

NATIONWIDE CHILDREN'S HOSPITAL

2022–2023 ANNUAL REPORT



NATIONWIDE CHILDREN'S®
When your child needs a hospital, everything matters.



THE OHIO STATE UNIVERSITY
COLLEGE OF MEDICINE

Leading in Pediatric Health Care and Research Through Our Journey to Best Outcomes

At Nationwide Children’s Hospital, our success is founded on the aspirations of our community and our teams — and organization-wide alignment with our strategic plan.

With our strategic plan as our guiding light, our *One Team* values enable us to achieve excellence in an environment that is professional, supportive and caring. Our *One Team* approach to the pursuit of excellence is the key to our achievements and our ability to lead the *Journey to Best Outcomes* for children everywhere.



We are EXPANDING access and services in material ways



LAUNCHING
the construction of our second hospital tower



GROWING
our care network with the opening of Nationwide Children’s Hospital - Toledo



SUPPORTING
social determinants of health through a transformational investment in the community



DEVELOPING
new therapies, including a novel FDA-approved gene therapy for Duchenne muscular dystrophy

Honors and Achievements



Celebrating 10 Years of Being Named to the Honor Roll of Best Children’s Hospitals and ranked in all 10 specialties by U.S. News & World Report



- In 2022, Nationwide Children’s had more than 1.7 million visits, and patients from all 50 states and 45 countries came for care.
- The Abigail Wexner Research Institute is among the top 10 freestanding pediatric research institutes for National Institutes of Health funding.
- Nationwide Children’s is a four-time American Nurses Credentialing Center Magnet® destination for nursing excellence.
- The Trauma Center has been continuously verified as a Level I Pediatric Trauma Center by the Committee on Trauma (COT) of the American College of Surgeons (ACS) since 1991.
- The Burn Program is one of the few at freestanding children’s hospitals to be verified as a Pediatric Burn Center by the American Burn Association. Our program has been verified since 2003.
- Our Pediatric Cancer program is accredited by the Commission on Cancer®, a Quality Program of the American College of Surgeons.
- Nationwide Children’s is fully accredited by the Association for the Accreditation of Human Research Protection Programs and AAALAC International, a private, nonprofit organization that promotes the humane treatment of animals in science through a voluntary international accreditation program. We are also accredited by the US Department of Agriculture (USDA).
- Nationwide Children’s provided more than \$259 million in charity care and community benefit services in 2022.

2021-2026
LEADING THE JOURNEY TO
BEST OUTCOMES
FOR CHILDREN EVERYWHERE



We are halfway through the most ambitious strategic plan in our 130-year history: a five-year, \$3.3 billion commitment to transform health outcomes for all children.

We are empowered by tremendous community support, a record of success in clinical care and research, genomics, behavioral health, and health equity and population health. Our achievements are grown from a unique ecosystem of passion, expertise and *One Team* values. Together, we are focused on the whole child. This makes Nationwide Children’s a place full of people, ideas and possibilities found nowhere else.

- We are integrating talent, quality and technology to achieve best outcomes for all patients.
- We are expanding and sharing an innovative model for behavioral health care.
- We are defining the next frontiers of pediatric health through gene therapy, genomics and personalized medicine.

LEARN MORE
ABOUT THE
STRATEGIC
PLAN. ▶



Nationwide Children’s Hospital made the decision more than two years ago to lead the journey to best outcomes for children everywhere. It was a little audacious to say that out loud.

We had spent the previous two decades growing from a treasured regional institution to an academic pediatric health care system with an international scope. We were already leaders in many ways, and we knew Nationwide Children’s had the infrastructure, the community support and the hospital culture to go further.

It’s one thing to have a bold aspiration, though, and another thing to deliver on it. We are now roughly halfway through our current strategic plan. And as you can see in this annual report, our hospital team of 15,000 truly is breaking new ground in pediatric clinical care, research and population health:

- The Center for Gene Therapy at the Abigail Wexner Research Institute developed its second FDA-approved gene therapy; two of the country’s first eight approved therapies came from here.
- Healthy Neighborhoods Healthy Families, a national model for addressing community social determinants of health, announced a new \$50 million fund for its Healthy Homes affordable housing initiative.
- The Institute for Mental and Behavioral Health Research has launched to advance research in this traditionally under-resourced field.
- A second patient tower at Nationwide Children’s is now under construction, allowing us to deliver more world-class care to the patients from all 50 states and 45 countries who visit us annually.

We are accelerating our already-pioneering efforts to develop destination programs that integrate research with clinical care; to drive economic development in Ohio; to push forward the fields of quality improvement and patient safety; to reduce disparities in health care access, infant mortality and overall child well-being; and to do so much more.

It may be audacious, but I was proud when Nationwide Children’s announced the ways that we plan on transforming child health. I am even prouder that we are following through.

TIM ROBINSON
CEO
Nationwide Children’s Hospital



Many of us understand that a region’s overall health is tied to the health of its children. If a pediatric health system can offer the best care for every child, the region is better for it.

Nationwide Children’s Hospital set a goal decades ago that no child should have to leave central Ohio for care. The hospital has achieved that goal and so much more. Today it is an international leader in gene therapy, genomics, behavioral health, and in integrating research with medical care. Central Ohio children stay local for treatment, and children from around the world come for care that’s only available here.

The Nationwide Children’s team has continued to expand its scope. “Health” isn’t just health care anymore. It also encompasses the ways in which a region’s people prosper economically, socially and academically.

I firmly believe Nationwide Children’s Hospital is leading the way as a driver of this kind of overall prosperity.

Its expertise in gene- and cell-based therapies has helped make Nationwide Children’s a national biosciences hub. The hospital has helped create 20 companies, with hundreds of employees, springing from research conducted at the Abigail Wexner Research Institute. Nationwide Children’s workforce development programs have led to the hiring of 2,000 people from traditionally underserved neighborhoods.

The hospital’s 17 school-based health centers and other school health services are helping keep students well and in class. Its school-based asthma therapy initiative in 30 school districts has reduced emergency department visits, and its Diabetes and School Health program helps students across 53 schools.

Nationwide Children’s model of community revitalization, called Healthy Neighborhoods Healthy Families, is building high-quality, affordable housing at a scale that is unprecedented in children’s health care. That same initiative is the country’s largest pediatric provider of free tax preparation services for families and supports fresh food markets that feed thousands.

Nationwide Children’s is one of the best children’s hospitals in the country — but it is so much more. I am honored to introduce this annual snapshot of its achievements.

KIRT WALKER
Chair
Nationwide Children’s Hospital Inc.
Nationwide Children’s Hospital
Board of Directors

DEAR FRIENDS AND COLLEAGUES,

This past year has been tremendous for growth and achievement at Nationwide Children’s. A second gene therapy developed here was approved in June of 2023. In fact, of the first eight FDA-approved gene therapies, two have come from Nationwide Children’s. Our infrastructure, organizational support and culture of collaboration have all supported this unprecedented gene therapy development and continues to serve as the foundation for our many other successes in clinical care and research.

Our commitment to excellence does not rest with success. Because youth mental health remains a crisis, this year, we announced the formation of the Institute for Mental and Behavioral Health Research to be housed in the Big Lots Behavioral Health Pavilion — America’s largest pediatric mental and behavioral health research hospital. Eric Youngstrom, PhD, a renowned psychologist specializing in bipolar disorder and clinical assessment and professor of Psychology and Neuroscience and Psychiatry at the University of North Carolina at Chapel Hill, will lead the institute beginning in February.

In this report, you will learn more about these successes and others across our organization, including those in the areas of clinical care, population health, quality and safety and the integration of research and care. Each of these achievements aligns with our strong commitment to our strategic plan to lead the *Journey to Best Outcomes* for children everywhere. But they are possible because of our *One Team* values. This creates a unique environment of collegiality, teamwork and support that makes Nationwide Children’s a place like nowhere else.

We invite you to join us not only as we celebrate recent accomplishments, but also as we continue our efforts to ensure that children everywhere achieve their best possible outcomes.

DENNIS R. DURBIN, MD, MSCE
*President, Abigail Wexner
Research Institute*

CATHERINE D. KRAWCZESKI, MD
*Physician-in-Chief
Chair, Department of Pediatrics*

RUSTIN MORSE, MD
Chief Medical Officer

OLUYINKA O. OLUTOYE, MD, PHD
Surgeon-in-Chief

(Left to Right) Rustin Morse, MD,
Oluyinka Olutoye, MD, PhD ,
Dennis Durbin, MD, MSCE,
Catherine Krawczeski, MD



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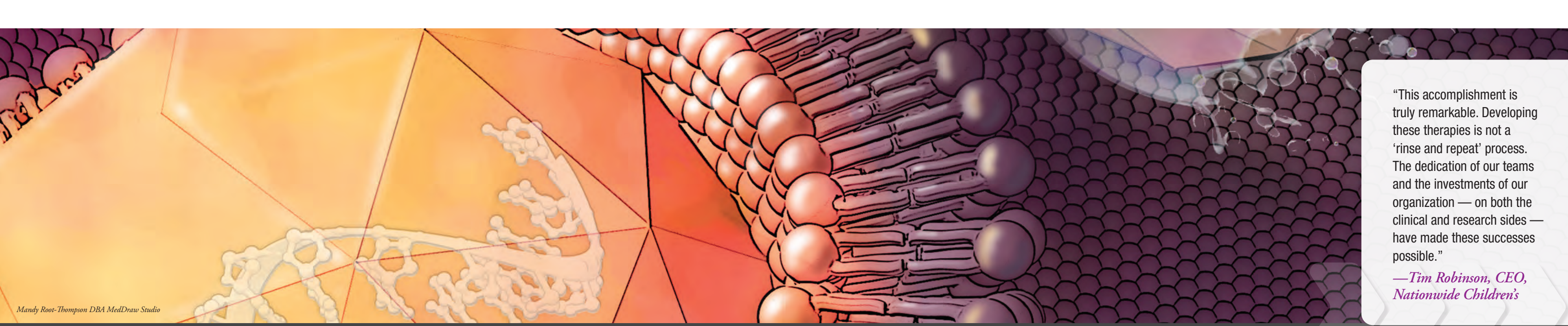
209 Center for Regenerative Medicine

211 Center for Vaccines and Immunity

213 Kidney and Urinary Tract Center

215 STEVE AND CINDY RASMUSSEN INSTITUTE FOR GENOMIC MEDICINE





“This accomplishment is truly remarkable. Developing these therapies is not a ‘rinse and repeat’ process. The dedication of our teams and the investments of our organization — on both the clinical and research sides — have made these successes possible.”

—Tim Robinson, CEO, Nationwide Children’s

LEADING THE TRANSLATION OF GENE THERAPY

Of the first eight gene therapies approved by the FDA, two have come from the lab of Jerry Mendell, MD, recently retired principal investigator and current senior advisor in the Center for Gene Therapy at the Abigail Wexner Research Institute.


In 2019, Zolgensma® became the first systemically delivered gene therapy approved by the FDA. On June 22, 2023, the FDA announced the accelerated

approval of SRP-9001/ELEVIDYS for children 4-5 years old with Duchenne muscular dystrophy.

Dr. Mendell saw his first patient with DMD more than 50 years ago, igniting his passion to develop new treatments for patients with neuromuscular diseases. Learn more about his journey to developing a gene therapy for DMD, the most common form of muscular dystrophy affecting children.



LEARN
MORE



“This is what I’ve devoted my life to; since I began investigating gene therapy as a potential treatment for children with neuromuscular disorders, it’s been my dream to develop a gene therapy for DMD. The FDA’s decision means we can save more function and save the quality of life for these children and their families.”

—Jerry Mendell, MD

Gene Therapy by the Numbers



Bringing Advanced Care to Patients Through the Gene Therapy Center of Excellence

By streamlining processes, increasing efficiency for facilitating clinical trials and introducing FDA approved therapies to our patients, the Gene Therapy Center of Excellence serves to improve access to gene therapies for patients. As a clinical care and research collaboration, the Gene Therapy Center of Excellence has four key aims:

STREAMLINE	FACILITATE	FUNCTION	CONNECT
processes related to prior authorization, drug order, receipt and storage, to shorten the time from commercialization to patient delivery.	best practices for investigational gene therapy administration, delivery and training.	as a hub for intravenous gene therapy delivery, leading in biosafety and compliance, and educating patients and families.	faculty and family foundations to develop and manage partnerships for gene therapy research and clinical trials.

LEADING QUALITY AND SAFETY



CENTER FOR CLINICAL EXCELLENCE

The Center for Clinical Excellence oversees and advances the quality program, including the SCOPE framework. In January, the team launched a refreshed version of the Zero Hero safety program, which originated here at Nationwide Children's. The newest version places more emphasis on pursuing prevention, learning through excellence and events, and supporting staff and patients on our journey to zero harm.



LEARN MORE



LEARN MORE ABOUT THE NEXT CHAPTER FOR:
Zero HeroSM Essentials

HIGHLIGHTS

In June, we *exceeded* **550** *days* without a serious safety event, surpassing our previous record of 531 days.

66%
reduction

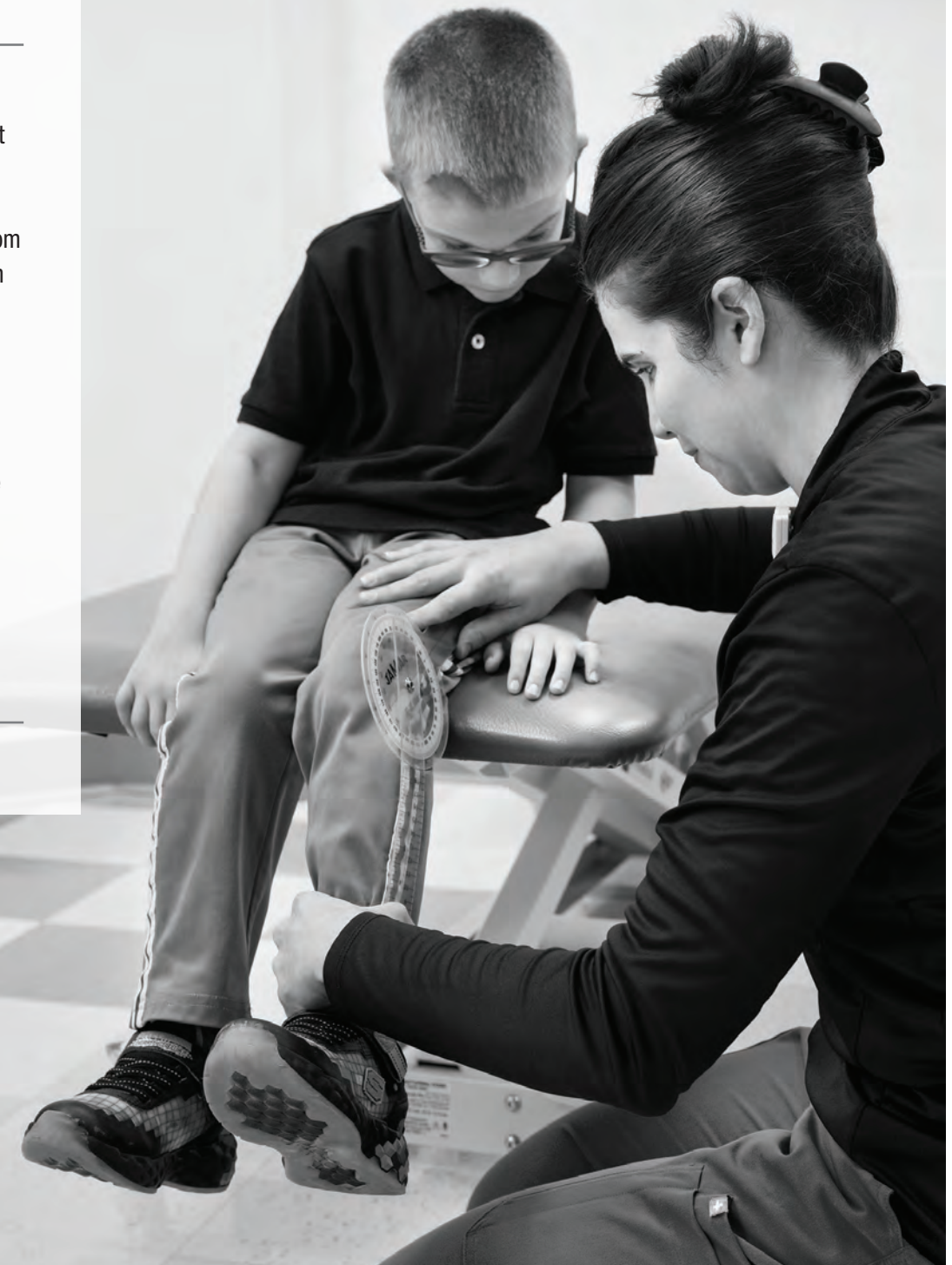
in CLABSI in 2023, compared to 2022 in the Hematology, Oncology & Blood and Marrow Transplant Unit and Neonatal Intensive Care Unit, the units with the highest number of central line days*

75%
reduction
in pressure injuries over 2022*

*As of August 2023

"Our clinical pathways are meant to complement clinical judgment. They are developed by leading physicians and nurses from medical subspecialties, in addition to experts from pharmacy, respiratory therapy and other allied health practitioners. This robust process gives users confidence that the information is relevant, current and expert."

— *Ryan Bode, MD,*
Associate Chief
Quality Officer



CLINICAL PATHWAYS

As of September, we have launched 25 newly developed and fully implemented clinical pathways this year, bringing the total of Nationwide Children's clinical pathways to 79 across multiple care settings including primary care, urgent care, emergency department, inpatient, surgery, intensive care units and the Behavioral Health Pavilion.



LEARN MORE



COMBINED QUALITY MEASURES IMPROVE SURGICAL OUTCOMES

A pediatric surgery morbidity and mortality (M&M) conference that applies quality improvement practices borrowed from industry can be a significantly more effective tool for learning from mistakes and making corrections. Building on early successes, in 2019, the team created a secure electronic health record (EHR)-integrated web application to store M&M data. Now, the team is making strides toward sharing the process with others.

In a submitted publication, Gail Besner, MD, chief of Pediatric Surgery, and her team report that using the web application enhanced efforts to track trends in errors, failures and improvements, ensuring that the M&M process results in tangible improvements in care.

“Each year, multiple hospitals across the United States ask about our process. We are taking steps to make it sharable for those who want to implement it in their institutions. It has been incredibly gratifying to see the improvements for children here, and to see that expand beyond our walls is just wonderful.”

– *Gail Besner, MD, Chief, Pediatric Surgery*

ASSOCIATE CHIEF QUALITY OFFICERS

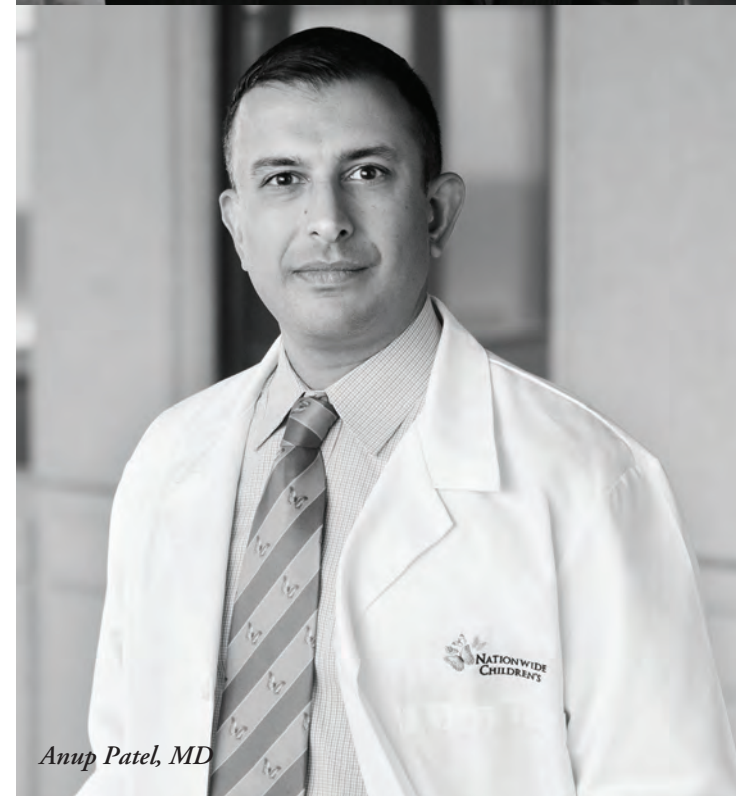
Drs. Julie Samora, Ryan Bode, Anup Patel, and Rob Gajarski have been appointed associate chief quality officers in recognition of the continued growth and evolution of their roles.



Julie Samora, MD



Ryan Bode, MD



Anup Patel, MD



Robert Gajarski, MD

LEADING IN BEHAVIORAL HEALTH

BEHAVIORAL HEALTH FAST FACTS

Home to America's largest mental and behavioral health research hospital on a pediatric campus, the Big Lots Behavioral Health Pavilion

>251,000

Behavioral Health
outpatient visits

>41,000

total unique
Behavioral Health
patients

>8,000

visits to the Psychiatric
Crisis Department, a
unique emergency
department

220

psychiatrists and
psychologists
on staff

Counseling services
offered in nearly

200
schools

>16

locations

Nearly **275** IRB-approved trials, studies, registries or databases focused on behavioral health

NEW INSTITUTE TO ADVANCE BEHAVIORAL HEALTH RESEARCH

The Institute for Mental and Behavioral Health Research will be housed in the state-of-the-art Big Lots Behavioral Health Pavilion. The Center for Suicide Prevention and Research is embedded within the institute. In addition to collaborative efforts across the Nationwide Children's campus, institute members will work in collaboration with The Ohio State University Department of Psychiatry and Behavioral Health and the Ohio State Institute for Behavioral Medicine Research.

The mission for the institute is to conduct innovative translational, clinical and epidemiological research focused on the etiology, prevention and treatment of mental, emotional and behavioral disorders. The center will be led by Eric Youngstrom, PhD, a professor at University of North Carolina at Chapel Hill and acting director of the Center for Excellence in the Research and Treatment of Bipolar Disorder. Dr. Youngstrom will be joining Nationwide Children's as director of the institute in early 2024.



THE CENTER FOR ACCELERATING SUICIDE PREVENTION IN REAL-WORLD SETTINGS (ASPIRES)

ASPIRES extends the work of the Center for Suicide Prevention and Research and Behavioral Health Services at Nationwide Children's. It also leverages the expertise of faculty at Ohio State and community experts. ASPIRES is funded by a P-50 grant from the National Institute of Mental Health (NIMH) as part of a national effort to reduce the suicide rate by 20% by 2025.

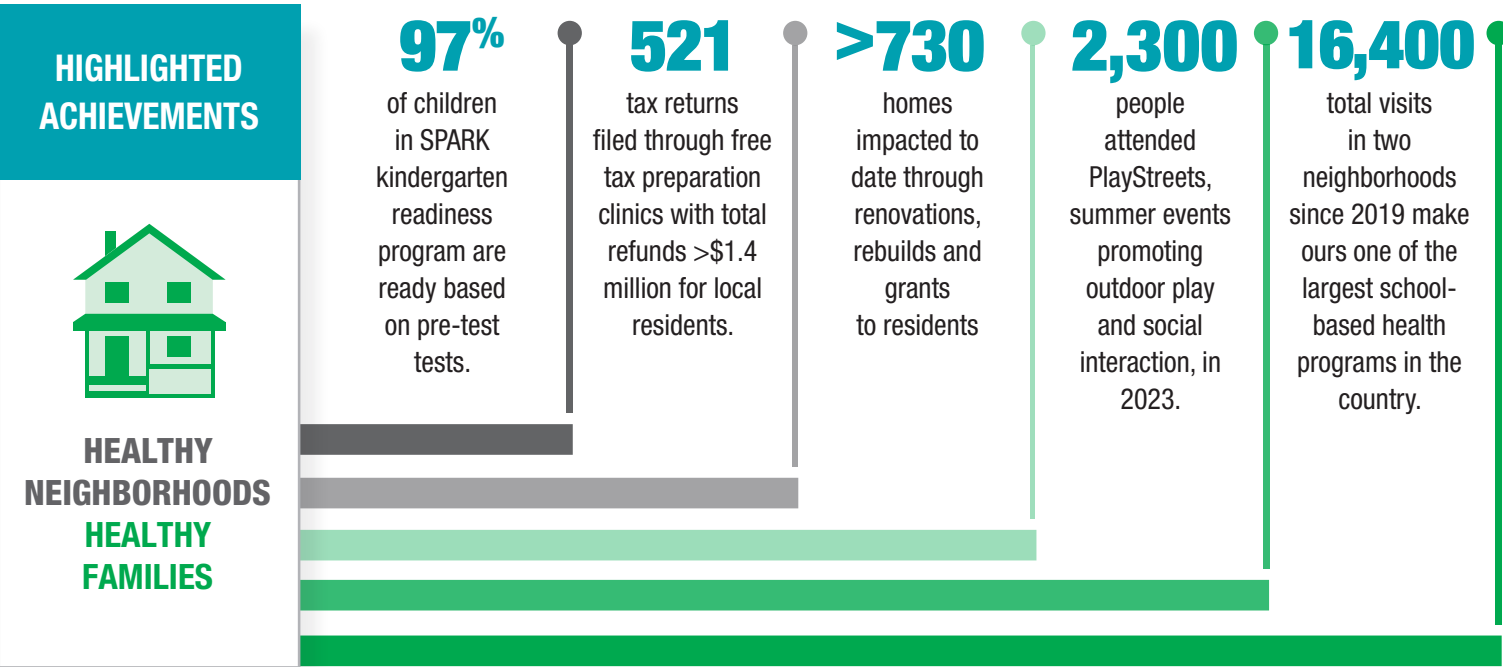
Learn more about the **ASPIRES** research at NationwideChildrens.org/ASPIRES.



LEADING POPULATION HEALTH

HEALTHY NEIGHBORHOODS HEALTHY FAMILIES IMPACT

One of the most important predictors of a child’s overall health is their zip code. Recognizing this, Nationwide Children’s, along with community partners, started Healthy Neighborhoods Healthy Families. The initiative brings important programs and services to the community to impact positive health outcomes, focused on five areas: affordable housing, economic development, health and wellness, education and community enrichment.



HEALTHY NEIGHBORHOODS HEALTHY FAMILIES IN LINDEN

Healthy Neighborhoods Healthy Families’ work began and continues in Columbus’s South Side, the neighborhood nearest the hospital’s campus. But as we have been able to grow our partnerships and successes, we have expanded into a second neighborhood — Linden.

We have been a proud partner in the Linden community for more than 25 years, providing health care for children through the Linden Primary Care Center, in neighborhood schools and at community organizations. Now, as Healthy Neighborhoods Healthy Families engages more deeply with the Linden community, we are expanding on the bold vision of the One Linden Plan, guided by resident concerns, to bring important programs and resources to this unique, vibrant community.



LINDEN PROUD PARENT

The Proud Linden Parent Program takes evidence-based, positive parenting strategies and contextualizes them with the concerns and challenges that families in the diverse Columbus neighborhood of Linden may face.

“Some families are struggling with housing, or they really need resources that traditional positive parenting programs don’t focus on,” says Whitney Raglin Bignall, PhD, pediatric psychologist and director of the program.

Dr. Raglin Bignall guides the program, “but I am not up there telling people how to parent,” she says. The 11-session program (with a separate graduation) is heavily discussion-based and respectful of the caregivers’ opinions and values. It often begins with questions like “What goals do you have for yourself?” or “Where do you see your child in five years?” The parents also have access to the Linden Primary Care Center’s community health worker, an expert in connecting people to the resources they need.

Dr. Raglin Bignall and her team recognize that it’s not easy to ask busy, stressed parents to commit to three months of classes, so they try to remove every barrier possible. They serve dinner. They have childcare — so far, led by Akua Amponsah, MD, medical lead at the Linden Primary Care Center and associate chief for population health in the Division of Primary Care Pediatrics (known affectionately in the community as “Dr. A”).

“One of the great benefits of the Proud Linden Parent Program is that it helps build a community of parents. These parents now know other parents that they can support, or who can support them. In fact, a program graduate is now the community health worker for the Linden Primary Care Center.” – *Whitney Raglin Bignall, PhD*



A TRANSFORMATIVE FUND TO IMPROVE HOUSING IN LINDEN

The nonprofit Ohio Capital Finance Corporation created a \$50 million fund to expand Nationwide Children’s affordable housing initiatives in the Linden neighborhood. The Linden Healthy Homes Fund II will allow Healthy Homes, the affordable housing arm of Nationwide Children’s Healthy Neighborhoods Healthy Families initiative, to further its commitment to invest in

community health with the development of 150 rental units over the next 10 years.

The fund comprises a \$25 million loan and \$25 million in grant funding, including support from the City of Columbus via voter-approved bond dollars and Franklin County Commissioners, to support the acquisition, construction, and permanent financing of rental housing units for families in all parts of the neighborhood.



O.N. RAY BIGNALL, II, MD, FAAP, FASN,
NAMED CHIEF DIVERSITY AND HEALTH
EQUITY OFFICER AT NATIONWIDE
CHILDREN'S HOSPITAL

Dr. Bignall will champion an inclusive, diverse workplace and improved health outcomes for all children. He has positively impacted many programs at the hospital including guiding an initiative to increase the diversity of our residency program, leading this year to the most diverse resident class in the hospital's history. He is also a nationally recognized expert on health equity issues, having served as a member of The White House's Health Equity Roundtable, serving as the inaugural chair of the Health Care Justice Committee for the American Society of Nephrology, and giving dozens of presentations across the nation.

“Dr. Bignall is one of the country’s most well-respected leaders in the diversity, inclusion and health equity field and we are fortunate to have him here. He is an extraordinary advocate for our patient families, a leader known for fostering an inclusive workplace, and a trusted mentor to our medical trainees. We’re excited to have him in this crucial role.”

— Tim Robinson,
Chief Executive Officer

Ray Bignall, MD,
Chief Diversity and Health Equity Officer

ADVANCING CHILD HEALTH, EQUITY AND WELL-BEING AND REDUCING HEALTH
DISPARITIES THROUGH RESEARCH

The Center for Child Health Equity and Outcomes Research in the Abigail Wexner Research Institute exists to advance child health, equity and well-being and reduce health disparities through research in and across clinical care, health services, health policy and community initiatives.

OUR VISION

Leading the nation in
Groundbreaking Research
that produces

Reduced Health Disparities

Vibrant Communities

Flourishing Families

Best Outcomes for all Children

OUR TOOLS

Clinical Expertise

Advanced Large Data Analytics

Translational Research

Mentorship & Training

Qualitative Methods

Community Engagement

OUR PARTNERS

INTERNAL PARTNERS

Partners For Kids

Community Wellness

Primary Care Network

Medical and Surgical Specialties

EXTERNAL PARTNERS

Communities

Health Care Organizations

Academic Institutions

Government Agencies and Policymakers

“Our faculty and staff conduct novel research designed for impact. Our partnerships enrich this work and ensure that it is grounded in the realities of our time. Most importantly, we believe that our research must be rigorous and meaningful and that our work must inform decisions that move us closer to being a community where every child has the opportunity to achieve their best health.”

— Deena Chisolm, PhD, Director, Center for Child Health Equity and Outcomes Research



REGIONAL GROWTH: NATIONWIDE CHILDREN’S - TOLEDO



Since opening in March 2022, Nationwide Children’s Hospital - Toledo has increased access to high-quality pediatric care in northwest Ohio. New to the region, behavioral health and otolaryngology (ENT) services have helped families receive the care they need close to home.

In addition to providing inpatient telehealth consults, our behavioral health experts are being integrated into Nationwide Children’s - Toledo’s primary care sites and Autism Center. Our new, full-service ENT program — including the only pediatric, fellowship-trained ENT providers in the region — offers everything from tonsillectomy and ear tubes to audiology and cochlear implant services. More information on Nationwide Children’s - Toledo's growing programs and services can be found at NationwideChildrens.org/Toledo.

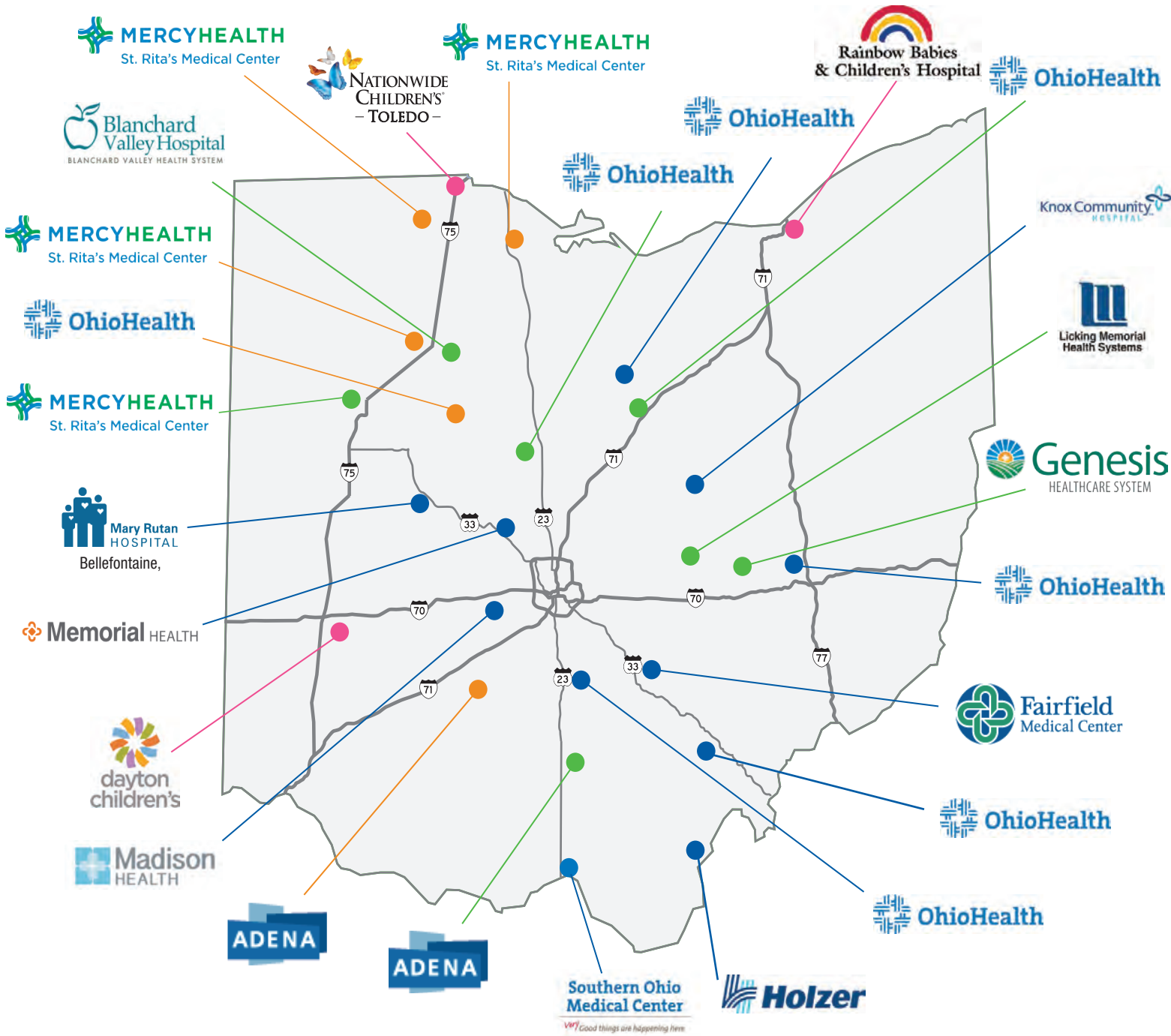


A COMMITTED MEMBER OF THE TOLEDO COMMUNITY

Nationwide Children’s - Toledo is coordinating with community stakeholders to support lead remediation, reduce lead exposure and identify resources to expand education for local families. Combined efforts will reduce adverse childhood experiences (ACEs) to promote health and well-being of children and families. This work includes ongoing participation on the Healthy Lucas County Executive Committee, the Healthy Lucas County Funding Task Force and the Healthy Lucas County CHIP Task Force.

The Nationwide Children’s mission to work at the intersection of housing and health extends to Toledo and Lucas County. The hospital and community partners align efforts to support home repair and lead remediation. Nationwide Children’s - Toledo’s role in improved housing conditions promotes the vision of the 2021-2024 Lucas County Community Health Improvement Plan.

OUR PARTNERSHIPS AND COLLABORATIONS



Nursery Key			
● Level I	● Level II	● N/A	● Pediatric Hospital Partnerships

AS PART OF THE \$3.3 BILLION STRATEGIC PLAN, EXPANDED FACILITIES AND PROGRAMS REQUIRE

ADDITIONAL FACILITIES TO SUPPORT OUR MORE THAN 1.7 MILLION PATIENT VISITS EACH YEAR.

MASTER FACILITIES PLAN : 2021-2026 CAMPUS ZONES AND PLANNED EXPANSION

Blue Zone: Ambulatory Outpatient

Orange Zone: Research

Tan Zone: Inpatient

Purple Zone: Acute Outpatient

Yellow Zone: Planned Inpatient Expansion



1 Livingston Orthopedic & Surgery Center

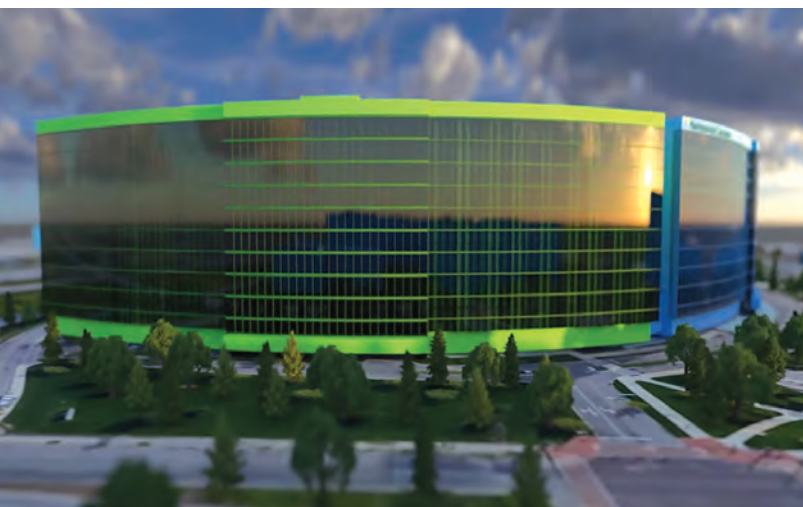
2 Research Building IV

3 Research Building V

4 Inpatient Tower

P Parking Garage

C Conference Center



NEW HOSPITAL TOWER

Ground has broken on the new hospital tower that will be a larger companion to the existing 12-story inpatient facility.



RESEARCH CAMPUS EXPANSION

Research Building IV opened in May 2023, bringing the total dedicated research space to 800,000 square feet.



LIVINGSTON ORTHOPEDIC & SURGERY CENTER

New Livingston Orthopedic & Surgery Center to open in 2024 with 270,000 square feet dedicated to high quality, multidisciplinary care in orthopedics and sports medicine.



PROTON CENTER

Nationwide Children's and The Ohio State University have brought the first proton therapy treatment facility to central Ohio. The facility opened in late 2023 and offers the most advanced technologies available, including FLASH proton therapy.

HIGHLIGHTED APPOINTMENTS, AWARDS AND GRANTS

Leadership Appointment Highlights



Cynthia Gerhardt, PhD

Cynthia Gerhardt, PhD, Chief Clinical Research Officer

Cynthia Gerhardt, PhD, former director of the Center for Biobehavioral Health in the Abigail Wexner Research Institute at Nationwide Children’s, has been appointed Chief Clinical Research Officer (CCRO) at Nationwide Children’s. Dr. Gerhardt is also a professor of Pediatrics and Psychology at The Ohio State University and program director in the Center for Clinical and Translational Science, a partnership between Ohio State and Nationwide Children’s to accelerate scientific discovery. As CCRO, Dr. Gerhardt will focus on the development and oversight of clinical research operations across Nationwide Children’s, with an overall goal of facilitating impactful clinical research throughout the organization. She oversees the full life cycle of the clinical research process, with an emphasis on increasing quality, compliance and efficiency along with promoting a culture of excellence among investigators and clinical research staff.



Peter White, PhD

Peter White, PhD, Chief Data Sciences Officer

Peter White, PhD, has been named the inaugural Chief Data Sciences Officer (CDSO) of the Abigail Wexner Research Institute (AWRI) at Nationwide Children’s. In his role, Dr. White leads biomedical data science initiatives to support Nationwide Children’s mission as a leader in pediatric health care innovation. As a member of the AWRI senior leadership team, Dr. White is responsible for building and executing a comprehensive data science strategy across AWRI, including the integration and analysis of disparate big data sources such as genomic and electronic health record data as well as using artificial intelligence and machine learning techniques to derive insights for the diagnosis and treatment of pediatric diseases. He oversees a team of data scientists, software developers, cloud engineers, data architects, analysts and other professionals to support these efforts.



Nelson Weichold, MHA

Nelson Weichold, MHA, Chief Financial Officer

Nelson Weichold, MHA, has been named chief financial officer at Nationwide Children’s. Weichold brings more than two decades of financial leadership experience, previously working in large teaching hospitals and academic medical centers. Weichold most recently served as CFO at the University of Mississippi Medical Center, which includes the state’s only children’s hospital.



Ray Bignall, MD

Ray Bignall, MD, Chief Diversity and Health Equity Officer

O. N. Ray Bignall II, MD, FAAP, FASN, has been named the hospital’s chief diversity and health equity officer. Dr. Bignall, a pediatric nephrologist, was named assistant chief diversity and healthy equity officer in 2022. In his new role as chief, Dr. Bignall will lead the hospital’s ongoing efforts to cultivate an inclusive and diverse workforce, and champion initiatives to improve equitable child health outcomes by addressing the social factors such as food insecurity or housing instability that can impact a child’s health, development and well-being. Dr. Bignall also serves as Director of Kidney Health Advocacy and Community Engagement (KHACE) for the Division of Nephrology and Hypertension, and an Associate Professor of Pediatrics at The Ohio State University College of Medicine.



Patrick Gallagher, MD

Patrick Gallagher, MD, Director for the Center for Perinatal Research

Patrick Gallagher, MD, formerly from Yale University has been named the director of the Center for Perinatal Research in the Abigail Wexner Research Institute at Nationwide Children’s. Dr. Gallagher is an active member of the American Society of Hematology and serves on many grant review panels including the Scientific Review Committee for the National Heart, Lung, and Blood Institute’s (NHLBI) Cure Sickle Cell Initiative (CureSCi). Dr. Gallagher is the editor-in-chief of the *Journal of Perinatology*, the official journal of the American Academy of Pediatrics Section on Neonatal Perinatal Medicine. He is a member of the editorial boards for *PLoS One*, *American Journal of Hematology* and *Frontiers in Physiology*. He is a contributing editor for *Blood Cells, Molecules, and Diseases*.

INTRODUCING ASSOCIATE DIVISION CHIEFS FOR RESEARCH

Sixteen new associate division chiefs for research (ADCR) have been appointed in the Department of Pediatrics as of July 1, 2023. The ADCRs will support the institution’s 5-year strategic plan focused on integrating clinical care and research.

ADCRs will work collaboratively with their division chiefs and the chief clinical research officer, Cynthia Gerhardt, PhD, on clinical research initiatives across the institution. Each ADCR will provide leadership and serve as a key liaison between their division and the Abigail Wexner Research Institute. Their primary role will be to encourage discovery and scholarly activities among divisional colleagues and trainees. The goal is to increase the quality, compliance, and efficiency of clinical research by facilitating access to research services, resources and training. ADCRs will provide mentorship and guidance to increase academic output and serve on divisional and departmental academic committees.

Andrea Bonny, MD, Adolescent Medicine*	Leena Nahata, MD, Endocrinology	Lisa Humphrey, MD, Palliative Care*
Benjamin Prince, MD, Allergy and Immunology	Scott Hickey, MD, Genetics and Genomics*	Alex Kemper, MD, Primary Care*
Kan Hor, MD, Cardiology	Cheryl Gariepy, MD, Gastroenterology	Kelly McNally, PhD, Pediatric Psychology and Neuropsychology
Megan Letson, MD, and Farah Brink, MD, Child Abuse Pediatrics*	Sarah O’Brien, MD, Hematology, Oncology & Blood and Marrow Transplant	Karen McCoy, MD, Pulmonary Medicine*
Alysha Taxter, MD, Clinical Informatics	Amy Tyler, MD, Hospital Pediatrics*	Alysha Taxter, MD, Rheumatology
Elizabeth Lucas, MD, Complex Care*	Masako Shimamura, MD, Infectious Disease	James MacDonald, MD, MPH, Sports Medicine
Jennifer Muszynski, MD, MPH, Critical Care Medicine	Carl Backes, Jr, MD, Neonatology	Hannah Hays, MD, Toxicology*
Daniel Coury, MD, Developmental and Behavioral Pediatrics*	Diana Zepeda-Orozco, MD, Nephrology	Cynthia Zimm, MD, Urgent Care*
Esteban Fernandez, MD, Dermatology	Adam Ostendorf, MD, Neurology	

*Denotes interim status

Award Highlights



Timothy C. Robinson
Chief Executive Officer

Nationwide Children's Hospital CEO Recognized Among the 100 Most Influential People in Health Care

Modern Healthcare, the health care industry’s premier business magazine, has named Nationwide Children’s Hospital CEO Tim Robinson to its signature list of the “100 Most Influential People in Healthcare.” The list includes political leaders and executives from large adult health systems, national associations and pharmaceutical companies. Robinson (#83 on the list) is one of only three pediatric hospital leaders who were named among the 100 most influential in 2022, joining the CEOs of Children’s Hospital of Philadelphia (#80) and St. Jude Children’s Research Hospital (#98).



Dennis Durbin,
MD, MSCE

Dennis Durbin, MD, MSCE, Inducted in MACPS Hall of Fame and Receives C. Everett Koop Medal of Distinction From Safe Kids Worldwide

Dr. Durbin, president of the Abigail Wexner Research Institute, has been inducted into the Manufacturers Alliance for Child Passenger Safety (MACPS) Hall of Fame. He joins nine other individuals from across North America for this significant recognition. Additionally, Safe Kids Worldwide, a nonprofit organization working to protect kids from preventable injuries, awarded Dr. Durbin the award for embodying Dr. Koop’s (former US Surgeon General and pediatric surgeon) legacy of affecting change and fighting for all families.



Christopher Walker,
PhD

Christopher Walker, PhD, Named Allen Distinguished Scholar in Pediatric Research

In November 2022, Nationwide Children’s and the Abigail Wexner Research Institute named Christopher Walker, PhD, director of the Center for Vaccines and Immunity the Allen Distinguished Scholar. The award is given in honor of former Nationwide Children’s chief executive officer, Steve Allen, MD. Dr. Walker’s research focuses on understanding the molecular mechanisms of hepatitis viruses. Dr. Walker also holds the Wilby S. Cowan Endowed Chair in Pediatric Research.

Highlighted Grants

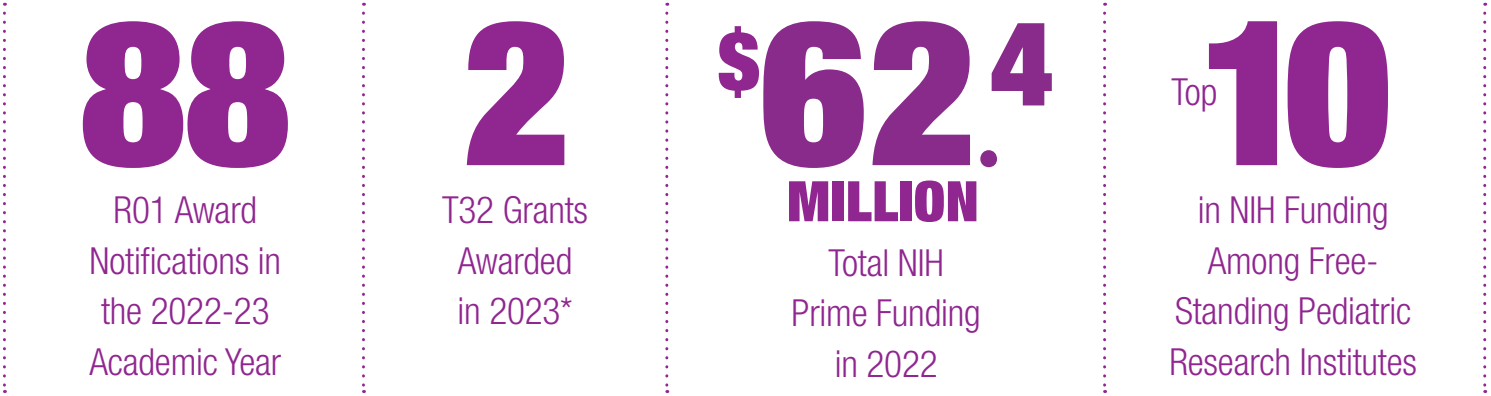
\$17.7 Million Awarded to Nationwide Children's Hospital and The Ohio State University to Study How Risk Factors During Pregnancy Affect Children as They Grow

The Environmental Influences on Child Health Outcomes (ECHO) program is supported by the NIH to enhance the health of children for generations to come, and to understand the effects of a broad range of early environmental influences on child health and development. The research team will enroll 675 diverse pregnant people and follow them, their conceiving partners and children to adulthood or age 21. Ohio State Wexner Medical Center will enroll the pregnant individuals, and once the babies are born, the families will transition to Nationwide Children’s for annual study visits. The team will pool data with other partners to address important child health research needs requiring large national samples.

\$6.95 Million FDA Grant to Help Create Medical Devices Just for Children

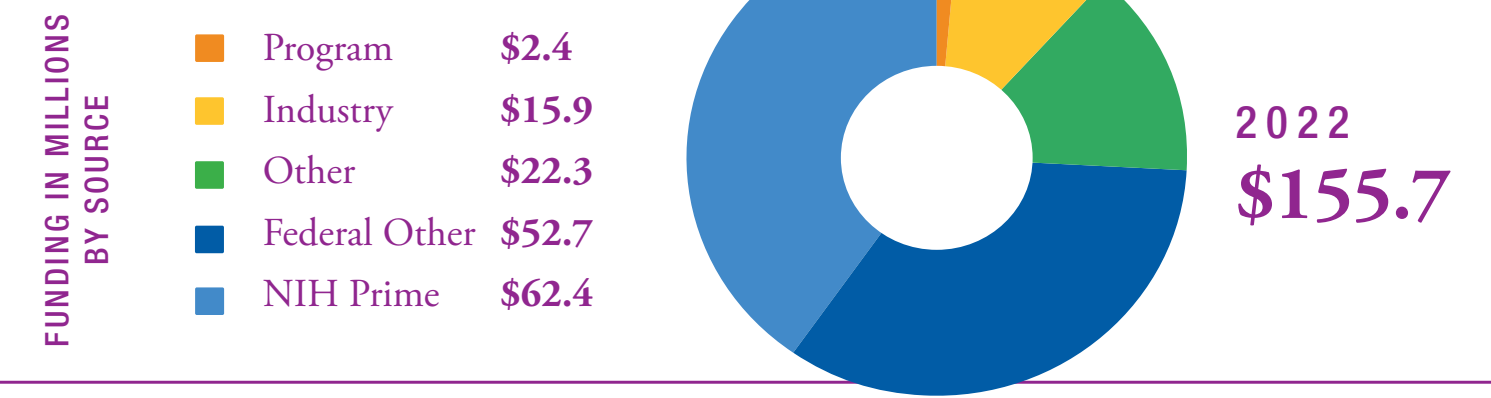
A new consortium led by Nationwide Children’s Hospital and The Ohio State University — the first of its kind in the Midwest — will develop, produce and commercialize pediatric medical devices. The consortium is funded by a grant from the Food and Drug Administration (FDA) for \$6.95 million distributed over five years. The Midwest Pediatric Device Consortium (MPDC) will include Nationwide Children’s, The Ohio State University Wexner Medical Center, Cleveland Clinic Children’s Hospital, Cincinnati Children’s Hospital Medical Center, Ohio Life Sciences, and Rev1 Ventures. Many other regional health care systems, academic institutions, and industry partners are also committed. The MPDC will work to conceptualize, prototype, test, manufacture, market and commercialize pediatric medical devices.

NIH Funding at Nationwide Children’s: By the Numbers



*Integrative Research Training Program in Pediatric Cardiopulmonary Disease and Training Program in Basic and Translational Pediatric Oncology Research

2022 External Awards



Department, Section and Research Institute **Reports**



A LETTER FROM THE DEAN OF THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE



Dear Friends,

We are so fortunate in central Ohio to have one of the nation’s leading academic pediatric medical centers in our backyard. Nationwide Children’s Hospital is a true gem, as evidenced by its recognition for the past decade as one of U.S. News & World Report’s Best Children’s Hospitals. I am very grateful for the strong partnership we at The Ohio State University College of Medicine enjoy with this unparalleled institution.

The people and programs at Nationwide Children’s play a pivotal role in helping us achieve our ambition of being a leading college of medicine that transforms the health of our communities through inclusive and innovative education, discovery and care. Our learners are passionate about this ambition. They want to make a difference in the world. And many of them specifically want to make a difference in the lives of children.

Among our more than 2,700 faculty members in the College of Medicine, nearly 700 reside in the Department of Pediatrics at Nationwide Children’s and its Abigail Wexner Research Institute. Each year, children and families from around the world benefit from the clinical care and research expertise of our faculty and scientists located there. Likewise, our learners benefit from the rich educational experience these faculty members provide.

Here are some wonderful highlights about our educational partnership from the past year:

- 274 third-year medical students completed core rotations in Pediatrics.
- 171 fourth-year medical students completed rotations (both required and elective) in Pediatrics.
- 8 first-year medical students completed a summer research experience at Nationwide Children’s.
- 53 first- and second-year medical students are completing their longitudinal clinical placements at Nationwide Children’s sites, where 42 Pediatrics faculty members serve as longitudinal practice preceptors.
- 26 of our graduating medical students (13%) went into Pediatrics and six selected Medicine/Pediatrics as their specialty.
- Our residency programs in Combined Internal Medicine/Pediatrics and Child Neurology, both in partnership with Nationwide Children’s, are considered top 10 programs as ranked by physician reputation across the country.

The Ohio State University College of Medicine faculty who work at Nationwide Children’s are making cutting-edge discoveries and translating them into solutions for children everywhere. I could not be prouder of their work and commitment to our patients, families and learners. Together, we are transforming the health of our communities and educating the pediatric health care leaders of tomorrow.

Sincerely,

Carol R. Bradford, MD, MS, FACS
Dean, The Ohio State University College of Medicine
Leslie H. and Abigail S. Wexner Dean’s Chair in Medicine
Vice President for Health Sciences, The Ohio State University Wexner Medical Center
Professor of Otolaryngology – Head and Neck Surgery

DEPARTMENT OF PEDIATRICS

The mission of the Department of Pediatrics at Nationwide Children’s Hospital and The Ohio State University is to achieve excellence in teaching, research, academics, advocacy and administrative service. With great energy and enthusiasm, we promote the well-being of children, discover new knowledge to bring to bear on optimal child health and provide evidence-based, efficient and compassionate medical care to our patients and their families.

The department comprises 27 clinical divisions, the Steve and Cindy Rasmussen Institute for Genomic Medicine and 13 research centers of emphasis in the Abigail Wexner Research Institute. Department of Pediatrics faculty members have formal appointments in The Ohio State University College of Medicine.

Our faculty has an unwavering commitment to excellence and aspires to the highest levels of professionalism, humanism, diagnostic acumen, clear communication and compassion. We educate and mentor more than 350 third- and fourth-year medical students from The Ohio State University and train approximately 300 residents and subspecialty fellows each year. Our Center for Faculty Development oversees a robust program that strives to engage, support and educate our more than 500 faculty. An important mission of our department and hospital is the discovery and dissemination of new knowledge related to child health and health care delivery. This discovery mission is supported by more than \$105 million in research funding and we are ranked sixth among free-standing children’s hospitals in NIH funding.



A LETTER FROM THE CHAIR, DEPARTMENT OF PEDIATRICS



Dear Colleagues,

At Nationwide Children’s, we provide state-of-the-art clinical care for children in central Ohio and around the world. Our training programs offer outstanding clinical and research experiences in an environment that supports professional growth and development. We foster diversity, inclusion and equity among our faculty and trainees through numerous programs, initiatives and investments.

We are committed to the integration of clinical care and research as highlighted in our strategic plan. From basic discovery science to clinical investigation, our faculty, residents and fellows have every opportunity to engage with research in meaningful ways to improve the care of children everywhere. Furthering our commitment to this integration, this year we named 16 associate division chiefs of research across the Department of Pediatrics. These individuals, with oversight from Cynthia Gerhardt, PhD, our chief clinical research officer, will serve as a bridge between clinical divisions and research leadership and resources.

At Nationwide Children’s, our work extends beyond our campus and into the community. Through advocacy, population health and health equity initiatives, we are meeting patients and families where they need us most. Our services include the integration of behavioral health in primary care, expansion of our school-based clinics and working with community partners to create safe housing options.

This edition of the annual report highlights the achievements and team members that are leading the *Journey to Best Outcomes* for children everywhere. I am proud to lead this committed, compassionate and driven team. Join me in celebrating the accomplishments of the last year and in looking forward to the successes to come.

Catherine Krawczeski

Catherine Krawczeski, MD
Physician-in-Chief at Nationwide Children’s
Ann I. Wolfe Endowed Chair in Pediatric Leadership
Professor and Chair, Department of Pediatrics, The Ohio State University College of Medicine

DEPARTMENT OF PEDIATRICS VICE CHAIRS



Ryan S. Bode, MD, MBOE
Senior Vice Chair,
Pediatrics



Elizabeth Bonachea, MD
Vice Chair, Diversity
and Inclusion



Dennis Durbin, MD
Vice Chair, Research



Linda Cripe, MD
Vice Chair, Promotion and Tenure



Rebecca Wallihan, MD
Vice Chair, Education

2022 – 2023 NATIONWIDE CHILDREN’S RESIDENCY PROGRAM
NATIONWIDE CHILDREN’S HOSPITAL | THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

**PEDIATRICS RESIDENCY
PROGRAM DIRECTOR**
Rebecca G. Wallihan, MD

**INTERNAL MEDICINE/
PEDIATRICS RESIDENCY
PROGRAM DIRECTOR**
Allison Rossetti, MD

**ASSOCIATE PROGRAM
DIRECTORS**

PEDIATRICS
Rena Kasick, MD
Mary Kay Kuzma, MD
Alexander T. Rakowsky, MD
Suzanne M. Reed, MD
Claire A. Stewart, MD

**INTERNAL MEDICINE/
PEDIATRICS**
Lucas McKnight, MD

**PEDIATRIC RESIDENTS
CHIEF RESIDENTS**
Dr. Elizabeth Grogan
Dr. Melonie Phillips
Dr. Timothy Pian
Dr. Kristin Sundy-Boyles
Dr. Jessica Williams

PL-4
Dr. Brandon Stone

PL-3
Dr. Hayat Al Tabosh
Dr. Sarah Allen
Dr. Brandon Barsky
Dr. Chelsea Bitler
Dr. Katelyn Carlson
Dr. Samantha Coss
Dr. Sara Crowell
Dr. Sara Delap
Dr. Grace Eberly
Dr. Meghan Fennell
Dr. JessieAnn Flowers
Dr. Ritika Gupta
Dr. Lisa Hall
Dr. Emily Hargrave
Dr. Evan Ingram
Dr. Catherine Kapcar
Dr. Alyshah Lakhani
Dr. Brittany Landry
Dr. Veronica Lewalski
Dr. Rachel Ludwig
Dr. Julie Luna Torres
Dr. Macala Maney

Dr. Kiah McArthur
Dr. Emily Messick
Dr. Marina Metzler
Dr. Lauren Misik
Dr. Robert Nadler
Dr. Priyanshi Patel
Dr. Adam Pearlstein
Dr. Lydia Powers
Dr. Sarah Rohrman
Dr. Daniel Roper
Dr. Katherine Shevelson
Dr. Blen Weldekidan
Dr. Alexandra Wenig
Dr. Jennifer Whipp
Dr. Matthew Wysong
Dr. Rachel Zeno

PL-2
Dr. Vedika Agrawal
Dr. Kaleb Boggs
Dr. Alison Brittain
Dr. Ana Maria Cabal Herrera
Dr. Fiona Chambers
Dr. Phillip Cheng
Dr. Ryan Ciarlo
Dr. John Crecelius
Dr. Catherine Davis
Dr. Ahmani DoDoo
Dr. Emily Engelhardt
Dr. Emily Ernest
Dr. Kaitlyn Foreman
Dr. Vinchelle Hardison
Dr. Taylor Hartlaub
Dr. Grace Hendrickson
Dr. Hannah Hughes (Datz)
Dr. Audrey Hull
Dr. S Basil Jafri
Dr. Dena Lowing
Dr. Sarah Mangold
Dr. William McAllister
Dr. Evan Meiman
Dr. Candice Melkerson
Dr. Elizabeth Murray
Dr. McKenzie Nelson Schmidt
Dr. Michelle Pfeffer
Dr. Albert Phillips, II
Dr. Julia Plourde Ciarlo
Dr. Sebastian Powell
Dr. Emily Rowland
Dr. Ali Sawani
Dr. Na'il Scoggins
Dr. Hannah Simmons
Dr. Jennifer Springer
Dr. Claire Tanager
Dr. Vanessa Thiel

Dr. Jonathan Wheeler
Dr. Matthew Wiet
Dr. Joshua Yell
Dr. George Zakhary
Dr. Morgan Zlotolow

PL-1
Dr. Emily Adler
Dr. Kaia Amoah
Dr. Nichole Anderez
Dr. Sarah Callaham
Dr. Melissa Cregan
Dr. Maxim Dragoun
Dr. Samuel Dressler
Dr. Madison Dudon
Dr. Austin Dukes
Dr. Patrick Dusza
Dr. Shaymaa Elhadidy
Dr. Olivia Grondalski
Dr. Charu Gupta
Dr. Ashley Hardee
Dr. Kyle Hendrix
Dr. Lauren Hoffman
Dr. Nicole Hurwitz
Dr. Nicole Jewett
Dr. Alexis Juergensen
Dr. Monica Kim
Dr. Valerie Kirtley
Dr. Andriana La Mantia
Dr. Katherine Lehman
Dr. Alexis Lester
Dr. Gina Livecchi
Dr. Reagan Lyman
Dr. Megan McConathy
Dr. Megan McPhee
Dr. Richard Miller
Dr. Garrett Muckleroy
Dr. Rachel Nguyen
Dr. Abena Obeng
Dr. Elizabeth Otto Nourse
Dr. Amy Parikh
Dr. Laura Roberts
Dr. Jasmine Robinson
Dr. Alicia Rodgers
Dr. Grace Rushton
Dr. Julie Tomolonis
Dr. Kari VanEvery
Dr. Christine Wang
Dr. Michael Young

**INTERNAL MEDICINE-
PEDIATRIC RESIDENTS
CHIEF RESIDENTS**
Dr. Brandi Heinz
Dr. Matthew Schreier

PGY-4
Dr. Cole Bredehoeft
Dr. Duncan Campbell
Dr. Jennifer DeSalvo
Dr. Dominic Haertling
Dr. Michael Neiger
Dr. Anthony Sanchez
Dr. Shilpa Sridhar
Dr. Christopher Woeste

PGY-3
Dr. Suranjana Dey
Dr. Anna Downs
Dr. John Gambрил
Dr. Brandon Liebau
Dr. Mariel McGuiness
Dr. Temitayo Olojo
Dr. Nathaniel Parisi
Dr. Stephen Ream
Dr. Jeanette Schnierle
Dr. Sarah Sprauer

PGY-2
Dr. Kathryn Andrews
Dr. Neemesh Desai
Dr. Jenna Hatab
Dr. Geoffrey Houtz
Dr. Lauren Ledingham
Dr. Ellen Lubbers
Dr. Megan McCrohan
Dr. John Reynolds
Dr. Andrea Schlosser
Dr. Hannah Smith

PGY-1
Dr. Nicole Chang
Dr. Victoria Charpentier
Dr. Meaghan Holzworth
Dr. Benjamin Jacob
Dr. Thomas Mason
Dr. Eleftheria Matsa
Dr. Grant Robertson
Dr. Caroline Skulski
Dr. Joshua Spegman
Dr. Samuel Stanley

Department of Pediatrics

ADOLESCENT MEDICINE

The Section of Adolescent Medicine at Nationwide Children’s Hospital provides general and specialty care for adolescents. The staff includes experts 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 care for incarcerated and unstably housed youth, and adolescents with complex health problems.

Faculty



Andrea E. Bonny, MD
Chief
Associate Division Chief for Research

Elise D. Berlan, MD, MPH

Maria D. Brown, MD

Ashley M. Ebersole, MD, MS

Fareeda W. Haamid, DO

Cynthia M. Holland-Hall, MD, MPH

Casey C. Levy, MD, MPH

Erin R. McKnight, MD, MPH

Heather L. Stewart, MD

Hunter J. Wernick, DO, MS

2022 – 2023 Fellows

Alexander S. Golec, MD

Lauren E. Matera, DO

Kristen E. Reilly, MD, MSW

Amy W. Zawacki, MD

Highlights From the Past Year

The Adolescent Medicine Clinic is located in the Livingston Ambulatory Center on our Columbus campus. Primary care is offered, as are consultative clinics for adolescents with reproductive health needs and those who need treatment for addiction. The Medical Clinic at the Franklin County Juvenile Intervention Center provides health care for detained youth. The Balanced Energy and Nutrition (BEAN) clinic provides medical evaluation and care for patients with disordered eating. The Substance Use Treatment and Recovery Program has been treating adolescents and young adults with substance use disorders since 2007. The Young Women’s Contraceptive Services Program, also known as BC4Teens, increases accessibility to long- acting reversible contraception. The THRIVE Program provides comprehensive care to transgender and gender-nonconforming youth. Physicians in the Section of Adolescent Medicine provide ongoing and consultative care for adolescents admitted to Nationwide Children’s with diverse medical problems, such as gynecological conditions and complications from eating disorders. An Accreditation Council for Graduate Medical Education Fellowship in Adolescent Medicine has been in place since 2010.

Our faculty members actively participate in national leadership and research:

- Elise D. Berlan, MD, MPH, is the liaison member on the Committee on Clinical Consensus-Gynecology for the American College of Obstetricians and Gynecologists and was invited by the Centers for Disease Control and Prevention to be an expert member of their Planning Meeting on CDC Contraceptive Guidance.
- Ashley M. Ebersole, MD is the site principal investigator for an industry-sponsored trial of a novel method for detection of sexually transmitted infections.
- Fareeda W. Haamid, DO, serves on the board of directors for the North American Society for Pediatric and Adolescent Gynecology.
- Cynthia M. Holland-Hall, MD, MPH, serves on the Executive Committee of the American Academy of Pediatrics Section of Adolescent Health.

- Erin R. McKnight, MD, MPH, served on the National Academies of Sciences, Engineering, and Medicine’s planning committee for a workshop on family focused interventions to prevent substance use disorders in adolescents.
- Heather L. Stewart, MD, serves as the President of the Diversity and Inclusion Council for the 122nd Fighter Wing, and has been appointed to the Educational Session Committee for the Society of Adolescent Health and Medicine 2024 Program Planning Committee.

Selected Publications

Hart L, Haamid F, Holland-Hall C, Bonny A. Impact of early stages of the COVID-19 pandemic on sexually transmitted infection screening claims among adolescent females in a pediatric accountable care organization in Ohio, United States. *Cureus*. 2022 Nov 30;14(11):e32070.

McKnight E, Dong Q, Brook D, Hepler S, Kline D, Bonny A. A descriptive study on opioid misuse prevalence and office-based buprenorphine access in Ohio prior to the removal of the drug addiction treatment act of 2000 waiver. *Cureus*. 2023 Mar 30;15(3):e36903.

McKnight E, Gardner S, Cottrill A, Levy C, Bonny A. Trauma and resilience in adolescents and young adults with opioid use and eating disorders. *Clin Pediatr (Phila)*. 2023 Jun 16:99228231181742.

Wilkinson T, Maslowsky J, Berlan E. The pediatrician in the post-Roe landscape. *JAMA Pediatr*. 2022 Oct 1;176(10):967-968.

Fast Facts: July 2022 – June 2023

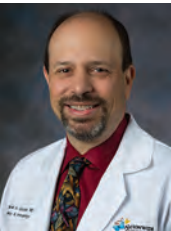
- Adolescent Medicine Clinic Visits: 6,219
- Adolescent Medicine Eating Disorders Visits: 2,276
- Adolescent Medicine Juvenile Justice Clinic Visits: 2,382
- Dublin Adolescent Medicine Clinic Visits: 351
- East Broad Adolescent Medicine Clinic Visits: 467
- Total Adolescent Medicine Clinic Visits: 9,313
- Inpatient Consults: 49

Department of Pediatrics

ALLERGY AND IMMUNOLOGY

The Division 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. Clinical activity includes an active outpatient clinic, food allergy treatment center, several multispecialty clinics, an urgent referral clinic and inpatient consultation services. The division is also actively involved in both basic science and clinical research.

Faculty



Mitchell H. Grayson, MD
Division Chief



Rebecca Scherzer, MD
Section Chief



Benjamin T. Prince, MD
Associate Division Chief for Research

Elizabeth A. Erwin, MD
Farah N. Khan, MD, MS
Kelsey Lecerf, MD
Irene J. Mikhail, MD
Peter J. Mustillo, MD
Margaret Redmond, MD
Kasey Strothman, MD
David R. Stukus, MD

2022 – 2023 Fellows

Christian Coletta, MD
Courtney Cotter, DO
Rebecca Koenigsberg, DO
Kasey Lanier, MD

Highlights From the Past Year

The Division of Allergy and Immunology has been busy working to provide the best outcomes for children with allergic and immunologic disorders:

- Our Food Allergy Treatment Center in Lewis Center is a one-of-a-kind center in central Ohio providing comprehensive evaluation, diagnosis and management of food allergies, including high-risk oral food challenges.
- Our division is a World Allergy Organization Center of Excellence.
- We are committed to the care of children with immune system defects, and along with the Nationwide Children’s Hospital Diagnostic Immunology Laboratory, continue to be a Jeffrey Modell Foundation for Primary Immunodeficiencies Diagnostic and Research Center of Excellence.
- One of our faculty serves as Editor-in-Chief for *Annals of Allergy, Asthma & Immunology*, a premiere allergy journal, and the editorial office is housed in our division.
- Our providers manage all allergic conditions, including asthma, allergic and nonallergic rhinitis, chronic sinusitis, hives, eczema, angioedema, drug and food allergies, latex allergy and stinging insect allergy. We provide allergy skin testing, allergen immunotherapy, asthma education, pulmonary function testing, comprehensive food allergy management (including oral food challenges) and drug allergy testing/oral drug challenges. We evaluate

children with recurrent or unusual infections and provide complete evaluation and management for primary immunodeficiencies. Faculty participate in the Complex Asthma and 22q11 clinics and in multidisciplinary clinics with Hematology/Oncology, Otolaryngology (ENT) and Gastroenterology. We provide inpatient consultation and immediate assistance for health care providers through the Physician Direct Connect Line.

- Our faculty perform a wide array of basic and clinical research, as well as quality improvement initiatives, exploring mechanisms driving development of asthma and allergies, clinical studies of eosinophilic esophagitis, food allergy, use of technology to improve patient outcomes, transition of care, primary immunodeficiency, asthma, and allergic and nonallergic rhinitis. Participating in clinical research studies provides our faculty the ability to provide cutting-edge care to our patients.
- Allergy and Immunology faculty provide clinical and didactic instruction for the Nationwide Children’s Hospital Allergy and Immunology Fellowship Program and Pediatric Residency Program along with 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, national and international conferences.

Selected Publications

Mustillo PJ, Sullivan KE, Chinn IK, Notarangelo LD, Haddad E, Davies EG, de la Morena MT, Hartog N, Yu JE, Hernandez-Trujillo VP, Ip W, Franco J, Gambineri E, Hickey SE, Varga E, Markert ML. Clinical practice guidelines for the immunological management of chromosome 22q11.2 deletion syndrome and other defects in thymic development. *J Clin Immunol.* 2023 Feb;43(2):247-270.

Prince B, Varga E, McBride K. Germline variant interpretation in children with severe sepsis. *J Clin Immunol.* 2023 Feb;43(2):312-314.

Redmond M, Scherzer R, Hardy C, Macias C, Samora J, Stukus D. In-office amoxicillin to increase graded-dose challenges at initial evaluation for penicillin allergy. *J Allergy Clin Immunol Pract.* 2023 Jul;11(7):2190-2195. Epub ahead of print.

Resiliac J, Rohlfing M, Santoro J, Hussain S, Grayson M. Low-dose lipopolysaccharide protects from lethal paramyxovirus infection in a macrophage- and tlr4-de-
pendent process. *J Immunol.* 2023 Feb 1;210(3):348-355.

Strothman K. Choosing biologics for uncontrolled asthma: A conundrum for clinicians. *Ann Allergy Asthma Immunol.* 2023 May;130(5):534-535.

Fast Facts: July 2022 – June 2023

Main Campus Allergy Clinic Visits: 4,688
Immunology Clinic Visits: 606
Complex Asthma-Allergy Clinic Visits: 128
Hilliard Allergy Clinic Visits: 709
Lewis Center Food Allergy Clinic Visits: 1,908
Westerville Allergy Clinic Visits: 665
Total Clinic Visits: 8,704
Inpatient Consults: 97



“While 3% does not seem like a lot, cardiac arrest is oftentimes a devastating outcome.”
– Tara C. Cosgrove, MD, MBOE

The Heart Center

The PROMISE Program Reduces Cardiac Arrests in High-Risk Patients

This proactive quality improvement initiative improved outcomes for high-risk pediatric cardiology patients undergoing cardiac intervention.

In a paper in *JTCVS Open*, a team used quality improvement methodology to decrease post-procedure cardiac arrests, which was associated with a decrease in overall and post-procedural length of stay.

Approximately 40,000 children have congenital heart surgery each year in the United States, and 2-3% of them experience post-procedure cardiac arrest.

“While 3% does not seem like a lot, cardiac arrest is oftentimes a devastating outcome,” says **Tara C. Cosgrove, MD, MBOE**, a pediatric cardiologist at Nationwide Children’s and first author of the new study. “Only about half of the children that have an arrest survive, and a large percentage of survivors experience long-lasting and serious health repercussions.”

Because cardiac arrests are relatively rare, the team tried to proactively mitigate risk before the events occurred. They formed a multidisciplinary quality improvement team to develop criteria to identify high-risk patients for whom interventions could be targeted.

In July 2020, the team enrolled these high-risk patients in the PROactive MIitigation to decrease Serious adverse Events (PROMISE) program. Patients in the program underwent two multidisciplinary reviews (termed PROMISE calls) involving key peri-procedural stakeholders, once before the procedure and then immediately post-procedure.

They measured the number of high-risk cases between cardiac arrests. Over the first 12 months of the PROMISE Program, they saw the median number of high-risk cases between arrests rise from three to seven, an increase of 133% which has been sustained for nearly two years.

“The success of the PROMISE program is attributed to the hard-working front-line staff within The Heart Center, specifically the Cardiac ICU providers and Cardiothoracic Surgical Teams directly caring for these incredibly complex patients,” says Dr. Cosgrove.

The Heart Center team hopes to utilize principles of the PROMISE Program with other divisions at Nationwide Children’s to aid in local spread. They are also helping to bring the program to other institutions with recent spread to the heart center at University Hospitals Rainbow Babies and Children’s Hospital in Cleveland, Ohio.

REFERENCE:

Cosgrove TC, Gauntt J, Carrillo SA, Cassidy SC, Gajarski RJ, Galantowicz M, Krawczeski CD. Proactive risk mitigation for cardiac arrest prevention in high-risk patients with congenital heart disease. *JTCVS Open*. 2022 Nov 4;13:307-319.

Department of Pediatrics

THE HEART CENTER

The Heart Center at Nationwide Children’s Hospital combines all clinical and research disciplines under one umbrella to meet our mission: to improve outcomes by discovering the causes of heart disease and develop novel therapies for our patients, focusing on each as an individual and providing the state-of-the-art care that all patients deserve, regardless of age. We support the mission of Nationwide Children’s to provide our services in a safe environment focused on family-centered care.

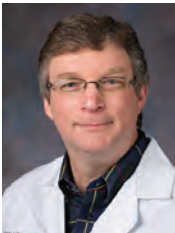
Faculty



Catherine D. Krawczeski, MD
Heart Center Co-Director



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



Robert J. Gajarski, MD,
MHSA
Interim Division Chief,
Section Chief



Vidu Garg, MD
Heart Center Director of
Translational Research
Director, Center for
Cardiovascular Research

Julie Aldrich, MD
Aimee K. Armstrong, MD
Lamya Atweh, MD
Carl H. Backes, MD
Amee Bigelow, MD, MS
Benjamin A. Blais, MD
Jessica L. Bowman, MD
Amulya Buddhavarapu, MD

Sergio A. Carrillo, MD
Steven C. Cassidy, MD
Kristin M. Chenault, MD
Marco Corridore, MD
Tara Cosgrove, MD, MBOE,
LSSBB
Linda H. Cripe, MD
Clifford L. Cua, MD

Curt J. Daniels, MD
Richard P. Fernandez, MD
Jill A. Fitch, MD
Jennifer Gauntt, MD
Stephen A. Hart, MD
Emily A. Hayes, MD
Kan N. Hor, MD
Anna N. Kamp, MD, MPH

John Kelly, MD
Naomi J. Kertesz, MD
Omar M. Khalid, MD
Sarah Khan, MD
John P. Kovalchin, MD
Rajesh Krishnamurthy, MD
Rohan Kumthekar, MD
Lauren Lastinger, MD

Anthony Y. Lee, MD
Marc Lee, MD
Simon Lee, MD
Kaitlin E. L’Italien, MD
Eric A. Lloyd, MD
May Ling Mah, MD, MS
Patrick I. McConnell, MD
Christopher T. McKee, DO

Aymen N. Naguib, MD
Deipanjan Nandi, MD, MSc
Kathryn D. Nardell, MD
Julie C. O’Donovan, MD
Trisha Patel, MD
Christina M. Phelps, MD
Saurabh Rajpal, MD
Kerry L. Rosen, MD, MBA

Daniel G. Rowland, MD
Arash Salavitar, MD
Brittany Shutes, MD
Toshiharu Shinoka, MD, PhD
Janet M. Simsic, MD
Corey A. Stiver, MD
Karen M. Texter, MD
Andrew Tran, MD, MS

Stephanie Tseng, MD
Jason Williams, MD
Peter D. Winch, MD, MBA
Lydia Wright, MD, MSc
Andrew R. Yates, MD
Jessie Yester, MD, PhD
Cody M. Young, DO

Highlights From the Past Year

NATIONAL AND INTERNATIONAL REPUTATION

- The Heart Center was ranked in the top five Best Children's Hospitals by U.S. News & World Report for 2023-2024.
- The Heart Center continued delivering outstanding surgical outcomes, significantly better than the national mean with overall surgical mortality around 2% over the last four years (2019-2022).
- We remained leaders in postoperative outcomes reported to the national PC4 collaborative with one of the shortest lengths of ICU stay and lowest need for postoperative mechanical ventilation in the entire collaborative.
- We sustained a low rate of blood stream infections associated with central intravenous lines in cardiac inpatients (ICU and acute care) at 0.4 infections/1000 line-days in 2022.
- The ACHD CT surgery program is one of the top programs in the U.S. with recent STS data reporting a 0% surgical mortality for the past five years with national benchmark 1.7-2.2%. This service has expanded to include Nationwide Children’s CT surgeons and ACHD team performing surgery at The Ohio State University and the Ross Heart Hospital.
- Nationwide Children’s hosted the Perinatal Conference in May 2023.
- Dr. Cliff Cua and his team continued their NIH-RO1 grant study (\$3.2 million), titled “Early Predictors of Spontaneous Patent Ductus Arteriosus (PDA) Closure and PDA-Associated Outcomes,” funded through November 2023.
- Multiple device trials were led by the interventional team, including pivotal trials for the two self-expanding transcatheter pulmonary valves.
- Nationwide Children’s was the live case site for PICS 2021 and 2022.
- We established the International SERVE (Self-Expanding RVOT Valve Evidence) Registry with Nationwide Children’s as the coordinating site.
- We had strong representation on writing groups for many national statements/guidelines through SCAI, PICS Society, AAP and the Society of Cardiovascular Computed Tomography.
- Our acute care cardiologists continue to hold leadership roles and participate in various national committees. Dr. Julie Aldrich leads the PAC3-sponsored clinical practice guideline for infective endocarditis. Dr. Stephen Hart serves as a Co-Chair on the PAC3 Database Committee. Dr. Corey Stiver was appointed Chair of the Conquering CHD Policy Committee. Dr. Tara Cosgrove is the Co-Lead for the PAC3 Quality Improvement Course.
- We led large animal research studies, including investigation of a new tissue engineered vascular graft, a bioresorbable ASD device, a bioresorbable magnesium drug-eluting stent, interventional cardiac MR guided catheterization with a new low field 0.55T scanner, and a tissue engineered bioresorbable fetal heart valve.
- In 2022, we surpassed a major program milestone of over 100 heart transplants from first transplant in 2003.
- We performed a record 10 transplants, including two adult fontans from July 2022 through June 2023.
- Dr. Deip Nandi and Dr. Linda Cripe, along with Dr. Chet Villa, lead the ACTION collaborative’s national efforts to improve cardiac care for the muscular dystrophy.
- We continued national leadership in titration of heart failure therapies through ACTION and quality improvement initiatives through the Pediatric Heart Transplant Society.
- Project Adam Ohio – We continue to recruit schools to become heart safe. We have applied for and received grants to support this initiative.

- Our ongoing use of biomechanical flow lab in the Pediatric Advanced Imaging Resource (PAIR) continued as a joint venture with the Department of Bioengineering at Georgia Tech, focusing on patient-specific 3D printing and biomechanical flow modeling.
- Active work continued in multiple quality improvement projects including those focused on improving long-term neurodevelopmental outcomes, increasing human milk feeds in critically ill neonates, reducing postoperative length of stay, and reduction in hospital acquired conditions.
- We published a paper on our multidisciplinary proactive risk mitigation Safety II program called PROMISE (PRO-active Mitigation to decrease Serious adverse Events) to improve outcomes in high-risk surgical patients.
- We established a post-operative clinical pathway for Fontan patients with successful reduction in our average post-operative length of stay.
- We continued collaboration with the Center for Regenerative Medicine on the tissue-engineered vascular graft clinical trial in patients with single ventricle heart disease.
- We continued collaboration with the Center for Cardiovascular Research in the genomics of congenital heart disease, modeling of single ventricle heart disease using induced pluripotent stem cells, and the discovery of maternal biomarkers for single ventricle heart disease.
- Ongoing multi-year research funding totaled over \$3.1 million of which \$2.2 million was from the NIH’s National Heart, Lung, and Blood Institute to investigate heart disease in infants and children.
- New five-year NIH National Heart, Lung, and Blood Institute T32 and R25 awards to support research training of postdoctoral and undergraduate trainees in pediatric heart and lung research that will start in July 2023.

Selected Publications

Cosgrove T, Gajarski R, Dolan K, Hart S, L'Italien K, Kuehn S, Ishmael S, Bowman J, Fitch J, Hills B, Bode R. Improving situational awareness to decrease emergency transfers for hospitalized pediatric cardiology patients. *Pediatric Quality and Safety.* 2023, epub ahead of print.

Cosgrove T, Gauntt J, Carrillo S, Cassidy S, Gajarski R, Galantowicz M, Krawczeski C. Proactive risk mitigation for cardiac arrest prevention in high-risk patients with congenital heart disease. *JTCVS Open.* 2022 Nov 4;13:307-319.

Kumthekar R, Augostini R, Kamp A, Kertesz N. Percutaneous jugular leadless pacemaker implantation in a pediatric patient. *J Cardiovasc Electrophysiol.* 2022 Sep;33(9):2111-2115.

Morgan R, Berg R, Reeder R, Carpenter T, Franzon D, Frazier A, Graham K, Meert K, Nadkarni V, Naim M, Tilford B, Wolfe H, Yates A, Sutton R; ICU-RESUS and the Eunice Kennedy Shriver National Institute of Child Health and Human Development Collaborative Pediatric Critical Care Research Network Investigator Groups. The physiologic response to epinephrine and pediatric cardiopulmonary resuscitation outcomes. *Crit Care.* 2023 Mar 13;27(1):105.

Nealon E, Phelps C, Krawczeski C, Alexander R, Stiver C, Ball M, Carrillo S, Texter K. Impact of maternal-fetal environment on outcomes following the hybrid procedure in the single ventricle population. *Pediatr Cardiol.* 2022 Dec 3.

Park H, Kelly J, Hoffman J, Takaesu F, Schwartzman W, Ulziibayar A, Kitsuka T, Heuer E, Yimit A, Malbrue R, Anderson C, Morrison A, Naguib A, Mckee C, Harrison A, Boe B, Armstrong A, Salavitabar A, Yates A, Shinoka T, Carrillo S, Breuer C, Davis M. Computational analysis of serum-derived extracellular vesicle miRNAs in juvenile sheep model of single stage Fontan procedure. *Extracell Vesicle.* 2022 Dec;1:100013.

Tseng S, Truong V, Peck D, Kandi S, Brayer S, Jason D, Mazur W, Hill G, Ashfaq A, Goldstein B, Alsaied T. Patent ductus arteriosus stent versus surgical aortopulmonary shunt for initial palliation of cyanotic congenital heart disease with ductal-dependent pulmonary blood flow: a systematic review and meta-analysis. *J Am Heart Assoc.* 2022 Jul 5;11(13):e024721.

Wright L, Culp S, Gajarski R, Nandi D. Racial and socioeconomic disparities in status exceptions for pediatric heart transplant candidates under the current U.S. pediatric heart allocation policy. *J Heart Lung Transplant.* 2023 Apr 21:S1053-2498(23)01824-7.

Fast Facts: July 2022 – June 2023

Heart Center Clinics
Main Campus and *Close to Home*SM Center Visits: 19,107
Regional Clinics Visits: 3,001
Total Clinic Visits: 22,108

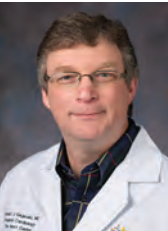
Heart Center Diagnostics
Cardiac CTs: 286
Cardiac Monitoring: 3,472
Cardiac MRIs: 696
Echocardiograms: 16,429
Electrocardiograms (EKGs): 17,919
Exercise Stress Tests: 698

Heart Center Procedures
Cardiac Catheterizations: 525
Cardiac Surgeries: 509
Electrophysiology Procedures: 186
Heart Transplants: 10

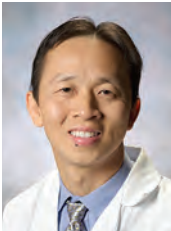
Department of Pediatrics
CARDIOLOGY

Cardiology is a section of the Department of Pediatrics and an integral part of The Heart Center at Nationwide Children’s Hospital. See page 41 for complete details.

Faculty



Robert J. Gajarski, MD, MHSA
*Interim Division Chief
Section Chief*



Kan N. Hor, MD
*Associate Division Chief for
Research*

Julie Aldrich, MD
Aimee K. Armstrong, MD
Amee Bigelow, MD, MS
Carl H. Backes, MD
Benjamin A. Blais, MD
Jessica L. Bowman, MD
Amulya Buddhavarapu, MD
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Clifford L. Cua, MD
Curt J. Daniels, MD
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Anna N. Kamp, MD, MPH
John Kelly, MD
Naomi J. Kertesz, MD
Omar M. Khalid, MD
John P. Kovalchin, MD

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Trisha Patel, MD
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Saurabh Rajpal, MD
Kerry L. Rosen, MD, MBA
Daniel G. Rowland, MD

Arash Salavitabar, MD
Brittany Shutes, MD
Janet M. Simsic, MD
Corey A. Stiver, MD
Karen M. Texter, MD
Andrew Tran, MD, MS
Stephanie Tseng, MD
Jason Williams, MD

Lydia Wright, MD, MSc
Andrew R. Yates, MD
Jessie Yester, MD, PhD

2022 – 2023 Fellows
Adult Congenital Heart
Disease

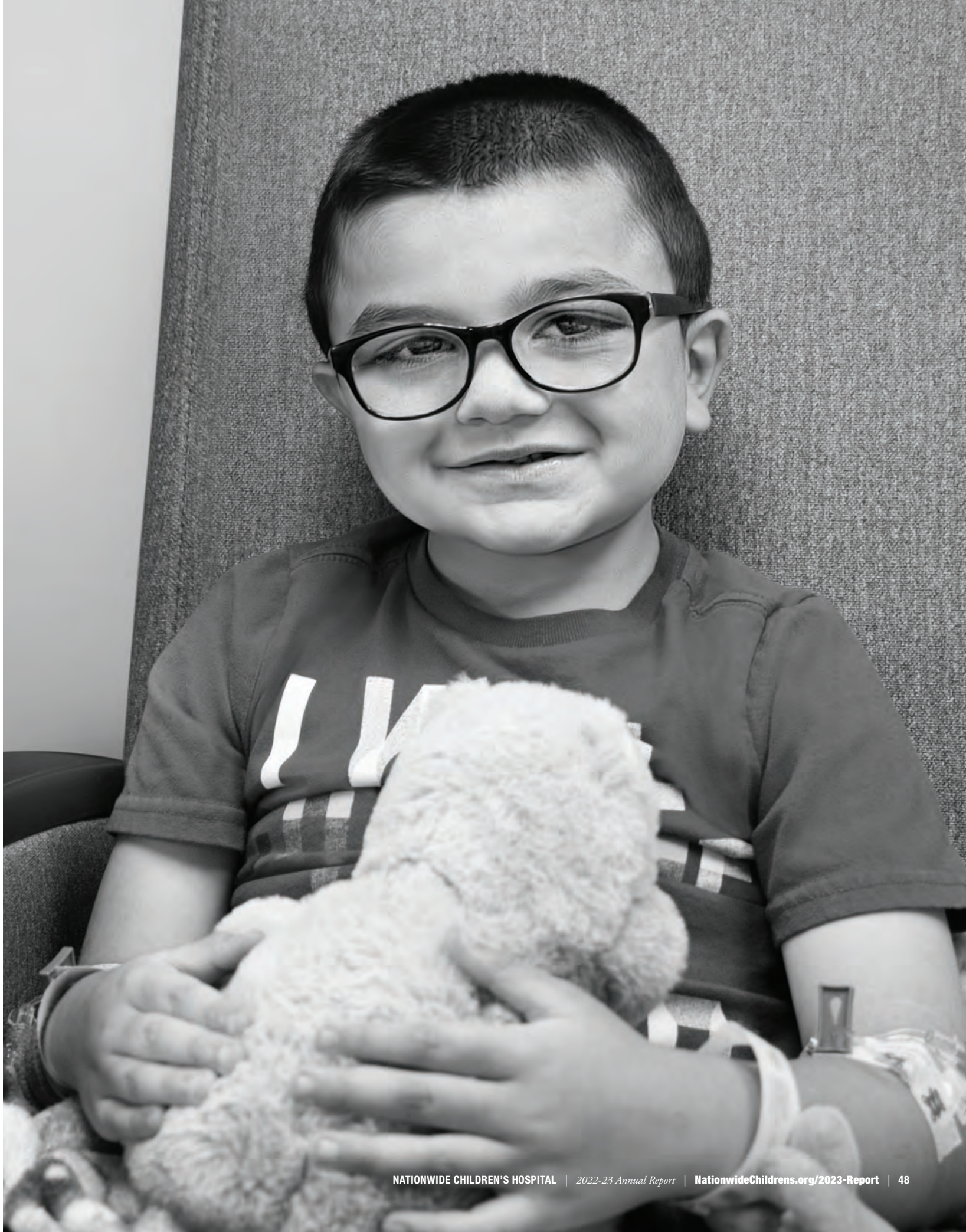
Ashley Brunmeier, MD
William Marshall, MD

Advanced Noninvasive
Cardiac Imaging

Erin Hehr, MD
Hannah Jacobs, MD

Pediatric Cardiology

Jennifer Barbadora, MD
Zac Daniels, MD
William Fogarty, MD
Jackie Giafaglione, MD
Rachel Harris, DO
Matt Laubham, MD
Angela Onorato, MD
Rachel Tonniss, MD
Aaron Walsh, MD



Department of Pediatrics

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 is dedicated to the well-being of children and families. Together with partners and communities, the center supports victims of family violence and advocates for social change to prevent abuse. 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 children services are co-located at the center to address the complex issues of family violence.

Faculty



Megan M. Letson, MD, MED
Chief

Farah W. Brink, MD
Kristin G. Crichton, DO, MPH
Catherine M. Huber, MD
H. Michelle Greene, DO
Jennifer J. Tscholl, MD

2022 – 2023 Fellows
Child Abuse Pediatrics
Mica Goulbourne, MD
Nara Cho, MD
Shilpa Hari, MD

Combined Child Abuse
Pediatric and Pediatric
Emergency Medicine Fellow
Luke Hartman, MD

Highlights From the Past Year

- From a clinical perspective, the Section of Child and Family Advocacy provides comprehensive evaluation and management of child maltreatment, offering inpatient and outpatient services. Key services include:
 - Child Assessment Center: Provides a coordinated response to family violence for families through partnerships with law enforcement, children services and a range of community resources. In collaboration with the Emergency Department, we provide afterhours assessments through our on-call forensic interviewer and pediatric sexual assault nurse examiner program.
 - Fostering Connections Program: Serves as a medical home for children in out of home placement.
 - Child Assessment Team Clinic: Multidisciplinary clinic focused on follow-up for children with suspected physical abuse in collaboration with medical social work, psychology and trauma surgery.
 - Non-Accidental Traumatic Brain Injury Clinic: Multidisciplinary clinic focused on long term follow-up for children with suspected abusive head trauma in collaboration with medical social work, psychology and physical medicine and rehabilitation.
 - Inpatient consultations for suspected child maltreatment.
- The section remains committed to providing quality educational experiences for trainees.
 - Elective rotations for medical students and residents.
 - Child Abuse Pediatrics Fellowship Program.
 - We are one of only a few programs nationally to offer a combined four-year Child Abuse Pediatrics and Pediatric Emergency Medicine Fellowship. In 2022, our second fellow graduated from this program and joined Nationwide Children’s as faculty.

- Research:
 - Multiple national abstract presentations at the Ray E. Helfer Society annual meeting and the Pediatric Academic Societies meeting.
 - We continue to be a site for the CAPNET research network which is a NIH-funded 11-center research network dedicated to child abuse research.
- Regional and National Recognition: Our faculty served on multiple regional and national committees, including the Ohio Attorney General’s Human Trafficking Initiative, Ohio Department of Health’s Child Fatality Review Advisory Committee, American Board of Pediatrics Subboard on Child Abuse Pediatrics, the ACGME Child Abuse Pediatrics Milestone Workgroup, the Council of Pediatric Subspecialties, the Pediatric Trauma Society Child Abuse Pediatrics Guidelines Committee and multiple Ray E. Helfer Society committees.

Selected Publications

Brink FW, Lo CB, Shi J, Stanley R, Lindberg DM. Diagnosis codes dramatically underestimate the burden of abuse. *Child Abuse Negl.* 2023 Jan;135:105986.

Crichton KG, Spencer S, Shapiro R, McPherson P, Izsak E, McDavid LM, Baker C, Thackeray JD. Timely recognition of abusive injuries (TRAIN): results from a statewide quality improvement collaborative. *Pediatr Qual Saf.* 2023 Apr 10;8(2):e637.

Greene HM, Letson MM, Spencer SP, Dolan K, Foster J, Crichton KG. Recognizing nonaccidental trauma in a pediatric tertiary hospital: a quality improvement imperative. *Pediatr Qual Saf.* 2023 Apr 10;8(2):e644.

Kratchman DM, Vaughn P, Silverman LB, Campbell KA, Lindberg DM, Anderst JD, Bachim AN, Berger RP, Hymel KP, Letson M, Melville JD, Wood JN. The CAPNET multi-center data set for child physical abuse: Rationale, methods and scope. *Child Abuse Negl.* 2022 Sep;131:105653.

Wood JN, Campbell KA, Anderst JD, Bachim AN, Berger RP, Hymel KP, Harper NS, Letson MM, Melville JD, Okunowo O, Lindberg DM. Child abuse pediatrics research network: the CAPNET core data project. *Acad Pediatr.* 2023 Mar;23(2):402-409.

Fast Facts: July 2022 – June 2023

Child Assessment Center Visits: 1,075
Child Assessment Team Clinic Visits: 233
Eastland Foster Care Clinic Visits: 198
Foster Care Clinic Visits: 1,368
Non-Accidental TBI Clinic Visits: 98
Sharon Woods Foster Care Clinic Visits: 269
Total Clinic Visits: 3,241
Inpatient Consults (Child Abuse Team): 478

Department of Pediatrics

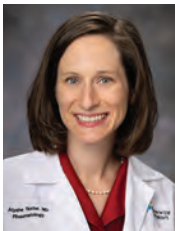
CLINICAL INFORMATICS

The Division of Clinical Informatics at Nationwide Children’s Hospital aims to transform health care through design, implementation and optimization of information and communication systems. Our goal is to enhance patient care activities with safe and reliable information systems, improve individual and population health outcomes through the use of technology and digital tools, enable innovation and research across the institution, and empower our patients and families with the tools they need to engage effectively with their health care team and our health care system.

Faculty



Jeffrey M. Hoffman, MD
Chief



Alysha J. Taxter, MD, MSCE
Associate Division Chief for Research

Aarti R. Chandawarkar, MD
Juan D. Chaparro, MD, MS
Jennifer A. Lee, MD
Kathryn E. Nuss, MD
Shama Patel, MD
Laura Rust, MD, MPH
Shravani Vundavalli, MD

2022 – 2023 Fellows
Faraaz Chekeni, MD
Jason Lo, MD
Emily Sentman, MD
Kathryn Tobin, MD

Highlights From the Past Year

The faculty and fellows in the Division of Clinical Informatics work to enhance the effectiveness of our clinical information systems and to provide expert consultation to operational leaders, clinicians and investigators across the institution. We collaborate with other divisions and disciplines to improve tools for clinical documentation, patient management, population health, quality improvement and research.

This past year has seen a number of important contributions from division faculty and fellows in the areas of patient safety, quality improvement, provider efficiency, patient-reported outcomes, and health equity. Here are a few major highlights from a large catalog of this impactful work.

- Ineffective patient handoffs often lead to gaps in patient care that can delay care and create safety risks. To address these concerns, Dr. Rust collaborated extensively with over 50 medical and surgical specialties to completely redesign and implement a system of integrated tools that allow inpatient provider teams to communicate patient care handoffs within the electronic health record (EHR). This new toolset has already shown impacts by streamlining and enhancing intra-provider communication and by reducing the time required to review patient information and update daily care plans.
- To expand and accelerate our clinical pathways program, Drs. Chaparro, Nuss, Patel and Taxter worked alongside colleagues from the Center for Clinical Excellence to translate new clinical pathway documents into actionable decision support tools within the EHR. These new tools help to standardize care for various patient populations during their hospitalization and better communicate to all care team members when a patient is on a given clinical pathway. With these pathways in place, patients not only get the right care at the right time but are best positioned to achieve the best outcome and more timely discharge to home.

- Building upon the work Dr. Taxter completed last year to introduce electronic questionnaires to help track and manage patients cared for in Rheumatology, she has now spearheaded a complete conversion from paper screening forms to a fully computer-assisted workflow. What previously relied on a significant amount of manual effort by clinic providers and staff is now fully automated. In addition to symptom monitoring, this new system now identifies clinic patients with signs of depression, allowing them to be quickly assessed by providers, social workers and psychologists during and after their visit. Results from this important work were presented at the 2023 Pediatric Rheumatology Symposium and awarded first place in the Quality, Health Services, and Education Research category.
- Our division continues to look for opportunities to simplify provider workflows to improve efficiency, reduce burden, and hopefully address the growing epidemic of physician burnout. Last year, Drs. Chandawarkar, Lee, Vundavalli, Hoffman and others in the division implemented a number of changes to EHR tools and workflows with this aim in mind. We successfully updated system configuration and procedures that significantly reduced unnecessary electronic messages clogging providers’ EHR inbaskets, allowing them to focus on important communications and patient care tasks. At the same time, Drs. Chandawarkar, Rust and others updated ordering tools to reduce the number of clicks required to place the most common medication orders for both admitted patients and those in outpatient clinics. With recent changes to billing documentation requirements from the Centers for Medicare and Medicaid Services (CMS), we also partnered with each specialty area to further reduce the complexity of clinical notes to decrease documentation burden and improve clinical communication.
- With Nationwide Children’s increased focus on health equity this year, our division has focused on how best to adjust our technology to better serve our highly diverse patient population. Recently, Drs. Chandawarkar and Vundavalli worked with colleagues in the Division of Primary Care Pediatrics to translate two common screening questionnaires, previously only available electronically in English, into Spanish and are working to both expand the number of translated questionnaires and number of languages supported to better service our non-English speaking patients and families.

Nationally, faculty in our division now serve in a number of high-profile leadership positions in informatics for various organizations. Dr. Jeffrey Hoffman is the Clinical Informatics Sub-board chair for the American Board of Preventive Medicine; Dr. Aarti Chandawarkar is president of the Academic Forum of the American Medical Informatics Association; Dr. Laura Rust is co-chair of Epic’s Pediatric Emergency Medicine specialty steering board; and Dr. Juan Chaparro is a member of the Clinical Information Technology Executive Committee of the American Academy of Pediatrics.

Selected Publications

Rust L, Gorham T, Bambach S, Bode R, Maa T, Hoffman J, Rust S. The deterioration risk index: developing and piloting a machine learning algorithm to reduce pediatric inpatient deterioration. *Pediatr Crit Care Med.* 2023 Apr;24(4):322-333.

Taxter A, Donaldson B, Rigdon J, Harry O. Association between patient-reported outcomes and treatment failure in juvenile idiopathic arthritis. *ACR Open Rheumatology.* 2022 Sep;4(9):775-781.

Van Citters A, Taxter A, Mathew S, Lawson E, Eseddi J, Del Gaizo V, Ahmad J, Bajaj P, Courtnay S, Davila L, Donaldson B, Kimura Y, Lee T, Mecchella J, Nelson E, Pompa S, Tabussi D, Johnson L. Enhancing care partnerships using a rheumatology dashboard: bringing together what matters most to both patients and clinicians. *ACR Open Rheumatology.* 2023 Apr;5(4):190-200.

Lee J, Patel S, Taxter A. How to make the electronic health record your friend. *Current Opinion in Pediatrics.* 2023 May 29. Epub ahead of print.

Zhang X, Huang Y, Lee J, Ganta R, Chandawarkar A, Linwood S. Measuring telehealth visit length and schedule adherence using videoconferencing data. *Telemedicine Journal and e-Health.* 2022 Jul;28(7):976-984.

Department of Pediatrics

COMMUNITY PEDIATRICS

The Section of Community Pediatrics at Nationwide Children’s Hospital includes community physicians in Pediatrics and Internal Medicine/Pediatrics who are affiliated with Nationwide Children’s. The hospital actively engages each physician group through multiple communication methods and educational opportunities. We work collaboratively to take care of our shared patients.

In addition, many of these physicians participate in the Pediatric Education in Community Sites (PECS) program. This provides residents with a different kind of outpatient experience than that of a traditional hospital-based practice. Beginning in their first or second year, each resident is assigned to a weekly 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.

Faculty



Robert W. Snyder, MD,
FAAP
Chief

Wahida B. Abaza, MD	Taylor A. Ballenger, MD	Anne M. Bever, MD
Collin J. Abbott, MD	Lauren C. Bar-Lev, MD	Cynthia J. Black, MD
Nikola T. Al-ain, MD	Carrie J. Barnes-Mullett, MD	Kathleen D. Blake, MD
Alanna J. Albano, DO	Brent M. Barson, DO	Kimberly K. Blazer, MD
Benjamin P. Almasanu, DO	Ryan M. Barson, MD	Denise L. Blocker, MD
Lacey J. Althausen, MD	Courtney R. Bartsch, MD	Eileen C. Bolton, MD
Nardia S. Ataman, MD	Heather A. Battles, MD	Richard J. Breen, MD
Jennifer E. Bachman, MD	Sarah A. Behrens, MD	Steven Randall Brown, MD

Michelle S. Buendia, MD	Ali M. Carine, DO	Omolara Y. Dairo, MD	Jonathan A. Digby, DO
Kyle Burghgraef, MD	Jennifer B. Carlos, MD	Gracia De Jong, MD	Dawn C. Dillinger, DO
Jennifer L. Burkam, MD	Aila L. Co, MD	Amy E. Deibel, MD	Kent W. Doherty, DO
Shari L. Burns, MD	Benjamin W. Cole, MD	Traci A. DeVoe, MD	Lorna F. Donovan, MD
Bethany J. Caldwell, MD	Kathleen A. Costlow, MD	Praveena V. Dhawale, MD	Julie M. Dunlea, MD
Jennifer H. Campbell, MD	Sidney L. Couling, MD	Michael T. DiBartola, MD	Nicholas J. Eastman, MD
Mitchell R. Camp, MD	Elizabeth A. Crickard, DO	Kevin M. Dickerson, MD	Meika K. Eby, MD
Stephen M. Canowitz, MD	Ann M. Croft, MD	Bradley E. Dickson, MD	Kimberly A. Eilerman, DO

Maureen M. Faust, DO	Raju R. Gaglani, MD	Michelle C. Golla, MD	Megan E. Heitzman, MD
Emily T. Ferguson, MD	Barbara B. Galantowicz, MD	Anna C. Gray, MD	Elizabeth M. Jacob, MD
Lenora A. Fitton, DO	Monica C. Gilbert, MD	Emily K. Gray, MD	Enaas F. Kasheer, MD
David D. Fosselman, MD	Paul D. Gilbert, MD	Jacob H. Gregerson, MD	Lisa A. Kelch, MD
Patricia A. Francis, MD	Kathryn L. Ginocchi, MD	Judith A. Groner, MD	Andrew M. Keller, MD
Michael R. Franks, MD	Jumana C. Giragos, MD	Patrick J. Gross, DO	Sara M. Kelly, MD
Brad E. Fuller, MD	Charles M. Goddard, MD	Dana L. Hamilton, DO	Richard A. Kern, MD
Kathleen T. Fulop, MD	Erin L. Goist, MD	Malika Haque, MD	Cheryl K. Kirkby, MD

Adam M. Kirkland, MD	Vijay S. Kumbar, MD	Tricia W. Lucin, MD	George M. Messick, MD
Elizabeth L. Kirkland, MD	Celina M. LaBrec-Salmons, MD	Eileen M. Maher, MD	Bruce P. Meyer, MD
William E.C. Knobeloch, MD	Robert C. LaMonte, MD	Michele V. Mahoney, MD	Cameron K. Miller, MD
Irene P. Koesters, MD	Kristina M. Lehman, MD	Jason W. Mailloux, MD	Alana C. Milton, MD
Stephen C. Koesters, MD	Michael J. Leymaster, MD	Jennifer J. Mastruserio, MD	Stacy L. Morran, MD
Andrew S. Korcal, MD	Bradley A. Lisko, MD	Derek A. McClellan, MD	Matthew J. Morrison, MD
Justin K. Krueger, MD	Elizabeth A. Little, MD	Sheilla D. McNeal, MD	Adrienne H. Mott-Young, MD
Lisa A. Krumm, MD	William W. Long, MD	Meera R. Mehta, MD	Mark A. Muresan, MD

Jessica A. Nash, MD	Jennifer Killion Overbey, MD	Laura D. Phillips-Chou, MD	Barbara B. Rayo, MD
Jacqueline M. Nicodemo, MD	Claire M. Pappa, MD	Domenico Pietropaolo, MD	Teresa R. Recker Gross, DO
Mary-Lynn Niland, MD	Rachael T. Pappa, DO	Laura D. Plachta, MD	Robert D. Reis, MD
Autumn M. O’Brien, MD	Divya S. Parikh, MD	Phyllis Jo Polas, DO	Patricia A. Ryan, MD
Adebomi A. Omikunle, MD	Jacqueline S. Pennywitt, MD	Danielle S. Pottinger, MD	Purbi S. Sahai, MD
Britney N. Onuma, MD	Jan E. Perry, MD	Rachel E. Pratt, MD	Timothy R. Savage, MD
Lilliam I. Ortiz, MD	Michael A. Perry, MD	M. Bonnie Pugh, MD	Erin K. Schaffner, MD
Laura E. Osthaus, MD	Brad T. Pfau, MD	Blake J. Randolph, MD	Elizabeth A. Schloss, MD

Dana J. Schultz, MD	Nazhat Taj-Schaal, MD	Kristin E. Thompson, MD	Diana T. Wagner, MD
Eileen H. Sheets, MD	Ellen R. Tamburello, MD	John D. Toth, MD	James D. Ward, MD
Phillip N. Simon, MD	Katrina S. Tansky, MD	Bonny M. Tsai, MD	Olivia N. Westhoven, MD
Rebecca M. Slaunwhite, MD	Amy Rachelle A. Teleron-Khorshad, MD	Ahmed J. Turjoman, MD	Ray S. Wheasler, III, MD
Donna L. Sterling, MD	Timothy A. Teller, MD	H. Scott Tyson, MD	Matthew M. White, MD
Nicholas S. Stevens, MD	Mark A. Thoma, MD	Nicole R. Van Steyn, MD	Melissa D. Winterhalter, MD
Kathleen C. Stiles, MD	Olivia W. Thomas, MD	Sean M. Vellucci, MD	Kathleen M. Wodarczyk, MD
Miller J. Sullivan, Jr., MD		Victoria N. Vinsant, MD	Lindsay A. Wylie, MD

Michelle E. Yaw, MD

Rachael E. Zanotti-Morocco, DO

Department of Pediatrics

COMPLEX CARE

The Division of Complex Care at Nationwide Children’s Hospital provides comprehensive, coordinated care to children and adults with neurodevelopmental disabilities. In our Complex Health Care Program, we are a primary care medical home for many patients. For those who already have a medical home in the community, we provide expertise in neurodevelopmental care alongside their other specialists. The Cerebral Palsy Program is an interdisciplinary program devoted to providing state of the art lifespan care for individuals with cerebral palsy. The Comprehensive Pediatric Feeding and Swallowing Program offers a variety of services, including evaluation and longitudinal management for children with feeding difficulties as well as an intensive feeding program. Our faculty participate in the Interdisciplinary Leukodystrophy Clinic, the Metabolic Bone Clinic, the Sialorrhea Clinic at Nationwide Children’s, as well as the Adult Down Syndrome Clinic at The Ohio State University’s Nisonger Center. We also provide medical care to the residents of the Heinzerling Community. In addition to our outpatient programs, Complex Care has an inpatient service to provide medical care to our patients who require hospitalization.

Faculty



Garey Noritz, MD
Division Chief



Laurie Glader, MD
Section Chief

Rukshana Ahmed, MD
Erica Braswell, MD
Derek Fletcher, MD
Praveen Goday, MD
Elizabeth Lucas, MD
Tsovinar Sorkin, MD
Katherine Steingass, MD

Highlights From the Past Year

- We inaugurated a fellowship in Complex Care Pediatrics on July 1, 2023. This two-year fellowship is one of just a few in the country and will train the next generation of academic pediatricians to specialize in the care of children with medical complexity.
- The intensive feeding track of the Comprehensive Pediatric Feeding and Swallowing Program (CPFSP) is one of only 18 such programs in the U.S. and the only program of its kind in Ohio, serving children with severe feeding disorders who are not able to make gains in outpatient therapy. This year we were able to expand access by increasing patient capacity to provide services for up to eight children at a time and are publishing research on long term outcomes with this population.
- The CPFSP’s novel co-treat program grew this year, combining feeding therapy, medical and psychology visits to help children with challenges related to both behavioral and oral motor needs with feeding.
- The Cerebral Palsy Program has grown substantially this year to offer faster access and increased specialized services. In addition to our long-standing multi-disciplinary team, there are a number of new or enhanced programs: a developmentally oriented clinic for children under 5; a Tone Management Clinic to evaluate our most challenging cases, including the expertise of neurosurgery, neurology, physical medicine, orthopedics, physical therapy and complex care; a diagnostic clinic in partnership with neurology; a perioperative clinic in partnership with orthopedics, and an adult clinic in partnership with adult psychiatry from The Ohio State Wexner Medical Center.

- Our faculty are a sought-after resource for mentoring and education, with invited lectures locally, nationally and internationally. Our non-physician staff are leaders in training their colleagues in psychology, nursing, nutrition, pharmacy, social work and allied therapies in the provision of family-centered care for children and adults with disabilities.
- Members of our faculty have leadership positions at prominent national organizations, including the American Academy of Pediatrics, the Society for Developmental and Behavioral Pediatrics, the Cerebral Palsy Foundation, and the American Academy for Cerebral Palsy and Developmental Medicine.
- Garey Noritz, MD, Katherine Steingass, MD, and Laurie Glader, MD, were authors on “Providing a Primary Care Medical Home for Children and Youth with Cerebral Palsy,” which was a joint clinical report of the American Academy of Pediatrics and the American Academy for Cerebral Palsy and Developmental Medicine.

Selected Publications

Dempster R, Huston P, Castillo A, Sharp W. Changes in medical charges following intensive multidisciplinary intervention for pediatric gastrostomy tube dependence. *J Pediatr Gastroenterol Nutr.* 2023;76:e77-e80.

Huth K, Newman L, Glader L. Priorities and progress in complex care education. *Acad Pediatr.* 2022 Nov 25:S1876-2859(22)00568-X.

Noritz G, Davidson L, Steingass K, Glader L, et al. Providing a primary care medical home for children and youth with cerebral palsy. *Pediatrics.* 2022 Nov;e2022060055.

Whitney D, Lucas E, Schmidt M, Haapala H, Noritz G. Risk of venous thromboembolism across the lifespan for individuals with cerebral palsy: A retrospective cohort study. *Thrombosis Update.* 2023 May 1;11:100138.

Young L, Ounpraseuth S, Merhar L, Hu Z, Simon, A, Bremer A, Lee J, Das A, Crawford M, Greenberg R, Smith P, Poindexter B, Higgins R, Walsh M, Rice W, Paul D, Maxwell J, Telang S, Fung C, Wright T, Braswell E, ... ACT NOW Collaborative. Eat, sleep, console approach or usual care for neonatal opioid withdrawal. *New England Journal of Medicine.* 2023 Apr 30;388(25):2326-2337.

Fast Facts: July 2022 – June 2023

Inpatient Discharges: 235
Observation and Outpatient-in-a-Bed Discharges: 25
Average Length of Stay*: 11.52
Average Daily Census*: 7.42
Patient Days*: 2,707
Inpatient Consults: 32
Complex Health Care Clinic Visits: 4,244
**Excludes observation and outpatient-in-a-bed patients*

Department of Pediatrics

CRITICAL CARE MEDICINE

The Division of Critical Care Medicine at Nationwide Children’s Hospital provides in-house faculty coverage of the pediatric intensive care units (PICUs) 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. This service also contributes actively to the vital missions of research and advanced training in the field of pediatric critical care medicine. The service typically cares for about 3,000 patients per year, covering the 54 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 severity-adjusted mortality rates of any PICU in the country. We also staff the Assessment and Consultation Team (a multidisciplinary rapid response team) and the Code Blue team at Nationwide Children’s.

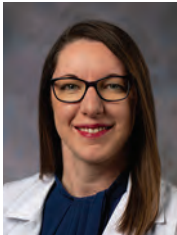
Faculty



Mark W. Hall, MD, FAAP, FCCM
Division Chief



Nadeem Khan, MD, FAAP
Section Chief



Jennifer A. Muszynski, MD, MPH, FCCM
Associate Division Chief for Research

Onsy S. Ayad, MD, FAAP
Amee M. Bigelow, MD
Katherine E. Bline, MD
Richard J. Brill, MD, FAAP
Margaret A. Chase, MD
Melissa G. Chung, MD
Megan C. Daniel, MD
Maria H. Estrada, DO, FAAP
Richard P. Fernandez, MD

Jill A. Fitch, MD, FAAP
W. Joshua Frazier, MD
Jennifer M. Gauntt, MD
Samantha W. Gee, MD, FAAP
John Jennings, MD
Hunter Johnson, MD
Todd J. Karsies, MD, MPH
Catherine D. Krawczeski, MD
Anthony Y. Lee, MD, FAAP
Ada T. Lin, MD, FAAP

Eric A. Lloyd, MD
Marlina E. Lovett, MD
Jeffrey E. Lutmer, MD
Tensing Maa, MD, FAAP
Jennifer M. MacDonald, MD, PhD
Christopher P. Montgomery, MD
Nicole F. O’Brien, MD
Claire A. Stewart, MD, MEd
Tsovinar Sorkin, MD, MS

Markita L. Suttle, MD
Joseph D. Tobias, MD
Andrew R. Yates, MD
2022 – 2023 Fellows
Oluwasoore Akande, DO
Courtney Alvis, MD
Jordan Brauner, MD
Natalie Capretta, DO
Justin Julian, MD

Jordan Lull, MD
Cynthia Moffitt, MD
Lauren McCluney, MD
Robert Murray, MD
Kortney Pihfer, MD
Erin Thornley, DO
Laura Wingert, MD

Highlights From the Past Year

The division remains a leader in pediatric critical care research, with numerous faculty leading single- and multi-center studies. Nationwide Children’s remains a key member of the National Institutes of Health-funded Collaborative Pediatric Critical Care Research Network (CPCCRN), serving as the central site for the network’s flagship PRECISE study. Division Chief Mark W. Hall, MD, is a national leader in the field of immunobiology research and serves as the principal investigator for the CPCCRN network’s groundbreaking multi-center trial of personalized immunomodulation in pediatric sepsis. Other outstanding areas of research focus for the Critical Care Medicine faculty include Staphylococcus aureus microbiology (Christopher P. Montgomery, MD), cerebral malaria and global health (Nicole F. O’Brien, MD), transfusion science (Jennifer A. Muszynski, MD, MPH, FCCM), respiratory infections (Todd J. Karsies, MD, MPH), bereavement (Markita L. Suttle, MD), anesthesiology (Joseph D. Tobias, MD), simulation (Tensing Maa, MD, FAAP), resuscitation (Andrew R. Yates, MD), and of course, quality and safety. With this broad scientific portfolio, an in-situ research laboratory within the PICU, and five divisional research coordinators, the division remains at the forefront of innovation in the field. Our Accreditation Council for Graduate Medical Education-approved Pediatric Critical Care Medicine Fellowship provides rigorous clinical and academic training for the next generation of ICU faculty, accepting four fellows per class in our three-year program. The Critical Care Medicine faculty participate in 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.

Selected Publications

Blinc K, Muszynski J, Guess A, Menocha S, Moore-Clingenpeel M, Popelka J, Hensley J, Steele L, Goldthwaite I, Jedreski K, Hall M. Novel identification of myeloid-derived suppressor cells in children with septic shock. *Pediatr Crit Care Med.* 2022 Dec 1;23(12):e555-e563.

Gonzalez-Dambrauskas S, Vasquez-Hoyos P, Camporesi A, Cantillano E, Dallefeld S, Dominguez-Rojas J, Francoeur C, Gurbanov A, Mazzillo-Vega L, Shein S, Yock-Corrales A, Karsies T; Critical Coronavirus and Kids Epidemiological (CAKE) Study Investigators. Paediatric critical COVID-19 and mortality in a multinational prospective cohort. *Lancet Reg Health Am.* 2022 Aug;12:100272.

Johnson H, Raees M, Urbina E, Muszynski J, Seydel K, Taylor T, O’Brien N. Multiple organ dysfunction syndrome and pediatric logistic organ dysfunction-2 score in pediatric cerebral malaria. *Am J Trop Med Hyg.* 2022 Sep 6;107(4):820-826.

O’Brien N, Fonseca Y, Johnson H, Postels D, Birbeck G, Chimalizeni Y, Seydel K, Bernard Gushu M, Phiri T, June S, Chetcuti K, Vidal L, Goyal M, Taylor T. Mechanisms of Transcranial Doppler Ultrasound phenotypes in paediatric cerebral malaria remain elusive. *Malar J.* 2022 Jun 21;21(1):196.

Poeppelman R, Coles M, Heater T, Vohsing L, Von Sadvosky V, Lutmer J, Maa T. Assessing competence with a task trainer: validity evidence for novel tracheostomy care skills assessment tool. *Simul Healthc.* 2022 Aug 1;17(4):220-225.

Fast Facts: July 2022 – June 2023

PICU Admissions: 3,269
Average Length of Stay*: 4
Average Daily Census*: 37
Total Patient Days*: 13,587
Inpatient Discharges: 3,357
Number of Beds: 54

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

Department of Pediatrics

DERMATOLOGY

The Section of Dermatology at Nationwide Children’s Hospital sees outpatients from birth through age 18 for both common and rare disorders of the hair, skin and nails.

Faculty



Patricia M. Witman, MD
Chief



Esteban Fernandez Faith, MD
Associate Division Chief
for Research

Katya Harfmann, MD
Joy Lynn Mosser-Goldfarb, MD
Elham Zayed, MD, Fellow

Highlights From the Past Year

- Our four attendings and three advanced practitioner nurses offered quality outpatient care at four separate clinic sites and two separate outpatient surgery sites around the Columbus metropolitan area.
- Dr. Esteban Fernandez-Faith, Dr. Katya Harfmann, and Dr. Patricia Witman provided expert care in hemangiomas and other vascular birthmarks as part of the Nationwide Children’s Vascular Anomaly Center. This multidisciplinary clinic dedicated to the care of patients with vascular birthmarks has representatives from a broad range of specialties at Nationwide Children’s and is now recognized by the International Society for the Study of Vascular Anomalies.
- Dr. Joy Mosser, in her role as Program Director of The Ohio State University Dermatology Residency Program, was instrumental in creating the first-ever Pediatric Dermatology Section within the Association of Professors of Dermatology, an organization dedicated to the creation of educational standards for dermatology residents. This accomplishment will mean the opportunity to create standards for pediatric dermatology education within residency programs.
- Our newest advanced nurse practitioner, Kendra Brunner, CPNP-PC, completed her training and started seeing patients independently.
- Our pediatric dermatology fellowship program, under the direction of program director Dr. Esteban Fernandez Faith, was awarded accreditation by the ACGME in 2022.
- Dr. Elham Zayed successfully completed her first year of this ACGME accredited fellowship in pediatric dermatology in 2022. She plans to stay for an additional year of training prior to returning to Jordan.
- The inaugural Nationwide Children’s Hospital Pediatric Dermatology Symposium was held in October 2022. The successful first meeting, codirected by Dr. Katya Harfmann and Brittany Kozy, APN, provided educational content on common pediatric dermatology problems to around 100 attendees.

Selected Publications

Eickstaedt J, Paller A, Lund E, Murphrey M, Brandling-Bennett H, Maurano M, **Fernández Faith E**, Holland K, Ibler E, Liang M, Todd P, Siegfried E, Igelman S, Cordoro K, Tollefson M. Paradoxical psoriasiform eruptions in children receiving tumor necrosis factor α inhibitors. *JAMA Dermatol.* 2023 Jun 1;159(6):637-642.

Fernández Faith E, Shah S, Braun M, Pope E, Lara-Corrales I, **Witman P**, **Harfmann K**, Bradley F, Keesari R, Jackson K, Hallagan A, Frieden I. Incidence and clinical factors associated with ulceration in infantile hemangiomas. *J Am Acad Dermatol.* 2023 Feb;88(2):414-420.

Hoover E, Jay R, **Witman P**. Trigeminal trophic syndrome in a pediatric patient with diffuse intrinsic pontine glioma. *Pediatr Dermatol.* 2023 Mar;40(2):345-348.

Paradiso M, Flood D, Chung C, Song E, **Fernández Faith E**. Verrucous plaque following recent immigration. *Int J Dermatol.* 2023 Jul;62(7):e391-e393.

Peck G, **Mosser-Goldfarb J**. Exophytic firm papulonodule on the labia in a patient with nonspecific gastrointestinal symptoms. *Cutis.* 2023 Jan;111(1):E16-E18.

Fast Facts: July 2022 – June 2023

Canal Winchester Dermatology Clinic Visits: 448
Dermatology Clinic Visits: 7,870
Dublin Dermatology Clinic Visits: 2,472
Westerville Dermatology Clinic Visits: 625
Total Clinic Visits: 11,415
Inpatient Consults: 201

Department of Pediatrics

DEVELOPMENTAL AND BEHAVIORAL PEDIATRICS

The mission of the Division of Developmental and Behavioral Pediatrics at Nationwide Children’s Hospital is to achieve best outcomes for children with developmental and behavioral needs through equitable, evidence-based, family-centered care with a focus on interprofessional practice. Outpatient services include comprehensive care delivered by developmental and behavioral pediatricians and advanced nurse practitioners in partnership with pediatric psychology, speech pathology, social work and other health care professionals. Areas of expertise include the evaluation and management of autism spectrum disorders, complex ADHD and developmental delay. Additional focus areas include myelomeningocele, neonatal follow-up, Down syndrome and Williams syndrome. The division often provides care in collaboration with programs through Nationwide Children’s Behavioral Health Services.

Faculty



Garey Noritz, MD
Interim Division Chief



Daniel L. Coury, MD
Associate Division Chief
for Research

Elizabeth Barnhardt, DO
Anita R. Narayanan, MD
Patricia L. Nash, MD
Katherine Steingass, MD

2022 – 2023 Fellows
Kendall Abbas, MD
Linda Solamen, MD

Highlights From the Past Year

- Daniel L. Coury, MD, received the C. Anderson Aldrich Award for Lifetime Achievement in Developmental-Behavioral Pediatrics from the American Academy of Pediatrics.
- Faculty in the division contribute at the local and national levels to improve clinical outcomes and reduce avoidable harm. Anita R. Narayanan, MD, is our medical director for quality improvement (QI) initiatives to improve transition to adult care for developmental and behavioral pediatric patients, and to reduce environmental stressors faced by Developmental and Behavioral Pediatrics patients and reduce missed appointments. Daniel L. Coury, MD, holds multiple national administrative and research roles, including medical directorship of the Autism Care Network. Patricia L. Nash, MD, serves as medical director of the Nationwide Children’s Down Syndrome Program. Katherine Steingass, MD, serves as medical director of the Nationwide Children’s Myelomeningocele Clinic and as a principal investigator on the National Spina Bifida Patient Registry.
- Elizabeth Barnhardt, DO, leads the SPEED Clinic (Supporting Primary Care Pediatricians through Engagement and Embedded DBP), a consultative program at Northern Lights Primary Care Center. A primary goal of this clinic is to empower primary care pediatricians through collaborative care of children with developmental disabilities through the provision of timely diagnostic evaluations for autism and developmental disorders. This clinic serves a diverse population including many Somali and Nepali families.
- The division continues to support a robust fellowship program led by Dr. Steingass. The fellowship is integrated with The Ohio State University’s Leadership Education in Neurodevelopmental Disabilities (LEND) program at the Nisonger Center, with Dr. Barnhardt serving as core faculty.

Selected Publications

Galion A, Farmer J, Connolly H, Allhusen V, Bennett A, **Coury D**, Lam J, Neumeyer A, Sohl K, Witmans M, Malow B. A practice pathway for the treatment of night wakings in children with autism spectrum disorder. *J Autism Dev Disord.* 2023 Jun 26.

Keim S, Jude A, Smith K, Khan A, **Coury D**, Rausch J, Udaipuria S, Norris M, **Bartram L**, **Narayanan A**, Rogers L. Randomized controlled trial of omega-3 and -6 fatty acid supplementation to reduce inflammatory markers in children with autism spectrum disorder. *Journal of autism and developmental disorders.* Dec 2022;52(12):5342-5355.

Noritz G, Davidson L, **Steingass K**, et al. Providing a primary care medical home for children and youth with cerebral palsy. *Pediatrics.* 2022 Nov;e2022060055.

Peng J, Townsend J, Casamassimo P, **Coury D**, Gowda C, Meyer B. Dental care differences among children with behavioral health diagnoses. *Academic Pediatrics.* 2022 Aug 30:S1876-2859(22)00418-1.

Fast Facts: July 2022 – June 2023

Developmental Behavioral Pediatrics Clinic Visits: 4,994

Developmental Disabilities Clinic Visits: 108

Myelomeningocele Clinic Visits: 700

Newark Developmental Behavioral Pediatrics Clinic Visits: 85

Northern Lights Developmental Behavioral Pediatrics Clinic Visits: 80

Westerville Developmental Behavioral Pediatrics Clinic Visits: 2,700

Department of Pediatrics

EMERGENCY MEDICINE

The Department of Emergency Medicine at Nationwide Children’s Hospital is one of the nation’s highest ranked and busiest pediatric emergency departments (based on Children’s Hospital Association benchmarking data and *Parents* magazine). Emergency Medicine features a Level I Pediatric Trauma Center and an Emergency Department staffed by board-certified/eligible pediatric emergency medicine subspecialists 24 hours a day.

Faculty



Rachel M. Stanley, MD, MHSA
Division Chief



Delia Gold, MD
Section Chief



Julie C. Leonard, MD, MPH
Associate Division Chief for Research

Adjoa Andoh, MD
Srikanth Aravapalli, MD
Berkeley Bennett, MD
Alan Bleiberg, MD
Bridget Bonaventura, MD
Mary Bowman, MD
Beth Bubolz, MD
Jonathon Chang, MD
Michael Chua, MD

Cullen Clark, MD
Beth Claxton, MD
Daniel Cohen, MD
Marcie Costello, MD
Courtney Coyle, MD
Carrie DeHoff, MD
Michael Dunn, MD
Meika Eby, MD

Emile Elshammaa, MD
Aarti Gaglani, MD
Christopher Gaw, MD
Yaffa Gewirtz, MD
Michelle Greene, DO
Angela Harris, MD
Todd Holman, MD
Maya Iyer, MD

Yamini Jadcherla, MD
Hazel Jeong, MD
Chris Jones, DO
Chelsea Kadish, MD
Julia Lloyd, MD
Rosalia Mahr, MD
Jennifer Melvin, MD
Leah Middelberg, MD

Samir Mishra, MD
Jennifer Mitzman, MD
Jennifer Mrozek, MD
Michael Patrick, MD
Maegan Reynolds, MD
Anne Runkle, MD
Laura Rust, MD
Daniel Scherzer, MD

Betsy Schmerler, MD
Emily Sentman, MD
Bashar Shihabuddin, MD
Gregory Stewart, MD
Kristin Stukus, MD
Scott Sutton, MD
Tracey Wagner, MD
Jordee Wells, MD

Taylor White, DO
Jessica Wilson, MD
Morgan Wurtz, MD
Anita Yalamanchi, DO

2022 – 2023 Fellows
Abha Athale, DO
Sarah Chen, MD
Kristol Das, MD
Nathaniel Forman, MD
Luke Hartman, MD
David Kling, DO
Celia Ligorski, DO

Charles McCombs, MD
Zachary Panzer, DO
Douglas (Alan) Potts, MD
Rachel Thompson, MD
Robert Trevino, MD
Taylor White, DO
Christopher Wright, MD

Highlights From the Past Year

The Department of Emergency Medicine provides expertise in pediatric advanced life support and resuscitation, as well as evaluation and treatment in every area for acute medical and surgical conditions. Emergency services are provided at our main campus and Lewis Center Emergency Department.

The Emergency Department is a hub for medical education in the acute care of children, adolescents and selected adults. Medical students and more than 300 residents from Emergency Medicine, Family Practice, Internal Medicine/Pediatrics and Pediatrics programs are educated in all aspects of pediatric emergencies. In addition, Nationwide Children’s has a large, vibrant Pediatric Emergency Medicine Fellowship program. Members of the Section of Emergency Medicine are active leaders and participants in the residency program at Nationwide Children’s and at The Ohio State University College of Medicine.

In addition to providing clinical, operational and educational excellence, Emergency Medicine has a strong history of clinical research. We lead the federally funded Great Lakes node of the Pediatric Emergency Care Applied Research Network (PECARN), a large 18-hospital research network. We have developed research collaborations with the Columbus Division of Fire and other emergency medical service agencies regionally and nationally. The section is committed to the ongoing improvement of health care delivery in the Emergency Department and in clinical outcomes.

Selected Publications

Iyer M, Wilson K, Draucker C, Hobgood C. Physician men leaders in emergency medicine bearing witness to gender-based discrimination. *JAMA Netw Open.* 2023 Jan 3;6(1):e2249555.

Kadish C, Lloyd J, Adelgais K, Ward C, Lo C, Truelove A, Leonard J. Prehospital recognition and management of pediatric sepsis: A qualitative assessment. *Prehosp Emerg Care.* 2023;27(6):775-785. *Epub* 2023 May 17.

Lloyd J, Alpi K, Hoogland M, Stephenson P, Meyer E. Interlibrary loan and document delivery in North American health sciences libraries during the early months of the COVID-19 pandemic. *J Med Libr Assoc.* 2022 Jul 1;110(3):348-357.

Nystrom J, Lo C, Helwig S, Wurtz M, Scherzer D, Moberly A, Iyer M. Feasibility of a video otoscope for diagnosis of otologic pathology in the pediatric emergency department. *Pediatr Emerg Care.* 2023 Jun 12.

Toews J, Leonard J, Shi J, Lloyd J. Implementation of an automated sepsis screening tool in a children's hospital emergency department: A cost analysis. *J Pediatr.* 2022 Nov;250:38-44.e1.

Fast Facts: July 2022 – June 2023

Main Campus ED Visits: 72,980
Lewis Center ED Visits: 23,205
Total ED Visits: 96,185



“We think that in females with T2D, the stigma of obesity may be increasing depression...”

– Robert P. Hoffman, MD

Endocrinology

How Are Depression, Diabetes Distress and Glycemic Control Related in Adolescents With Type 2 Diabetes?

For adolescents with T2D, obesity and attempts at weight loss may contribute more to depression and diabetes distress than the demands of diabetes management.

Diabetes distress is a negative emotional response to living with diabetes. It is frequently mistaken for depression and the two are interrelated.

Previous research showed that in adolescents with type 1 diabetes (T1D), both depression and diabetes distress can result in poor glycemic control and increased hemoglobin A1c (HbA1c), though diabetes distress is more closely related to diabetes control than is depression.

Less is known about the interrelationships between depression, diabetes distress and glycemic control in adolescents with type 2 diabetes (T2D). To address this gap, researchers from Nationwide Children’s conducted a study of 364 patients with diabetes between the ages of 13-17 years.

The researchers found that depression scores were higher in adolescent females with T2D compared to those with T1D; however, they did not find any difference in diabetes distress scores between these groups.

“We think that in females with T2D, the stigma of obesity may be increasing depression, and that stigma is overwhelming all the other effects that are there,” says **Robert P. Hoffman, MD**, a member of the Section of Endocrinology at Nationwide Children’s and one of the study’s authors.

Researchers found that diabetes distress and depression scores were closely linked in adolescents with T2D, as has been found for adolescents with T1D. However, these scores were not related to glycemic control and did not differ by treatment regimen. Dr. Hoffman and colleagues suggest that the biggest sources of depression and diabetes distress in adolescents with T2D may be related to weight concerns, diet and exercise, rather than the demands of diabetes care.

Dr. Hoffman, who is also a professor of Pediatrics at The Ohio State University College of Medicine, says that further research is needed to assess how obesity and attempts at weight loss impact mental health in adolescents with T2D, and whether reducing depression and diabetes distress may be beneficial to diabetes control and enhance weight loss.”

REFERENCE:

Hoffman RP, Damilano CP, Hong KMC, Glick BA, Kamboj MK. Glycemic control, depression, diabetes distress among adolescents with type 2 diabetes: effects of sex, race, insurance, and obesity. *Acta Diabetologica*. 2022 Aug;59(8):1083-1089.

Department of Pediatrics

ENDOCRINOLOGY

The Section of Endocrinology at Nationwide Children’s Hospital provides comprehensive primary and consultative services for the diagnosis and treatment of endocrine/hormone disorders and diabetes mellitus in children and adolescents. We offer multidisciplinary care for complex chronic medical conditions that impact the endocrine system. The section has a strong national presence in the realm of quality improvement for diabetes.

Faculty



Manmohan K. Kamboj, MD
Chief



Leena Nahata, MD
Associate Division Chief
for Research

Sasigarn A. Bowden, MD
Elizabeth O. Buschur, MD
Monika Chaudhari, MD
Cecilia Damilano, MD
Victoria A. Elliott, MD
Kajal Gandhi, DO
Rohan K. Henry, MD, MS
Robert P. Hoffman, MD
Justin A. Indyk, MD, PhD
Jennifer Ladd, MD
Amit Lahoti, MD

Leena Mamilly, MD
Kathryn Obrynba, MD
LeAnne M. Sancrainte, DO
Aurelia C.H. Wood, MD

2022 – 2023 Fellows
Reham Alzahrani, MD
Shadi Bakjaji, MD
Esther Bell, MD
Ayse Bulan, MD
Hiba Salhah, MD

Highlights From the Past Year

The Section of Endocrinology currently has 17 active pediatric endocrinologists, 18 advanced practitioners and five pediatric endocrinology fellows. The section presently conducts 15,000 outpatient appointments per year. In 2022, there were over 270 patients diagnosed with new-onset diabetes, and there are over 2,400 patients with diabetes mellitus being followed at Nationwide Children’s 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 comprehensive programs include the following areas of focus: type 1 and type 2 diabetes mellitus, cystic fibrosis-related diabetes, Prader-Willi syndrome, bone marrow transplant long-term follow-up, metabolic bone disease, muscular dystrophy, thyroid nodule/cancer, reproductive health and fertility, sickle-cell, young adult diabetes transition, disorders of sexual development and gender (THRIVE program), polycystic ovary syndrome, neuro-oncology, William’s syndrome, Turner syndrome, and chromosome 22q11 deletion.

The section maintains a robust quality improvement portfolio that includes over 15 active projects designed to achieve best safety and quality outcomes for patients with diabetes mellitus and endocrine disorders. As a member of the National T1D Exchange Quality Improvement Collaborative, the section participates in initiatives to further expand the reach of quality improvement best practices nationally. The section has expanded access across the care continuum and into the community through the development of the Diabetes and School Health (DASH) program, an innovative partnership with school-based health services, as well as the Diabetes/Insulin Inpatient Consult Service (DIISC). The Section of Endocrinology is a major referral center for children and adolescents in and beyond central Ohio and is a national and international destination for various specialty endocrine programs. The section also is a consultative resource for the Ohio Department of Health Newborn Screening Program for congenital hypothyroidism and congenital adrenal hyperplasia.

Selected Publications

Bowden S. Current screening strategies for the diagnosis of adrenal insufficiency in children. *Pediatric Health Med Ther.* 2023 Apr 6;14:117-130.

Henry R, Miller B. Approach to the patient: Case studies in pediatric growth hormone deficiency and their management. *J Clin Endocrinol Metab.* 2023 May 29;dgad305.

Hong K, Glick B, Kamboj M, Hoffman R. Glycemic control, depression, diabetes distress among adolescents with type 2 diabetes: effects of sex, race, insurance, and obesity. *Acta Diabetol.* 2022 Aug;59(8):1083-1089.

Raman V, Gupta A, Ashraf AP, Breidbart E, Gourgari E, Kamboj M, Kohn B, Krishnan S, Lahoti A, Matlock K, Mehta S, Mistry S, Miller R, Page L, Reynolds D, Han JC. Pharmacologic weight management in the era of adolescent obesity. *J Clin Endocrinol Metab.* 2022 Sep 28;107(10):2716-2728.

Stanek C, Garcia D, Olsavsky AL, Hill KN, Himelhoch AC, Kenney AE, Humphrey L, Olshefski R, Gerhardt CA, Nahata L. Communication within families about advanced pediatric cancer: A qualitative study. *Palliat Support Care.* 2022 Dec 27:1-8.

Fast Facts: July 2022 – June 2023

Inpatient Discharges: 443
Observation and Outpatient-in-a-Bed Discharges: 195
Total Discharges: 638
Average Length of Stay*: 2.3
Average Daily Census*: 2.8
Patient Days*: 1,009
Inpatient Consults: 651
Canal Winchester Endocrinology Clinic Visits: 268
Dublin Endocrinology Clinic Visits: 1,597
East Broad Endocrinology Clinic Visits: 577
Endocrinology Clinic Visits: 11,002
Lima Endocrinology Clinic Visits: 50
Westerville Endocrinology Clinic Visits: 1,622
Prader-Willi Clinic Visits: 114
Total Clinic Visits: 15,230

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



Gastroenterology, Hepatology and Nutrition

Managing Iron Deficiency in Children Undergoing Intestinal Rehabilitation

A new position paper offers recommendations for the evaluation and management of iron deficiency in children undergoing intestinal rehabilitation.

A position paper from the NASPGHAN Intestinal Rehabilitation Special Interest Group, led by **Ethan A. Mezoff, MD**, a pediatric gastroenterologist at Nationwide Children’s, delves into the identification and treatment of iron deficiency in children undergoing intestinal rehabilitation. The paper, published in the *Journal of Pediatric Gastroenterology and Nutrition*, aims to provide clarity on this critical matter, shedding light on the complexities surrounding the issue.

“Children with intestinal failure and/or short bowel syndrome are at risk for multiple micronutrient deficiencies,” says Dr. Mezoff, who is an associate professor of Pediatrics at The Ohio State University College of Medicine. “One of the most common concerns is iron deficiency. This can occur because the child doesn’t receive enough iron, has lost too much in their stool, or has intestinal problems that have impacted iron absorption. Iron deficiency can lead to anemia, and in some studies has even been linked with impaired neurodevelopment.”

To unravel the complexities of iron deficiency in children with digestive issues, Dr. Mezoff and the research team examined numerous medical studies using PubMed. The studies focused on children with low iron levels, digestive problems and nutritional challenges.

“This paper will benefit children with intestinal failure and short bowel syndrome,” says **Molly C. Dienhart, MD**, attending pediatric gastroenterologist and medical director of the Center for Intestinal Rehabilitation and Nutrition Support at Nationwide Children’s. “To truly make an impact, we have to identify iron deficiency early. Working to establish a consistent monitoring and treatment plan is crucial to achieving excellent overall outcomes.”

This paper explores five central elements influencing treatment decisions for children undergoing intestinal rehabilitation: causes for iron deficiency, dietary intake, intravenous supplementation, diagnostic criteria, and holistic treatment components.

“At Nationwide Children’s we’re fortunate to work with great surgeons, pharmacists, radiologists, interventional radiologists, social workers, dietitians and a host of inpatient-based therapists who are part of our larger program and who ensure the care we provide is truly multidisciplinary and customized to the individual patient,” says Dr. Mezoff.

REFERENCE:
Talathi S, Namjoshi S, Raghu V, Wendel D, Oliveira SB, Reed K, Yanchis D, Mezoff EA. Evaluation and Management of Iron Deficiency in Children Undergoing Intestinal Rehabilitation—A Position Paper From the NASPGHAN Intestinal Rehabilitation Special Interest Group. *J Pediatr Gastroenterol Nutr.* 2023 May 1;76(5):672-683.



Position paper explores five central elements influencing treatment decisions for children undergoing intestinal rehabilitation.

Ethan A. Mezoff, MD, and Molly C. Dienhart, MD

Department of Pediatrics

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 care for a broad range of gastrointestinal, liver, pancreatic and nutritional problems in addition to providing advanced endoscopic techniques. The division strives for excellence in research, teaching and clinical care, and maintains a team of physicians committed to the creation of new knowledge in the discipline. Our team, including pediatric advanced nurse practitioners, registered dietitian nutritionists, and social workers, collaborates with other disciplines including behavioral and developmental psychologists, radiologists and surgeons to provide comprehensive, coordinated care for each child.

Faculty



Carlo Di Lorenzo, MD
Division Chief



Brendan M. Boyle, MD, MPH
Section Chief



Cheryl E. Gariepy, MD
Associate Division Chief
for Research

Brandon Arnold, DO	A. Jay Freeman, MD	Ross Maltz, MD	Karla K. Vaz, MD
Steve L. Ciciora, MD	Jonathan M. Gisser, MD	Ethan Mezoﬀ, MD	Rajitha Venkatesh, MD, MPH
Molly C. Dienhart, MD	Praveen Goday, MD	Hilary Michel, MD	Alex Weymann, MD
Jennifer L. Dotson, MD, MPH	Muhammad Khan, MD, MPH	Carol J. Potter, MD	Kent C. Williams, MD
Tracy R. Ediger, MD, PhD	Jennifer Lee, MD	Neetu B. Puri, MD, MPH	Frederick W. Woodley, PhD
Steven H. Erdman, MD	Peter Lu, MD	John M. Russo, MD	Desale Yacob, MD
Colleen Flahive, MD	Dieudonne Nonga Makon, MD	Ala K. Shaikhkhalil, MD	

2022 – 2023
Fellows Pediatric
Gastronenterology

Nicole Davidson, MD
Peter Farmer, MD
Matt Grisham, MD
Laura Hamant, MD

Janice Khoo, MD
Judy-April Murayi, MD
Samantha Paglinco, DO
Patrick Rowland, MD
Garrett Sprague, MD

GI Motility
Raul Sanchez, MD

Highlights From the Past Year

The division has a national reputation in general pediatric gastrointestinal care. In addition, we have 11 comprehensive sub-specialty clinics that provide outstanding care for their patient populations. Members of the GI Division also support subspecialists in other divisions to provide coordinated, comprehensive care and our providers travel throughout the region to bring care to families.

- **Motility Center:** A national leader in caring for children with neuro-gastrointestinal and functional disorders. Team members include Carlo Di Lorenzo, MD, Division Chief of Gastroenterology; Desale Yacob, MD, Medical Director; Peter Lu, MD, Research Director; as well as Karla Vaz, MD, Neetu B. Puri, MD, MPH, and Ashley Kroon Van Diest, PhD.
- **Center for Colorectal and Pelvic Reconstruction:** This renowned center works in partnership with the Motility Center to provide advanced comprehensive medical and surgical services for children with complex motility disorders.
- **Inflammatory Bowel Disease Center:** A national leader in providing state-of-the-art care for children with Crohn’s disease and ulcerative colitis. Co-directors of the inflammatory bowel disease (IBD) service are Brendan Boyle, MD, MPH, and Jennifer Dotson, MD, MPH, working together with Ross Maltz, MD, and Hilary Michel, MD. The IBD Center has one of the highest steroid-free remission rates in the country and works closely with the pediatric surgeons to provide comprehensive care for children with severe IBD.
- **Intestinal Rehabilitation Service:** Under the leadership of Drs. Molly Dienhart and Ethan Mezoﬀ, the team follows a large cohort of children with intestinal failure and has some of the best outcomes in the country for care of children with short bowel syndrome.
- **Celiac Disease Center:** Under the leadership of Tracy Ediger, MD, PhD, medical director, the center is nationally recognized for promotion of more standardized care for children with celiac disease to improve long-term outcomes.
- **Intestinal Polyposis Service:** Led by Drs. Steven Erdman and Colleen Flahive, the service works closely with geneticists to provide comprehensive care and counseling for children and families with polyposis syndromes.
- **Eosinophilic Esophagitis Center:** The leadership team for the EOE Center includes Drs. John Russo, Rajitha Venkatesh and Elizabeth Erwin. The service provides both gastrointestinal and allergy expertise in the long-term management of children with eosinophilic esophagitis and provides advanced endoscopic assessment through the use of transnasal endoscopy.
- **Pancreas and Liver Care Center:** Under the medical leadership of hepatologist Alex Weymann, MD, pancreatologists A. Jay Freeman, MD, and Cheryl Gariepy, MD, and the surgical leadership of Jaimie D. Nathan, MD, and Sara Rasmussen, MD, PhD, the center provides comprehensive multidisciplinary care to children with routine and complex liver and pancreas conditions. The center offers leading-edge liver transplant capabilities, including all technical variant grafts, as well as advanced portal hypertension operations. Designated by the National Pancreas Foundation as an Academic and Clinical Center of Excellence, the center is one of the few pediatric programs in the nation that offers total pancreatectomy with islet autotransplantation (TPIAT). Additionally, Balamurugan N. Appakalai, PhD, an international pioneer in pancreatic islet cell processing and transplantation, directs the Islet Cell Isolation Program.
- **Advanced Interventional and Diagnostic Endoscopy:** In 2022, the GI Division welcomed Muhammad A. Khan, MD, MPH, FASGE, a pediatric interventional endoscopist with special focus in endoscopic retrograde cholangiopancreatography (ERCP) and endoscopic ultrasound (EUS) in the diagnostic evaluation and therapeutic management of chronic pancreatitis, peri-pancreatic fluid collections and other complex hepatopancreatobiliary disorders.
- **Gastrointestinal Autism Clinic:** Led by Kent Williams, MD, a nationally renowned expert on children with autism and gastrointestinal problems, this clinic provides comprehensive care for diagnosis and management of GI disorders in this specialized group of children.

- **NICU Cholestasis Service:** Under the leadership of Carol Potter, MD, this unique service provides specialized, individualized, long-term care to hospitalized infants with liver disease.
- **Multidisciplinary Clinics:** Members of the GI Division work closely with other medical and surgical subspecialists to provide comprehensive care in dedicated clinics for children with complex medical problems, including aerodigestive disorders (Karla Vaz, MD); nutritional needs of those with cystic fibrosis, congenital heart disease and bone disease (Ala Shaikhkhalil, MD, who has specialized expertise in both GI and nutrition); muscular dystrophy (Kent Williams, MD); feeding disorders and the complex care clinic (Neetu B. Puri, MD, MPH). patients with a single heart ventricle (Cheryl Gariepy, MD); and liver and pancreatic disease in individuals with cystic fibrosis (Alex Weymann, MD, and A. Jay Freeman, MD). Praveen Goday, MD, leads the Comprehensive Nutrition and Feeding Center, which aims to standardize care for all children with feeding and nutritional disorders while providing a centralized setting for all challenges related to tube feedings.
- **Outreach clinics:** In addition to seeing children with GI disorders at Nationwide Children’s, our faculty see patients at satellite clinics locally (in Dublin and Westerville) and at regional outreach sites in Mansfield (Jonathan Gisser, MD, and Brandon Arnold, DO), Lima (Steve Ciciora, MD, and Tracy Ediger, MD, PhD) and Chillicothe (Carlo Di Lorenzo, MD, Desale Yacob, MD, Peter Lu, MD, and Ross Maltz, MD).

Selected Publications

Coe A, Ciricillo J, Mansi S, El-Chammas K, Santucci N, **Bali N, Lu P**, Damrongmanee A, Fei L, Liu C, Kaul A, **Williams K**. Evaluation of chronic constipation in children with autism spectrum disorder. *J Pediatr Gastroenterol Nutr*. 2023 Feb 1;76(2):154-159.

Farmer P, Boyle B, Hill I, Kiel A, **Ediger T**. Single-center analysis of essential laboratory testing in patients with newly diagnosed celiac disease. *J Pediatr*. 2023 May 16;259:113487.

Michel H, Boyle B, David J, Donegan A, Drobnic B, Kren C, **Maltz R**, McKillop H, McNicol M, Oates M, **Dotson J**. The pediatric inflammatory bowel disease medical home: a proposed model. *Inflamm Bowel Dis*. 2022 Sep 1;28(9):1420-1429.

Morris G, McNicol M, **Boyle B**, Donegan A, **Dotson J, Michel H, Maltz R**. Increasing biosimilar utilization at a pediatric inflammatory bowel disease center and associated cost savings: Show me the money. *Inflamm Bowel Dis*. 2022 Mar 30;28(4):531-538.

Talathi S, Namjoshi S, Raghu V, Wendel D, Oliveira S, Reed K, Yanchis D, **Mezoff E**. Evaluation and management of iron deficiency in children undergoing intestinal rehabilitation — a position paper from the NASPGHAN intestinal rehabilitation special interest group. *J Pediatr Gastroenterol Nutr*. 2023 May.

Sabella J, Kroon Van Diest A, **Bali N, Vaz K, Yacob D, Di Lorenzo C, Lu P**. Multidisciplinary tiered care is effective for children and adolescents with rumination syndrome. *J Pediatr Gastroenterol Nutr*. 2023 Mar 1;76(3):282-287.

Syversen E, Tobin M, Patton T, Franciosi J, Gupta S, **Venkatesh R**. Variability in swallowed topical corticosteroid practice patterns for treatment of pediatric eosinophilic esophagitis. *J Pediatr Gastroenterol Nutr*. 2023 Aug 1;77(2):256-259. Epub 2023 May 19.

Tham S, Wang F, **Gariepy C**, Cress G, Abu-El-Haija M, Bellin M, Ellery K, Fishman D, Gonska T, Heyman M, Lin T, Maqbool A, McFerron B, Morinville V, Nathan J, Ooi C, Perito E, Schwarzenberg S, Sellers Z, Shah U, Troendle D, Wilschanski M, Zheng Y, Yuan Y, Lowe M, Uc A, Palermo T; INternational Study Group of Pediatric Pancreatitis: In search for a cuRE (INSPPIRE) and Consortium for the Study of Chronic Pancreatitis, Diabetes and Pancreatic Cancer (CPDPC). Health-related quality of life in pediatric acute recurrent or chronic pancreatitis: association with biopsychosocial risk factors. *J Pediatr Gastroenterol Nutr*. 2022 May 1;74(5):636-642.

Fast Facts: July 2022 – June 2023

Inpatient Discharges:	734
Observation and Outpatient-in-a-Bed Discharges:	391
Total Discharges:	1,125
Average Length of Stay*:	5.8
Average Daily Census*:	11.6
Patient Days*:	4,231
Total Surgical Procedures	3,876

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

Gastroenterology Clinic Visits (Main Campus): 16,136

Chillicothe Gastroenterology Clinic Visits: 355

Dublin Gastroenterology Clinic Visits: 1,687

Lima Gastroenterology Clinic Visits: 396

Mansfield Gastroenterology Clinic Visits: 566

Westerville Gastroenterology Clinic Visits: 1,404

GI Allergy Clinic Visits: 245

Total GI Clinic Visits: 20,789



Department of Pediatrics

GENETIC AND GENOMIC MEDICINE

The mission of the Division of Genetic and Genomic Medicine at Nationwide Children’s Hospital is to deliver compassionate, family-centered care via genetic/genomic diagnostic and therapeutic services while providing counseling, education, research and advocacy to improve the lives of individuals with genetic conditions. We treat inborn errors of metabolism and genetic conditions across all ages, from preconception and prenatal through childhood and well into adulthood. Clinical services are supported partly by the Ohio Department of Health as a Regional Genetics Center of the state of Ohio, Region IV. Research partners include the Steve and Cindy Rasmussen Institute for Genomic Medicine, and the Center for Gene Therapy and the Center for Cardiovascular Research in the Abigail Wexner Research Institute at Nationwide Children’s Hospital.

Faculty



Scott E. Hickey, MD
Interim Division Chief
Associate Division Chief
for Research



Kandamurugu (Murugu)
Manickam, MD, MPH
Section Chief

Dennis W. Bartholomew, MD
Bimal Chaudhari, MD, MPH
Stephen G. Kaler, MD
Mari Mori, MD
Britton D. Rink, MD
Kristin Truxal, MD
Bianca Zapanata, DO

2022 – 2023 Fellows & Residents
Medical Genetics Residents

Hannah Hughes, MD (PGY2)
Brandon Stone, MD (PGY4)
Jacqueline Yurkoski, MD (PGY3)

Medical Biochemical Fellow
Caterina Abdala-Villa, MD (PGY6)

Highlights From the Past Year

- Led by the efforts for Dr. Mori, Designated National Center of Excellence by the National Organization of Rare Disorders.
- Over 40 publications from within the division including by trainees and nurse practitioners including several “first-diagnoses” publications.
- Led by Dr. Chaudhari, expanded the use of rapid genome testing in the ICU setting and for multiple specialty indications.
- Increased to over 3,000 outpatient visits that include 87 of 88 Ohio counties.
- Continue to have 100% board pass rate for trainees with many trainees further specializing in inborn errors of metabolism.
- Represent on state and national genetics and genomic organizations to advocate for patients with rare diagnoses including the American College of Medical Genetics/Genomics, the American Society of Human Genetics, the North American Metabolic Association, and the Ohio Governor’s Rare Disease Advisory Council.

Rare disorders remain a focus overall for the division. We continue to participate in the Institute for Genomic Medicine Rare Disease Program to identify causes of rare disorders in patients from Nationwide Children’s, ending their diagnostic odyssey. We were pleased to help organize and lead the Rare Disease Day event at Nationwide Children’s and are planning to greatly expand the event for 2024. Our interest also reaches nationally with our faculty participating in setting standards and guidelines in the evaluation of individuals with these conditions. We have successfully started a clinic for therapeutics of genetic disorders including enzyme replacement therapies for a variety of lysosomal storage disorders. Our goal for the coming year is to establish a Rare Disease Clinic to better serve our patients and become an internationally recognized destination for those with a rare disorder. The division also helps staff multidisciplinary clinics across Nationwide

Children’s/The Ohio State University Wexner Medical Center including cardiogenetic, craniofacial/22q clinic, bone clinic with nephrology and NF1 clinic.

We continue to offer high-quality education in genetics and genomics. We graduated our second biochemical genetics fellow as there is a critical need for specialists in this area of genetics in the United States. Our division was also the sponsor of multiple students through the Healthy Neighborhoods Healthy Families program.

The division is active in several research projects. We have active protocols in several clinical trials, including the investigator-led gene transfers for Sanfilippo disease type A and B (principal investigator: Kevin Flanigan, MD) and industry-sponsored programs for phenylketonuria. Three trials are due to launch: enzyme replacement therapy for generalized arterial calcification in infancy (as the national site), enzyme substitution therapy for phenylketonuria and a small molecular study for methylmalonic and propionic acidemias. The division also has several active early access programs for Menkes disease, Barth syndrome, Friedreich ataxia and others. Our group also participates in a number of natural history studies of lysosomal disorders.

Selected Publications

Batzios S, Tal G, DiStasio A, Peng Y, Charalambous C, Nicolaides P, Kamsteeg E, Korman S, Mandel H, Steinbach P, Yi L, Fair S, Hester M, Drousiotou A, Kaler S. Newly identified disorder of copper metabolism caused by variants in CTR1, a high-affinity copper transporter. *Hum Mol Genet.* 2022 Dec 16;31(24):4121-4130.

de Sainte Agathe J, Pode-Shakked B, Naudion S, Michaud V, Arveiler B, Fergelot P, Delmas J, Keren B, Poirsier C, Alkuraya F, Tabarki B, Bend E, Davis K, Bebin M, Thompson M, Bryant E, Wagner M, Hannibal I, Lenberg J, Krenn M, Wigby K, Friedman J, Iascone M, Cereda A, Miao T, LeGuern E, Argilli E, Sherr E, Caluseriu O, Tidwell T, Bayrak-Toydemir P, Hagedorn C, Brugger M, Vill K, Morneau-Jacob F, Chung W, Weaver K, Owens J, Husami A, Chaudhari B, Stone B, Burns K, Li R, de Lange I, Biehler M, Ginglinger E, Gérard B, Stottmann R, Trimouille A. ARF1-related disorder: phenotypic and molecular spectrum. *J Med Genet.* 2023 Apr 25:jmg-2022-108803.

Mori M, Clause A, Truxal K, Hagelstrom R, Manickam K, Kaler S, Prasad V, Windster J, Alves M, Di Lorenzo C. Autosomal recessive ACTG2-related visceral myopathy in brothers. *JPGN Rep.* 2022 Oct 20;3(4):e258.

Raca G, Astbury C, Behlmann A, De Castro M, Hickey S, Karaca E, Lowther C, Riggs E, Seifert B, Thorland E, Deignan J; ACMG Laboratory Quality Assurance Committee. Points to consider in the detection of germline structural variants using next-generation sequencing: A statement of the American College of Medical Genetics and Genomics (ACMG). *Genet Med.* 2023 Feb;25(2):100316.

Wojcik M, Callahan K, Antoniou A, Del Rosario M, Brunelli L, ElHassan N, Gogcu S, Murthy K, Rumpel J, Wambach J, Suhrie K, Fishler K, Chaudhari B. Provision and availability of genomic medicine services in Level IV neonatal intensive care units. *Genet Med.* 2023 Jul 6;25(10):100926. Online ahead of print.

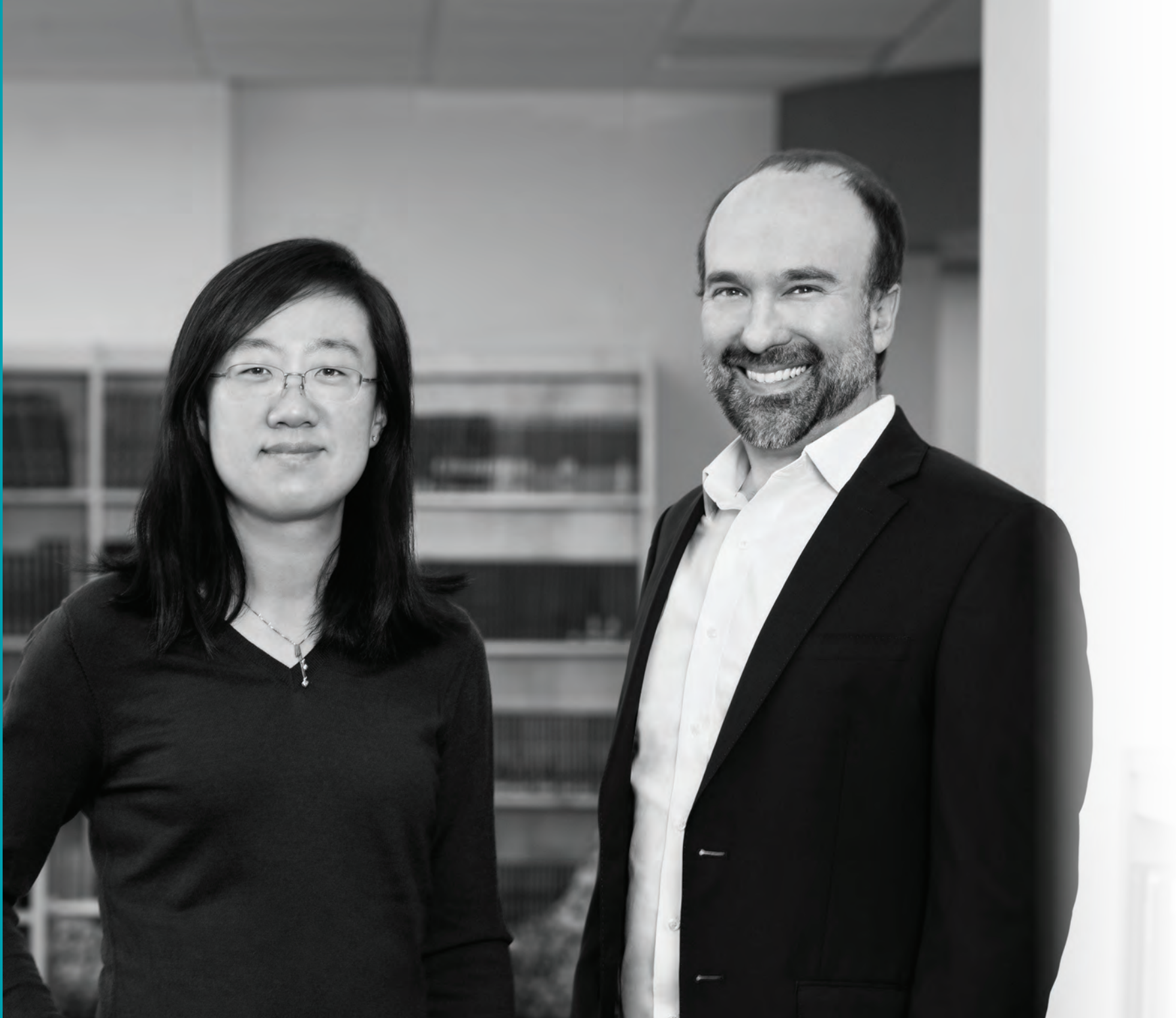
Fast Facts: July 2022 – June 2023

Inpatient Discharges: 39
Observation and Outpatient-in-a-Bed Discharges: 35
Total Nationwide Children’s Discharges: 74
Average Length of Stay*: 2.4
Average Daily Census*: 0.3
Patient Days*: 94
Inpatient Consults: 323

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

Outpatient Visits

Cardiogenetics Clinic Visits: 273
Dublin Genetics Clinic Visits: 206
Genetics (Main Campus) Clinic Visits: 2,605
Marietta Genetics Clinic Visits: 15
Westerville Genetics Clinic Visits: 211
Zanesville Genetics Clinic Visits: 15



Hematology, Oncology & Blood and Marrow Transplant

Mapping the 3D Structure of Rhabdomyosarcoma Chromatin

Researchers publish the first comprehensive, 3D analysis of the complete rhabdomyosarcoma genome.

In a paper published in *Nucleic Acids Research Cancer (NAR Cancer)*, researchers from the Center for Childhood Cancer Research at Nationwide Children’s and their collaborators report a comprehensive 3D chromatin structural analysis and characterization of rhabdomyosarcoma (RMS).

“RMS represents an unmet medical need in pediatric cancer,” says **Benjamin Stanton, PhD**, principal investigator in the Center for Childhood Cancer Research and senior author of the publication. “Few mutations have been identified in this tumor, and even then, precision medicine remains a challenge. By understanding the epigenetics — the factors affecting gene expression outside of the actual genetic code — of RMS, we can find epigenetic drivers and give the medical community new targets and vulnerabilities for precision therapy.”

The Stanton Lab’s latest publication describes three layers of epigenetic characterization of RMS.

“While the human genome project provided the one-dimensional sequence of base pairs, we have to realize that the human genome is three-dimensional,” says **Meng Wang, PhD**, a senior bioinformatic scientist in the Center for Childhood Cancer Research and first author of the publication. “Cancers can be caused by mutations in the line of code, but they can also be caused by how different genes associate with one another in three-dimensional space.”

To understand how the 3D structure of the RMS genome could contribute to tumor formation, the team began the deepest, most comprehensive analysis of the structure to date.

The team created spike-in in situ Hi-C chromatin interaction maps for the most common RMS cell lines. They uncovered common and distinct structural components in large-scale chromatin compartments, tumor-essential genes with variable topologically associating domains (TADs) and unique patterns of structural variation.

“Dr. Wang is the first to comprehensively describe the compartments and TADs of RMS,” says Dr. Stanton. “This is a big step forward for the field in terms of understanding RMS and identifying possible targets for new therapies.”

The team’s high-depth chromatin interactivity maps and comprehensive analyses provide context for gene regulatory events and reveal functional chromatin domains in RMS.

REFERENCE:

Wang M, Sreenivas P, Sunkel BD, Wang L, Ignatius M, Stanton BZ. The 3D chromatin landscape of rhabdomyosarcoma. *NAR Cancer*. 2023 Jun 13;5(3):zcad028.



Researchers publish the first comprehensive, 3D analysis of the complete rhabdomyosarcoma genome.

Meng Wang, PhD, and Benjamin Stanton, PhD


Department of Pediatrics

HEMATOLOGY, ONCOLOGY & BLOOD AND MARROW TRANSPLANT


The Division of Hematology, Oncology & Blood and Marrow Transplant at Nationwide Children’s Hospital treats patients with any one of a full array of blood diseases, 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 diseases and cancer, as well as other diseases treated by cellular therapies or apheresis.

In addition to clinical care, through our integrated programs within the Abigail Wexner Research Institute’s Center for Childhood Cancer Research, the Steve and Cindy Rasmussen Institute for Genomic Medicine, the Blood Diseases Research Affinity Group, the Center for Translational Research, the Center for Health Equity and Outcomes Research, and the Biopathology Center, we seek to transform the way patients with cancer and blood diseases are cared for by fully integrating research, cutting-edge therapies and multidisciplinary teams.


Faculty



Timothy P. Cripe, MD, PhD, FAAP
Division Chief



Nicholas D. Yeager, MD
Section Chief



Sarah H. O'Brien, MD, MS
Associate Division Chief for Research

Rolla F. Abu-Arja, MD
Anthony N. Audino, MD
Jeffery J. Auletta, MD
Rajinder P. Bajwa, MD, MBBS
Danielle Chambers, PhD
Susan I. Colace, MD
Susan E. Creary, MD
Amy L. Dunn, MD

Maryam Fouladi, MD, MSc, FRCP	Sara Khan, MD	Suzanne M. Reed, MD	Keri A. Streby, MD
Molly Gardner, PhD	Margot Lazow, MD	Ryan D. Roberts, MD, PhD	Kathryn Vannatta, PhD
Cynthia A. Gerhardt, PhD	Dean Lee, MD, PhD	Melissa J. Rose, DO	Anthony D. Villella, MD
Terri L. Guinipero, MD	Kathleen L. Lemanek, PhD	Ralph Salloum, MD	Andrea Wojtowicz, PhD
Jennifer Hansen-Moore, PhD	Randal S. Olshefski, MD	Amanda Sankar, MD	Tammi K. Young-Saleme, PhD
Amanda Jacobson-Kelly, MD	Jeffrey Papiernik, MD	Megan Schaefer, PhD	
Bryce A. Kerlin, MD	Mark A. Ranalli, MD	Bhuvana A. Setty, MD	
	Hemalatha G. Rangarajan, MD	Nilay D. Shah, MD	

2022 – 2023 Fellows	SECOND YEAR	THIRD YEAR	FOURTH YEAR (BMT)
FIRST YEAR	Amanda Campbell, MD	Natasha Bala, MD	Ashleigh Kussman, MD
Ann Kebede, MD	Megan Scruggs, MD	Andrew Picca, DO	FOURTH YEAR (HEMOSTASIS-THROMBOSIS)
Charles Treinen, MD		James Reinecke, MD, PhD	Eman Abdelghani, MD
Mariah Wright, MD			Shreya Agarwal, MD

Highlights From the Past Year

Through research, patient care and psychosocial support, the Division of Hematology, Oncology & Blood and Marrow Transplant provides the best possible outcomes for our patients, families and care teams. As a top 10 program ranked by U.S. News and World Report, we continue to set national and international standards for innovation for patients and families, not only at Nationwide Children’s, but around the world.

Research, Innovation and Growth Highlights in 2023:

- Over 1,000 patient samples analyzed in the first year of the Molecular Characterization Initiative
- Paradigm shift in cancer therapy pioneered in mice using adeno-associated virus (AAV) gene therapies
- Received certification to perform gene therapy for transfusion-dependent beta thalassemia
- Opening of the Proton Center, home of the world’s most advanced FLASH technology
- Publication of the first comprehensive, 3D analysis of the complete rhabdomyosarcoma genome
- Expansion of regional services and providers at Nationwide Children’s-Toledo
- Over 120 open and enrolling clinical trials

Selected Publications

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Fast Facts: July 2022 – June 2023

Inpatient Discharges: 1,387	Anticoagulation Clinic Visits: 193
Observation and Outpatient-in-a-Bed Discharges: 397	BMT Clinic Visits: 5,325
Total Discharges: 1,784	Chillicothe Hematology/Oncology Clinic Visits: 30
Patient Days*: 10,972	Dayton Hematology/Oncology Clinic Visits: 14
Average Length of Stay*: 7.9	Dublin Hematology Clinic Visits: 134
Average Daily Census*: 30.1	East Broad Sickle Cell Clinic Visits: 138
Inpatient Consults: 835	Main Campus Hematology/Oncology Clinic Visits: 9,267
Total Surgical Procedures: 761	Mansfield Hematology/Oncology Clinic Visits: 20
BMT Transplants: 89	Portsmouth Hematology/Oncology Clinic Visits: 15
Apheresis and Photopheresis Procedures: 1,030	Surgical Oncology Clinic Visits: 109
*Excludes observation and outpatient-in-a-bed patients	Zanesville Hematology/Oncology Clinic Visits: 34

Department of Pediatrics

HOSPITAL PEDIATRICS AND ADULT HOSPITAL MEDICINE

The Section of Hospital Pediatrics at Nationwide Children’s Hospital, which also includes newborn and adult hospital medicine, is home to a talented group of physicians who specialize in the care of hospitalized newborns, children, adolescents and adults. The section supports Nationwide Children’s commitment to providing the highest-quality care to all children and their families regardless of ability to pay, and specifically aims to set the standard in the provision of high-value, quality inpatient care, the intentional and thoughtful education of future generations of doctors, and the production of useful and influential clinical, educational and quality-improvement research.

Faculty



Ryan S. Bode, MD, MBOE
Chief



Amy N. Tyler, MD, MSCS
Associate Division Chief for
Research

Seth Agyeman-Berko, PA	Sofia Davila, MD
Sean Ankrom, MD	Anyelika Delerme, MD
Kristin Balmert, PA	Michael Dienstbach, MD
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Jessica Bockenstedt, MD	Samuel Dudley, MD
Carrie Cacioppo, MD	Christian Earl, MD
Sharon Clark, MD	Matthew Emery, MD
Megan Coe, MD	Lauren Finnegan, NP

Emily Graham, MD	Rena Kasick, MD	Sarah Marzec, MD, MA	Alana Painter, MD
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Melissa Skaug, MD	Cara Texler, MD
Whitney Smith, NP	Keith Torrey, MD
Isaac Spears, MD	Melissa Tullock, DO
Anuja Sriparameswaran, MD	Kathryn Westphal, MD
Mary Stone, MD	Maria Widmann, MD

2022 – 2023 Fellows

Karen Allen, MD
Kathryn Connor, MD
Monica Hoff, MD
Ashleigh Slemmer, DO

Highlights From the Past Year

The Section of Hospital Pediatrics and Adult Hospital Medicine provides inpatient care across the continuum to patients and families at Nationwide Children’s. Newborn hospitalists manage full-term and late preterm newborns and the associated common conditions, including hyperbilirubinemia, feeding and nutrition, infections, neonatal abstinence syndrome, and newborn screening and anticipatory guidance. Pediatric hospitalists provide inpatient care for common pediatric illnesses such as bronchiolitis, asthma and failure to thrive, as well as undifferentiated and/or multisystem diseases, coordinating and facilitating care, and ensuring a safe transition back to primary care providers. In addition, in conjunction with the Section of Child Psychiatry, hospitalists work collaboratively in the Big Lots Behavioral Health Pavilion to provide holistic medical care for children and adolescents facing acute mental health crises. Internal medicine trained adult hospitalists serve as consultants for adult patients with congenital and childhood-onset chronic illnesses admitted to Nationwide Children’s.

Hospital Pediatrics continued to grow in 2022 as we expanded the scope of our inpatient responsibilities to include patients with neurologic and rheumatologic conditions as well as expanded coverage of complex care and infectious disease patients. This resulted in record number of hospitalized patient days and discharges for our team. We continued our presence at The Ohio State University (OSU) Wexner Medical Center Newborn Nursery as well as the Behavioral Health Pavilion. Our team has continued to show incredible teamwork, flexibility and resilience as we ensure safe and consistent staffing across our multiple service lines. We are already planning for the future facility expansions at both OSU Nursery and Nationwide Children’s inpatient unit. In addition, our team has continued to thrive in our educational, safety, quality improvement (QI) and research programs. Our Pediatric Hospital Medicine Fellowship Program successfully expanded to two fellows per year and we have been successful in retaining our graduating fellows as we continue to grow our faculty. Our important QI and research work continued to expand including multiple multi-institutional grant funded research projects. Publications and national presentations again increased compared to the prior year.

The section is involved in a multitude of educational, patient safety, quality improvement and research initiatives with demonstrated outcomes that include:

- Multi-institutional educational study aimed to increase resident autonomy on inpatient family-centered rounds and teaching.
- Patient Centered Outcomes Research Institute (PCORI)-funded grant investigating the safety and efficiency of hospital direct admissions versus emergency department admissions.
- Diversity, equity and inclusion-focused projects including contraceptive counseling and intervention to at-risk hospitalized adolescents and ensuring hospital orientation in a family’s primary language.
- Clinical pathway development and implementation using evidence-based practice leading to standardized care and improved patient outcomes.
- Enhanced patient safety, including 24/7 in-house attending coverage and the innovative Safety Officer and Watchstander Program, which has led to a significant decrease in unrecognized clinical deterioration on the floor, ICU transfers and patient mortality.

We are dedicated and committed to the education of future pediatricians with an emphasis on excellence in clinical teaching for both medical students and family practice and pediatric residents. Faculty serve as important mentors for these learners in their educational, clinical, research and professional development. Our faculty continue to be recognized on an annual basis with prestigious teaching awards, and we are consistently evaluated and ranked as one of the top inpatient rotations by the pediatric residents.

Selected Publications

Allen K, Najjar M, Ostermeier A, Washington N, Genies MC, Hazle M, Hardy C, Lewis K, McDaniel L, McFarlane DJ, Macias C, Molloy MJ, Perry MF, Piper L, Sevov C, Titus L, Toth H, Unaka NI, Weisgerber MC, Kasick R. The autonomy toolbox: a multicenter collaborative to promote resident autonomy. *Hosp Pediatr*. 2023 May 8:e2022006827.

Kuehn S, Melvin J, Creech, P, Fitch J, Nortiz G, Perry M, Stewart C, Bode R. Reduction of very rapid emergency transfers to the pediatric intensive care unit. *Pediatric Quality and Safety*. 2023 May;8(3), e645.

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Tyler A, Dempsey A, Spencer S, Freeman J, McGwire G, Marsh R, Morris MA. Do the guidelines apply? A multisite, combined stakeholder qualitative case study to understand care decisions in bronchiolitis. *Acad Pediatr*. 2022 Jul;22(5):806-817.

Fast Facts: July 2022 – June 2023

Inpatient Discharges: 5,300

Observation Discharges: 2,465

Total Discharges: 7,765

Average Length of Stay*: 2.8

Average Daily Census*: 40.7

Patient Days*: 14,848

Complex Health Care Clinic Visits: 4,244

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



“We felt it was important to set up a program to offer outpatient treatment for children who had the highest risk of developing severe disease.”
– Joshua R. Watson, MD

Infectious Diseases

Implementation of a COVID-19 Monoclonal Antibody Program

Researchers provide guidance on risk stratification and offer subspecialists and community practitioners a streamlined approach to treating patients at greater risk for severe COVID-19.

In late 2020, monoclonal antibody therapies were among the first COVID-19 therapeutics to receive emergency use authorization from the U.S. Food and Drug Administration. In January 2021, a panel of pediatric experts released a consensus statement recommending against routine use of COVID-19 monoclonal antibody therapies in children and adolescents due to limited efficacy or safety data.

“When the first monoclonal antibody treatment was developed, it was not clear how this new therapy, which was still considered investigational, would impact pediatric patients with COVID-19. So, we felt it was important to set up a program to offer outpatient treatment for children who had the highest risk of developing severe disease,” says **Joshua R. Watson, MD**, pediatric Infectious Disease specialist at Nationwide Children’s.



Jill Blind,
PharmD, CCRP

“Procurement of the drug was difficult, and we were often told how many doses the hospital would receive only a week in advance. This required us to be very nimble,” adds **Jill Blind, PharmD, CCRP**, pharmacy manager of Investigational Drug Service and Controlled Substances at Nationwide Children’s.

Drs. Watson and Blind worked closely with a multidisciplinary team to establish a COVID-19 monoclonal antibody referral process that worked fluidly as doses became available and new therapies were developed.

Between November 27, 2020, and January 26, 2022, 182 patients received a COVID-19 monoclonal antibody infusion at Nationwide Children’s. The patients were between 10 months and 21 years of age. Overall, seven patients (4%) experienced suspected adverse reactions during the infusion, and 15 (8%) patients required a COVID-19 related visit (primary care provider, emergency department, or hospitalization) within 30 days of the monoclonal antibody infusion.

“Although the current SARS-CoV-2 variants are showing resistance to the available monoclonal antibodies, other outpatient therapies have been developed for COVID-19. Thus, this program continues to provide a valuable framework within our hospital and for other hospitals that may want to establish such a program,” says Dr. Watson.

REFERENCE:

Blind JE, Sapko M, Killough A, Thornton H, Watson JR. Implementation and patient outcomes of a pediatric COVID-19 monoclonal antibody program. *J Pediatric Infect Dis Soc.* 2022 Dec 28;11(12):565-574.

Department of Pediatrics

INFECTIOUS DISEASES

The specialists in the Division of Infectious Diseases (ID) at Nationwide Children’s Hospital provide expertise in the diagnosis and management of immune-competent and immune-compromised children with all types of acute and chronic infections. Our physicians provide direct care for patients admitted to the Nationwide Children’s Infectious Diseases Unit and clinical consultation for patients with complicated infectious diseases throughout the hospital, in close partnership with their primary care teams and other subspecialists. We have developed close clinical and research collaborations with physicians in Hematology, Oncology & Blood and Bone Marrow Transplant, Cardiology, Lung, Heart and Liver Transplantation, Pediatric Critical Care, Neonatology, Nephrology, and the hospital’s other medical and surgical departments with the goal of optimizing the infectious diseases-related care of patients. Patients are also evaluated in the ambulatory setting following referral to the Infectious Diseases, Tuberculosis, Neonatal Infectious Diseases, Host Defense, Travel Medicine, Hepatitis C, Family AIDS Clinic Education Services (FACES) and Kawasaki Disease clinics located on the Nationwide Children’s main campus. Additionally, our division offers consultation to both external and internal providers through the Nationwide Children’s Physician Consult and Transfer Center. Bench, translational and clinical research is conducted by members of the ID Division and in collaboration with our colleagues from the Clinical Microbiology Laboratory, the Center for Microbial Pathogenesis, the Center for Vaccines and Immunity and other centers in the Abigail Wexner Research Institute at Nationwide Children’s, as well as national and international collaborators.

Faculty



William J. Barson, MD, MS
Section Chief and Interim Division Chief



Masako Shimamura, MD
Associate Division Chief for Research

Monica Ardura, DO, MSCS
Jeffrey Auletta, MD
Megan Brundrett, MD
Kevin Cassady, MD
Juan Chaparro, MD
Guliz Erdem, MD
Charitha Gowda, MD, MPH
Katia Halabi, MD
Jonathan R. Honegger, MD
Rachel Martin-Blais, MD, DTM&H

Christopher Ouellette, MD
Pablo J. Sánchez, MD
Eunkyung Song, MD
Jeanette Taveras, DO
Sanya Thomas, MD
Cristina Tomatis, MD
Rebecca Wallihan, MD
Matthew Washam, MD, MPH
Joshua Watson, MD

Clinical Microbiology

Amy Leber, PhD
Director

Sophonie Jean, PhD
Assistant Director

Huanyu Wang, PhD
Assistant Director

2022 – 2023 ID Fellows

Kali Broussard, MD
Diego Cruz, MD
Raquel Giacomelli Cao, MD, PhD
Alex Medoro, MD, MS, FAAP
Ana Quintero, MD
Randal Desouza, MD
Guillermo Yepes, MD

2022 – 2023 ID Host Defense Fellow

Valentina Gutierrez, MD

Highlights From the Past Year

Nationwide Children’s population of immunocompromised children continues to grow, both in number and complexity. To optimize the care of these children, we divided and expanded our consult services into two different inpatient teams: General ID Consult Service and ID Host Defense Service. The ID Host Defense consultative services are provided by clinicians who have interest and expertise in this area, including Drs. Monica Ardura, Eunkyung Song, Sanya Thomas, Christopher Ouellette, Jeff Auletta, and nurse practitioners Jessica Copacia, CPNP-AC, and Paula Sanborn, FNP. The Host Defense Program has also developed an outpatient Vaccine Clinic for all immunocompromised children to ensure that these most vulnerable patients are optimally protected against vaccine-preventable infections.

We successfully recruited Rachel Martin-Blais, MD, DTM&H, who has expertise in global health. She serves as the division’s director of Travel and Tropical Medicine and director of the Travel and TB clinics. The Travel Medicine Clinic serves to prepare children and their families for safe international travel as well as evaluation and treatment of travel acquired infections. Dr. Martin-Blais is working closely with her colleagues at Children’s Hospital of Philadelphia to develop an infectious diseases fellowship at the University of Botswana where she attends two months of the year.

Members of the division have worked closely with other subspecialty colleagues in developing clinical pathways including these recently published ones — febrile infant, osteomyelitis, and community acquired pneumonia.

We continue to maintain our strong research collaborations with colleagues in the Center for Microbial Pathogenesis and the Center for Vaccines and Immunity in the Abigail Wexner Research Institute at Nationwide Children’s, as well as the Clinical Microbiology Laboratory. Various clinical translational research programs are ongoing related to the following topics: hepatitis (Jonathan Honegger, MD; Chris Walker, PhD), adenovirus (Amy Leber, PhD; Eunkyung Song, MD), cytomegalovirus (Pablo Sánchez, MD; Masako Shimamura, MD), pneumococcus (William Barson, MD; Guliz Erdem, MD), tuberculosis and global health (Rachel Martin-Blais, MD), respiratory syncytial virus (RSV) vaccine development and SARS CoV-2 infection (Cristina Tomatis, MD; Mark Peeples, PhD), influenza virus response in patients with inflammatory bowel disease (Cristina Tomatis, MD), HHV-6 chromosomal integration (Cristina Tomatis, MD; Amy Leber, PhD), assessment of latent TB infection in immunocompromised children (Christopher Ouellette, MD; Randal Desouza, MD), and translational and diagnostic/ therapeutic clinical trials aimed to optimize clinical outcomes in immunocompromised hosts (Monica Ardura, DO; Jeffrey Auletta, MD; Christopher Ouellette, MD; Masako Shimamura, MD; Eunkyung Song, MD; and Sanya Thomas, MD).

Research: See page 203 for information about the Center for Microbial Pathogenesis and page 211 for the Center for Vaccines and Immunity in the Abigail Wexner Research Institute at Nationwide Children’s Hospital.

Selected Publications

Aggarwal P, Luo W, Pehlivan KC, Hoang H, Rajappa P, Cripe TP, **Cassady KA**, Lee DA, Cairo MS. Pehlivan K, Rajappa P. Pediatric versus adult high grade glioma: Immunotherapeutic and genomic considerations. *Front Immunol.* 2022 Nov 22;13:1038096.

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Schuster J, Ardura M, Batarseh E, Bocchini C, Carpenter P, Coffin S, Danziger-Isakov L, Dulek D, Englund J, Freedman J, Grimley M, Haddadin Z, Halasa N, Hamdan L, Harrison C, Kalams S, Kitko C, Maron G, Moulton E, Munoz F, Paulsen G, Potter M, Rahman H, Spieker A, Stahl A, Stewart L, Wattier R; Pediatric HCT Flu Study Group. Influenza vaccine in pediatric recipients of hematopoietic-cell transplants. *N Engl J Med.* 2023 Jan 26;388(4):374-376.

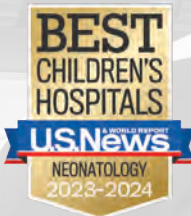
Tomatis C, Erdem G, Sánchez P. Update on nonpolio enterovirus and parechovirus infections in neonates and young infants. *Curr Opin Pediatr.* 2023 Jun 1;35(3):380-389.

Fast Facts: July 2022 – June 2023

Inpatient Discharges: 2,265
Observation and Outpatient-in-a-Bed Discharges: 692
Total Discharges: 2,957
Average Length of Stay*: 2.8
Average Daily Census*: 18
Patient Days*: 6,406
Inpatient Consults: 1,035
FACES Clinic Visits: 1,916
Infectious Disease Clinic Visits: 1,743
Tuberculosis Clinic Visits: 470
Total Clinic Visits: 4,129

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





“We’ve gotten to a point where we can do the testing and analysis in 36 hours, but we have identified other challenges.”

– Bimal P. Chaudhari, MD, MPH

Neonatology

Advancing Genomics-Driven Decision Medicine in the NICU

New testing and clinical trials in gene sequencing allow genomic medicine to integrate with pediatric research and clinical care.

According to the Children’s Hospital’s Neonatal Consortium, as many as half of newborns hospitalized in level IV neonatal intensive care units (NICUs) due to critical illness have an underlying genetic condition. Most don’t get their diagnosis for months or even years. However, clinical assays, new testing modalities and clinical trials are improving their care.

Advanced Technology Speeds Diagnosis

Bimal P. Chaudhari, MD, MPH, a neonatologist and medical geneticist, was recruited to Nationwide Children’s to collaborate with other investigators to develop a clinical assay for in-house, rapid-turnaround genome sequencing (rGS) without relying on shipping samples to a commercial lab.

After spending two years developing the rGS test, according to Dr. Chaudhari, feasibility studies showed the in-house assay provided diagnostic performance indistinguishable from commercial labs while returning results to clinicians sooner.

The clinical laboratory at the Steve and Cindy Rasmussen Institute for Genomic Medicine at Nationwide Children’s is validating this assay while Dr. Chaudhari, who is also a principal investigator in the Institute, works with partners across the hospital to accelerate the use of rGS for all patients.

Shifting Paradigms Takes Time

“We’ve gotten to a point where we can do the testing and analysis in 36 hours, but we have identified other challenges,” says Dr. Chaudhari. “In medicine, it’s not always, ‘If you build it, they will come.’ We like to think that if you design this shiny new technology and drug, all the right people will realize how great it is and use it, but that’s not necessarily the case. It can take years for there to be broad adoption and use of a new tool and a change in care.”

Nationwide Children’s has made this paradigm shift — integrating genomic medicine into multiple domains of pediatric research and clinical care — a key strategic goal. To that end, Dr. Chaudhari and his team continue working to improve genomic testing, they also aim to document benefits to make genomics salient to non-geneticist health care providers.

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Department of Pediatrics

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 Abigail Wexner Research Institute at Nationwide Children’s.

Faculty



Leif D. Nelin, MD
Division Chief



Edward G. Shepherd, MD
Section Chief



Amy Schlegel, MD
Associate Division Chief



Sudarshan Jadcherla, MD
Associate Division Chief
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Elizabeth Bonachea, MD
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Carl H. Backes, MD
Associate Division Chief
for Clinical Research

Full-Time Nationwide
Children's Faculty

Molly K. Ball, MD
Roopali V. Bapat, MD
Thomas Bartman, MD, PhD
Kristen L. Benninger, MD
Bimal Chaudhari, MD
Bernadette Chen, MD
George El-Ferzli, MD
Jana Erner, MD
Zachary Farmer, MD

Omid Fathi, MD
Patrick Gallagher, MD
Jennifer Haase, MD
Cecilie Halling, MD
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Stephanie Napolitano, MD
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Community-Based Faculty

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Wendy A. Luce, MD
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Gary E. Snyder, MD
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Heather Weydig, MD
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William Zaia, MD

Neonatology Administration

Marissa E. Larouere, MBA, BSN, RN
Vice President Neonatal Services
Lawrence Baylis, MHA
Administrative Director
Courtney Rowe, DNP, APRN,
CPNP-AC
Service Line Administrator

Neonatal Network Directors

Melissa Hamms, MBA, BSN, RN
Jennifer Thompson, MBA, BSN, RN
Jodi Smathers, RN, MSN

Director of Neonatal
Advanced Practitioners

Erin Keels, DNP, APRN, NNP-BC

2022 – 2023 Fellows

Nicole Asdell, MD
Meg Barcroft, MD
Yvette Chop, MD
Mary Crume, MD
Paulina Krause, MD
Kala Levine, MD
Allison Lure, MD

Abby Melemed, MD
Michael Ratti, MD
Timothy Rogers, MD
Olivia Ruth, MD
Ashley Wethall, MD

Highlights From the Past Year

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 Level III and IV neonatal care, but has also implemented 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.

- Comprehensive Center for Bronchopulmonary Dysplasia
 - The only dedicated inpatient unit for the care of infants with bronchopulmonary dysplasia (BPD).
 - Demonstrated that there are pulmonary function test parameters that identify patients with severe BPD that are like to respond to bronchodilators, and that responders had evidence of dysnaptic lung growth.
 - Found that in a multi-center cohort of patients with severe BPD that there were racial disparities in important outcomes that were not dependent on differences in disease severity, highlighting the need for further research into the cause of these disparities in outcomes so that these disparities can be addressed.
- Small Baby Program
 - Dedicated unit for the care of infants born at <27 weeks gestation.
 - Disseminated our approach to the small baby, including a publication on implementing a QI initiative to minimize cuff blood pressure measurements as a way of minimizing noxious stimuli to these highly vulnerable patients.
- Infant Feeding Disorders Program
 - Unique program providing physiology-based advanced care and treatment to optimize outcomes for infants with feeding disorders.
 - Published findings demonstrating that a comprehensive evaluation and individualized management strategy minimized variability and promoted acquisition of feeding milestones consistently over a 10-year period.

- Congenital Infections Program
 - Unique multidisciplinary inpatient/outpatient program to identify, treat and follow infants born with congenital infections.
 - Published data that antibiotic therapy for suspected early onset bacterial infection can be discontinued safely after 24 hours if cultures are negative, important findings for antibiotic stewardship in this high-risk population.
- Fetal Center
 - Neonatologists with expertise in fetal medicine and complex neonatal care provide counseling to families facing a spectrum of fetal diagnoses and collaborate with maternal fetal medicine and pediatric specialists to ensure best outcomes.
 - Establishment of the Nationwide Children’s Fetal Center has allowed for the delivery of services including prenatal consultation, advanced diagnostics, innovative fetal therapy, research, and special delivery services.
- Innovative Advanced Fellowships
 - The two advanced fellowships in infant feeding disorders and in BPD medicine are currently the only advanced fellowships of their kind.
 - The novel curriculum includes advanced diagnostics and management of focused problems related to infant feeding disorders or BPD.
- Diversity, Equity and Inclusion
 - Procuring and analyzing baseline racial/ethnic disparity data trends for staff and patients, and implementing dashboards so that this data will be readily available.
 - Launching clinical initiatives including tobacco exposure mitigation, improving breastfeeding/human milk feeding and increasing family engagement.
 - Developing programs to improve effectiveness in recruiting and retaining a diverse and inclusive cadre of trainees, staff, and faculty. Including working with other centers to develop national recommendations for recruitment and retention of underrepresented in medicine trainees in neonatal-perinatal medicine.

Selected Publications

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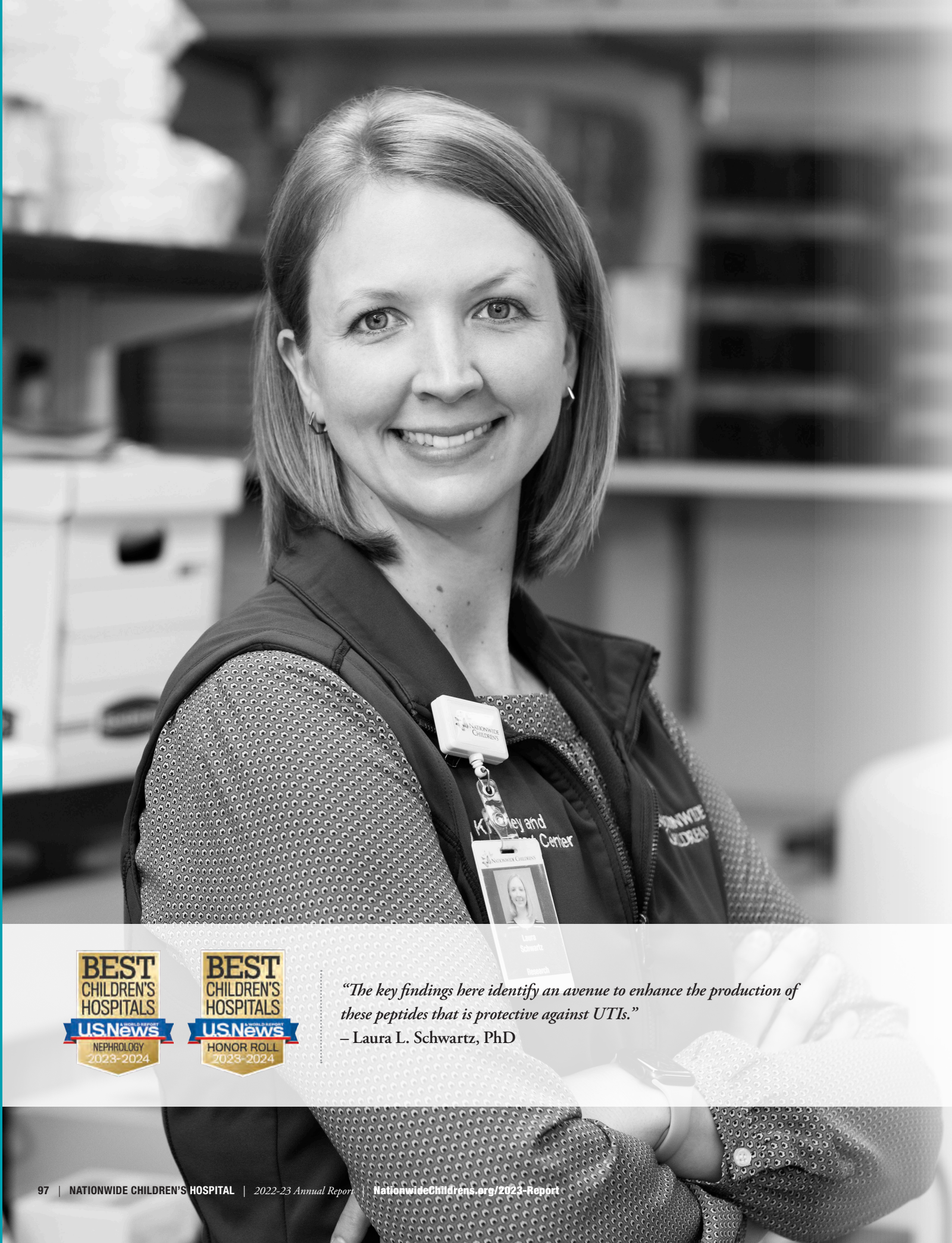
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Fast Facts: July 2022 – June 2023

Main Campus
Inpatient Discharges: 1,003
Observation and Outpatient-in-a-Bed Discharges: 3
Total Discharges: 1,006
Average Length of Stay*: 38.1
Average Daily Census*: 104.8
Patient Days*: 38,256
Fetal Medicine Collaborative Clinic Visits: 1,671
Neonatology Clinic Visits: 3,067
Neonatology BPD Clinic Visits: 909
Newborn Intensive Care Unit at Riverside Methodist Hospital
Inpatient Discharges: 610
Observation and Outpatient-in-a-Bed Discharges: 8
Total Discharges: 618
Average Length of Stay*: 21.2
Average Daily Census*: 35.4
Patient Days*: 12,930
Newborn Intensive Care Unit at Grant Medical Center
Inpatient Discharges: 256
Observation and Outpatient-in-a-Bed Discharges: 0
Total Discharges: 256
Average Length of Stay*: 18.7
Average Daily Census*: 13.1
Patient Days*: 4,791

Newborn Intensive Care Unit at Doctor's Hospital West
Inpatient Discharges: 114
Observation and Outpatient-in-a-Bed Discharges: 2
Total Discharges: 116
Average Length of Stay*: 15.0
Average Daily Census*: 4.7
Patient Days*: 1,715
Newborn Special Care Nursery at Dublin Methodist Hospital
Inpatient Discharges: 153
Observation and Outpatient-in-a-Bed Discharges: 2
Total Discharges: 155
Average Length of Stay*: 9.5
Average Daily Census*: 4.0
Patient Days*: 1,452
Newborn Intensive Care Unit at St. Ann’s Hospital
Inpatient Discharges: 266
Observation and Outpatient-in-a-Bed Discharges: 0
Total Discharges: 266
Average Length of Stay*: 17.7
Average Daily Census*: 12.9
Patient Days*: 4,700
Newborn Intensive Care Unit at The Ohio State University Wexner Medical Center
Inpatient Discharges: 665
Observation and Outpatient-in-a-Bed Discharges: 67
Total Discharges: 732
Average Length of Stay*: 17.0
Average Daily Census*: 30.9
Patient Days*: 11,283



Nephrology and Hypertension

Proteins as Antibiotic Alternatives or Urinary Tract Infections

Researchers are finding ways to repurpose FDA-approved medication that is already on the market to defend the body against UTIs.

In a new study from Nationwide Children’s Hospital, published in the *Proceedings of the National Academy of Science (PNAS)*, researchers demonstrate a way to boost the body’s production of antimicrobial peptides, which may provide an alternative to antibiotic use.

With the rise of antibiotic resistant infections, finding treatment alternatives is more important than ever – especially for the kind of bacteria that cause urinary tract infections (UTIs), called uropathogenic *E. coli*.

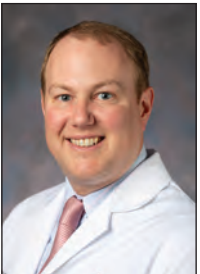
“Bacteria are acquiring resistance to the kinds of antibiotics that are typically used to treat UTIs at a high rate and there are currently no new antibiotics in development that address this issue, so it’s incredibly important to find other treatment options from a public health perspective,” **Laura L. Schwartz, PhD**, principal investigator in the Kidney and Urinary Tract Center at Nationwide Children’s and a lead author of the study.

To identify therapeutics that increased antimicrobial peptide production, researchers used reporter cells that emitted light if a drug was able to induce expression of two specific antimicrobial peptides, RNase 4 or RNase 7. These antimicrobial peptides, or AMPs, are expressed by the urinary tract and have been shown to be protective against UTI.

The study, published in PNAS, found that histone deacetylase (HDAC) inhibitors had a positive effect on increasing antimicrobial peptide production and preventing UTIs.

“Currently, HDAC inhibitors are used to treat cancer,” explains Dr. Schwartz, who is Research Assistant Professor of Pediatrics at The Ohio State University College of Medicine. “Obviously, we are a long way from recommending chemotherapy drugs for UTIs, but the key findings here identify an avenue to enhance the production of these peptides that is protective against UTIs.

“The basic science of developing this novel pathway is the foundation of a larger solution to fighting antibiotic resistant infections,” says **John David Spencer, MD**, chief of the Division of Nephrology and Hypertension and one of the authors of the study. “It’s exciting to identify a new way to boost the body’s natural immune response.”



*John David Spencer,
MD*

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Schwartz L, Bochter MS, Simoni A, Bender K, de Dios Ruiz Rosado J, Cotzomi-Ortega I, Sanchez-Zamora YI, Becknell B, Linn S, Li B, Santoro N, Eichler T, Spencer JD. Repurposing HDAC inhibitors to enhance ribonuclease 4 and 7 expression and reduce urinary tract infection. *Proc Natl Acad Sci USA*. 2023 Jan 24;120(4):e2213363120.



“The key findings here identify an avenue to enhance the production of these peptides that is protective against UTIs.”

– Laura L. Schwartz, PhD

Department of Pediatrics

NEPHROLOGY AND HYPERTENSION

The Division of Nephrology and Hypertension 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, 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, aquapheresis and kidney transplantation.

Faculty



John David Spencer, MD
Division Chief



Hiren P. Patel, MD
Section Chief



Diana Zepeda-Orozco, MD
Associate Division Chief for Research

Brian Becknell, MD, PhD
Ray Bignall II, MD
Mahmoud Kallash, MD
John D. Mahan, MD
Tahagod Mohamed, MD
Stephanie Peters, APN
William E. Smoyer, MD
Emily Stonebrook, MD
Beth A. Vogt, MD
Amy Wright, APN

Research Faculty

Ashley Jackson, PhD
Juan de dios Ruiz Rosado, PhD
Laura Schwartz, PhD

2022 – 2023 Fellows

Mayra Alejandra Oseguera, MD
(Medicine/Pediatrics)
Jessamyn Carter
(Medicine/Pediatrics)
Claudia Mosquera-Vasquez
(Pediatrics)

Laura Walawender, MD
(Pediatrics)
Ahmed Zeid
(Pediatrics)

Highlights From the Past Year

In January 2022, the Kidney and Urinary Tract Center opened at Nationwide Children’s. This center, created in collaboration with the Department of Urology, offers patients access to expert surgical and medical treatment of urologic, genital, and kidney issues. The center is a collaborative, integrated process designed to combine patient care, advocacy, research and training to develop the next generation of nephrology and urology treatment for children. Expanded or new programs in the Kidney and Urinary Tract Center include:

- Expansion of an aquapheresis program to dialyze small infants
- Establishment of an acute kidney injury program that is supported by research efforts and quality improvement projects that aim to minimize kidney damage
- Expanded services including Neonatal Nephrology, Glomerular Disease, and a pediatric Hypertension clinic
- Expanded pediatric transplant team including two pediatric kidney transplant surgeons

- Patient advocacy and community engagement through the Kidney Health Advocacy and Community Engagement Program (KHACE)
- Summer training programs for medical students and undergraduates supported by the National Institutes of Health

In addition to patient care, The Division of Nephrology and Hypertension maintains an active and highly funded research program in the Abigail Wexner Research Institute at Nationwide Children’s Hospital. Five of our physician-scientists maintain actively funded National Institutes of Health (NIH) research programs, including Brian Becknell, MD, PhD; William E. Smoyer, MD; and John David Spencer, MD; Emily Stonebrook, MD; and Diana Zepeda-Orozco, MD. In addition to these physician-scientists, Ashley Jackson, PhD, Juan de Dios Ruiz Rosado, PhD, and Laura Schwartz, PhD, are basic scientists who are supported by the NIH and investigating mechanisms of kidney disease. Together, our team investigates mechanisms and outcomes of urinary tract infection, obstructive uropathy, chronic kidney disease, bacterial peritonitis, renal transplantation, glomerular diseases, metabolic bone disorders and medical education.

Nephrology faculty had over 50 unique, peer-reviewed publications, some of which are highlighted here.

Research: See page 197 for information about the Center for Clinical and Translational Research and page 213 for information about the Kidney and Urinary Tract Center in the Abigail Wexner Research Institute.

Selected Publications

Dawson A, LaMotte J, Bignall R 2nd. Acknowledging socioecological systems to address the systemic racial disparities in children with kidney disease. *J Am Soc Nephrol.* 2022 Oct;33(10):1820-1822.

Han R, Bonachea E, Jackson K, Conroy S, Slaughter J, Mahan J, Mohamed T. Describing patterns in serum creatinine in infants with and without necrotizing enterocolitis. *J Perinatol.* 2023 Jan;43(1):86-90.

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Schwartz L, Bochter M, Simoni A, Bender K, de Dios Ruiz Rosado J, Cotzomi-Ortega I, Sanchez-Zamora Y, Becknell B, Linn S, Li B, Santoro N, Eichler T, Spencer JD. Repurposing HDAC inhibitors to enhance ribonuclease 4 and 7 expression and reduce urinary tract infection. *Proc Natl Acad Sci USA.* 2023 Jan 24;120(4):e2213363120.

Fast Facts: July 2022 – June 2023

Inpatient Discharges: 221

Observation and Outpatient-in-a-Bed Discharges: 142

Total Discharges: 363

Average Length of Stay*: 5.4

Average Daily Census*: 3.3

Patient Days*: 1,188

Nephrology Clinic Visits: 5,025

Dublin Nephrology Clinic Visits: 233

Kidney Transplants: 9

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



“Delaying successful treatment may worsen developmental outcomes...”
– John R. Mytinger, MD

Neurology

Using Hormone Therapy First Drives Earlier Remission from Infantile Epileptic Spasms Syndrome

Recent research conducted at Nationwide Children's Hospital demonstrated standardizing hormone therapy as the first treatment for infantile spasms improved rates of early remission.

Early and effective treatment for children with infantile epileptic spasms syndrome (IESS) can improve outcomes for many children. The best outcomes are possible when that treatment enables complete remission from infantile spasms and resolution of the epileptic encephalopathy on EEG.

The American Academy of Neurology and Child Neurology Society have strongly recommended that one of three standard medications be used as the first treatment for IESS: adrenocorticotrophic hormone (ACTH), vigabatrin or high-dose oral prednisolone. Because there is no recommendation that one of the medications be selected over the others, there is significant variability in clinical practice around the world.

Using quality improvement (QI) methodology that standardized hormone therapy as the first treatment, researchers at Nationwide Children's Hospital increased the rate of 3-month remission of children with IESS from about 54% to nearly 76%.

The QI project, published in *Neurology* in 2022, included several interventions to improve clinical practice, but **John R. Mytinger, MD**, director of the Infantile Spasms Program at Nationwide Children's Hospital and lead author of the study, identified this treatment prioritization as the major driver of improvement.

As part of this QI project, Dr. Mytinger and his team also standardized earlier follow-up after initiating treatment to facilitate the initiation of a second treatment when necessary.

“We know we need to see these children soon after treatment initiation, ideally within that second week, to balance giving the first medication time to work with quickly enabling the initiation of a second treatment if needed,” says Dr. Mytinger. “For children with IESS, delaying successful treatment may worsen developmental outcomes. Both starting with the right treatment and facilitating early sequential treatment may improve outcomes.”

Dr. Mytinger, an associate professor of Pediatrics at The Ohio State University College of Medicine, says he and his team plan to further examine the early initiation of a second treatment for non-responders and hope to conduct a study that evaluates outcomes, such as the rate of uncontrolled epilepsy, at two years of age.

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Mytinger JR, Parker W, Rust SW, Ahrens SM, Albert DV, Beatty CW, Chrisman J, Clark DJ, Debs A, Denney D, Karn M, Herbst J, Ostendorf AP, Taylor MC, Twanow J, Vidaurre J, Patel AD. Prioritizing hormone therapy over vigabatrin as the first treatment for infantile spasms: A quality improvement initiative. *Neurology*. 2022 Nov 8;99(19):e2171-e2180.

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Department of Pediatrics

NEUROLOGY

Providers in the Division of Neurology at Nationwide Children’s Hospital deliver comprehensive care for children with a wide variety of disorders. These children include those with simple and complex epilepsy, primary and secondary headache and migraine, tics and movement disorders, neuroinflammatory conditions, muscular dystrophy, spinal muscular atrophy and neuropathy (acquired and genetic). To correctly identify and safely treat these children, state-of-the-art neurophysiological diagnostic testing and intraoperative monitoring is used. Our mission is to achieve the best outcomes for all children and adolescents with neurological illness.

Faculty



Anne M. Connolly, MD
Division Chief



Jaime-Dawn Twanow, MD
Section Chief



Adam P. Ostendorf, MD
Associate Division Chief for Research

Stephanie Ahrens, MD
Dara Albert, DO
William D. Arnold, MD
Kristen Arredondo, MD
Sylvia Awadalla, MD
Shawn Aylward, MD
Christopher Beatty, MD
Melissa Chung, MD
Emily De Los Reyes, MD

John L. Eickholt III, MD
Kevin Flanigan, MD
Mariam L. Freimer, MD
Darrah Haffner, MD
Melissa Hutchinson, MD
Monica P. Islam, MD
Latif Khuhro, MD
Neil Kulkarni, MD

Warren D. Lo, MD
Setty Magaña, MD, PhD
Jennifer McKinney, MD
Jerry Mendell, MD
John Mytinger, MD
Ann Pakalnis, MD
Anup Patel, MD
Toni S. Pearson, MD

Margie Ream, MD, PhD
Sean Rose, MD
Zarife Sahenk, MD, PhD
Laurel Slaughter, MD
Chang-Yong Tsao, MD
Jorge Vidaurre, MD
Megan Waldrop, MD
Pedro Weisleder, MD, PhD

2022 – 2023 Residency and Fellowship Programs
Child Neurology Residents
Ahmed Awad, MD
Brianna Brun, MD
April Consevage, MD
Sean DeBoyace, MD
Megan Fredwall, MD

Rae Gumayan, MD
Muhammed Talha Gunduz, MD
Laura (Kate) Lamberta, DO
Quinton Mandle, MD
Corinne McCabe, MD
Alyssa-Claire Mendoza, MD

Stephanie Rinne, DO
Alexandra Sankovic, MD
Ezgi Saylam, MD
Alex Sunshine, MD, PhD

Neurophysiology Fellows
Daniel Clark, MD, PhD
Thomas Murray, DO
Headache Fellows
Dharti Dua, MD
Mark Pierce, MD

Highlights From the Past Year

In the last year, we welcomed Toni Pearson, MBBS, who joined in September 2022. Dr. Pearson is originally from Australia, she earned an undergraduate degree in music and her medical degree from the University of Adelaide. She then completed her residency training in pediatrics at the Children’s Hospital of Westmead (University of Sydney) and Montreal Children’s Hospital (McGill University), before moving to New York to undertake child neurology residency and a movement disorders fellowship at Columbia University.

Dr. Pearson is a specialist in childhood movement disorders and evaluates patients with dystonia, chorea, parkinsonism, ataxia, myoclonus, tremor, tics and spasticity. She also works in collaboration with the Comprehensive Cerebral Palsy Program at Nationwide Children’s. Her clinical research interests focus on the characterization and treatment of rare neurogenetic conditions, including work on an NIH-funded clinical trial investigating gene therapy for the neurotransmitter disorder aromatic L-amino acid decarboxylase (AADC) deficiency.

The first gene therapy for the treatment of 4- and 5-year-olds with Duchenne muscular dystrophy was approved in June of 2022. Active gene transfer for children with spinal muscular atrophy (SMA) continues. Since the addition of newborn screening for SMA in Ohio, five children were successfully treated in 2022. Basic and translational research to develop gene therapy for children with Batten disease, limb girdle muscular dystrophy and Charcot-Marie-Tooth (CMT) continue. We continue to expand quality improvement initiatives, leading to improvement in care of infants and children with epilepsy, status epilepticus, complex epilepsy and neuromuscular disorders.

The division includes 31 physicians and 12 advanced health care providers who oversee comprehensive programs for children with epilepsy, headache, movement disorders, neurodegenerative disorders and neuromuscular diseases. Children with complex disorders benefit from our multidisciplinary clinical approach. Additional ongoing multidisciplinary programs include centers of clinical excellence for children with Batten disease, leukodystrophy, Rett syndrome, tic/Tourette and muscular dystrophy.

The division offers outstanding residency and fellowship programs. The Child Neurology Residency program (certified by Accreditation Council for Graduate Medical Education and ranked seventh in the country) includes five residents per year with options for clinical- or research-focused educational tracks. Neurology also offers pediatric fellowship training in clinical neurophysiology, epilepsy surgery, gene therapy, headache, neuromuscular disease, neuromuscular pathology and stroke. Faculty members conduct quality improvement, basic and clinical research and published numerous journal articles and book chapters in the past academic year, some of which are featured here.

Selected Publications

Mytinger J, Parker W, Rust S, Ahrens S, Albert D, Beatty C, Chrisman J, Clark D, Debs A, Denney D, Karn M, Herbst J, Ostendorf A, Taylor M, Twanow JD, Vidaurre J, Patel A. Prioritizing hormone therapy over vigabatrin as the first treatment for infantile spasms: a quality improvement initiative. *Neurology*. 2022 Nov 8;99(19):e2171-e2180.

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Ahrens S, Arredondo K, Bagic AI, Bai S, Chapman K, Ciliberto M, Clarke D, Eisner M, Fountain N, Gavvala J, Perry S, Rossi K, Wong-Kisiel L, Herman S, Ostendorf A. Epilepsy center characteristic and geographic region influence presurgical testing in the United States. *Epilepsia*. 2023 Jan;64(1):127-138.

Ostendorf A, Ahrens S, Lado F, Arnold S, Bai S, Bensalem Owen M, Chapman K, Clarke D, Eisner M, Fountain N, Gray J, Hopp J, Riker E, Schuele S, Small B, Herman S. United states epilepsy center characteristics: a data analysis from the national association of epilepsy centers. *Neurology*. 2022 Feb 1;98(5):e449-e458.

Fast Facts: July 2022 – June 2023

Neurology Inpatient

Total Epilepsy Monitoring Unit Discharges: 880
Average Length of Stay*: 1.5
Patient Days*: 1,397
Average Daily Census of 8 bed Epilepsy Monitoring Unit: 7.6
Inpatient Neurology Consults: 5,698
Epilepsy Presurgical Evaluations: 120

**Includes Inpatient, observation and outpatient-in-a-bed patients*

Neurology Outpatient

Main Campus Neurology Clinic Visits: 11,049
Dublin Neurology Clinic Visits: 3,787
East Broad Neurology Clinic Visits: 912
Findlay Neurology Clinic Visits: 49
Heinzerling Neurology Clinic Visits: 60
Mansfield Neurology Clinic Visits: 98
Westerville Neurology Clinic Visits: 1,922
Complex Concussion Clinic Visits: 479
Stroke Clinic Visits: 235
Total Neurology Clinic Visits: 18,591

Neuromuscular Disorders Outpatient

MDA Clinic Visits: 662
Neuromuscular Disorders Clinic Visits: 896
Spinal Muscular Atrophy Clinic Visits: 186
Total Neuromuscular Clinic Visits: 1,744



Department of Pediatrics

PEDIATRIC PSYCHOLOGY AND NEUROPSYCHOLOGY

The Section of Pediatric Psychology and Neuropsychology in the Department of Pediatrics at Nationwide Children’s Hospital concentrates clinical services in four 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 cooccurring 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). Pediatric Psychiatric Acute Care Psychology provides services to support the acute care continuum in the Big Lots Behavioral Health Pavilion. In addition, Intellectual and Developmental Disability/Autism Spectrum Disorder Psychology provides specialized assessment and intervention services for children and adolescents impacted by various genetic and neurodevelopmental disabilities, including autism spectrum disorders. See page 135 for details and for information about all Behavioral Health services.

Faculty



Eric M. Butter, PhD
Chief

Charles Albright, PhD
Jacqueline Aldrich, PhD
Hannah Barton, PhD
Amy E. Baughcum, PhD
Kari Benson, PhD
Doug Bodin, PhD
Shalonda Brooks, PhD

Catherine Butz, PhD
Senior Associate Division Chief,
Pediatric Psychology and
Clinical Programs
Abbey Caserta, PhD
Jennifer E. Cass, PhD
Associate Division Chief,
Neuropsychology and Quality
Danielle Chambers, PhD

Eileen Chaves, PhD
Sindhia Colburn, PhD
Andrea Coppens, PhD
Alison Hatley Cotter, PhD
Canice Crerand, PhD
Jennifer David, PhD
Anne Dawson, PhD
Ashley Debeljak, PhD

Nicole Dempster, PhD
Robert M. Dempster, PhD
Christine Eichelberger, PhD
Anya Froelich, PsyD
Lauren Garbacz, PhD
Molly Gardner, PhD

Frances Beth Garrity-Rokous,
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Ellen Geib, PsyD
Cynthia A. Gerhardt, PhD
Shannon Gillespie, PhD
Alana Goldstein-Leever, PhD
Dawn Greathouse, PhD

Amy Hahn, PhD
Jane Hamel-Lambert, PhD
Jennifer Hansen, PhD
Rebecca Hellenthal, PhD
Greta Hilbrands, PhD
Caroline Hodgson, PhD

Jessica Hoehn, PhD
Ariana Hoet, PhD
Kristen E. Hoskinson, PhD
Cody Hostutler, PhD
Jennifer Hughes, PhD
Cara Inglis, PsyD

Jamie Jackson, PhD
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Katie Johanning-Gray, PhD
Oula Khoury, PhD
Rebecca Kirchner, PhD
Chrissie Koterba, PhD
Ashley Kroon Van Diest, PhD

Elizabeth Kryszak, PhD
Kathleen L. Lemanek, PhD
Ann Levine, PhD
Della Lofin, PhD
Barbara Mackinaw-Koons, PhD
Laura M. Mackner, PhD
Marilee Martens, PhD

Babetta Mathai, PhD
Wayne Mason, PhD
Ian McKay, PhD
Hannah McKillop, PhD
Kelly McNally, PhD
Associate Division Chief for
Research

Erin McTiernan, PhD
Margaret Mehling, PhD
David Michalec, PhD
Kara Monnin, PhD
Elisabeth Moore, PhD
Katie Mosher, PhD
James A. Mulick, PhD

Caroline Murphy, PhD
Associate Division Chief,
Neurodevelopmental
Psychology and Clinical
Informatics
Megan Norris, PhD
Jessica Palilla, PhD

Ari Rabkin, PhD
Natalie Raff, PhD
Whitney Raglin-Bignall, PhD
Heather Richard, PsyD
Courtney Rice, PsyD
Emily Ronkin, PhD

Margaret Rosencrans, PhD
Nicholas Russell, PhD
Megan Schaefer, PhD
Jessica Scherr, PhD
Rose Schroedl, PhD
Kelsey Shively, PhD

Ashley Showalter, PhD
Adina Seidenfeld, PhD
Micheline Silva, PhD
Destiny Singleton, PhD
Tyanna Snider, PsyD
Janet Souder, PsyD

Kevin Stephenson, PhD
Jack H. Stevens, PhD
Ruhee Sutar, PhD
Moneika Sutton, PhD
Karen Tabern, PhD
H. Gerry Taylor, PhD
Leah Taylor, PhD

Sean Tams, PhD
Kristen Trott, PhD
Natalie Truba, PhD
Kathryn A. Vannatta, PhD
Lindsey Vater, PhD
Sarah N. VerLee, PhD
Bethany Walker, PhD

Jacqueline Warner, PhD
Jonathan Wilkins, PhD
Camille Wilson, PhD
Mary Wojnaroski, PhD
Andrea Wojtowicz, PhD
Noelle Wolf, PhD
Morgan Wright, PhD

Jacqueline Wynn, PhD
Heather L. Yardley, PhD
Tammi K. Young-Saleme, PhD

Selected Publications

Basile N, Brown Kirschman K, **Dempster N**. Psychosocial, neurodevelopmental, and transition of care practices provided to children with CHD across North American cardiac clinics. *Cardiol Young*. 2023 Feb;33(2):235-241.

Baughcum A, Clark O, Lassen S, Fortney C, Rausch J, Dunnells Z, Geller P, Olsavsky A, Patterson CA, **Gerhardt C**. Preliminary validation of the psychosocial assessment tool in the neonatal intensive care unit. *J Pediatr Psychol*. 2023 Jul 5;48(6):503-511.

David J, Michel H, Dotson J, Nwomeh B, Boyle B, Donegan A, Maltz R, **McKillop H**, **Mackner L**. Psychosocial considerations in ostomy surgery for pediatric IBD patients. *J Wound Ostomy Continence Nurs*. 2023 Mar-Apr 01;50(2):104-106.

Dawson A, **Wilson C**, Smoyer W, Pottanat N, Wilson A, Mahan J, LaMotte J. Psychosocial supports within pediatric nephrology practices: A pediatric nephrology research consortium survey. *PLoS One*. 2023 May 9;18(5):e0285126.

Lundine J, Koterba C, Shield C, Shi J, **Hoskinson K**. Predicting outcomes 2 months and 1 year after inpatient rehabilitation for youth with TBI using duration of impaired consciousness and serial cognitive assessment. *J Head Trauma Rehabil*. 2023 Mar-Apr 01;38(2):E99-E108.

Raglin Bignall W, Herbst R, McClure J, Pero M, Loren R, Burkhardt M. Adapting a preschool disruptive behavior group for the underserved in pediatric primary care practice. *Fam Syst Health*. 2023 Mar;41(1):101-111.

Sabella J, **Kroon Van Diest A**, Bali N, Vaz K, Yacob D, Di Lorenzo C, Lu P. Multidisciplinary tiered care is effective for children and adolescents with rumination syndrome. *J Pediatr Gastroenterol Nutr*. 2023 Mar 1;76(3):282-287.

Shahidullah J, **Hostutler C**, Coker T, Allmon Dixon A, Okoroji C, Mautone J. Child health equity and primary care. *Am Psychol*. 2023 Feb-Mar;78(2):93-106.

Stephenson K, Fenning R, Macklin E, Lu F, **Norris M**, Steinberg-Epstein R, **Butter E**. Child behavior problems and parenting stress in underserved families of children with ASD: Investigation of family resources and parenting self-efficacy. *J Autism Dev Disord*. 2022 Jul 25.

Fast Facts: July 2022 – June 2023

Inpatient Consultations: 5,737

Psychology Clinic Visits: 15,610

Psychology Medical Clinic Visits/Outpatient Consultation Visits: 23,556

Department of Pediatrics

PRIMARY CARE PEDIATRICS

Pediatricians in the Division of Primary Care Pediatrics at Nationwide Children’s Hospital staff the 14 Nationwide Children’s Primary Care Centers located throughout the Columbus area. A multidisciplinary staff provides comprehensive primary care services for a diverse and underserved population of patients.

Faculty



Alex R. Kemper, MD, MPH, MS
Division Chief
Associate Division Chief for Research



Dane A. Snyder, MD
Section Chief

Mary Ann Abrams, MD
Akua A. Amponsah, MD
Kristen Beck, MD
Stefanie R. Bester, MD
Stephanie Bland, MD
Sara Bode, MD
Courtney Brown, MD
Megan Brundrett, MD

Milagro P. Castaneda-Vidaurre, MD
Aarti Chandawarkar, MD
Linda E. Chun, MD
Katharine Coffman, MD
Duane R. Copenheaver, DO
Emily A. Decker, MD
Tanya Dedyo, MD

Sarah Denny, MD
Meghan Dishong, MD
Allyson Driggers Gallagher, MD
Maretta Fan, DO
Ashley Fernandes, MD
Jessica Gefvert, MD

Sean P. Gleeson, MD
Gabriella Gonzales, MD
Judith A. Groner, MD
Malika Haque, MD
Laura Hart, MD
Brandi Heinz, MD

Stephen J. Hersey, MD
Lisa Humphrey, MD
Evan Ingram, MD
Sinimol James, MD
Angela V. Jones, MD
Rajneesh Jain, MD

Shelby Jordan, MD
Ranee Jostpille, MD
Skyler Kalady, MD
Tatyana Karakay, MD
Amrik Singh Khalsa, MD
Megan King, MD

Lindsay Kneen, MD
Jack A. Kopechek, MD
Alicia Kuper, DO
Mary Kay Kuzma, MD
Lauren Lange Smith, MD
Benjamin Levinson, MD
Gilbert Liu, MD

Jonathan T. Lucas, MD
Shengyi Mao, MD
Laura Martin, MD
Rose Martoma, MD
Lucas McKnight, MD
Douglas J. McLaughlin, MD
Melissa A. Meyer, MD

Christopher Miller, MD
Belinda M. Mills, MD
Alana Milton, MD
Asma Mobin-Uddin, MD
Mary A. Nelin, MD
Barbara Oettgen, MD
Michele Oyortey, MD

Aubrey Pizza, MD
Stephanie Quach, MD
Alexander T. Rakowsky, MD
Jessica Retzke, MD
Jennifer Ricciardo, MD
Nathan Richards, MD
Richard E. Rodenberg Jr., MD

Allison Rossetti, MD
Andrea Sattler, MD
Sara Schroder, MD
Andrew Searcy, MD
Amina Smajlovic, MD
Brandi Spitler, DO

Kimberly Stettler, MD
Lisa Stone, DO
Angelica Storms, MD
Melissa Swanson, MD
Olivia W. Thomas, MD
Gina R. Thompson, DO

Jagadisharaje K. Urs, MD
Leah Utset, MD
Jose Vargas, MD
Suzanne Voorhees, MD
Shravani Vundavalli, MD
Caroline Weingart, MD

Mark Wells, MD
Aisha White, MD
Dominique Williams, MD
Mark Winerman, MD

Primary Care APRNs

Megan Baloy, MSN, CPNP
Sarah Balster, MSN, CPNP
Kelley Brown, MSN, CPNP
Krista Buckingham, MSN, CPNP
Amanda Croxton, MSN, CPNP

Abigail Datz, MSN, CPNP
Amy Dennis, MSN, CPNP
Lauren Gramlich, MSN, CPNP
Amanda Hadad, MSN, CPNP
Georgianna Hernandez, MSN, CPNP

Susan Hoskins, MSN, CPNP
Charlotte Knisely, MSN, FNP
Cheryl Kollman, MSN, FNP
Cathy Lang, CPNP
Sara Lord, MSN, FNP
Melissa Malin, MSN, CPNP

Alyssa McArdell, MSN, CPNP
Sheena Palmer, DNP, FNP
Allyson Woerndle, MSN, CPNP
Jenny Yeh, MSN, CPNP

Highlights From the Past Year

The Primary Care Centers provide comprehensive care primarily for children from birth to 21 years of age. Available services include preventive care, chronic disease management and acute care, with both scheduled and same-day, walk-in access. In addition to pediatricians and pediatric nurse practitioners, the clinics include a wide array of other individuals to support the needs of patients and their families, including care coordinators, certified lactation consultants, disease managers, pharmacists, psychologists and social workers. Combined adult and pediatric adult health services are available at one clinic site. The division also houses the Center for Healthy Weight and Nutrition, a national model for multidisciplinary, comprehensive care for children and adolescents with obesity.

The division’s quality improvement initiatives continue to focus on improving care for patients with a broad array of conditions, including asthma, attention deficit-hyperactivity disorder, depression, and obesity. The division works to ensure that all children and adolescents receive timely preventive services, including well visits and immunizations.

The Division of Primary Care Pediatrics provides training and education for The Ohio State University College of Medicine students, as well as residents in Pediatrics, Family Medicine and combined Internal Medicine-Pediatrics. Research focuses on a broad range of preventive services, smoking cessation, obesity prevention and treatment, health literacy, and transition from pediatric to adult health care services.

Selected Publications

Chavez L, Gardner W, Tyson D, Pajer K, Rosic T, Kemper A, Kelleher K. Trends in office-based anxiety treatment among us children, youth, and young adults: 2006-2018. *Pediatrics*. 2023 Jul 1;152(1):e2022059416.

Gorham T, Tumin D, Groner J, Allen E, Retzke J, Hersey S, Liu S, Macias C, Alachraf K, Smith A, Blount T, Wall B, Crickmore K, Wooten W, Jamison S, Rust S. Predicting emergency department visits among children with asthma in two academic medical systems. *J Asthma*. 2023 Jun 19:1-8.

Hart L, Chisolm D. Improving the use of transition readiness measures in research and clinical care. *Pediatr Res*. 2023 Apr 7.

Khalsa A, Weber Z, Zvara B, Keim S, Andridge R, Anderson S. Factors associated with parenting stress in parents of 18-month-old children: parenting stress in parents of toddlers. *Child Care Health Dev*. 2022 Jul;48(4):521-530.

Weingart C, Toth C, Berlan E, Snyder D. Increasing contraceptive prescriptions in adolescent females with documented interest in contraception: a QI Project. *Acad Pediatr*. 2023 Jun 30:S1876-2859(23)00236-X.

Fast Facts: July 2022 – June 2023

Primary Care Network Visits: 223,549

Unique Patients Treated in Entire Primary Care Network: 237,855

Department of Pediatrics

HEALTHY WEIGHT AND NUTRITION

The Center for Healthy Weight and Nutrition at Nationwide Children’s Hospital offers a comprehensive approach to weight management with medical and bariatric surgery programs for the prevention and treatment of children and young adults, ages 2 to 21 years, with obesity. The center’s mission is to empower children and families to establish a foundation for healthy lifestyles through clinical care, education, research, community engagement and advocacy.

Faculty



Gina R. Thompson, DO
Interim Director



Marc P. Michalsky, MD, MBA,
FACS, FAAP
Surgical Director

Angelica A. Storms Avina, MD
Eileen Chaves, PhD
Hiba Salhah, MD
Keeley Pratt, PhD
Affiliate Faculty, OSU

Highlights From the Past Year

The Center for Healthy Weight and Nutrition offers assessment clinics for evaluation of children and young adults with obesity, and a variety of interdisciplinary programs for intensive weight management. The center’s adolescent bariatric surgery program is accredited by the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program. In 2022, the center’s bariatric surgery program was re-accredited and has been accredited since 2015. The center leads the Primary Care Obesity Network (PCON) which transitioned to Project ECHO (Extension for Community Care Outcomes) framework in 2021. In 2022, the center was able to train and/or support more than 120 health care professionals through ECHO obesity. The center convenes a multi-sector coalition, Healthy Kids of Central Ohio Coalition, to address, develop, and influence policy recommendations and community-level practices that affect the overall health and well-being of children living in Central Ohio, ages 0-18 years. Healthy Kids Coalition is comprised of representatives from over 45 community-based organizations and aims to achieve the following vision: Central Ohio is a community in which all children have daily opportunities to be physically active and have access to nutritious foods, so they are ready to live, learn and play at their best. In addition, the center anchors the obesity program in the hospital’s signature population health initiative, Pediatric Vital Signs (PVS), which involves several community partnerships.

The center remains dedicated to providing educational opportunities with a fourth-year medical student elective, a residency elective rotation, a childhood obesity and adolescent bariatric surgery fellowship, in addition to serving as an expert to obesity programs around the United States and internationally. The center participates in three National Institutes of Health (NIH) multicenter studies on the long-term outcomes of adolescent bariatric surgery, modeling obesity program attrition and the use of family behavioral therapy to address childhood obesity in the primary care setting. The center faculty provides leadership for several leading national organizations in the field including the Obesity Medicine Association (OMA), American Society for Metabolic and Bariatric Surgery (ASMBS), American Academy of Pediatrics Institute for Healthy Childhood Weight (AAP-IHCW) and the National Academy of Medicine (NAM) Roundtable on Obesity Solutions.

Selected Publications

Hampi S, Hassink S, Skinner A, Armstrong S, Barlow S, Bolling C, Avila Edwards K, Eneli I, Hamre R, Joseph M, Lunsford D, Mendonca E, Michalsky M, Mirza N, Ochoa E, Sharifi M, Staiano A, Weedn A, Flinn S, Lindros J, Okechukwu K. Executive summary: clinical practice guideline for the evaluation and treatment of children and adolescents with obesity. *Pediatrics*. 2023 Feb 1;151(2):e2022060641.

Epstein L, Wilfley D, Kilanowski C, Quattrin T, Cook S, Eneli I, Geller N, Lew D, Wallendorf M, Dore P, Paluch R, Schechtman K. Family-based behavioral treatment for childhood obesity implemented in pediatric primary care: a randomized clinical trial. *JAMA*. 2023 Jun 13;329(22):1947-1956.

Williams D, Chaves E, Greenwood N, Kushner J, Chelvakumar G, Swaringen S, Leibowitz S. Care of gender diverse youth with obesity. *Curr Obes Rep*. 2022 Dec;11(4):215-226.

Svetanoff W, Diefenbach K, Hall B, Craver A, Rutledge S, McManaway C, Eneli I, Tobias J, Michalsky M. Utilization of an enhanced recovery after surgery (ERAS) protocol for pediatric metabolic and bariatric surgery. *J Pediatr Surg*. 2023 Apr;58(4):695-701.

Williams D, Chaves E. Seek first to understand. *Pediatrics*. 2022 Dec 1;150(6):e2022059167.

Fast Facts: July 2022 – June 2023

- Bariatric Clinic Visits: 840
- Healthy Weight and Nutrition Clinic Visits: 2,901
- Hilliard Healthy Weight Clinic Visits: 797
- Westerville Healthy Weight Clinic Visits: 884
- Total Clinic Visits: 5,422



Pulmonary, Sleep Medicine and Cystic Fibrosis

Modulator Therapy Improves Lives of Patients With Cystic Fibrosis With Severe Lung Disease

Patients receiving ETI on a compassionate use basis experienced substantial clinical improvement.

The development of cystic fibrosis transmembrane conductance regulator (CFTR) modulator drugs, most recently elexacaftor/tezacaftor/ivacaftor (ETI), has transformed the treatment of patients with cystic fibrosis. A new study from researchers at Nationwide Children's Hospital, published in *Pediatric Pulmonology*, shows that ETI therapy has the potential to change even the lives of patients with advanced lung disease.

In 2018-2019, clinical trials of ETI conducted in patients with cystic fibrosis with stable disease resulted in significant improvements in clinical symptoms and quality of life. The results were rapid and dramatic, according to lead study author **Karen S. McCoy, MD**, chief of the Division of Pulmonary Medicine at Nationwide Children's and professor of Pediatrics at The Ohio State University College of Medicine.

"We could tell which patients received the medication, even though the trial was blind, in some cases within hours of the first dose," she says.

Though the results of the clinical trial were striking, it would take several months for ETI to receive final approval from the U.S. Food and Drug Administration (FDA). McCoy and her colleagues believed some of their patients with cystic fibrosis with severe lung disease might also benefit from the therapy but had a high risk of dying before FDA approval of the drug.

"We spent the better part of three months doing these individual requests to the FDA to approve this drug on a compassionate use basis, one person at a time," says Dr. McCoy.

The researchers reported that ETI therapy resulted in fewer respiratory symptoms, improved nutrition, and better quality of life. Most of the patients also had sustained improvements in pulmonary function. Patients in this cohort went back to school to complete higher degrees, obtained new jobs, stopped the use of supplemental oxygen and ventilators, and gave birth to children.

Currently, most cystic fibrosis centers in the U.S. have nearly everyone who is eligible on ETI therapy. At Nationwide Children's, this amounts to about 350 patients.

REFERENCE:

McCoy KS, Blind J, Johnson T, Olson P, Raterman L, Bai S, Eisner M, Sheikh SI, Druhan S, Young C, Pasley K. Clinical change 2 years from start of elexacaftor-tezacaftor-ivacaftor in severe cystic fibrosis. *Pediatr Pulmonol*. 2023 Apr;58(4):1178-1184.



"We could tell which patients received the medication, even though the trial was blind..."

— Karen S. McCoy, MD

Department of Pediatrics

PULMONARY, SLEEP MEDICINE AND CYSTIC FIBROSIS

The Division of Pulmonary, Sleep Medicine and Cystic Fibrosis at Nationwide Children’s Hospital provides the highest quality clinical care for children and adults with congenital respiratory disorders including asthma, cystic fibrosis, primary ciliary dyskinesia, interstitial lung diseases, disorders of breathing control, sleep-related breathing disorders, hemoglobinopathies and neuromuscular diseases. Additionally, our providers care for those approaching and following lung and heart-lung transplant, advanced lung disease management, and for management of those requiring long-term mechanical ventilation. Given the many challenges these children and their families face, it is important that the care we deliver is multidisciplinary and often multi-specialty in nature. Another extremely important part of our mission is to provide medical education to prepare the next generation of clinicians, scientists, and educators.

Multispecialty Collaborators: Endocrinology, Hematology/Oncology, Pediatric and Adult Gastroenterology, Hepatology and Nutrition; Cardiology/Cardiac Failure, Neurology/Neuromuscular, Otolaryngology, Psychiatry, Psychology

Multidisciplinary Staff: respiratory therapists, registered dietitians, pharmacists, social workers (LISW and LISW-S), research coordinators, genetic counselors, clinical nursing (RN, APN), clinic staff (RN, LPN, MA); Pulmonary Research Core, Child life and dedicated administrative staff.

Faculty



Karen S. McCoy, MD
Division Chief
Associate Division Chief for Research



Richard D. Shell, MD
Section Chief

Debra Boyer, MD
Courtney Gushue, DO
Brooke Gustafson, MD
John Heintz, MD
Melissa Holtzlander, MD
Sehyr Imran, MD
Maninder Kalra, MD
Stephen Kirkby, MD
Kavitha Kotha, MD

Robert Kowatch, MD
Katelyn Krivchenia, MD
Anne May, MD
Eric Mull, DO
Sabrina Palacios, MD
Alpa Patel, MD
Grace Paul, MD
Shahid Sheikh, MD
Lisa Ulrich, MD

2022 – 2023 Fellows

Sarah Cohen, MD

Michelle Gillespie, MD
Brooke Gustafson, MD

Swati Jayaram, DO
Rachel Ronau, DO

Terace Thomas, MD
Bailey Young, DO

Highlights From the Past Year

Over the past year we have focused on providing exceptional care to those with advanced lung disease. Our transplant service has focused on the most complex patient population, giving some patients the access to a transplant that may have been denied elsewhere. We have continued to see growth in our program and have added new accredited clinics in interstitial lung disease and primary ciliary dyskinesia adding additional care for those with complex lung conditions and are very often successful in bridging care to lung transplant if needed. We also focus on providing the best multidisciplinary care for those with pulmonary hypertension in conjunction with our cardiology team and expect to grow this program in the next few years.

We are closely involved with the care of patients with lung diseases of prematurity through working closely with our Neonatology and Bronchopulmonary Dysplasia teams. These patients are truly complex, and many remain technology dependent at discharge. Over the past year we have directed the care of these patients and have seen many “graduate” the hospital system and continue to gain milestones as outpatients. Our focus will be to provide an outpatient home for this special population of patients to provide the best care available anywhere.

Multidisciplinary care is essential in many of the children we treat, and we have worked closely with many other subspecialties to assist in the respiratory care of patients whose primary disease may affect their breathing. We are proud to lead or be a part of the following specialized clinics:

- Cystic Fibrosis Clinic including clinic times with Hepatology, Gastroenterology, Endocrinology and ENT as well as visits focused on transition to adult care
- Primary Ciliary Dyskinesia
- Interstitial Lung Disease and Advanced Lung Disease
- Complex Asthma Clinic including the use of Biologics
- Aerodigestive clinic combining Pulmonary, Gastroenterology and ENT
- Neuromuscular and our accredited MDA and PPMD clinics
- Spinal Muscular Atrophy clinic
- Sickle Cell Clinic as well as other Hemoglobinopathies
- Rheumatology clinic

As part of an accredited Pediatric Pulmonary Fellowship program, we have made the education of future specialists a top priority. We have filled our available positions in the match every year since 2010 and our fellows have graduated and taken positions all over the United States and overseas with nearly all our graduates staying in academic medicine. We take pride in clinical and bench research and have presented at the following National and international meetings:

- American Thoracic Society
- Cystic Fibrosis Foundation
- Chest
- World Muscle Society
- Parent Project Muscular Dystrophy
- Muscular Dystrophy Association

We are extremely proud of the care we provide to children with respiratory disease, and this was acknowledged again this year by USNWR as we have remained a top 10 pediatric pulmonary department since 2012 and in 2023 we ranked at number three.

Selected Publications

McCoy K, Blind J, Johnson T, Olson P, Raterman L, Bai S, Eisner M, Sheikh S, Druhan S, Young C, Pasley K. Clinical change 2 years from start of elexacaftor-tezacaftor-ivacaftor in severe cystic fibrosis. *Pediatr Pulmonol.* 2023 Apr;58(4):1178-1184.

Pasley K, Krivchenia K, Dell M, McCoy K, Paul G. Clinical management of pediatric patients with cystic fibrosis and autism spectrum disorder. *Pediatr Pulmonol.* 2023 Apr;58(4):1160-1168.

Pugh C, Zeno R, Stanek J, Gillespie M, Kopp B, Creary S. Description of a colocated comprehensive care model for people with sickle cell and comorbid pulmonary disease. *J Pediatr Hematol Oncol.* 2023 Aug 1;45(6):e723-e727. Epub 2023 Mar 6.

Shell R, McGrattan K, Hurst-Davis R, Young S, Baranello G, Lavrov A, O'Brien E, Wallach S, LaMarca N, Reyna S, Darras B. Onasemnogene abeparvovec preserves bulbar function in infants with presymptomatic spinal muscular atrophy: a post-hoc analysis of the SPR1NT trial. *Neuromuscul Disord.* 2023 Jun 22:S0960-8966(23)00153-0.

Zampoli M, Morrow B, Paul G. Real-world disparities and ethical considerations with access to CFTR modulator drugs: *Mind the gap! Front Pharmacol.* 2023 Mar 27;14:1163391.

Fast Facts: July 2022 – June 2023

Inpatient Discharges: 804
Observation and Outpatient-in-a-Bed Discharges*: 1,752
Total Discharges: 2,556
Average Length of Stay†: 7.3
Average Daily Census†: 16.1
Patient Days†: 5,877
Inpatient Consults: 527
Cystic Fibrosis Patients: 562

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

Pulmonary Clinic Visits

Dublin Pulmonary Clinic Visits: 802
Lima Pulmonary Clinic Visits: 197
Lung Transplant Clinic Visits: 39
Main Campus Pulmonary Clinic Visits: 6,671
Pulmonary Rehab Clinic Visits: 709
Westerville Pulmonary Clinic Visits: 2,587
Total Pulmonary Clinic Visits: 11,005

Pulmonary Diagnostics Clinic Visits

Dublin Pulmonary Diagnostics Clinic Visits: 23
Main Campus Pulmonary Diagnostics Clinic Visits: 295
Westerville Pulmonary Diagnostics Clinic Visits: 43
Total Pulmonary Diagnostics Clinic Visits: 361

Sleep Disorders Center

Main Campus Sleep Clinic Visits: 696
Dublin Sleep Clinic Visits: 1,094
New Albany Sleep Clinic Visits: 10
Westerville Sleep Clinic Visits: 663
Total Sleep Clinic Visits: 2,463

SLEEP DISORDERS CENTER
Faculty



Maninder S. Kalra, MD, PhD
Medical Director, Sleep Medicine

Margaret Chase, MD
Mattina Davenport, PhD
Sehyr Imran, MD
A. Latif Khuhro, MD
Robert Kowatch, MD, PhD
Paola Malerba, PhD
Anne May, MD

Brandon Morgan, MSW, LISW
Alpa Patel, MD
Grace Paul, MD
Jack Stevens, PhD

Fellows

Margaret Chase, MD
Sravya Brahmandan, MD

Highlights From the Past Year

Accredited by the American Academy of Sleep Medicine, the Sleep Disorders Center at Nationwide Children’s provides outpatient and inpatient consultations for children with a wide variety of sleep disorders. General Sleep Disorders clinics have grown tremendously in 2023 and are now held at Dublin, Main Campus, New Albany and Westerville. Dedicated multidisciplinary clinics are conducted for the following disorders:

- Behavioral Insomnia
- Hypersomnia
- Complex Obstructive Sleep Apnea
- Prader -Willi Syndrome
- Positive Airway Pressure Dependent
- Polycystic Ovarian Syndrome

Diagnostic testing is provided in Sleep Laboratories at Nationwide Children’s Lewis Center and Main campus. With the opening of Lewis Center facility in June 2023, the testing capacity has expanded to 14 patients/night.

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 and residents in Pediatrics, Neurology, Otolaryngology, Physical Medicine and Rehabilitation, and Radiology, as well as psychiatrists, and graduate students at The Ohio State University. Over the past 14 years, 54 sleep medicine and pediatric subspecialty fellows have completed required rotations in pediatric sleep medicine at the center. Sleep disorders research from the center was presented at following national meetings:

- Pediatric Academic Societies 2023
- Sleep 2023
- Chest 2023

Selected Publications

Davenport M, Berkley S, Zeiders K, Landor A, Sarsar E. Does ethnic-racial socialization matter? A within-person analysis of racial discrimination and sleep health among Black and Latinx emerging adults. *Sleep Health*. 2023 Jun 27:S2352-7218(23)00099-2.

Krishna J, Kalra M, McQuillan M. Sleep disorders in childhood. *Pediatr Rev*. 2023 Apr 1;44(4):189-202.

Lang A, Stevens J, Mara C, Patel A, Schmidt M, Tenney J, Modi A. Predictors of objective treatment adherence in adolescents with epilepsy: The important role of motivation. *Epilepsy Behav*. 2023 May;142:109192.

Malerba P, Whitehurst L, Mednick S. The space-time profiles of sleep spindles and their coordination with slow oscillations on the electrode manifold. *Sleep*. 2022 Aug 11;45(8):zsac132.

Department of Pediatrics

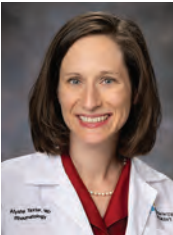
RHEUMATOLOGY

Our mission is to improve the lives of children with rheumatic disease through high-quality and innovative care, education and research. The Division of 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, and educates students, residents, fellows and pediatricians. 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



Stacy Payne Ardoin, MD, MS
Chief



Alysha J. Taxter, MD, MSCE
Associate Division Chief
for Research

Shoghik Akoghlianian, MD
Melissa Argraves, MD, MEd
Kyla Driest, MD, MEd
Ysabella Esteban, MD, MS
Gloria C. Higgins, PhD, MD
Edward Oberle, MD
Vidya Sivaraman, MD

2022 – 2023 Fellows
Samuel Gagne, MD
Lauren Harper, MD
Kendra Lauer, DO
Ivana Stojkic, MD

Highlights From the Past Year

The Rheumatology Clinic at Nationwide Children’s serves children with diseases including juvenile idiopathic arthritis, systemic lupus erythematosus, juvenile dermatomyositis, spondyloarthropathy, vasculitis, scleroderma, autoimmune inflammatory conditions and painful musculoskeletal problems. The clinic conducts more than 5,000 outpatient visits annually at locations on main campus and in Dublin, Ohio. Our fellowship includes four categorical pediatric fellows.

To meet the needs of patients and families with complex immunologic disease, we offer several multidisciplinary clinics.

- The Lupus, Vasculitis and Glomerulonephritis Clinic, directed by Dr. Stacy Ardoin, incorporates expertise from rheumatologists, nephrologists, pulmonologists, psychology, pharmacy and social work to provide evidence-based, personalized treatment plans for children and adolescents with lupus and vasculitis.
- The Neuro-Immunology Clinic includes representatives from rheumatology, psychiatry, psychology and neuropsychology and focuses on care of children with autoimmune encephalitis and other neuro-immunologic disorders.
- Our Hypermobility Clinic engages providers from rheumatology, physical therapy, occupational therapy, psychology and social work, and provides comprehensive support to children with symptomatic hypermobility.
- Edward Oberle, MD, directs our Musculoskeletal Ultrasound Clinic.
- Kyla Driest, MD, MEd, participates in a collaborative clinic with Hematology, Immunology and Genetics focused on care of patients with persistent cytopenias and combined immunologic and hematologic dysfunction.

This year we welcomed to our team Dr. Melissa Argraves who is the fellowship Associate Program Director and serves as the rheumatology liaison to the Inflammatory Bowel Disease Clinic at Nationwide Children’s. We also welcomed Dr. Ysabella Esteban who is certified in musculoskeletal ultrasound and is leading efforts to standardize rheumatology fellowship training in musculoskeletal ultrasound.

Our close association with adult rheumatology at The Ohio State University and with multiple pediatric subspecialists at Nationwide Children’s promotes collaborative educational opportunities, clinical care and research. Rheumatology is engaged in clinical and basic science research projects and participates in several national and international collaborative studies of childhood rheumatic diseases. Basic scientist Chack-Yung Yu, DPhil, has an appointment in Rheumatology focusing on the relationship between complement genetics and rheumatic diseases. Our team participates in the Childhood Arthritis and Rheumatology Research Alliance and Pediatric Rheumatology Collaborative Study Group clinical research networks. We also participate in the quality improvement initiative Pediatric Rheumatology Care and Outcomes Improvement Network.

Selected Publications

Brogan P, Naden R, **Ardoin SP**, Cooper J, De Benedetti F, Dicaire J, Eleftheriou D, Feldman B, Goldin J, Karol S, Price-Kuehne F, Skuse D, Stratakis C, Webb N, Stone J. The pediatric glucocorticoid toxicity index. *Seminars in Arthritis and Rheumatism*. 2022 Oct;56:152068.

Morishita K, Wagner-Weiner L, Yen E, **Sivaraman V**, James K, Gerstbacher D, Szymanski A, O’Neil K, Cabral D, Childhood Arthritis and Rheumatology Research Alliance (CARRA) Antineutrophil Cytoplasmic Antibody-Associated Vasculitis Workgroup. Consensus treatment plans for severe pediatric antineutrophil cytoplasmic antibody-associated vasculitis. *Arthritis Care & Research*. 2022 Sep;74(9):1550-1558.

Mruk V, Wise K, **Driest K**, **Oberle E**, **Ardoin SP**, Yildirim-Toruner C, **Sivaraman V**, Stevens J, McGinnis A, Gallup J, Mitchell B, Lemle S, Jones S, Maher J, Berlan E, Barbar-Smiley F. Preventing teen pregnancies on teratogenic drugs by quality improvement and behavioral economics. *Pediatrics*. 2023 Jan 1;151(1):e2021054294.

Van Citters A, **Taxter A**, Mathew S, Lawson E, Eseddi J, Del Gaizo V, Ahmad J, Bajaj P, Courtney S, Davila L, Donaldson B, Kimura Y, Lee T, Mecchella J, Nelson E, Pompa S, Tabussi D, Johnson L. Enhancing care partnerships using a rheumatology dashboard: bringing together what matters most to both patients and clinicians. *ACR Open Rheumatology*. 2023 Apr;5(4):190-200.

Vega-Fernandez P, Ting T, **Oberle E**, McCracken C, Figueroa J, Altaye M, Cassidy A, Kaeley G, Roth J, CARRA Musculoskeletal Ultrasound Workgroup. Musculoskeletal ultrasound in childhood arthritis limited examination: a comprehensive, reliable, time-efficient assessment of synovitis. *Arthritis Care & Research*. 2023 Feb;75(2):401-409.

Fast Facts: July 2022 – June 2023

Inpatient Discharges: 26

Observation and Outpatient-in-a-Bed Discharges: 25

Total Discharges: 51

Average Length of Stay*: 5.3

Average Daily Census*: 0.4

Patient Days*: 137

Inpatient Consults: 226

Main Campus Rheumatology Clinic Visits: 5,223

Dublin Rheumatology Clinic Visits: 638

Total Clinic Visits: 5,861

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

Department of Pediatrics

SPORTS MEDICINE

The Division of Sports Medicine at Nationwide Children’s Hospital includes a team of experts who specialize in the treatment and prevention of sports-related injuries in the pediatric and adolescent athlete. The focus of the department is prevention, diagnosis and treatment of youth and adolescent sports injuries, including concussions and other specialties.

Faculty



Thomas L. Pommering, DO
Chief



James P. MacDonald, MD, MPH
Associate Division Chief
for Research

Steven C. Cuff, MD
Drew Duerson, MD
Anastasia N. Fischer, MD
Jonathan Napolitano, MD
Reno Ravindran, MD
Richard E. Rodenberg, MD
Amy E. Valasek, MD

2022 – 2023 Fellows

Alvin Chi, MD
Gabriella Gonzales, MD

Highlights From the Past Year

Faculty in Sports Medicine continue to publish cutting-edge research in the areas of concussion, spondylolysis, exercise in youth and female athletic triad. We provide team-centered sports medicine care. Our clinical staff works with the athlete’s team, which includes the patient, family, athletic trainer, school nurse, coach and primary care physician, to assist in the recovery of the injury, development of a treatment plan and recommendations for successful participation in future sports activities. Our department also helps patients navigate their care through our partners in other departments within Nationwide Children’s, including Radiology, Orthopaedics, Physical Therapy, Cardiology, Healthy Weight and Nutrition, Pulmonary Medicine, Neuropsychology/Psychology, Emergency Medicine, Primary Care, and Sports Nutrition.

- Faculty named over 60 times in publications, abstracts, national/international podium and poster presentations, and national media interviews.
- Faculty member (Dr. Anastasia Fischer) served as President of the American College of Sports Medicine, an international organization with 50,000 members representing 70 sports medicine professions from 90 counties.
- Faculty member (Dr. James MacDonald) named, Fellow of the Faculty of Sport and Exercise Medicine, Royal College of Surgeons and Physicians, Ireland.
- Trained over 300 learners who rotated through the Sports Medicine service in the past year.
- Collaborate with The Ohio High School Athletic Association, community EMS, local school districts, community organizations and other Nationwide Children’s departments on COVID-19 safety protocols in athletics, management of heat illness, STOP THE BLEED® training, on-field trauma protocols, and safe return to sport.
- Hosted two conferences at Nationwide Children’s including our Annual Sports Medicine & Orthopedics Conference and the Adaptive Sports Medicine Symposium.
- Medical Director for the Celebration Village Medical Tent at the Nationwide Children’s Hospital Columbus Marathon.

- Developed a Golf Medicine Program with staff and faculty who are Titleist Performance Institute (TPI) certified providers.
- Provided team physician and athletic training services for Ohio Dominican University and 17 central Ohio high schools and middle schools.

Services available at Nationwide Children’s Sports Medicine include:

- Diagnosis and treatment of all sports-related injuries
- Comprehensive point-of-care ultrasound (POCUS) for diagnosis and interventional treatment of musculoskeletal injuries
- Sports Concussion Clinic
- Adaptive Sports Medicine Clinic
- Performing Arts Medicine
- Golf Medicine
- Limb Deformity Clinic in collaboration with the Department of Orthopaedics
- Specialized rehabilitation and injury prevention programs for swimmers, throwers, dancers, runners and athletes in other sports
- Sports Nutrition Counseling
- Sports Performance Training
- Play Strong Program (supervised rehab and exercise program for children with medical conditions such as cancer, obesity, diabetes, certain heart diseases, autism, etc.)
- Pediatric Sports Medicine Fellowship Training Program
- Central Ohio EMS Community Outreach and Education for Care of Athletes Injured on the Field of Play
- Partnerships with multiple youth and club sport organizations and schools
- Robust website with educational resources for patients/families, physicians, athletic trainers, school nurses and coaches

Selected Publications

Cuff S, Maki A, Feiss R, Young J, Shi J, Hautmann A, Yang J. Risk factors for prolonged recovery from concussion in young patients. *Br J Sports Med.* 2022 Dec;56(23):1345-1352.

Faigenbaum A, Stracciolini A, MacDonald J, Rial Rebullido T. Socioecological approach for building stronger youth for life. *Br J Sports Med.* 2023 May 26;bjsports-2023-106748.

Plumage E, Bista S, Recker R, Cuff S, Fischer A, Tiso M, Yang J. Changes in physician recommendations for early physical activity after pediatric concussion: a retrospective study. *Clin J Sport Med.* 2023 Jun 15.

Sullivan L, McKenzie L, Roberts K, Recker R, Schwebel D, Pommering T, Yang J. A virtual reality app intervention to improve concussion recognition and reporting in athletes aged 9 to 12 years: development and pilot testing. *JMIR Form Res.* 2023;7:e43015.

Sullivan L, Xu M, Yeates K, Alshaikh E, Taylor H, Pommering T, Yang J. Trajectories of daily postconcussion symptoms in children. *J Head Trauma Rehabil.* 2023 Jun 19.

Tibial Spine Research Interest Group; Orellana K, Houlihan N, Carter M, Baghdadi S, Baldwin K, Stevens A, Cruz Al Jr, Ellis H Jr, Green D, Kushare I, Johnson B, Kerrigan A, Kirby J, MacDonald J, McKay S, Milbrandt T, Mistovich R, Parikh S, Patel N, Schmale G, Traver J, Yen Y, Ganley T. Tibial spine fractures in the child and adolescent athlete: a systematic review and meta-analysis. *Am J Sports Med.* 2023 Jun 16:3635465231175674.

Fast Facts: July 2022 – June 2023

Canal Winchester Sports Medicine Clinic Visits: 1,564

Dublin Sports Medicine Clinic Visits: 3,952

East Broad Sports Medicine Clinic Visits: 924

Hilliard Sports Medicine Clinic Visits: 1,698

Main Campus Sports Medicine Clinic Visits: 1,647

Marysville Sports Medicine Clinic Visits: 701

New Albany Sports Medicine Clinic Visits: 1,835

Reynoldsburg School-Based Sports Medicine Clinic Visits: 74

Westerville Sports Medicine Clinic Visits: 5,270

Total Sports Medicine Clinic Visits: 17,665

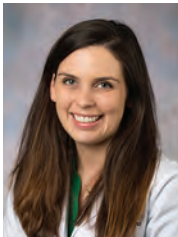


Department of Pediatrics

TOXICOLOGY

The Section of Toxicology at Nationwide Children’s Hospital provides teaching, patient care and research to improve outcomes for poisoned patients. We provide medical support for the Central Ohio Poison Center (COPC) and the toxicology consult service in the treatment of poisoned patients and management of adverse drug reactions. Our research investigates drug and toxicant effects, poison prevention, and population-based poison control. We provide important consultation resources to hospital-based and community physicians across Ohio, supporting them as they treat poisoned patients in their own communities.

Faculty



Hannah Hays, MD, FACEP, FAACT, FACMT
Chief
Associate Division Chief
for Research

- Cynthia Aaron, MD, FACMT, FACEP
- Alek Adkins, MD
- Marcel Casavant, MD, FACEP, FACMT, FAACT
- Prashant Joshi, MD
- Natalie I. Rine, PharmD, BCPS, BCCCP
- Jason Russell, DO
- Henry Spiller, MS, DABAT, FAACT

Highlights From the Past Year

Medical and pharmacy students, and physicians from emergency medicine, pediatrics, internal medicine, pediatric emergency medicine, addiction medicine, pediatric hospital medicine, and child abuse training programs benefit from rotations with the Section of Toxicology and the COPC. We teach the public through frequent media interviews, social media and poison prevention programs. We also help local, county and state agencies prepare effective responses 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 COPC serves the citizens of 64 of Ohio’s 88 counties. Our staff includes 18 specially-trained, nationally-certified nurses and pharmacists who handle poison exposure cases from the public, health care professionals, health departments and emergency medical services. Certified by the American Association of Poison Control Centers, the COPC has been improving the care of poisoned patients for 65 years.

With our nationally-recognized Be Poison Smart!® public education program, the COPC works to reduce the incidence of childhood poisonings throughout Ohio. Our Be Poison Wise!SM program helps older adults prevent poison exposures and medication mistakes. The COPC plays an important role in toxic surveillance, communications, poisoning-related fatality review, and emergency professional education in preparation for and during a community disaster. Research to describe important poisoning hazards and to reduce the incidence of poisoning is conducted with the Center for Injury Research and Policy in the Abigail Wexner Research Institute at Nationwide Children’s Hospital.

Following the train derailment disaster on February 3, 2023, in East Palestine, Ohio, we were activated to help the affected community and other providers. Our physicians drafted the initial clinical guidance used by the county and state health departments and physicians in the area, and our chief gave three webinars to train physicians how to evaluate and treat victims. The Ohio Department of Health relied on our chemical expertise when they staffed the Governor’s Community Clinic, and we worked with the incident command team and the CDC throughout the response.

Selected Publications

Adkins A, Trautman W. Articles you may have missed. *J Med Toxicol.* 2023 Jan; 19 (1): 49-52.

Becker S, Spiller H, Badeti J, Funk A, Casavant M, Zhu M, Michaels N, Smith G. Cocaine exposures reported to United States poison control centers, 2000-2020. *Clin Toxicol (Phila).* 2022 Jul;60(7):827-837.

Ciccotti H, Spiller H, Casavant M, Kistamgari S, Funk A, Smith G. Pediatric suspected suicides and nonfatal suicide attempts reported to United States poison control centers before and during the COVID-19 pandemic. *J Med Toxicol.* 2023 Apr;19(2):169-179.

Hays H. Poisoning and Overdose. Case Management Topic In: *Rivers’ Preparing for the Oral Board Exam in Emergency Medicine*, Ohio Chapter, American College of Emergency Physicians (Ohio ACEP), 2023.

Yoon C, Rine N, Smith A, Casavant M. Propafenone and valsartan overdose with cardiovascular deterioration managed with lipid emulsion and high dose insulin: a case report. *Toxicology Communications.* Epub 2022 May 4.

Fast Facts: July 2022 – June 2023

- Peer Consults: 3,193
- Toxicology Poison Center Consults: 4,819
- Poison Center Exposures Cases: 42,812

Department of Pediatrics

URGENT CARE

The Division of Urgent Care at Nationwide Children’s Hospital operates seven conveniently located urgent care centers throughout the central Ohio area. The urgent cares are staffed with physicians, advanced practice providers, nurses and technologists who specialize in the treatment of pediatric urgent care needs. Our centers have more than 152,000 visits annually and offer a full complement of urgent care services including radiology, laboratory, suturing and splinting. The division continues its mission of providing high quality, efficient, compassionate acute care when and where it is needed most, in a family-centered environment for the children of Central Ohio.

Faculty



Cynthia S. Zimm, MD, MBA, FAAP
Division Chief
Associate Division Chief
for Research



Luciana E. Berg, MD
Associate Division Chief and
Medical Director of East Broad

Medical Site Directors

Karla R. Hauersperger, MD
Daniela A. Humphrey, DO
Marc S. Leder, MD
Rachael E. Levine, MD
Jonathan J. Price, MD
Jerry M. Stultz, MD, MBI
Kathleen L. Sugrue, MD

Providers

Iham M. Alqudah, MD

Hayat Al Tabosh, MD
Edward D. Alten, MD
Robert R. Baun, MD
Deborah L. Blackwell, DO
Traci A. Bouchard, MD, MPH
Brian K. Bowden, MD
Shannon R. Brennan, PA-C
Michael S. Chua, MD
Marcie Costello, MD
Megan K. Cunningham, FNP
Lori R. Deschene, MD

Nancy L. Ford, CPNP-PC, DNP
Adam Garlock, MD
Sharla A. Gillespie, PA
Ritika Gupta, MD
Iram Jafri, MD
Ismahan Hassan, FNP
Andre C. Hurst, CPNP-AC
Simmi Dogra Kulkarni, MD

Catherine A. Lambert, MD
Aaron J. Maki, MD, PhD
Timothy S. McClung, MD
Alicia McVity, FNP-C
Judy Midkiff, CPNP-PC
Kathryn E. Nuss, MD
Scott E. Oman, CPNP-PC
Jan E. Perry, MD

Joshua J. Prudent, MD
Sheela R. Rao, MD
Farhan Rashid, MD
Lindsay Reilly, FNP
Jameson Ridge, CPNP-PC
Elyshia Smith, FNP
Pamela L. Streich, CPNP-PC, APP
Clinical Lead

John P. Sotos, MD
Bethany D. Uhl, MD
Morgan E. Von Holle, CPNP-PC
Lindsey C. Welch, CPNP-PC
Caitlyn N. White, CPNP-PC
Rachel M. Wozniak, MD
Jennifer L. Wyse, MD

Highlights From the Past Year

The Division of Urgent Care has completed its first year as an independent division and section in the Department of Pediatrics at Nationwide Children’s Hospital and The Ohio State University College of Medicine. We welcomed Luciana Berg, MD, in her new role as the associate division chief. She has been a member of the Urgent Care faculty group for 16 years and is the medical director of the East Broad UC location and the director of the Urgent Care elective for residents. She has also been actively involved at The Ohio State University College of

Medicine as a portfolio coach, longitudinal group instructor, and learning communities facilitator. She has personal interests in clinical research, quality improvement, and education and will be taking on the role of Acute Care Fellowship director in 2024.

The Urgent Care Division recognizes that effective use of medical technology can improve all aspects of patient care and has several ongoing divisional initiatives. Highlights of these initiatives include Nationwide Children’s EMR Advisory Board membership by Jerry Stultz, MD, MBI, and Karla Hauersperger, MD, as well as the successful development and launch of the Save my Place remote queuing program for our patients.

Faculty in the division have continued to participate in multiple local and national multi-institutional studies and research trials. These include ROUTT-B/Rest is Best aimed at decreasing unnecessary interventions for patients with bronchiolitis, the Health Equity in Antibiotic Prescribing Project and the Nationwide Children’s arm of the PCORI Direct Admission Leadership Team.

Urgent Care faculty extend their dedication to the health of all children through their participation in national organizations. Jonathan Price, MD, was the chairperson of the AAP Committee on Child Health Financing in 2022. He was also a member of the AAP Payor Advisory and Advocacy Committee and contributed to the AAP Committee on Federal Government Affairs in the Access Subcommittee.

The East Broad location faculty and staff received the Nationwide Children’s Hospital Service from the Heart Award for their outstanding clinical accomplishments in the care of sick children.

Selected Publications

Carlson K, Berman S, Price J; AAP Committee on Child Health Financing. Guiding principles of managed care arrangements for the health of newborns, infants, children, adolescents and young adults. *Pediatrics*. 2022 Jul 25;150(2):e2022058396.

Cuff S, Maki A, Feiss R, Young J, Shi J, Hautmann A, Yang J. Risk factors for prolonged recovery from concussion in young patients. *British Journal of Sports Medicine*. 56 (23): 1345-1352, 2022 Dec.

Perrin JM, Flanagan P, Katkin J, Barabell G, Price, J; AAP Committee on Child Health Financing. The unique value proposition of pediatric health care. *Pediatrics*. 2023;151(2):e2022060681.

Fast Facts: July 2022 – June 2023

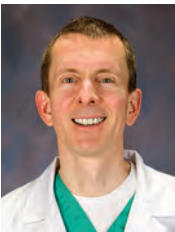
- Main Campus Urgent Care Visits: 47,623
- Canal Winchester Urgent Care Visits: 17,841
- Dublin Urgent Care Visits: 12,861
- East Broad (Columbus) Urgent Care Visits: 23,788
- Hilliard Urgent Care Visits: 20,419
- Marysville Urgent Care Visits: 11,838
- Westerville Urgent Care Visits: 29,975
- Total Visits: 164,345

Department Reports

ANESTHESIOLOGY AND PAIN MEDICINE

The Department of Anesthesiology and Pain Medicine at Nationwide Children’s Hospital consists of fellowship-trained, board-certified pediatric anesthesiologists. The department provides anesthesiology 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.

Faculty



Joseph D. Tobias, MD
Chief

Graciela Argote-Romero, MD	Marco Corridore, MD	Natalie Jacobowski, MD
Rita Banoub, MD	Olamide Dairo, MD	Sarah Khan, MD
Ralph Beltran, MD	Ajay D’Mello, MD	Senthil G. Krishna, MD
Candice Burrier, MD	Nicole Elsey, MD	Katherine Manupipatpong, MD
Gregory Cambier, MD	Seth Hayes, MD	David Martin, MD
Richard Cartabuke, MD	Renee Heng, MD	Leslie Matthews, MD
Kristin Chenault, MD	Grant Heydinger, MD	Gregory Maves, MD
Kate Cicozi, MD	Lisa M. Humphrey, MD	

Christopher McKee, DO	Amrish Patel, MD	Erica Sivak, MD	Giorgio Veneziano, MD
Alok Moharir, MD	Priyal Patel, DO	Ashley Smith, MD	Brittany Willer, MD
Olubukola Nafiu, MD	Laura Puertas-Ocio, MD	Steven Smith, MD	Peter Winch, MD
Aymen Naguib, MD	Leila Reduque, MD	Timothy Smith, MD	
Vanessa Ng, MD	Saif Rehman, MD	Kevin Spellman, MD	
Rachel Ochotny, MD	Lance Relland, MD	Ahsan Syed, MD	
Vanessa Olbrecht, MD	Devin Sanders, MD	Joshua Uffman, MD	

2022 – 2023 Fellows	Ryan Jenkins, MD
Mark Bozych, MD	Marcelino Murillo-Deluquez, MD
Anuranjan Ghimire, MD	Jessica Yeh, MD
Holly Gillis, MD	
Jay Holladay, DO	

Highlights From the Past Year

- The Department of Anesthesiology and Pain Medicine provided care at 43 different sites each day. Currently, the department includes 42 pediatric anesthesiologists, six palliative care physicians and 55 certified registered nurse anesthetists. An attending pediatric anesthesiologist is present in the hospital at all times for emergency cases, consultations and airway management.
- During the 2022-2023 academic year, the department provided anesthetic care and procedural sedation services for more than 38,000 procedures.

- All members of the faculty are fellowship-trained in pediatric anesthesiology and board certified in Anesthesiology as well as Pediatric Anesthesiology by the American Board of Anesthesiology. Several faculty hold additional board certification in Pediatric Critical Care Medicine, Pain Medicine and General Pediatrics. The Division of Pediatric Cardiac Anesthesiology includes eight pediatric anesthesiologists with added expertise in the perioperative care of patients with acquired and congenital heart disease.
- The Acute Pain Service provides pain management services, including patient-controlled analgesia and regional anesthesia for hospital and home-based care.
- The department provides palliative care and hospice services with six palliative care physicians, three of whom are boarded and trained in additional specialties including psychiatry, hematology/oncology and cardiology. There is an ACGME-approved fellowship in palliative care medicine.
- The departmental fellowship programs provide subspecialty training in pediatric anesthesiology for fellows in an ACGME-accredited program and international fellows from all over the world. Advanced subspecialty training is offered in pediatric cardiac anesthesia, pediatric regional anesthesia, quality improvement and safety, acute pain management, chronic pain management and palliative care.
- Departmental research initiatives are led by a Vice-Chair for Academic Affairs and supported by a PhD research scientist, a medical biostatistician, two clinical research nurses and four research associates. There are numerous ongoing prospective investigations in various areas of pediatric anesthesiology, pain management and critical care medicine. The department published more than 50 manuscripts in peer-reviewed journals and presented more than 55 abstracts at national meetings during the last academic year.
- Clinical research involves novel approaches to airway management and intraoperative monitoring, applications of virtual reality in the operating room and as an adjunct to pain management, innovations in regional anesthesia for control of acute post-surgical pain, the perioperative implications of comorbid conditions including obstructive sleep apnea and COVID-19, use of novel pharmacologic agents in the pediatric population and several quality improvement and safety initiatives. Additionally, the department is continuing their focused research on the impact of ethnicity and socioeconomic factors on perioperative care and surgical outcomes.
- During the upcoming year, we anticipate continued expansion of clinical services with opening of an outpatient surgery center (Livingston Orthopedic Surgery Center) on the West Campus of our downtown facility with operating rooms to replace our current dental operating rooms, the on-site ambulatory surgery center and an additional MR scanner.
- We anticipate continued growth of the solid organ transplantation program and the fetal surgery program. There will be continued growth of our comprehensive pain programs including acute pain, regional anesthesia, palliative and hospice care and chronic pain management.

Selected Publications

Beltran R, Mpody C, Nafiu O, Tobias J. Association of sugammadex or neostigmine with major postoperative pulmonary complications in children. *Anesth Analg.* 2022 Nov;135:1041-1047.

Holladay J, Winch P, Morse J, Anderson BJ, McKee CT, Rice-Weimer J, Tobias JD. Acetaminophen pharmacokinetics in infants and children with congenital heart disease. *Paediatr Anaesth.* 2023 Jan;33:46-51.

Lemus R, Jacobowski NL, Humphrey L, Tobias JD. Applications of dexmedetomidine in palliative and hospice care. *J Pediatr Pharmacol Ther.* 2022 Sep;27:587-594.

Naguib AN, Carrillo SA, Corridore M, Bigelow AM, Walczak A, Tram NK, Hersey D, Galantowicz M, Tobias JD. A ROTEM-guided algorithm aimed to reduce blood product utilization during neonatal and infant cardiac surgery. *J Extra Corpor Technol.* 2023 Jun;55:60-69.

Olbrecht V, Engelhardt T, Tobias J. Beyond mortality: definitions and benchmarks of outcome standards in paediatric anaesthesiology. *Curr Opin Anaesthesiol.* 2023 Jun;36:318-323.

Department Reports

PATHOLOGY AND LABORATORY MEDICINE

The Department of Pathology and Laboratory Medicine at Nationwide Children’s Hospital provides a wide range of pediatric diagnostic services for hospitalized and ambulatory infants, children and adolescent patients. Laboratory services are provided through the main campus anatomic and clinical pathology laboratories, as well as multiple outpatient/reference laboratory testing facilities, Nationwide Children’s Close To HomeSM and Urgent Care centers, and our freestanding Emergency Department.

Faculty



Shamlal Mangray, MB, BS
Chief, Department of Pathology and Laboratory Medicine, Interim Section Chief, Anatomic Pathology (August 2022-present)



Kathleen K. Nicol, MD
Medical Director, Section Chief, Clinical Pathology



Vinay Prasad, MD
Section Chief, Anatomic Pathology (July 2021-July 2022)

Roshini Abraham, PhD
Peter B. Baker III, MD
Laura Biederman, MD
Daniel R. Boue, MD, PhD
Kristina Brannock, MD
Dustin Bunch, PhD
Srinivasa Chekuri, MB, BS
Sonja Chen, MB, BS
Catherine Chung, MD

Miriam R. Conces, MD
Bonita R. Fung, MD
Sophonie Jean, PhD
Samir Kahwash, MD
Benjamin Kaumeyer, MD, PhD
Amy L. Leber, PhD
Huifei Liu, MD, PhD
Erin K. Meyer, DO, MPH
Jeffrey Papiernik, MD

Christopher R. Pierson, MD, PhD
Amy L. Pyle-Eilola, PhD
Nilsa Del Carmen Ramirez-Milan, MD
Archana Shenoy, MD
Diana Thomas, MD
Huanyu Wang, PhD

Affiliated Faculty
Biochemical Genetics
Dennis W. Bartholomew, MD

Steve and Cindy Rasmussen Institute for Genomic Medicine Clinical Laboratory
Yasmine Akkari, PhD
Melanie Babcock, PhD
Catherine Cottrell, PhD
Claire Hou, PhD
Jesse Hunter, PhD

Marco Leung, PhD
Mariam Mathew, PhD
Hui Mei, PhD
Shalini Reshmi, PhD
Kathleen Schieffer, PhD
Karen Tsuchiya, PhD

Neuromuscular Pathology
Zarife Sahenk, MD, PhD
2022 – 2023 Fellows
Ashlie Rubrecht, MD
Olufunmilayo Abobarin-Aofolaju, MD

Highlights From the Past Year

The Department of Pathology and Laboratory Medicine includes more than 27 pathologists and doctoral scientists with subspecialty expertise in pediatric pathology and laboratory medicine. This professional staff is supported by more than 400 technical staff who provide 24/7 coverage in critical patient care areas. As an integral part of Nationwide Children’s operations, our team provides specimen collection and diagnostic services in multiple service centers across Ohio.

The department is making substantial investments in new technology and supportive infrastructure focused on these top five areas:

- Continued focus on attracting and retaining a diverse and engaged workforce.
- Enterprise Digital Pathology Program collaborating with the AWRI Biopathology Center.
- Renovating our main campus laboratories through a multi-million-dollar, multi-year plan to include an upgraded autopsy suite with BSL-3 standards.
- Planning for laboratory automation and improved analytical systems wherever possible, including the implementation of Beaker to align with the Epic EHR.
- Development and growth of an Immunology Business Plan to attract outreach clients and fulfill an underserved need for niche testing.

As part of our core mission, we were actively involved in undergraduate and graduate medical education, and our faculty served in multiple leadership roles locally and nationally. Faculty highlights include:

- Ben Kaumeyer, MD, PhD, started in the position, Assistant Director of Flow Cytometry.
- Diana Thomas, MD, promoted to Director of Digital Pathology.
- Kristina Brannock, MD, accepted the position, Interim Director of Hematopathology.
- Archana Shenoy, MD, promoted to OSU Associate Professor and also graduated from the OSU FAME Faculty Leadership Institute and received the Robert Ruberg Team Spirit Award.
- Vinay Prasad, MD, received the Nationwide Children’s Medical Staff - Golden Stethoscope Award.
- Christopher Pierson, MD, PhD, received the OSU Master Teacher Award as a part of the Courage to Teach program and the OSU Portfolio Coach of the Year Award.
- Roshini Abraham, PhD, is leading one of the aims for the CHOP R24 grant submission, United States Immunodeficiency Network fully funded.
- Miriam Conces, MD, and Archana Shenoy, MD, participated in the Nationwide Children’s Medical Leadership Program.
- Cathy Cottrell, PhD, participated in the Nationwide Children’s Journey to Leadership Excellence Program.
- Two anatomic/clinical pathologists were recruited in the last year, and we will recruit and develop faculty in the areas of cytopathology, liver pathology, hemostasis, transfusion medicine and diagnostic immunology.

Selected Publications

Akkari Y (expert member editorial board), Arends MJ, Bruford EA, Cree IA, Dalglish R et al. WHO Classification of Tumors online: *Genetic Tumor Syndromes (5th ed; Website beta version)* April 2023.

Biederman L, Conces M, Shenoy A. Acute interstitial nephritis in the pediatric population: a review of etiologic associations, histologic findings, and clinical outcome. *Pediatr Dev Pathol.* 2023 Jan-Feb;26(1):13-17.

Blincoe A, Labrosse R, Abraham R. Acquired B-cell deficiency secondary to B-cell-depleting therapies. *J Immunol Methods.* 2022 Dec;511:113385.

Bunch D, Durant T, Rudolf J. Artificial intelligence applications in clinical chemistry. *Clin Lab Med.* 2023 Mar;43(1):47-69.

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Department Reports

PHYSICAL MEDICINE AND REHABILITATION

The Section of Physical Medicine and Rehabilitation at Nationwide Children’s Hospital specializes in the diagnosis and management of children with physically disabling conditions. Our physicians are board-certified specialists in Physical Medicine and Rehabilitation 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, Carl D. Gelfius, MD, is board certified in electrodiagnostic medicine. Carl D. Gelfius, MD, Karl Klamar, MD, and Reginald D. Talley, MD, are board certified in brain injury medicine.

Faculty



Michelle A. Miller, MD
Chief

Carl D. Gelfius, MD

Amy D. Hiller, DO

Karl W. Klamar, MD

Wilawan Nopkhun, MD

Nathan S. Rosenberg, MD

Reginald D. Talley, MD

2022 – 2023 Fellows

Dana Miller, MD

Jennifer Kalbus, MD

Highlights From the Past Year

Physical Medicine and Rehabilitation was actively involved in the teaching of medical students, medical residents and fellows over the past year. We offer a pediatric rehabilitation rotation to the Physical Medicine and Rehabilitation residents from Larkin Community Hospital and the Palm Spring Branch of Larkin. Presentations on pediatric rehabilitation, concussion, neuromuscular disorders, musculoskeletal disorders, spasticity management and pediatric traumatic brain injury were made at local, regional, national and international levels.

Clinically, we provide services to the multidisciplinary brachial plexus team, the wheelchair seating and equipment clinic, and the EMG laboratory. We also continue services to our CARF (Commission on Accreditation of Rehabilitation Facilities)-accredited inpatient rehabilitation unit, the inpatient consult service and the following outpatient clinics: General Rehabilitation, Myelomeningocele, Botulinum Toxin, Concussion, Gait Lab, Neuro-oncology and Non-Accidental Traumatic Brain Injury.

Selected Publications

Damante M, Rosenberg N, Shaikhouni A, Johnson H, Leonard J, Ostendorf A, Pindrik J. Impact of etiology on seizure and quantitative functional outcomes in children with cerebral palsy and medically intractable epilepsy undergoing hemispherotomy/hemispherectomy. *World Neurosurg.* 2023 Jul;175:e769-e774.

Marchese D, Feldman K, Sinn C, Javaid S, Jaffe A, Katz E, Lider J, Green M, Marcus L, Swanson E, Gober J, Thomas S, Deike D, Felman K, Sinha A, Dalal P, Ewing E, Hiller A, Rosenberg N, Mosher K, Houtrow A, McLaughlin M. Rehabilitation outcomes in children with acute flaccid myelitis from 2014 to 2019: A multicenter retrospective review. *Pediatr Neurol.* 2023 Aug;145:41-47.

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Fast Facts:
July 2022 – June 2023

Inpatient Discharges: 83

Observation and Outpatient-in-a-Bed Discharges: 1

Total Discharges: 84

Average Length of Stay*: 23.2

Average Daily Census*: 5.3

Patient Days*: 1,924

Inpatient Consults: 520

Number of Beds: 12

Physical Medicine Clinic Visits: 6,129

Myelomeningocele (Spina Bifida) Clinic Visits: 700

School-Based Seating Clinic Visits: 12

Total Clinic Visits: 6,841

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



The Youth Crisis Stabilization Unit at the Big Lots Behavioral Health Pavilion addresses growing mental health needs of children and adolescents.

Mary A. Fristad, PhD, and Joyce Chen, MD

Behavioral Health

Evolution of the Youth Crisis Stabilization Unit

An alternative to inpatient hospitalization for youth experiencing a mental health crisis and their families sees success at Nationwide Children's.

Over the last 12 years, the Youth Crisis Stabilization Unit (YCSU) has grown from a two-bed unit housed within a general emergency department to a 16-bed unit designed specifically with the needs of youths and families in crisis in mind. In a new book chapter from *Handbook of Evidence-Based Day Treatment Programs for Children and Adolescents*, clinicians and researchers from Nationwide Children's detail why the unit was established, how it has grown and why it is a promising alternative psychiatric intervention to traditional inpatient hospitalization.

In recent years, the availability of inpatient psychiatric beds for adolescents has declined despite increasing suicidal behaviors and self-injury among youth. The YCSU was developed to help meet the growing mental health needs of children and adolescents in the central Ohio region.

"We worked to get hospital systems, community partners and insurance companies to cooperate in a structure that is functional for families," says **Mary A. Fristad, PhD**, a clinical child and adolescent psychologist at Nationwide Children's and senior author of the new chapter.

The YCSU began in 2010, supported by a grant from the county Alcohol, Drug, and Mental Health (ADAMH) Board. The success of the program in these initial years led to further funding and growth of the YCSU. In 2020, Nationwide Children's opened the Big Lots Behavioral Health Pavilion and the YCSU moved to this new facility.

"The biggest philosophical difference compared to a traditional inpatient unit is the exclusive focus on the individual, their family and the crisis that brought them to the unit," says **Joyce Chen, MD**, a child and adolescent psychiatrist at Nationwide Children's and lead author of the chapter. "The goal is to help the patient and their family build communication and coping skills that will help them manage outside of the unit."

REFERENCE:

Chen JT, Bruns E, Schellhause Z, Garcia C, Fristad MA. (2022). The Youth Crisis Stabilization Unit: An Alternative Psychiatric Treatment Model. In: Leffler, J.M., Frazier, E.A. (eds) *Handbook of Evidence-Based Day Treatment Programs for Children and Adolescents*. Issues in Clinical Child Psychology. Springer, Cham.

Department Reports

BIG LOTS BEHAVIORAL HEALTH SERVICES

Faculty



David A. Axelson, MD

Medical Director, Big Lots Behavioral Health Services

Chief, Psychiatry and Community Behavioral Health

Highlights From the Past Year

Big Lots Behavioral Health Services at Nationwide Children’s Hospital is a comprehensive service line dedicated to children and adolescents affected by mental illness and problems of emotion, behavior, development, thought and adaptation to life challenges, including those 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, psychologists and neuropsychologists, advanced practice providers, nurses, social workers, family therapists and counselors. We also provide consultation and integrated behavioral health services in pediatric primary care and specialty clinics. By working together, we aim to deliver team-based care that transcends the work of individual professionals, incorporating evidence-based practices into active clinical settings and establishing high standards of quality, safety and customer satisfaction. Faculty from the Department of Pediatrics and the Division of Child and Family in the Department of Psychiatry and Behavioral Health provide clinical care for the service line.

In March 2020, Nationwide Children’s opened the Big Lots Behavioral Health Pavilion. As the most comprehensive pediatric facility of its kind nationally, the Pavilion houses integrated behavioral health services, including inpatient psychiatric beds, a psychiatric crisis evaluation center with observation beds, a crisis stabilization unit, a partial hospital program, intensive outpatient program and outpatient clinics. Over the past year, we saw significant growth in the volume of patients served by programs in the Pavilion. The Behavioral Health Pavilion serves as a place to conduct trainings for the wide range of disciplines in pediatric mental and behavioral health, as well as to foster collaboration with Nationwide Children’s research teams and community partner agencies. The service line has hosted representatives from many pediatric hospitals and behavioral health organizations that have asked to visit and learn about the design and service delivery at the Big Lots Behavioral Health Pavilion.

In addition to being one of the largest outpatient service lines at Nationwide Children’s, we are also the largest pediatric behavioral health network of any children’s hospital in the country, with over 260,000 outpatient visits completed in the past year. Clinical services within behavioral health serve as a setting for training a wide range of disciplines. Associated training programs include pre-professional internships in psychology, social work and clinical counseling; fellowships in child and adolescent psychiatry; postdoctoral psychology fellowships in pediatric psychology, neuropsychology, child clinical, intellectual and developmental disabilities and autism treatment; a postgraduate fellowship program in child and adolescent mental health for advanced practice nurses; and externships for psychiatric and mental health advanced practice nurses, clinical counselors, social workers, family therapists and psychologists. In addition, medical students, residents in psychiatry, pediatric and family practice, and nursing students all have training experiences and rotations within the service line. The service line supports a diverse portfolio of clinical research studies, many of which are led by investigators from the Center for Biobehavioral Health, the Center for Suicide Research and Prevention, and the Autism and Neurodevelopmental Research Program, as well as collaborations with the Steve and Cindy Rasmussen Institute for Genomic Medicine. 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.

The Child Development Center and Center for Autism Spectrum Disorders provide services to individuals with intellectual and developmental disabilities, including those with autism spectrum disorders. The Child Development Center offers a range of services to address the developmental and behavioral needs of children, adolescents and families of those with autism spectrum disorders and other developmental disabilities. These services include interdisciplinary assessment and treatment, psychological evaluation and treatment, family interventions, advocacy support and care coordination with medical, speech and additional services. The Child Development Center provides integrated care in more than a dozen pediatric subspecialty clinics. It also serves as a site for Autism Speaks’ Autism Care Network, which has more than 25 sites across the United States and Canada. The center’s psychologists are also involved in several other national research networks including the Simons Foundation SPARK Autism Network, the largest genetic research registry for individuals with autism spectrum disorder as well as multiple other federally funded multi-site research studies.

The Center for Autism Spectrum Disorders provides comprehensive, multidisciplinary care focusing on evidence-based treatment, education, research and advocacy for children diagnosed with autism spectrum disorder. Services include intensive behavioral intervention and consultation, school support and educational consultation, Asperger syndrome counseling, social skills groups, parent teaching, advocacy and community education. Services are delivered in clinic, homes, and schools and cover the full age range from early childhood through transition to adulthood.

Pediatric Psychology and Neuropsychology has 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, concussion, 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.

Psychologists act as liaisons to divisions within the departments of Pediatrics and Psychiatry to provide expertise in clinical care and to assist in development of research and quality initiatives around the psychosocial care for patients and families. Pediatric Psychology provides inpatient consultation and liaison, and outpatient services. One area of continued expansion has been integrating pediatric psychologists into our Primary Care Centers as well as supporting behavioral health integration programs in community primary care practices. Also, Pediatric Psychology recently expanded already established integrated care programs within Hematology/Oncology, Critical Care, the Pediatric Feeding and Swallowing Program, and acute psychiatry settings within the Big Lots Behavioral Health Pavilion. Additionally, there is a history of psychologists providing 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 & Blood and Marrow Transplant, psychosocial leadership in areas of gastrointestinal care and the Newborn Intensive Care Unit, program leadership in the interdisciplinary feeding program for children with feeding problems, and the comprehensive interdisciplinary pain program. Psychology leadership has now been established for Nationwide Children’s Hospital’s expansion into Toledo. Pediatric Psychology also provides leadership in the *On Our Sleeves*® national movement for children’s mental health.

Psychiatry and Community Behavioral Health is the largest and most clinically diverse section of Behavioral Health Services. This integrated program of care for pediatric mental disorders spans a comprehensive spectrum, from prevention services to inpatient psychiatric units. Services currently available include the Psychiatric Crisis Department, a 10-bed Extended Observation Suite, a 16-bed Youth Crisis Stabilization Unit, three inpatient psychiatric units, consultation-liaison services for youth who are hospitalized on Nationwide Children’s medical and surgical units, a Partial Hospital Program, outpatient services for eating disorders provided in collaboration with Adolescent Medicine, intensive outpatient services within the Mood and Anxiety Program, intermediate levels of behavioral health care in the community, including in the courts and schools, specialized services for early child mental health, outpatient treatment clinics and novel programs to support mental health service delivery in primary care settings. Over the past year, we continue to focus on refining and expanding services at the Big Lots Behavioral Health Pavilion. In September 2022, we started the Mobile Response and Stabilization Services program, which sends behavioral health clinicians to homes or schools in Franklin County to respond to youth in crisis. This program, along with our Tele-Crisis program, moved into a new suite built on the first floor of the Behavioral Health Pavilion. We also opened psychiatry and therapy outpatient clinics in newly built space on the 4th floor of the pavilion. See page 140 for a list of faculty, selected publications and grants awarded.

Center for Biobehavioral Health: See page 189 for information about the Center for Biobehavioral Health in the Abigail Wexner Research Institute at Nationwide Children’s Hospital.

Fast Facts: July 2022 – June 2023

- Outpatient Visits/Consults: 268,641
- Inpatient Consults: 6,502
- Inpatient Discharges: 2,031
- Inpatient Days: 13,449
- Child Development Center Outpatient and Medical Clinic Visits: 14,669
- Center for Autism Spectrum Disorders Visits: 33,994

Department Reports
PSYCHIATRY AND COMMUNITY BEHAVIORAL HEALTH

Psychiatry and Community Behavioral Health at Nationwide Children’s Hospital is the largest and most clinically diverse section of the Big Lots Behavioral Health Service Line. This integrated program of care for pediatric mental health conditions spans a comprehensive spectrum of care from prevention services to inpatient psychiatric units. The Division of Child and Family in The Ohio State University Department of Psychiatry and Behavioral Health has faculty at Nationwide Children’s. See page 135 for details and for information about all Behavioral Health services.

Faculty



David A. Axelson, MD
Chief

- | | | |
|------------------------|--------------------------------|-------------------------------|
| John Ackerman, PhD | Catherine Butz, PhD | Cynthia Fontanella, PhD |
| Kento Akasaka, DO | Meredith Chapman, MD | Mary Fristad, PhD |
| Benjamin Albrecht, DO | Joyce Chen, MD | Bela M. Gandhi, MD |
| Jaclyn Aldrich, PhD | Courtney Cleminshaw-Mahan, PhD | Mounika Ganguly, MD |
| Sarah Amato, PsyD | Allison Collier, MD | Richard H. Gilchrist, MD |
| Samanta Boddapati, PhD | Nancy Cunningham, PsyD | Charles J. Glawe, MD |
| Jeffrey A. Bridge, PhD | Benjamin Fields, PhD | Adam Goldberg, MD |
| Katie Burkhouse, PhD | Michael Flores, PhD | Jocelyn Hart, MD |
| Eric Butter, PhD | | Karah Harvey-Nuckles, MD, MPH |

- | | | | |
|------------------------------|--------------------------------|--------------------------|---|
| Taylor Hendricks-Johnson, MD | Anna Kerlek, MD | Molly Meers, PhD | Eileen Ryan, DO |
| Caroline Hodgson, PhD | Robert A. Kowatch, MD, PhD | Christine Oh, MD | Brittany Schaffner, MEd, IMFT-S, LPCC-S |
| Ariana Hoet, PhD | Rajeev Krishna, MD, PhD, MBA | Ijeoma Osigwe, PhD | Nadine Schwartz, MD |
| Amy Hoisington-Stabile, MD | Scott Leibowitz, MD | Jessica Palilla, PhD | Stephen Scott, DO |
| Jennifer Hughes, PhD | Elizabeth (Lisa) Linstedt, PhD | Raisa Ray, PhD | Allison Siroky, PhD |
| Geeta Ilipilla, MD | Della Loflin, PhD | Sidney Risley, PhD | Alexandra (Lexi) Smith, PhD |
| Natalie Jacobowski, MD | Ghada Lteif, MD | Jennifer Reese, PsyD | Lisa Sperle, PhD |
| David Jensen, DO | Gina McDowell, LPCC-S | Margaret Rosencrans, PhD | Maria Stamatakos, MD |
| Kristina R. Jiner, MD | Ian McKay, PhD | Donna Ruch, PhD | |

- | | |
|------------------------|----------------------|
| Griffin A. Stout, MD | Heather Yardley, PhD |
| Moneika Sutton, PhD | Musa Yilanli, MD |
| Glenn Thomas, PhD | Donald Zeolla, MD |
| Raymond Troy, MD | |
| Elizabeth Vickery, PhD | |
| Kelly Wesolowski, PsyD | |
| Kristopher West, PhD | |
| Nicole White, MD | |
| Lynda Wolfe, PhD | |

Selected Publications

Bridge J, Ruch D, Sheftall A, Hahm H, O’Keefe V, Fontanella C, Brock G, Campo J, Horowitz L. Youth suicide during the first year of the COVID-19 pandemic. *Pediatrics*. 2023 Mar 1;151(3):e2022058375.

Burkhouse K, Kujawa A. Annual Research Review: Emotion processing in offspring of mothers with depression diagnoses – a systematic review of neural and physiological research. *J Child Psychol Psychiatry*. 2023 Apr;64(4):583-607.

Granros M, MacNamara A, Klumpp H, Phan K, Burkhouse K. Neural reactivity to affective stimuli and internalizing symptom dimensions in a transdiagnostic patient sample. *Depress Anxiety*. 2022 Dec;39(12):770-779.

Hughes J, Horowitz L, Ackerman J, Adrian M, Campo J, Bridge J. Suicide in young people: screening, risk assessment, and intervention. *BMJ*. 2023 Apr 24;381:e070630.

Russo R, Hameed U, Ibrahim Y, Joshi A, Kerlek A, Klapheke M, Kovach J, Raml D, Schatte D, Thomas L, Rakofsky J. Psychiatry residency directors’ attitudes toward and uses of the medical student performance evaluation and other potential tools for residency selection. *Acad Psychiatry*. 2022 Oct;46(5):622-626.

Strang J, Chen D, Nelson E, Leibowitz S, Nahata L, Anthony L, Song A, Grannis C, Graham E, Henise S, Vilain E, Sadikova E, Freeman A, Pugliese C, Khawaja A, Maisashvili T, Mancilla M, Kenworthy L. Transgender youth executive functioning: relationships with anxiety symptoms, autism spectrum disorder, and gender-affirming medical treatment status. *Child Psychiatry Hum Dev*. 2022 Dec;53(6):1252-1265.

Trivedi M, Nandy K, Mayes T, Wang T, Forbes K, Anderson J, Fuller A, Hughes J. Youth Aware of Mental Health (YAM) program with Texas adolescents: depression, anxiety, and substance use outcomes. *J Clin Psychiatry*. 2022 May 16;83(4):21m14221.

Fast Facts: July 2022 – June 2023

Community-Based Therapy Visits: 40,583

Office-Based Therapy Visits: 95,813

Partial Hospital/Intensive Outpatient Program Visits: 5,891

Psychiatric Crisis Department: 7,748

Psychiatry Clinic Visits: 30,777

Psychiatry Inpatient Consultations: 765

Psychiatry Inpatient Unit Discharges: 862

Youth Crisis Stabilization Unit Discharges: 1,169


Department Reports
RADIOLOGY

The Department of Pediatric Radiology at Nationwide Children’s Hospital is one of the nation’s premier imaging programs for children, with subspecialty expertise in abdominal, cardiac, chest, fetal/neonatal, interventional, musculoskeletal, neuroimaging and nuclear imaging. We provide expert care in image-guided diagnosis and therapy.


Our mission is to improve children’s lives through innovative imaging. The major philosophical consideration that drives our mission is that children are not small adults. Technology must be adapted to meet the needs of pediatric patients to create imaging biomarkers specific for pediatric disease. We approach imaging with the following goals in mind:

- Develop and validate imaging biomarkers specific to pediatric disease
- Determine quality, safety and cost-effectiveness of validated imaging biomarkers for discrete patient care pathways
- Integrate imaging biomarkers across the research and clinical spectrums
- Utilize Pediatric Advanced Imaging Resource (PAIR) analysts to provide advanced analysis of images

Faculty



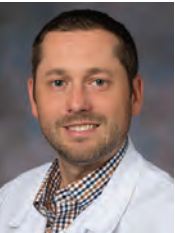
Ellen Chung, MD
Chief, Pediatric Radiology




Jeremy Jones, MD
Vice Chief, Pediatric Radiology and Section Chief, Neuro-Radiology



Brent Adler, MD
Section Chief, Body Imaging



Adam Bobbey, MD
Section Chief, Nuclear Medicine and Molecular Imaging



Leah Braswell, MD
Section Chief, Interventional Imaging

Lamya Atweh, MD	Julie O’Donovan, MD	Cody Young, DO
David Gregory Bates, MD	Andrew Rabe, DO	Nicholas Zumberge, MD
Nathan Fagan, MD	Mitch Rees, MD	
Mark Hogan, MD	Diana Rodriguez, MD	
Rajesh Krishnamurthy, MD	Lynne Ruess, MD	
Anna Lillis, MD, PhD	Jerome Rusin, MD	
Lisa Martin, MD	Rida Salman, MD	
Aaron McAllister, MD	Summit Shah, MD	
Kathryn Milks, MD	Sally Smith, DO	
James Murakami, MD	Benjamin Thompson, DO	
Becky Murray, MD	Patrick Warren, MD	

2022 – 2023 Pediatric Diagnostic Fellows

Jasmeet Singh, MBBS

Highlights From the Past Year

Radiology has had several clinical advancements over the past year. A few notable accomplishments:

- Cardiac Imaging: Pursuing efficiencies in workflow to reduce turnaround time of cardiac imaging studies, including rapid myocardial characterization using 3T, abbreviated and unsedated 4D flow studies with free breathing in congenital heart disease, and streamlined processing and reporting workflow.
- Body Imaging: Continued growth in fetal imaging services; hepatic imaging continues to grow in sophistication and scope; more extensive vascular imaging is being routinely done on transplant and liver resection patients cared for by hepatology and surgery.
- Oncologic Imaging: Continued growth and utilization of tumor metrics to track lesions in patients enrolled in clinical trials; implementing Lutathera radiotherapy for patients with somatostatin receptor avid brain tumors.
- Neuroimaging: Continued expansion of study specific MRI protocols and metrics with neuro-oncology; exploration of utility of low field strength MRI in setting of hydrocephalus, in conjunction with neurosurgery; establishment of inpatient stroke imaging pathway and protocol.
- Interventional Radiology: Offered new endovenous laser treatment for chronic venous disease; increased inpatient consult service and bolstered outpatient clinic infrastructure; increased rotation allotment for trainees to gain unique pediatric IR experience.
- Our cardiac research team has had several key publications regarding the use of biomechanical flow modeling using patient-specific 3D printed models and computational modeling of risk of sudden cardiac death in children. They have begun the first study of 4D flow in sheep fetuses using blood pool contrast agent for hemodynamic monitoring of fetal interventions as part of a collaborative effort with the tissue engineering group.
- Additionally, our imaging faculty lead and promote multi-institutional data sharing through large patient registries, including the Imaging Registry for Orphan and Rare Disease (IROAR) at the American College of Radiology and its association with PEDSnet, the Fontan Outcome Registry Using Cardiac Magnetic Resonance Imaging Examinations (FORCE), and Collaborative for Longitudinal Aortic Research in the Young (CLARITY).

Selected Publications

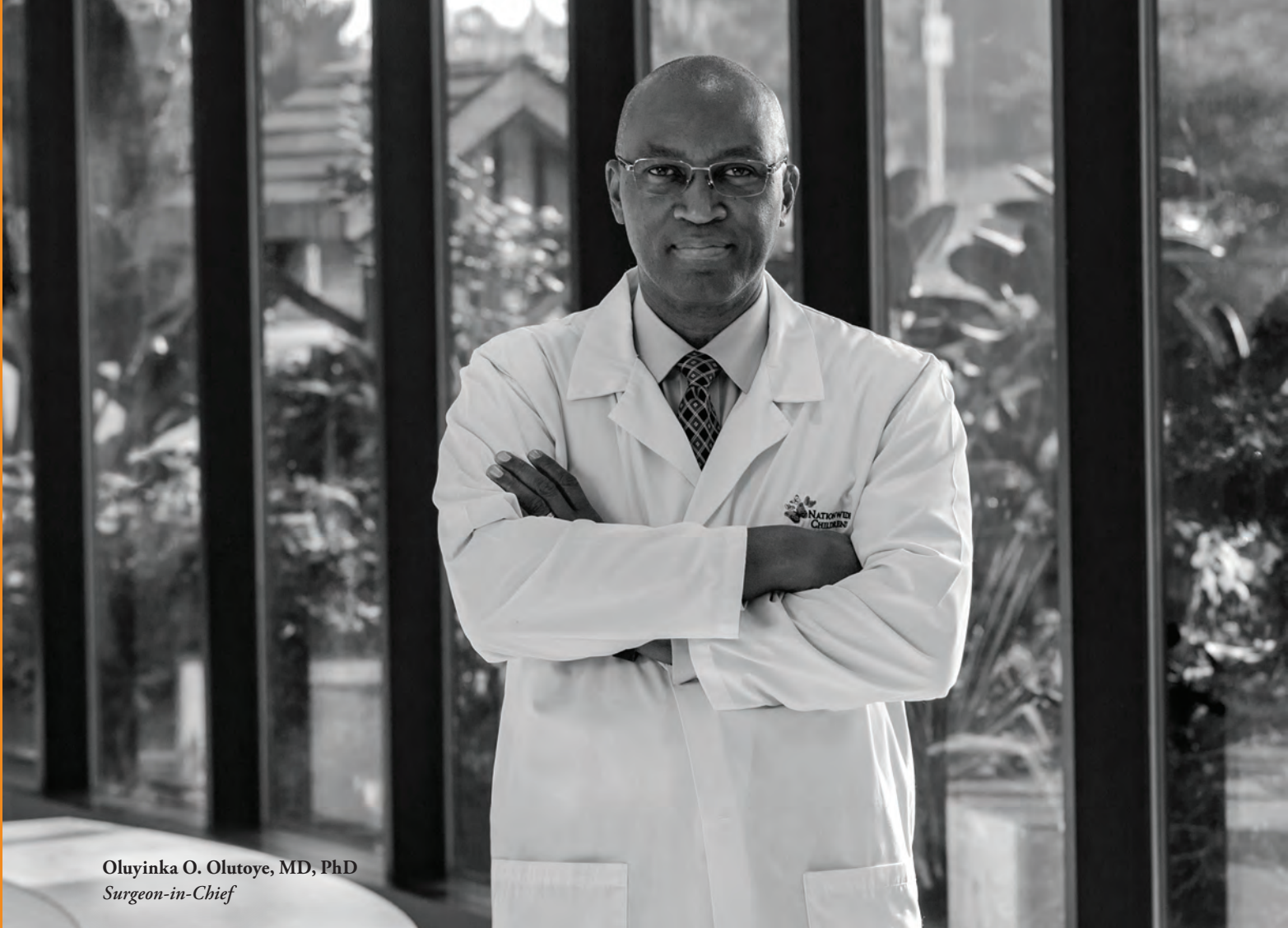
Doan T, Sachdeva S, Bonilla-Ramirez C, Reaves-O'Neal D, Masand P, Krishnamurthy R, Jadhav S, Mery C, Binsalamah Z, Molossi S. Anomalous aortic origin of coronary arteries in children: postoperative high-risk anatomic features. *Ann Thorac Surg.* 2023 Apr;115(4):991-998.

Krishnamurthy R, Dasi LP. (2023). Predictive Model of Sudden Cardiac Death in Anomalous Aortic Origin of Coronary Artery (AAOCA); U.S. Patent 63/502,524. Nationwide Ref: 2022-055-01. Provisional patent.

Pindrik J, McAllister A, Jones J. Imaging in Chiari I malformation. *Neurosurg Clin N Am.* 2023 Jan;34(1):67-79.

Wong M, Braswell L, Murakami J. Doxycycline sclerotherapy of cervical spine aneurysmal bone cysts: single-institution 13-year experience. *Pediatr Radiol.* 2022 Jul;52(8):1528-1538.





Oluyinka O. Olutoye, MD, PhD
Surgeon-in-Chief

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 ground-breaking 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 surgery, robotic assisted surgery and complex colorectal surgery.

SURGICAL SUBSPECIALTIES

- Abdominal Transplant and Hepatopancreatobiliary Surgery
 - Cardiothoracic Surgery
 - Colorectal and Pelvic Reconstruction
 - Dentistry
 - Fetal Medicine
- Neurosurgery
 - Ophthalmology
 - Orthopaedics
 - Otolaryngology
 - Pediatric and Adolescent Gynecology
- Pediatric Surgery
 - Plastic and Reconstructive Surgery
 - Trauma
 - Urology

Surgical Services
ABDOMINAL TRANSPLANT AND HEPATOPANCREATOBILIARY SURGERY

The Department of Abdominal Transplant and Hepatopancreatobiliary Surgery at Nationwide Children’s is leading the way in providing liver and kidney transplantation as well as surgical treatment of children with pancreatic and hepatobiliary conditions. A national and international destination, the department serves as the principal surgical component for several advanced multidisciplinary programs, including the Pancreas and Liver Care Center and Kidney Transplant. Surgical capabilities include many advanced procedures available at only a handful of children’s hospitals in the United States. Program highlights include:

- Total pancreatectomy with islet autotransplantation (TPIAT) for children with debilitating pain and impaired quality of life from acute recurrent or chronic pancreatitis.
- One of the only pediatric hospitals in the United States with a dedicated on-site GMP islet isolation facility, and the only pediatric hospital to be awarded by the National Institutes of Health (NIH) as Islet Isolation Center (IIC) in the Integrated Islet Distribution Program (IIDP).
- Advanced liver surgery options and all technical variant transplant grafts, including reduced-size grafts, split liver grafts and living donor transplantation.
- Liver transplants in very young patients (<6 months).
- Highly specialized hepatobiliary surgery team with extensive experience in hepatoportoenterostomy (Kasai) for biliary atresia, choledochal cyst resection and complex resections of tumors and masses.
- Expertise in portal hypertension operations, including meso-Rex shunts for extrahepatic portal vein thrombosis, distal splenorenal shunts and mesocaval shunts.
- Autologous intestinal reconstruction surgery, including the Bianchi procedure and the serial transverse enteroplasty procedure (STEP), for children with short bowel syndrome.

Faculty



Jaimie D. Nathan, MD, FACS
Chief, Abdominal Transplant and Hepatopancreatobiliary Surgery

KIDNEY TRANSPLANT
PEDIATRIC SURGERY AND
KIDNEY TRANSPLANT

- Jaimie D. Nathan, MD, FACS
- Amer Rajab, MD, PhD
- Sara Rasmussen, MD, PhD
- Christie Heinzman, DNP, APRN

NEPHROLOGY

- Brian Becknell, MD, PhD
- O. N. Ray Bignall II, MD
- Mahmoud Kallash, MD
- John D. Mahan, MD
- Tahagod Mohamed, MD

- Hiren P. Patel, MD
Medical Director, Kidney Transplant
- William E. Smoyer, MD
- John David Spencer, MD
- Emily J. Stonebrook, MD
- Beth A. Vogt, MD
- Diana Zepeda-Orozco, MD

UROLOGY

- Christina B. Ching, MD
- Rama Jayanthi, MD
- Daryl J. McLeod, MD

PANCREAS AND LIVER
CARE CENTER
HEPATOPANCREATOBILIARY
SURGERY AND LIVER
TRANSPLANT

- Jaimie D. Nathan, MD, FACS
- Ashley Limkemann, MD
- Sara Rasmussen, MD, PhD
- Christie Heinzman, DNP, APRN

GASTROENTEROLOGY,
HEPATOLOGY AND NUTRITION

- A. Jay Freeman, MD, MSc
Medical Director, Pancreas Care
- Cheryl E. Gariepy, MD

Muhammad A. Khan, MD, MPH
Director, Interventional and Diagnostic Endoscopy

Dieudonne Nonga Makon, MD

Carol J. Potter, MD

Alexander Weymann, MD
Medical Director, Liver Care

Addie Flood, CPNP-AC

ANESTHESIOLOGY AND PAIN MEDICINE

Graciela Argote-Romero, MD

Candice Burrier, MD

Ajay D’Mello, MD

Greg Maves, MD

Ambrish Patel, MD

Timothy Smith, MD

Ahsan S. Syed, MD

Brittany Willer, MD

ENDOCRINOLOGY

Kajal K. Gandhi, DO, MPH

Robert Hoffman, MD

Justin A. Indyk, MD, PhD

Jennifer Ladd, MD

HEMATOLOGY/ONCOLOGY

Mark A. Ranalli, MD

INFECTIOUS DISEASE

Monica I. Ardura, DO, MSCS

Christopher P. Ouellette, MD

Eunkyung Song, MD

Sanya J. Thomas, MD

ISLET CELL TRANSPLANTATION AND BETA CELL BIOLOGY

Balamurugan N. Appakalai, PhD
Director

Ahad Ahmed Kodipad, PhD
Research Scientist

Chandrashekar Bangalore Revanna, PhD
Research Scientist

Krishna Kumar Samaga, MS
Chief Research Associate

PEDIATRIC PSYCHOLOGY

Hannah N. McKillop, PhD

RADIOLOGY

Nathan Fagan, MD

Mitchell A. Rees, MD

Patrick Warren, MD

Highlights From the Past Year

- Jaimie D. Nathan, MD, reached a significant milestone in performing his 100th total pancreatectomy with islet autotransplantation (TPIAT) in September. Dr. Nathan is the most experienced board-certified pediatric surgeon in the United States performing TPIATs.
- The Islet Cell Transplantation and Beta Cell Biology Program was awarded by the NIH as an Islet Isolation Center (IIC) in the Integrated Islet Distribution Program (IIDP). IIDP is the organization that facilitates diabetes and metabolism research through distribution of isolated human islets. The select group of recognized IIDP centers includes only those demonstrating the highest level of experience and quality output. Nationwide Children’s is the only pediatric hospital with the IIDP designation.
- Performed Nationwide Children’s first technical variant liver transplant and the hospital’s first ABO-incompatible liver transplant.
- Performed nine kidney and eight liver transplants, and six TPIAT operations.
- Multiple new recruits have expanded our expertise in liver and kidney transplantation and hepatopancreatobiliary care. New recruits include:
 - Dieudonne Nonga Makon, MD, joined the Division of Gastroenterology, Hepatology and Nutrition, as transplant hepatologist following completion of his liver transplant fellowship at Children’s Hospital of Pittsburgh. He will be an integral part of the Pancreas and Liver Care Center, helping to address a substantial increase in the number of children needing and receiving liver transplants.
 - Chandrashekar Bangalore Revanna, PhD, joined the Islet Cell Transplantation and Beta Cell Biology Program as a Research Scientist.
 - Hannah N. McKillop, PhD, a psychologist in Pediatric Psychology and Neuropsychology who has been with Nationwide Children’s since 2020 became part of the Pancreas and Liver Care Center team.

Selected Publications

Downs E, Eaton A, Witkowski P, Wijkstrom M, Walsh M, Trikudanathan G, Singh V, Schwarzenberg S, Pruett T, Posselt A, Naziruddin B, **Nathan JD**, Mokshagundam S, Morgan K, Lara L, Gardner T, Freeman M, Ellery K, Chinnakotla S, Beilman G, Adams D, Ahmad S, Abu-El-Haija M, Bellin M. Nutritional risks in patients undergoing total pancreatectomy islet autotransplantation in the POST consortium. *J Gastrointest Surg.* 2023 Jul 13. Online ahead of print.

Goddard G, Wagner M, Jenkins T, Abu-El-Haija M, Lin T, Goldstein S, **Nathan JD**. Effect of intraoperative fluid type on postoperative systemic inflammatory response and end organ dysfunction following total pancreatectomy with islet autotransplantation in children. *J Pediatr Surg.* 2022 Aug;57(8):1649-1653.

Kaj-Carbaidwala B, Bernieh A, Russi A, Miethke A, Abu-El-Haija M, Trout A, Gupta A, Ricci K, **Nathan JD**. Total pancreatectomy with islet autotransplantation in a child with pancreatic kaposiform hemangioendothelioma. *J Pediatr Surg Case Rep.* 2022;81:102266.

Patterson K, Trout A, Shenoy A, Abu-El-Haija M, **Nathan JD**. Solid pancreatic masses in children: A review of current evidence and clinical challenges. *Front Pediatr.* 2022 Nov 25;10:966943.

Rasmussen S, Lemoine C, Superina R, Sayed B, Goldaracena N, Soltys K, Griesemer A, Dick A, Angelis M, Chin L, Florman S, Ganoza A, Lyer K, Kang S, Magliocca J, Squires J, Eisenberg E, Bray D, Tunno J, Reyes J, Mazariegos G. State of pediatric liver transplantation in the United States and achieving zero wait list mortality with ideal outcomes: A statement from the Starzl Network for Excellence in Pediatric Transplant Surgeon’s Working Group. *Pediatr Transplant.* 2023 Feb;27 Suppl 1:e14283.

Fast Facts: July 2022 – June 2023

Liver Care Inpatient Discharges: 142

Liver Care Observation and Outpatient-in-a-Bed Discharges: 96

Pancreas Care Inpatient Discharges: 89

Pancreas Care Observation and Outpatient-in-a-Bed Discharges: 14

Kidney Transplants: 9

Liver Transplants: 8

TPIAT Operations: 6

Other Operations: 78

Total Surgical Procedures: 101

Kidney Clinic Visits: 26

Liver Clinic Visits: 61

TPIAT Clinic Visits: 54

All Other Related Clinic Visits: 214

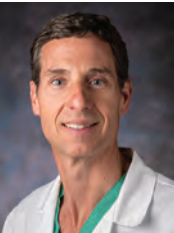
Total Abdominal Transplant and Hepatopancreatobiliary Surgery Clinic Visits: 355

Surgical Services

THE HEART CENTER/CARDIOTHORACIC SURGERY

The Cardiothoracic Surgery Program at Nationwide Children’s Hospital 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 41 for details about The Heart Center.

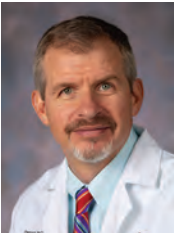
Faculty



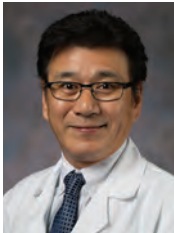
Mark E. Galantowicz, MD
Chief, Cardiothoracic Surgery
Co-Director, The Heart Center



Sergio A. Carrillo Melendez, MD
Pediatric Cardiothoracic Surgeon



Patrick I. McConnell, MD
Director, Cardiopulmonary Mechanical Assist Program



Toshiharu Shinoka, MD, PhD
Director, Cardiovascular Tissue Engineering Program

Selected Publications

Cosgrove T, Gauntt J, Carrillo S, Cassidy S, Gajarski R, Galantowicz M, Krawczeski C. Proactive risk mitigation for cardiac arrest prevention in high-risk patients with congenital heart disease. *JTCVS Open*. 2022 Nov 4;13:307-319.

Nealon E, Phelps C, Krawczeski C, Alexander R, Stiver C, Ball M, Carrillo S, Texter K. Impact of maternal-fetal environment on outcomes following the hybrid procedure in the single ventricle population. *Pediatr Cardiol*. 2022 Dec 3.

Park H, Kelly J, Hoffman J, Takaesu F, Schwartzman W, Ulziibayar A, Kitsuka T, Heuer E, Yimit A, Malbrue R, Anderson C, Morrison A, Naguib A, Mckee C, Harrison A, Boe B, Armstrong A, Salavitarab A, Yates A, Shinoka T, Carrillo S, Breuer C, Davis M. Computational analysis of serum-derived extracellular vesicle miRNAs in juvenile sheep model of single stage Fontan procedure. *Extracell Vesicle*. 2022 Dec;1:100013.

Surgical Services

COLORECTAL AND PELVIC RECONSTRUCTION

The Center for Colorectal and Pelvic Reconstruction (CCPR) at Nationwide Children’s Hospital is leading the way in providing high-quality care for children diagnosed with colorectal and pelvic conditions. There is a direct correlation between the number of patients a clinical program sees and the high-quality outcomes they can deliver to their patients. CCPR is the busiest program of its kind anywhere in the world, having performed more than 550 operations last year. Every child diagnosed with a colorectal or pelvic condition is handled with an individualized treatment plan. Because of the complexity of many conditions, most children require care throughout their life. Our team is committed to providing optimal outcomes and quality of life for patients ranging from the newborn stage, through toilet training, puberty and adulthood, including bowel, urinary, sexual function and childbearing.

Faculty



Richard J. Wood, MD
Chief

Colorectal and Pelvic Reconstructive Surgery

Karen A. Diefenbach, MD
Alessandra Gasior, DO
Transitional Care Director
Ihab Halaweish, MD

Gastroenterology, Hepatology and Nutrition

Neetu B. Puri, MD, MPH
Carlo Di Lorenzo, MD
Peter Lu, MD
Karla Vaz, MD
Kent C. Williams, MD
Desale Yacob, MD
Motility Director, Colorectal and Pelvic Reconstruction

Diagnostic Radiology

Brent H. Adler, MD
David Gregory Bates, MD
Benjamin P. Thompson, DO

Neurosurgery

Jeffrey R. Leonard, MD

Orthopedics

Christopher A. Iobst, MD

Pediatric and Adolescent Gynecology

Geri D. Hewitt, MD
Gynecology Director, Colorectal and Pelvic Reconstruction
Chelsea A. Kebodeaux, MD
Katherine A. McCracken, MD

Urology

Daniel G. DaJusta, MD
Urology Director, Colorectal and Pelvic Reconstruction
Molly Fuchs, MD
V. Rama Jayanthi, MD

Service Line Administrator

Vannessa Moses

Program Manager

Stephanie Vyrostek, MHA, BSN, RN

Clinical Leaders

Kristina Booth, MSN, CFNP
Jess Thomas BSN, RN

2022 – 2023 Fellows
Pediatric Colorectal Research

Shruthi Srinivas, MD

Pediatric Colorectal Surgery

Wendy Jo Svetanoff, MD

International Pelvic Reconstruction

Syed Faizullah Hussaini, MD

Highlights From the Past Year

The Center for Colorectal and Pelvic Reconstruction complex reconstruction program, working closely with urologists, gynecologists and gastroenterologists, continues to help children from around the world, providing guidance and surgery for children from all 50 states and 73 countries. The use of minimally invasive surgery has expanded, offering both robot-assisted and pure laparoscopic surgical treatment of complex conditions, including bladder neck reconstruction, and appendicovesicostomy and/or Malone procedures for severe incontinence, both urinary and fecal, and offering unique opportunities to share tissues such as a shared appendix used for both procedures. The Colorectal and Pelvic Reconstruction team travels to provide surgical education across the globe. Surgeons train fellow surgeons and nurses train fellow nurses.

The Center for Colorectal and Pelvic Reconstruction has a growing transition-of-care program for children as they become young adults and move into adulthood. With the expertise of Alessandra Gasior, DO, the first surgeon in the world trained in both pediatric and adult colorectal surgery, this unique program will collaborate with The Ohio State University Wexner Medical Center. The center has changed the lives of many adult patients through our collaborative approach to care and bowel management program. The center is also partnering with the Institute of Genomic Medicine at the Abigail Wexner Research Institute to investigate the genetics of anorectal malformations.

Selected Publications

Ahmad H, Knaus M, Gasior A, Jimenez A, Spieth P, Snirivas S, Stanek J, Levitt M, Wood R, Hewitt G, McCracken K. Sexual and reproductive health outcomes in females with cloacal malformations and other anorectal malformations. *J Pediatr Adolesc Gynecol.* 2023 April 36:148-154.

Baaleman D, Vriesman M, Lu P, Benninga M, Levitt M, Wood R, Yacob D, Di Lorenzo C, Koppen I. Long-term outcomes of antegrade continence enemas to treat constipation and fecal incontinence in children. *J Pediatr Gastroenterol Nutr.* 2023 May 16;77(2):191–7.

Knaus M, Pendola G, Srinivas S, Wood R, Halaweish I. Social determinants of health and Hirschsprung-associated enterocolitis. *J Pediatr Surg.* 2022 Sep 30:S0022-3468(22)00632-7.

Knaus M, Westgarth-Taylor C, Gasior A, Halaweish I, Thomas J, Srinivas S, Levitt M, Wood R. A modification of the anoplasty technique during a posterior sagittal anorectoplasty and anorectal vaginal urethroplasty closure: The para-U-stitch to prevent wound dehiscence. *Eur J Pediatr Surg.* 2023 Jan 24.

Liaqat N, Wood R, Fuchs M. Hypospadias and anorectal malformation: A difficult combination. *J Pediatr Surg.* 2022 Oct 21:S0022-3468(22)00684-4.

Fast Facts: July 2022 – June 2023

Inpatient Discharges: 307

Observation and Outpatient-in-a-Bed Discharges: 30

Total Discharges: 337

Average Length of Stay*: 7.12

Patient Days*: 2,186

Total Surgical Procedures: 575

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

Colorectal and Pelvic Reconstruction Clinic Visits: 2,275

Multidisciplinary Clinic Visits (CCPR/Urology/GYN/Psychology): 581

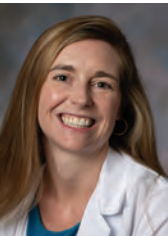
Total Clinic Visits: 2,856

Surgical Services

DENTISTRY

The Department of Dentistry at Nationwide Children’s Hospital is comprised of dedicated professionals in the fields of pediatric dentistry, orthodontics, oral surgery, endodontics, periodontics, general dentistry, dental hygiene and dental assisting 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



Janice A. Townsend, DDS, MS
Chief

Full-Time Nationwide
Children’s Faculty

Homa Amini, DDS, MS, MPH

Ehsan Azadani, DDS, MS

Paul S. Casamassimo, DDS, MS

Daniel B. Claman, DDS
Associate Program Director

David Danesh, DMD, MS, MPH

Kimberly Hammersmith, DDS,
MPH, MS
Program Director

Ashok Kumar, BDS, MS
Director of Clinical Operations
and General Anesthesia

Kylium Lee, DMD, PhD, MS

Kristina Petrich, DDS

OSU-Affiliate Faculty

Hany A. Emam, BDS, MS
Section Chief, Oral and
Maxillofacial Surgery

Henry W. Fields, DDS, MS, MSD
Section Chief, Orthodontics

Ann L. Griffen, DDS, MS

Erin L. Gross, DDS, PhD, MS

Courtney A. Jatana, DDS, MS,
FACS

Kelly S. Kennedy, DDS, MS

Dennis J. McTigue, DDS, MS

Beau Meyer, DDS, MPH

Diego A. Solis, DDS

Orthodontists (Primary
Appointment in Plastics)

Kaitrin Kramer, DDS, MS, PhD

Ana M. Mercado, DMD, MS, PhD

Kara Morris, DDS, MS

Community-Based
Dentists

Ashley E. Anderson, DDS

Amy Augustine, DDS

Richa Banthia, DDS

Carolyn A. Barber, DDS

Kyle Beulke, DDS

Janet J. Brown, DDS

Jennifer Bryk-Hechko, DDS, MS

Emily R. Burns, DDS, MS

George Chen, DDS, MS

Darya Dabiri, DMD, MS

Joseph DePalo, DMD, MS

Johnathan W. Draney, DDS, MS

Kylene H. Fernandez, DDS, MS

Timothy J. Frey, DDS

Lucia C. Gerstmann, DDS, MS

Kimberly M. Gill, DDS, MS

Jillian N. Gray, DDS

Michael Hawk, DMD

Marcus Heffner, DDS

Courtney D. Herman, DDS

Mitzi L. Hines, DDS

Nicole Johnson, DDS

Gary M. Judis, DDS

Patrick M. Kennedy, DDS

Nicholas M. Kerns, DDS, MS

Benjamin Kwok, DDS, MS

Joshua M. Leavitt, DMD, MS

Eileen M. Martinez, DDS

Monte E. Masonbrink, DDS, MS

Yoon-Mi L. Matracia, DMD, MS

Jeffrey T. Milton, DDS, MS

Cecilia A. Moy, DDS, MS

Andrea M. Myers, DDS

Gregory M. Ness, DDS

Scott W. Nieman, DDS

Sean T. O’Day, DMD

Colleen C. Orellana, DDS, MS

Andree-Anne Page, DMD

Sachin S. Parulkar, DDS

Chintan I. Patel, DDS

Monica R. Patel, DMD, MS

Nira S. Patel, DDS

Emily E. Pearson, DMD

Matthew L. Pingel, DMD

Mindy A. Price, DDS, MS

Sidney D. Price, DDS, MS

Joel J. Richards, DDS

Shaun A. Rotenberg, DMD, MS

Avneet K. Sandhu, DDS

Katherine M Seymour, DDS

Marlina M. Shah, DDS, MS

Chelsea C. Shellhart, DDS

Kristine N. Fu Shue, DMD

David S. Silverglade, DDS, MS

David A. Smeltzer, DDS

Eric Soller, DDS

Kumar Subramanian, DDS, MS

CaAdrian N. Taylor, DDS	Valetnina Zahran, DDS, MD	Katy Grunenwald, DMD	Alison Riley, DDS
Claire E. Townning, DDS	2022 – 2023 Residents	Allison Higgins, DMD	Brittany Schweiger, DDS
Eric C. Van Gilder, DDS	Bradley Bennett, DMD	Alex Kirkpatrick, DDS	Lotte Sjulín, DDS
Andrew Vo, DDS, MS	Aaron Buban, DDS	Kayla Kopczynski, DDS	Casey White, DMD
Kevin T. Weitzel, DMD, MS	Natalie Bussard, DDS	Jennifer Lee, DMD	Sheaffer Yinger, DDS
Stephen Wilson, DMD, PhD	Trevor Eide, DMD	Kyulim Lee, DMD, PhD	
Chloe Wong, DDS, MS	Kim Gibbs, DMD	Shivam Patel, DDS	

Highlights From the Past Year

In the past year, the department has continued our long tradition of care for children with an emphasis on children with special health care needs and patients with barriers accessing care. The department has maintained excellence in joint specialty care with our Periodontics Clinic and Trauma Clinic. To reduce barriers to accessing dental care, the department has maintained a school-based dentistry program in the Columbus area in collaboration with School Based Health and Care Connection. The department has also implemented a teledentistry program to reduce geographical and transportation barriers to care. To continue to improve clinical access to care for adolescents with special health care needs, the department has recruited a dentist who has completed a fellowship in Special Needs Dentistry, Dr. Kristina Petrich. To expand access for our pediatric patients, the department has recruited Dr. David Danesh and Dr. Kylium Lee.

National and local faculty and resident recognitions:

- Beau Meyer, DDS, MPH, was promoted to Associate Professor with Tenure and has been appointed to the role of Associate Medical Director/Dental Director for Partners for Kids.
- Kim Hammersmith DDS, MPH, MS, graduated from the American Academy of Pediatric Dentistry Leadership Institute Cohort 6 and completed the Nationwide Children’s Community Health and Advocacy Scholars and Educators Program.
- Following completion of his training, Dr. Daniel Claman is now an Epic Physician Builder.
- Dr. Ann Griffen and Dr. Kim Hammersmith were both recognized for The Ohio State University College of Dentistry Paper of the Year in the respective categories of Basic Science and Social and Behavioral Science.
- Dr. Henry Fields was recognized as the 2023 Earl E. and Wilma S. Shepard Distinguished Service Recipient at the American Association of Orthodontists Annual Session in Chicago.

Research (funded) highlights:

- Kim Hammersmith: From Classroom to Clinic: Enhanced Public Health Dental Training and a School-Based Pediatric Dentistry Model; US Department of Health and Human Services, Health Resources and Services Administration: \$504,490.
- Homa Amini: Medicaid Equity Simulation Project; Ohio State University Office of Sponsored Projects; Ohio Department of Medicaid: \$210,097.
- Kylium Lee: Characterization of the Oral Microbiome in Patients Receiving Hematopoietic Stem Cell Transplant; The Research Institute at Nationwide Children’s Hospital: \$10,000.

Selected Publications

Meyer B, Hyer M, Milgrom P, Downey T, Chi D. Silver diamine fluoride–associated delays in procedural sedation in young children: A retrospective cohort study. *The Journal of the American Dental Association*. 2023 Apr;154(4), 311–320.

Danesh D, Peng J, **Hammersmith K**, Gowda C, Maciejewski H, **Amini H**, Wapner A, **Meyer B**. Impact on dental utilization of the integration of oral health in pediatric primary care through quality improvement. *J Public Health Manag Pract*. 2023 Mar-Apr 01;29(2):186-195.

DiPaolo M, **Townsend J**, Peng J, **McTigue D**, **Azadani E**. Characteristics, treatment outcomes and direct costs of tooth avulsion in children treated at a major hospital. *Dent Traumatol*. 2023 Jun;39(3):240-247.

Dhar V, Randall C, Marghalani A, Jayaraman J, Chen C, Wells M, Law C, Gosnell E, Majstorović M, **Townsend J**, Wedeward R. Nonpharmacological behavior guidance for children during preventive dental visits: a systematic review-part 1. *Pediatr Dent*. 2023 May 15;45(3):181-196.

Sirrianni J, Sezgin E, **Claman D**, Linwood S. Medical text prediction and suggestion using generative pre-trained transformer models with dental medical notes. *Methods Inf Med*. 2022 Jul 14;61(5-06):195-200.

Fast Facts: July 2022 – June 2023

Observation and Outpatient-in-a-Bed Discharges: 22

Total Surgical Procedures: 5,309

Dental Clinic Visits: 32,762

Dental Clinic and Sedation Visits: 313

Community Dental Clinic Visits: 1,340

Total Clinic Visits: 34,415

Surgical Services

FETAL MEDICINE

The Fetal Center at Nationwide Children’s Hospital provides comprehensive care to families from across the United States and around the world who are facing potentially complex birth defects. The multidisciplinary Fetal Team works closely with families and their perinatologists to utilize state-of-the-art diagnostic and treatment protocols from a full range of specialties to improve neonatal outcomes. Families receive care beginning with prenatal counseling and continuing through the birth of their child and beyond.

The Fetal Center is a member of the North American Fetal Therapy Network (NAFTNet), a voluntary association of 36 medical centers in the United States, Canada and Mexico that performs advanced in-utero fetal therapeutic procedures. The center is also a member of the Ohio Fetal Medicine Collaborative (OFMC), a multi-system effort to provide high-risk expectant mothers and their babies with suspected fetal diagnoses the highest quality care.

Faculty



Adolfo Etchegaray, MD
Chief

Anesthesiology

Seth B. Hayes, MD
Katherine Manupipatpong, MD
Vanessa A. Olbrecht, MD
Laura Puertas Ocio, MD

Cardiology

Aimee K. Armstrong, MD
Clifford L. Cua, MD
Omar M. Khalid, MD
John P. Kovalchin, MD
Kathryn D. Nardell, MD
Corey A. Stiver, MD
Karen M. Texter, MD
Stephanie Y. Tseng, MD

Cardiovascular Surgery

Mark E. Galantowicz, MD
Patrick I. McConnell, MD
Sergio Carrillo Melendez, MD
Toshiharu Shinoka, MD, PhD

Craniofacial and Plastic Surgery

Kim A. Bjorklund, MD
Ibrahim Khansa, MD FAAP FACS
Richard E. Kirschner, MD, FAAP, FACS
Gregory D. Pearson, MD, FAAP, FACS

Fetal Imaging/Radiology

Brent H. Adler, MD
Jeremy Y. Jones, MD
Lisa C. Martin, MD
Aaron S. McAllister, MD
Kathryn S. Milks, MD
Julie C. O’Donovan, MD
Mitchell A. Rees, MD
Jerome A. Rusin, MD

Genetic and Genomic Medicine

Cody M. Young, DO
Nicholas A. Zumberge, MD
Bimal P. Chaudhari, MD, MPH
Scott E. Hickey, MD
Kandamurugu Manickam, MD
Anna M. Connair, WHNP-BC, CNM
Adolfo Etchegaray, MD
Oluseyi K. Ogunleye, MD
Amy L. Dunn, MD
Amanda E. Jacobson-Kelly, MD
Melissa J. Rose, DO

Neonatology

Molly K. Ball, MD
Zachary J. Farmer, MD
Cecilie Halling, MD
Jason R. Jackson, DO
Susan M. Lopata, MD
Namrita Odackal, DO
Shama Y. Patel, MD, MPH

Neonatology/Infectious Disease

Ruth B. Seabrook, MD
Sheria D. Wilson, MD
Pablo J. Sanchez, MD
Michael Brian Becknell, MD, PhD
Hiren P. Patel, MD

Neurology

Darrah N. Haffner, MD
Margie A. Ream, MD, PhD
Jaime E. Twanow, MD

Neurosurgery

Albert M. Isaacs, MD
Jeffrey R. Leonard, MD
Jonathan A. Pindrik, MD

Ammar Shaikhouni, MD
Eric A. Sribnick, MD, PhD

Otolaryngology

Charles A. Elmaraghy, MD, FACS, FAAP
Jonathan M. Grischkan, MD, FACS, FAAP
Meredith N. Lind, MD, FACS, FAAP

Palliative Care

Kate Cicozi, MD
Lisa M. Humphrey, MD
Natalie L. Jacobowski, MD
Amy B. Schlegel, MD
Steven M. Smith, MD

Pediatric Surgery

Karen A. Diefenbach, MD
Ihab F. Halaweish, MD
Peter C. Minneci, MD, MHSc
Oluyinka O. Olutoye, MD, PhD

Psychology

Amy E. Baughcum, PhD
Catherine L. Butz, PhD
Nicole R. Dempster, PhD

Pulmonary Medicine

Karen S. McCoy, MD

Spina Bifida

Katherine J. Steingass, MD

Urology

Seth A. Alpert, MD
Linda A. Baker, MD
Christina B. Ching, MD
Daniel G. DaJusta, MD
Molly E. Fuchs, MD
V. Rama Jayanthi, MD
Daryl J. McLeod, MD

Highlights From the Past Year

- Adolfo Etchegaray, MD, joined the Fetal Center as Chief, Fetal Medicine.
- The Fetal Center continued delivering outstanding care for families identified as having a fetal anomaly.
- Performed first fetal surgery at Nationwide Children’s, resulting in a successful birth 12 weeks later at 37 weeks gestation.
- Nationwide Children’s was accepted as a member of the North American Fetal Therapy Network (NAFTNet) in October 2022, effectively acknowledging the program’s expertise in fetal therapy and consultation.
- Hosted the first Nationwide Children’s combined Neonatology/Fetal Conference in May 2023.
- Obtained funding and GME approval for a new Perinatal Surgery Fellowship program starting in 2024.
- Established the Fetal Research Affinity Group at Nationwide Children’s Hospital, fostering collaboration with the Abigail Wexner Research Institute to pioneer next-generation fetal therapies.

Selected Publications

Ball MK, Seabrook SB, Corbitt R, Stiver C, Nardell K, Medoro AK, Beer L, Brown A, Mollica J, Bapat R, Cosgrove T, Texter KT. Safety and feasibility of skin-to-skin contact in the delivery room for high-risk cardiac neonates. *Pediatr Cardiol.* 2023 Jun;44(5):1023-1031.

Nealon E, Phelps C, Krawczeski C, Alexander R, **Stiver C, Ball MK, Carrillo SA, Texter K.** Impact of maternal–fetal environment on outcomes following the hybrid procedure in the single ventricle population. *Pediatr Cardiol.* 2022 Dec 3. Online ahead of print.

Ogunleye O, Johnson M, Stocker C, Texter K, Seabrook R, Etchegaray A, Olutoye O. Establishing a fetal center in a freestanding pediatric hospital. *Neoreviews.* 2023 Aug 1;24(8):e471-e478.

Taylor K, Lovelace C, Richards B, **Tseng S, Ogunleye O, Cua CL.** Utility of screening fetal echocardiograms at a single institution following normal obstetric ultrasound in fetuses with Down syndrome. *Pediatr Cardiol.* 2023 Oct;44(7):1514-1519.

Wojcik MH, Callahan KP, Antoniou A, Del Rosario MC, Brunelli L, ElHassan NO, Gogcu S, Murthy K, Rumpel JA, Wambach JA, Suhrie K, Fishler K, **Chaudhari BP.** Provision and availability of genomic medicine services in Level IV neonatal intensive care units. *Genet Med.* 2023 Jul 6;25(10):100926.

Surgical Services

NEUROSURGERY

Ranked sixth in the country by U.S. News & World Report, the Department of 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 & Blood and Marrow Transplant, Neurology, Physical Medicine & Rehabilitation, Pediatric Surgery, Plastic and Reconstructive Surgery, Colorectal and Pelvic Reconstruction, Fetal Medicine and many other pediatric disciplines as well as the adult neurosurgical program.

Faculty



Jeffrey R. Leonard, MD
Chief

Full-Time Nationwide
Children's Faculty

- Albert Isaacs, MD, PhD
- Jonathan A. Pindrik, MD
- Ammar Shaikhouni, MD, PhD
- Eric A. Sribnick, MD, PhD
- Michelle Wedemeyer, MD, PhD

OSU-Affiliate Faculty

- Andrew J. Grossbach, MD
- John M. McGregor, MD
- Ehud U. Mendel, MD
- Shahid Nimjee, MD
- Ciaran J. Powers, MD, PhD
- Daniel Prevedello, MD
- Patrick Youssef, MD

2022 – 2023 Fellow
Pediatric Neurosurgery

- Luke Smith, MD

Highlights From the Past Year

- The Department of Neurosurgery continued with significant growth with 850 surgical cases and more than 6,000 clinic visits performed annually.
- Outreach efforts have been successful, as the team has provided care to patients from all around the world, including 45 states and nine countries.
- The Epilepsy Surgery Program is steadily expanding and is on pace to perform over 70 epilepsy cases this year. In 2023, the program was awarded the Germain Family Accelerator Award to hasten clinical impact through advancement of translational and clinical research discoveries.
- The Selective Dorsal Rhizotomy Program continues to provide comprehensive care for patients with spastic cerebral palsy, including care provided by colleagues in Physical Medicine and Rehabilitation, as well as in Clinical Therapy Services. Our program is one of very few in the country that performs this procedure with great success. Our out-of-state referrals have grown significantly, as demonstrated by increases in new patient clinic visits, inpatient hospital days and case volume.
- Ammar Shaikhouni, MD, PhD, launched our pediatric neurosurgery clinic at Nationwide Children’s Hospital-Toledo.
- Albert Isaacs, MD, PhD, and Michelle Wedemeyer, MD, PhD, were newly appointed Assistant Professors at The Ohio State University, College of Medicine in the Department of Neurological Surgery.

Research (Funded) Highlights

National Institutes of Health Awards to faculty in Neurosurgery in 2022-2023:

- Jeffrey R. Leonard, MD, site principal investigator, received more than \$1 million in 2022 for R01 entitled, “A Safety and Efficacy Study of AAV2-hAADC for AADC Deficiency,” a multi-site study and collaboration with The Ohio State University.
- Eric Sribnick, MD, PhD, principal investigator, continues his work on his K08 award from the National Institute of Neurological Disorders and Stroke for his project, “Reversal of Immunoparalysis Following Traumatic Brain Injury and Systemic Hemorrhage in Juvenile Rat Model.”
- Ammar Shaikhouni, MD, PhD, principal investigator, received an R21 from the National Institute of Mental Health for his project, “Using Intracranial Recording, Stimulation and Computational Modeling to Map Role of the Subthalamic Nucleus in Human Decision Making.”

Selected Publications

Arredondo K, Ostendorf A, Ahrens S, Beatty C, Pindrik J, Shaikhouni A. Post-ictal rhythmic thalamic activity of the centromedian nucleus. *J Clin Neurophysiol.* 2023 Mar 10.

Damante M, Rosenberg N, Shaikhouni A, Johnson H, Leonard J, Ostendorf A, Pindrik J. Impact of etiology on seizure and quantitative functional outcomes in children with cerebral palsy and medically intractable epilepsy undergoing hemispherotomy/hemispherectomy. *World Neurosurg.* 2023 Jul;175:e769-e774.

Drapeau A, Onwuka A, Koppera S, Leonard J. Hospital case-volume and patient outcomes following pediatric brain tumor surgery in the pediatric health information system. *Pediatr Neurol.* 2022 Aug;133:48-54.

MAKoshi Z, Leonard J. Clinical manifestations of chiari I malformation. *Neurosurg Clin N Am.* 2023 Jan;34(1):25-34.

Sribnick E, Mansfield J, Rhodes C, Fullaway V, Bolte J. Biomechanical effects of a halo orthotic on a pediatric anthropomorphic test device in a simulated frontal motor vehicle collision. *Traffic Inj Prev.* 2022;23(8):500-503.

Fast Facts: July 2022 – June 2023

- Inpatient Discharges: 624
- Observation and Outpatient-in-a-Bed Discharges: 195
- Total Discharges: 819
- Average Length of Stay*: 5.6
- Average Daily Census*: 9.6
- Patient Days*: 3,519
- Total Surgical Procedures: 749
- Neurosurgery Main Campus Clinic Visits: 6,526

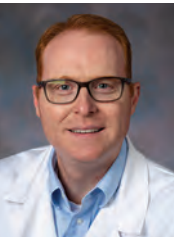
*Excludes observation and outpatient-in-a-bed patients

Surgical Services

OPHTHALMOLOGY

The Department of Ophthalmology at Nationwide Children’s Hospital is dedicated to providing ongoing comprehensive eye care for children and adults. The Department of Ophthalmology includes the Eye Clinic and the Electrophysiology Testing Laboratory. Our department provides comprehensive eye care in both the hospital inpatient setting as well as to families in the community. Our clinics also provide special testing on pediatric patients referred by community-based providers. The clinic staff includes pediatric ophthalmologists, optometrists, a pediatric ophthalmology fellow and ophthalmology residents from The Ohio State University College of Medicine, as well as low vision and rehabilitation specialists. We are pleased to have an approved and accredited Orthoptic Fellowship Program by the American Orthoptic Council. In addition, the Eye Clinic offers subspecialty clinics staffed by ophthalmologists for patients with issues related to glaucoma, retina, oculoplastics, cornea and external disease, intracranial hypertension, and low vision.

Faculty



David L. Rogers, MD
Chief

Full-Time Nationwide
Children's Faculty

- Don L. Bremer, MD
- Cybil B. Cassady, MD
- Richard P. Golden, MD
- Hilliary E. Inger, MD
- Catherine Olson Jordan, MD
- Julie M. Lange, MD
- Mary Lou McGregor, MD
- Gary L. Rogers, MD
- Hersh Varma, MD
- Amanda L. Way, MD

OSU-Affiliate Faculty

- Sayoko Moroi, MD, PhD
*Chair, Ophthalmology and
Visual Sciences, The Ohio State
University*
- N. Douglas Baker, MD
- Dominic M. Buzzacco, MD
- Kenneth V. Cahill, MD
- Colleen M. Cebulla, MD
- Megan M. Chambers, MD
- Raymond I. Cho, MD
- Frederick H. Davidorf, MD
- Jill A Foster, MD
- Allen Gu, MD
- Andrew J. Hendershot, MD
- Charles J. Hickey, MD
- Steven E. Katz, MD
- Curtin G. Kelley, MD
- Johnstone M. Kim, MD
- Rebecca A. Kuennen, MD
- Carrie A. Lembach, MD
- Christina Martinez, MD
- Thomas A. Mendel, MD
- Zachary J. Mikolaj, MD
- Cameron B. Nabavi, MD
- Matthew P. Ohr, MD
- Tyler Oostra, MD
- Daniel G. Straka, MD
- Ana M. Suelves Cogollos, MD
- Michael B. Wells, MD

Highlights From the Past Year

The Department of Ophthalmology supports research and teaching programs that ensure delivery of the highest quality pediatric care for our patients, now and in the future. We are participating in multiple research projects including those involving amblyopia, cataract, myopia, and retinopathy of prematurity (ROP) studies sponsored by the Pediatric Eye Disease Investigator Group. We are actively engaged in studies focused on preserving vision in children with Batten disease. We continue to do research on projects concerning infantile cataracts, intracranial hypertension, secondary intraocular lens placement, pediatric drusen and children with cystic fibrosis. We are also one of the only sites in the country currently participating in the multicenter Artisan Aphakia Lens Study. The Artisan Aphakia lens is unique because it is fixed 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 enjoy life with a more normal visual function. These lenses are not FDA approved, and we expect this study will help gain future FDA approval.

The Visual Electrophysiology Clinic at Nationwide Children’s is led by Julie Racine, PhD. This clinic performs electroretinograms, multifocal electroretinograms, electrooculograms and visual evoked potential on patients of all ages, including adults, to assess retinal and retina-cortical function. Our department also manages and acts as the physical location for the office of the Ohio Amblyope Registry program (funded by the Ohio Department of Health’s Save Our 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, prevention, and treatment options. It also 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, optical coherence tomography (OCT) performed in the office an intraoperatively, intravenous and oral fluorescein angiography, autorefraction, tonometry, color vision and contrast sensitivity testing. We are proud to serve patients from across the country and the world.

Selected Publications

Freedman S, Del Monte M, Diva U, Donahue S, Drack A, Dutta R, Fung S, Imperiale M, **Jordan CO**, Lenhart P, Lim M, McCourt E, Nihalani B, Sabahi T, Stahl E, Miraldi Utz V, Wilson M Jr, Yen K, VanderVeen D. Prevalence of cerebrotendinous xanthomatosis among patients diagnosed with early-onset idiopathic bilateral cataracts: final analysis. *J AAPOS*. 2023 Jun 14;S1091-8531(23)00119-2.

Freedman S, Hercinovic A, Wallace D, Kraker R, Li Z, Bhatt A, Boente C, Crouch E, Hubbard G, **Rogers D**, VanderVeen D, Yang M, Cheung N, Cotter S, Holmes J; Pediatric Eye Disease Investigator Group. Low- and very low-dose bevacizumab for retinopathy of prematurity: reactivations, additional treatments, and 12-month outcomes. *Ophthalmology*. 2022 Oct;129(10):1120-1128.

Klimo K, Stern-Green E, Shelton E, Day E, Jordan L, Robich M, **Racine J**, McDaniel C, VanNasdale D, Yuhass P. Structure and function of retinal ganglion cells in subjects with a history of repeated traumatic brain injury. *Front Neurol*. 2022 Aug 12;13:963587.

Wallace D, Hercinovic A, Freedman S, Crouch E, Bhatt A, Hartnett M, Yang M, **Rogers D**, Hutchinson A, Good W, Repka M, Li Z, Beck R, Kraker R, Cotter S, Holmes J; Pediatric Eye Disease Investigator Group. Ocular and developmental outcomes of a dosing study of bevacizumab for retinopathy of prematurity. *J AAPOS*. 2023 Feb;27(1):10.e1-10.e8.

Zhang K, **Varma H**, Cao Y, Shah V. Split-tendon medial transposition of lateral rectus for pediatric complete oculomotor palsy. *J Neuroophthalmol*. 2022 Nov 7.

Fast Facts: July 2022 – June 2023

- Total Surgical Procedures: 1,857
- Inpatient Consults: 1,672
- Eye Clinic and Low Vision Eye Clinic Visits: 11,939
- Outpatient Clinic Visits: 25,937



“There is now hope for patients with conditions previously considered irreparable.”
– Craig A. Smith, MD

Orthopaedics

Surgical Hip Dislocation as a Treatment Modality in Children and Adolescents

What was once a complicated surgery has now become a safe and effective way to treat many hip conditions.

The surgical hip dislocation approach can provide excellent exposure to the hip joint and thus is beneficial when caring for patients with complex hip deformities. The Center for Hip Preservation, under the Department of Orthopedics at Nationwide Children’s Hospital, has studied the innovative and safe use of surgical hip dislocation to treat other common hip conditions and injuries in children and adolescents. A summary of their work was published in the *Journal of the American Academy of Orthopaedic Surgeons* in 2023.

Because surgical hip dislocation is not the standard treatment for all hip conditions, this summary covers a wide range of conditions where it could be useful. Some are more common and well-known, and some are not. In all cases, the procedure provided safe access to the femoral head and acetabulum with the successful preservation of blood supply.

“The summary highlighted some of the novel ways we use surgical hip dislocation here at Nationwide Children’s to treat kids with complex hip issues while limiting complications,” says **Craig A. Smith, MD**, pediatric orthopedic surgeon, assistant professor of Orthopedic Surgery at The Ohio State University College of Medicine, and lead author of the paper.

They also found that surgical hip dislocation makes treating benign and malignant tumors in the hip joint safer and more effective.

The paper also highlighted using the approach in younger patients who are skeletally immature. In the past, doctors thought this kind of surgical procedure was not safe for children that young, but Dr. Smith and team have shown that it can be just as effective and safe.

The authors conclude that surgical hip dislocation can be expanded to include younger patients and a variety of conditions affecting the hip.

“Our work enables other surgeons to perform more successful hip reconstructions. We’re continually developing new hip preservation techniques and collaborating with others to improve options for patients. There is now hope for patients with conditions previously considered irreparable,” Dr. Smith says.

REFERENCE:

Smith C, DiBartola AC, Fisher M, Klingele KE. Surgical Hip Dislocation in Pediatric and Adolescent Patients. *J Am Acad Orthop Surg*. 2023 Mar 15;31(6):e287-e297.

Surgical Services

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 posttraumatic 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 their pediatric orthopedic experience at Nationwide Children’s. The Accreditation Council for Graduate Medical Education-accredited fellowship program rounds out the extensive educational program.

Faculty



Kevin E. Klingele, MD
Chief

Full-Time Nationwide Children’s Faculty

- Allan C. Beebe, MD
- Matthew C. Beran, MD
- Reid C. Chambers, DO
- Alex DiBartola, MD
- Christopher A. Iobst, MD, FAOA
- Allen Kadado, MD
- Julie Balch Samora, MD, PhD, MPH, FAOA
- Walter P. Samora III, MD, FAOA

Thomas Scharschmidt, MD, FAOA, FACS, MBOE

Craig A. Smith, MD

OSU-Affiliate Faculty

Hisham M. Awan, MD

Community-Based Faculty

- Brent A. Bickel, MD
- Craig N. Dimitris, MD
- James E. Popp, MD
- Corey L. VanHoff, MD
- Raymond K. Wurapa, MD

2022 – 2023 Fellow

Stephanie Chen, MD

The Center for Orthopedic Innovation showed early success under the leadership of Allen Kadado, MD. Within one year of existence, projects within spine deformity, hip reconstruction, pediatric trauma, limb deformity and surgical stimulation have earned several grant awards and seven projects are approaching successful patent awards. Commercial and academic collaborations outside of Nationwide Children’s will help provide the basis of a future orthopedic innovation fellowship to begin within the 2024-2025 academic year.

The department also formed a Community Service program to organize multiple successful service-based projects, relying on a large network of volunteers from within the department.

Resident Day at the Miracle League of New Albany, Columbus Litter League-Keep Columbus clean, and our annual congenital hand camp led by James Popp, MD, Director of our Pediatric Hand/Upper Extremity program were just a few of the successful endeavors.

The Orthopedic International Mission Support Program was formed with the purpose of facilitating our ability as a department to provide life-changing surgical interventions and care to children living with disabilities in underserved areas all over the world. The program includes the ability to offer our fellows/residents a chance to see the impact first-hand by providing clinical training in other, possibly remote areas of the world with the intention of producing a new generation of health care professionals giving back on a global scale.

Selected Publications

Andras L, Sanders J, Goldstein R, Samora JB. What’s new in pediatric orthopaedics. *J Bone Joint Surg Am.* 2023 Feb 15;105(4):269-276.

Bafor A, Iobst C. What’s new in limb lengthening and deformity correction. *J Bone Joint Surg Am.* 2022 Aug 17;104(16):1419-1425.

Bjorklund K, Alexander J, Tulchin-Francis K, Yanes N, Singh S, Valerio I, Klingele K, Scharschmidt T. Targeted muscle reinnervation for limb amputation to avoid neuroma and phantom limb pain in patients treated at a pediatric hospital. *Plast Reconstr Surg Glob Open.* 2023 Apr 13;11(4):e4944.

Samade R, Jonard B, Scharschmidt T. Utility of 45s5 bioactive glass as bone graft substitute for cavitary defects in pediatric bone tumors: a preliminary study. *J Pediatr Orthop.* 2022 Oct 1;42(9):532-538.

Smith C, DiBartola A, Fisher M, Klingele K. Surgical hip dislocation in pediatric and adolescent patients. *J Am Acad Orthop Surg.* 2023 Mar 15;31(6):e287-e297.

Highlights From the Past Year

Thomas J. Scharschmidt, MD, MBOE, FAOA, FACS, has served as director of the Pediatric Musculoskeletal Oncology Program at Nationwide Children’s since 2009, while working jointly with The Ohio State University Comprehensive Cancer Center (OSUCCC — James). Starting in May 2023, Dr. Scharschmidt transitioned to working exclusively with Nationwide Children’s.

An orthopedic oncologist, Dr. Scharschmidt’s clinical interests include bone and soft tissue sarcomas, benign bone and soft tissue tumors, complex limb reconstruction, advanced reconstruction options in the growing child, care of the oncologic amputee patient and spine tumors. This year was highlighted by the conception of several new and unique programs. With his leadership the Center for Musculoskeletal Oncology was formed with a highly specialized service geared toward the unique needs of children and young adults with all types of benign or cancerous bone or soft tissue masses. With a staff devoted exclusively to the removal of these growths — including a special focus on Ewing sarcoma and osteosarcoma — our offerings lead the nation in expertise, volume and variety.

The program focuses on innovative limb salvage strategies and ways to protect quality of life both now and in the future. We are supported by a robust range of related programs at Nationwide Children’s to help maximize health outcomes, from oncology and child life to adaptive therapies and rehabilitation resources. This also led to the first of its kind, dedicated pediatric musculoskeletal oncology fellowship which has filled for the upcoming academic year.

Fast Facts: July 2022 – June 2023

Inpatient Discharges: 438

Observation and Outpatient-in-a-Bed Discharges: 601

Total Discharges: 1,039

Average Length of Stay*: 2.8

Average Daily Census*: 3.3

Patient Days*: 1,210

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

Total Surgical Cases: 3,076

Inpatient Consults: 312

Main Campus Orthopaedic Clinic Visits: 17,461

Dublin Orthopaedic Clinic Visits: 10,913

Hilliard Orthopaedic Clinic Visits: 214

Mansfield Orthopaedic Clinic Visits: 243

New Albany Orthopaedic Clinic Visits: 2,908

Westerville Orthopaedic Clinic Visits: 9,056

Orthopaedic-Oncology Clinic Visits: 1,080

Total Orthopaedic Clinic Visits: 41,875

Surgical Services

OTOLARYNGOLOGY

The Department of Pediatric Otolaryngology, Head and Neck Surgery 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, skull base tumors, salivary gland problems and many other related diseases.

Faculty



Charles A. Elmaraghy, MD, FAAP, FACS
Chief

Full-Time Nationwide Children’s Faculty

- Ethan Bassett, MD
- Tendy Chiang, MD
- Jonathan M. Grischkan, MD, FAAP, FACS
- Kris R. Jatana, MD, FAAP, FACS
- Spencer Lindsey, MD
- Prashant S. Malhotra, MD, FAAP, FACS

- Amy Manning, MD
- Meredith Merz-Lind, MD, FAAP, FACS
- Prasanth Pattisapu, MD
- James M. Ruda, MD
- Patrick C. Walz, MD
- Gregory J. Wiet, MD, FAAP, FACS

OSU-Affiliate Faculty

- Oliver F. Adunka, MD, FACS
- Eugene Ge-Hink Chio, MD
- Brad W. deSilva, MD
- Edward E. Dodson, MD
- Brandon Kim, MD
- Leslie R. Kim, MD, MPH
- Bradley A. Otto, MD
- Minka L. Schofield, MD

Community-Based Faculty

- Patrick L. Bockenstedt, MD
- Jacob P. Burkhart, DO
- Roberto J. Castellon, MD
- Daniel W. Chase, MD
- Timothy P. Drankwalter, DO
- Alfred J. Fleming Jr., MD
- Akash Gupta, MD

- Joseph E. Hall, MD
- Jeffrey B. Hiltbrand, MD
- Steven M. Hirsch, MD
- Scott T. Kramer, MD
- Michael J. Loochtan, MD
- James D. Lowery, MD
- Michael D. Martyn, MD
- Timothy J. Nash, DO
- Stephen J. Nogan, MD

- Blaize A. O’Brien, MD
- David M. Powell, MD
- Cherie Ryoo, MD
- John M. Ryzenman, MD
- Ashish Shah, MD
- Thomas M. Shirck, DO
- Adam C. Spiess, MD
- Evan J. Tobin, MD
- Andrew Tompkins, MD

2022 – 2023 Fellow

- Ma’in Al Shawabkeh, MD

Highlights From the Past Year

The Department of Pediatric Otolaryngology accounts for over 35% of the total surgical volume at Nationwide Children’s and continues to pursue the best outcomes for pediatric ears, nose and throat patients. Following COVID, the Department has seen unprecedented clinical volume and continues to maintain the best possible outcomes. Our Department expanded its clinical footprint developing a presence at Nationwide Children’s -Toledo. The Otolaryngology Department has been a national role model in reduction of opioids used in pediatric surgery and developing quality initiatives to reduce readmissions following adenotonsillectomy. In addition to quality and research, innovation accomplishments include a patent granted to Drs. Elmaraghy and Jatana for development of a novel surgical safety device. Dr. Chiang has led a prospective study on surgical ergonomics and preventative strategies to prevent work-related injuries to surgeons.

Selected Publications

Findlen U, Grischkan J, Alston S, Durinka L, Baylis A. Assessing adherence to audiologic parameters of care for children with cleft palate: a quality improvement initiative cleft palate. *Craniofac J.* 2022 Aug;59(8):961-969.

Gibbs H, Jatana K. Pediatric button battery injuries-current state and what's next? *JAMA Otolaryngol Head Neck Surg.* 2022 Jul 1;148(7):683-685.

Gwilt C, Metzger G, Jatana K, Bourgeois T, Walz P. Perceptions of telemedicine at a pediatric otolaryngology-head and neck surgery program. *World J Pediatr Surg.* 2022 Nov 10;5(4):e000440.

Koenigs M, Young C, Lillis A, Morrison J, Kelly N, Elmaraghy C, Krishnamurthy R, Chiang T. Dynamic volumetric computed tomography angiography is an effective method to evaluate tracheomalacia in children. *Laryngoscope.* 2023 Feb;133(2):410-416.

Fast Facts: July 2022 – June 2023

Inpatient Discharges: 69

Observation and Outpatient-in-a-Bed-Discharges: 1,639

Total Discharges: 1,708

Average Length of Stay*: 4.8

Average Daily Census*: 0.9

Patient Days*: 329

Total Surgical Cases: 9,704

Inpatient Consults: 1,054

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

ENT (Main Campus) Clinic Visits: 17,640

Dublin ENT Clinic Visits: 7,808

Lewis Center ENT Clinic Visits: 1,058

Lima ENT Clinic Visits: 129

Mansfield ENT Clinic Visits: 481

Marysville ENT Clinic Visits: 831

Springfield ENT Clinic Visits: 246

Westerville ENT Clinic Visits: 8,244

Pediatric Aerodigestive Disorders Clinic Visits: 110

Rhinology Clinic Visits: 58

Total ENT Clinic Visits: 36,605

Surgical Services

PEDIATRIC AND ADOLESCENT GYNECOLOGY

The Department 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 within a wide array of clinical services including:

- Pediatric and Adolescent Gynecology
- Center for Colorectal and Pelvic Reconstruction
- Family AIDS Clinic and Education Services (FACES)
- Fertility and Reproductive Health Program
- Teen and Pregnant Program
- THRIVE Program (differences of sexual development and complex urological and gender concerns)
- Turner’s Syndrome Program

Faculty



Geri D. Hewitt, MD
Chief

Pediatric and Adolescent Gynecology

Frances Fei, MD
Geri D. Hewitt, MD
Chelsea Kebodeaux, MD
Dana Lenobel, APN
Kate A. McCracken, MD
Chelsea Mitek, APN

OSU-Affiliate Faculty

Melissa Brown, MD
Melissa M. Goist, MD

Maggie Rosen, MD

Rebecca H. Rudesill, MD
Andrea N. Snyder, MD

Teen and Pregnant Program

Natasha Reno, WHNP
Megan Wacker, WHNP
Maggie Rosen, MD
Melissa Brown, MD

Family Aids Clinic and Education Services

Vidhya Krishnan, MD

Fetal Medicine

Maged M. Costantine, MD, MBA
Adolfo Etchegaray, MD
Heather A. Frey, MD
William Grobman, MD, MBA
Oluseyi K. Ogunleye, MD
Philip Samuels, MD
Patrick D. Schneider, MD
Cynthia S. Shellhaas, MD
Kara Rood, MD
Kartik K. Venkatesh, MD, PhD
Courtney Abshier Ware, MD

Highlights From the Past Year

Pediatric and Adolescent Gynecology (PAG) at Nationwide Children’s strives to provide excellence in patient care, quality initiatives, clinical research, and medical education. Our team has added an additional APN allowing us to serve multiple ambulatory clinical sites and grow the geographic region we serve. Our ambulatory visits, in patient consultations, unique patient encounters, and procedures performed have continued to increase. PAG is participating in a new Nationwide Children’s Turner’s Syndrome Program to better meet the needs of this patient population.

PAG specific quality improvement (QI) work has focused on intimate partner violence screening and sexually transmitted infection (STI) expedited partner therapy and post treatment rescreening. Newly initiated QI work focuses on high risk sexual behavior screening in trauma patients and sexual and reproductive health care in natal-female cancer survivors. PAG continues to collaboratively develop institutional clinical guidance regarding adnexal masses and torsion. PAG participates in institutional QI initiatives around antibiotic stewardship and opioid prescribing practices.

Some of our published clinical research is highlighted below. Our group has published 15 peer-reviewed clinical research manuscripts this year and presented our research at several domestic and international meetings.

We focus on educating our patients, families, and medical community. We have expanded our print and electronic patient educational materials and additionally expanded into social media attempting to combat reproductive health related misinformation online. Our first PAG fellow begins this year, and we continue to educate OSU OB/GYN residents and medical students as well as external OB/GYN resident rotators.

The Teen and Pregnant Program clinic continues to serve pregnant patients in central Ohio, offering multidisciplinary care in both traditional and centering obstetrical care models.

Selected Publications

Ahmad H, Knaus M, Gasior A, Jimenez A, Spieth P, Snirivas S, Stanick J, Levitt M, Wood R, Hewitt G, McCracken K. Sexual and reproductive health outcomes in females with cloacal malformations and other anorectal malformations. *J Pediatr Adolesc Gynecol.* 2023 April 36:148-154.

Ahmad H, Wood R, Avansino J, Calkins C, Dickie B, Durham M, Frischer J, Fuller M, Ralls M, Reeder R, Rentea R, Rollins M, Saadai P, Oelschlager AEA, Breech L, Hewitt G, Kluivers K, van Leeuwen K, McCracken K. Does presence of a VACTERL anomaly predict an associated gynecologic anomaly in females with anorectal malformations?: A pediatric colorectal and pelvic learning consortium study. *J Pediatr Surg.* 2023 March 58:471-477.

Fei F, Smith Y, Wan J, Dendrinios M, Winfrey O, Quint E. Should we screen for Müllerian anomalies following diagnosis of a congenital renal anomaly? *J Pediatr Urol.* 2022 Oct;18(5):676.e1-7.

Knaus M, Onwuka A, Abouelseoud N, Bergus K, Breech L, Brito K, Dekonenko C, Hertweck S, Hong H, Menon S, Merritt D, Schikler A, Senapati N, Smith Y, Strickland J, Truehart A, Minneci P, Hewitt G. Recurrence rates for pediatric benign ovarian neoplasms. *J Pediatr Adolesc Gynecol.* 2023 Apr;36(2):160-166.

Knaus M, Onwuka A, Abouelseoud N, Breech L, Brito K, Dekonenko C, Hertweck S, Hong H, Lawrence A, Menon S, Merritt, Schikler A, Senapati N, Smith Y, Strickland J, Truehart A, Minneci P, Hewitt G. Failure of operative therapy after ovarian-sparing surgery for pediatric benign ovarian neoplasms: a retrospective review. *J Pediatr Adolesc Gynecol.* 2022 Dec;35(6):702-706.

Fast Facts: July 2022 – June 2023

Downtown Teen and Pregnant Clinic Visits 1,608
Canal Winchester Clinic Visits 359
Dublin Clinic Visits 920
East Columbus Clinic Visits 328
Main Campus Clinic Visits 3,501
Westerville Clinic Visits 889
Total Clinic Visits 7,605
Total Surgical Procedures 355



“We found the majority of patients with a positive SLN were safely observed with serial nodal ultrasound.”

– Jennifer H. Aldrink, MD

Pediatric Surgery

Treating Pediatric Melanoma: Ultrasound Surveillance vs. Completion Lymph Node Dissection for Sentinel Node Positive Patients

Treatments for pediatric melanoma are usually based on adult studies, but increasing recognition of the differences between pediatric and adult melanoma could change that.

The Skin Cancer Foundation reports that about 400 children under 20 years old are diagnosed with melanoma each year in the United States. Because there are so few pediatric cases, treatment is often based on what doctors have learned about managing adult melanoma.

Two groundbreaking clinical trials showed that there was only a slightly higher risk of cancer returning to lymph nodes, and no difference in overall survival rate when using the less invasive ultrasound surveillance in adults. This has become the standard of care for SLN-positive melanoma.

Because there is increasing evidence of important clinical and biological differences between pediatric and adult melanoma, **Jennifer H. Aldrink, MD**, director of Surgical Oncology at Nationwide Children’s Hospital and professor of Clinical Surgery at The Ohio State University College of Medicine, wanted to study whether close surveillance ultrasound is a reasonable and safe option for children with sentinel lymph node positive melanoma, rather than completion lymph node dissection.

Dr. Aldrink and her team reviewed 252 pediatric cases from 14 pediatric hospitals in the Pediatric Surgical Oncology Research Collaborative, of which Dr. Aldrink is a founding member. The study was published in the *Annals of Surgery* in 2023.

“We found that the majority of patients with a positive SLN were safely observed with serial nodal ultrasound, with no difference in overall survival or recurrence rates between the two groups,” Dr. Aldrink summarizes. “Recurrence, when it occurred, was more reflective of the stage of disease and aggressiveness of the biology.”

Pediatric surgeons and oncologists now have data to support close surveillance ultrasound as a viable option for their patients with microscopically positive SLN.

Dr. Aldrink hopes that this study will be the impetus for more studies into the genetic makeup of pediatric melanomas through the Nationwide Children’s Cancer Predisposition Team and the Institute of Genomic Medicine, as well as the Children’s Oncology Group Molecular Characterization Initiative which will characterize pediatric lesions for specific and potentially targetable genetic mutations and alterations.

REFERENCE:

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Surgical Services

PEDIATRIC SURGERY

The mission of the Department of Pediatric Surgery at Nationwide Children’s Hospital is to develop, promote, and provide equitable, innovative, evidence based, comprehensive pediatric surgical care. The members of the department are all full-time faculty members of the Department of Surgery at The Ohio State University College of Medicine and are committed to excellence in clinical care, surgical education, research and quality improvement.

Faculty



Gail E. Besner, MD
Chief

Full-Time Nationwide
Children’s Faculty

Jennifer H. Aldrink, MD
Christopher K. Breuer, MD
David R. Brigstock, PhD
Cory Criss, MD
Karen A. Diefenbach, MD

Renata B. Fabia, MD, PhD
Jonathan I. Groner, MD
Ihab Halaweish, MD
Brian D. Kenney, MD, MPH
Sara Mansfield, MD
Marc P. Michalsky, MD, MBA
Peter C. Minneci, MD, MHSc
Jaimie D. Nathan, MD
Benedict C. Nwomeh, MD, MPH
Oluyinka O. Olutoye, MD, PhD
Surgeon-in-Chief
Sara Rasmussen, MD
Dana Schwartz, MD
Rajan K. Thakkar, MD
Richard J. Wood, MD

OSU-Affiliate Faculty

Nicole Bernal, MD
Michael Go, MD
Mounir J. Haurani, MD
Bradley J. Needleman, MD
Kristine Orion, MD
Xin Peng, MD
Amer Rajab, MD, PhD
Timur Sarac, MD
Jean E. Starr, MD
Bryan Tillman, MD
William K. Washburn, MD
Xiaoyi Teng, MD

2022 – 2023 Fellows

Pediatric Surgery
Joseph Drews, MD
Liese Pruitt, MD

Pediatric Minimally
Invasive Surgery

Stephanie Cruz, MD

Surgical Critical Care

Kristina Griffin, MD

- Ben Nwomeh, MD, received the 2022 Nationwide Children’s Family Advisory Council Award of Excellence in Family Centered Care.
- Jaimie Nathan, MD, was accepted into membership of the Society of University Surgeons.
- Marc Michalsky, MD, was accepted into membership in American Surgical Association.
- Richard Wood, MD, was promoted to Professor of Surgery.
- Renata Fabia, MD, was accepted into The Ohio State University Mazzafferi-Ellison Society of Master Clinicians.
- Dana Schwartz, MD, received the Golden Apple Teaching Award bestowed by the OSU medical students.
- Cory Criss, MD, received the Denis R. King Teacher of the Year Award bestowed by the general surgery residents.
- 10 faculty members were listed in Castle Connolly 2022 Top Doctors.
- Peter Minneci, MD, completed his presidency of the Midwest Pediatric Surgical Research Consortium.
- Jonathan Groner, MD, had a front cover article “The Disease of Gun Violence” in the *Columbus Monthly* August edition.

One of the paramount goals of our department is to train the next generation of pediatric surgeons. As a result of our basic, clinical, translational, outcomes, and QI research, the department continues as a national leader in presentations at academic meetings. For the 12th year in a row, our research trainees have received prestigious awards for their high-quality research, bringing our total number of research awards to an unprecedented 69 in the past 12 years. Several of our pediatric surgery trainees won highly competitive awards this year, under the mentorship of our faculty:

- Adrian Rajab (Mentor: Gail Besner, MD) received the Research Institute Poster Competition Poster of Distinction Award for Development and Production of a New Intestinal Organ-on-a-Chip.
- Shruthi Srinivas, MD, (Mentor: Pete Minneci, MD) received the OSU James D. King Research Award for her project titled, Burden of Therapy in Pediatric Bowel Management Programs.
- Steven Scoville, MD, PhD, (Mentor: Jennie Aldrink, MD) won the best IPSO abstract for Comparison of Outcomes Between Surveillance Ultrasound and Completion Lymph Node Dissection in Children and Adolescents with Sentinel Lymph Node Positive Cutaneous Melanoma: a PSORC Study.
- Nitin Sajankila, MD, (Mentor: Gail Besner, MD) was awarded a Masters in Medical Science degree from OSU.
- Zack Dumbauld (Mentor: Gail Besner) graduated from OSU with Research Distinction after defending his thesis titled, The Importance of Tryptophan Catabolism by *Lactobacillus reuteri* in AhR Mediated Protection against Necrotizing Enterocolitis.
- Katherine Bergus, MD, (Mentors: Renata Fabia, MD, Raj Thakkar, MD, Dana Schwartz, MD) received the American Burn Association/Shriners Best Pediatric Paper Award for her work on Characterizing Delirium and Associated Risk Factors using the Cornell Assessment of Pediatric Delirium Score in Pediatric Burn Patients.
- Mecklin Ragan, MD, (Mentor Gail Besner, MD) won the Surgical Research Day Gold Award for her presentation, Enteral Administration of *Lactobacillus reuteri* in its Biofilm State is Protective in a Piglet Model of NEC.
- William Schwarzman (Mentor: Chris Breuer, MD) won the Surgical Research Day Silver Award for his presentation, Preclinical Evaluation of Tissue Engineered Vascular Grafts.
- Julia Penatzer, PhD, (Mentor: Raj Thakkar, MD) won the Surgical Research Day Bronze Award for her presentation, Early Detection of Soluble Proteins Predicts the Development of Nosocomial Infection in Pediatric Burn Patients.
- Dr. Srinivas (Mentors: Ihab Halaweish, MD, Richard Wood, MD) won the Surgical Research Day Silver Award for her presentation, Social Determinants of Health Have a Significant Correlation in HAE.

Highlights From the Past Year

The Department of Pediatric Surgery is one of the largest and most diverse departments in the country. The department maintains active clinical programs focused on general pediatric surgery, trauma, burns, minimally invasive surgery, robotic surgery, surgical oncology, surgical endocrinology, chest wall deformities, bariatric surgery, inflammatory bowel disease, hepatobiliary surgery, neuromodulation, ECMO, intestinal failure, pigmented lesions, fetal surgery and colorectal surgery. The Trauma Program has been verified by the American College of Surgeons (ACS) as a Level 1 Trauma Program since 1991, the Burn Program has been an American Burn Association (ABA) verified Burn Center since 2003, and the Bariatric Surgery Program has been verified by the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) since 2015.

Each of the 21 faculty members in the department bring individual strengths and talents to the department, and are recognized for their expertise in clinical care, research, education and quality improvement. Faculty members received awards this year for their excellent clinical care, research, and educational expertise including:

- Gail Besner, MD, was selected as a Full Member of the American College of Surgeons Academy of Master Surgeon Educators.
- Raj Thakkar, MD, received Nationwide Children’s Physician-of-the-Year Award.

- Dr. Bergus (Mentors: Pete Minneci, MD, Geri Hewitt, MD) won the Surgical Research Day Gold Award for her poster presentation on Recommendations for Postoperative Surveillance of Pediatric Benign Ovarian Neoplasms.
- Alberta Negri Jimenez, MD, (Mentors: Ihab Halaweish, MD, Alesandra Gasior, MD, Richard Wood, MD) won the Surgical Research Day Silver Award for his poster presentation on Outcomes of Children with Functional Constipation and Autism Spectrum Disorder Treated with ACE.

Selected Publications

Griffin K, Beyene T, Kenney B. Questioning prophylactic antibiotic use for pyloromyotomy: analysis of the pediatric health information system database. *J Pediatr Surg.* 2023 Jun;58(6):1123-1127.

Hampl S, Hassink S, Skinner A, Armstrong S, Barlow S, Bolling C, Avila Edwards K, Eneli I, Hamre R, Joseph M, Lunsford D, Mendonca E, Michalsky M, Mirza N, Ochoa E, Sharifi M, Staiano A, Weedn A, Flinn S, Lindros J, Okechukwu K. Executive summary: clinical practice guideline for the evaluation and treatment of children and adolescents with obesity. *Pediatrics.* 2023 Feb 1;151(2):e2022060641.

Mansfield S, Morrison Z, Utria A, Reyes C, Garcia A, Stallion A; Diversity, Equity, and Inclusion Committee of the American Pediatric Surgery Association. Improving pathways to eliminate underrepresentation in the pediatric surgery workforce: A call to action. *J Pediatr Surg.* 2022 Jul;57(7):1309-1314.

Patterson K, Beyene T, Lehman K, VerLee S, Schwartz D, Fabia R, Thakkar R. Evaluating effects of burn injury characteristics on quality of life in pediatric burn patients and caregivers. *Burns.* 2023 Jan 31;S0305-4179(23)00011-6.

Patterson K, Onwuka A, Schwartz D, Fabia R, Thakkar R. Length of stay per total body surface area burn: a validation study using the national burn registry. *J Burn Care Res.* 2022 Nov 2;43(6):1227-1232.

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Scoville S, Stanek J, Rinehardt H, Sutthatarn P, Abdelhafeez A, Talbot L, Malek M, Leraas H, Tracy E, Chen S, Kim E, Lotakis D, Ehrlich P, Favela J, Le H, Davidson J, Wilson C, Seemann N, Osman Y, Piche N, Hoang V, Petroze R, Polites S, McKay K, Correa H, Lovvorn H, Lee Y, Balagani A, Dasgupta R, Aldrink J. Comparison of outcomes between surveillance ultrasound and completion lymph node dissection in children and adolescents with sentinel lymph node positive cutaneous melanoma. *Ann Surg.* 2023 Jul 24. Online ahead of print.

Svetanoff W, Diefenbach K, Hall B, Craver A, Rutledge S, McManaway C, Eneli I, Tobias J, Michalsky M. Utilization of an enhanced recovery after surgery (ERAS) protocol for pediatric metabolic and bariatric surgery. *J Pediatr Surg.* 2023 Apr;58(4):695-701.

Fast Facts: July 2022 – June 2023

- Inpatient Discharges: 1,074
- Observation and Outpatient-in-a-Bed Discharges: 1,167
- Total Discharges: 2,241
- Average Length of Stay*: 4.9
- Average Daily Census*: 14.5
- Patient Days*: 5,298
- *Excludes observation and outpatient-in-a-bed patients
- Total Surgical Procedures: 3,777
- Inpatient Consults: 1,049
- Colorectal Clinic Visits: 2,202
- Dublin Surgery Clinic Visits: 225
- Surgery/Burn Clinic Visits: 5,909
- Westerville Surgery Clinic Visits: 285
- Total Surgery Clinic Visits: 8,695

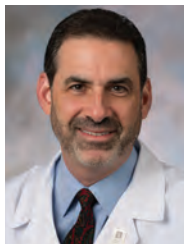


Surgical Services

PLASTIC AND RECONSTRUCTIVE SURGERY

The Department of Plastic and Reconstructive Surgery at Nationwide Children’s Hospital provides comprehensive, interdisciplinary management of cleft lip and palate, congenital and traumatic craniofacial anomalies, 22q deletion syndrome, velopharyngeal dysfunction, hemangiomas and vascular anomalies, pigmented birthmarks, burn injuries, microtia and other ear anomalies, breast abnormalities, congenital and traumatic hand and upper extremity anomalies, post-oncologic defects, and peripheral nerve disorders.

Faculty



Richard E. Kirschner, MD,
FAAP, FACS
Chief

Full-Time Nationwide
Children’s Faculty

- Adriane Baylis, PhD, CCC-SLP
- Kim Bjorklund, MD
- Ibrahim Khansa, MD
- Kaitrin Kramer, DDS, MS, PhD
- Ana Mercado, DMD, PhD
- Kara Morris, DDS, MS
- Gregory D. Pearson, MD

OSU-Affiliate Faculty

- Albert Chao, MD
- Matthew Chetta, MD
- Min-Jeong Cho, MD
- Clara N. Lee, MD
- Amy Moore, MD
- Ryan Schmucker, MD

2022 – 2023 Fellows

Pediatric Plastic and
Craniofacial Surgery

- Carolina Romero-Narvaez, MD

Craniofacial Speech

- Lucy Moreman, MS, CF-SLP

Highlights From the Past Year

- The department launched a new strategic plan for 2022-2026. The plan includes a comprehensive people strategy as well as goals and objectives for advancement in clinical services, quality, research, and education.
- The Hemangioma-Vascular Anomalies Clinic achieved enhanced status as the comprehensive, multidisciplinary Vascular Anomalies Center under the directorship of Dr. Ibrahim Khansa and Dr. Anna Lillis.
- The department launched the comprehensive Adolescent Breast Program.
- The Cleft Lip and Palate Center hosted the first national Cleft Lip and Palate Family Conference in June 2023.
- The department engaged in 5 NIH-funded studies of children with cleft palate:
 - A comparative effectiveness study of speech and surgical treatments using a Cleft Palate Registry/Research Outcomes Network (CORNET)
 - Velopharyngeal insufficiency following cleft palate repair: A comparative effectiveness study of existing surgical procedures and identification of criteria to guide a personalized treatment approach (VPI-OPS)
 - The Development of Stop Consonants in Children with Repaired Cleft Palate
 - Shared Reading Intervention for Children with Oral Clefts
 - Health and Psychosocial Outcomes in Children with Cleft Palate
- Adriane Baylis, PhD, served as President-Elect of the American Cleft Palate-Craniofacial Association.
- Kaitrin Kramer, DDS, MS, PhD, received the University of Illinois at Chicago Rising Star Leadership Award.

- Kara Morris, DDS, MS, was selected to contribute a monthly opinion column to “The ODA Today,” the Ohio Dental Association’s monthly publication. The ODA describes this publication as “one of our primary tools for providing information about issues affecting the practice of dentistry.” The Ohio Dental Association represents more than 5,000 member dentists, nearly 75 percent of the state’s licensed dentists.
- Kim Bjorklund, MD, was promoted to Associate Professor of Plastic Surgery at The Ohio State University and to Chair of the Upper Extremity Resident Education Committee of the American Society of Plastic Surgeons.
- Gregory D. Pearson, MD, served as Vice President of the Medical Staff.

Selected Publications

Bjorklund K, Alexander J, Tulchin-Francis K, Yanes N, Singh S, Valerio I, Klingele K, Scharschmidt T. Targeted muscle reinnervation for limb amputation to avoid neuroma and phantom limb pain in patients treated at a pediatric hospital. *Plast Reconstr Surg Glob Open.* 2023 Apr 13;11(4):e4944.

Findlen U, Grischkan J, Alston S, Durinka L, **Baylis A.** Assessing adherence to audiologic parameters of care for children with cleft palate: a quality improvement initiative. *Cleft Palate Craniofac J.* 2022 Aug;59(8):961-969.

Halsey J, Asti L, **Kirschner R.** The impact of race and ethnicity on surgical risk and outcomes following palatoplasty: an analysis of the NSQIP pediatric database. *Cleft Palate Craniofac J.* 2023 Jun;60(6):663-670.

Khansa I, Aldabbeh S, **Pearson G,** **Baylis A,** Madhoun L, Schoenbrunner A, Splaingard M, **Kirschner R.** Airway and feeding outcomes in pierre robin sequence: a comparison of three management strategies. *Cleft Palate Craniofac J.* 2023 Jun;60(6):689-694.

Fast Facts: July 2022 – June 2023

Inpatient Discharges: 73
Observation and Outpatient-in-Bed Discharges: 278
Total Discharges: 351
Average Length of Stay*: 2.8
Average Daily Census*: 0.6
Patient Days*: 208
**Excludes observation and outpatient-in-a-bed patients*

Total Surgical Procedures: 1,380
Inpatient Consults: 61
Ortho Center Plastic Surgery Clinic Visits: 62
Orthodontics Treatment Program Visits: 2,825
Cleft Lip/Craniofacial Clinic Visits: 2,414
Hilliard Plastic Surgery Clinic Visits: 363
Plastic Surgery Clinic Visits: 4,269
Westerville Plastic Surgery Clinic Visits: 375
Total Plastic Surgery Clinic Visits: 10,308

Surgical Services

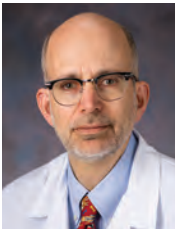
TRAUMA

Nationwide Children’s Hospital is one of the only freestanding pediatric hospitals in the nation with a Level 1 Pediatric Trauma Center verified by the American College of Surgeons (ACS), a Burn Center verified by the American Burn Association (ABA) and a rehabilitation center accredited by the Commission on Accreditation of Rehabilitation Facilities (CARF). These three accreditations allow us to provide the most comprehensive care for injured children all on the same campus. The Trauma and Burn Centers provide clinical care for injured children, a robust performance improvement program to ensure that the highest quality of care is provided, a passenger safety program and research to improve outcomes. The Trauma Center was successfully reverified and many strengths were identified throughout all aspects of the patient’s care from pre-hospital, emergency department, critical care, inpatient, operative management and rehabilitation, validating our multidisciplinary, collaborative approach that allows us to provide patients with exceptional care. The Trauma and Burn Centers serve our community and beyond in our commitment to best outcomes and health equity for injured children everywhere.

Faculty



Rajan Thakkar, MD
Medical Director, Trauma, and Co-director, Burn Center



Jonathan I. Groner, MD
Quality Medical Director, Trauma



Dana Schwartz, MD
Associate Medical Director, Trauma



Renata Fabia, MD, PhD
Co-director, Burn Center

Trauma Surgeons

Jennifer H. Aldrink, MD
Gail E. Besner, MD
Cory Criss, MD
Karen A. Diefenbach, MD
Ihab Halaweish, MD
Brian D. Kenney, MD, MPH
Sara Mansfield, MD
Marc P. Michalsky, MD
Peter C. Minneci, MD
Jaimie D. Nathan, MD
Benedict C. Nwomeh, MD

Oluyinka Olutoye, MD
Sara K. Rasmussen, MD, PhD
Richard Wood, MD
Physician Trauma/Burn Liasions
Graciela Argote-Romero, MD (Anesthesia)
Allan Beebe, MD (Orthopedics)
Cullen Clark, MD (Emergency Medicine)
Maria Estrada, DO (Critical Care)

Jeff Lutmer, MD (Critical Care)
Jennifer MacDonald, MD (Critical Care)
David Martin, MD (Anesthesia)
Andrew Rabe, MD (Radiology)
Summit Shah, MD (Radiology)
Eric Sribnick, MD (Neurosurgery)
Morgan Wurtz, MD (Emergency Medicine)

Trauma Program Manager

LeeAnn Wurster, MS, RN, TCRN, CPNP-PC

Center for Pediatric Trauma Research Faculty



Henry Xiang, MD, MPH, PhD
Director



Jonathan I. Groner, MD
Medical Director



Julie Leonard, MD, MPH
Associate Director

Jennifer Cooper, PhD
Renata Fabia, MD, PhD
Brian Kenney, MD, MPH
Jeffrey Leonard, MD
Julie Leonard, MD, MPH
Eric Sribnick, MD, PhD
Rachel Stanley, MD
Gerry Taylor, PhD
Rajan Thakkar, MD
Ginger Yang, PhD, MPH

Affiliate Faculty

Allan C. Beebe, MD
Mark Hall, MD, FAAP, FCCM
Bo Lu, PhD (The Ohio State University)
Jennifer Lundine, PhD, CCCSLP, BC-ANCDS
Ai Ni, PhD (The Ohio State University)
Keith Yeates, PhD
Ping Zhang, PhD, FAMIA (The Ohio State University)

Nurse Researchers

Sheila Giles, BSN, RN
Dana Noffsinger, CPNP-AC
LeeAnn Wurster, MS, RN, TCRN, CPNP-PC

Clinical Research Coordinator Team Lead

Megan Armstrong, MPH

Highlights From the Past Year

- The Burn Center was successfully reverified as a Pediatric Burn Center by the American Burn Association.
- Dana Schwartz, MD, was appointed associate medical director of Trauma.
- Abby Frooman, MS, RN, CPNP-AC, was hired as a Trauma/Burn advanced practice provider.
- Maria Penrose, CAISS, CSTR, was elected to the Education Committee for the Trauma Center Association of America.
- Lee Ann Wurster, MS, RN, TCRN, CPNP-PC, was elected treasurer for the Trauma Advisory Board of COTS.
- Eric Sribnick, MD, was elected to the Pediatric Trauma Society (PTS) Board as member-at-large.
- Eric Sribnick, MD, was the annual recipient of the PTS Research grant for his work on “Immunoparalysis After Hemorrhage and Traumatic Brain Injury: Mechanism and Therapy.”
- Eric Sribnick, MD, received a K08 grant from the NIH for his work on the “Reversal of Immunoparalysis Following Traumatic Brain Injury and Systemic Hemorrhage in a Juvenile Rat Model.”

Center for Pediatric Trauma Research Achievements

- Henry Xiang, MD, MPH, PhD, MBA, received two federal R01 grants 1) AHRQ – “A Randomized Clinical Trial of Smartphone Virtual Reality for Pain Management During Burn Care Transition” 2) NICHD – “Poly-Matching Causal Inference for Assessing Multiple Acute Medical Managements of Pediatric Traumatic Brain Injuries.”
- Eric Sribnick, MD, received two federal grants (K08 and R01) and became the Trauma Liaison for Neurosurgery at Nationwide Children’s, Executive Board Member for COTS, and Executive Board member for ThinkFirst.
- Jonathan Groner, MD, was featured on the cover of Columbus Monthly for its annual “Top Doctors” issue with an accompanying story about reducing firearm injuries.
- Ginger Yang, PhD, MPH, received a National Science Foundation grant “Collaborative Research: Cognitive Workload Classification in Dynamic Real-World Environments: A MagnetoCardioGraphy Approach.”

Selected Publications

Groner J, Phuong J, Price M, Bixby P, Ehrlich P, Burd R, Jensen A, Rivara F, Sribnick E, Bulger E. Developing a national trauma research action plan: results from the pediatric research gap delphi survey. *J Trauma Acute Care Surg.* 2022 Sep 1;93(3):360-366.

Lundine J, Huling J, Adelson P, Burd R, Fuentes M, Haarbauer-Krupa J, Hagen K, Iske C, Koterba C, Kurowski B, Petrucci S, Rose S, Sadowsky C, Westendorf J, Truelove A, Leonard J. Using billing codes to create a pediatric functional status e-score for children receiving inpatient rehabilitation. *Arch Phys Med Rehabil.* 2023 Apr 17:S0003-9993(23)00224-1.

Patterson K, Onwuka A, Schwartz D, Fabia R, Thakkar R. Length of stay per total body surface area burn: a validation study using the national burn registry. *J Burn Care Res.* 2022 Nov 2;43(6):1227-1232.

Ray W, Rajab A, Alexander H, Chmil B, Rumpf R, Thakkar R, Viswanathan M, Fabia R. A 1% TBSA chart reduces math errors while retaining acceptable first-estimate accuracy. *J Burn Care Res.* 2022 May 17;43(3):665-678.

Wang A, Xiang H. U.S. leading causes of death and years of potential life lost, 1981-2019: implications for surgical research. *J Surg Res.* 2023 Jan;281:338-344.

Fast Facts: July 2022 – June 2023

Admissions: 1,443	Orthopedic Trauma Admissions: 471
Average Length of Stay*: 3.0	Pediatric Surgery Trauma Admissions: 704
Asphyxial Injury Admissions: 37	Penetrating Injury Admissions: 133
Blunt Injury Admissions: 1,113	Other Service Trauma Admissions: 125
Burn Injury Admissions: 160	<i>*Excludes observation and outpatient-in-a-bed patients</i>
Neurosurgery Trauma Admissions: 143	





“My goal is to create a way to manage the bladder that’s durable...”
– Molly E. Fuchs, MD

Urology

Real-World Urinary Management and Outcomes in Cloacal Exstrophy Among Children and Adults

Most (94%) older children and adults with cloacal exstrophy are managed by incontinent diversion or clean intermittent catheterization.

“The published literature about cloacal exstrophy can be misleading, and there is an impression that with surgical bladder reconstruction, normal bladder function and voiding can be restored. That is to say, a child will be able to potty train and to control their urine without having accidents. However, this is probably an oversimplification, and my colleagues and I believe it is unrealistic,” says **Molly E. Fuchs, MD**, urologist at Nationwide Children’s Hospital and assistant professor of Urology at The Ohio State University College of Medicine.

To evaluate real-world incontinence management in cloacal exstrophy, the Pediatric Urology Midwest Alliance (PUMA) group analyzed data from children and adults cared for at five institutions.

The study population comprised 40% boys or men and 60% girls or women aged <10 years (n=57), 10-17.9 years (n=35), or >18 years (n=68).

Overall, no child or adult had volitional voiding through their urethra with at least a three-hour dry interval.

More adults (68%) and older children (83%) were managed with clean intermittent catheterization (CIC) than younger children (32%; $P < .001$) whereas fewer adults (15%) or older children (11%) emptied urine via urethra (e.g., CIC per urethra, Valsalva, incontinence) compared with younger children (46%; $P < .001$).

“Historically, bladder reconstruction was performed to try to achieve voiding via the urethra by trying to reconstruct the bladder to look normal, hoping it would also function normally. This would often require numerous surgical procedures and have poor success rates,” says Dr. Fuchs.

In the future, Dr. Fuchs and colleagues want to focus on kidney health, the patient experience and ensuring that patients have maximal function and comfort while minimizing time spent in the health care setting.

Dr. Fuchs concluded, “My goal is to create a way to manage the bladder that’s durable, that hopefully doesn’t require a lot of surgical procedures, particularly early in life, so we can keep these children at home to develop and thrive and not in the hospital their whole childhood.”

REFERENCES:

Fuchs ME, Ahmed M, Dajusta DG, Gargollo P, Kennedy UK, Rosoklija I, Strine AC, Whittam B, Yerkes E, Szymanski KM, on behalf of PUMA. Urinary and bowel management in cloacal exstrophy: A long-term multi-institutional cross-sectional study. *J Pediatr Urol.* 2023 Feb;19(1):35.e1-35.e6.

Surgical Services

UROLOGY

The Department 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 department participates in several multispecialty clinics, including THRIVE (a program specializing in care for differences of sexual development, complex urological problems and gender concerns), the Center for Colorectal and Pelvic Reconstruction (CCPR), the Urology/Nephrology Combined Clinic, the Stone Clinic and the Myelomeningocele Program.

The mission of the department is to provide the highest quality pediatric urological care in the safest and most child friendly environment. The department 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.

Faculty



V. Rama Jayanthi, MD
Chief

Full-Time Nationwide Children's Faculty

- Seth A. Alpert, MD
- Linda Baker, MD
- Christopher T. Brown, MD
- Christina B. Ching, MD
- Daniel G. DaJusta, MD
- Molly E. Fuchs, MD
- Daryl J. McLeod, MD
- Donald H. Nguyen, MD

Community-Based Faculty

- Nima Baradaran, MD
- Roy R. Brown Jr., MD
- George T. Ho, MD
- Adam C. Weiser, MD

2022 – 2023 Fellow

- Valerie Noel-Deslauriers, MD

Highlights From the Past Year

A major highlight of the last academic year was the recruitment of Linda Baker, one the premier pediatric urological basic science researchers in the country. She has had an impressive career being continuously funded by the NIH for 20+ years and is a recognized expert in the surgical management of Prune Belly Syndrome as well as in vaginal agenesis.

The Department of Urology has a long tradition of traveling to long-distance clinics to offer high-level specialty care close to our patients’ homes. Historically we have traveled to Lima, Mansfield and Portsmouth (Wheelersburg).

Nationwide Children’s Hospital staff offer full-time pediatric urological services at Dayton Children’s Hospital to serve that region. Nationwide Children’s staff are also now the primary pediatric urology caregivers in northwest Ohio, as we work to develop Nationwide Children’s Hospital-Toledo.

The Robot-Assisted Laparoscopic Surgery Program is robust, performing a wide range of surgical procedures, from routine kidney-level operations such as pyeloplasties and nephrectomies, to more complex procedures such as bladder neck reconstructions and appendicovesicostomy. Only a handful of centers around the country are performing the latter, but at Nationwide Children’s this procedure has become commonplace. Our six robotically trained pediatric urologists are among the most active in the country with regard to surgical volumes.

Selected Publications

Ching C. Non-antibiotic approaches to preventing pediatric UTIs: a role for d-mannose, cranberry, and probiotics? *Curr Urol Rep.* 2022 Jun;23(6):113-127.

Dawson A, Ray Bignall ON, Spencer J, McLeod D. A call to comprehensively understand our patients to provide equitable pediatric urological care. *Urology.* 2023 Jun 30:S0090-4295(23)00531-9.

Ebert K, Terry H, Ching C, Dajusta D, Fuchs M, Jayanthi VR, McLeod D, Alpert S. Effectiveness of a practical, at-home regimen of parasacral transcutaneous electrical nerve stimulation in pediatric overactive bladder. *Urology.* 2022 Jul;165:294-298.

Ernst M, Klamer B, Thompson N, Alpert S, Dajusta D, Fuchs M, McLeod D, Jayanthi VR, Ching C. Caregiver disclosure of common early childhood pediatric urologic surgeries. *J Pediatr Urol.* 2023 Feb 23:S1477-5131(23)00062-1.

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Kaefer M, Saad K, Gargollo P, Whittam B, Rink R, Fuchs M, Bowen D, Reddy P, Cheng E, Jayanthi R; Pediatric Urology Midwest Alliance (PUMA). Intraoperative laser angiography in bladder exstrophy closure: A simple technique to monitor penile perfusion. *J Pediatr Urol.* 2022 Dec;18(6):746.e1-746.e7.

Stout M, Alpert S, Kersey K, Ching C, Dajusta D, Fuchs M, McLeod D, Jayanthi R. Reducing opioid prescriptions after common outpatient pediatric urologic surgeries: A quality improvement assessment. *Pediatr Qual Saf.* 2023 Jan 16;8(1):e623.

Fast Facts: July 2022 – June 2023

Inpatient Discharges: 124	Dublin Urology Clinic Visits: 831
Observation and Outpatient–in-a-Bed Discharges: 168	East Broad Urology Clinic Visits 263
Total Discharges: 292	Hilliard Urology Clinic Visits 307
Average Length of Stay*: 2.6	Lewis Center Urology Clinic Visits 230
Average Daily Census*: 0.9	Lima Urology Clinic Visits: 321
Patient Days*: 318	Mansfield Urology Clinic Visits: 242
Inpatient Consults: 264	Portsmouth Urology Clinic Visits: 103
*Excludes observation and outpatient-in-a-bed patients	Urology (Main Campus) Clinic Visits: 6,270
Total Surgical Procedures: 1,770	Urology/Nephrology (Main Campus) Clinic Visits: 380
Urodynamics: 606	Westerville Urology Clinic Visits: 1,329
Canal Winchester Urology Clinic Visits: 181	Total Urology Clinic Visits: 11,136
Dayton Children's Clinic Visits: 679	



ABIGAIL WEXNER RESEARCH INSTITUTE AT NATIONWIDE CHILDREN'S HOSPITAL

With discoveries always on the horizon, science is thriving at Nationwide Children's. Our status as an international leader in pediatric research is supported by the behavioral-, basic- and clinician-scientists within the Abigail Wexner Research Institute (AWRI) at Nationwide Children's who are redefining pediatric health care with best outcomes for every child in mind.

One of the largest pediatric research centers in the United States, the AWRI is ranked in the top 10 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.

The AWRI occupies more than 800,000 square feet of dedicated research space on the Nationwide Children's campus. The new Research Building IV opened its doors in May 2023, featuring expanded wet bench and dry lab space.

ABIGAIL WEXNER RESEARCH INSTITUTE LEADERSHIP



Dennis R. Durbin, MD, MSCE
President



Cynthia A. Gerhardt, PhD
Chief Clinical Research Officer



Peter White, PhD
Chief Data Sciences Officer



Amy J. Roscoe
Vice President of Strategic Planning and Finance



Matthew McFarland, RPh, PhD
Vice President of Commercialization and Industry Relations

INSTITUTES AND CENTERS OF EMPHASIS

- Biopathology Center
- Center for Biobehavioral Health
- Center for Cardiovascular Research
- Center for Child Health Equity and Outcomes Research
- Center for Childhood Cancer Research
- Center for Clinical and Translational Research
- Center for Gene Therapy
- Center for Injury Research and Policy
- Center for Microbial Pathogenesis
- Center for Perinatal Research
- Center for Regenerative Medicine
- Center for Suicide Prevention and Research
- Center for Vaccines and Immunity
- Kidney and Urinary Tract Center
- Steve and Cindy Rasmussen Institute for Genomic Medicine

Research Institute Reports

BIOPATHOLOGY CENTER

The Biopathology Center provides a full range of services related to biospecimen procurement, banking, processing, testing and distribution. The Biopathology Center is accredited by the College of American Pathologists Biorepository Accreditation Program (CAP BAP) and the Laboratory Accreditation Program (CAP LAP) for histopathology and molecular processing procedures. The team of 180 staff members manage over six million biospecimens from numerous biospecimen collection efforts, including the National Cancer Institute (NCI)-funded biorepositories of the Children’s Oncology Group (COG) and SWOG. Also, part of the Biopathology Center is the NCI-funded Pediatric Division of the Cooperative Human Tissue Network and the Biospecimen Processing Center of the NCI’s Center for Cancer Genomics, as well as numerous biospecimen collections from other sponsors (e.g., Nationwide Children’s Hospital-funded investigators, the SARC Foundation).

Faculty



Nilsa Del Carmen Ramirez-Milan, MD, FCAP
Medical Director and Principal Investigator



Diana Thomas, MD, PhD, FCAP
Pathology Operations Director and Principal Investigator



Jay Bowen, MS
Principal Investigator



Kathleen Nicol, MD, FCAP
Principal Investigator

Highlights From the Past Year

To accommodate the growth of our operation, the Biopathology Center recently recruited Andrew Drury as the new laboratory operations director. He is coming home to Nationwide Children’s Hospital after serving as director of clinical operations at Washington University School of Medicine and director of laboratory at Riverside Hospital. He most recently worked as the director of laboratory outreach at Ohio Health. Also joining our leadership team is Emily Liszkay, who was recently recruited as the new Biopathology Center inventory and banking manager. Emily began her career in the Biopathology Center in 2015 before transferring to the Steve and Cindy Rasmussen Institute for Genomic Medicine (IGM) where she worked first as a genetic technologist and then as a clinical operations coordinator. Most recently, she worked at the Ohio Bureau of Workers’ Compensation as a reimbursement policy member in Medical Services.

For the Molecular Characterization Initiative (MCI), the Biopathology Center utilizes the services of 11 board-certified pathologists from the Department of Pathology and Laboratory Medicine at Nationwide Children’s to ensure diagnostic concordance between the samples submitted for testing and the diagnoses issued at the submitting institutions prior to nucleic acid extraction at the Biopathology Center and testing at IGM. Early this year, the pathologists started performing these valuable expert reviews utilizing a digital pathology application developed at the Biopathology Center. After the diagnostic pathology glass slides are digitized, the digital pathology application allows the pathologists to view, analyze and annotate the virtual whole-slide images and the pertinent documents (including data collection forms) for each case using a computer screen. This process eliminates the use of a microscope and paper forms, significantly decreasing the turn-

around time of the case review and the collection of the quality assurance (QA) data. MCI is a project that aims to collect, analyze and report clinical molecular data to support Children’s Oncology Group-affiliated clinicians in choosing the best treatment for each patient. This program is part of the National Cancer Institute (NCI) Childhood Cancer Data Initiative (CCDI). Nationwide Children’s supports critical aspects of the NCI CCDI MCI through the Biopathology Center and IGM. So far, patients with central nervous system tumors, soft tissue sarcomas and rare tumors are participating in this program.

Selected Publications

Bedrosian T, Miller K, Grischow O, Schieffer K, LaHaye S, Yoon H, Miller A, Navarro J, Westfall J, Leraas K, Choi S, Williamson R, Fitch J, Kelly B, White P, Lee K, McGrath S, Cottrell C, Magrini V, Leonard J, Pindrik J, Shaikhouni A, Boué D, **Thomas D**, Pierson C, Wilson R, Ostendorf A, Mardis E, Koboldt D. Detection of brain somatic variation in epilepsy-associated developmental lesions. *Epilepsia*. 2022 Aug;63(8):1981-1997.

Chi S, Yi J, Williams P, Roy-Chowdhuri S, Patton D, Coffey B, Reid J, Piao J, Saguilig L, Alonzo T, Berg S, **Ramirez NC**, Jaju A, Mhlanga J, Fox E, Hawkins D, Mooney M, Takebe N, Tricoli J, Janeway K, Seibel N, Parsons D. Tazemetostat for tumors harboring SMARCB1/SMARCA4 or EZH2 alterations: Results from NCI-COG pediatric MATCH APEC1621C. *J Natl Cancer Inst*. 2023 May 25:djad085.

Garcia-Recio S, Hinoue T, Wheeler G, Kelly B, Garrido-Castro A, Pascual T, De Cubas A, Xia Y, Felsheim B, McClure M, Rajkovic A, Karaesmen E, Smith M, Fan C, Ericsson P, Sanders M, Creighton C, **Bowen J**, Leraas K, Burns R, Coppens S, Wheless A, Rezk S, Garrett A, Parker J, Foy K, Shen H, Park B, Krop I, Anders C, Gastier-Foster J, Rimawi M, Nanda R, Lin N, Isaacs C, Marcom P, Storniolo A, Couch F, Chandran U, Davis M, Silverstein J, Ropelewski A, Liu M, Hilsenbeck S, Norton L, Richardson A, Symmans W, Wolff A, Davidson N, Carey L, Lee A, Balko J, Hoadley K, Laird P, Mardis E, King T; AURORA US Network; Perou C. Multiomics in primary and metastatic breast tumors from the AURORA US network finds microenvironment and epigenetic drivers of metastasis. *Nat Cancer*. 2023 Jan;4(1):128-147.

Goodhue Meyer E, Uffman J, Townsend S, Rice-Weimer J, Tobias J, **Nicol K**. Establishing pediatric reference ranges for rotational thromboelastometry. *Am J Clin Pathol*. 2023 Jul 5;160(1):72-77.

McCall S, Lubensky I, Moskaluk C, Parwani A, Radin K, **Ramirez NC**, Von Menchhofen Z, Washington M, LiVolsi V. The cooperative human tissue network of the national cancer institute: Supporting cancer research for 35 years. *Mol Cancer Ther*. 2023 Jul 28:MCT-22-0714.

Thomas N, Dreval K, Gerhard D, Hilton L, Abramson J, Ambinder R, Barta S, Bartlett N, Bethony J, Bhatia K, **Bowen J**, Bryan A, Cesarman E, Casper C, Chadburn A, Cruz M, Dittmer D, Dyer M, Farinha P, Gastier-Foster J, Gerrie A, Grande B, Greiner T, Griner N, Gross T, Harris N, Irvin J, Jaffe E, Henry D, Huppi R, Leal F, Lee M, Martin J, Martin M, Mbulaiteye S, Mitsuyasu R, Morris V, Mullighan C, Mungall A, Mungall K, Mutyaba I, Nokta M, Namirembe C, Noy A, Ogbwang M, Omoding A, Orem J, Ott G, Petrello H, Pittaluga S, Phelan JD, Ramos J, Ratner L, Reynolds S, Rubinstein P, Sissolak G, Slack G, Soudi S, Swerdlow S, Traverse-Glehen A, Wilson W, Wong J, Yarchoan R, ZenKlusen J, Marra M, Staudt L, Scott D, Morin R. Genetic subgroups inform on pathobiology in adult and pediatric Burkitt lymphoma. *Blood*. 2023 Feb 23;141(8):904-916.

Research Institute Reports

CENTER FOR BIOBEHAVIORAL HEALTH

The mission of the Center for Biobehavioral Health in the Abigail Wexner 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. Our work is designed to identify factors associated with developmental risk and resilience across the life span, design and evaluate new interventions, and disseminate and implement effective interventions into routine practice. We support trainees, ranging from undergraduate students to postdoctoral fellows, that will become the next generation of leaders in biobehavioral research. The Center for Biobehavioral Health also directs resources that support research across Nationwide Children’s including the Behavioral Trials Office, Biobehavioral Outcomes Core, Neuroimaging Core and Neurodevelopmental Research Affinity Group.

Faculty



Kathryn Vannatta, PhD
Interim Director

Full-Time Nationwide Children’s Faculty

- Canice E. Crerand, PhD
- Cynthia A. Gerhardt, PhD
- Kristen E. Hoskinson, PhD
- Jamie L. Jackson, PhD
- Sarah A. Keim, PhD
- Laura Mackner, PhD
- Paola Malerba, PhD

Leena Nahata, MD

Eric E. Nelson, PhD

Joseph R. Rausch, PhD

Emre Sezgin, PhD

Micah A. Skeens, PhD, APRN, CPNP

Jack H. Stevens, PhD

H. Gerry Taylor, PhD

Affiliate Faculty

Amy Baughcum, PhD

Elise Berlan, MD, MPH

Christine A. Fortney, PhD, RN

Tondi Harrison, PhD, RN

Kathy Lemanek, PhD

Kelly McNally, PhD

Postdoctoral Fellows

- Mahmoud Alipour, PhD
- Kristen Fox, PhD
- Emily Moscato, PhD
- Anna Olsavsky, PhD

Highlights From the Past Year

Jamie Jackson, PhD, was awarded a five-year, \$3.2 million R01 from the National Heart, Lung, and Blood Institute to conduct a randomized clinical trial evaluating the efficacy a lifestyle intervention to increase physical activity for adolescents and young adults with moderate and complex forms of congenital heart disease.

Kristen Hoskinson, PhD, was awarded a \$782,000 Research Scholar Grant from the American Cancer Society to integrate structural and functional MRI methods into a large-scale study of neurocognitive, social and emotional outcomes of children surviving cancer diagnosed in the preschool years. This compliments her program of similar research spanning children with traumatic brain injury and congenital heart disease.

Micah Skeens, PhD, APRN, CPNP, was selected as a Fellow in the American Academy of Nursing. This is the highest honor given within the nursing profession and recognizes exceptional expertise, achievement and contributions to nursing and health care. In addition, her BMT4me app, developed in collaboration with Emre Sezgin, PhD, to foster medication adherence, received a Silver Award in the Digital Health Fortune 500 category through the Health Information Resource CenterSM.

Canice Crerand, PhD, was appointed to serve as an expert for the MINORS Project, a national panel charged with developing clinical recommendations and guidelines for minors seeking appearance-altering procedures.

Cynthia Gerhardt, PhD, became the president-elect for the Society of Pediatric Psychology, which is Division 54 of the American Psychological Association. In addition, she was selected as the new chief clinical research officer for Nationwide Children’s Hospital.

Selected Publications

Jackson J, Fox K, Rausch J, Swenski T, Neville S, Marousis N, Korth C, Cua C, Garg V, **Vannatta K.** A randomized clinical trial demonstrating feasibility and preliminary efficacy of a videoconference-delivered physical activity lifestyle intervention among adolescents with a congenital heart defect. *Ann Behav Med.* 2022 Jul 12;56(7):673-684.

Keim S, Jude A, Smith K, Khan A, Coury D, **Rausch J,** Udaipuria S, Norris M, Bartram L, Narayanan A, Rogers L. Randomized controlled trial of omega-3 and -6 fatty acid supplementation to reduce inflammatory markers in children with autism spectrum disorder. *Autism Dev Disord.* 2022 Dec;52(12):5342-5355.

Nahata L, Stanek C, Theroux C, **Olsavsky A,** Quinn G, Creary S. Fertility testing knowledge and attitudes in male adolescents and young adults with SCD and their caregivers: a pilot study. *Blood Adv.* 2022 Jun 28;6(12):3703-3706.

Grannis C, Mattson W, Leibowitz S, **Nahata L,** Chen D, Strang J, Thobe H, Indyk J, **Nelson E.** Expanding upon the relationship between gender-affirming hormone therapy, neural connectivity, mental health, and body image dissatisfaction. *Psychoneuroendocrinology.* 2023 Jun 8;156:106319.

Sezgin E, Hussain S, Rust S, Huang Y. Extracting medical information from free-text and unstructured patient-generated health data using natural language processing methods: feasibility study with real-world data. *JMIR Form Res.* 2023 Mar 7;7:e43014.

Seck S, Kim Y, Cunningham W, Olshefski R, Yeates K, **Vannatta K, Hoskinson K.** Pilot study of associations among functional connectivity and neurocognition in survivors of pediatric brain tumor and healthy peers. *J Child Neurol.* 2022 Dec;37(12-14):927-938.

Taylor HG, Hoskinson K, Vrantsidis D, Minich N, Busch T, Horn T, Mattson W, **Nelson E.** Quality of social relationships with parents and peers in adolescents born extremely preterm. *J Dev Behav Pediatr.* 2023 Apr 1;44(3):e218-e224.

Research Institute Reports

CENTER FOR CARDIOVASCULAR RESEARCH

The mission of the Center for Cardiovascular Research in the Abigail Wexner Research Institute at Nationwide Children’s Hospital is to conduct innovative, mechanism-based research leading to improved therapies and outcomes for pediatric cardiovascular disease and to foster preventive strategies that promote cardiovascular health. Our cardiovascular studies span the spectrum from basic molecular research, which occurs in the Center for Cardiovascular Research, to translational and clinical research performed in collaboration with clinicians in The Heart Center at Nationwide Children’s.

Faculty



Vidu Garg, MD
Director

Jihyun Jang, PhD
Deqiang Li, MD, PhD
Brenda Lilly, PhD
Patrick I. McConnell, MD
Aaron J. Trask, PhD
Mingtao Zhao, DVM, PhD

Associate Investigators
Carl H. Backes, Jr., MD
Amee M. Bigelow, MD
Christopher K. Breuer, MD
John M. Kelly, MD
Kan N. Hor, MD
Andrew H. Tran, MD
Andrew R. Yates, MD
Jessie Yester, MD, PhD

Postdoctoral Scientists
2022-2023
Matthew Alonzo, PhD
Shaela Pervin, PhD
Jun Yasuhara, MD
Yang Yu, PhD
General Surgery Resident
Ruth Ackah, MD

Highlights From the Past Year

The Center for Cardiovascular Research had a highly productive year, and this included the addition of two new faculty as principal investigators. Deqiang Li, MD, PhD, joined as an associate professor, having been recruited from the University of Maryland. Dr. Li’s National Institutes of Health (NIH)-funded research program is focused on understanding the molecular mechanisms regulating heart development and regeneration using mouse models, human induced pluripotent stem cells and a variety of cutting-edge technologies. Jihyun Jang, PhD, joined as a research assistant professor. Her research utilizes vertebrate models (e.g., genetic mouse models and human iPSCs) to discover genetic pathways and environmental factors that influence cardiovascular development, function, regeneration and disease. This year, Dr. Jang received a Career Development Award from the American Heart Association (AHA) to further her research.

New grants awarded to the center expand our research into the investigation into the genes and gene-environment interactions that contribute to congenital heart defects, as well as the molecular and signaling pathways regulating normal heart and blood vessel development and how they are disrupted during disease development and progression. These include Dr. Lilly and Dr. Trask’s National Heart, Lung, and Blood Institute (NHLBI)-funded award studying the role of Notch signaling in Type 2 diabetic coronary microvascular disease, Dr. Zhao’s NHLBI-funded award studying the effects of a SARS-CoV-2 infection in Down syndrome using patient-specific iPSCs, and two AHA Innovative Project Awards granted to Dr. Jang and Dr. Zhao.

The genomics program has continued to expand with growth of the induced pluripotent stem cell core facility, which has recruited nearly 200 patients with congenital heart disease and their family members and currently houses over 50 unique iPSC cell lines.

The past year has been highly productive with 36 publications, 11 of which were collaborative efforts with clinicians in The Heart Center at Nationwide Children’s. In addition, Dr. Zhao and his team published their research titled “Impaired Human Cardiac Cell Development due to NOTCH1 Deficiency” in *Circulation Research*, where it was featured on the journal cover. This along with other research highlights were presented at our first Annual Heart Center Research Day, which was attended by cardiovascular researchers from The Heart Center and Abigail Wexner Research Institute.

Cardiovascular research education also continues to be a priority within the Center as we continue to train high school, college, medical, graduate and postdoctoral students. Our educational mission was bolstered by a new, five-year, \$1.7 million Ruth L. Kirschstein Institutional National Research Service Award (T32) from the NIH/NHLBI, to enhance cardiovascular research training for postdoctoral (MD, MD/PhD, and PhD) fellows that is led by Dr. Garg and Dr. Backes in The Heart Center. In addition, Dr. Garg continues to direct the AHA summer undergraduate research fellowship and serves as the co-director with Deena Chisolm, PhD, director of the Center for Child Health Equity and Outcomes Research, of a new five-year, \$800,000 NIH/NHLBI R25 training grant to support summer research experiences for undergraduate students. Lastly, Dr. Zhao’s lab received two notable NIH/NHLBI diversity supplements to support a graduate student and a postdoctoral fellow.

Selected Publications

Breikaa RM, Denman K, Ueyama Y, McCallinhart PE, Khan AQ, Agarwal G, Trask AJ, Garg V, Lilly B. Loss of Jagged1 in mature endothelial cells causes vascular dysfunction with alterations in smooth muscle phenotypes. *Vascul Pharmacol.* 2022 Aug;145:107087.

Majumdar U, Choudhury TZ, Manivannan S, Ueyama Y, Basu M, Garg V. Single-cell RNA-sequencing analysis of aortic valve interstitial cells demonstrates the regulation of integrin signaling by nitric oxide. *Front Cardiovasc Med.* 2022 Oct 25;9:742850. eCollection 2022.

McCallinhart PE, Lee YU, Lee A, Anghelescu M, Tonniges JR, Calomeni E, Agarwal G, Lincoln J, Trask AJ. Dissociation of pulse wave velocity and aortic wall stiffness in diabetic db/db mice: The influence of blood pressure. *Front Physiol.* 2023 Mar 24;14:1154454.

Manivannan S, Mansfield C, Zhang X, Kodigepalli KM, Majumdar U, Garg V, Basu M. Single-cell transcriptomic profiling unveils dysregulation of cardiac progenitor cells and cardiomyocytes in a mouse model of maternal hyperglycemia. *Commun Biol.* 2022 Aug 15;5(1):820.

Trask AJ, Bello NA, Carnevale D, Arnold AC, Watts SW. Hypertension section editors series: early career introduction and update. *Hypertension.* 2023 Mar;80(3):493-496.

Ye S, Wang C, Xu Z, Lin H, Wan X, Yu Y, Adhicary S, Zhang JZ, Zhou Y, Liu C, Alonzo M, Bi J, Ramirez-Navarro A, Deschenes I, Ma Q, Garg V, Wu JC, Zhao MT. Impaired human cardiac cell development due to NOTCH1 deficiency. *Circ Res.* 2023 Jan 20;132(2):187-204.

Research Institute Reports

CENTER FOR CHILD HEALTH EQUITY AND OUTCOMES RESEARCH

The mission of the Center for Child Health Equity and Outcomes Research in the Abigail Wexner Research Institute at Nationwide Children’s Hospital is to advance child health and well-being through research in and across clinical care, health services, health policy and community initiatives. We aspire to lead the nation in groundbreaking research that cultivates flourishing families and vibrant communities, reduces disparities and facilitates the best and most equitable outcomes for all children. Investigators in 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.

Faculty



Deena J. Chisolm, PhD
Director

Principal Investigators

- Mary Ann Abrams, MD, MPH
- Laura J. Chavez, PhD, MPH
- Susan E. Creary, MD, MSc
- Mattina A. Davenport, PhD
- Laura C. Hart, MD
- Kelly J. Kelleher, MD, MPH

Alex R. Kemper, MD

Amrik S. Khalsa, MD

Sarah H. O’Brien, MD, MSc

Prasanth Pattisapu, MD, MPH

Amy N. Tyler, MD

Jordee M. Wells, MD, MPH

Research Scientists

Lindsey Asti, PhD

Kierra Barnett, PhD

Rose Hardy, PhD

Selected Publications

Barnett K, Banks A, Morton T, Sander C, Stapleton M, **Chisolm D.** “I just want us to be heard”: A qualitative study of perinatal experiences among women of color. *Womens Health* (Lond). 2022 Jan-Dec;18:17455057221123439.

Chavez L, Tyson D, **Davenport M,** **Kelleher K,** **Chisolm D.** Social needs as a risk factor for positive postpartum depression screens in pediatric primary care. *Acad Pediatr.* 2023 Mar 22:S1876-2859(23)00095-5.

Creary S, Beeman C, Stanek J, King K, McGann P, **O’Brien S,** Liem R, Holl J, Badawy S. Impact of hydroxyurea dose and adherence on hematologic outcomes for children with sickle cell anemia. *Pediatr Blood Cancer.* 2022 Jun;69(6):e29607.

Gil L, **Asti L,** Apfeld J, Sebastião Y, Deans K, Minneci P. Perioperative outcomes in minimally-invasive versus open surgery in infants undergoing repair of congenital anomalies. *J Pediatr Surg.* 2022 Dec;57(12):755-762.

Khalsa A, Copeland K, Kharofa R, Geraghty S, Dewitt T, Woo J. The longitudinal relation between infant feeding styles and growth trajectories among families from low-income households. *J Nutr.* 2022 Sep 6;152(9):2015-2022.

Slesnick N, Zhang J, Feng X, Mallory A, Martin J, Famelia R, Brakenhoff B, Yilmazer T, Wu Q, Ford J, Holowacz E, Jaderlund S, Hatsu I, Luthy E, **Chavez L,** Walsh L, **Kelleher K.** Housing and supportive services for substance use and self-efficacy among young mothers experiencing homelessness: A randomized controlled trial. *J Subst Abuse Treat.* 2023 Jan;144:108917.

Wells J, Rodean J, Cook L, Sills M, Neuman M, Kornblith A, Jain S, Hirsch A, Goyal M, Fleegler E, DeLaroche A, Aronson P, Leonard J. Injury-related pediatric emergency department visits in the first year of COVID-19. *Pediatrics.* 2022 Oct 1;150(4):e2021054545.

Highlights From the Past Year

Center activities continue to support our goal of enhancing child health equity and well-being. Additions to the faculty include Laura Chavez, PhD, MPH, a health services researcher interested in pediatric behavioral health, Mattina Davenport, PhD, a psychologist exploring inequities in sleep health and health care, and Amy Tyler, MD, the new Nationwide Children’s chief of Hospital Medicine whose research focuses on de-implementation of low value care.

Economic drivers of health are a growing focus of our research portfolio. Dr. Chavez’s newly funded NIMH R01 grant will support exploration of the relationship between the child tax credit, expanded for COVID-19, and behavioral health in Medicaid enrolled adolescents. Other ongoing research on economic drivers focuses on expanding uptake of the earned income tax credit (EITC) and assisting patient/parent enrollment in financial support programs for which they are eligible. Our research has clearly documented that health-related social and economic factors matter for child health. Recent publications show that health-related social needs are associated with limited access to perinatal care (Barnett), avoidable emergency department use (Das and Chisolm), postpartum depression (Chavez) and substance use (Slesnick and Kelleher).

We also continue to conduct cutting edge clinical outcomes research highlighted by projects on sickle cell disease (Creary), bleeding (O’Brien), trauma care (Wells), infant feeding (Khalsa), newborn screening (Kemper), and transition care (Hart).

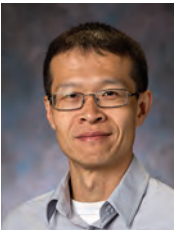
Beyond research, the center is dedicated to expanding health equity awareness and building diversity within the medical and research pipeline. Activity in this area included hosting an outstanding child health equity summit and launching the Research Experiences in Childhood Heart Lung and Blood Sciences (REaCH LABS), a new NHLBI-funded R25 training award providing summer research internships to undergraduates from populations under-represented in medicine.

Research Institute Reports

CENTER FOR CHILDHOOD CANCER RESEARCH

The mission of the Center for Childhood Cancer Research in the Abigail Wexner Research Institute at Nationwide Children’s Hospital is to transform the care of children, adolescents and young adults with cancer through fundamental biomedical research and clinical translation. Center investigators collaborate closely to study how cells grow, divide and function, how these basic processes are usurped to allow cancers to develop, how the body responds to developing cancers, and how this knowledge can be used to better diagnose and treat these diseases. Investigators work closely with physicians at Nationwide Children’s, as well as with national and international colleagues, to translate these findings to the patient.

Faculty



Ruoning Wang, PhD
Interim Director

Primary Investigators

- Kevin A. Cassady, MD
- Dawn S. Chandler, PhD
- Long-Sheng Chang, PhD
- Timothy P. Cripe, MD, PhD
- Rachid Drissi, PhD
- Genevieve C. Kendall, PhD
- Dean A. Lee, MD, PhD

Ryan D. Roberts, MD, PhD

Benjamin Z. Stanton, PhD

Emily R. Theisen, PhD

Emeritus Professor

Stephen L. Lessnick, MD, PhD

Associate and Affiliate Investigators

Meisam Naeimi Karaoudi, DVM, PhD

Jeffrey R. Leonard, MD

Highlights From the Past Year

Since the National Cancer Act was signed over 50 years ago, cancer research has been leading the way in advancing a broad understanding of human biology at molecular, cellular and organismal levels. As such, the most distinctive strength of the Center for Childhood Cancer Research is that our investigators conduct highly innovative fundamental and applied research on pediatric cancers and other diseases by integrating concepts and technologies from the full spectrum of biological disciplines, including biochemistry, genetics, molecular and cellular biology, comparative developmental biology, virology, neurology, immunology and computational biology. Building upon this broad range of research expertise, investigators in the center share a common goal of revealing fundamental mechanisms that drive cancer and have conducted highly collaborative studies translating basic findings into clinical practice.

In the past year, 1) all members were committed to building and promoting an empowered, collegial and inclusive culture in the center; 2) center investigators continued their commitments to mentoring a large number of graduate students, post-doctoral fellows and clinical fellows, some of whom are sponsored by a T32 training grant awarded to the center; 3) many investigators have reached critical milestones in their career: all three junior investigators (Drs. Kendal, Stanton, and Theisen) have received their first R01 or R01-equivalent extramural grants; Dr. Roberts has been promoted to Associate Professor with tenure; Dr. Chandler and Dr. Wang have been promoted to Professor with tenure; 4) trainees and investigators continued to publish research articles in the most prestigious scientific journals across all disciplines, including *Cell Reports*, *Science Advances*, *Cancer Cell*, *Nature Metabolism*, etc.; 5) investigators made sustained progress in research projects supported by extramural grants, including eight R01s and R01-equivalent awards, one U01-cooperative agreement award, one T32-training award, two U54-large scale collaborative project awards, and several significant awards from private foundations; 6) several technologies developed by center investigators were licensed to external industry

partners for further development toward clinical testing; 7) lastly, this year also marked the penultimate career year for Stephen Lessnick, PhD, who transitioned to emeritus professor in June 2023. Over the course of his career, Dr. Lessnick spearheaded several critical discoveries about Ewing sarcoma tumorigenesis, particularly concerning the interaction of the EWS-FLI1 oncogene with the cellular genome. Dr. Lessnick also led the strategic growth of the center, spearheading key recruitments and coalescing the various individual labs into thematic teams. He managed to foster a *One Team* culture by articulating a new vision and mission statement and enabling team-building events and unique retreats. Dr. Lessnick successfully led the creation of an NIH-funded T32 training program, achieving another high-bar first for the center that is proving to be transformational in how we prepare the next generation of pediatric cancer biologists. Dr. Lessnick has made a lasting impression on both our institution and the field of childhood cancer.

As the home of 12 individual laboratories and nearly 100 trainees and staff, the Center for Childhood Cancer Research continues to have exceptional growth and success in its research programs through strong integration and collaboration among laboratories within the center, with other centers and clinical divisions, and with The Ohio State University Comprehensive Cancer Center and Pelotonia Institute for Immuno-Oncology.

Selected Publications

Cripe TP, Hutzen B, Currier MA, Chen CY, Glaspell AM, Sullivan GC, Hurley JM, Deighen MR, Venkataramany AS, Mo X, Stanek JR, Miller AR, Wijeratne S, Magrini V, Mardis ER, Mendell JR, Chandler DS, Wang PY. Leveraging gene therapy to achieve long-term continuous or controllable expression of biotherapeutics. *Sci Adv*. 2022 Jul 15;8(28):eabm1890.

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Pereira MSF, Sorathia K, Sezgin Y, Thakkar A, Maguire C, Collins PL, Mundy-Bosse BL, Lee DA, Naeimi Kararoudi M. Deletion of glycogen synthase kinase 3 beta reprograms NK cell metabolism. *Cancers (Basel)*. 2023 Jan 24;15(3):705.

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Research Institute Reports

CENTER FOR CLINICAL AND TRANSLATIONAL RESEARCH

The Center for Clinical and Translational Research in the Abigail Wexner Research Institute at Nationwide Children’s Hospital is committed to improving the diagnosis, treatment and outcomes of society’s most important pediatric diseases by integrating high-caliber basic science research with innovative patient-based research.

Faculty



William E. Smoyer, MD, FASN
Director

- Balamurugan Appakalai, PhD
- Andrea E. Bonny, MD
- David R. Brigstock, PhD
- Mitchell H. Grayson, MD
- Mark W. Hall, MD, FAAP, FCCM
- Hunter Johnson, MD
- Bryce A. Kerlin, MD
- Setty M. Magaña, MD, PhD
- Jennifer A. Muszynski, MD, MPH, FCCM
- Olubukola O. Nafiu, MD
- Nicole O’Brien, MD
- Vanessa A. Olbrecht, MD
- Lance M. Relland, MD, PhD
- Eric A. Sribnick, MD, PhD
- Rachel M. Stanley, MD, MHSA
- Rajan K. Thakkar, MD

Highlights From the Past Year

The vision of the Center for Clinical and Translational Research is to integrate “evidence-based medicine” with “evidence-generating medicine” to ensure children benefit from the latest advances in both medical knowledge and innovative treatments to improve their health. We believe it is our responsibility to learn from every patient so that all subsequent children will be able to benefit from evidence-based improvements in care.

Our center has scientists investigating several diverse areas of research. The overarching theme of our research programs is to bring new knowledge from both bedside to bench and from bench to bedside to improve the lives of children.

Our faculty are from three departments and represent 10 different subspecialties: Adolescent Medicine, Allergy/Immunology, Anesthesia, Critical Care, Emergency Medicine, Hematology/Oncology, Nephrology, Neurology, Neurosurgery, Pediatric Surgery.

Our research programs are diverse and include immunoparalysis after sepsis or trauma, pathophysiology of stored red blood cell (RBC)-induced immune suppression, novel treatments for nephrotic syndrome, pathophysiology of thrombosis, burn injury, abdominal sepsis, hepatic fibrosis, cancer genetics, adolescent addiction, interventions for traumatic brain injury, spinal cord injuries, mechanisms behind viral infection and allergic disease, extracellular vesicles and noncoding RNAs in pediatric multiple sclerosis, perioperative respiratory complications, neonatal pain assessments and the role of pain control in immune function.

Selected Publications

Abdelghani E, Waller A, Wolfgang K, Stanek J, Parikh S, Rovin B, **Smoyer W, Kerlin B**; the PNRC Investigators; the NEPTUNE Investigators. Exploring the role of antithrombin in nephrotic syndrome-associated hypercoagulopathy: a multi-cohort study and meta-analysis. *Clin J Am Soc Nephrol*. 2023 Feb 1;18(2):234-244.

Hunley T, Hidalgo G, Ng K, Shirai Y, Miura K, Beng H, Wu Q, Hattori M, **Smoyer W**. Pioglitazone enhances proteinuria reduction in complicated pediatric nephrotic syndrome. *Pediatr Nephrol*. 2023 Apr;38(4):1127-1138.

Johnson H, Raees M, Urbina E, **Muszynski J**, Seydel K, Taylor T, **O’Brien N**. Multiple organ dysfunction syndrome and pediatric logistic organ dysfunction-2 score in pediatric cerebral malaria. *Am J Trop Med Hyg*. 2022 Sep 6;107(4):820-826.

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Resiliac J, **Grayson M**, Hussain S, Rohlfing M, Santoro J. Low-dose lipopolysaccharide protects from lethal paramyxovirus infection in a macrophage- and tlr4-dependent process. *J Immunol*. 2023 Feb 1;210(3):348-355.

Research Institute Reports

CENTER FOR GENE THERAPY

The primary mission of the Center for Gene Therapy in the Abigail Wexner Research Institute at Nationwide Children’s Hospital is to develop novel genetically based therapies for inherited diseases to ease the burden of these diseases on children and their families. This mission is pursued by a dedicated team of laboratory scientists whose work is directed toward clinical applications, and by the efforts of clinician-scientists who are tasked with bringing these therapies into clinical trials. To do this, the center works closely with the regulatory expert staff of Nationwide Children’s Office of Research Regulatory Affairs and is affiliated for clinical manufacturing with Andelyn Biosciences and other biotech partners. This integrated approach allows us to accelerate the transfer of promising therapies from the bench to the bedside.

Faculty



Kevin M. Flanigan, MD
Director

Principal Investigators

Lindsay Alfano, PT, DPT, PCS
Allison Bradbury, PhD
Liubov Gushchina, MSc, PhD
Scott Harper, PhD
Stephen Kaler, MD, MPH
Linda Lowes, PT, PhD

Paul Martin, PhD
Jerry R. Mendell, MD
Kathrin Meyer, PhD
Afrooz Rashnonejad, MSc, PhD
Nizar Saad, PhD
Zarife Sahenk, MD, PhD
Sriram Vaidyanathan, PhD
Tatyana Vetter, PhD
Megan Waldrop, MD
Nicolas Wein, PhD

Associate Faculty

Anne Connolly, MD
Kristen Truxal, MD
Christopher Walker, PhD

2022 – 2023 Fellows

Eleonora D’Ambrosio, MD
(Gene Therapy Fellow)
Stefan Nicolau, MD
(Gene Therapy Research Fellow)

Support Staff

Tabatha Simmons, PhD
Administrative Director, Gene Therapy Operations
Kelly Lehman, MS, CNP
Clinical Research Operations Manager

Highlights From the Past Year

The Center for Gene Therapy once again had a highly productive and collaborative year, marked by the high point in late June of accelerated FDA approval of delandistrogene moxeparvovec, an adeno-associated viral (AAV) gene therapy vector delivering a microdystrophin gene. Developed at Nationwide Children’s by Jerry Mendell, MD, and licensed to Sarepta Therapeutics, the approval of its use for 4 to 5 year old patients follows pioneering clinical trials by Dr. Mendell, some of which had results published this year (Mendell et al). The principal of microdystrophin therapy builds upon fundamental studies published in the graduate thesis of current faculty member Scott Harper, PhD, and its successful development and approval represents the culmination of the more than five decade career of Dr. Mendell.

The year also saw the publication of the results of a first-in-human surrogate gene therapy for DMD, delivering a gene encoding the GALGT protein instead of a version of microdystrophin. This approach, developed in the laboratory of Paul Martin, PhD, holds promise in multiple forms of muscular dystrophy in addition to DMD. Yet another approach to DMD is

directed toward establishing full-length dystrophin expression using either AAV-delivered U7snRNAs to alter splicing (work led by Dr. Wein) or by antisense oligonucleotides (Dr. Gushchina). Preclinical work on gene therapies address many syndromes — including both single gene disorders and more complex syndromes, with the latter exemplified by work done in the laboratory of Zarife Sahenk, MD, PhD, showing that AAV delivery of the gene encoding neurotrophin 3 gene can have a positive effect in the mouse model of sarcopenia, the loss of muscle mass and function found in aging (Sahenk, et al).

Additional preclinical studies address both models and mechanisms of disease. The laboratory of Kathrin Meyer, PhD, has demonstrated the appropriateness of central nerve system cell types — induced by transdifferentiation from patient-derived fibroblasts — as *in vitro* models for therapy development (Sierra-Delgado, et al). Dr. Harper’s lab continues to elucidate the fundamental biology of the protein DUX4, expression of which underlies facioscapulohumeral muscular dystrophy (Knox, et al). Using a large database of dystrophinopathy patients, Kevin Flanigan, MD, and colleagues have identified multiple potential genetic modifiers of severity in DMD (Flanigan, et al).

Finally, the center has continued its highly visible efforts in education of the next generation of gene therapists, hosting its 11th annual Nationwide Children’s/OSU Myology Course for lab and clinical trainees, and continuing the organization of two graduate level courses within the OSU graduate school catalogue, taught nearly entirely by Center for Gene Therapy faculty.

Selected Publications

Flanigan K, Vetter T, Simmons T, Iammarino M, Frair E, Rinaldi F, Chicoine L, Harris J, Cheatham J, Cheatham S, Boe B, **Waldrop M,** Zygmunt D, Packer D, **Martin P.** A first-in-human phase I/IIa gene transfer clinical trial for Duchenne muscular dystrophy using rAAVrh74.MCK.GALGT2. *Mol Ther Methods Clin Dev.* 2022 Sep 2;27:47-60.

Flanigan K, Waldrop M, Martin P, Alles R, Dunn D, **Alfano L, Simmons T,** Moore-Clingenpeel M, Burian J, Seok S, Weiss R, Vieland V. A genome-wide association analysis of loss of ambulation in dystrophinopathy patients suggests multiple candidate modifiers of disease severity. *Eur J Hum Genet.* 2023 Jun;31(6):663-673.

Gushchina L, Vetter T, Frair E, Bradley A, Grounds K, Lay J, Huang N, Suhaiba A, Schnell F, Hanson G, **Simmons T, Wein N, Flanigan K.** Systemic PPM0-mediated dystrophin expression in the Dup2 mouse model of Duchenne muscular dystrophy. *Mol Ther Nucleic Acids.* 2022 Nov 9;30:479-492.

Knox R, Eidahl J, Wallace L, Choudury S, **Rashnonejad A,** Daman K, Guggenbiller M, **Saad N,** Hoover M, Zhang L, Branson O, Emerson C Jr, Freitas M, **Harper S.** Post-translational modifications of the DUX4 protein impact toxic function in FSHD cell models. *Ann Neurol.* 2023 Aug;94(2):398-413.

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Sierra-Delgado J, Sinha-Ray S, Kaleem A, Ganjibakhsh M, Parvate M, Powers S, Zhang X, Likhite S, **Meyer K.** In vitro modeling as a tool for testing therapeutics for spinal muscular atrophy and IGHMBP2-related disorders. *Biology (Basel).* 2023 Jun 16;12(6):867.

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Research Institute Reports

CENTER FOR INJURY RESEARCH AND POLICY

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

Faculty



Gary A. Smith, MD, DrPH
Director

Julie C. Leonard, MD, MPH

Lara B. McKenzie, PhD, MA

Nichole L. Michaels, PhD, MPH

Henry Xiang, MD, MPH, PhD, MBA

Jinzghen (Ginger) Yang, PhD, MPH

Motao Zhu, MD, MS, PhD

Postdoctoral Fellows

Nkeiruka Orajaiaka, MD, MPH

Dominique Rose, PhD

Fangda Zhang, PhD

Selected Publications

Ciccotti H, Spiller H, Casavant M, Kistamgari S, Funk A, **Smith G**. Pediatric suspected suicides and nonfatal suicide attempts reported to United States poison centers before and during the COVID-19 pandemic. *J Med Toxicol.* 2023;19(2):169–179.

Cuff S, Maki A, Feiss R, Young J, Shi J, Hautmann A, **Yang J**. Risk factors for prolonged recovery from concussion in young patients. *Br J Sports Med.* 2022 Dec;56(23):1345-1352.

Evans A, Polak C, Neuroth L, **Smith G, Zhu M**. Trends in passenger seat belt use among U.S. high school students, 1991-2019. *Journal of Adolescent Health.* 2022;71(6):761-763.

Roberts K, McAdams R, **McKenzie L**. Stay-at-home, safe at home? A survey of parental home safety practices before and during the COVID-19 pandemic. *Inj Epidemiol.* 2022 Dec 21;9(Suppl 1):43.

Vaishnav A, **Smith G**, Badeti J, **Michaels N**. An epidemiological study of unintentional pediatric firearm fatalities in the USA, 2009-2018. *Inj Epidemiol.* 2023 Jun 26;10(1):25.

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Highlights From the Past Year

The Center for Injury Research and Policy works from local to global levels to reduce death and disability due to injuries and violence 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 prevention of injuries and violence.

The center has been awarded Injury Control Research Center (ICRC) designation by the Centers for Disease Control and Prevention since 2008. The center is one of only nine centers nationally with this designation, and it is the only ICRC focused on pediatric injury research and prevention.

The multidisciplinary Center for Pediatric Trauma Research at Nationwide Children’s, led by Henry Xiang, MD, MPH, PhD, MBA, conducts evidence-based trauma care and policy research to achieve the best outcomes for pediatric trauma patients. Focusing on pre-hospital emergency medical services, acute treatment and rehabilitation care, researchers associated with the Center for Pediatric Trauma Research help promote the mission of the Center for Injury Research and Policy.

Research Institute Reports

CENTER FOR MICROBIAL PATHOGENESIS

The Center for Microbial Pathogenesis in the Abigail Wexner Research Institute at Nationwide Children’s Hospital is home to 12 full-time basic and clinician scientist investigators. The Center for Microbial Pathogenesis also hosts the Oral and GI Microbiology Research Affinity Group which brings together likeminded individuals actively involved in research in oral and gastrointestinal microbiology as it affects human disease. Collectively, we are dedicated to the development of a greater understanding of the molecular mechanisms by which microorganisms cause disease, as well as how we respond to these disease states. To do so, our faculty identify virulence mechanisms and define host immune response patterns by use of a variety of molecular, cellular and ‘omics’-based approaches, with the overarching goal of identifying opportunities to interfere in the disease process and/or promote our ability to combat disease. We strive to then translate our findings rapidly into the development of new and/or better ways to diagnose, treat, and ideally, prevent infectious diseases to improve the lives of children worldwide.

Faculty



Lauren O. Bakaletz, PhD
Director

- | | |
|--------------------------|-------------------------------|
| Juhi Bagaitkar, PhD | Christopher P. Montgomery, MD |
| Michael T. Bailey, PhD | Santiago Partida-Sanchez, PhD |
| Jennifer L. Edwards, PhD | Chack-Yung Yu, DPhil |
| Steven D. Goodman, PhD | |
| John S. Gunn, PhD | |
| Samantha J. King, PhD | |
| Kevin M. Mason, PhD | |

Highlights From the Past Year

Infectious diseases remain a significant cause of morbidity and mortality globally, as recently witnessed during the COVID19 pandemic. We also face the growing concern over the rapid emergence of often multidrug-resistant bacteria, due to over and inappropriate use of antibiotics (e.g., gonorrhea); the appearance of new pathogens/variants (e.g., human monkeypox, SARS-CoV-2) and re-emergence of known pathogens, formerly believed under control, due to waning immunity and/or non-acceptance of available vaccines (e.g., measles, pertussis), as well as the fact that with global warming come new opportunities for expansion of the geographic distribution of vectors that carry specific diseases (e.g., malaria, dengue). Each of these amplify the importance and relevance of the work of the faculty within the Center for Microbial Pathogenesis, as well as that of our colleagues who are similarly dedicated to making discoveries that help us overcome these challenges. This year, center faculty conducted work to show that certain microbes that reside within the gastrointestinal tract may be linked to prosocial behaviors used to regulate emotion in typically developing children (Bailey lab); others expanded development of a species-agnostic biofilm disruption technology to show its broad effectiveness, including against polymicrobial biofilms (Bakaletz lab), and one group continued their work on the complex interactions between innate immune cells, epithelial cells and microbial colonizers at the mucosal barrier surfaces (Bagaitkar lab). Further, our understanding of *N. gonorrhoeae* was advanced to demonstrate both the potent anti-gonococcal activity of corallopyronin A, as well as the fact that spontaneous resistance to this antibiotic rarely developed (Edwards lab); work continued on gene regulation in biofilms with a focus on

bacterial surface detection/attachment, horizontal gene transfer/metagenomics and bacterial histones (Goodman lab). Efforts to better manage typhoid fever were expanded to show that whereas biofilm formation in the gallbladder by *Salmonella enterica serovar Typhi* does indeed provide a niche for development of troublesome and highly recalcitrant ‘persisters’, the harsh conditions of the gall bladder likely dampens their development (Gunn lab); similarly research devoted to gain a better understanding of the pathogenesis of alpha hemolytic streptococci and their role in infective endocarditis continued (King lab). Our investigators also expanded their studies of the pathogenic mechanisms that equip survival of nontypeable *Haemophilus influenzae* as it transitions from a harmless commensal of the nasopharynx to a pathogen of the upper and lower airway (Mason lab), and another group showed that toxin expression during infection with *Staphylococcus aureus* imprints host immunity to dampen vaccine efficacy, an increased understanding that will inform how we now develop an effective vaccine (Montgomery lab). Other center investigators showed the restoration of macrophage function in people with cystic fibrosis following treatment with new modulator therapies (Partida-Sanchez lab); while another lab focused their efforts on genetic risk factors for idiopathic inflammatory myopathies, a group of autoimmune diseases, to identify a link with low copy numbers of specific genes involved in the complement cascade (Yu lab).

This year we collaborated with colleagues nationally and internationally to advance our multidisciplinary approaches to unravel how bacteria and viruses cause infections, then, whenever possible, we use this understanding to develop novel ways to improve clinical care for children battling these diseases. We also advanced our mission to teach the next generation of basic and clinician scientists by welcoming a variety of trainees into our labs. The importance of our work is evidenced by notable faculty accomplishments, high-impact publications, and awards of nearly \$4.7 million in external grants — including multiple new grants awarded by the National Institutes of Health (NIH). Selected highlights include:

- Center faculty published 39 peer-reviewed research papers in high impact journals.
- Awards to center faculty provided more than \$1 million in new year-one direct costs.
- Samantha King, PhD, and Juhi Bagaitkar, PhD, were awarded new grants from the NIH.
- Jennifer Edwards, PhD, was promoted to full professor with tenure.
- Steven Goodman, PhD, was selected as the Nationwide Children’s Hospital Innovator of the Year.
- Trainees in the Mason lab received several travel awards, and those in the Bagaitkar, Gunn, and Montgomery labs were awarded funds to support independent research projects.
- Trainees in the Bagaitkar and Goodman labs were recognized with awards for best presentations at local international meetings, respectively.
- Faculty participated in and provided leadership service for multiple cross-campus academic initiatives (e.g., Biofilms in Human Medicine, Cure Cystic Fibrosis Columbus (C3), Infectious Diseases Institute).

Selected Publications

Delgadillo D, Pressman S, Christian L, Galley J, **Bailey M**. Associations between gut microbes and social behavior in healthy 2-year-old children. *Psychosom Med*. 2022 Sep 1;84(7):749-756.

Edwards J, Balthazar J, Esposito D, Ayala J, Schiefer A, Pfarr K, Hoerauf A, Alt S, Hesterkamp T, Grosse M, Stadler M, Golparian D, Unemo M, Read T, Shafer W. Potent in vitro and ex vivo anti-gonococcal activity of the RpoB inhibitor Corallopyronin A. *mSphere*. 2022 Oct 26;7(5):e0036222.

González J, Hitt R, Laipply B, **Gunn J**. The effect of the gallbladder environment during chronic infection on salmonella persister cell formation. *Microorganisms*. 2022 Nov 16;10(11):2276.

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Teymournejad O, Li Z, Beesetty P, Yang C, **Montgomery C**. Toxin expression during *Staphylococcus aureus* infection imprints host immunity to inhibit vaccine efficacy. *NPJ Vaccines*. 2023 Jan 24;8(1):3.

Zhang S, Shrestha C, Robledo-Avila F, Jaganathan D, Wisniewski B, Brown N, Pham H, Carey K, Amer A, Hall-Stoodley L, McCoy K, Bai S, **Partida-Sanchez S**, Kopp B. Cystic fibrosis macrophage function and clinical outcomes after elexacaftor/tezacaftor/ivacaftor. *Eur Respir J*. 2023 Apr 1;61(4):2102861.

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Research Institute Reports

CENTER FOR PERINATAL RESEARCH

The Center for Perinatal Research performs basic, translational and clinical research focused on understanding aspects of prematurity, fetal and neonatal disorders, and neonatal outcomes. The ultimate goals of this research are to prevent prematurity and its complications, provide state-of-the-art treatment for neonates with disorders requiring medical care, and allow the best long-term outcome of children, mothers, and their families. The Center for Perinatal Research houses the Ohio Perinatal Research Network (OPRN), a platform for clinical research across a regional network of sites. Epidemiology studies focus on problems of prematurity and their influence on outcomes. Basic and translational research in the center focuses on diagnosis, treatment and prevention of genetic disorders, infectious diseases, pulmonary hypertension, aspects of lung development and disease, feeding and gastrointestinal disorders, blood disorders, and basic aspects of inflammation. Other areas of interest include health disparities, education, long-term outcomes of preterm and critically ill neonates, and quality improvement.

Faculty



Patrick G. Gallagher, MD
Director

Carl H. Backes, Jr., MD

Kristen Benninger, MD

Gail E. Besner, MD

Rodney Britt, PhD

Bernadette Chen, MD

Sudarshan R. Jadcherla, MD

Yusen Liu, PhD

Leif D. Nelin, MD

Leeann R. Pavlek, MD, MPH

Susan Reynolds, PhD

Pablo Sánchez, MD

Jonathan L. Slaughter, MD,
MPH

Heather Tubbs Cooley, PhD, RN,
FAAN

Highlights From the Past Year

The Environmental Influences on Child Health Outcomes (ECHO) program is supported by the National Institutes of Health (NIH) to study how risk factors during pregnancy affect children as they grow. This large study will follow a diverse group of pregnant people, their conceiving partners and children until the children reach adulthood.

The multicenter Percutaneous Intervention Versus Observational Trial of Arterial Ductus in Lower Gestational Age Infants (PIVOTAL) trial led by center investigators to determine if percutaneous catheter-based closure of patent ductus arteriosus (PDA) in the subset of infants with hemodynamically significant and clinically symptomatic PDA improves cardiopulmonary and neurodevelopmental outcomes continues to enroll patients.

The center-led Cut or Delay in Neonates with Congenital Heart Disease (CORD-CHD) study, a multicenter trial assessing the benefits of delayed cord clamping over early cord clamping in neonates with critical congenital heart disease, a population with a high frequency of adverse outcomes, is ongoing.

Center investigators direct the Early Prediction of Spontaneous Patent Ductus Arteriosus (PDA) Closure and PDA-Associated Outcomes study, which prospectively examines the natural course of the ductus arteriosus to better understand management and outcome of infants with PDA.

World-class innovative clinical and research programs in infant feeding and aerodigestive disorders are led by center investigators.

The Cure CF Columbus Research and Development Program, a joint program of researchers from Nationwide Children’s Hospital and The Ohio State University, has significant contributions from center investigators.

Studies of normal and perturbed lung function in disorders including bronchopulmonary dysplasia, severe asthma and cystic fibrosis continue to advance care of patients affected with these disorders.

Wide-ranging investigation of perinatal infectious diseases continues. The center participates as a member site of the Congenital and Perinatal Infections Rare Diseases Clinical Research Consortium.

The previous director, Lynette Rogers, PhD, retired and continues work as a consultant with Nationwide Children’s Hospital. The new center director, Patrick Gallagher, MD, joined Nationwide Children’s in the spring of 2023.

Selected Publications

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Muller M, Bryant K, Espinosa C, Jones J, Quach C, Rindels J, Stewart D, Zangwill K, Sánchez P. SHEA Neonatal Intensive Care Unit (NICU) White Paper Series: Practical approaches for the prevention of central-line-associated bloodstream infections. *Infect Control Hosp Epidemiol*. 2023 Apr;44(4):550-564.

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Research Institute Reports

CENTER FOR REGENERATIVE MEDICINE

The Center for Regenerative Medicine in the Abigail Wexner Research Institute at Nationwide Children’s Hospital applies the principles of engineering, computer modeling and life sciences to develop biological substitutes to restore or improve tissue function. Regenerative medicine is the process of creating living, functional tissues to repair or replace tissue or organ functions, lost primarily due to congenital defects or disease. The center currently focuses on producing blood vessels, valvular patches and heart valves, offering a positive impact on children with congenital heart disease. Other areas of regenerative medicine research in progress include intestinal and tracheal replacement.

Faculty



Christopher K. Breuer, MD
Director

Jenny Barker, MD, PhD
Tendy Chiang, MD, FACS
John M. Kelly, MD
Oluyinka O. Olutoye, MD, PhD
Toshiharu Shinoka, MD, PhD
Mitchel R. Stacy, PhD

Postdoctoral Scientists
Ting-Heng Chou, PhD
Mahboubeh Nabavinia, PhD
James Reinhardt, PhD (year 4-7)
Lourenco Sbragia Neto, MD, PhD
Anudari Ulziibayar, MD (year 1-3)

Surgery Research Fellows
Rahul Gadde, MD
Marissa Guo, MD
Sophia Hameedi, MD
Tatsuya Watanabe, MD, PhD (year 1-3)
Jason Xia, MD
Satoshi Yuhara, MD (year 1-3)

Highlights From the Past Year

Medical advances have made it possible to save more patients from life-threatening injuries, diseases and congenital conditions. However, after the onset of these conditions, the damage is occasionally lifelong. Often, symptoms can be treated with success, but the underlying tissue or organ damage remains unhealed and can cause further complications over time. To develop new clinical applications that address the unmet needs of these patients, the Abigail Wexner Research Institute at Nationwide Children’s established the Center for Regenerative Medicine in 2017.

The Center for Regenerative Medicine clinicians and researchers, led by Christopher Breuer, MD, are using degradable scaffolds to bioengineer blood vessels, intestines and tracheas. Further, we are identifying progenitor cells that mediate neotissue formation in hopes to develop ways to enhance tissue repair and growth. And to diversify the center’s research strengths, we are actively recruiting principal investigators.

Our vision is to pioneer new approaches in tissue regeneration and to develop next-generation reparative solutions. Further, we believe it is our responsibility to learn from every patient so our care for the next child will be improved.

This year we moved into the newly constructed Research Building IV and have acquired new imaging technologies to enhance our data acquisition capabilities, in turn helping us push the discovery envelope in the field of regenerative medicine. Not only have we made significant progress on our Department of Defense and National Institutes of Health (NIH)-funded research, but we have also fostered new partnerships with sponsors and labs to help develop the next generation of biomaterials that have the ability to regenerate body tissues. In 2023, we are continuing the second phase of our human tissue-engineered vascular graft (TEVG) clinical trial for patients undergoing a Fontan repair. And excitingly,

we have also recently established a large animal model of the Fontan circulation. As we study implantation of our biodegradable scaffolds, we also hope to unravel the many pathophysiological changes that occur in this patient population.

Ultimately, this comprehensive approach means that the Center for Regenerative Medicine has the ability to turn promising laboratory discoveries into proven treatments and make them available to patients.

Selected Publications

Park HJ, Kelly JM, Hoffman JR, Takaesu F, Schwartzman W, Ulziibayar A, Kitsuka T, Heuer E, Yimit A, Malbrue R, Anderson C, Morrison A, Naguib A, Mckee C, Harrison A, Boe B, Armstrong A, Salavitabar A, Yates A, Shinoka T, Carrillo S, Breuer CK, Davis ME. Computational analysis of serum-derived extracellular vesicle miRNAs in juvenile sheep model of single stage Fontan procedure. *Extracell Vesicle*. 2022 Dec;1:100013.

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Research Institute Reports

CENTER FOR VACCINES AND IMMUNITY

The Center for Vaccines and Immunity in the Abigail Wexner Research Institute at Nationwide Children’s Hospital has a single purpose: to improve the health of children through fundamental and applied research to better predict and understand the course of serious virus infections, and to translate this information into improved therapies and preventive vaccines.

Faculty



Christopher Walker, PhD
Director

- Katherine Bline, MD
- Zongdi Feng, PhD
- Amit Kapoor, PhD
- Mark Peeples, PhD
- Masako Shimamura, MD
- Nicole Skinner, MD, PhD

Highlights From the Past Year

The Center for Vaccines and Immunity has continued to evolve over the past year in scientific focus and membership. Our investigators remain committed to finding approaches to prevent and treat viruses that are significant public health challenges for expectant mothers and children. Respiratory virus infections remain especially problematic with the emergence of SARS-CoV-2 as a cause of a multi-inflammatory syndrome that is unique to children. Center investigators (Peeples, Kapoor) have partnered with colleagues at The Ohio State University to explore mechanisms of disease caused by SARS-CoV-2 and new approaches to prevent infection by vaccination. Others have contributed to our understanding of risk factors for severe disease caused by SARS-CoV-2 and the respiratory syncytial virus (RSV) that can result in hospitalization (Bline). Of note, Dr. Bline was the recipient of a highly competitive and prestigious K12 award from the National Institutes of Health (NIH) to further her career and work on RSV and SARS-CoV-2 induced suppression of immunity that results in severe disease in children. At the same time there are glimmers of hope especially regarding prevention of RSV disease in children by vaccination and monoclonal antibodies as highlighted in invited commentaries from senior center investigator Mark Peeples, PhD.

Hepatitis viruses, especially the hepatitis C and hepatitis E viruses, continue to cause significant problems for maternal health in the United States and globally. Center investigators (Kapoor, Feng, Walker) have continued to study mechanisms of disease and immunity with the goal of finding effective strategies for prevention and intervention with significant new support from the NIH over the past year. A shift towards application of genomic medicine to these problems is underway and provides substantial new opportunities for discovery. The center also remains committed to understanding how the cytomegalovirus causes severe disease in maternally acquired (congenital) infections and children who are immunocompromised in studies led by Dr. Shimamura.

Selected Publications

Halasa N, Olson S, Staat M, Newhams M, Price A, Pannaraj P, Boom J, Sahni L, Chiotos K, Cameron M, **Bline K**, Hobbs C, Maddux A, Coates B, Michelson K, Heidemann S, Irby K, Nofziger R, Mack E, Smallcomb L, Schwartz S, Walker T, Gertz S, Schuster J, Kamidani S, Tarquinio K, Bhumbra S, Maamari M, Hume J, Crandall H, Levy E, Zinter M, Bradford T, Flori H, Cullimore M, Kong M, Cvijanovich N, Gilboa S, Polen K, Campbell A, Randolph A, Patel M; Overcoming Covid-19 Investigators. Maternal vaccination and risk of hospitalization for COVID-19 among infants. *N Engl J Med*. 2022 Jul 14;387(2):109-119.

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Taveras J, Garcia-Maurino C, Moore-Clingenpeel M, Xu Z, Mertz S, Ye F, Chen P, Cohen S, Cohen D, **Peeples M**, Ramilo O, Mejias A. Type III interferons, viral loads, age, and disease severity in young children with respiratory syncytial virus. *Infection J Infect Dis*. 2022 Dec 28;227(1):61-70.

Zambrano L, Newhams M, Olson S, Halasa N, Price A, Orzel A, Young C, Boom J, Sahni L, Maddux A, **Bline K**, Kamidani S, Tarquinio K, Chiotos K, Schuster J, Cullimore M, Heidemann S, Hobbs C, Nofziger R, Pannaraj P, Cameron M, Walker T, Schwartz S, Michelson K, Coates B, Flori H, Mack E, Smallcomb L, Gertz S, Bhumbra S, Bradford T, Levy E, Kong M, Irby K, Cvijanovich N, Zinter M, Bowens C, Crandall H, Hume J, Patel M, Campbell A, Randolph A; Overcoming COVID-19 Investigators. BNT162b2 mRNA vaccination against coronavirus disease 2019 is associated with a decreased likelihood of multisystem inflammatory syndrome in children aged 5–18 years-United States, July 2021 - April 2022. *Clin Infect Dis*. 2023 Feb 8;76(3):e90-e100.

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Research Institute Reports

KIDNEY AND URINARY TRACT CENTER

The Kidney and Urinary Tract Center offers patients access to expert surgical and medical treatment of urologic, genital and kidney conditions. The center is a collaborative, integrated process designed to combine patient care, advocacy, research and training to develop the next generation of nephrology and urology treatment for children. Nephrology and urology physicians, surgeons, scientists and care staff at Nationwide Children’s Hospital are nationally recognized in patient care and research by peers for reputation and outcomes.

Faculty



M. Brian Becknell, MD, PhD
*Research Director
Nephrology and
Hypertension Faculty*



Linda Baker, MD
*Co-director
Urology Faculty*



John David Spencer, MD
*Co-director
Nephrology and Hypertension
Division Chief*

Abdominal
Transplant and
Hepatopancreatobiliary
Surgery

Jaimie D. Nathan, MD
Amer Rajab, MD, PhD
Sara K. Rasmussen, MD, PhD

Nephrology and
Hypertension

O.N. Ray Bignall, II, MD
Ashley R. Jackson, PhD
Mahmoud Kallash, MD
John D. Mahan, MD
Tahagod H. Mohamed, MD
Hiren P. Patel, MD
Juan de Dios Ruiz-Rosado, PhD
William E. Smoyer, MD
Beth A. Vogt, MD
Diana Zepeda-Orozco, MD

Urology

Seth A. Alpert, MD
Christopher T. Brown, MD
Christina B. Ching, MD
Daniel G. DaJusta, MD
Molly E. Fuchs, MD
Rama Jayanthi, MD
Daryl J. McLeod, MD
Donald H. Nguyen, MD

Highlights From the Past Year

A major goal of the Kidney and Urinary Tract Center is to enhance the health of children with kidney and urinary tract disorders by engaging in high-quality, innovative research. This includes identifying new therapeutic and diagnostic targets, validating them in preclinical models, and translating these discoveries into the clinic setting so that novel therapies and management strategies can improve clinical outcomes and lead to new cures.

Over the past year, we have onboarded new faculty, held our second annual KUTC Symposium, developed infrastructure for clinical and translational research, obtained NIH funding to support our summer research program for undergraduates and medical students, and expanded research in genomics, transcriptomics and proteomics.

Our physician-scientists and basic scientists have already made many contributions to advance the understanding of disorders commonly treated by pediatric nephrologists and urologists – including acute kidney injury, chronic kidney disease, urinary tract infections, congenital anomalies of the kidney and urinary tract, and nephrotic syndrome.

Selected Publications

Dawson A, Ray Bignall ON, Spencer JD, McLeod D. A call to comprehensively understand our patients to provide equitable pediatric urological care. *Urology*. 2023 Jun 30;S0090-4295(23)00531-9.

Fuchs M, Ahmed M, Dajusta D, Gargollo P, Kennedy U, Rosoklija I, Strine A, Whittam B, Yerkes E, Szymanski K; Pediatric Urology Midwest Alliance (PUMA). Urinary and bowel management in cloacal exstrophy: A long-term multi-institutional cross-sectional study. *J Pediatr Urol*. 2023 Feb;19(1):35.e1-35.e6.

Matsell D, Catapang M, Becknell B. Predicting outcomes in children with congenital anomalies of the kidney and urinary tract. *Pediatr Nephrol*. 2023 May 3.

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Research Institute Reports

STEVE AND CINDY RASMUSSEN INSTITUTE FOR GENOMIC MEDICINE

The Steve and Cindy Rasmussen Institute for Genomic Medicine at Nationwide Children’s Hospital focuses on improving our patients’ outcomes using molecular diagnostic testing and advanced analysis in both research and clinical settings. Since its inception in 2016, the institute’s mission has been to build a seamless continuum between research, clinical testing, and patient care by involving specialty-focused providers in translational genomics protocols that explore how best to apply different technologies in appropriate disease settings. The institute combines robust clinical diagnostics, leading-edge research and development, and computational genomics to enable precision genomic medicine. Another area of emphasis is providing educational opportunities for care providers and all levels of trainees as a means by which genome-based results are made accessible and meaningful to the patients and families we serve.

Our computational genomics group is composed of computational researchers focused on applying state-of-the-art quantitative methods in basic and clinical research to better inform and improve clinical care in pediatrics. These faculty work collaboratively with internal and external scientists, utilizing their expertise in mathematics, statistics, and quantitative methods to advance the organization’s mission.

Senior Leadership



Richard K. Wilson, PhD
Executive Director



Elaine R. Mardis, PhD
Co-Executive Director

Clinical Faculty

- George M. Kyle, MS, CGC

Marco L. Leung, PhD, FACMG

Mariam T. Mathew, PhD, FACMG

Theodora J. Matthews, MS, CGC

Hui Mei, PhD, FACMG

Cortlandt R. Myers, MS, CGC

Danielle E. Mouhlas, MS, CGC
- Yassmine M. N. Akkari, PhD, FACMG

Melanie Babcock, PhD, FACMG

Catherine E. Cottrell, PhD, FACMG

Allison M. Daley, MS, MPH, CGC

Leeran B. Dublin-Ryan, PhD, MS

Ying-Chen Hou, PhD

Jesse M. Hunter, PhD, FACMG

Research and Computational Faculty

- Taylor A. Porter, MS, CGC

Samara L. Potter, MD, MBA

Shalini C. Reshmi, PhD, FACMG

Karen D. Tsuchiya, MD, FCAP, FACMG

Kathleen M. Schieffer, PhD, FACMG

Amy E. Siemon, MS, CGC
- Rachel C. Supinger, MS, CGC

Elizabeth A Varga, MS, CGC

Ava C. Willoughby, MS
- Mykyta Artomov, PhD

Christopher W. Bartlett, PhD, MPH

Tracy A. Bedrosian, PhD

Bimal P. Chaudhari, MD, MPH, FAAP, FACMG

Jayajit Das, PhD
- Mark E. Hester, PhD

Albert M. Issacs, MD, PhD, FRCSC, FAANS

Andrzej Kloczkowski, PhD

Daniel C. Koboldt, MS

Christian L. Lauber, PhD

Elaine R. Mardis, PhD

Katherine E. Miller, PhD

2022 – 2023 Fellows
Postdoctoral Clinical Fellows

- Prajwal Rajappa, MD, MS

Rolf W. Stottmann, MS, PhD

Benjamin D. Sunkel, PhD

Alex H. Wagner, PhD

Michelle A. Wedemeyer, MD, PhD

Peter White, PhD

Richard K. Wilson, PhD
- Erica L. Macke, PhD

Amanda N. Moccia, MS, PhD

Joy O. Olayiwola, PhD

Subhodip Adhichary

Austin A. Antoniou, PhD

Postdoctoral Research
Fellows

- Alecia M. Biel, PhD

Matthew J. Cannon, PhD

Rachel R. Corrigan, PhD

Nathanael Cox, PhD

Elizabeth A.R. Garfinkle, PhD

Mubasher Hassan, PhD

Mohammad Marhabaie, PhD

Debangana Mukhopadhyay

Indrani Nayak
- Maheshwor Poudel

Daniel Puthawala

Swetha Ramadesikan, PhD

Beulah Solivio, PhD

Jennifer L. Watts, PhD

Kevin L. Ying, PhD

Hyojung Yoon, PhD

Highlights From the Past Year

The Steve and Cindy Rasmussen Institute for Genomic Medicine aims to advance the application of genomic medicine through cutting-edge translational research, the introduction of new genomics-based clinical tests, the development of computational genomics methods, and the application of data science and Big Data technologies. By combining novel laboratory methods, state-of-the-art bioinformatics solutions, quantitative methods, and machine learning, our team is driven to create a future where no child with genetic disease goes undiagnosed, and every child with cancer receives optimal treatment based on their genomic profile. Some highlights from the past year include:

- In 2022, we signed a five-year contract with the National Cancer Institute to provide a multi-assay clinical characterization of pediatric solid tumor samples from patients enrolling in the Children’s Oncology Group (COG) Project Every Child registry, providing clinical results within a 14-day turnaround time as part of the Molecular Characterization Initiative (MCI). Thus far, we have clinically characterized samples from over 1,300 pediatric brain or sarcoma cancer patients.
- Genome sequencing and the application of computational genomics analyses to these data are helping to identify the underlying genetic causes of disorders. In turn, the results of these studies open new collaborative research avenues to approach the disorders with physicians and other researchers having corresponding expertise. Building on the success of our Epilepsy Translational Protocol, which identified genomic alterations in the brain that lead to treatment-refractory epilepsy, we have received funding for multi-site protocol expansion. This will allow us to build new external collaborations and will enable discovery that will contribute to best outcomes for patients and families.
- We enrolled our 200th patient/family on the Rapid Genome Sequencing (rGS) Protocol that studies critically ill patients with likely genetic causes. This assay is now clinically validated and will be an orderable clinical test in early 2024. This approach to patient care will enable a 60 to 72-hour diagnostic pathway for critically ill children (typically neonates) for whom no conclusive diagnosis has previously been achieved.
- We launched a Liquid Biopsy Protocol that will optimize the use of biofluid-derived cfDNA for high-depth, targeted sequencing of patient-specific tumor mutations. We will longitudinally evaluate collected biofluid samples throughout the course of treatment for pediatric and young adult patients with tumors as a surrogate for minimal residual disease and assessment of therapeutic response.
- We obtained IRB approval for a Cardiology Translational Protocol – COURAGE for Kids. Patients seeking care at the cardiac intensive care unit at Nationwide Children’s for congenital heart disease, unexplained cardiac arrest, severe ventricular dysfunction, or pulmonary hypertension will be eligible for this study. We will utilize genomic analysis and other multi-omic approaches to characterize and interpret genotype/phenotype correlations for pediatric cardiovascular conditions and critical care outcomes.

- The Computational Genomics Group excels in advancing next-generation sequencing analysis, supporting research, clinical trials and diagnostic testing. By integrating state-of-the-art cloud technologies, we have developed applications and pipelines that effectively manage the surge in Molecular Characterization Initiative-related testing throughput. This advancement not only ensures efficient and comprehensive clinical results but also significantly contributes to the global cancer genomics research community.
- The Computational Genomics Group has been at the forefront of numerous internal and multi-institutional collaborations, supporting biomedical research in congenital heart disease, rare genetic disorders, behavioral health and epilepsy. Within the cancer research sphere, our team’s bioinformatics and statistical expertise have been pivotal in developing algorithms for novel cancer variant discovery. Notably, our research extends beyond pediatric diseases, encompassing significant work in areas such as metastatic breast cancer. These collaborative efforts underline our group’s versatile and impactful role in advancing medical research and patient care.

Selected Publications

Bedrosian T, Miller K, Grischow O, Schieffer K, LaHaye S, Yoon H, Miller A, Navarro J, Westfall J, Leraas K, Choi S, Williamson R, Fitch J, Kelly B, White P, Lee K, McGrath S, Cottrell C, Magrini V, Leonard J, Pindrik J, Shaikhouni A, Boué D, Thomas D, Pierson C, Wilson R, Ostendorf A, Mardis E, Koboldt D. Detection of brain somatic variation in epilepsy-associated developmental lesions. *Epilepsia*. 2022 Aug;63(8):1981-1997.

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Liegel R, Michalski M, Vaidya S, Bittermann E, Finnerty E, Menke C, Diegel C, Zhong Z, Williams B, Stottmann R. Successful therapeutic intervention in new mouse models of frizzled 2-associated congenital malformations. *Development*. 2023 Feb 1;150(3):dev201038.

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Miller K, Wheeler G, LaHaye S, Schieffer K, Cearlock S, Venkata L, Bravo A, Grischow O, Kelly B, White P, Pierson C, Boué D, Koo S, Klawinski D, Ranalli M, Shaikhouni A, Salloum R, Shatara M, Leonard J, Wilson R, Cottrell C, Mardis E, Koboldt D. Molecular heterogeneity in pediatric malignant rhabdoid tumors in patients with multi-organ involvement. *Front Oncol*. 2022 Jul 13;12:932337.

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In Memoriam

On November 29, 2023, we lost our senior photographer Brad Smith.

His beautiful photography can be seen throughout more than two decades of annual reports, web pages, marketing campaigns, and hospital publications. His photos were recognized by the Children’s Hospital Association and were an important element on dozens of awards for the Nationwide Children’s Hospital Marketing and Public Relations Department.

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