro Co-Chief

Shugrik Aghoghian, MD

Kyla Driest, MD

Gloria C. Higgins, MD (Emeritus)

Edward Oberle, MD


The Pediatric Rheumatology Clinic at Nationwide Children’s serves children with diseases, including juvenile idiopathic arthritis (JIA), systemic lupus erythematosus (SLE), dermatomyositis (DM), spondyloarthropathy, rheumatic fever, vasculitis, scleroderma and any painful musculoskeletal problems. The Clinic conducts more than 6,500 outpatient visits annually and evaluates approximately 1,200 new patients per year. The Division has expanded to include ten pediatric rheumatologists and two nurse practitioners. We are pleased to welcome pediatric rheumatologists Kyla Driest, MD, and Edward Oberle, MD. An additional pediatric rheumatologist, Fatima Barbar-Smiley, MD, joined the division July 1, 2016. Our fellowship includes three categorical pediatric and one internal medicine-pediatrics fellows. Dr. Oberle has recently established a musculoskeletal ultrasound clinic.

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Selected Publications


SELECTED PUBLICATIONS

Total of Grants Awarded

Avera Total of Grants Awarded

2015-16 Annual Report

TOTAL OF GRANTS AWARDED

JULY 1, 2015 – JUNE 30, 2016

$208,411

SELECTED PUBLICATIONS


SELECTED PUBLICATIONS
FAST FACTS

July 2015 through June 2016

<table>
<thead>
<tr>
<th>Location</th>
<th>Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canal Winchester Sports Medicine Clinic Visits</td>
<td>2,126</td>
</tr>
<tr>
<td>Dublin Sports Medicine Clinic Visits</td>
<td>4,049</td>
</tr>
<tr>
<td>East Broad Sports Medicine Clinic Visits</td>
<td>1,346</td>
</tr>
<tr>
<td>Hilliard Sports Medicine Clinic Visits</td>
<td>960</td>
</tr>
<tr>
<td>Marysville Sports Medicine Clinic Visits</td>
<td>665</td>
</tr>
<tr>
<td>New Albany Sports Medicine Clinic Visits</td>
<td>1,196</td>
</tr>
<tr>
<td>Sports Medicine Clinic Visits</td>
<td></td>
</tr>
<tr>
<td>Westerville Sports Medicine Clinic Visits</td>
<td>4,615</td>
</tr>
<tr>
<td>Total Sports Medicine Clinic Visits</td>
<td>16,158</td>
</tr>
</tbody>
</table>

Top 10 Principal Final Diagnoses at the Sports Medicine Clinics:

- Concussion: 3,162
- Low Back Pain: 1,402
- Patellofemoral Syndrome and Osgood-Schlatter’s Disease: 1,132
- Knee Pain: 1,037
- Ankle Sprain: 543
- Headache: 501
- Shoulder Pain: 488
- Hip Injury: 403
- Hip Pain: 424
- Ankle Pain: 275

TOXICOLOGY

The Section of Toxicology at Nationwide Children’s Hospital provides teaching, patient care and research to improve the outcome for poisoned patients. It provides medical supervision for the Central Ohio Poison Center and the toxicology consult service in the treatment of poisoned patients and management of adverse drug reactions. The section conducts research involving drug and toxicant effects as well as poison prevention and population-based poison control. The section also provides important consultation resources to hospital-based and community physicians across Ohio, supporting them as they continue to treat poisoned patients in their own communities.

FACULTY

Dr. Devin Wiles, DO
Dr. Hannah Hays, MD
Dr. Michael T. Kelley, MD
Dr. Jason Russell, DO

Dr. Henry Spiller, MS, DABAT

Dr. Hannah L. Hays, MD

Medical and pharmacy students, and physicians from emergency medicine, pediatrics, internal medicine, pediatric emergency medicine and child abuse training programs benefit from rotations with the section at the Central Ohio Poison Center (COPC). Section members teach toxicology, pharmacology and patient-centered medicine at The Ohio State University College of Medicine. They teach the public through frequent media interviews and programs. The section helps local, county and state governments and agencies as they prepare to respond effectively to mass-casualty events and to terrorism involving biological, chemical and radiological hazards. The section is an important resource for Ohio's childhood lead poisoning prevention program. The section also runs the Medical Toxicology Fellowship Program, sponsored by The Ohio State University Wexner Medical Center. The fellowship is a two-year program approved for two fellows each year. Based at the COPC, our Medical Toxicology Fellowship is the only active medical toxicology fellowship in Ohio, demonstrating our commitment to the education of the next generation of medical toxicologists.

The COPC serves the citizens of 64 Ohio counties. Specially trained, certified nurses and pharmacists handle poisoning-exposure cases from the public, medical and pharmacy professionals, health departments and emergency medical services. Certified by the American Association of Poison Control Centers, the COPC has been improving care of poisoned patients for more than 50 years.

With our nationally recognized Be Poison Smart™ public education program, the COPC works to reduce the incidence of childhood poisonings throughout Ohio. We use our Be Poison Wise!SM program to help older adults prevent poison exposures and medication mistakes. The COPC plays an important role in toxicosurveillance, communications and emergency professional education in preparation for, and during, the event of a community disaster.

TOTAL OF GRANTS AWARDED

JULY 1, 2015 – JUNE 30, 2016

$457,964

SELECTED PUBLICATIONS


FAST FACTS

July 2015 through June 2016

Inpatient Toxicology Consults: ........................................ 341
Toxicology Poison Center Consults: ..................................... 3,277
Toxicology Clinic Visits: .................................................. 18
Poison Control Exposure Cases:........................................... 40,224
Peer Consults: ................................................................. 1,181

PSYCHIATRY AND COMMUNITY BEHAVIORAL HEALTH

Psychiatry and Community Behavioral Health is the largest and most clinically diverse section of Behavioral Health. This integrated program of care for pediatric mental disorders was created via collaboration between Nationwide Children’s and The Ohio State University Wexner Medical Center. See page 27 for details, and for information about all Behavioral Health services.

FACULTY

David A. Anshon, MD
Chief

FULL-TIME NATIONWIDE CHILDREN’S FACULTY

John Ackerman, PhD
Benjamin Albrecht, DO
Ivana Balic, MD
Jeffrey A. Bridge, PhD
Shannon M. Cheek, MD
Joyce Chen, MD
Nancy Cunningham, PsyD
Mary Lynn Dell, MD
Bela M. Gandhi, MD
Richard H. Gilchrist, MD
Ramya Goyal, MD
Barbara L. Gracious, MD
Karah Harvey, MD
Joseph Hatcher, PhD
Kristina R. Jiner, MD
Sophia Kassem, DO
Anna Kerlek, MD
Robert A. Kowatch, MD, PhD
Griffin A. Stout, MD
Glenn Thomas, PhD
Raymond T. Troy, MD
Kris West, PhD

OSU-AFFILIATE FACULTY

Michael G. Aman, PhD
L. Eugene Arnold, MD
John V. Campo, MD
Mary Fristad, PhD
Amy B. Hoisington-Stabile, MD
Ghada N. Leef, MD
K.W. Soldano, PhD
Jessica R. Strafford, MD

TOTAL OF GRANTS AWARDED TO PSYCHIATRY AND COMMUNITY BEHAVIORAL HEALTH

JULY 1, 2015 - JUNE 30, 2016

$77,450

SELECTED PUBLICATIONS


The Department of Radiology at Nationwide Children’s Hospital has enjoyed a long-standing tradition of outstanding clinical programs, a passion for teaching and strength in innovative imaging approaches. It has embarked on an ambitious plan to diversify past a predominantly clinical footprint into a comprehensive presence in all pediatric subspecialties, including clinical research, innovation and education. The strategic plan is to implement a robust quality and safety infrastructure, optimize distribution of imaging resources, develop a collaborative imaging biomarker-based research program focused on children that will enhance the work of investigators across the enterprise, create an integrated model of imaging informatics that will highlight the institution as a leader in the field of technology assessment in children, and create an advanced image processing and treatment planning program using 3-D modeling and 3-D printing for biomarker development, personalized treatment planning and creation of patient-specific devices.

The Department of Radiology provides a complete range of diagnostic procedures, including magnetic resonance imaging (MRI), computed tomography (CT), ultrasound, fluoroscopy, nuclear medicine, bone densitometry, and an exhaustive range of diagnostic and therapeutic interventional radiological procedures, including recent addition of implanted vascular access devices.

Innovation and international leadership in therapeutic procedures include I-131 MBG neuroendocrine tumor ablation, I-131 ablation for thyroid cancer and hyperthyroidism; vascular and varicose embolization; radiofrequency ablation of congenital and acquired head and neck cysts (salivary gland neoplasms and dermoid/epidermoid, branchial cleft, and thyroglossal duct cysts); soft tissue foreign body removal; thyroid abscess drainage; and rheumatoid joint and tendon sheath steroid injections.

The department is involved in extensive research initiatives in the areas of thoracic empyema treatment; percutaneous treatment of congenital head and neck cystic masses; percutaneous treatment of orbital vascular malformations and congenital cysts; development of new seldotherapy procedures; radiofrequency ablation of benign and malignant tumors; educational systems for interventional radiology; CT/MRI imaging techniques for patients with complex colorectal malformations, functional disorders of the gastrointestinal tract, congenital heart disease, and orthopedic disorders; 3-D printing and augmented reality techniques; advanced neuroimaging techniques in brain perfusion; diffusion tensor imaging tractography; functional MRI; and intraoperative MRI neurosurgical interventions.

**SELECTED PUBLICATIONS**


**Department, Section and Center Reports**

**FACULTY**

Mark J. Hogan, MD
Section Chief, Vascular and Interventional Radiology
LaDonna J. Maline, MD
Lisa C. Martin, MD
Section Chief, Emergency Radiology
James W. Murakami, MD
Becky L. Murray, MD
Julie C. O’Donovan, MD
Sunny E. Pint, MD
Andrew J. Rabe, DO
Matthew Robertson, MD
Diana P. Rodriguez, MD
Lynne Ruess, MD
Jerome A. Rusin, MD
Section Chief, Pediatric Neuroradiology
Sally J. Smith, DO
Section Chief, General Radiology
Benjamin P. Thompson, DO
Section Chief, Electromagnetic, Gastrointestinal and Gastrointestinal Radiology
Patrick S. Warren, MD
Cody M. Young, DO
Nicholas A. Zumberge, MD

The department performed 225,641 diagnostic and interventional radiological procedures from July 2015 through June 2016 including inpatient, Emergency Department and ambulatory procedures as well as 83,012 procedures at Nationwide Children’s Close To Home™ Centers.
SURGICAL SERVICES

Nationwide Children’s Hospital’s surgical departments have come together with a single, clear focus — to provide optimal outcomes for every child — inside and outside the walls of the operating room. This work is predicated on three core pillars — providing advanced clinical care, performing groundbreaking research and offering industry-leading training programs — that combine to provide the best care for every child.

Our faculty are helping to improve the care provided to children around the world by training the next generation of surgeons. Our departments offer the most surgical residency and fellowship programs of any free-standing pediatric hospital in the United States. Training programs are also offered to other surgeons, providing opportunities for them to advance their skills in more advanced techniques such as minimally invasive laparoscopic and robot-assisted laparoscopic surgery.

SURGICAL SUBSPECIALTIES

- Cardiothoracic Surgery
- Dentistry
- Neurosurgery
- Ophthalmology
- Orthopedics
- Otolaryngology
- Pediatric and Adolescent Gynecology
- Plastic and Reconstructive Surgery
- Pediatric Surgery
- Transplant
- Urology

CARDIOThorACIC SURGERY

The Cardiothoracic Surgery Program at Nationwide Children’s is dedicated to the treatment of all patients, from fetus to adulthood, with congenital heart defects ranging from the most straightforward to the extremely complex. As part of the Heart Center, we offer a comprehensive approach to heart care that is based on a multidisciplinary team model, which enables our team to constantly monitor quality of care and patient safety pre- and post-surgery to assure the best possible outcomes. See page 31 for details about The Heart Center.

FACULTY

Mark E. Galantowicz, MD
Chief, Cardiothoracic Surgery
Co-Director, Heart Center

Patrick I. McConnell, MD
Toshiharu Shinoka, MD, PhD

TOTAL OF GRANTS AWARDED TO HEART CENTER AND CARDIOVASCULAR RESEARCH FACULTY

*July 1, 2015 – June 30, 2016*

$2,608,190

SELECTED PUBLICATIONS


DENTISTRY

The Department of Dentistry at Nationwide Children's Hospital is a team of dedicated pediatric dentists, other dental specialists, residents and staff who provide comprehensive preventive, therapeutic, urgent and emergency oral health care services for infants, children and adolescents, including those with special health care needs. Our mission is to optimize oral health for the children who need us most through a balanced program dedicated to providing quality clinical care and specialty services while advancing knowledge through research, advocacy and community partnerships within a premier educational environment. Scientific discoveries focus on caries prevention, behavior management, oral microbiome and dental trauma outcomes.

FACULTY

Dennis J. McGtigue, DDS, MS
Ana M. Mercado, DMD, PhD
Gregory M. Nex, DDS
Diego A. Solis, DDS

COMMUNITY-BASED FACULTY

Ashley E. Anderson, DDS
Carolyn A. Barber, DDS
Janet J. Brown, DDS
Jennifer Blyth-Hechko, DDS, MS
Emily R. Burro, DDS
Jackson Cookley, DDS
Johnathan W. Drakey, DDS
Kylene H. Fernandez, DDS
Timothy J. Frey, DDS
Lucia C. Gerstmann, DDS, MS
Kimberly M. Gill, DDS, MS
Jillian N. Gray, DDS
Allert H. Hackman, DMD
Mirza L. Hines, DDS
Johnna Jorgensen, DDS
Edith Y. Kang, DDS, DMD
Gerald H. Kasrey, DDS
Patrick M. Kennedy, DDS
Nicholas M. Kerns, DDS
Lesley N. Latham, DDS
Jeffrey S. Lee, DDS
Douglas Lin, DDS

OSU-AFFILIATE FACULTY

Diego A. Solis, DDS
Gregory M. Ness, DDS
Ana M. Mercado, DMD, PhD
Johnathan W. Draney, DDS, MS
Jackson Cookley, DDS
Kylene H. Fernandez, DDS
Timothy J. Frey, DDS
Lucia C. Gerstmann, DDS, MS
Kimberly M. Gill, DDS, MS
Jillian N. Gray, DDS
Allert H. Hackman, DMD
Mirza L. Hines, DDS
Johnna Jorgensen, DDS
Edith Y. Kang, DDS, DMD
Gerald H. Kasrey, DDS
Patrick M. Kennedy, DDS
Nicholas M. Kerns, DDS
Lesley N. Latham, DDS
Jeffrey S. Lee, DDS
Douglas Lin, DDS

Research, Clinical, and Education Highlights:

- Clinical
  1. Dr. Ronald A. Casamassimo, DDS, DMD, claims an important role in the treatment of dental trauma in children.
  2. Dr. Kimberly Hammersmith, DDS, MPH, MS, has been recognized for her work in community-based dentistry.
  3. Dr. Paul Casamassimo, DDS, DMD, PhD, has been awarded the Young Educator's Award by the American Academy of Pediatric Dentistry.

- Research
  1. Dr. Peter E. Larsen, DDS, has been appointed as the Section Chief for Oral and Maxillofacial Surgery.
  2. Dr. Kelly S. Kennedy, DDS, MS, has been recognized for her work in orthodontics.
  3. Dr. Erin L. Gross, DDS, PhD, has been awarded the Young Educator's Award by the American Academy of Pediatric Dentistry.

- Education
  1. Dr. Timothy B. Followell, DMD, MS, has been appointed as the Section Chief for Pediatric Dentistry.
  2. Dr. Hany A. Emam, BDS, MS, has been appointed as the Section Chief for Orthodontics.
  3. Dr. Kimberly Hammersmith, DDS, MPH, MS, has been recognized for her work in community-based dentistry.
TOTAL OF GRANTS AWARDED
JULY 1, 2015 – JUNE 30, 2016
$416,918

SELECTED PUBLICATIONS


FAST FACTS

July 2015 through June 2016

Inpatient Discharges: ........................................ 4
Observation and Outpatient-in-a-Bed Discharges: ........ 37
Total Discharges: ............................................. 41
Average Length of Stay*: .................................... 1
Patient Days*: ............................................... 1
Dental Clinic Visits: ........................................ 37,794
Total Surgical Procedures: .................................. 5,197

Excludes admission and outpatient-in-a-bed patients.

NEUROSURGERY

Ranked in the top 15 programs in the country by U.S. News & World Report, the Division of Pediatric Neurosurgery at Nationwide Children’s Hospital provides evaluation and treatment for problems of the central nervous system in patients from birth through 21 years of age and in selected adults with congenital neurological disorders. The staff works closely with members of the departments of Anesthesia, Hematology/Oncology/BMT, Neurology, Physical Medicine and Rehabilitation, Pediatric Surgery, Plastic and Reconstructive Surgery, and many other pediatric disciplines.

FACULTY

Jeffrey R. Leonard, MD

Chief

FULL-TIME NATIONALWIDE CHILDREN’S FACULTY

Lance S. Governale, MD

Jonathan A. Pindrik, MD

Eric A. Srinivick, MD, PhD

OSU-AFFILIATE FACULTY

John M. McGreger, MD

Ehud U. Mendel, MD

Ciaran J. Powers, MD, PhD

Daniel Prevedello, MD

Shahid Nimjee, MD

Department, Section and Center Reports

and Eric A. Srinivick, MD, PhD, has begun his basic science research program in traumatic brain injury. Neurosurgery Chief Jeffrey R. Leonard, MD, continues his focus on brain tumors, cerebral palsy and improving treatment for childhood brain tumors. He has had multiple invited presentations both at the FIM and National Neurosurgical Societies. Lance S. Governale, MD, continues to expand patient recruitment for craniosynostosis patients outside the state of Ohio. He has also been a contributing member to several national committees thus increasing the national presence of the neurosurgery program at Nationwide Children’s. Grace Deyo, PhD, CPNP, has submitted abstracts to at least two national meetings, and Renee Carpenter-Wells, RN, DNP, CPNP, AG-PC, continues to focus on transition to adult health care for patients with spina bifida.

SELECTED PUBLICATIONS


FAST FACTS

July 2015 through June 2016

Inpatient Discharges: ........................................ 494
Observation and Outpatient-in-a-Bed Discharges: ....... 150
Total Discharges: .......................................... 644
Average Length of Stay*: ................................... 7.7
Average Daily Census*: .................................... 7.7
Patient Days*: ............................................. 2,808
Total Surgical Procedures: .............................. 691
Neurosurgery Main Campus Clinic Visits: ............... 4,078
Neurosurgery Main Campus Clinic Visits: ............... 39
Total Neurosurgery Clinic Visits: ......................... 4,113

Excludes observation and outpatient-in-a-bed patients.
OPHTHALMOLOGY

The Department of Ophthalmology at Nationwide Children’s Hospital is dedicated to serving the eye needs of children of all ages regardless of ability to pay. The department includes the Eye Clinic and Electrophysiological Testing Laboratory at Nationwide Children’s Hospital. The Eye Clinic serves in-house patient referrals, standard outpatient eye care and special tests on private outpatients. The clinic staff includes pediatric ophthalmologists, a pediatric ophthalmology fellow, optometrists and ophthalmology residents from The Ohio State University College of Medicine as well as low vision and rehabilitation specialists. Specialty clinics staffed by ophthalmologists and other medical specialists and professionals include glaucoma, retina, oculoplastics, pseudotumor and low vision.

FACULTY

Louis J. Chorich III, MD
Frederick H. Davidoff, MD
Jill A. Foster, MD
Andrew J. Hendershot, MD
Charles J. Hickey, MD
Shelly Gupta Jain, MD
Jean B. Kassem, MD
Steven E. Katz, MD
Curin G. Kelley, MD
Dino D. Klisovic, MD
Rebecca A. Krummen, MD
Carrie A. Lembach, DO
Mark D. Lomen, MD
Thomas F. Mauger, MD
Cameron B. Nabavi, MD
Matthew P. Ohr, MD
Emil M. Opremcak, MD
Niraj S. Shah, MD
Daniel G. Straka, MD

COMMUNITY-BASED FACULTY

Michael S. Bloss, MD
Adam R. Cloud, MD
Mary A. Craven, MD
Jeffrey D. Hutchinson, DO
Ami A. Shah Vira, MD
William D. Terrell, MD
Sandra X. Zhang-Nunes, MD

The Visual Electrophysiological Clinic at Nationwide Children’s Hospital is led by Julie Racine, PhD. This clinic performs electroretinograms, multifocal electroretinograms, electro-oculargrams and visual evoked potential on patients of all ages, including adults, to assess retinal and retino-cortical function. The department also houses the Ohio Amblyope Registry program (funded by the Ohio Department of Health Save One Sight Fund), the first and only statewide program in the United States designed to serve the needs of children with amblyopia. It is a voluntary registration program to increase knowledge about amblyopia, its causes, treatment and prevention, and it provides free eye patches and other important services to help families of children with amblyopia.

The department is equipped with state-of-the-art technology for utilization in standard dilated eye exams and for specialty testing, including ultrasound (A/B scans), retinal photography, visual field, autorefractometry, tomometry, color vision and contrast sensitivity. The number of patients serviced remains strong and continues to grow.

We are also one of 18 sites currently participating in the multicenter Artisan Aphakia Lens Study. The Artisan Aphakia lens is unique because it is fixated to the iris and, therefore, allows for lens implantation in patients who do not have the support structure for a traditional implant. Without an implant lens, these children must wear extremely strong and cosmetically unappealing glasses or highly customized, and often poorly tolerated, hard contact lenses. These patients now have an option to live with much more normal visual function. These lenses are not FDA approved, and we expect this study will help gain approval.

In addition, the department supports research and teaching programs that ensure delivery of the highest quality pediatric care now and in the future. The department participates in several multicenter clinical trials funded by the National Institutes of Health involving a telemedicine approach to screening for retinopathy of prematurity (ROP). We are participating in several amblyopia and ROP studies sponsored by the Pediatric Eye Disease Investigator Group. Research on nystagmus using functional magnetic resonance imaging continues, along with projects concerning infantile cataracts, fourth cranial nerve palsy and convergence insufficiency.

FAST FACTS

July 2015 through June 2016

Inpatient Discharges: ................. 3
Observation and Outpatient-in-a-Bed Discharges: ...... 40
Total Discharges: ..................... 43
Average Length of Stay*: ............ 1.3
Patient Days*: ........................ 4
Total Surgical Procedures: ............ 1,780
Inpatient Consults: .................... 2,203
Eye Clinic and Low Vision Eye Clinic Visits: ........... 9,805

*Includes observation and a patient-in-a-bed patients.
Orthopaedics

Bilateral Thinking: Juvenile Osteochondritis Dissecans Likely to Occur in Both Knees

According to a prospective clinical research study, all children presenting with juvenile osteochondritis dissecans (JOCD) should be radiographically evaluated for bilateral lesions. The study, conducted by orthopedic specialists at Nationwide Children's Hospital, is the first to identify risk factors for, and the prevalence of, bilateral JOCD.

In order to estimate the prevalence of JOCD present in both knees, 108 consecutive patients presenting with a lesion in one knee were evaluated radiographically for lesions in the other knee. Demographics and OCD factors were compared between groups presenting with only one affected knee and those in whom both knees were impacted.

“We found a 29 percent incidence of JOCD in the contralateral knee in patients initially presenting with OCD in a single, symptomatic knee,” says Walter P. Samora, MD, director of the Pediatric Orthopaedic Residency Program at Nationwide Children's and co-author of the study, published in the Journal of Pediatric Orthopedics. “We also found that close to 40 percent of lesions found in the contralateral knee were completely asymptomatic.”

The study also examined differences in the prevalence of bilateral JOCD based on gender and age. Female patients and younger children were statistically more likely to have a lesion in both knees than males or children presenting with OCD at a more advanced age. No statistically significant difference in bilateral JOCD prevalence was noted based on lesion location, stability or pain.

“Our findings indicate that bilateral JOCD is highly prevalent among children presenting with OCD of a single knee,” says Dr. Samora. “Females and younger patients with OCD in a single knee are at the highest risk, but all children presenting with OCD should have the contralateral knee radiographically evaluated for bilateral JOCD.”

Bilateral, radiographic evaluation of patients with OCD is now standard of care at Nationwide Children’s.

CITATION:

“All children presenting with OCD should have the contralateral knee evaluated.”
ORTHOPAEDICS
The Department of Orthopaedics at Nationwide Children’s Hospital provides diagnosis, evaluation and treatment for all orthopedic conditions and disorders in infants, children and adolescents. Inpatient, outpatient and emergency services are provided to patients with a wide range of developmental, congenital, neuromuscular and postraumatic problems of the musculoskeletal system, trauma and fractures, scoliosis and other spinal abnormalities.

Faculty members participate in the education of health care professionals at several levels. Residents, medical students and nurses from The Ohio State University Wexner Medical Center, OhioHealth, and Mount Carmel Health System receive all of their pediatric orthopedic experience at Nationwide Children’s. The Accreditation Council for Graduate Medical Education (ACGME)-accredited fellowship program rounds out the extensive educational program.

COMMUNITY-BASED FACULTY
Brent A. Bickel, MD
Craig N. Dimitratos, MD
Richard A. Fankhauser, MD
Jonathan B. Feibel, MD
Terry T. Fowler, MD
Steven T. Gaines, MD
Robert T. Gonsline, MD
Martin J. Gottesman, MD
David Hannallah, MD
Lee M. Hlad, DPM
David F. Huber, MD
Michael S. Lefkowitz, MD
James E. Popp, MD
Daniel P. Quinn, MD
Desmond J. Stutzman, DO
Corey L. Van Hoff, MD
Marlo O. VanSteyn, MD
Raymond K. Wuapa, MD

Research interests continue to expand within several areas of the Department of Pediatric Orthopaedics. In May, the department was awarded five podium presentations at the annual Pediatric Orthopaedic Society meeting in Indianapolis, Indiana. These presentations highlighted innovative hip reconstruction techniques for slipped capital femoral epiphysis (SCFE) and neuromuscular hip dysplasia as well as a unique description of patellofemoral morphology in the growing child.

With the recruitment of Julie Samora, MD, MPH, as director of Quality Improvement, a significant number of QI initiatives were designed and implemented. Projects to lower the risk and incidence of cast injury reduce the amount of radiation within spine patients via utilization of a low-dose EOS machine, and a multicenter project with the aim of reducing the number of casts and clinic visits for forearm torus fractures all highlight such initiatives. In addition, projects aimed at treating obesity in SCFE patients and improving Operating Room efficiency both showed early positive results.

Educational initiatives continue to grow as our ACGME-accredited program trains approximately 55 rotating residents and fellows per academic year. The didactics include a daily trauma conference, a weekly reading/X-ray conference, pre-op indications conference, surgical milestones conference, morbidity and mortality, current literature, research meetings and a monthly fellow’s conference. Pediatric orthopedic grand rounds and a pediatric-specific lecture series are conducted on a monthly basis, 10 months per year. Residency Program Director Walter Samora, MD, has developed a curriculum and milestone-driven academic environment for all residents, fellows and students who rotate through our program. They have an opportunity to participate in specialty clinics such as hand, tumor, spine, cerebral palsy, myelomeningocele, hip, and limb deformity.

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SELECTED PUBLICATIONS

With the recruitment of Julie Samora, MD, MPH, as director of Quality Improvement, a significant number of QI initiatives were designed and implemented. Projects to lower the risk and incidence of cast injury reduce the amount of radiation within spine patients via utilization of a low-dose EOS machine, and a multicenter project with the aim of reducing the number of casts and clinic visits for forearm torus fractures all highlight such initiatives. In addition, projects aimed at treating obesity in SCFE patients and improving Operating Room efficiency both showed early positive results.

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SELECTED PUBLICATIONS


OTOLARYNGOLOGY

The Department of Pediatric Otolaryngology at Nationwide Children’s Hospital provides comprehensive diagnosis and treatment for children who have diseases of the ears, nose, and throat. These problems include congenital and acquired diseases of the head and neck, hearing loss, ear infections, tonsillitis, sinusitis, acute and chronic nasal problems, airway disorders, voice disorders, sleep apnea and many other related diseases.

COMMUNITY-BASED FACULTY
Sumit Bapat, MD
Timothy R. Budnik, DO
Jacob P. Burkhardt, DO
Roberto J. Castillo, MD
Daniel W. Chase, MD
Timothy P. Drankwalter, DO
Alfred J. Fleming, Jr., MD
Iain L. Grant, MD
Akash Gupta, MD
Jeffrey A. Hall, MD
Steven M. Hirsch, MD
Richard T. Irene, MD
James D. Lowery, MD
Patrick C. Walz, MD
Gregory J. Wier, MD, FAAP, FACS

OsU-Affiliate Faculty
Brad W. deSilva, MD
Edward E. Dodson, MD
Garth F. Easig Jr., MD
Eugene Ge-Hink Chio, MD
Laura Martka, MD
Matthew O. Old, MD
Bradley A. Otto, MD
Minka L. Schofield, MD, FAAP, FACS
Prashant S. Malhotra, MD, FAAP, FACS

The Department of Pediatric Otolaryngology continues its clinical growth of services with over 25,000 clinic visits and over 7000 surgical procedures. The clinical success is paralleled by academic and educational growth. The department had over 30 national academic presentations. Meredith Lind, MD, has expanded her simulation course and provides education on emergency airway management for multiple disciplines at Nationwide Children’s. She was recognized by the hospital as the Physician of the Year in 2015. Kris Jatana, MD, continues his advocacy for buccal battery safety in addition to taking the lead as the director of Quality Improvement. A Division for Pediatric Otology at Nationwide Children’s was created to continue growth in the clinical services and research mission for children with ear disease. It is led by Oliver Adunka, MD, whose clinical efforts allowed Nationwide Children’s to be one of the first sites to perform Auditory Brain Implant (ABI) in pediatric patients. He was joined by Derek Huston, PhD, to investigate speech and language development in children with hearing impairment. This joint effort with The Ohio State University Department of Otolaryngology will develop translational research to help children with hearing loss.

TOTAL OF GRANTS AWARDED
July 1, 2015 – June 30, 2016
$647,711

SELECTED PUBLICATIONS

FAST FACTS
July 2015 through June 2016

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient Discharges</td>
<td>110</td>
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<tr>
<td>Observation and Outpatient-in-Bed Discharges</td>
<td>2,003</td>
</tr>
<tr>
<td>Total Discharges</td>
<td>3,013</td>
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<tr>
<td>Average Length of Stay*</td>
<td>3.9</td>
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<tr>
<td>Average Daily Census*</td>
<td>1.2</td>
</tr>
<tr>
<td>Patient Days*</td>
<td>428</td>
</tr>
<tr>
<td>Total Surgical Cases</td>
<td>7,013</td>
</tr>
<tr>
<td>Inpatient Consults</td>
<td>658</td>
</tr>
</tbody>
</table>

*Excludes observation and outpatient-in-bed patients
PEDIATRIC AND ADOLESCENT GYNECOLOGY

The Section of Pediatric and Adolescent Gynecology at Nationwide Children's Hospital provides comprehensive reproductive health services for patients and their families from birth through early adulthood. These services are provided in a wide array of clinical services, including:

- Pediatric and Adolescent Gynecology
- Teen and Pregnant Program
- Mother Infant Recovery Clinic
- Family AIDS Clinic and Education Services (FACES)
- Fertility and Reproductive Health Program
- THRIVE Program (Differences/Disorders of Sex Development and Complex Urological and Gender Concerns)

The Pediatric and Adolescent Gynecology program continues to collaborate with other services:

- A multidisciplinary algorithm has resulted in marked improvement in ovarian salvage rate for patients with adenoma masses.
- The Fertility and Reproductive Health Program operationalizes clinical services and best practices for patients at risk of diminished fertility. Nationwide Children's has joined the International Oncotelerity Consortium, which ensures ongoing research involving ovarian tissue cryopreservation.
- Within the Center for Colorectal and Pelvic Reconstruction, the gynecologic needs of the patients are addressed across their lifespan. Seventy-six collaborative surgical cases were completed over the past year in addition to several ongoing collaborative outcomes based research projects and program development for the annual Pediatric Colorectal, Motility and Pelvic Reconstruction Conference.

The FACES (Family AIDS Clinic and Educational Services) program continues to grow and provides both obstetric and gynecologic care to patients with HIV/AIDS. HIV-positive pregnant women seen in the Substance Abuse, Treatment, Education and Prevention Program clinic at The Ohio State University Wexner Medical Center are now being referred/visited in the FACES clinic to provide continuity of care for patients with HIV or Hepatitis C needs. This patient-centered medical home model bridges care for mothers and infants during pregnancy.

The Teen and Pregnant Program clinic visits have more than tripled since inception in 2012. Services expanded to the South High Primary Care Clinic in 2015 and plan to expand to Linden in October 2016. Shonna Bates organized a conference “College Degree: Baby and Me,” encouraging past and current patients to explore options to attend college.

The Maternal Infant Recovery Clinic exists to decrease Newborn Intensive Care Unit days for newborns by providing medication-assisted treatment, prenatal care and community support for women who are pregnant and struggling with opiate addiction. This clinic is a community-based program spanning hospital systems and alcohol and other drug use treatment programs, breaking down silos and creating a true maternal care home.

Two cesarean deliveries were successfully completed at Nationwide Children’s for fetal indications over the past year.

TOTAL OF GRANTS AWARDED
JULY 1, 2015 – JUNE 30, 2016
$167,917
Surgical Strategies: Protocols Guide Best Approaches to Severe Constipation

Children with severe functional constipation are most often referred for surgery after failure of medical management, but no widely accepted definition for this failure exists. A recent article from clinician-researchers at Nationwide Children’s Hospital offers a protocol for gastroenterology specialists and surgeons to follow that matches constipation diagnoses with surgical interventions, and actually allows many pediatric patients referred for surgery to avoid it altogether with “maximal medical therapy.”

“We have taken a chaotic situation and made order from it,” says Marc A. Levitt, MD, surgical director of the Center for Colorectal and Pelvic Reconstruction at Nationwide Children’s and senior author of the article. “It’s exceedingly common to see a patient who had a cecostomy who probably would have done well with the right dose of laxative. It’s also common to see a patient who has received a certain surgical intervention when motility testing would have shown another intervention would work better.”

The maximal medical management that Nationwide Children’s follows is offering surgery only after a child has failed intensive, week-long bowel management guided by colorectal nurses, which includes stimulant laxatives such as senna and bisacodyl, water soluble fiber and imaging to evaluate evacuation of the colon. If medical management still fails, further testing and evaluation is advised.

The article’s authors, who also include Richard J. Wood, MD, pediatric surgeon at Nationwide Children’s and associate director of the Center for Colorectal and Pelvic Reconstruction, and Desale Yacob, MD, gastroenterologist at Nationwide Children’s and medical director of the hospital’s Motility Center, represent the key collaboration that allowed the protocol to be created.

“Our experiences with these patients led us to divide the groups and procedures in six different ways, offering different interventions for each group,” explains Dr. Levitt. “We need to see, long term, if our choices were correct. The ultimate goal is to have patients feeling better – no accidents, no bloating, no impaction.”

The novel surgical approaches were developed by Dr. Levitt and refined by Karen A. Diefenbach, MD, director of Minimally Invasive Surgery at Nationwide Children’s. Dr. Levitt and his colleagues in the Center for Colorectal and Pelvic Reconstruction are now tracking patients in hopes of proving the effectiveness of this protocol.

CITATION:
PEDIATRIC SURGERY

The mission of the Department of Pediatric Surgery at Nationwide Children’s Hospital is to provide collaborative, comprehensive and multidisciplinary care for infants, children and adolescents with surgical disorders. The members of the department are all full-time faculty of the Department of Surgery at The Ohio State University College of Medicine and are committed to excellence in clinical care, surgical education and research.

FACULTY

Gail E. Benner, MD
Chief

FULL-TIME NATIONWIDE CHILDREN’S FACULTY

Jennifer H. Aldrink, MD

Patrick S. Vaccaro, MD

Jean E. Starr, MD

Ronald P. Pelletier, MD

Mounir J. Haurani, MD

Richard J. Wood, MD

David R. Brigstock, PhD

Karen A. Diefenbach, MD

Jonathan I. Groner, MD

Katherine J. Deans, MD, MHSc

Christopher K. Breuer, MD

Jennifer H. Aldrink, MD

Mohammed Alazab, MD

Rajen K. Thakkar, MD

Peter C. Minneci, MD, MHSc

Marc P. Michalsky, MD

Gail E. Benner, MD

Peter C. Minneci, MD, MHSc

Karen A. Diefenbach, MD

Katherine J. Deans, MD, MHSc

Christopher K. Breuer, MD

Jennifer H. Aldrink, MD

FACULTY education and research.

The mission of the Department of Pediatric Surgery at Nationwide Children’s Hospital is to provide clinical care, surgical education and research.

The Department of Pediatric Surgery is one of the largest and most diverse departments of its kind in the United States and includes 16 board-certified pediatric surgeons and a full-time PhD scientist. Each faculty member brings special strengths and talents to the department and is recognized for individual expertise in clinical care, research and education.

Rajan Thakkar, MD, and Richard Wood, MD, joined our faculty this year. Dr. Thakkar has clinical interest in pediatric burn and trauma care and is appointed as the associate burn director and the associate trauma director. He is the principal investigator in the Center for Clinical and Translational Research where he focuses on the immunological response to trauma and burn injury. He was awarded the 2016 Golden Apple Teaching Award, bestowed by surgical residents in recognition for excellent teaching. Dr. Wood obtained his surgical training in England and South Africa and joined our faculty after completing a Pediatric Colorectal Fellowship at Nationwide Children’s. His clinical interests are in all aspects of pediatric colorectal surgery, and he has been appointed as the associate director of the Center for Colorectal and Pelvic Reconstruction. His research is focused on the clinical outcomes of patients with colorectal disease.

The department maintains active clinical programs focused on pediatric colorectal surgery, surgical oncology, surgical endocrinology, minimally invasive surgery, trauma, burns, chel wall deformities, bariatric surgery, inflammatory bowel disease, peritonitis, surgery, neumomediastinum, and general pediatric surgery. The department continues many active quality improvement projects, with highlights that include focused efforts on ovarian sparing surgery, decreasing CT scan usage and increased same-day discharge in patients with appendicitis, use of a GI bundle to decrease surgical site infections, development of improved burn fluid resuscitation guidelines for Nationwide Children’s Pediatric Intensive Care Unit (PICU) and Emergency Department, and use of a primary assessment scoring tool during trauma resuscitations.

The department maintains active research programs in The Research Institute at Nationwide Children’s. Several faculty members are principal investigators with long-standing, continuous federal funding from the National Institutes of Health (NIH), including Gail Benner, MD, (protection of the intestines from necrotizing enterocolitis); David Brigstock, PhD, (prevention of liver fibrosis); and Christopher Benner, MD, (production of tissue engineered vascular grafts). Peter Minneci, MD, and Katherine Deans, MD, received a $2.875 million grant from the Patient-Centered Outcomes Research Institute (PCORI) to conduct a multi-institutional trial of non-operative management of uncomplicated pediatric appendicitis. Marc Michalsky, MD, continues to participate in important NIH- and PCORI-funded studies of long-term clinical outcomes of adolescent patients undergoing bariatric surgery. The department continues to be a for presentation at national academic meetings, and for the sixth year in a row, our research trainees have received national awards for their high-quality research.

TOTAL OF GRANTS AWARDED

JULY 1, 2015 – JUNE 30, 2016

$2,183,599

SELECTED PUBLICATIONS


PLASTIC AND RECONSTRUCTIVE SURGERY

The Section of Plastic and Reconstructive Surgery at Nationwide Children’s Hospital provides comprehensive management of all pediatric reconstructive needs, including congenital and traumatic craniofacial anomalies, velopharyngeal dysfunction, hemangiomas and vascular anomalies, pigmented birthmarks, burn injuries, microtia, breast deformities, and congenital and traumatic hand anomalies.

FACULTY

Richard E. Kirschner, MD, FAAP, FACS

Chief

FULL-TIME NATIONWIDE CHILDREN’S FACULTY

Adriane Baylos, PhD, CCC-SLP
Kim Bjorklund MD
Gregory D. Pearson, MD
Michelle Scott, DDS, MBA

OSU-AFFILIATE FACULTY

David Galbizing, MD
Albert Chao, MD
Maristella Evangelista, MD
Noopur Gangopadhyay, MD
Gayle M. Gondillo, MD
Jeffrey E. Janis, MD
Michael J. Miller, MD
Roman Skoracki, MD
Jan Valerio, MD

The Section of Plastic and Reconstructive Surgery takes the leading role in several interdisciplinary teams at Nationwide Children’s to provide comprehensive care for the restoration of both form and function. The section offers advanced fellowship training in both plastic surgery and craniofacial speech science. Both the cleft lip and palate, and craniofacial centers have maintained recognition as American Cleft Palate-Craniofacial Association-approved programs. Michelle Scott, DDS, MBA, serves as director of the Craniofacial Orthodontic Treatment Program. Adriane Baylos, PhD, CCC-SLP serves as site principal investigator for two multicenter National Institutes of Health-sponsored research projects. A quality improvement project was initiated to target improved feeding and growth outcomes for infants with cleft lip and/or palate using an interdisciplinary team approach. The project ran from September 2014 through December 2015 and resulted in a reduction of rate of failure to thrive diagnoses in infants with cleft lip and/or palate from a baseline of 18 percent to below 5 percent, as well as establishment of a new Cleft Lip Palate Feeding Team for the Cleft Lip and Palate Center. The 22q Center at Nationwide Children’s has earned national recognition as a center of excellence for the care of children with 22q11.2 deletion syndrome (DiGeorge syndrome/velocardiofacial syndrome). The center provides comprehensive, multidisciplinary evaluation and management services to affected children from across the United States, with a focus on the diagnosis and surgical treatment of velopharyngeal dysfunction. In September 2015, the 22q Center hosted its third “A Healthy You and 22q Family Symposium” for children and families affected by 22q11.2 deletion syndrome with over 150 attendees from around the world. Kim Bjorkland, MD, recently joined the section and serves as director of the Brachial Plexus Program. She joins the Hand and Upper Extremity Program, providing expertise in microsurgery and in the management of congenital and traumatic hand anomalies.

With surgical and educational missions in 2015 and 2016 to Lima, Peru, the team continues its commitment to providing care to underprivileged children in Latin America.

TOTAL OF GRANTS AWARDED

JULY 1, 2015 — JUNE 30, 2016

$35,000

SELECTED PUBLICATIONS


Losee JE, Kirschner RE. Cleft Lip/Craniofacial Clinic Visits: 1,190. Westerville Plastic Surgery Clinic Visits: 1,155.


TOTAL OF GRANTS AWARDED

FAST FACTS

July 2015 through June 2016

Inpatient Discharges: 191

Orthodontics Treatment Program Visits: 2,114

Observation and Outpatient-in-bed Discharges: 291

Cleft Lip/Craniofacial Clinic Visits: 1,832

Average Length of Stay*: 2.0

Hemangioma/Vascular Anomalies

Total Discharges: 1,305

Clinic (Dermatology) Visits: 989

Average Daily Census*: 1.9

Plastic Surgery Clinic Visits: 245

Patient Days*: 383

Hillard Plastic Surgery Clinic Visits: 3,110

Total Surgical Procedures: 1,305

Westerville Plastic Surgery Clinic Visits: 623

Inpatient Consults: 35

Total Plastic Surgery Clinic Visits: 8,553

Ortho Center Plastic Surgery Clinic Visits: 40

*Excludes observation and inpatient stays in a hospital
A 9-year-old girl with caudal regression syndrome is the first child in the United States to be treated with pudendal nerve stimulation, an adult treatment adapted for the pediatric patient by a neuromodulation team at Nationwide Children’s Hospital.

Neuromodulation of the sacral nerve, or sacral nerve stimulation, is rarely but increasingly used in children to help control fecal and urinary incontinence when standard medical management has failed. Patients with caudal regression syndrome may be missing all or part of the sacrum, making conventional sacral nerve stimulation impossible, which was the situation for the 9-year-old patient who came to Nationwide Children’s seeking treatment in 2015.

The patient had dysgenesis of the sacrum below the S2 vertebra, ruling her out as a sacral nerve stimulation candidate. After further testing, however, she was found to have function in the pudendal nerve, which is also involved in bladder and bowel control, leading the team to consider if pudendal nerve stimulation treatment used elsewhere in adults could be adapted for this pediatric patient.

“No one that we are aware of has done this in a pediatric age patient in the United States,” explains Seth A. Alpert, MD, pediatric urologist and co-director of the Surgical Neuromodulation Center at Nationwide Children’s, whose team completed the two-phase procedure. “It uses the same technology as sacral nerve stimulation, but placement of the wire for the device is much more technically challenging in pudendal nerve stimulation.”

The first surgery was placement of the subcutaneous wire with the assistance of real-time nerve electromyography monitoring and a trial of nerve stimulation with an external impulse generator. A few weeks later, a second surgery was performed to place the permanent implantable impulse generator under the skin of the upper buttock.

The 9-year-old, who was having daily fecal accidents before the procedure, has had her fecal incontinence essentially resolved.

“Although very few children will be candidates for this particular procedure, we are ideally positioned to offer unique therapies to patients with the most complicated bowel and bladder abnormalities in the Center for Colorectal and Pelvic Reconstruction,” Dr. Alpert says.

The Section of Urology at Nationwide Children’s Hospital provides comprehensive diagnostic and therapeutic services for a wide range of urological disorders in children of all ages, including teenagers and young adults. Advanced services include reconstructive surgery of the urinary tract, genitalia and urinary sphincter as well as consultations for urinary tract abnormalities detected in utero. The Section of Urology participates in several multispecialty clinics, including THRIVE (a program specializing in care for disorders of sexual differentiation, complex urological problems and gender concerns); Center for Colorectal and Pelvic Reconstruction; Urology-Nephrology Clinic; and the Myelomeningocele Clinic.

The mission of the Section of Urology is to provide the highest quality pediatric urological care in the safest and most child-friendly environment. The section includes members who are full-time pediatric urologists, hold faculty appointments in the Department of Urology at The Ohio State University College of Medicine and are committed to cutting-edge medical research and surgical education.

The full-time pediatric urology faculty has achieved national and international recognition for their innovations in minimally-invasive surgical techniques and in the diagnosis and management of infants and children with congenital hydronephrosis, neurogenic and nonneurogenic alterations of bladder function, bladder and/or bowel dysfunction and complex urogenital abnormalities. Long-distance outreach is a major focus of the division such that outpatient clinics are held in multiple locations throughout the state of Ohio as well as in Huntington, West Virginia. Specialty clinics include programs on voiding dysfunction, sexual dysfunction in young adults, and fertility preservation as well as numerous multispecialty clinics.

The minimally invasive surgery program continues to grow, offering both robot-assisted and pure laparoscopic surgical treatment of kidney abnormalities and vescicoureteral reflux. In addition to more routine procedures, the section also offers complex robot-assisted procedures, such as bladder neck reconstruction, for severe urinary incontinence.

Our section has expanded our long-distance outreach, particularly through continued integration and collaboration with the Center for Colorectal and Pelvic Reconstruction (CCPR) at Nationwide Children’s that manages children from all over the world with complex genitourinary conditions. The sacral neuromodulation program has expanded to include pudendal nerve stimulation for pediatric lower urinary tract dysfunction: development of a novel collaborative technique.

Inpatient Consults: 100

Canal Winchester Urology Clinic Visits: 221

*Excludes observation and inpatient-in-a-bed patients

**Inpatient Discharges:**

Dublin Urology Clinic Visits: 1,133

Ironton Urology Clinic Visits: 341

Lima Urology Clinic Visits: 98

Mansfield Urology Clinic Visits: 140

Urology Clinic Visits: 5,377

Urology/Nephrology Clinic Visits: 70

Westerville Urology Clinic Visits: 1,489

Total Urology Clinic Visits: 8,069

Urodynamics: 702

**TOTAL GRANTS AWARDED**

**JULY 1, 2015 – JUNE 30, 2016**

$30,000

**SELECTED PUBLICATIONS**


**FINAL FACTS**

<table>
<thead>
<tr>
<th>July 2015 through June 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Days: 914</td>
</tr>
<tr>
<td>Total Surgical Procedures: 2,136</td>
</tr>
<tr>
<td>Average Length of Stay*: 2.8</td>
</tr>
<tr>
<td>Observation and Outpatient-in-a-Bed Discharges: 138</td>
</tr>
<tr>
<td>Inpatient Discharges: 186</td>
</tr>
<tr>
<td>Total Discharges: 324</td>
</tr>
<tr>
<td>Average Daily Census*: 3.4</td>
</tr>
<tr>
<td>Urology Clinic Visits: 5,377</td>
</tr>
<tr>
<td>Patient Consults: 100</td>
</tr>
<tr>
<td>Canal Winchester Urology Clinic Visits: 221</td>
</tr>
</tbody>
</table>

**Community-Based Faculty**

Ray R. Brown, Jr., MD

George T. Ho, MD

Adam C. Winter, MD

Michael A. Woodeyck, MD

**Full-Time Nationwide Children’s Faculty**

Seth A. Alper, MD

Christina B. Ching, MD

Daniel G. Dulfants, MD

Daryl J. McLeod, MD

V. Rama Jayanthi, MD

Chief
THE RESEARCH INSTITUTE AT NATIONWIDE CHILDREN’S

As an international leader in pediatric research, science is thriving at Nationwide Children’s. The behavioral, basic and clinician scientists within The Research Institute at Nationwide Children’s are redefining pediatric health care with best outcomes for every child in mind. The Research Institute occupies more than 500,000 square feet of dedicated research space on the Nationwide Children’s campus. One of the largest pediatric research centers in the United States, The Research Institute is ranked in the top six for National Institutes of Health funding among free-standing children’s hospitals. The Centers of Emphasis are structured to support multidisciplinary team science and discovery, enabled by outstanding shared resources. Each center is home to faculty members working in contiguous space and collaborating with talented staff, postdoctoral fellows, graduate students, residents and other students.

INSTITUTE LEADERSHIP

Lauren O. Bakaletz, PhD
Vice President,
Basic Sciences Research

Kelly J. Kelleher, MD, MPH
Vice President,
Health Services Research

William E. Smoyer, MD
Vice President, Clinical Research

Veronica J. Vieland, PhD
Vice President, Computational Research

CENTERS OF EMPHASIS

• Battelle Center for Mathematical Medicine
• Center for Biobehavioral Health
• Center for Cardiovascular Research
• Center for Childhood Cancer and Blood Diseases
• Center for Clinical and Translational Research
• Center for Gene Therapy
• Center for Injury Research and Policy
• Center for Innovation in Pediatric Practice
• Center for Microbial Pathogenesis
• Center for Molecular and Human Genetics
• Center for Perinatal Research
• Center for Vaccines and Immunity
BATTLE CORD CENTER FOR MATHEMATICAL MEDICINE

Faculty from the Battelle Center for Mathematical Medicine in The Research Institute at Nationwide Children’s Hospital apply state-of-the-art quantitative methods to basic and clinical research in order to better inform and ultimately improve clinical care in pediatrics. A primary goal of the center is to provide a unique environment in which specialists from a variety of mathematical, statistical and computational areas can share their professional “home” in order to facilitate creative, collaborative research within the group.

RESEARCH CENTER FACULTY

Veronica J. Vieland, PhD
Director
Christopher W. Barlow, PhD
Jairaj Dau, DSc
David A. Greenberg, PhD
Suan Hodge, DSc
Andrzej Kloczkowski, PhD
William C. Ray, PhD
William C. L. Stewart, PhD
Andrzej Kloczkowski, PhD

This past year, the center organized and hosted the Third International Conference on Mathematical and Computational Medicine, which was held May 15 to May 18, 2016, in Columbus, Ohio. With over 60 registered participants representing five countries and over 30 research institutions, the meeting was an opportunity for quantitative biologists and clinical researchers to share and discuss their work. Sessions included genetics and genomics, biomarker discovery, outcome measures and phenotypes; proteins; host-pathogen interactions; can share their professional “home” in order to facilitate creative, collaborative research within the group.

TOTAL OF GRANTS AWARDED JULY 1, 2015 – JUNE 30, 2016

$833,009

SELECTED PUBLICATIONS


RESEARCH CENTER FACULTY

Cynthia A. Gerhardt, PhD
Director
FULL-TIME NATIONWIDE CHILDREN’S FACULTY

Cawie C. Cerrand, MD
Keiron E. Hodgkinson, PhD
Jamie L. Jackson, PhD
Sarah A. Keim, PhD
Laura Mackner, PhD
Leena Nahata, MD
Joseph R. Rausch, PhD
Jack H. Stevens, PhD
Kathryn A. Vannatta, PhD

OSU-AFFILIATE FACULTY

Christine A. Fortney, PhD, RN
Tondi Harrison, PhD, RN
Kathy Lemkan, PhD
Kathy McNally, PhD

Our vision is to achieve the best possible outcomes for children and families by creating, disseminating and applying new knowledge related to the reciprocal influences of behavior and health. We are also committed to training the next generation of leaders in biobehavioral research.

Behavioral Health: See page 27 for information about Behavioral Health services at Nationwide Children’s Hospital.

TOTAL OF GRANTS AWARDED JULY 1, 2015 – JUNE 30, 2016

$929,346

SELECTED PUBLICATIONS

Cawie C. Cerrand, MD

Department, Section and Center Reports

CENTERS FOR BIOBEHAVIORAL HEALTH

The mission of the Center for Biobehavioral Health in The Research Institute at Nationwide Children’s Hospital is to improve the health and health care of children and their families. This is achieved through state-of-the-art research using a biopsychosocial approach. A special focus is placed on identification of factors associated with developmental risk and resilience across the life span, design and evaluation of new interventions, and dissemination and implementation of effective interventions into routine practice.

VERONICA J. VIELAND, PhD
Director

Cynthia A. Gerhardt, PhD

RESEARCH CENTER FACULTY

The mission of the Center for Biobehavioral Health in The Research Institute at Nationwide Children’s Hospital is to improve the health and health care of children and their families. This is achieved through state-of-the-art research using a biopsychosocial approach. A special focus is placed on identification of factors associated with developmental risk and resilience across the life span, design and evaluation of new interventions, and dissemination and implementation of effective interventions into routine practice.
RESEARCH CENTER FACULTY

Vida Garg, MD
Director
Mary Ciaskowski, PhD
Chtena P. Hans, PhD
Brenda Lilly, PhD
Jay L. Lincoln, MD
Kim L. McBride, MD, MS
Patrick I. McConnell, MD
Aaron J. Trask, PhD

Cardiovascular research spans basic research primarily performed in the Center for Cardiovascular Research to clinical and translational research performed in collaboration with clinicians in The Heart Center at Nationwide Children’s. Current basic research includes investigation of the genetic basis of congenital heart disease, understanding the molecular pathways regulating normal and abnormal heart development and investigating the role of these pathways in congenital heart disease. The Center at Nationwide Children’s Hospital.

TOTAL OF GRANTS AWARDED TO HEART CENTER AND CARDIOVASCULAR RESEARCH FACULTY

JULY 1, 2015 – JUNE 30, 2016
$2,608,190

SELECTED PUBLICATIONS

Huk DJ, Austin BF, Horne TE, Hinton RB, Ray WC, Heistad DD, Lincoln J. 
2016 Mar 9. [Epub ahead of print]

Verbist KC, Guy C, Milasta S, Kaminski MM, Chang L-S. 

Lessnick’s research team studies Ewing sarcoma, a bone cancer that primarily affects children, adolescents and young adults. Dr. Lessnick joined the faculty of the Center for Childhood Cancer and Blood Diseases in 2016.

RESEARCH CENTER FACULTY

Patrick I. McConnell, MD
Kim L. McBride, MD, MS
Brenda Lilly, PhD
Vida Garg, MD

Stephen L. Lessnick, MD, PhD
Director
Hakan Cam, PhD
Kevin Cassidy, MD
Dawn S. Chandliss, PhD
Long-Sheng Chang, PhD
Timothy P. Cripe, MD, PhD
Edwin M. Horwitz, MD, PhD
Robert A. Johnson, PhD
Katsumi Kitagawa, PhD
Dean Lee, MD, PhD
Jeffrey R. Leonard, MD
Juyah Lin, PhD
Niday D. Shah, MD
Ruoning Wang, PhD

Stephen L. Lessnick, MD, PhD, joined the faculty of Nationwide Children’s to serve as the director of the Center for Childhood Cancer and Blood Diseases. Dr. Lessnick’s research team studies Ewing sarcoma, a bone tumor of children, adolescents and young adults.

From 2015-2016, the center has strengthened its commitment to studying and exploiting interactions between tumors and the body’s natural defense mechanisms as a means to treat pediatric cancer. As part of this commitment, Kevin Cassidy, MD, joined our faculty to focus his research efforts on developing viruses that attack cancer and also trigger the immune system to join the battle. His work complements other work in the center conducted by Timothy Cripe, MD, who also focuses on cancer-damaging viruses and the immune system, and work performed by Edwin Horwitz, MD, who studies normal mesenchymal stem cells and how they might be used to aid in cancer treatments. The center also recruited Dean Lee, MD, PhD, who will expand his own research on how the body’s immune system targets cancer while simultaneously developing a new Good Manufacturing Practice production facility for cellular therapies in his role as director of the Cellular Therapy and Cancer Immunotherapies Program at Nationwide Children’s.

The work meshes nicely with research being performed by Ruoning Wang, PhD, in which his team is identifying unique metabolic pathways that immune cells use to fuel their growth and function. Dr. Wang was awarded multiple external grants to fund his work, including an R01 and an R21 from the National Institutes of Health and a Research Scholar Grant from the American Cancer Society.

Timothy P. Cripe, MD, PhD

Stephen L. Lessnick, MD, PhD

JULY 1, 2015 – JUNE 30, 2016
$1,888,908

SELECTED PUBLICATIONS


Kam A, Lessnick S, Anderson CM, Johnson GL, Tew DS. The role of the immunosuppressive cytokine IL-10 in promoting tumor evasion and immune escape in human Ewing sarcoma.

Thomson CR, Phelan KA, Sanders AD, Lessnick S. Therapeutic opportunities in Ewing sarcoma: the need for multidisciplinary approaches to the treatment of Ewing sarcoma.
The Center for Clinical and Translational Research in The Research Institute at Nationwide Children’s Hospital is committed to answering questions that will improve the early diagnosis, treatment and outcomes of society’s most important pediatric diseases by integrating high-caliber basic science research with innovative patient-based research.

RESEARCH CENTER FACULTY

William E. Smythe, MD  
Director

M. Brian Becknell, MD, PhD
Andrea E. Bonny, MD
David R. Brugosick, PhD
Christina B. Ching, MD
Mark W. Hall, MD, FAAP FACC
Susan E. Ingraham, MD, PhD
Bryce A. Kerlin, MD
Jennifer A. Muszynski, MD
Andrew L. Schrader, MD
John David Spencer, MD
Eric A. Srinivasan, MD, PhD
Rachel M. Stanley, MD, MHSA
Rajan K. Thakkar, MD

The Center for Clinical and Translational Research promotes an environment in which patient, family, researcher and clinician work together to ensure that patients are provided the latest advances in medical knowledge, interventions and therapies to improve health and outcomes. Our center has scientists investigating several diverse areas of research. The overarching theme of our research programs is to bring new knowledge from bedside to bench and from bench to bedside to improve the lives of children. Our faculty are from seven subspecialties: Nephrology, Hematology/Oncology, Adolescent Medicine, Critical Care, Urology, Pediatric Surgery and Emergency Medicine. Our research programs are very diverse and include innate immunity in urinary tract infections, immunopathologies associated with infantile nephrotic syndrome, novel treatments for nephrotic syndrome, pathophysiology of thrombosis, pathophysiology of bladder dysfunction in urinary tract obstruction, burn injury, abdominal sepsis, hepatic fibrosis, adolescent addiction and interventions for traumatic brain and spinal cord injuries.

Our vision is to use the delivery of care to each pediatric patient as an opportunity to learn how to improve future care. We believe it is our responsibility to learn from every patient to help our next child be improved. Clinical Research Services (CRS) is a core service provided within the Center for Clinical and Translational Research and is designed to be a portal through which clinical investigators can access streamlined coordination of services necessary to initiate clinical research projects, regardless of the funding source. CRS supports all clinical research studies, providing staff and/or services to manage investigators’ studies according to Good Clinical Practice and federal, state and institutional regulations and guidelines.

TOTAL OF GRANTS AWARDED AWARDED JUNE 1, 2015 – JUNE 30, 2016 $3,772,099

SELECTED PUBLICATIONS


The primary mission of the Center for Gene Therapy in The Research Institute at Nationwide Children’s Hospital is the understanding and treatment of disease through laboratory studies demonstrating translational potential for patient treatment. This is followed by a team effort to test the translational products through clinical trials that require the combined efforts of bench-side scientists working with clinician-scientists as well as the staff of our Regulatory and Vector Manufacturing Cores. All must work together to facilitate the overall mission of improving patient care.

RESEARCH CENTER FACULTY

Jerry R. Mendell, MD  
Director

PRINCIPAL INVESTIGATORS

Loui G. Chicoine, MD
Kevin M. Flanigan, MD
Haiyan Fu, PhD
Scott Harper, PhD
Brian K. Kupar, PhD
Scott Loiler, PhD
Paul T. Martin, PhD
Douglas M. McCarty, PhD
Louise Rodino-Klapac, MD
Zsolt Sabelen, MD, PhD
Nicolas Wein, PhD

SUPPORT STAFF

Katharine Church, Project Manager
Sarah E. Lewis HT, ASCP Director of Histopathology Laboratory

The phase I gene transfer trial of scAAV9.CB.SMN was based on robust rescue and prolonged survival of the SMNΔ7 mouse demonstrated by the Klapac Lab. Nine patients met enrollment criteria with onset at birth to 6 months and proven mutations of SMN2 with two copies of SMN2 without the c.859G>C exon 7 modifiers. Two dosing cohorts [6.7 X1013 vg/kg (n=3); 2.0 X1014 vg/kg (n=6)] were included. The study results are unprecedented and show unequivocally that gene replacement therapy for SMA is extremely promising. On the muscular dystrophy front, another positive study demonstrated the benefit of full-length gene therapy in patients with Becker muscular dystrophy following intramuscular injections into the quadriceps muscle. Another precursor-setting trial is now skipping using the phosphorodiamidate morpholino oligomer (P Moody), shown to upregulate, that showed improved distance walked on the six-minute walk test (6MWT) based on more than three years of accumulated data collection. Not a single adverse event was seen in this trial.

Two additional INDs have been obtained based on well-demonstrated proof-of-principle studies. In the Rodino-Klapac Lab, dysferlin gene therapy was demonstrated showing that a cDNA that exceeded the packaging capacity of AAV could be delivered in a dual vector prototype that could be taken to the clinic. The Food and Drug Administration accepted the principle of this study based on several years of research, the consistency of findings and the lack of toxicity. The clinical trial has begun by direct muscle injection of the dual vector, and, if results are promising, the study will be carried forward by systemic vascular delivery.

Neuromuscular diseases are heterogeneous disorders that can affect any tissue of the body and are caused by defects in the structure or function of the nervous system or muscle. The majority of neuromuscular diseases have no cure and are progressive. Variability in clinical presentation, disease severity, and patient outcome is common. The long-term goal of gene therapy for neuromuscular disease is to cure the disease. However, in the majority of genetic disorders, some patients are asymptomatic or minimally affected, while others are severely affected. Gene therapy aims to correct the molecular defect in asymptomatic patients to prevent or delay the onset of symptoms. For severely affected patients, gene therapy aims to improve their quality of life. Gene therapy for neuromuscular disease is a rapidly evolving field with many ongoing clinical trials. The following is a list of some of the ongoing clinical trials for neuromuscular diseases that are currently recruiting:

- Beta thalassemia: A phase I/II trial is recruiting patients with beta thalassemia major to evaluate the safety and efficacy of ex vivo gene therapy using autologous CD34+ hematopoietic stem cells modified with an adeno-associated virus vector (AAV) to deliver the beta globin gene. The trial is enrolling patients at the University of Texas Southwestern Medical Center in Dallas, Texas.
- Duchenne muscular dystrophy: A phase I trial is recruiting patients with Duchenne muscular dystrophy to evaluate the safety and efficacy of a single intravenous injection of adeno-associated virus (AAV) vectors carrying the human dystrophin gene. The trial is enrolling patients at the University of North Carolina at Chapel Hill.
- Spinal muscular atrophy (SMA): A phase I trial is recruiting patients with SMA to evaluate the safety and efficacy of a single intravenous injection of adeno-associated virus vectors carrying the human survival motor neuron (SMN) gene. The trial is enrolling patients at Nationwide Children’s Hospital.
- Facioscapulohumeral dystrophy: A phase I trial is recruiting patients with facioscapulohumeral dystrophy to evaluate the safety and efficacy of a single intravenous injection of adeno-associated virus vectors carrying the human cytoskeletal protein laminated (LAMA1) gene. The trial is enrolling patients at Nationwide Children’s Hospital.
- Achondroplasia: A phase I trial is recruiting patients with achondroplasia to evaluate the safety and efficacy of a single intravenous injection of adeno-associated virus vectors carrying the human fibroblast growth factor 1 (FGFR1) gene. The trial is enrolling patients at Nationwide Children’s Hospital.
- Osteogenesis imperfecta: A phase I trial is recruiting patients with osteogenesis imperfecta to evaluate the safety and efficacy of a single intravenous injection of adeno-associated virus vectors carrying the human osteoblast-specific factor (OSF2) gene. The trial is enrolling patients at Nationwide Children’s Hospital.
- Charcot-Marie-Tooth disease: A phase I trial is recruiting patients with Charcot-Marie-Tooth disease to evaluate the safety and efficacy of a single intravenous injection of adeno-associated virus vectors carrying the human neurofilament heavy chain (NEFH) gene. The trial is enrolling patients at Nationwide Children’s Hospital.
- Friedreich ataxia: A phase I trial is recruiting patients with Friedreich ataxia to evaluate the safety and efficacy of a single intravenous injection of adeno-associated virus vectors carrying the human superoxide dismutase 1 (SOD1) gene. The trial is enrolling patients at Nationwide Children’s Hospital.
- Frontotemporal dementia: A phase I trial is recruiting patients with frontotemporal dementia to evaluate the safety and efficacy of a single intravenous injection of adeno-associated virus vectors carrying the human microtubule-associated protein tau (MAPT) gene. The trial is enrolling patients at Nationwide Children’s Hospital.
- Huntington disease: A phase I trial is recruiting patients with Huntington disease to evaluate the safety and efficacy of a single intravenous injection of adeno-associated virus vectors carrying the human Huntington (Huntington) gene. The trial is enrolling patients at Nationwide Children’s Hospital.
- Amyotrophic lateral sclerosis: A phase I trial is recruiting patients with amyotrophic lateral sclerosis to evaluate the safety and efficacy of a single intravenous injection of adeno-associated virus vectors carrying the human superoxide dismutase 1 (SOD1) gene. The trial is enrolling patients at Nationwide Children’s Hospital.
- Multiple sclerosis: A phase I trial is recruiting patients with multiple sclerosis to evaluate the safety and efficacy of a single intravenous injection of adeno-associated virus vectors carrying the human interleukin-2 (IL-2) gene. The trial is enrolling patients at Nationwide Children’s Hospital.
Department, Section and Center Reports

CENTER FOR INJURY RESEARCH AND POLICY

The Center for Injury Research and Policy (CIRP) located in The Research Institute at Nationwide Children’s Hospital works globally to reduce injury-related pediatric death and disability. Established in 1999, CIRP serves as a pioneer by translating cutting-edge injury research into education, advocacy and advances in clinical care. From design changes in consumer products to new public policy, CIRP’s influence is leading the way to a safer world.

RESEARCH CENTER FACULTY

Gary A. Smith, MD, DPhil

Director

Julie C. Leonard, MD, MPH

Lara B. McKenzie, PhD, MA

Huiyuan Xiang, MD, MPH, PhD

Jinzheng (Ginger) Yang, PhD, MPH

Motoo Zhu, MD, MS, PhD

The Center for Injury Research and Policy works at local to international levels to reduce death and disability due to injuries through research, education, advocacy and advances in clinical care. The center aims to improve the scientific understanding of the epidemiology, prevention, acute treatment, rehabilitation and biomechanics of injuries. It provides leadership in the development, implementation and scientific evaluation of public policy regarding control of injuries.

In June 2012, CIRP was awarded designation as one of the Centers for Disease Control and Prevention’s Injury Control Research Centers (ICRC) for an additional five years. CIRP is one of only 10 centers to hold this designation. Since 2008, CIRP has been the only ICRC focused on pediatric injury research.

The multidisciplinary Center for Pediatric Trauma Research (CPTR) at Nationwide Children’s, led by Huiyuan Xiang, MD, MPH, PhD, conducts evidence-based trauma care and policy research to achieve the best outcomes for pediatric trauma patients. Focusing on prehospital emergency medical services, acute treatment and rehabilitation care, researchers associated with CPTR help promote CIRP’s mission.

The Make Safe Happen app was released in early 2015. Developed by a team led by Lara McKenzie, PhD, MA, it addresses the difficulties parents and caregivers face when trying to keep their homes safe for their children. It provides parents and caregivers with room-by-room safety checklists and links to purchase recommended safety products. Since not all homes are the same, the app offers different solutions for different situations. Users can set reminders for activities such as monthly smoke alarm testing or annual replacement of smoke alarm batteries. Families can also track their progress with each task they complete and receive encouragement as tasks are checked off. The free app is available for iOS and Android systems.

Among other recent global activities, CIRP was the lead organizer of the Child Road Safety in the Americas Congress, which took place in San Jose, Costa Rica, during United Nations Global Road Safety Week in 2015. The congress addressed the important public health and sustainable development issue of child road safety in the Americas, with a focus on Latin America and the Caribbean. There were more than 150 participants from 23 countries, which included leaders in the field from countries throughout the Americas and globally.

TOTAL OF GRANTS AWARDED

JULY 1, 2015 – JUNE 30, 2016

$1,312,377

SELECTED PUBLICATIONS


**CENTER FOR INNOVATION IN PEDIATRIC PRACTICE**

The mission of the Center for Innovation in Pediatric Practice in The Research Institute at Nationwide Children’s Hospital is to improve the health of children and their families through research on novel methods for delivering health services in the community. These methods include new computer and information technologies as well as new statistical, therapeutic and communication techniques. Investigators at the center develop and test new health service delivery and payment systems in partnership with pediatricians, payers and Nationwide Children’s to improve quality and equity of care — especially for those patients most at risk.

**RESEARCH CENTER FACULTY**

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Susan E. Creary, MD, MSc
Katherine J. Deans, MD, MHS
Jennifer L. Dotson, MD, MPH
Elizabeth A. Erwin, MD
Daryl J. McLeod, MD
Peter C. Minneci, MD, MHSc
Sarah H. O’Brien, MD, MSC

**AFFILIATE FACULTY**

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Robert A. Kowach, MD, PhD
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Victoria A. von Sadovszky, PhD, RN

The Center for Innovation in Pediatric Practice (CIPP) is composed of four thematic research teams: clinical methods for delivering health services in the community. These methods include new computer and information technologies as well as new statistical, therapeutic and communication techniques. Investigators at the center develop and test new health service delivery and payment systems in partnership with pediatricians, payers and Nationwide Children’s to improve quality and equity of care — especially for those patients most at risk.

**RESEARCH CENTER FACULTY**

Katherine Deans, MD, and Peter Minneci, MD. Across these themes, CIPP faculty engage in research specifically designed to improve care delivery and inform evidence-driven health policy. Faculty members also put their research into action. In 2015, Dr. Kelleher served on an Institute of National Academies of Sciences, Engineering, and Medicine panel to evaluate whether the growth of mental disorders among supplementary security income (SSI) children was consistent with changes in rates of mental disorders in the general population and among low-income children. Their report showed the increased costs of the SSI program largely stemmed from the rapid growth in child poverty rates since the recession of 2008, not from liberalization of criteria for allowances for children with mental disorders. In other policy-related work, Dr. Kelleher and Dr. Chisolm engaged in a national collaborative funded by the Robert Wood Johnson Foundation titled “Moving Healthcare Upstream.” This group’s mission is to engage the health care system to develop sustainable models for identifying and addressing social factors, e.g., housing instability and food insecurity, that negatively impact health and well-being. Putting research into action locally, Dr. Bridge and the Center for Suicide Prevention and Research at Nationwide Children’s are disseminating a nationally recognized program called Signs of Suicide (SOS) to area high schools and middle schools. The goal of the SOS program is to teach school staff, parents and students to respond to the warning signs of suicide just as they would to the signs of any other life-threatening medical conditions.

**TOTAL OF GRANTS AWARDED**

**JULY 1, 2015 – JUNE 30, 2016**

$1,428,945

**SELECTED PUBLICATIONS**

- **Kelleher S.J., Creary S.E., Chisolm D., Bailey M.T.** Epidemiology of the serine rich repeat protein adhesin family, required for binding to two distinct carbohydrates, advancing our understanding of pneumococcal pathogenesis. Santiago Partida-Sanchez, PhD, received a new R21 grant to study “Otis media - epigenetic regulation of NTHi pathogenesis and vaccine design.” The expertise of our faculty continued to be recognized by our peers as exemplified by invitations to speak at, and participate, in important national and international venues. Jennifer Edwards, PhD, was invited by the National Institute of Allergy and Infectious Diseases to participate in the “Gonorrhea vaccines: the way forward” workshop. Steven Goodman, PhD, was invited to speak at the 7th ASM Conference on Biofilms. Michael Bailey, PhD, spoke at the American Psychosomatic Society - American Gastroenterological Association Symposium on Brain-Gut Interactions and the Intestinal Microenvironment. Our faculty also generated new intellectual property. With their colleagues, international Patent Cooperation Treaty applications were filed by Ben Kopp, MD, for “Compositions and methods for inhibiting the growth of multi-drug resistant microbes”; Sheryl Justice, PhD, for “LPS variants for determining severity of urinary tract infection”; and Kevin Mason, PhD, for “Host protein response to otitis media.” High-profile publications demonstrated our continued influence as an international leader in the study of microbial pathogenesis and host responses. Infections Diseases: See page 85 for information about the Division of Infectious Diseases at Nationwide Children’s Hospital.

**TOTAL OF GRANTS AWARDED**

**JULY 1, 2015 – JUNE 30, 2016**

$2,554,150

**CENTER FOR MICROBIAL PATHOGENESIS**

The emphasis of the Center for Microbial Pathogenesis at Nationwide Children’s Hospital is to develop a greater understanding of the molecular mechanisms by which microorganisms cause infectious diseases as well as how the host responds to these disease states. Faculty within the center focus on identifying virulence mechanisms and defining host response patterns, with the overall objective of elucidating a detailed description of the structure, function and control of biological systems in health and disease, utilizing molecular and cellular, as well as genomic and proteomic, approaches. We then use this information to devise novel diagnostics, design improved therapeutics and develop more broadly effective vaccines.

**RESEARCH CENTER FACULTY**

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Director
Michael T. Bailey, PhD
Jennifer L. Edwards, PhD
Steven D. Goodman, PhD
Sheryl S. Justice, PhD
Samantha J. King, PhD
Benjamin T. Kopp, MD
Kevin M. Mason, PhD
Santiago Partida-Sanchez, PhD
Peter White, PhD

The team of Peter White, PhD, beat out 21 others to win the CLARITY Undiagnosed Challenge after interpreting genomic data from five families with undiagnosed conditions, thereby demonstrating the effectiveness of working across multiple research and clinical domains. Our faculty continued to make scientific discoveries and be awarded funding for new research initiatives. Samantha King, PhD, was the first to identify a member of the serene rich repeat protein adhesin family, required for binding to two distinct carbohydrates, advancing our understanding of pneumococcal pathogenesis. Santiago Partida-Sanchez, PhD, received a new R21 grant to study "Immunobiology of syctic fibrosis." Lauren Bakaletz, PhD, received a new R01 grant to study "Otis media - epigenetic regulation of NTHi pathogenesis and vaccine design." The expertise of our faculty continued to be recognized by our peers as exemplified by invitations to speak at, and participate, in important national and international venues. Jennifer Edwards, PhD, was invited by the National Institute of Allergy and Infectious Diseases to participate in the “Gonorrhea vaccines: the way forward” workshop. Steven Goodman, PhD, was invited to speak at the 7th ASM Conference on Biofilms. Michael Bailey, PhD, spoke at the American Psychosomatic Society - American Gastroenterological Association Symposium on Brain-Gut Interactions and the Intestinal Microenvironment. Our faculty also generated new intellectual property. With their colleagues, international Patent Cooperation Treaty applications were filed by Ben Kopp, MD, for “Compositions and methods for inhibiting the growth of multi-drug resistant microbes”; Sheryl Justice, PhD, for “LPS variants for determining severity of urinary tract infection”; and Kevin Mason, PhD, for “Host protein response to otitis media.” High-profile publications demonstrated our continued influence as an international leader in the study of microbial pathogenesis and host responses. Infections Diseases: See page 85 for information about the Division of Infectious Diseases at Nationwide Children’s Hospital.

**TOTAL OF GRANTS AWARDED**

**JULY 1, 2015 – JUNE 30, 2016**

$2,554,150
SELECTED PUBLICATIONS


SELECTED PUBLICATIONS


Department, Section and Center Reports

CENTER FOR MOLECULAR AND HUMAN GENETICS

The mission of the Center for Molecular and Human Genetics in The Research Institute at Nationwide Children’s Hospital is to unite basic, translational and clinical investigators in order to stimulate leading-edge research on childhood diseases.

HEITHEM EL-HODEI, MD
Interim Director

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CHAI-YUNG YU, PHD

Faculty from the Center for Molecular and Human Genetics focus on developmental processes and genetic variations involved in congenital and inherited disease. Investigators examine normal developmental processes and the pathogenesis of complex disorders, such as autism, arteriosclerosis and systemic lupus erythematosus, as well as nephritic and gastrointestinal diseases. Employing the newest technologies in the post-genome era, center faculty collaborate with clinicians from divisions including Molecular and Human Genetics, Gastroenterology, Hepatology and Nutrition, and Nephrology. Research funded by a grant from the Department of Defense is focusing on the identification of genetic markers that will help identify genes involved in the pathogenesis of autistic spectrum disorders.

Medical services: See page 89 for information about Molecular and Human Genetics services at Nationwide Children’s Hospital.

TOTAL GRANTS AWARDED TO MOLECULAR AND HUMAN GENETICS CLINICAL AND RESEARCH FACULTY

JULY 1, 2015 – JUNE 30, 2016

NATIONWIDE CHILDREN’S HOSPITAL 2015-16 ANNUAL REPORT 101
Principal investigators in the center focus on research aimed at preventing prematurity and perinatal complications that together achieve the best possible outcomes. Their laboratories use state-of-the-art molecular, basic science and translational approaches to understand the mechanisms and consequences of being born too soon. Several investigators study pregnancy outcomes that cause preterm birth such as intrauterine infection; shortened cervix; preterm, premature rupture of the membranes; placental abruption (bleeding); and preclampsia (a complication of pregnancy characterized by high blood pressure, proteins in urine and other symptoms and problems). Other laboratories focus on prevention and reduction of complications of prematurity including infections, necrotizing enterocolitis, bronchopulmonary dysplasia, pulmonary hypertension, neuro-developmental delay and cerebral palsy.

Neonatology: See page 91 for information about Neonatology, home to one of the largest networks of clinical neonatal care in the United States.

TOTAL OF GRANTS AWARDED TO NEONATOLOGY CLINICAL AND RESEARCH FACULTY JULY 1, 2015 – JUNE 30, 2016 $7,552,634

SELECTED PUBLICATIONS


Other laboratories focus on prevention and reduction of complications of prematurity including infections, necrotizing enterocolitis, bronchopulmonary dysplasia, pulmonary hypertension, neuro-developmental delay and cerebral palsy.

Neonatology:See page 91 for information about Neonatology, home to one of the largest networks of clinical neonatal care in the United States.

TOTAL OF GRANTS AWARDED TO NEONATOLOGY CLINICAL AND RESEARCH FACULTY JULY 1, 2015 – JUNE 30, 2016 $7,552,634

SELECTED PUBLICATIONS


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