Pediatrics NATIONWIDE

Advancing the Conversation on Child Health | Fall/Winter 2025

Better Asthma Outcomes: A Systems-Level Approach

INSIDE THIS ISSUE

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That's the overarching goal of a dedicated team at Nationwide Children's, a system-wide group that has been working for more than a decade to improve outcomes for children with asthma in central Ohio and beyond.

They're working on the front lines and behind the scenes to make prevention and maintenance a priority and decreasing lengths of stay for emergency room and inpatient visits. They're in schools and clinics, developing electronic medical record tools and conquering quality improvement projects to increase implementation of best practices and evidence-based medicine.

And they're working so that children can spend their time playing, going to school, participating in sports and growing with their friends and family.

DEPARTMENTS

FEATURES

"We weren't looking to add complexity or overhaul bedside workflows. We want to enhance safety by making the clamp's open and closed status clear — visually and intuitively — without disrupting existing processes."

— Jenna Merandi, PharmD, MS, CCPS, medication safety officer, Nationwide Children's

"Here, you can learn to do anything you want — from procedural skills to evidence-based outpatient management to advanced techniques at the lab bench. But most importantly, my clinical training was never sacrificed for the research experience. It truly is the best of both worlds."

— Samantha Coss, MD, PhD, fellow in the Division of Rheumatology at Nationwide Children's

New Study Finds Sharp Increase in Nicotine Pouch Ingestions Among Young Children

Experts urge stronger regulations, a ban on flavors for all nicotine products and secure at-home storage to help prevent nicotine ingestions.

A new study reveals that ingestions of nicotine pouches by young children in the United States have surged in recent years.

Researchers at the Center for Injury Research and Policy at Nationwide Children's Hospital and the Central Ohio Poison Center analyzed calls to U.S. poison centers and found an alarming 763% increase in the rate of reported nicotine pouch ingestions among children younger than 6 years old from 2020 to 2023. Children who ingested nicotine pouches were more likely to experience serious medical outcomes or hospital admissions than those exposed to other nicotine products such as gum/lozenges, e-liquids, powder/granules and tablets/capsules/caplets.

Nicotine pouches, which contain nicotine powder and are placed in the mouth, were not tracked in national poison center data until 2020. However, between 2020 and 2023 (the most recent year of data from the study), the rate of unintentional ingestion of nicotine pouches by young children increased at a fast rate — even as ingestion rates for other formulations of nicotine declined.

"Nicotine pouches are a serious and growing toxic ingestion hazard among young children," says Hannah Hays, MD, co-author of the study, chief of Toxicology at Nationwide Children's and medical director of the Central Ohio Poison Center.

"The rapid increase in the number and comparative severity of nicotine pouch ingestions is a reminder of the public health challenges of the changing nicotine product market," Dr. Hays says. "This is why we need to continue ongoing surveillance and increase our efforts to prevent nicotine ingestions among young children."

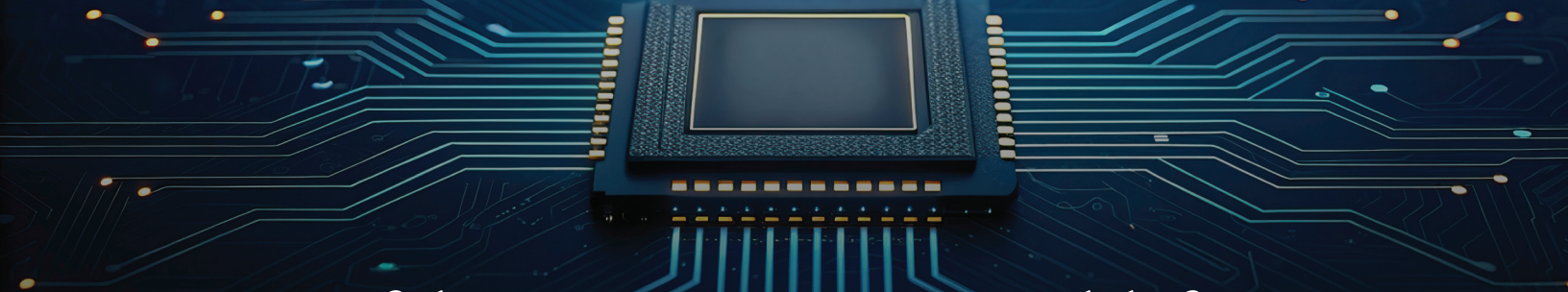
The study, published in *Pediatrics*, also investigated other nicotine products and formulations. Researchers examined nearly 135,000 cases of nicotine ingestions among children younger than 6 years old that were reported to U.S. poison centers from 2010 through 2023. Most ingestions occurred at home and involved children under the age of 2 years. While most exposures resulted in minor or no effects, there were 39 cases with major medical outcomes and two deaths.

The overall rate of all nicotine ingestions increased 59% from 2010-2015 before decreasing 34% from 2015 to 2023. This rate was primarily driven by the ingestion rate for liquid nicotine and nicotine solid formulations such as tablets, capsules and caplets. The ingestion rate for liquid nicotine increased by 450% from 2010 to 2015 and then decreased by 45% from 2015 to 2023.

"This abrupt change in the rate trend for liquid nicotine ingestions corresponded with the passage of both state and federal legislation, including the Child Nicotine Poisoning Prevention Act of 2015, which required child-resistant packaging of liquid nicotine," says Gary Smith, MD, DrPH, senior author of the study and director of the Center for Injury Research and Policy at Nationwide Children's. "This suggests that legislation can make a difference. However, despite this improvement, the ingestion rate for liquid nicotine remained higher than the rates for any other nicotine product, which clearly indicates that there are opportunities for further improvement."

Olivas M, Hays HL, Kistamgari S, Rine NI, Zhu M, Yang J, Smith GA. Nicotine ingestions among young children: 2010-2023. *Pediatrics*. 2025 Aug 1;156(2):e2024070522.

— Laura Dattner



How Useful Are Large Language Models for Caregivers of Pediatric Cancer Patients?

These powerful informational tools for caregivers of pediatric cancer patients vary in areas such as readability and source credibility, highlighting the need to carefully consider their clinical utility.

A recent study led by Emre Sezgin, PhD, and Micah Skeens, PhD, APRN, FAAN, CPNP-PC, at Nationwide Children's Hospital demonstrated that large language models (LLMs) deliver accurate and clinically relevant information for caregivers of pediatric cancer patients but vary in other factors, such as readability.

In their study, published in *Cancer Medicine*, Dr. Sezgin, Dr. Skeens and their research teams evaluated four popular LLMs for their use in pediatric oncology: ChatGPT, Google Bard/Gemini, Google SGE and Microsoft Bing Chat.

"LLMs can serve as a bridge between complex clinical knowledge and accessible education for caregivers," says Dr. Sezgin, a digital health specialist and principal investigator in the Center for Biobehavioral Health at Nationwide Children's.

Conventional methods of pediatric oncology caregiver education are primarily paper-based, explains Dr. Skeens, a pediatric nurse practitioner and principal investigator in the Center for Biobehavioral Health.

"Large binders of information, for example, are overwhelming, time-intensive and not easily searchable," she says.

They first compiled a set of 26 frequently asked questions (FAQs) that reflected a pediatric cancer caregiver's perspective. Next, they selected five clinical pediatric oncology experts to evaluate LLM-generated responses for their accuracy, clarity, inclusivity, completeness and clinical utility. Each FAQ was entered into each LLM, generating 104 responses.

The research team evaluated the content quality of responses, measuring readability, artificial intelligence (AI) disclosures, source credibility, resource matching and content originality.

ChatGPT had the highest overall rating, with statistically significantly higher scores for accuracy, clarity, completeness and clinical utility, compared to the other LLMs.

Content quality scores varied between the LLMs. For example, Google Bard received a high score in AI disclosure, while Microsoft Bing Chat scored highly for source credibility and resource matching.

None of the LLMs met the gold standard for readability (8th grade level), says Dr. Sezgin, highlighting a need to improve the LLMs' understandability.

"These results highlight the need for careful and thoughtful selection of which LLMs to use, and the need to refine their clinical use," Dr. Skeens notes.

Drs. Sezgin and Skeens mention several provider concerns about LLMs in the clinical setting, including the potential for misinformation, general content inaccuracies and insufficient source credibility. They also note the need to investigate real-time caregiver interaction with LLMs.

"We need to understand caregivers' impression and perception of LLMs," Dr. Skeens explains. She also recommends considering digital literacy to ensure that caregivers know how to use LLMs and can carefully evaluate the generated responses.

"We're at a pivotal moment where AI can reshape how we support caregivers, but the technology should not outpace trust," Dr. Sezgin says, adding, "This work is not about replacing human connection, but augmenting it."

Sezgin E, Jackson DI, Kocaballi AB, Bibart M, Zupanec S, Landier W, Audino A, Ranalli M, Skeens M. Can large language models aid caregivers of pediatric cancer patients in information seeking? A cross-sectional investigation. *Cancer Medicine*. 2025 Jan;14(1):e70554.

— JoAnna Pendergrass, DVM

Primary Care Clinicians' Comfort Level With Childhood Mental Health Medications

A recent survey of primary care clinicians revealed opportunities to improve mental health care for kids.

Each year, 20% of children are diagnosed with a mental health condition, and an estimated $247 billion are spent on the treatment and management of childhood mental health concerns. As the demand for pediatric mental health services continues to grow across the country, workforce shortages make it increasingly difficult for families to access the psychiatric care they need. As a result, families are turning to their primary care clinicians as their preferred resource for mental health care.

"We know primary care clinicians are on the front lines when it comes to managing mental health concerns," says Cody Hostutler, PhD, pediatric primary care psychologist at Nationwide Children's Hospital. "That's why we surveyed 148 primary care clinicians across 11 different health care systems in the United States. Our goal was to learn about the frequency and comfort level of providers in initiating, managing and discontinuing mental health medications in the primary care setting."

The survey included questions around three common mental health conditions; attention deficit hyperactivity disorder (ADHD), anxiety/depression and sleep problems for three different age ranges; early childhood (0 to 5 years old), middle childhood (6 to 11 years old) and adolescence (12 to 18 years old).

The results show varying comfort levels based on condition and age, as well as a greater need for mental health support in primary care.

"Clinicians are still largely uncomfortable managing pediatric mental health medications," explains Dr. Hostutler. "This is what we expected, and is likely caused by a number of barriers, including lack of training, limited time and perceived scope of practice."

Other notable findings include:

- Primary care clinicians are equally uncomfortable maintaining medications as starting them. This suggests that ongoing mental health support in the primary care setting may be more effective than a handoff from a specialist.
- Primary care clinicians are most comfortable prescribing ADHD medications. However, 25% of clinicians still report discomfort prescribing ADHD medications for kids ages 6 and older.
- Primary care clinicians in rural areas are slightly more comfortable managing behavioral health medications. This may be caused by limited access to specialists, forcing clinicians to manage more on their own.
- Primary care clinicians who are earlier in their careers are slightly more comfortable managing mental health medications, which may point to improved mental health training in medical education.

To fill the gaps and provide support to clinicians, Nationwide Children's offers a suite of free programs, such as BH-Tips, Project ECHO, the Behavioral Health Integration Program and the Behavioral Health Learning Library, to help clinicians grow their knowledge and consult with behavioral health specialists in real time.

"Our research shows that primary care clinicians who participate in these programs are significantly more knowledgeable, more comfortable, and we actually see them change how they're managing mental health conditions within the practice, including how they prescribe medications."

Hostutler CA, Wolf N, Stallworth K, Herbst R, Hoffses KW, Pajek J, Curtis D, Mautone JA, Riley AR, Shahidullah JD. Primary care clinician perspectives on medication prescribing for child mental health concerns. *Clinical Pediatrics (Phila)*. 2025 Oct;64(9):1264-1273.

— Shannon Caldwell

To access resources mentioned in this article visit PediatricsNationwide.org/BH-PrimaryCare.

A Digital Bundle to Help Primary Care Clinicians Successfully Promote Cardiovascular Health

A web-based app that integrates into electronic record systems could offer primary care providers an evidence-based way to effectively address cardiovascular risks and behavior change with parents.

On average, physicians get a total of 4 hours of education in nutrition and behavior change counseling during medical school.

"That's a horrible baseline," says Amrik Singh Khalsa, MD, a dual-certified internal medicine and pediatrics physician and principal investigator at the Center for Child Health Equity and Outcomes Research in the Abigail Wexner Research Institute at Nationwide Children's Hospital. "Patient families often come to us wanting to know how to improve their cardiovascular health and keep their child from getting a condition they have, and a lot of physicians don't know what to say or do."

Dr. Khalsa has a career development (K) award from the National Institutes of Health to try to change that. His latest framework for a digital communication bundle to help guide families and physicians through behavioral change appeared in the *Journal of General Internal Medicine*.

"Traditional tools often give numeric risk scores that are hard to interpret, especially for families with low health literacy," explains Dr. Khalsa. "We need a visual way to represent their risk over time and show them where they could be if they make certain changes — we need tools to meet the patient halfway."

Dr. Khalsa's current iteration of the web-based application is undergoing feasibility testing with parents. It employs the five elements described in the publication: assessment of cardiovascular health status and risk factors via a brief digital survey in the waiting room; guided communication about identified risk factors in a health-literate, patient-friendly visual; clinician-directed prompts to assess the patient's readiness to change; behavior change counseling templates to guide suggestions for identified goals; and tools for assessing and addressing barriers to change via referrals and resources.

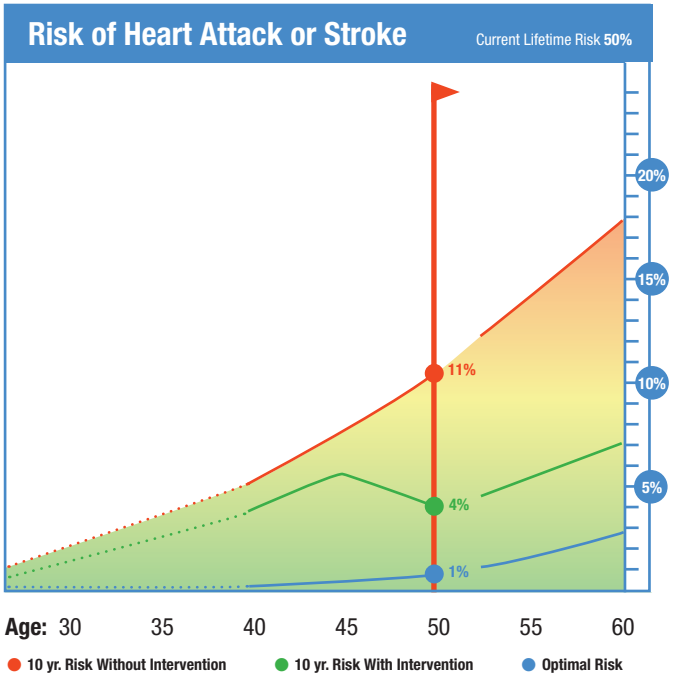
The program can be integrated into electronic record systems, and the physician-led portion should require only 2-5 minutes of visit time. The tool could also be used by community health workers, social workers and other services outside of primary care. While current efforts are targeted at young parents bringing their children into primary care visits, the tool could easily be adapted for other settings, including pediatrics. Dr. Khalsa also expects a trickle-down effect of behavior change on behalf of the parents.

"A lot of risks are shared family behaviors, like poor diet or inactivity," says Dr. Khalsa. "This is a long-term, patient-focused plan to promote heart health."

He and his team have planned a preliminary trial with parents at Nationwide Children's primary care clinics, with the goal to progress to a randomized-controlled study to evaluate engagement, self-efficacy, behavior change, follow-up and health outcomes over time.

Khalsa AS, Miller CK, Rhee KE, Cho H. A proposed framework to aid primary care clinicians in promoting cardiovascular health. *Journal of General Internal Medicine.* 2025 Jun;40(8):1749-1754.

— Katie Brind'Amour, PhD, MS, CHES



From the Operating Room to the Clinic: A New Protocol for Ear Tube Surgery

Nationwide Children's Hospital is one of the only pediatric hospitals to offer in-office ear tubes as an established choice in their standard of care.

written by Alaina Doklovic

In the United States, bilateral myringotomy/tympanostomy tube insertion (BTI), also known as ear tube surgery, is the most performed ambulatory pediatric surgery with about 667,000 children needing the procedure every year. Ear tubes treat children or adults with recurring ear infections, ear infections not responding to antibiotics or fluid trapped in the middle ear.

During the surgery, a small incision is made to drain any trapped fluid from the middle ear, and a small tube is placed into the eardrum. For pediatric patients, this surgery is usually performed under general anesthesia in an operating room. About one in every 15 children will need ear tubes by the age of 3 years.

The frequent need for this procedure keeps the operating rooms in high demand. This means there are large gaps of time between the initial otolaryngologist evaluation for ear infections and the actual treatment. The timing and accessibility to operating rooms also varies between providers.

"Ear tube surgery is somewhat of a time-sensitive procedure," says Charles Elmaraghy, MD, FAAP, FACS, chief of the Department of Otolaryngology at Nationwide Children's Hospital. "It's not an emergency, but for kids suffering with recurrent ear infections, they may have difficulty eating, sleeping and, most importantly, hearing, which may impact their speech and language development. Part of the quality of this procedure is not just the surgical procedure itself, but how quickly we can perform it."

Harnessing the Power of Choice

In 2023, Dr. Elmaraghy and his team noticed reduced access to the operating room. Patients and their families were starting to go to other hospital systems because they were able to treat their child quicker. At the same time, a trend emerged in ENT, endorsed by the Academy of Otolaryngology, to do more office-based procedures. Additionally, families expressed growing concerns about the risks of general anesthesia for children.

This sparked a department-wide initiative from the Department of Otolaryngology at Nationwide Children's to allow parents to choose between the standard ear tube surgery with general anesthesia or a different procedure: in-office BTI (IO-BTI), also known as in-office ear tube surgery. In-office ear tube surgery follows the same steps as BTI, but no general anesthesia is needed.

IO-BTI is not a new procedure. It has been traditionally reserved for a small number of pediatric patients who have potential health risks with general anesthesia. Now, it's being used as a regular option at Nationwide Children's. Good candidates for the procedure are usually patients 16 months or younger who have experienced three ear infections in six months, fluid

A new study finds that IO-BTI is safe, effective, maintains positive surgical outcomes for children and increases satisfaction for caregivers.

in the ear for 3-6 months or ear infections not responding to antibiotics.

Dr. Elmaraghy and his team conducted a study, published in the *International Journal of Pediatric Otorhinolaryngology*, to evaluate the implementation and effectiveness of in-office ear tube surgery as a standard choice for patient families. The study found that IO-BTI is not only safe and cost-effective but maintains positive surgical outcomes for pediatric patients and increases satisfaction of their families.

By implementing this new protocol to add in-office ear tubes to the standard of care, Nationwide Children's became one of the only pediatric hospitals in the United States to offer this procedure to every single candidate for ear tube surgery that walked through its doors. This means that patients will receive the same options and the same standard of care no matter what physician they see that day. Since its implementation in 2023, Nationwide Children's has performed over 700 in-office ear tube surgeries.

"As a new mom myself, I am able to flip the room," says Ashley Miller, MD, physician in the Department of Otolaryngology at Nationwide Children's and assistant professor of Clinical Otolaryngology at The Ohio State University College of Medicine. "I try to give families all the information necessary for them to compare the two options and make the best decision for their child. My daughter was recently evaluated in our clinic and underwent in-office ear tubes during the same visit — the convenience is really unparalleled. The recovery was even smoother than I expected, which has helped me to counsel other parents considering in-office tubes."

Putting Families First

"It was important to us to avoid general anesthesia and try to pursue the right outcomes in the most minimally invasive way," says Hillary Donkin, mother of Ansel Donkin, an 18-month-old boy who received in-office ear tubes at Nationwide Children's in February 2025. "When the procedure came around, I expected it to be a bigger deal than it was. They gave Ansel some medicine before the procedure, put numbing drops in his ears, and I was sent to the waiting room. When I came back after a few minutes, the procedure was done, and I remember thinking how quiet it was. Dr. Miller was in the hallway holding Ansel and showing him pictures. It was such a striking moment because it wasn't really a moment. It was just so normal."

In-office ear tube surgery takes about 2-4 minutes and is performed in the clinic. The nurses at Nationwide Children's are highly experienced with gentle holding to soothe the child or resolve any behavioral problems that could arise during the procedure. The recovery period is very short as they don't have to spend time waking up from anesthesia.

"The operating room is still an acceptable way to perform the procedure," says Dr. Elmaraghy. "However, the parent's ability to now choose the in-office procedure depending on what is best for their child is what's most important." ■

Giroux K, McColl LF, Harter C, Seitz E, Kistler I, Chiang T, Jatana K, Elmaraghy C. Protocol implementation for in-office manual tympanostomy tube insertion. *International Journal of Pediatric Otorhinolaryngology*. 2025 May;192:112326.

Enhanced IV Line Clamp: *A New Spin on a Classic*

Revolutionizing patient care through human-centered design

written by Madison Storm

The IV line clamp is a long-standing technology used to deliver intravenous medications and fluids. For over 90 years, the simplistic, gravity-based design has remained unchanged, despite the growing complexity of patient care and significant advancements in medical technology.

Enter Jenna Merandi, PharmD, MS, CCPS, medication safety officer, and Erin Ahrens, BSN, RN, senior solutions developer at Nationwide Children's Hospital.

Dr. Merandi and Ahrens work with interdisciplinary teams to develop system-based solutions to mitigate risk and prevent errors in effort to enhance patient safety.

"Patients we serve have complex needs. For instance, a critically ill infant may require the support of many devices, including smart infusion pumps. These pumps may be delivering life-sustaining medications," Dr. Merandi says. "If an IV line is inadvertently clamped while a medication is being delivered, that means the medication doesn't reach the patient. This could lead to potential harm or even fatality if left unnoticed."

About 80% of hospitalized patients receive intravenous therapy. Over the past several years, reported safety events continue to rise involving inadvertent clamped lines, which have led Dr. Merandi and Ahrens to take a closer look at the medication administration process and the technology. It is important to understand how people interact with technology in fast-paced, high-stress environments.

"We realized there's a lack of visual cues; nothing that says whether it's on or off," Ahrens says.

Enhancing the Design

Dr. Merandi and Ahrens secured support from Nationwide Children's Office of Technology Commercialization – Technology Development Fund to begin their project. They launched a four-phase enhancement project, guided by human-centered design which included: context immersion, concept development, functional prototyping and comparative usability testing.

"Human-centered design refers to focusing on the actual needs and challenges faced by frontline staff, so that solutions can be more effective and sustainable," says Ahrens. "It requires understanding workflows, environmental pressures and the cognitive demands placed on frontline staff."

Dr. Merandi and Ahrens partnered with Priority Designs, a Columbus-based firm specializing in human factors and product development. Together, they conducted on-site clinical observations, engaged directly with nurses, and studied how current IV clamps are used in practice.

"We weren't looking to add complexity or overhaul bedside workflows," says Dr. Merandi. "We want to enhance safety by making the clamp's open and closed status clear — visually and intuitively — without disrupting existing processes."

Co-designing Safer Solutions

The team developed five early design concepts focused on visibility, intuitive use and that offered unique elements for error prevention. Three designs were selected for prototyping based on how well the technology design emulated the concepts Dr. Merandi and Ahrens were looking for.

- Concept C retained the familiar wheel-based design of the roller clamp yet emphasized the open and closed position of the clamp with high-contrast color blocking. Similar to the common roller clamp, movement of the wheel from the top to the bottom occurs on a gradient by which the fluid gradually ceases to flow once the clamp is in the fully closed position.
- Concept W incorporated tactile feedback, with a noticeable 'pop' confirming when the clamp is fully open.
- Concept S introduced a switch-style clamp that functions intuitively and has a bold visual indicator for clamp status.

All prototypes integrated colored visual cues indicating the open/closed status — one of several features informed by direct clinician feedback.

Comparative Usability Testing

With the prototypes developed, Dr. Merandi and Ahrens hosted human factors engineers from Priority Designs to conduct usability testing in Nationwide Children's Simulation Center.

"We brought in frontline users from a variety of clinical roles that interact with IV lines, clamps and infusion pumps on a daily basis to look and test the different prototypes," Ahrens says. "We created realistic clinical scenarios and asked users to interact with the prototypes as they would in real life. Their feedback wasn't just helpful in our product development — it was essential."

Three activities that simulated what a user would experience in a clinical environment were monitored and studied by the engineers. Questions were asked throughout, garnering participant assessment of the clamps functionality when operating the clamp and how the open/close status was visualized.

Feedback in Effect

After completing usability testing, the data for each prototype was collected and evaluated using a scoring system relevant to each of the testing activities.

Clamp Concept C emerged as the preferred design. Moreover, results revealed that two of the concept prototypes outperformed the current/standard roller clamp.

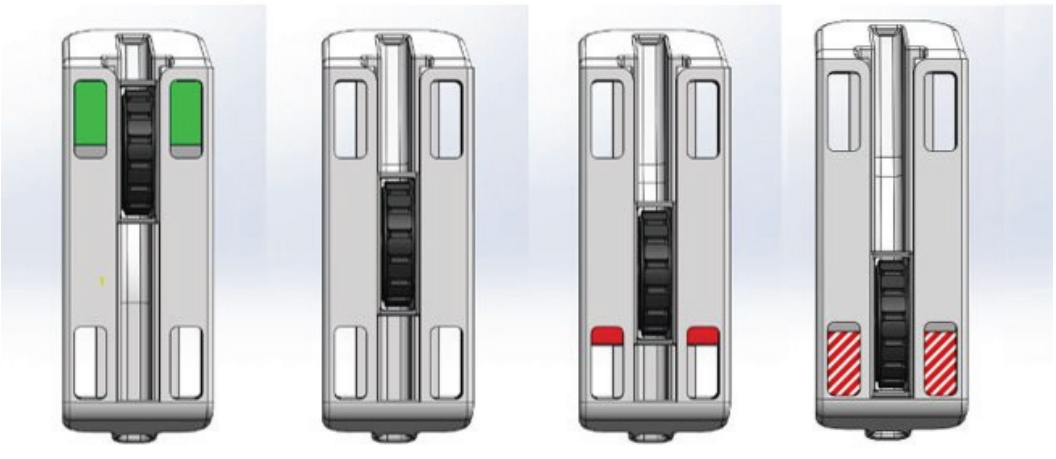
"In addition to our three concepts, we included the current clamp being today within our prototype testing," explains Dr. Merandi. "It scored below two of the improved prototypes. That told us the nurses believe in the enhanced design; they believe in the value of the enhanced IV line clamp."

Refining the Design

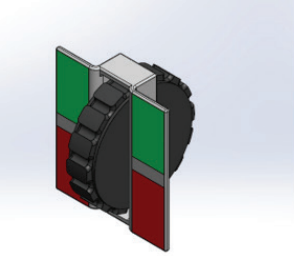
With Clamp Concept C selected as the most favored, the team continued to refine the design based on user feedback. This included the following changes to design addressing:

- Visual indicators accessible to individuals with colorblindness
- Clear, unmistakable wheel placement indicating clamp status
- Enhanced visibility from multiple angles and distances

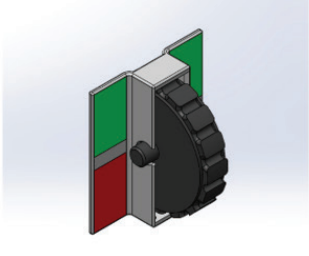
The final product incorporates feedback from user testing, improved usability and an enhanced design. The human-centered design features prominent visual cues, such as open/close status visibility, and inherent function and movement.



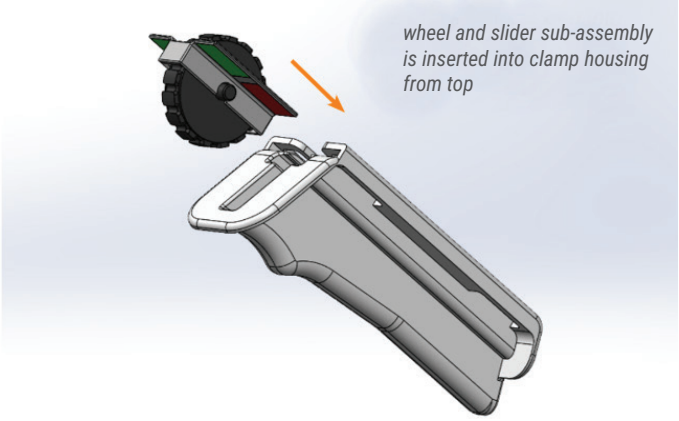
Notes: Windows allow color to be visible from back of clamp (above); red indicator will have white striping for color blind differentiation



FRONT ISOMETRIC VIEW



BACK ISOMETRIC VIEW



As the enhanced IV line clamp moves toward commercialization, design and utility patents have been filed with the help of the Office of Technology Commercialization. Dr. Merandi and Ahrens are working toward their goal of making the enhanced IV line clamp available for clinical use through industry partnerships.

"Our goal here is really to save lives," Dr. Merandi says. "We want to tackle patient safety issues through innovative design in hopes of creating technologies that make it easier for frontline staff to do the right thing." ■

Inventors of the Enhanced IV Line Clamp

Enhanced IV line clamp inventors Jenna Merandi, PharmD, MS, CPPS, (left) and Erin Aherns, BSN, RN, (right) are working with the Office of Technology Commercialization at Nationwide Children's to make their invention available to others through industry partnerships.

How Medical-Legal Partnerships Support Families, Relieve Stress and Improve Health

With a small team of dedicated attorneys working as part of a medical-legal partnership, Lawyers for Kids is making an outsized impact for families at Nationwide Children's Hospital.

written by Wendy Margolin

A classic example of a medical-legal partnership case is a child with asthma who frequently visits the emergency room. The parents and doctors know the cause is mold in a rented home, but the doctor has limited skills or resources to address the issue with the landlord.

With Lawyers for Kids, clinicians and families have somewhere to turn.

"I'm very proud to be a part of an organization that pays attention not only to the physical and the behavioral health concerns but also to those community factors that we know most definitely impact patient health," says Cari Stork, MBA, program manager for Lawyers for Kids at Nationwide Children's.

One of the Nation's Few Hospital-Employed Attorney Programs

Lawyers for Kids grew out of The Center for Family Safety and Healing, a nonprofit subsidiary of Nationwide Children's Hospital that supports adult victims of domestic violence and added a legal component in 2013.

It wasn't long after that program launched that Rhonda Comer, JD, senior vice president of Legal Services for Nationwide Children's, realized the hospital's families could also benefit from a medical-legal partnership to address health-harming legal needs. Initially, Nationwide Children's collaborated with Legal Aid of Southeast and Central Ohio, whose lawyers supported cases identified by clinicians, but the needs continued to grow.

"We realized our patients and families needed more legal support because many health issues are linked to underlying legal problems. Having in-house legal advocates join the health care team was the best approach to address the health-harming legal needs and provide critical legal services patients

and families wouldn't otherwise be able to access," says Comer.

In 2020, Lawyers for Kids was launched hospital-wide, adding hospital-employed attorneys who provide free legal services to patients and their families. Today, Nationwide Children's is one of only a few hospitals in the country with hospital-employed attorneys. In 2024, Lawyers for Kids supported 2,338 families and continues to expand and add staff in 2025.

While the hospital attorneys handle many cases, partnerships are vital to meeting the needs of families. Lawyers for Kids continues to partner with Legal Aid of Southeast and Central Ohio for those cases that require court representation. They also work with a network of pro bono attorneys from Columbus firms and businesses who are inspired to give back to Nationwide Children's patients and families.

Why Medical-Legal Partnership Is Needed

Low-income Americans have limited free legal resources available to them, leaving most people to navigate complicated situations such as housing, insurance denial, safety and guardianship processes on their own.

"Resources for free legal representation tend to go toward big cases that make an impact versus smaller issues where maybe giving brief advice to families can resolve the problem, which is a lot of what we do," says Callie Query, JD, managing attorney of Lawyers for Kids.

Research indicates that many legal issues affecting families have a direct impact on child health. Some of these issues include:

- Evictions and unsafe housing conditions
- Medicaid denials for coverage and services
- Financial insecurity due to loss of government benefits
- Legal problems, such as barriers to housing and employment due to criminal records
- Domestic violence and child abuse
- Education issues, such as a lack of special education services and discipline disparities

All of these can be addressed by the Lawyers for Kids team.

"There are things that contribute to what leads children to need the medical care that doctors can't fix, so this medical-legal partnership allows us to bring some of those additional tools to families," says Kate McGarvey, an attorney with Legal Aid of Southeast and Central Ohio.

How Lawyers Help Patients

The Lawyers for Kids team provides a range of legal support.

"Not every family needs to file a lawsuit," says Query. "Sometimes they just need legal advice about their situation or someone on their side to help them advocate with insurance companies."

Quick, but essential advice

- Advising single pregnant moms or expectant fathers about paternity, custody and child support. In Ohio, unmarried mothers have full custody until the father completes a court filing

Advocacy

- Helping families access home health care or prescribed durable medical equipment after insurance or Medicaid denials
- Supporting children who struggle in school to get an individual education plan (IEP) and services to improve learning and behavior
- Overturning expulsion and reducing suspension while working with the school to prevent another incident

More extensive support

- Supporting families escaping domestic violence, including divorce paperwork and getting a civil protection order
- Helping children with prior convictions get their records sealed so they can apply for Free Application for Federal Student Aid (FAFSA) and attend college
- Providing referrals to Legal Aid for court representation in evictions, custody matters and bankruptcy
- Supporting legal guardianship processes for parents of children with complex medical issues

> **We realized our patients and families needed more legal support because many health issues are linked to underlying legal problems. Having in-house legal advocates join the health care team was the best approach to address the health-harming legal needs and provide critical legal services patients and families wouldn't otherwise be able to access."**
>
> *– Rhonda Comer, JD, senior vice president of Legal Services for Nationwide Children's*

To help reach more families who need simple advice or help with paperwork, Lawyers for Kids is piloting a system-wide MyChart change for parents of children who need guardianship at age 18 due to complex medical issues. Parents currently receive a 30-day notice informing them of their impending loss of access to their child's medical records once the child turns 18. This short notice period can cause issues for families when transitioning to adult care, especially for medically complex children.

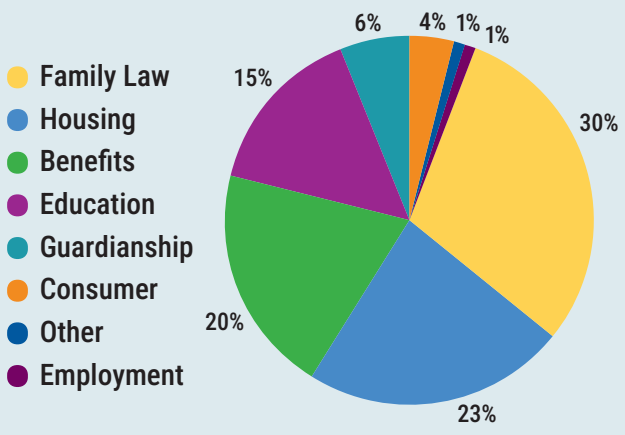
Lawyers for Kids added a more detailed 90-day message explaining that parents of a child with a physical or behavioral health concern that requires adult assistance can get help filing for guardianship from Lawyers for Kids. Parents across the Nationwide Children's system will receive this message starting in September 2025.

Achieving Meaningful Success, One Patient at a Time

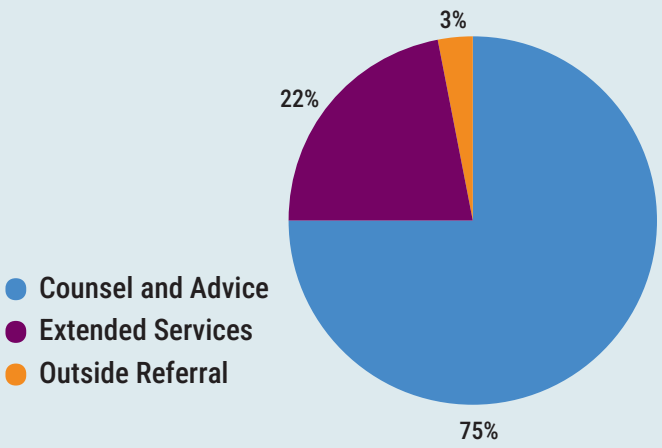
A significant early success for the Lawyers for Kids team came after helping a family get insurance approval for durable medical equipment. The family struggled to care for their child at home as the child got older, which led to bedsores that required hospitalization. When Medicaid denied the physician-prescribed equipment, Lawyers for Kids represented the family in a hearing and won. The child wasn't admitted to the hospital for bed sores after getting the device they needed.

SELECTED 2024 METRICS: LAWYERS FOR KIDS

Closed Cases by Area of Law



2024 Level of Service



> **Having our team's support to address the issue so the family can receive the necessary benefit, such as Supplemental Nutrition Assistance Program (SNAP) or Medicaid, that was denied because of an administrative error, is a huge win."**
>
> *– Cari Stork, JD, Lawyers for Kids program manager*

"We have many success stories involving families who assume they can't appeal an insurance denial. Providing education to families about a different path forward is really empowering," says Stork.

When a child needed a motorized wheelchair that was denied by the insurance company, a Lawyers for Kids attorney represented the family in a state hearing, securing approval for the $14,000 device.

When it comes to school expulsion hearings, a little help from Lawyers for Kids has made a big impact for families.

"Many times, they've experienced trauma and struggle to stay in the classroom, so sometimes we're just explaining to the school what's going on with the kid," says Query.

After one case, Query learned a child she represented received a citizenship award six months later. "Kids are really resilient, and a lot can change pretty quickly," she says.

It's not uncommon for legal services to overlap with social work services. In fact, most referrals for Lawyers for Kids come from the Nationwide Children's social work team.

"Having our team's support to address the issue so the family can receive the necessary benefit, such as Supplemental Nutrition Assistance Program (SNAP) or Medicaid, that was denied because of an administrative error, is a huge win," says Stork.

"Social workers have done this work for years, and they make a large impact, but there's just something about being a lawyer when you call a landlord or a school that gets more attention," adds Query.

Helping Families Self-Advocate

A big part of Lawyers for Kids' work, outside of providing legal intervention, is education and advocacy.

Many times, families don't realize they need a lawyer, especially in school-related cases. Instead, families mention the education challenge while visiting Nationwide Children's for another issue. The physician then contacts the social worker, who refers the case to Lawyers for Kids.

"The hope is that we provide the knowledge for someone to move through their current legal situation and also feel empowered if it comes up in the future," says Stork.

Benefits of Legal Intervention

In a 2021 pre- and post-support questionnaire, Lawyers for Kids clients reported lower perceived stress after the legal intervention.

Lawyers for Kids has also studied zip code utilization to ensure they provide legal services in vulnerable areas. They compared eviction referrals from lower-income zip codes with those from other Franklin County zip codes.

"We received more eviction referrals from higher-risk areas and families were more likely to receive a positive outcome regarding the eviction when linked with Lawyers for Kids for intervention," says Stork.

Families experience immediate and long-term ripple effects on health outcomes each time the Lawyers for Kids team removes a legal hurdle.

"We do this because it's the right thing to do and because Nationwide Children's is committed to population health and health equity. We know the whole community benefits from healthy kids," says Query. ■

BRIDGING CARE AND CURIOSITY: Mentoring the Physician-Scientists of Tomorrow

The resident Research Pathway at Nationwide Children's uniquely prepares trainees for medical research.

written by Alaina Doklovic

Physician-scientists play a key role in bridging scientific discoveries and clinical care. That's why Nationwide Children's Hospital is committed to leading the path for the healers and innovators of tomorrow. The Research Pathway at Nationwide Children's allows residents to pursue scientific and clinical training to promote their development as pediatric physician-scientists.

The Research Pathway is co-directed by Brian Becknell, MD, PhD, a pediatric nephrologist and research director of the Kidney and Urinary Tract Center at Nationwide Children's, and Jessie Yester, MD, PhD, pediatric cardiologist in The Heart Center at Nationwide Children's and principal investigator in the Center for Cardiovascular Research in the Abigail Wexner Research Institute (AWRI). The Research Pathway supports both the Integrated Research Pathway (IRP) and the Accelerated Research Pathway (ARP). Both are non-standard pathways approved by the American Board of Pediatrics designed to provide flexibility to accommodate individual career goals for residents who plan to pursue a career in academic medicine.

"As a physician-scientist, I have been, and continue to be, shaped by institutions and mentors who understand the unique environment required to train and cultivate a physician-scientist. That support is more vital now than ever," says Dr. Yester. "I am honored to co-direct the pediatric residency Research Pathway, where we support a culture of patient-centered investigation. I firmly believe our trainees will lead discoveries that redefine the future of pediatric medicine, and I am proud to walk alongside them in that journey."

There are currently three residents in the Research Pathway and 14 alumni. Among the 17 total current and former participants, 14 of them have both a medical degree and a doctorate.

Samantha Coss, MD, PhD, second year fellow in the Division of Rheumatology at Nationwide Children's, completed medical school and her doctorate at The Ohio State University and a residency in Pediatrics through the Research Pathway, while she is also training to become a pediatric rheumatologist.

"At Nationwide Children's, everyone wants you to succeed," says Dr. Coss. "Here, you can learn to do anything you want — from procedural skills to evidence-based outpatient management to advanced techniques at the lab bench. But most importantly, my clinical training was never sacrificed for the research experience. It truly is the best of both worlds."

MENTORSHIP AND SUPPORT

In 2024, Hannah Kluger, MD, PhD, joined the Nationwide Children's Research Pathway. As a PGY-1, her clinical interests include Neonatology and Genetics. Her current research studies DNA repair pathways, CRISPR biology, genetic engineering and lineage-tracing techniques.

"Over the past year, I have had an incredible experience in the Research Pathway," says Dr. Kluger. "Drs. Becknell and Yester have been incredible mentors and continue to go to bat for my research and fellowship goals. I truly feel like this program is enabling an easy transition into my ideal career path. Nationwide Children's also offers a broad array of research opportunities, making it very easy to find my fellowship research laboratory."

Mentorship is the central feature of success in the Research Pathway program. A customized mentoring committee of seasoned investigators in the AWRI is assembled for each resident. A research mentor is then identified based on the applicant's research and career interests.

"Even now after I've graduated from the residency program, I still reach out to program leadership. Their advice is invaluable, and I count them highly among my mentors," says Dr. Coss.

"Residents, fellows and graduate students are crucial to the success of our research. They are the caretakers of tomorrow's patients and discoverers of tomorrow's innovations. They add incredible value to a laboratory," says Ryan Roberts, MD, PhD, physician for the Division of Hematology and Oncology at Nationwide Children's, principal investigator in the Center for Childhood Cancer and Blood Diseases at AWRI and alumnus of the Research Pathway. "I have an obligation to mentor tomorrow's doctors and scientists with as much care, interest and passion as was shown to me by my own mentors."

LEANING ON THE FUTURE

"The Research Pathway at Nationwide Children's provides opportunities for residents with significant research experience to integrate their clinical training with mentored research opportunities and successfully launch careers as pediatric physician-scientists," says Dr. Becknell.

Training tomorrow's pediatric physician-scientists requires bridging clinical care with discovery. A tremendous number of research opportunities exist, and with a little encouragement and education, these physician-scientists are primed to move their fields forward.

"Trainees are often unencumbered by prior knowledge, which gives them some freedom to consider crazy ideas that old codgers like me would deem — well, crazy," says Dr. Roberts. "But sometimes they work. Trainees read a lot and work hard and are motivated — and have more energy than I do. We need them around. And, hopefully, it works both ways." ■

Learn more at PediatricsNationwide.org/Research-Pathway

THERE ARE CURRENTLY

3 Residents | **14** Alumni

IN THE RESEARCH PATHWAY

AMONG THE 17 TOTAL CURRENT AND FORMER PARTICIPANTS

14 have both a medical degree and a doctorate

Better Asthma Outcomes: A Systems-Level Approach

A dedicated team of experts embraced sweeping tactics to reduce asthma-related emergency department visits by 33% and inpatient length of stay by 0.9 days. This is how they did it.

written by Katie Brind'Amour, PhD, MS, CHES

It started with a conversation about the data: Why are kids with asthma the hospital's most frequent fliers? After all, excellent preventive and acute treatments exist for asthma. Properly managed asthma should have minimal impact on a child's well-being.

And there's the rub.

Asthma requires consistent attention. Families must understand how to avoid asthma triggers, how to recognize symptoms, what medications to use and when, how to administer the correct dose, when to refill prescriptions and how to manage and avoid asthma flares.

A short visit to the hospital often involves different medications and management strategies than families use at home, which can leave families unprepared to effectively transition back to self-care. To complicate matters, primary care physicians may not be familiar enough with the reasoning behind prescription changes to effectively guide maintenance regimens moving forward.

Together, these challenges make an otherwise straightforward medical condition a monumental hurdle from a population health standpoint, especially because asthma affects as many as 6-10% of all children. Not surprisingly, perhaps, asthma has historically been the most common diagnosis for inpatient hospitalizations at Nationwide Children's Hospital.

The idea of a systems-level, multilayered approach to the management of a common pediatric health condition sounds ideal, but in practice, there are often too many moving parts — and competing priorities — to make headway.

But that's exactly what a dedicated team at Nationwide Children's has done over the past 15 years, resulting in dramatic transformations in pediatric asthma outcomes in central Ohio.

In the process, asthma fell from being the No. 1 most common diagnosis for hospital admissions to No. 3.

Building the Asthma Core Team

In 2010, asthma's place at the top of the chart for inpatient admissions at Nationwide Children's — coupled with its inclusion in the hospital's strategic plan to improve community health — prompted hospital administrators and their pediatric accountable care organization, Partners For Kids® (PFK), to ask

pulmonologist Beth Allen, MD, now retired, to initiate a quality improvement (QI) plan to improve asthma outcomes. PFK manages care for more than 446,000 Ohio children on Medicaid and promotes chronic disease management.

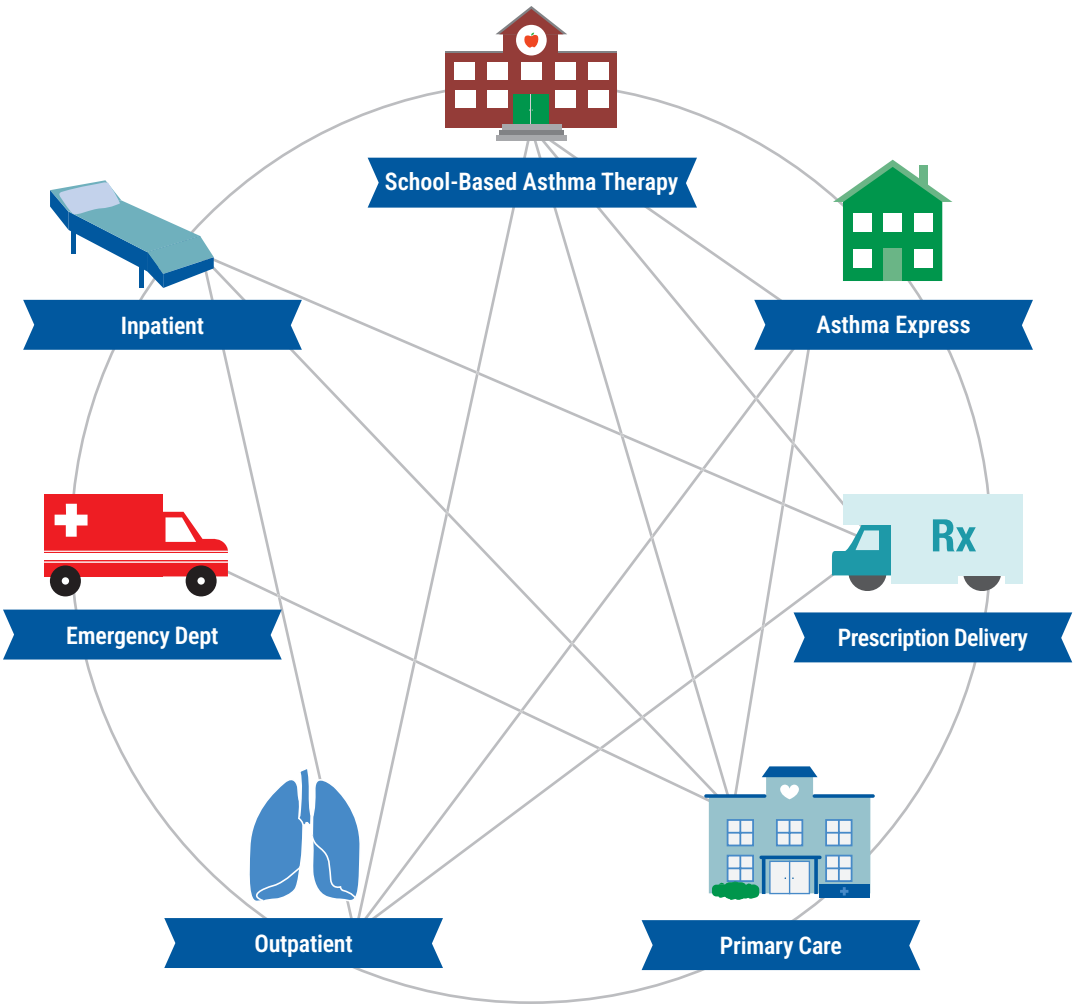
Dr. Allen worked with the PFK team and consulted other pulmonologists, emergency medicine physicians, hospitalists, respiratory therapists and primary care specialists. As stakeholders across the care continuum agreed to join forces, the Asthma Collaborative was born. Over time, they assembled a Core Team composed of 33 members devoted to the team's vision: helping children live a life not limited by asthma.

Together they would work toward the overarching mission of the Collaborative — with a reduction in emergency and inpatient visits related to asthma as the first common goal — sharing their plans and results in monthly meetings. Independently, they would set discipline-specific QI projects and implement changes in their own departments.

This cross-disciplinary, multi-tiered approach was essential.

"Seeing patients as a pulmonologist, we have one small point of view — we don't get to see what happens everywhere else," says Lisa Ulrich, MD, pediatric pulmonologist and medical leader of the Asthma Core team at Nationwide Children's since 2021. "We are fortunate we have experts from each area who take part. The Core Team members help figure out the best ways to adapt interventions and get buy-in from their own departments. There isn't one person forcing something to fit into a box when their department is really a circle."

OUR ECOSYSTEM OF ASTHMA CARE



Primary Care as the Primary Focus

Primary care physicians perform the vast majority of asthma diagnosis and management.

"We pride ourselves on having a discussion about asthma often with our patients," says Stephen Hersey, MD, primary care pediatrician and co-lead of the Primary Care Network asthma QI team. Prior to the launch of the Asthma Collaborative, he worked to roll out asthma guidelines in clinical practice for primary care centers in Ohio as part of his QI work for the Ohio Chapter of the American Academy of Pediatrics.

As Dr. Hersey's QI efforts merged with the hospital's initiatives through the Collaborative, the primary care network — consisting of 14 clinics and about 100 physicians — adopted a plan with five key goals:

1. Incorporate customizable asthma action plans into the electronic medical record (EMR) and achieve 80% completion rates.
2. Launch asthma specialty clinics staffed by primary care pediatricians with extended-length visits for patients requiring more complex asthma care or intervention, and average 250 visits per month.
3. Increase completion of asthma notes (standardized EMR-based forms designed to promote guideline-based care and discussion of asthma status) from 20% to 65% of all encounters with asthma patients, regardless of the reason for the visit.
4. Increase documentation of an asthma control test (ACT) from 40% to 70% of all encounters with asthma patients, regardless of the reason for the visit.
5. Standardize approaches to step-up therapy and increase referrals to support resources for children with poorly controlled asthma from 35% to 50%.

The five initiatives rolled out gradually from 2011 to 2015, and their results were remarkable.

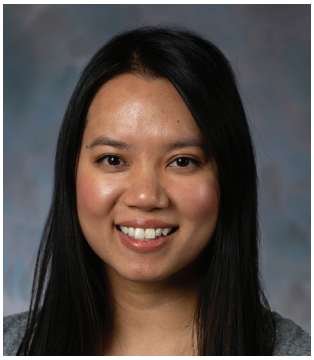
In a population of 86,356 patients, of whom 10% had asthma, asthma-related ED visits fell from 21.7 per 1,000 patients per year in 2010 to 14.5 per 1000 patients per year in 2019 — a 33% reduction. Asthma action plan documentation went from 0% to their goal of 80%, and asthma control test records nearly doubled, achieving the 70% target. They published their results in *Pediatrics*.

The team has also maintained at least a 50% rate of appropriate medication escalation and guideline-based step-up strategies for patients with poorly controlled asthma. Visits to the specialty clinic hit the target but subsequently reduced to an average of about 176 per month.

To make these changes possible, Dr. Hersey and co-leader of the asthma QI team Jessica Retzke, MD, visited each primary care clinic for initial training and continue to onboard new residents and physicians. They both have one day a week dedicated to their QI work, and receive extensive data analysis support from the hospital's Asthma Core Team QI guru, Charles Hardy, MHA, CPHQ, lead quality strategist at Nationwide Children's, who supplies them and the rest of the Collaborative with overarching data. Care providers get regular individual and clinic-specific reports to indicate performance on key asthma metrics.

> "When I joined Nationwide Children's in 2007, if I had to step a kid up off of Flovent [an inhaled corticosteroid] because their asthma was not controlled, I would refer to pulmonology. After working on these projects, I can see my evolution as a practitioner. Now our network providers, including younger faculty and nurse practitioners, have an increased level of confidence from using our embedded processes, and quickly become comfortable stepping up therapy."
>
> – *Stephen Hersey, MD, primary care pediatrician and co-lead of the Primary Care Network asthma QI team at Nationwide Children's*

> SBAT is really helping kids who otherwise would fall through the cracks and probably be very ill if they weren't getting that oversight and assistance with adherence to their medications at school. It has been a very beneficial program for our families."
>
> – *Loan (Kathy) Nguyen, PCPNP, program coordinator of School-Based Asthma Therapy (SBAT) at Nationwide Children's*



"When I joined Nationwide Children's in 2007, if I had to step a kid up off of Flovent [an inhaled corticosteroid] because their asthma was not controlled, I would refer to pulmonology," Dr. Hersey says. "After working on these projects, I can see my evolution as a practitioner. Now our network providers, including younger faculty and nurse practitioners, have an increased level of confidence from using our embedded processes, and quickly become comfortable stepping up therapy."

EMR best practice alerts categorize children into low-, medium- and high-risk groups with relevant program referrals suggested according to identified risk factors. At least half a dozen other asthma-related alerts prompt other actions to improve asthma outcomes.

But even with better action plans and optimized prescriptions, some families need more support.

Bringing Asthma Care Straight to Patients

"I used to work in primary care and had the mentality that we'd meet with the family, give them the action plan, send in the prescription and send them on their way thinking that's what they'd do," says Loan (Kathy) Nguyen, PCPNP, program coordinator of School-Based Asthma Therapy (SBAT), which serves about 1,000 children at more than 300 schools in the greater Columbus area. "Working for SBAT has changed my mindset about asthma, health barriers and health equity. There are so many things families face that can make it hard to give a controller medication every day."

Some families have no car to get to the pharmacy or don't know how to refill a prescription. Insurance coverage changes and prices go up, making things too expensive. They mix up controller and rescue inhaler instructions. Kids split their time between two households. Or parents work in the morning, leaving children responsible for taking their own daily maintenance medication before school.

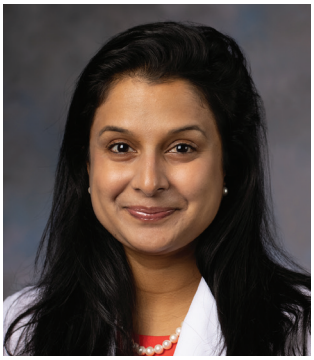
Schools and clinicians refer kids with absences and illness due to asthma to SBAT, and SBAT nurses collaborate with school nurses or office staff to administer daily preventive medications at school. SBAT nurses coordinate delivery of prescriptions straight to the school. They also work to increase communication between the family, school and asthma provider about asthma concerns — such as increased symptoms, hospital utilization and suggestions on possible medication changes — in order to come up with a plan that optimizes asthma control.

Within a year of SBAT enrollment, 37% of children newly achieved well-controlled asthma according to the Asthma Control Test and 56% according to health care provider ratings, as published in the *Journal of Allergy and Clinical Immunology: Global*. Asthma-related ED visits and inpatient admissions each dropped by 50% among participants, intensive care unit (ICU) admissions fell by 71%, and acute and urgent visits fell by 38% and 41%, respectively. Improvements were even greater for certain indicators among Black and Latino children and have obvious implications for children's ability to attend school.

"SBAT is really helping kids who otherwise would fall through the cracks and probably be very ill if they weren't getting that oversight and assistance with adherence to their medications at school," says Nguyen. "It has been a very beneficial program for our families."

Impressed by the impact on utilization, PFK sought out additional funding to expand the SBAT program. A new grant will grow the SBAT provider team from nine staff

> Supporting our patients means truly understanding their lives and providing the specific resources they need to thrive. The journey to staying out of the hospital is complex, and we're here to help navigate every layer — from securing transportation and facilitating medication delivery to offering vital asthma education."
>
> – *Rajitha D. Venkatesh, MD, MPH, FAAP, medical director for the Chronic Conditions service line at PFK*



members (primarily nurses) to 11 and increase patient capacity by 50% to serve more than 1,500 children.

"Supporting our patients means truly understanding their lives and providing the specific resources they need to thrive," says Rajitha D. Venkatesh, MD, MPH, FAAP, medical director for the Chronic Conditions service line at PFK. "The journey to staying out of the hospital is complex, and we're here to help navigate every layer — from securing transportation and facilitating medication delivery to offering vital asthma education."

Families requiring further help at home can benefit from Asthma Express, a program that sends nurses to patient homes to evaluate and educate about medication, symptoms and asthma triggers. Prescription delivery services now also address barriers in access to pharmacies by bringing medications straight to patients' homes when needed.

Together with enhancements in primary care, these efforts have collectively made major contributions to reductions in asthma-related ED and inpatient admissions at Nationwide Children's.

In Case of Emergency

While patient care prior to an exacerbation is outside the control of the ED itself, several QI plans aimed to reduce utilization and the cost of care within the walls of the hospital dovetail with efforts to standardize and streamline care across the continuum of providers.

"A lot of our work in the ED is focused on better care for exacerbations, but we still ask for collaboration and ideas from the wider Core Team because what we do in the ED can impact what happens when patients go home or get admitted," says Adjoa Andoh, MD, emergency medicine physician and leader of the ED asthma QI team at Nationwide Children's.

The first plan the ED asthma QI team rolled out was steroid administration within 60 minutes of arrival at the ED for all asthma exacerbations. The metric aligns with national guidelines and results in shorter stays and fewer inpatient admissions — outcomes the team has ameliorated despite facing barriers to rapid steroid administration.

The ED asthma QI team has since implemented multiple complementary QI projects, two of which aim to increase their chances of achieving the overarching 60-minute steroids goal:

- The licensed practitioner initiation project, to increase the rate of steroids ordered by nurses during triage
- A paramedic steroid administration project, to increase steroid use en route to the hospital
- A nebulizer reduction project, now in sustain mode after effective replacement of high-albuterol nebulizers with more efficient equipment (described in a *Pediatric Quality & Safety* publication)

The ED receives about 2,000 asthma-related visits per year. As in other departments, changes to practice involve hundreds of people who all have other patients and diagnoses to manage as well, making stakeholder buy-in essential.

"Having that collaboration and getting the ideas and feedback from everyone that this touches is the only way to make any of these changes successful," says Dr. Andoh.

Dr. Andoh has also looked beyond ED-specific metrics

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to improve asthma care. For one initiative, published in *The Journal of Asthma*, she examined national data to demonstrate the ability to cost-effectively and safely care for patients needing continuous nebulized albuterol on the regular inpatient floor after admission, rather than sending patients to the ICU. Because of her involvement in the Asthma Collaborative, her hospitalist colleagues were ready and willing to explore that practice change.

Inpatient and Outpatient Expertise

"Historically, continuous albuterol aerosols have been an ICU-level intervention, but our goal is to offer it for certain inpatients to prevent their transfer to the ICU for that intervention alone," says Shauna Schord, MD, pediatric hospitalist at Nationwide Children's and co-lead of the inpatient asthma QI team.

The inpatient team has already completed stepwise implementation of the measure with more than 40 patients and have a manuscript submitted for publication detailing their efforts.

Most measures they implement, however, focus on getting patients back to baseline respiratory status (or better) as fast as possible, and keeping them out of the hospital long-term. During admission, hospitalists and pulmonologists evaluate and adjust the patients' asthma care plans as needed to maintain better health moving forward. They discuss adherence and any changes in preventive treatment, and hand off to pharmacists and respiratory therapists to enhance the education families receive before heading home.

"Our team has had longstanding goals that primarily surround our safety and efficiency in discharging patients home," says Dr. Schord.

These include reducing length of stay and 30-day readmission rates to meet or beat national averages. Their efforts have dropped average length of stay from 2.4 to 1.5 days, and the team typically outperforms national averages for readmissions.

"Prior to being part of the Collaborative, I was more focused on acute management and the parts of care that I have direct control over," says Karen Allen Glenn, MD, pediatric hospitalist at Nationwide Children's and co-lead of the inpatient asthma QI team. "Now I think of asthma as a more chronic life problem that families need education to manage long term; my approach is more family-centered."

Drs. Schord and Allen Glenn have attempted to promote this shift in mindset among the other 60 hospitalists as well as the residents, nurses, respiratory therapists and pharmacists taking care of inpatients. They meet regularly to discuss failures and successes and to identify any aspects of care that prevent rapid improvement or prompt discharge.

They recently identified completion of the updated asthma action plan and physician decisions about discharge maintenance medications as bottlenecks in the discharge process; education and referrals to community resources cannot be completed until these changes happen, making their next QI target clearer.

Big Goals, Big Actions, Big Impact

Beyond the efforts directed at patient education and experience, PFK operates behind the scenes to produce policy and payer-level changes to further impact families coping with asthma.

Pharmacy leaders in the program advocated for

> We have a wide range of QI initiatives, including provider education, patient tools and resources, a PFK newsletter and Asthma Toolkit for providers, webinars and even an ECHO series to improve primary care provider knowledge and capabilities state-wide. We provide care coordination and disease management services at the highest level."
>
> – *Melanie Pinnow, MSN, RN, CCM, clinical director of the Chronic Conditions service line for PFK*

continued coverage of key asthma drugs at a time when they were scheduled to be dropped from the Medicaid formulary, for example, resulting in continued access to critical controller medications for thousands of patients. The team also successfully lobbied to get coverage for two inhaler spacers per year per patient — an essential aid in proper drug delivery.

"We have a wide range of QI initiatives, including provider education, patient tools and resources, a PFK newsletter and Asthma Toolkit for providers, webinars and even an ECHO series to improve primary care provider knowledge and capabilities state-wide," says Melanie Pinnow, MSN, RN, CCM, clinical director of the Chronic Conditions service line for PFK. "We provide care coordination and disease management services at the highest level."

Despite having achieved the vast majority of their goals, members of the Asthma Collaborative see no end to their mission.

"Everybody is focusing on the next goals, working to create and streamline telehealth services to improve access to care and increase our focus on health literacy, education and teach-back methods," says Amanda Truex, MS, RRT, AE-C, respiratory therapist and the asthma program coordinator at Nationwide Children's. Teach-back implementation, which has been shown to improve patient adherence and confidence in disease management, has already increased by 20%.

In primary care, Dr. Hersey envisions a future where primary care providers conduct more advanced asthma care with the input of the Nationwide Children's pulmonology team.

A Systems Approach to Asthma Care:

33%
reduction in asthma-related ED visits among primary care patients

71%
decrease in asthma-related ICU visits among SBAT enrollees

50%
decrease in asthma-related ED visits among SBAT enrollees

> I have asthma, and my life mission when I chose to become a pulmonologist was to try to improve outcomes for kids with asthma. I know what it feels like to not be able to breathe due to your asthma and want to prevent as many kids as I can from having to experience that themselves."
>
> – *Lisa Ulrich, MD, pediatric pulmonologist and medical leader of the Asthma Core Team at Nationwide Children's*

"Looking ahead, we aim to partner with specialists to ensure routine co-management of our patients, recognizing that their limited availability makes it challenging for them to see every child on a quarterly basis," says Dr. Hersey.

In the ED, Dr. Andoh has research underway to support a change in the type of steroid used for exacerbations to try to reduce side effects and the number of doses required. Inpatient hospitalists aims to roll out non-ICU continuous nebulizer therapy to all eligible patients.

As family services grow across Ohio and early administration of steroids for exacerbations increases, inpatient admissions may drop even further.

"I have asthma, and my life mission when I chose to become a pulmonologist was to try to improve outcomes for kids with asthma," says Dr. Ulrich. "I know what it feels like to not be able to breathe due to your asthma and want to prevent as many kids as I can from having to experience that themselves."

With the Asthma Core Team hard at work, she may just see her dream come true. ■

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By the Numbers

33
members of the Asthma Core Team

>1,500
children capacity for SBAT thanks to a new grant

Length of stay decreased from
2.4 to 1.5 days
for asthma-related admissions

Universal Donor CAR NK Cells: A New Platform Technology for Cancer

A first-in-human study of universal donor CAR NK cells for acute myeloid leukemia could pave a path for a new approach to treating cancer.

written by Abbie Miller, MS, MWC

If you ask Dean Lee, MD, PhD, the new first-in-human trial to evaluate universal donor chimeric antigen receptor (CAR) natural killer (NK) cells in patients with advanced, high-risk acute myeloid leukemia (AML) is the intersection of right time, right place and right team.

The clinical trial, which received the safe-to-proceed approval from the Food and Drug Administration (FDA) earlier this year, represents several firsts in the field:

- First CAR NK cell created on the hospital's patented universal-donor NK cell platform
- First human trial featuring NK cells modified with the team's patented CRISPR and AAV approach
- Four novel assays developed to ensure quality and safety

These universal donor CAR NK cells were developed and are produced completely in house at Nationwide Children's Hospital.

"This trial represents the culmination of a lot of work over decades of my career," says Dr. Lee, director of the Cellular Therapy and Cancer Immunotherapy program at Nationwide Children's and The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute. "It also represents the tremendous work of my team and colleagues. The amount of skill and tenacity required to develop new therapies based on new techniques and technologies, then to develop the assays needed to ensure safety, and finally to manage the technology commercialization and regulatory aspects to get it to a first-in-human trial is just huge, and I'm grateful to work with individuals who are so dedicated."

Not only is the trial a milestone on its own, the research behind it establishes a new platform approach for treating cancer.

Back to the Beginning

More than 20 years ago, Dr. Lee started as a T-cell researcher making CD33 CAR T cells. When he moved to MD Anderson, he switched to NK cells after a twist of fate led him to a more effective approach to growing them in a lab — the approach that is still used today by researchers all over.

"I thought we'd just do the same things we were doing with CAR T cells to make CAR NK cells," he says. "But it didn't work. And eventually I moved on and focused on non-modified NK cells for about four years."

Then, he came to Columbus, Ohio, got interested in CRISPR and hired the team for the program. The rest, they hope, is about to make history.

Universal Donor NK Cells

NK cells are the innate immune system's first line of defense for viral infections. These white blood cells can act faster than T or B cells because they do not require prior activation or exposure to a target antigen to recognize and attack problematic cells. NK cells constantly circulate — patrolling — looking for potential tumor cells or infectious invaders.

Early in Dr. Lee's work with NK cells, he expanded cells

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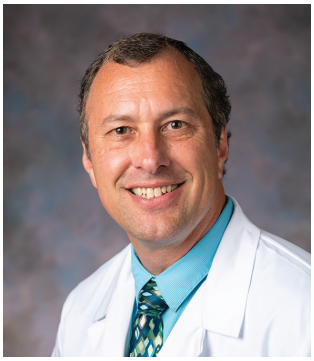


collected from the patient or a related donor, which were then given back to the patient after treatment to support immune function. These early studies showed that researchers can safely collect, expand and deliver NK cells to patients with cancer. But too often, the process of finding donors or collecting cells from sick kids or their family member and then expanding and delivering the cells took too long, and children grew too ill to receive the therapy.

These hurdles inspired Dr. Lee and others to question: Wouldn't it be easier if there was an off-the-shelf product that was ready to thaw and give to patients on demand?

The short answer is yes. And it is what Dr. Lee has accomplished with his universal donor NK cell program.

Though his research, he's identified what makes a good donor for NK cells, and working with the National Marrow Donor Program (NMDP), formerly known as Be The Match Biotherapies, he's developed a bank of cells that can be cryopreserved, banked and made available to patients when they need them.

According to Dr. Lee, about 1 in 20 individuals, or millions of Americans, could qualify as universal donors. Through the NMDP, donors are first identified by HLA type and KIR type. Additionally, optimal donors must have been exposed to cytomegalovirus, which leads to higher NK cell activity. Once donors are identified, a sample comes to Nationwide Children's for a final check of the donor's NK cell function.

After donor cells are collected at a collection center near their home, they need to be expanded. At the start, NK cells make up about 5% of the cells in the collected product from the donor. By the end of the expansion period, they make up 99%. The cells then go into cryo-storage for universal donor NK cell trials or move on to become universal donor CAR NK cells.

Working with the Nationwide Children's Biologics Manufacturing Resource, a GMP-appropriate manufacturing facility led by Lawrence Gazda, PhD, Dr. Lee established a manufacturing process that has supported five clinical trials to date. More than 1 trillion universal donor NK cells have been delivered to patients through the program.

"The beauty of these cells is that they don't have to match the patient to function well," says Dr. Gazda. "And we can make these weeks, months, potentially even years ahead. I am excited to think about the potential impact for patients."

Making CAR NK Cells

In 2017, Meisam Naeimi Kararoudi, DVM, PhD, joined Nationwide Children's as a postdoctoral fellow. Now, he is the director of the CRISPR/Gene Editing Core and a principal investigator in the Center for Childhood Cancer Research.

"Back when I started working with Dr. Lee, everyone in the field was trying to engineer NK cells using the traditional methods used for CAR T, including lentivirus, and they were failing," says Dr. Kararoudi. "The NK cell's job is to get rid of viruses, and lentivirus is the

> We greatly reduced the risk of random insertion into, or next to, normal healthy genes. Lentiviral vectors insert randomly in cells, potentially causing problems such as new cancers. The CRISPR AAV approach is site-directed, meaning the new gene only goes where we tell it to go."
>
> – *Meisam Naeimi Kararoudi, DVM, PhD, director of the CRISPR/Gene Editing Core and a principal investigator in the Center for Childhood Cancer Research at Nationwide Children's*

same type of virus that causes HIV. We decided to use a different approach."

He and Dr. Lee began working together to develop a new technique to manipulate the genes in NK cells. They landed on an approach that uses CRISPR to knock out one gene, followed by using adeno-associated virus (AAV) to insert another gene in its place.

"Once we were able to knock out a gene using CRISPR, we had an open place to knock in a new gene," says Dr. Lee. "This hadn't been done before at the time, and it was really motivating to see it work."

Leaning on Nationwide Children's long history of success developing AAV-mediated gene therapies, Drs. Lee and Kararoudi worked with experts in the Jerry R. Mendell, MD, Center for Gene Therapy at Nationwide Children's to adapt AAV systems for this approach.

The approach also solved another problem associated with using lentivirus.

"We greatly reduced the risk of random insertion into, or next to, normal healthy genes," says Dr. Kararoudi. "Lentiviral vectors insert randomly in cells, potentially causing problems such as new cancers. The CRISPR AAV approach is site-directed, meaning the new gene only goes where we tell it to go."

The CAR developed for the AML trial against CD33 and is inserted into the CD38 gene to make the CAR NK cell. CD33 is an important receptor found on AML cells. It is a common target of therapies treating AML, as nearly all (85-90%) AMLs express CD33.

In a paper published in *Blood* in 2020, the team showed that eliminating CD38 in NK cells enhanced the potency of daratumumab's (a human monoclonal antibody targeting CD38) cytotoxic effects against multiple myeloma *ex vivo*.

"The novel gene editing technique used for this approach increases both safety and efficacy," says Dr. Lee. "By knocking out the CD38, we enhance potency and potential for combined CD38 targeting. That is, any therapies targeting CD38 would not affect these CAR NK cells."

Go to page 34 to see the process from donor collection to patient administration.

Preclinical and Computational Studies

A key component of Dr. Lee's research program is the preclinical lab. Marcelo De Souza Fernandes Pereira, PhD, is a research scientist in Dr. Lee's lab.

"When it comes to the mouse experiments, I'm running everything behind the scenes," says Dr. Pereira, who started in the Lee Lab 6 years ago as a postdoc. "These are important models that enable us to use our experimental NK cell products and see how they impact tumor cells."

Dr. Pereira and the rest of the lab monitor the mice for decreases in tumor burden, using *in vivo* imaging to track tumor growth with luciferase. They also monitor for side effects such as cytokine storm, graft vs host disease and other toxicities.

"In our studies, we've seen very positive results using universal donor CAR NK cells," says Dr. Pereira. "When mice are treated with CAR T cells, we often see graft vs host disease and cytokine release syndrome, also known as cytokine storm. We don't typically see these

problems in mice treated with CAR NK cells, which makes us eager to see the results of the human trial."

In addition to studies in preclinical models, the trial is also built on data obtained from multiscale *in silico* modeling. In a preprint published in January in *bioRxiv*, Dr. Lee, Jayajit Das, PhD, and their graduate student Kun Xing use a model trained with quantitative flow cytometry and in vitro cytotoxicity data to predict the short- and long-term cytotoxicity of CD33 CAR NK cells against leukemia cell lines.

"Our model accurately predicted cytotoxicity across multiple CAR designs," says Dr. Lee. "This adds to our evidence supporting the product currently in the clinical trial. We can also extend the model to predict CAR NK activity across many different antigens and tumor targets, giving us another tool for future applications and studies."

Universal Donor CAR NK for AML

Margaret Lamb, MD, principal investigator of the universal donor CAR NK clinical trial and pediatric expert in the Division of Hematology, Oncology and Blood and Marrow Transplant at Nationwide Children's, and Dr. Lee have ongoing trials testing universal donor NK cells in patients with AML. Moving the universal donor CAR NK cells forward for this patient population is a logical next step.

AML occurs in all ages of children and adults, and 50 to 80% of people with AML achieve complete remission after treatment. However, about half of those who achieve initial remission will develop relapsed AML. For those with relapsed AML (it came back after remission) or refractory (it did not respond to first-line treatments), treatment options are limited.

"In ALL [acute lymphoblastic leukemia], we have CAR T cells and other immunotherapies, which have really revolutionized the outcomes. But so far, CAR T for AML hasn't been successful," says Dr. Lamb. "We do not yet have an effective cell therapy product for AML. But we feel strongly that this trial could move us a step closer to changing that."

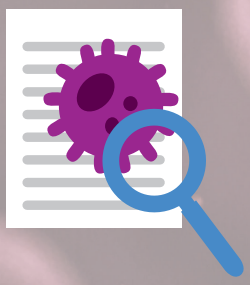
The lack of a CAR T option for AML creates a prime opportunity to use the universal donor CAR NK cell platform.

Drs. Lee and Lamb have several reasons for thinking that CAR NK cells may be better than CAR T cells for AML, all supported by previous studies of NK cells in AML and preclinical studies of the universal donor CAR NK cells:

- First, CAR NK cells and CAR T cells have similar effector functions, but the NK cell activating receptors plus the CAR-antigen recognition may enhance potency and minimize antigen escape.
- Additionally, using healthy donor NK cells does not carry the risk of graft vs host disease like donor T cells.
- Collecting cells from patients with refractory AML is challenging. AML cells can repress the function of the patients' own T cells, making them poor candidates for T cell collection and modification for an autologous CAR T product.
- Using healthy donor cells for the CAR NK therapy means that the product contains more fit and functional cells than those collected from sick patients.
- Cytokine reactions are significant concerns for CAR T cell therapy. However, these strong reactions have not been observed to the same degree in CAR NK cell studies.

"In ALL, we have CAR T cells and other immunotherapies, which have really revolutionized the outcomes. But so far, CAR T for AML hasn't been successful. We do not yet have an effective cell therapy product for AML. But we feel strongly that this trial could move us a step closer to changing that."

– *Margaret Lamb, MD, principal investigator of the universal donor CAR NK clinical trial and pediatric expert in the Division of Hematology, Oncology and Blood and Marrow Transplant at Nationwide Children's*



NK Cell Trials at Nationwide Children's and The Ohio State University

- **Studies involving universal donor TGF-beta imprinted NK cells for sarcoma, neuroblastoma, brain tumors, breast, melanoma, multiple myeloma and T-cell L/Ly.**
- **Universal donor expanded NK cells for relapsed/refractory AML in children and adults.**
- **Haploidentical expanded NK cells for AML**
- **More than 1 trillion universal donor cells delivered to participants in clinical trials.**

Learn more at NationwideChildrens.org/cell-therapy

"One reason we're so optimistic about the potential for CAR NK cells for AML is the low rates of cytokine storm produced by NK cell therapies," says Dr. Lamb. "We think this will make them better suited to AML."

Ensuring Safety, One Innovation at a Time

Dr. Lee's team has innovated every step of the process to develop the CAR NK cell therapy for AML and bring it to this point — even developing quality assurance tests.

One of the challenges with novel therapeutics is the need for new assays and tests to ensure their safety. The team needed to be able to confidently say that the product contained only the intended cells with the intended genetic alterations with the intended purity and concentration. Not only are these tests needed for the research process, but they also are essential to the regulatory processes required for moving discovery and innovation into the clinic.

Cecele Denman, MS, began working with Dr. Lee a decade ago at MD Anderson. At Nationwide Children's, she is the laboratory manager for the Flow Cytometry and Immune Monitoring Cores, which provide support for Dr. Lee's work. She developed the novel autonomous outgrowth assay that ensures that the NK cells haven't acquired any cancer potential before delivery to patients. This test is part of the testing required by the FDA.

Yasemin Sezgin, MS, is a research associate and lab manager in the Kararoudi Lab. She also developed assays for FDA and regulatory compliance. She developed a novel assay to ensure that the AAV has not become active in the cells, and that the cells have the correct number of copies of the transgene in the final product. In addition, she also helps interpret the test for on and off target effects that looks for chromosomal abnormalities after gene editing. The team developed this test in collaboration with the Institute for Genomic Medicine. Lastly, the team worked with KROMATID, Inc. and Cergentis, B.V. to develop assays that ensure that the CRISPR/AAV process inserted only the CD33 CAR and only in the correct place.

"We want to make sure that the final product has enough, but not too many, copies of the inserted gene in the cells," says Sezgin.

"Ensuring cell therapy products are safe, reproducible and high-quality is our focus," adds Denman. "It's how we promote the best possible outcomes for children and contribute to improved therapies for kids with cancer."

Enrolling Now

The non-randomized, open-label, dose-escalation study, began enrolling participants in August 2025.

Key inclusion criteria for the study include relapsed or primary refractory CD33+ AML including second or subsequent relapse or any relapse after hematopoietic stem cell transplant. Participants must have a HSCT donor identified, as the goal is to get the participants into remission and ready for transplant.

"CD33 is also present on normal myeloid cells," says Dr. Lamb. "We need to find out if this therapy increases risk for aplasia [failure produce blood cells]. This is one reason we need to have a HSCT donor identified for participants."

In addition to receiving the universal donor CAR NK cells, participants in the trial will receive the AML-directed reinduction regimen with venetoclax. Previous research shows that adding venetoclax enhances NK cell function, according to Dr. Lamb.

"This is a pediatric study, but because it is first-in-human, our first three patients at each dose escalation will need to be 16 years old or older," says Dr. Lamb. "After those initial doses, we look forward to including participants of all ages."

While this is currently a single-site study, Drs. Lee and Lamb both hope that a multisite opportunity will grow from this study.

"The off the shelf product and large-scale manufacturing makes a multi-institutional study feasible and could change the way we approach cell therapy," says Dr. Lamb.

Future Forward

The universal donor approach as a platform technology enables the development of off-the-shelf CAR NK cells targeting many different cancers. The team says they have developed more than a dozen different CARs targeting unique cancer antigens, and they recently received a large grant to pursue CAR NK cells for osteosarcoma.

"AML is just the beginning," says Dr. Lee. "It is an exciting time to work with CAR NK cells, and our universal donor program opens a lot of doors for multicenter collaboration. I can't wait to see what happens next."

"The off-the-shelf CAR NK cell product is truly revolutionary in that it supports an incredibly fast turnaround time for patients to be treated," adds Dr. Lamb. "We can go from consenting a patient for participation to infusion in a single day. That has the potential to change outcomes." ■

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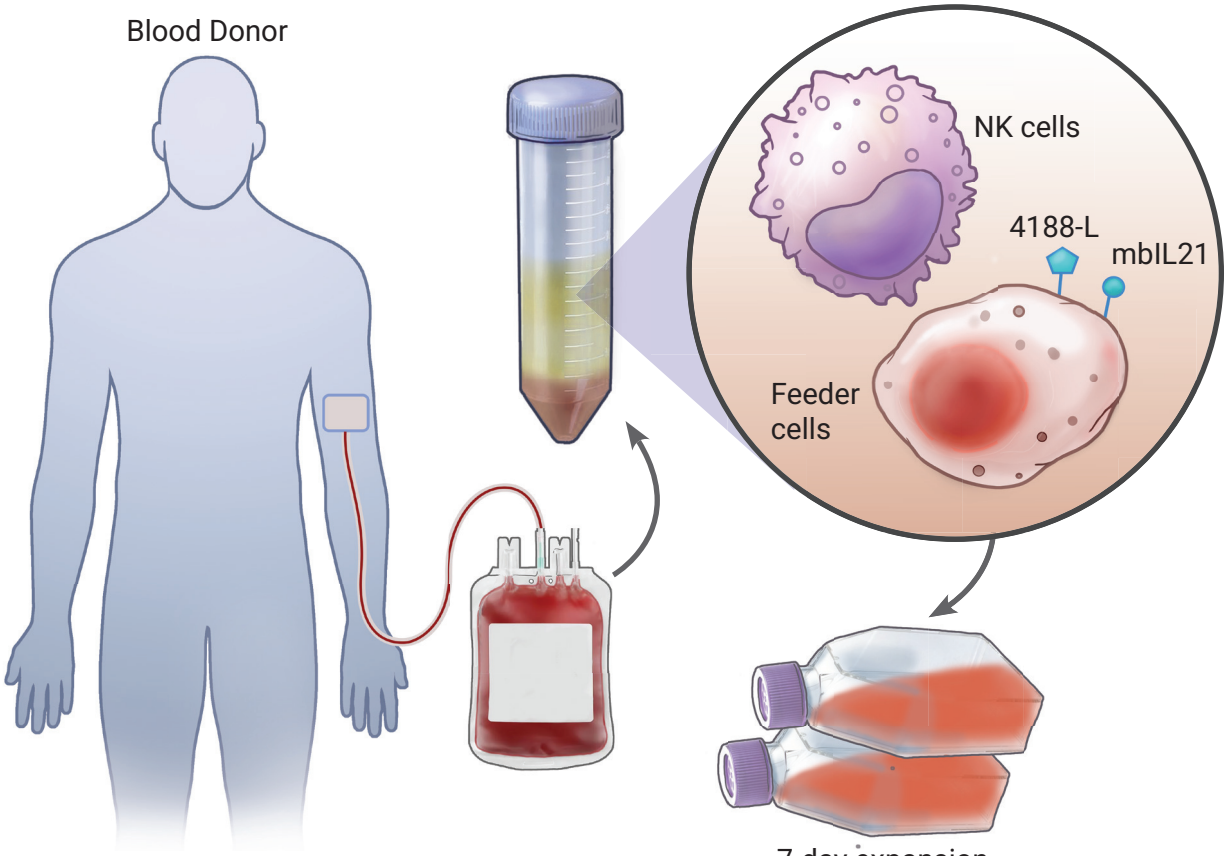
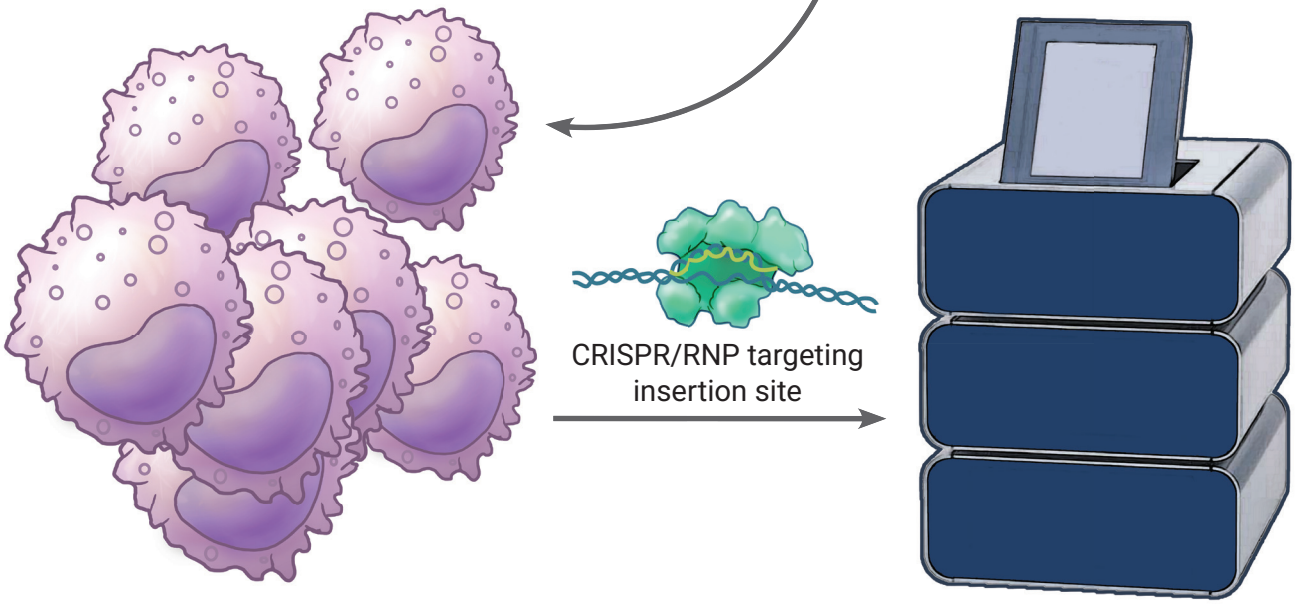
>
> – *Dean Lee, MD, PhD, director of the Cellular Therapy and Cancer Immunotherapy (CTCI) program at Nationwide Children's and The Ohio State University*

Making Universal Donor CAR NK Cells

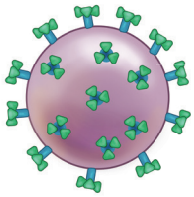


1. NK cells are collected and expanded.

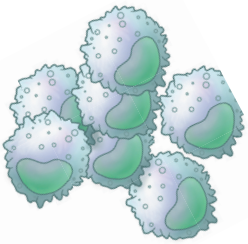


2. CD38 (or other selected gene) is knocked out using CRISPR.

3. CD33 (or other selected gene) is inserted via AAV.

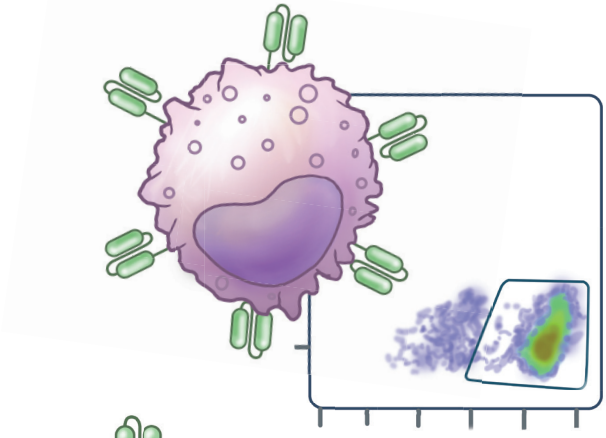


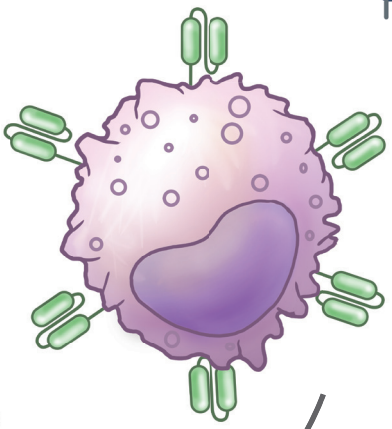
AAAV6 delivering CAR insert

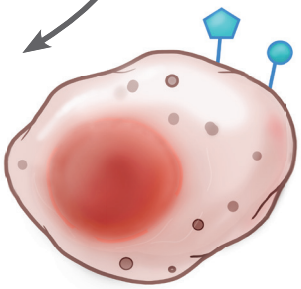


Electroporated NK cells

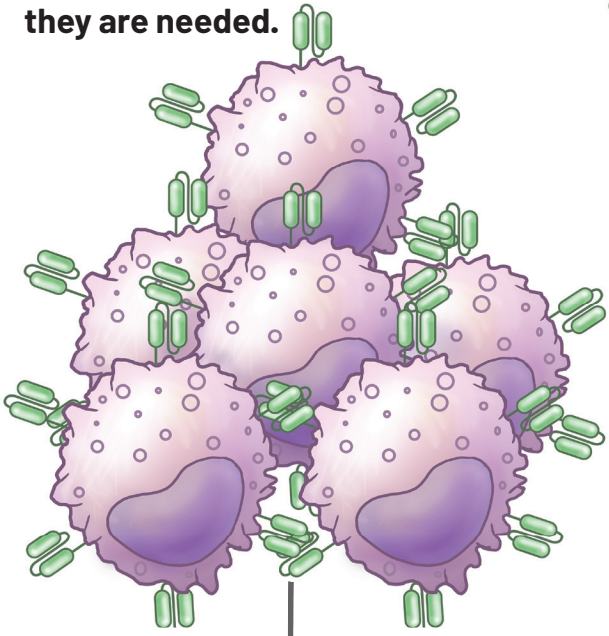
4. Knock-out and knock-in success is evaluated and cells are expanded an additional 14 days.





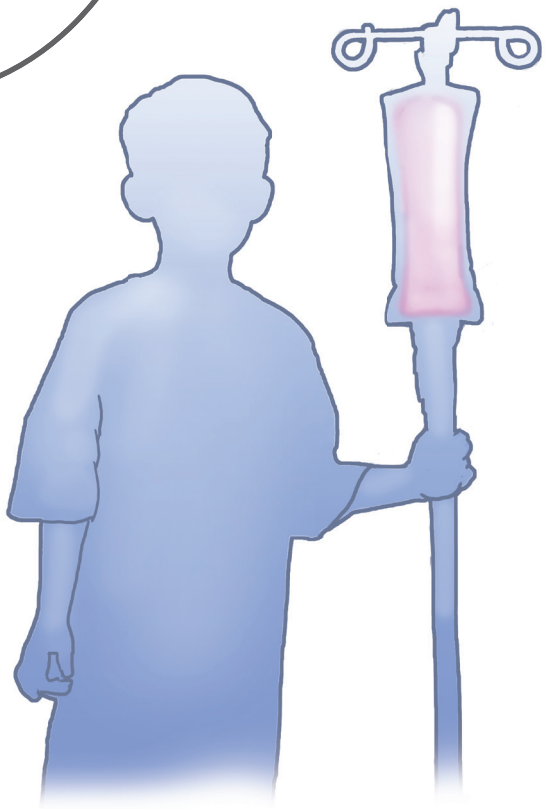


5. CAR NK cells are cryopreserved until they are needed.



Cryopreserved CAR NK cells

6. Patient receives off-the-shelf CAR NK cells on demand.



Cultivating Culture *in a High-Growth, High-Performance Organization*

Catherine Krawczeski, MD, chief medical officer and physician-in-chief at Nationwide Children's shares her thoughts on how to drive a positive, collaborative culture while pursuing academic and clinical excellence.

When you walk through the doors of Nationwide Children's Hospital, you can feel it: the energy, the sense of purpose and the collaborative spirit that make us so unique. At Nationwide Children's, our culture is not just a backdrop or window dressing; it's the very foundation of our organization. And it's a culture that makes me honored to be part of the leadership team.

So what do you call a culture that is immediately apparent to visitors, felt deeply by faculty and is the result of intention, collaboration and years of hard work? We call it *One Team*.

It's what draws many of our physicians, scientists and employees here and what keeps them here. Recruiting and retaining a health care workforce is one of the biggest challenges facing health care organizations everywhere. In this environment, culture is key.

Strength in Collaboration

Having worked and trained in exceptional academic medical centers throughout my career, I can confidently say that Nationwide Children's is the most collaborative place I've ever been. The spirit of collaboration is evident at every level, from our front-line staff and faculty to our trainees and management.

Examples of collaboration are found everywhere you look, but two outstanding examples are the March Metric Madness in primary care, which involves all team members in a friendly competition to improve priority quality improvement goals, and the PROMISE program in The Heart Center, which showcases our ability to work across teams to reduce cardiac arrests in high-risk patients after heart surgery.

Beyond special programs, clinician-scientists from different labs, centers and specialties routinely find ways to work together to improve care for patients through research. Nurses and physicians work with administrators and leadership to balance patient care and staffing needs and engage in quality improvement projects. And every day, we help each other in ways large and small.

Fostered Through Intention

A good organizational culture doesn't happen by accident. It requires intentional effort and a commitment to making it a priority. We work hard to promote professionalism and culture. Chief Wellness Officer Brandon Kozar, PsyD, MBA, participates in many divisional and organizational activities, including the Department of Pediatrics new chief mentoring program, Chiefs Learning Leadership. This program supports new pediatric division chiefs to develop knowledge and skills required to be effective through interactive presentations and roundtable discussions. It also fosters collaboration and collegiality among chiefs, as all division chiefs are invited to attend and participate in discussions.

We also appointed Ashley Fernandes, MD, as director of faculty professionalism. In this role, he expands his leadership work in ethics and professionalism with The Ohio State University College of Medicine, teaching

both reactive and proactive professionalism through coaching and educational sessions. These are things that physicians are not typically taught, but that are key to becoming effective collaborators and future leaders.

As Nationwide Children's continues to grow, we must remain intentional in our work to preserve this sense of community. This means creating opportunities for people to interact and build relationships. One way we've done this is by establishing a peer faculty coaching process. We invested in training an inaugural group of physician coaches last year, and now these faculty are available to coach peers for a variety of needs. Importantly, we don't view coaching as punitive. It's an important tool for professional development and growth.

Making It Personal

Our leaders are committed to leading by example and supporting professionalism and culture among their teams through leadership touchpoints. They also know that it's not enough for leadership touchpoints to simply occur; they must be personalized and meaningful. Our leaders genuinely care about our employees as individuals. They take the time to understand their needs, aspirations, and challenges. This level of care and attention fosters a sense of belonging and loyalty that is invaluable.

One of the most remarkable aspects of our culture is the way it empowers individuals. When people feel valued and supported, they are more likely to contribute their best efforts. They are more willing to share their ideas, take risks and innovate. This culture of empowerment leads to better outcomes for our patients and their families.

Facing Change and Achieving Excellence, Together

In the past 5 years, Nationwide Children's has gained about 5,000 employees. We've gone from 13,000 to nearly 18,000 colleagues and teammates. In a few short years, we'll be opening our second inpatient tower, and with its opening will come another expansion of our team. As we continue to grow, it is increasingly important to ensure that our core values and commitment to culture remain intact.

Our culture is the product of the people in all areas of the organization who are working tirelessly to ensure the best outcomes for children. We are committed to investing in our people and creating an environment where everyone can flourish. As we continue to grow and evolve, we remain dedicated to preserving and enhancing this culture and the people who make me so proud to be part of Nationwide Children's. ■

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FEATURED ONLINE EXCLUSIVES:

Streamlining Autism Diagnosis: How Electronic Health Record Tools Increased Early Identification and Referrals in a Primary Care Network

Elizabeth W. Barnhardt, DO, MAEd, developmental-behavioral pediatrician at Nationwide Children's Hospital and faculty member at The Ohio State University College of Medicine, and her team recently published a quality improvement initiative designed to improve the early identification of autism spectrum disorder (ASD) across a large primary care network. By embedding screening tools and clinical decision support into the electronic health record, the project helped increase both screening completion and referral follow-through — without adding burden to already packed well-child visits.

PediatricsNationwide.org/EHR-Autism

Dynamic Contrast-Enhanced Ultrasound for Renal Obstruction: A Feasibility Study

In a recent study, Bryan S. Sack, MD, chief of Pediatric Urology at Nationwide Children's Hospital - Toledo, and colleagues demonstrated the potential of dynamic contrast-enhanced ultrasound (DCEUS) to diagnose ureteropelvic junction obstruction or blockages where the kidney connects to the ureter. Their findings, published in *The Journal of Ultrasound in Medicine*, suggest that this imaging modality may provide a safer, more accessible alternative to traditional diagnostic approaches.

PediatricsNationwide.org/DCEUS-Study

Beyond the Bedside: Nurses Conducting Research to Transform Pediatric Outcomes

Nurses are vital to clinical research — supporting and conducting it. At Nationwide Children's Hospital, our nurse-scientists are leading the way, dedicated to advancing prevention, diagnosis and treatment of pediatric health conditions.

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