

Everything Matters In

Patient Care



*Technology
at Nationwide
Children's Hospital*



Technology, and how we use it in our patient care, is an important element of the Nationwide Children's Hospital strategic plan.

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Using Technology to Achieve Best Outcomes



Lee Ann Wallace
MBA, BSN, RN, NEA-BC
Senior Vice President,
Patient Care Services,
Chief Nursing Officer

We are more than halfway through our ambitious five-year organizational strategic plan with a focus on improving the health of the whole child through world-class care, cutting-edge research and integrating talent, quality and technology to achieve best outcomes. Through our strategic plan, we look to the future and plan for new programs, treatments and services, as well as additional capacity in our inpatient, emergency and surgical spaces that will accommodate the evolving growth and complexity of our patient populations.

As we kick off the design, development and construction of a new inpatient tower and Emergency Services Department, the needs and expectations of our patients, family, staff and providers are at the center. Teams representing each of the key stakeholders have participated in workgroups to imagine and plan for a facility and the technology and clinical care that will take us into the future. We know that many of our patients and families spend long periods of time with us. Their room is their home away from home, and as such, we need to plan and design patient rooms that are warm, welcoming, calming and comforting. The Nationwide Children's Hospital Neonatal Intensive Care Units, Pediatric Intensive Care Units and Hematology/Oncology units will be housed in the new tower. These acutely ill patients often require specialized equipment and technology. Technology is an important key element of our Nationwide Children's Strategic Plan, and the technology we embed in our new space should facilitate and create a healing experience for the patient and family. The new facility aims to enhance the care team's efficiency, improve safety, ensure quality of care and increase patient and family satisfaction.

For more than 130 years, Nationwide Children's Hospital has served the needs of patients and families in Columbus, in Ohio and beyond. This new expansion will continue the legacy and vision of our founders and enhance our commitment to the highest quality and safety supported by state-of-the-art technology and a welcoming facility.

STRATEGIC PLAN UPDATE

Recently, CEO Tim Robinson sat down with Lee Ann Wallace, Vice President and Chief Information Officer Denise Zabawski and Chief Human Resources Officer Lorina Wise to discuss the strategic plan and our progress. Visit [ANCHOR](#) and search "Strategic Plan Resources" to watch the recording.

Experiencing the Room of the Future

Rosie Goodman Pakalnis, Senior Communication and Organizational Change Strategist, Information Services





Nationwide Children’s Hospital has expanded our commitment to lead the *Journey to Best Outcomes* with a new 15-story tower to mirror our existing inpatient tower. Although the new building won't be finished until mid-2028, a dedicated group of team members from across the organization has already spent countless hours working with patients, families and staff to carefully and thoughtfully plan every inch of the new 850,000-square-foot space.

“This new tower is our chance to take something we already do well and do it even better. We can bring the incredible patient care we provide today to even more families,” said Ed Cheshire, Engineering Services senior project manager assigned to the effort.

The project team would like to take this opportunity to share our dreams for this new tower through some imaginary stories. Although the following stories and characters are not real, our job is to bring these experiences to life for real people in the new tower.

The hospital room of the future will be the perfect fit for staff and patients alike. Let’s explore our hopes for staff first.

My name is Annie and I’m a NICU nurse. Something special about the new NICU is how easy it is to find the materials, information and technology I need. When you first walk into the room, there’s a digital door sign that tells you about precautions or individual patient needs before you even enter the room. All are directly pulled from the patient’s electronic health record. I can get the whole picture and focus on caring for the child right away.

Each private NICU room features a computer mounted to the wall with an extendable arm and a nurse server under it. I can move the computer around to interact with the family and face the patients when I’m charting. The nurse server is mobile and it stores everything I need. The top of the cart has an extra extension surface to allow more bedside workspace, which is perfect for sterile line setups.

The team member experience is at the heart of the new tower’s design. Hailey Yost is the clinical liaison aligned to the project. She’s helped facilitate dozens of interviews with team members to understand what staff need and create the ideal staff experience, including representatives from the PICU, NICUs, child life, leaders and more. The project team even built full-size models of the new rooms and walked clinical staff through the models for feedback.

“We’re focused on creating a perfect balance of patient and family experience and staff experience,” Hailey said. “In our walkthroughs, clinical team members were very excited about what we’re doing for our staff and what we’ll be able to do for our patients.”

The new tower space has been meticulously planned. There are specific areas for tools and equipment that make sense to the people who need them. There are designated spaces for clinical teams to meet just outside the patients’ rooms so all the members of a patient’s care team can collaborate.

And this thoughtful planning extends to the staff-only areas as well. We know staff work tirelessly to make a difference in our patients’ lives, which can be physically and mentally draining, so there are safe spaces for physical and mental breaks. Staff



The project team built full-size models of the new rooms and walked clinical staff through for feedback.

break rooms will offer plenty of space and floor-to-ceiling views of the outside. Smaller, more private respite rooms will be equipped with comfortable seating and dimmable lights for staff to rest and recharge.

Now, let’s explore the patient and family experiences we’re dreaming of through some new parents.

Hi, we’re Jessie and Sam. We’re here at the NICU at Nationwide Children’s because our little baby Emma arrived six weeks early. Although she’s tiny, she’s so strong and such a fighter. This is an incredibly hard time for both of us – we’re under a lot of stress and we’re so nervous. But, we are so grateful for the outstanding staff and the little things here that are helping us focus on Emma and get through this.

Our room is our home away from home. We have a private room and bathroom, where we can all be together. We can lie back on the recliner and get skin-to-skin contact with her, or even spend the night on the sleeper sofa. There are outlets for our phone chargers and laptops so we can catch up on work and keep in touch with family. This room even has a place for our suitcase and a special locking drawer where we can tuck things away.

The big TV on the wall is a great distraction for us when we all need a mental break. Plus, our amazing nurse, Donna, was able to use it to show us special instructions to care for Emma when we get home. The information and videos we watched are all connected to our online medical chart so we can pull it up at home if we need a refresher.

Every single decision we are making as we build the room of the future has been made with a patient experience like this in mind. When a child needs a hospital, we know the family is under extreme stress. They need a space where they can truly get involved in their child’s care and work toward the goal of going home.

The project team has interviewed patients, families, volunteers and the Family Advisory Council to carefully consider every element of the room to support patients and families. Even the placement of light switches on the walls has been carefully considered to accomodate the placement of crucial tools like diaper scales.

applications that are intuitive and reliable – allowing staff to focus on the children in our care instead of tech support.

Let’s examine some other ways to use the tech in the room of the future through the eyes of a young patient.

My name is Abdi and I’m seven years old. Me and my family are from Somalia. I’m sick, so I’m staying at the hospital. This hospital is really pretty – it kinda looks like my favorite library. My room has a nice big TV that I can use to play my games I brought from home. It does hospital stuff too, like tells me all about my doctors and nurses. There’s an iPad I can use to do everything, like watch videos on the big TV, play music, order my food or call my nurse, Max.

Sometimes, we even use the TV to call someone who speaks Somali to help my mom and dad talk about complicated stuff with the doctor. It’s so cool, it’s like they’re right there in my room. The camera follows whoever’s talking!

We’re creating a room that feels warm, welcoming and familiar. The artwork and décor elements are bright and beautiful, mirroring the natural and colorful design of our existing tower. The technology in the room doesn’t get in the way. It can be used to entertain, educate and connect to the outside world.

“It’s clear that the room of the future is a high-tech room with a low-tech feel. It allows people to take care of people,” said Denise Zabawski, vice president and chief information officer.

The technology that will be used in these new rooms was chosen after an extensive search based on what it can do to create the best experience for people. It will enable virtual clinical care like virtual consults and virtual rounding and connect patients to family members who cannot be there in person. And of course, every detail is considered, from accessible controllers that can be used by all children to mounting speakers at the level of the child in the bed so they can be included in conversations.

The room of the future is a place where *Everything Matters* is brought to life. It’s a space where team members, patients and families have a smooth, welcoming experience. It’s a reflection of the love and care of the project team, the leadership team, the many staff who were interviewed and the many patients and families who have been involved in its development. Thank you for allowing us to share our vision with you.

Nurses and Evidence-Based Practice Changes

Cathleen Opperman, DNP, RN, NPD-BC, EBP-C, NEA-BC, CPN,
Evidence-based Practice Nurse Specialist, Center for Nursing Excellence

In early 2023 the Center for Nursing Excellence (CNE) introduced a new role, the Evidence-based Practice (EBP) Nurse Specialist. The primary responsibilities of this role are to teach and mentor nurses in clinical inquiry, particularly in evidence-based practice. This article is a report on the initiatives the EBP Nurse Specialist has consulted on to date.

To capture the key information of each nurse-driven EBP initiative in the organization, a database was developed and is routinely updated. This database not only demonstrates the work being completed, but is also used for:

- 1) Linking persons from similar inquiries
- 2) Recording deliverables from each step in the EBP process
- 3) Tracking the progress of practice changes

The Clinical Inquiry database has a total of 45 EBP initiatives recorded for the first 18 months of this role. Some initiatives were partially completed before contacting the CNE EBP Nurse Specialist and only needed help with implementation and dissemination. Other initiatives came to the EBP Nurse Specialist at the beginning steps, were completed with coaching and are currently working on disseminating the outcomes. Many other initiatives are in the early stages of the process.

Since EBP involves implementing a practice change when there is evidence to indicate a better way of doing something, it is essential to measure whether the change made the problem better, worse, or unchanged here at Nationwide Children's Hospital. We can categorize the outcomes measured in these practice change initiatives into patient, employee and organizational outcomes. Examples of patient outcomes include hemoglobin A1c levels, volume of human milk at discharge or patient events. Employee outcomes may include knowledge levels, certificate completion, burnout scores or self-reported learner comfort levels. Organizational outcomes may be looking at the number of patients/families recognizing staff, reported leadership accessibility or student experiences.

The plan with each inquiry effort is to improve practice and spread positive change to other units, settings and organizations. With 19 initiatives in the dissemination phase, the EBP Nurse Specialist is coaching individuals and groups to publish internally (e.g., “Everything Matters in Patient Care”) and present at podium opportunities like Nursing Grand Rounds. Both opportunities spread ideas for best practices within the organization. Additionally, individuals and groups from these initiatives are coached to submit abstracts for larger conference presentations and write for peer-reviewed publications.

Nurses at Nationwide Children’s do incredible work to better the lives and health care experiences of children and their families. Recognizing this work, helping to navigate the process, coaching teams to simplify the effort and capturing the work in a database are some of the many rewards in this new role as the EBP Nurse Specialist.

Snapshot of Clinical Inquiry Initiatives March 2023 - Present	
Total Number of EBP Initiatives	45
Initiatives for School Projects (e.g., graduate nursing degrees)	16
Different Areas Involved in the Combination of Initiatives	48
Consultations Initiated with CNE in the First 6 months of 2024	14
By Status of Initiative	
Currently Active	23
Inactive or Paused	3
Completed and in Dissemination Phase	19
By Role Initiating the Inquiry	
Nurse Educators	8
Advanced Practice Registered Nurses	15
Nurse Managers/Clinical Leaders	7
Clinical Nurses	12
Other nurses (Supervisor, Infection Preventionist)	2
Respiratory Therapists	1
By Type of Intervention Implemented	
Patient Education	8
Employee Education	33
Document Changes (e.g., Policy, Epic, etc.)	11
Current Evidence Indicated No Necessary Practice Change	2
Changes Not Determined Yet	8
By Outcome Type	
Patient Outcomes	11
Employee Outcomes	21
Organizational Outcomes	8
Outcomes Not Determined Yet	4
By Dissemination Pathway	
Internal - Nursing Grand Rounds	12
Internal - Nationwide Children's Publication	2
External - National or Regional Conference	5
External - Peer-reviewed Publication	3

Combining Forces: Bringing Magnetic Resonance Imaging and the Operating Room Together

Christopher Gerity, MPH, RT(R)(MR)(CT)MRSO(MRSC™), MRI Team Leader
Nicole Evans, MSN, RN, CNOR, OR Program Manager



Nationwide Children's Hospital positions itself to bring the best technologies to our patients. Areas where these technologies are on display, highlighting patient safety and improved patient access, are our operating rooms (OR) and Magnetic Resonance Imaging (MRI) spaces, specifically the new OR 14 and adjoining MRI scanner. In April 2024, we reopened OR 14 with a new and improved space for our surgeons and we attached a new 3 Tesla (T) MRI scanner. This created what we like to call our new intraoperative MRI suite. The ceiling-suspended, rail-guided combination IMRIS™ suite concept brings the MRI machine to the patient, not the patient to the machine. This is not new to Nationwide Children's but there are marked improvements on both sides of its sliding wall.

The new suite provides advances in MRI technologies that improve patient access by reducing the time it takes to perform an MRI scan and increasing the types of scans being performed. The previous version of the IMRIS™ suite, OR 11 and its adjoining 1.5T MRI scanner, lacked the capabilities of other MRI scanners throughout Nationwide Children's. The stronger Tesla magnet and new software allow for higher-resolution images and shortened MRI scan times. Our technologists and radiologists also have access to additional MRI coils and sequences specific to various body parts and pathologies resulting in higher quality images for diagnosis and planning. The less time a patient spends in the MRI scanner equals less time under sedation.

A unique feature of the new MRI scanner that also promotes patient safety is that it physically rotates on its central axis.



This means that while scanning diagnostically our MRI technologists and anesthesia personnel have a direct view of the patient. Then when the MRI scanner needs to move into the OR, the 10.4 metric ton scanner rotates 90 degrees to fit over the patient on the operating table. Another expanded capability of the new IMRIS™ suite is minimally invasive procedures can be performed using MRI assistance in the MRI suite itself. Using MRI-safe or conditional tools, surgical teams can perform minor interventions on their patients right in the diagnostic bay, without needing to move the magnet into the OR. This was accomplished with the installation of an additional head wall and by equipping the scanner with the ability to perform real-time imaging using conditional viewing monitors for needle guidance and placement.

In addition to updating the MRI magnet, OR 14 integration was upgraded which is vital for optimizing workflows using technology. OR integration includes cameras, monitors and routing systems. With the upgraded OR integration, the new suite is equipped with five 4K monitors, providing the surgeon with enhanced image viewing during the surgical procedure. To further assist with imaging, we added three more camera views and multiple routing options for staff.

Along with OR integration, boom system technology was upgraded. The boom system and the OR integration are tied together by a five-stack design. This allows for mobility of



the screens in the OR as well as the equipment. 360-degree access was incorporated to allow for better workflows within the OR. Recently the Ohio Legislature passed a law requiring surgical smoke evacuation in all ORs. Because of this legislation and prioritizing patient and staff safety, the upgraded boom design and technology was customized to allow for safe surgical smoke evacuation. These boom design changes result in increased safety and accessibility and a simplified workspace.

Another large safety improvement is the addition of a wireless router. The wireless router now allows multidisciplinary teams to utilize Vocera™ to enhance communication. The old suite did not have the wireless router technology, rendering Vocera™ ineffective. Additionally, the wireless router ensures that other technologies used in OR 14 can be wireless and on par with the rest of our ORs. This creates better and more consistent workflows for the staff by allowing them to stay in the OR with the equipment and the patient.

Technology plays a major role in patient safety and staff satisfaction. Even though designing a technologically advanced hybrid OR/MRI suite is not easy, the planning has paid off. Staff utilizing these rooms have been pleased with the technological and safety improvements, making it easier for them to focus on patient care and providing the best patient outcomes.



Aquapheresis: Supporting Best Outcomes for Some of Our Smallest Patients with Acute Kidney Injury

Stephanie Peters, MS, CPNP-PC/AC, Division of Nephrology and Hypertension

Acute kidney injury (AKI) has become increasingly recognized in hospitalized pediatric patients around the world. AKI happens for many reasons but can ultimately lead to a buildup of toxins and fluid in the body, leading to respiratory distress, compromised cardiovascular function and neurological complications. AKI of any degree is estimated to occur in 26% of hospitalized pediatric patients, with 14% being moderate to severe. Patients with severe AKI often require dialysis when the kidneys are unable to do the work alone.

Aquapheresis is a form of dialysis that offers a means to provide kidney support therapy (KST) to infants as small as 2.5 kilograms in weight.

Aquapheresis is a form of dialysis that offers a means to provide kidney support therapy (KST) to infants as small as 2.5 kilograms in weight. This therapy was first offered at Nationwide Children's Hospital in 2021 and uses a machine originally created to remove fluid in adults with heart failure. The aquapheresis machine was modified to provide clearance in addition to fluid removal so it can remove toxins and manage electrolytes in infants weighing less than 8 kilograms. An aquapheresis circuit holds only 33 milliliters of blood, which circulates outside the patient's body. Before the advent of aquapheresis, it was challenging to safely provide dialysis to infants due to their small size in relation to the bigger machine typically used for KST. The larger machine requires more of the patient's blood to circulate outside the body, which can lead to severe hypotension and other adverse effects. Because the entire aquapheresis circuit is so small, infants can better tolerate the procedure as compared to when the larger machine is used.

KST in any capacity can be a high-risk procedure, but when dealing with patients who are critically ill in the ICU, the risk is even greater. When deciding on candidacy for aquapheresis, a comprehensive assessment of risks versus benefits guides clinical decision-making, ensuring the safety and efficacy of the procedure. Close monitoring of vital signs, electrolyte levels and hemodynamic parameters during the procedure is essential to promptly identify and address any adverse events. In caring for patients on aquapheresis, it is important to work closely with the critical care team to help ensure that this happens and that the teams and families feel comfortable with the therapy. We round daily with intensive care physicians, advanced practice providers and nurses, as well as a pharmacist and registered dietician. Interdisciplinary collaboration is imperative to providing safe care to patients receiving aquapheresis.

While aquapheresis offers a valuable therapy, it requires a comprehensive approach to risk management. By prioritizing patient safety and using a One Team approach, we can optimize the benefits of aquapheresis while minimizing potential risks in achieving our goals for best outcomes for even our smallest of patients.

Revolutionizing Patient Safety: The Role of Simulation in Infusion Pump Integration in Pediatric Hospitals

Andrea Pifer Manning, DNP, RN, MBA, NEA-BC, Vice President, Clinical Services
Cheryl Camacho, MBA, CHSE, EMT-P/I, FSSH, Director of Simulation and Outreach Education





The project's results highlighted various benefits and challenges associated with infusion pump interoperability. A primary advantage was enhanced documentation accuracy, crucial for maintaining high patient safety standards.



The Institute for Healthcare Improvement (IHI) developed the quadruple aim framework to optimize health system performance by improving care, population health, reducing per capita costs and enhancing the clinician experience. This framework represents a significant shift from volume-based to value-based health care, emphasizing the importance of quality improvement and cost reduction. This paradigm shift has pressured health care organizations to enhance service quality while simultaneously reducing operational costs. As the landscape of patient care equipment and technology evolves rapidly, safe and effective evaluation methods are essential to ensure patient safety and operational efficiency. Simulation has emerged as a crucial tool for testing new technologies in healthcare without exposing patients to real-world risks.

Simulation is revolutionizing various aspects of health care, including medical training, patient care and system optimization. By providing realistic environments for health care professionals, simulation enables practitioners to practice and refine their skills, enhance clinical competency and engage in interdisciplinary training. It also aids organizations in optimizing processes and improving system efficiency. This project aimed to validate the integration capabilities of syringe and large-volume infusion pumps within specific organizational workflows, particularly in pediatric hospitals where these pumps were previously unused.

The hospital's commitment to innovation and patient safety is evident from its achievements, including an 85% reduction in medication errors over the past decade. The strategic use of simulation technology by the hospital ensures rigorous evaluation of new health care delivery approaches before their clinical implementation, thereby maintaining high standards of patient safety and care quality.

METHODS

The project's initial phase involved forming a stakeholder group comprising representatives from various departments, including pharmacy, nursing informatics, information services, supply chain and biomedical engineering. This diverse group was tasked with determining the project's feasibility and scope. Project managers were assigned to oversee the process and a comprehensive governance structure was established to guide the simulation kick-off in January 2023. The governance structure included various teams such as the leadership team, project management team, core project team, extended team, vendors and contributors with participation from executive and bedside staff from multiple departments.

Subject Matter Experts (SMEs) were recruited from the hospital's inpatient Epic® Super User team. Unit leaders played a crucial role in facilitating staff availability for training sessions. SMEs were required to complete a vendor-designed computer-based training (CBT) module before participating in educational classes and simulations. The training program included classroom sessions, vendor-provided videos and hands-on practice with the pumps and Electronic Medical Record (EMR) system while walking through specific scenarios.

Seven simulation scenarios were meticulously crafted to mimic common nursing workflows. These scenarios allowed participants to demonstrate successful pump programming and compliant EMR documentation. The simulations took place in a testing environment designed to replicate actual patient care rooms, with specific patient profiles built for the simulation to ensure realistic practice conditions.

RESULTS

The project's results highlighted various benefits and challenges associated with infusion pump interoperability. A primary advantage was enhanced documentation accuracy, crucial for maintaining high patient safety standards. The integration capabilities of the pumps significantly improved the accuracy of medication records, largely due to auto-documentation features, which minimized manual data entry errors. Reducing reliance on manual documentation also alleviated the burden on nursing staff, allowing more focus on direct patient care.

Additionally, the project showed that pump integration could enhance medication administration safety. Automatic programming, where the order from the EMR is sent directly to the pump, eliminates the need for manual programming. Staff gave examples of preventable medication administration events such as entering the wrong concentration, giving a bolus of the wrong fluid by inverting rates (such as total parenteral nutrition [TPN] and lipid rates), programming the incorrect rate or forgetting to unclamp an intravenous line. These errors are avoidable with interoperability. Auto-documentation is another benefit and ensures accurate and up-to-date information for health care providers, facilitating better monitoring and reducing medication errors. Specifically, the system's ability to track and document each step in the medication administration process helped ensure adherence to the five rights of medication administration: the right patient, drug, dose, route and time. This precision is particularly important in pediatric settings where dosing errors can have severe consequences.

Despite these benefits, several challenges were identified. One significant issue was communication delays between the pump and the EMR system due to the speed of the wireless network. Addressing these delays is critical for seamless operation. While integration added value in terms of accuracy and safety, it also introduced additional steps in the medication scanning process making it seem more time-consuming for the SMEs. Concerns about over-reliance on automation, potentially impacting the five rights of medication administration thoroughness, were also noted. Ensuring staff remain vigilant and not overly dependent on automation is essential for maintaining high standards of care.

The project successfully demonstrated the use of simulation to validate the integration capabilities of syringe and large-volume infusion pumps in a pediatric hospital setting. The findings indicated that the new infusion pumps met the technical requirements for EMR integration and interoperability, thereby improving documentation accuracy and medication safety.

Other challenges noted included discrepancies in administration values due to differing rounding logic between the EMR and pump, potentially leading to confusion and errors in medication dosing. Standardizing the rounding logic used by both the EMR and pump systems was essential. Another issue was the need for mobile solutions to address workflow inefficiencies, providing greater flexibility and ease of access, and allowing health care providers to manage and monitor medication administration more effectively.

Feedback from participants indicated mixed perceptions regarding the system's ease of use, efficiency and time-saving potential. Many acknowledged that the integrated system was safer but did not necessarily find it easy to use or more efficient. This feedback underscored the importance of thorough change management. Communication strategies with the staff emphasized the purpose of integration was to enhance medication administration safety and not to make medication administration a faster process. Extensive testing and training were identified as critical for the successful full-scale implementation of the integrated pumps. Proper training would help address initial resistance to change and ensure that staff were confident and proficient in using the new technology.

While integrating syringe and large-volume pumps presented challenges, the overall benefits of improved documentation accuracy and medication safety were significant. The project underscored the need for comprehensive planning, thorough training and effective change management to ensure the successful implementation of new healthcare technologies. By addressing identified challenges and incorporating user feedback prior to implementation, the hospital can optimize the integration process, ultimately enhancing patient safety and care quality.

DISCUSSION

The primary aim of the project was to utilize simulation for the design, development and assessment of an innovative product before its clinical implementation. Despite focusing on common workflows, the pilot project highlighted the need to test more complex workflows before implementation. Examples of these complex workflows include insulin drips and chemotherapy administration which present unique challenges and require rigorous testing to ensure safety and efficacy. Future considerations should include ensuring the full integration of pump interoperability in various clinical contexts, addressing Wi-Fi speed barcode procurement issues and updating policies to align EMR and pump functionalities.

Lessons learned from the simulation project itself included engaging the hospital's Nursing Education Informaticists (NEI) earlier in the project. Coordinating end-user training and simulation sessions before the staffing schedule is released will ensure protected training time, leading to increased staff participation and clearly defined roles and responsibilities of the project team. Ensuring that all stakeholders are adequately informed and involved from the outset will enhance the project's success and facilitate a smoother implementation process.

CONCLUSION

The project successfully demonstrated the use of simulation to validate the integration capabilities of syringe and large-volume infusion pumps in a pediatric hospital setting. The findings indicated that the new infusion pumps met the technical requirements for EMR integration and interoperability, thereby improving documentation accuracy and medication safety. This aligns with existing literature supporting the use of simulation for safely testing new healthcare technologies. The project underscored the importance of addressing identified challenges and incorporating feedback to ensure successful implementation in clinical settings. Future projects should build on these insights to further enhance the integration and efficacy of health care technologies, ultimately contributing to improved patient outcomes and health care system efficiency.

Pain Management Technology in the NICU

Teresa D. Puthoff, PharmD, BCNSP, Advanced Patient Care Pharmacist – NICU, Department of Pharmacy Services

Since 2010, Nationwide Children's Hospital NICU has used a structured post-operative analgesia guideline that provides multi-modal analgesia recommendations with initial starting doses of opioid and acetaminophen based on surgeon assessment of the potential of the surgical procedure to cause varied levels of pain. This guideline provides sufficient analgesia at a time when assessment of pain was considered the "fifth vital sign." However, an FDA communication safety alert, published in 2017, advised medical practitioners to minimize exposure to anesthetics and sedatives in children younger than 3 and provided the impetus to explore additional methods of analgesia delivery.

Members from neonatology, surgery, anesthesia, pain team, pharmacy and nursing met to discuss the implementation of a new regional analgesia (RA) service in the NICU. Eligible procedures for this therapy include weight > 2 kg, 24-hour surgery notice and open thoracic, abdominal or genitourinary cases, and/or presence of opioid tolerance. Use of RA resulted in a reduction of opioid use from a baseline of 5.1 mg/kg IV MME (morphine milligram equivalents) to 1.1 mg/kg IV MME over approximately a one-year timeframe. The average time to extubation was 45 hours in the baseline period and 19.9 hours in the intervention group. After interventions, 75% of infants were extubated in the OR, as compared with 10.5% in the baseline period.



In 2020, a structured process for implementation of nurse-controlled analgesia (NCA) began using RA eligibility criteria. Once a surgical plan was identified, the pain team was consulted to identify the mode of post-operative analgesia (NCA or RA). This implementation was successful and opioid requirements were reduced from a baseline of 5.1 mg/kg IV MME to 3.48 mg/kg.

In 2023, a process for the use of wound catheters for neonatal patients who weigh greater than 2 kilograms was developed. A wound catheter infuses local anesthetic directly into the surgical site. The catheter is connected to an anesthetic infusion and delivered via an epidural pump. Patients who are post-operative from an abdominal, urologic or colorectal surgery and are not candidates for regional analgesia are eligible for wound catheter placement. Patients may also have an NCA pump as well as a wound catheter if indicated. The impact on opioid requirements has not been assessed yet.

Through our initiatives, we have demonstrated that epidural catheter and NCA placement in appropriate patients can reduce opioid need by 30-78% and reduce the duration of post-operative mechanical ventilation in the neonatal population.

Livingston Orthopedic & Surgery Center

Jayme Williamson, RN, MBA, Service Line Administrator
Amy White, MSN, RN, CNOR, Nurse Director of the Livingston Surgery Center

In July 2024, Nationwide Children’s Hospital opened the doors to a new innovative center dedicated to high-quality, multidisciplinary care of patients. The Livingston Orthopedic & Surgery Center (LOSC) is a facility that combines all aspects of care, collaboration and research in a single location, all to provide advanced, patient-focused services.

ASSISTIVE TECHNOLOGY CENTER

The Assistive Technology Center (ATC) includes Occupational Therapy, Physical Therapy, Speech-Language Pathology and our Multidisciplinary Physical Medicine and Rehabilitation Seating Clinic. Assistive technology (AT) can be an item, piece of equipment or product that can be used to maintain or improve the functional capabilities of individuals with disabilities. AT can be used to support a child’s abilities in a variety of areas, like mobility, communication, social participation, self-care, health management and leisure activities.

CEREBRAL PALSY CLINIC

The Cerebral Palsy (CP) Program takes a holistic approach to care, factoring in the physical, mental and family needs of everyone seen in our clinic. The team collaborates with the family and begins the process of making a family-centered, evidence-based and individualized care plan. The care plans include each provider’s recommendations and goals; who will do it and how it will be done; and expected outcomes. Nursing and care coordinators complete the care plans and send them to your family, primary care provider and other relevant agencies. The care plan is available electronically and provides a road map for next steps in care.

As children mature into adulthood, the team works with families to help individuals with CP develop the skills needed to become informed, independent, healthy adults. At age 22, we begin seeing patients in the Adult Cerebral Palsy Team clinic to continue interdisciplinary specialty care.

ORTHOPEDIC CLINICS

The Orthopedic Team specializes in diagnosing, evaluating and treating problems of the musculoskeletal system, trauma and fractures, scoliosis and other spinal abnormalities in children of all ages. The comprehensive clinics at this location are:

- Center for Comprehensive Spine Care
- Center for Hip Preservation
- Center for Limb Lengthening and Reconstruction
- Hand and Upper Extremity Program
- Center for Orthopedic Oncology
- Limb Differences Clinic

A procedure room with on-site musculoskeletal radiologist, fluoroscopy capabilities and Radiology services such as plain film, MRI, EOS imaging and point-of-care ultrasound (POCUS) are available.

The Honda Center for Gait Analysis and Mobility Enhancement (Gait Lab) along with the new Spine Motion Lab are in the LOSC. The Gait Lab offers children and adults with mobility limitations, spinal conditions, neuromuscular disorders and congenital and acquired limb conditions access to in-depth analysis of their gait and motion. The equipment is used to provide detailed information about how patients walk, where they place their weight, how their spine moves, how fluid their motions are, how muscles work and where there may be opportunities to improve.

OUTPATIENT SURGERY CENTER

The LOSC will house a new Surgery Center for both general and dental surgeries. The Livingston Surgery Center provides efficient, high-quality care for surgical patients who are having a routine procedure that will not result in an overnight stay at the hospital. The new center boasts four Operating Rooms (OR) and four Dental Surgery rooms, with the capacity for future expansion into two additional shelled OR spaces and two MRI suites.

Patients and families visiting our Livingston Surgery Center can expect a state-of-the-art surgical experience, coupled with the convenience and amenities one would expect in a surgery center location, including convenient on-site parking, state-of-the-art surgical and dental operating suites, comfortable waiting areas and a vestibule where families can pull up to the building to pick up their child.

RHEUMATOLOGY

The Rheumatology clinic provides comprehensive care and consultation services for children with suspected or definite rheumatic diseases and non-surgical musculoskeletal problems.

SPORTS MEDICINE SPECIALTY CLINICS

Sports Medicine works with the patient, family, athletic trainer, coach and primary care physician to assist in the recovery of the injury by developing a treatment plan and recommending future sports activities.

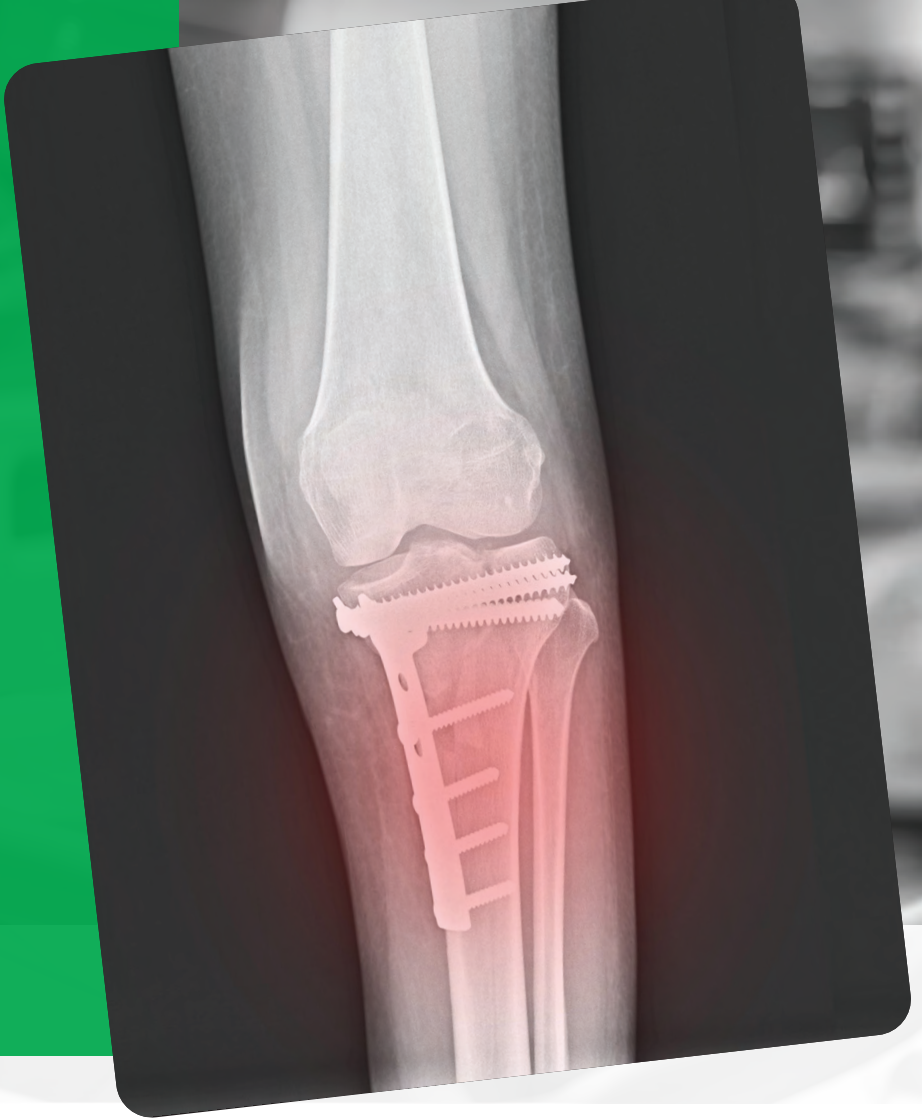


The Adaptive Sports Medicine program is a joint venture of the Departments of Sports Medicine and Orthopedics. Participation in sports offers important benefits, such as physical fitness, social interaction and mental well-being, to everyone – but these advantages may be particularly significant for young people with physical disabilities. Our experts offer children, adolescents and young adults with physical disabilities a host of tailored resources to help them enter and excel in athletics confidently and comfortably.

The Sports and Ortho Physical Therapy Department is located within the 11,000-square-foot rehabilitation gym. This space has a 2,700-square-foot turf space, a gymnastic tumbling space, a performing arts studio with a dance floor and an adaptive rehab area



Although the research study has not been finalized, the results are promising. Patients appear to benefit from the engagement and distraction of the VR environment, with less anxiety and fewer negative, maladaptive responses. Overall, the accessibility of virtual reality technology in Orthopedics fostered best outcomes for patients by mitigating discomfort and anxiety experienced during external fixator cares.



Virtual Reality Immersion: Leveraging Technology to Improve Orthopedic Patients’ Experiences

Mackenzie Cannon, Certified Child Life Specialist, Family and Volunteer Services

Technology can be an effective tool in mitigating perceived pain and anxiety during medical procedures for pediatric patients. Invasive health care encounters can have lasting adverse effects on children, including posttraumatic stress symptoms, negative reactions and noncompliance during subsequent medical visits (Sanchez, et al., 2018). Maladaptive coping as a result of poor psychological adjustment can complicate and prolong recovery from complex orthopedic procedures; a significant percentage of children who undergo these treatments experience anxiety and depression (Hrutkay & Eilert, 1990). The integration of virtual reality (VR) as a non-pharmacological strategy is an innovative way to counteract these negative outcomes in the pediatric population.

Several outpatient orthopedic clinics at Nationwide Children’s Hospital have implemented virtual reality as a distraction technique to reduce pain and anxiety associated with treatments such as fracture management, pin removal and cast application and removal. One group in particular, the team at the Center for Limb Lengthening and Reconstruction (CLLR) is conducting a research

study on the impact of virtual reality immersion with patients who require adjustments to the external fixation hardware used following limb reconstruction surgery. This hardware, or frame, includes pins that go through the skin and into the bone. Metal rings and braces provide stability. Understandably, the anticipation of pain as well as the appearance of the equipment used for these procedures can elicit coping difficulties for patients and caregivers.

The course of treatment for limb reconstruction (as well as many other orthopedic conditions) requires multiple outpatient appointments for hardware adjustments, pin site care and dressing and cast changes, all of which can be uncomfortable and stressful.

The study focuses on the question of whether virtual reality immersion in the clinic would decrease the amount of time spent performing post-op care, would be tolerated well by patients and would lead to higher procedure satisfaction scores for patients and providers. Furthermore, it was hypothesized that patients would report lower levels of pain and anxiety caused by these procedures when immersed in

virtual reality experiences (experimental group) than when procedures were performed per standard of care (control group). Subjects were equally randomized into a sequence of two treatment conditions (experimental first or control first). All study procedures occurred exclusively during the first four post-op visits. Each subject served as their own control measure, allowing for efficient assessment between the two conditions.

The treatment team includes a child life specialist, whose role is to optimize patient coping by assessing their understanding of medical events and providing preparation, education and support, based on their developmental level and psychosocial risk. In the context of this research, the child life specialist served as a facilitator of study visits by orienting subjects to the VR technology, ensuring they felt comfortable and competent navigating the simulated environment. The VR platform used was developed specifically for pediatric hospitals. Subjects were immersed in a scuba-diving adventure on an application called *Aqua*. The game included interactive features, such as feeding sea creatures, collecting treasure and exploring an underwater world. The application

was designed to support patient safety by encouraging minimal body movement during medical procedures, an important stipulation due to the structural adjustments performed on external fixators. The computer-generated, immersive, audiovisual and three-dimensional environment served as a relaxing means of cognitive distraction to divert patients’ attention away from potential discomfort and anxiety experienced during procedures. Patients are also empowered to remove the headset at any point, which fosters their sense of control and autonomy, should they experience motion sickness or prefer to actively watch procedures instead.

Although the research study has not been finalized, the results are promising. Patients appear to benefit from the engagement and distraction of the VR environment, with less anxiety and fewer negative, maladaptive responses. Overall, the accessibility of virtual reality technology in Orthopedics fostered best outcomes for patients by mitigating discomfort and anxiety experienced during external fixator cares.



While the long-term impact of fosdenopterin is still under study, this case provides **HOPE** that early intervention in MoCD-A can prevent neurological injury.

Maternal-Fetal Intervention for a Rare Genetic Disease: Molybdenum Cofactor Deficiency (MoCD) Type A

Stephanie M. Cruz, MD, and Adolfo Etchegaray, MD

Molybdenum cofactor deficiency (MoCD) Type A is a rare autosomal recessive hereditary metabolic disorder characterized by severe neurodevelopmental delays due to the accumulation of sulfites and S-sulfocysteine (SSC) in the brain. Early neonatal symptoms include intractable seizures, respiratory distress, spasticity or hypotonia, feeding difficulties and an excessive startle reflex. Postnatal brain MRI often reveals evidence of hypoxic-ischemic encephalopathy (HIE) and brain atrophy, with death occurring in some cases before childhood.

In 2021, the FDA approved NULIBRY® (fosdenopterin) for the treatment of MoCD Type A. This drug, administered intravenously daily, aims to prevent severe brain injury from disease progression.

In 2022, a pregnant patient with a previously affected child with MoCD-A who was diagnosed and managed by Bimal Chaudhari, MD, at Nationwide Children’s Hospital, was referred to the Fetal Center after the fetus was diagnosed with the same condition. A multidisciplinary team, including maternal-fetal medicine, neonatology, genetics and neurology, closely monitored fetal development. Serial detailed imaging studies were conducted to assess potential early signs of brain injury. Prenatal therapy was considered. Unfortunately, the drug was not allowed to be used prenatally due to a lack of safety data. An MRI at 28 weeks gestation showed signs of potential neurological damage. This led the fetal team to discuss possible early interventions to prevent significant brain injury that has been described during the third trimester in pregnancies with MOCD-A. A multidisciplinary decision was made to deliver the fetus preterm at 32 weeks via an elective cesarean section at Nationwide Children’s and immediately administer the drug after birth to minimize the

time of exposure to neurotoxicity metabolites and balance the associated risks of severe prematurity.


The mother was admitted to the hospital the day before delivery due to concerns of decreased fetal movement. The Nationwide Children’s fetal team delivered a male infant at 32 weeks and 5 days gestation, weighing 2060 grams. Intravenous fosdenopterin was initiated within 10 minutes of birth in the operating room, marking the earliest known administration of MoCD-A therapy to date. The infant was transferred to the neonatal intensive care unit (NICU). Seizures, an expected symptom of MoCD-A, were noted within the first 12 hours of life but ceased by 36 hours with daily fosdenopterin treatment—a significant improvement over typical outcomes with traditional antiseizure medications. Initially, the infant required supplemental oxygen and a feeding tube for enteral nutrition. Within one week, he was weaned to room air and tolerating full oral feeds. After a one-month NICU stay, he was discharged home on a multivitamin regimen and daily IV fosdenopterin.

The infant continues to receive outpatient follow-ups with neurology, genetics and physical and occupational therapy for close monitoring. An MRI at five weeks of age showed no further brain injury, a remarkable outcome for MoCD-A patients. At one year of age, he remains free of seizures and other associated symptoms, with cerebral palsy being his only notable difference.

While the long-term impact of fosdenopterin is still under study, this case provides hope that early intervention in MoCD-A can prevent neurological injury. The Nationwide Children’s Fetal Center, with its specialized multidisciplinary team, demonstrates the potential of early diagnosis and prenatal interventions in rare diseases. This case marks a significant step forward in the early treatment of rare metabolic disorders.

Enhancing Patient Care Through Informatics: A Deep Dive into the Nursing and Physician Informatics Teams

Jennifer A. Lee, MD, Assistant Professor Divisions of Clinical Informatics & Gastroenterology
Jaclyn Hampton, MSN, RN, Nursing Informaticist



In addition to the **INFORMATION TECHNOLOGY** team of 618 people, Nationwide Children's Hospital also has two dedicated teams of clinicians focused on clinical informatics: nursing informatics and physician informatics.

to optimize the Electronic Health Record (EHR) or bring other digital tools to the bedside.

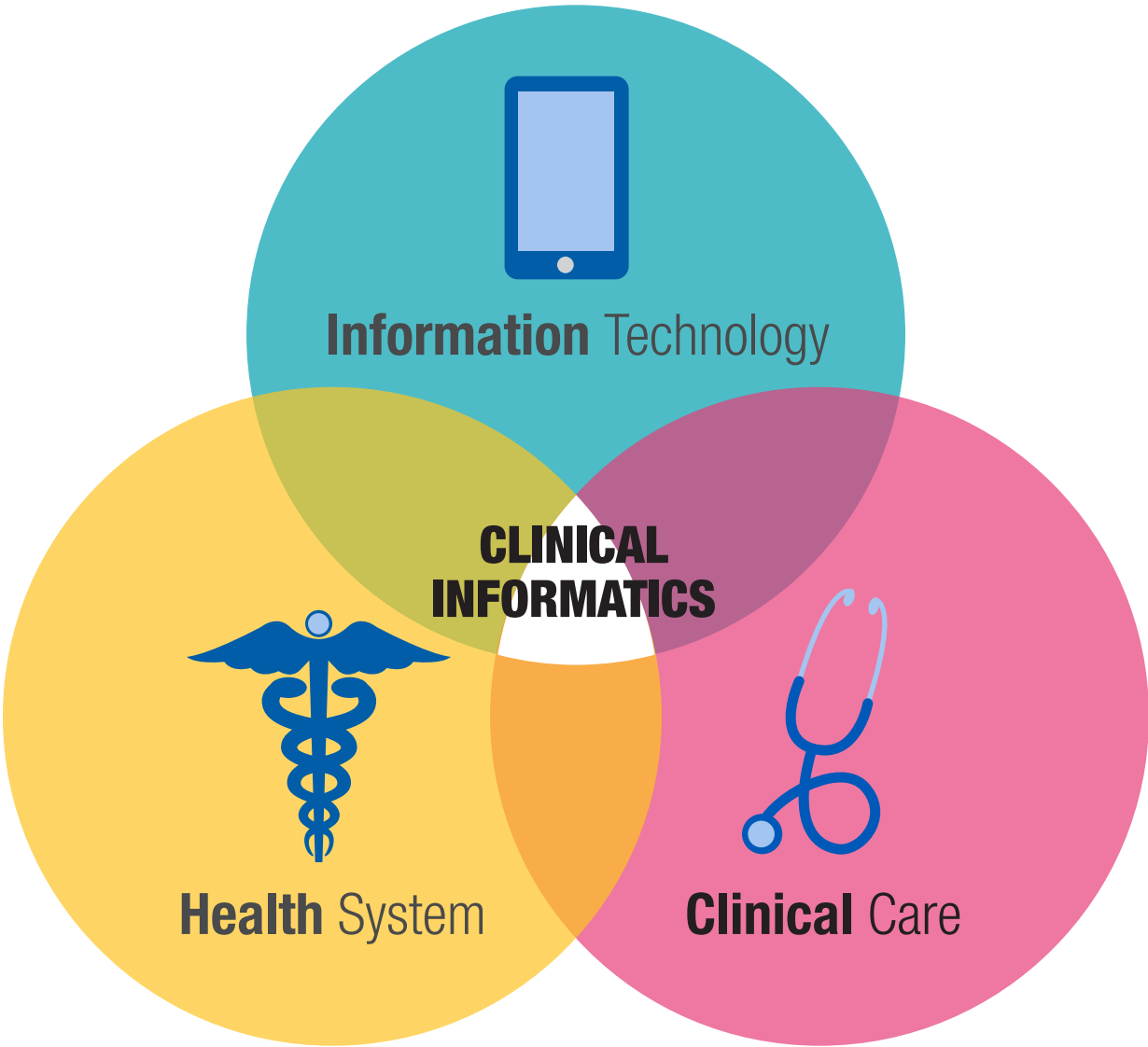
Nursing informatics is a specialty that integrates nursing science with multiple information management and analytical sciences to identify, define, manage and communicate information in nursing practice. It is a dynamic and growing field that bridges the gap between clinical care and IT. Currently, there are nine nurse informaticists with a combined 190 years of nursing experience. Our focus is on the effective use of information and technology to enhance health care delivery, improve patient outcomes and facilitate a more efficient, data-driven health care environment.

For physicians, clinical informatics was recognized as a board-certified specialty of medicine in 2011. Physicians who are board-certified in another specialty can be eligible through the practice pathway (open through 2025) or after completion of a two-year Accreditation Council for Graduate Medical Education accredited fellowship. At Nationwide Children's, there are 11 attending physicians and four fellows in the Division of Clinical Informatics. This team at Nationwide Children's is called physician informatics. Physician informatics involves applying informatics principles to the range of activities that pertain to clinical medicine. This includes workflow optimization, quality improvement, research, clinical decision support and education to improve health outcomes.

Like other medical specialties, the physician informatics team is available for consultation. Consults can be placed by emailing consultphysicianinformatics@NationwideChildrens.org. This service is designed to leverage the specific expertise of physician informaticists to address challenges and solicit new ideas for improving the functionality and utility of the Epic system. The consult service accepts submissions from Nationwide Children's employees, suggesting ideas for enhancements or reporting issues that detract from user experience or patient care. The consultation service should not be used for break-fixes or errors, as those should be urgently fixed through a help desk ticket. In addition, if the solution is known by the clinical staff, an Information Services ticket can be placed by a division's representative.

Each consultation placed is reviewed by the physician and nursing informatics teams. These reviews are comprehensive, involving an assessment of the suggested enhancements' potential impact on patient care, workflow efficiency and overall system performance. The teams then collaborate to develop solutions or recommendations, which may involve system customization, the creation of new features or adjustments to existing workflows. The outcomes of consultation include recommendations for workflow changes, Electronic Health Record changes, project intakes or other committee involvement (for example: medication safety) will be made.

The approach to informatics consultation embodies the Nationwide Children's One Team approach. It is



critical that both physician and nursing informatics teams work together on technology changes that impact clinicians. Because these teams include members from diverse specialties and backgrounds, a holistic approach to problem-solving and innovation in healthcare technologies and workflows is used. This multidisciplinary approach to optimizations ensures that all roles are considered in new technology implementations and that burden of documentation doesn't fall solely on one group.

The goal of the consult service is to ensure that the health care IT ecosystem is not only robust and secure but also intuitively aligned with the needs of end users and conducive to optimal patient care. By soliciting direct input from users and engaging multidisciplinary teams in solution development, healthcare organizations can dynamically adapt their technologies in response to the evolving demands of health care delivery.

Moreover, these teams play a crucial role in training and support, helping users maximize the capabilities of the system and ensuring that technological tools are used effectively to achieve clinical and operational goals. This enhances patient outcomes and improves the satisfaction of health care providers by alleviating common pain points associated with complex IT systems.

In conclusion, the nursing and physician informatics teams at Nationwide Children's embody the collaborative, interdisciplinary spirit necessary to drive forward the integration of technology in healthcare. By fostering a culture of continuous improvement and innovation, these teams ensure that technology serves as a cornerstone of high-quality, efficient and patient-centered care.

In Recognition

Presentations

Wurster Lee Ann, J. Lee, K. Burkey, M. Bainter, K. Scallon, K. Thompson, G. Musilli: “The New Era of Trauma Registries: Hybrid Programs and Education” 9th Annual Pediatric Trauma Society Meeting, New Orleans, Louisiana, November 2023

Amanda Brown, Zachary Miller, Mary Steffan: “Innovation in Learning: EHR Computer-Based Training” Epic Training Consortium, Online, October 2023

Barbara Roman: “Applying a Quality Framework to Infection Prevention Programs” Central Ohio Association of Practitioners in Infection Control & Epidemiology chapter meeting, Hilliard, Ohio, March 2024

Kathleen Cox, Vicky Duff, Matt Deitemeyer: “Negative Pressure Therapy for ECMO Cannula Stabilization” 34th Annual ELSO Conference, Seattle, WA, October 2023

Laura Valido, Ahquilah Tucker, Brittany Palmer, Rika Tanda, Cathleen Opperman: “A Collaborative Core Curriculum for ICU New Hire RNs”, 6th World Nursing Congress, Orlando, FL, March 2024

Julie Young & Lisa Kluchurosky: “Practical Strategies to Optimize your Well-Being” Great Lakes Athletic Trainers’ Association Annual Meeting & Symposium, Chicago, IL, March 2024

Cheryl Camacho, Mary Coles, Ashley Brophy, Thomas Heater, Erica Rey: “It Is All Fun and Games in Simulation” International Meeting for Simulation in Healthcare, San Diego, CA, January 2024

Cheryl Camacho, J. Arnold, C. Rosenberg, N. Rodriguez, M. Diaz, B. O’Connell, M. Cashin, H. Walsh: “Transforming Patient and Family Education Through Simulation” International Meeting for Simulation in Healthcare, San Diego, CA, January 2024

Sara Eilerman, Elizabeth Villanueva, Nathan Rosenberg: “Burn Reconstruction Rehabilitation Symposium” North American Burn Society Annual Conference, Olympic Valley, CA, March 2024

Erin Gates, K. Fokin, E. Moulis, M. Dakhlian, S. Fox: “Urine Luck! Multicenter strategies to address pediatric pelvic floor dysfunction” American Physical Therapy Association, Boston, MA, February 2024

Erin Gates, Jennifer Lane, G. Schnaterbeck: “Playing it Safe: How to Implement and Apply Safe Patient Handling Practices in the Pediatric Hospital-Based Setting” Virtual, October 2023

Ben Reader, A. L’Hotta, S. Randolph, A. King: “Clinical Practice Guideline and Expert Consensus Recommendations for Rehabilitation among Children with Cancer: A Systematic Review” International Society of Pediatric Oncology, Ottawa, Canada, October 2023

Melanie Oates: “Susan Moyer Grant Review: Improving Inflammatory Bowel Care Through Parent Mentoring” APGNN Conference, San Diego, CA, October 2023

Tishia Gunton: “Transformational Supervision: Reframing the Pediatric Hospital Social Worker’s Role” Society for Social Work Leadership in Health Care Annual Conference, Atlanta, GA, October 2023

Jill Karnes: “Hot Topic: Future of Social Work Education” Society for Social Work Leadership in Health Care Annual Conference, Atlanta, GA, October 2023

Lorenzo Juan Benavides, Lois Stephney: “Promoting Wellness and Reducing Secondary Traumatic Stress in Social Workers: A Guide to Wellness” Society for Social Work Leadership in Health Care Annual Conference, Atlanta, GA, October 2023

Connor McDanel: “Promoting Wellness and Reducing Secondary Traumatic Stress in Social Workers: A Guide to Wellness” Pediatric Colorectal and Pelvic Reconstruction Conference – Clinical and Scientific Programs, Scottsdale, AZ, November 2023

Molly Green, Scott Leibowitz, Heather Thobe, Tina Mason, Lourdes Hill: “Transition Process from Pediatric to Adult Care in a Pediatric Colorectal Clinic Setting” Pediatric Colorectal and Pelvic Reconstruction Conference – Clinical and Scientific Programs, Scottsdale, AZ, November 2023

Toyetta Barnard-Kirk: “A Nationwide Children’s Hospital (NCH) Diabetes Patient and Family Focus Group Program: A new Initiative to Incorporate the Voice of the Consumer” Type 1 Diabetes (T1D) Exchange Conference, New York, November 2023

Sarah Dillon, Hannah Kirby: “A Nationwide Children’s Hospital (NCH) Diabetes Patient and Family Focus Group Program: A new Initiative to Incorporate the Voice of the Consumer” Heart Center Family Conference at Nationwide Children’s Hospital, Columbus, Ohio, February 2024

Kara Monnin, Kelsey Bakaletz: “Preventing Secondary Trauma & Practical Self-Care for Pediatric Rehabilitation Providers” International Pediatric Rehabilitation Collaborative, Virtual, March 2024

Anna Connair: “Social Adversity Throughout Maternal-Fetal Care: A look at High Risk Pregnancy, Social Determinants of Health, Race and Beyond” NCH Stand Against Racism, Stand for Health Equity Nursing and Global Health Perspectives, Columbus, Ohio, November 2023

Publications

Gail A. Bagwell, S. Cesario, D. Fraser, C. Kenner, K. Walker: “Breaking the Cycle of Nursing Chaos: The Need to Address the Nursing Shortage” *JOGNN*, November 2023

Gail A. Bagwell, S. Cesario, D. Fraser, C. Kenner, K. Walker: “Breaking the Cycle of Nursing Chaos: The Need to Address the Nursing Shortage” *Neonatal Network*, November 2023

Gail A. Bagwell, S. Cesario, D. Fraser, C. Kenner, K. Walker: “Breaking the Cycle of Nursing Chaos: The Need to Address the Nursing Shortage” *Nursing For Women’s Health*, November 2023

Gail A. Bagwell, S. Cesario, D. Fraser, C. Kenner, K. Walker: “Breaking the Cycle of Nursing Chaos: The Need to Address the Nursing Shortage” *Journal of Neonatal Nursing*, February 2024

Wurster Lee Ann, M. Herndon, D. Seastrom, J. Fritzeen, K. Mitchell, M. Schmid Rumsey K: “Quality Improvement Practices and Resources Targeting Firearm Injuries: A Survey of U.S. Pediatric Trauma Centers” *Journal of Trauma Nursing* 30(6): 328-333, November 2023

Lauren Renner, Debra Drew, Ann Quinlan-Colwell: “Position Statement: Range Orders in the Management of Pain” *Pain Management Nursing*, February 2024

Christine Maihle, Avery Anderson, Victoria Von Sadovsky: “Evidence-Based Education on Care of LGBTQ Patients: Improving Knowledge and Attitudes Among Pediatric Nurses” *The Journal of Continuing Education in Nursing*, December 2023

Jill E. Blind, Sumit Ghosh, Taylor D. Niese, Julia C. Gardner, Stephanie Stack-Simone, Abigail Dean, Matthew Washam: “A comprehensive literature scoping review of infection prevention and control methods for viral-mediated gene therapies” *Antimicrobial Stewardship & Healthcare Epidemiology*, January 2024

Cheryl Camacho, Aaron Calhoun, David Cook, Gina Genova, Seyed Mohammad Kalantar Motamedi , Muhammad Waseem, Rob Carey, Amy Hanson, Jacky Chan C.K., Ilana Harwayne-Gidansky, Barbara Walsh, Marjorie White, Gary Geis, Anne Marie Monachino, Tensing Maa, Glenn Posner, David Li, Yiqun Lin: “Education and patient care impacts of In Situ simulation in Healthcare” *Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare*, January 2024

Adriane L. Baylis, Lindsey Pauline, Andrea Thompson: “Incorporating Social Determinants of Health into Screening” *American Speech-Language Hearing Association*, March 2024

Gail A. Bagwell, S. Cesario, D. Fraser, C. Kenner, K. Walker: “Breaking the Cycle of Nursing Chaos: The Need to Address the Nursing Shortage” *Advances in Neonatal Care*, December 2023

Micah Skeens: “Mixed-method examination of factors associated with adolescent decision-making and involvement in care in the context of advanced cancer” *Palliative & supportive care*, February 2024

Micah Skeens, K.E. Montgomery: “Bridging theory, research, and practice to guide the next generation of symptom interventions”, *Cancer nursing*, January 2024

Dana Noffsinger, S. Jain, M. Armstrong, J. Luna, R.K. Thakkar, R. Fabia, J.I. Groner, A. Ni, E. Nelson, H. Xiang: “Features of virtual reality impact effectiveness of VR pain alleviation therapeutics in pediatric burn patients: A randomized clinical trial” *PLoS digital health*, January 2024

Brittany Kozy, R.N. Alexander, E. Fernandez-Faith: “Referral patterns and diagnostic concordance in pediatric skin disorders”, *Journal of pediatric health care*, February 2024

Amy Donegan, P. Rowland, M. McNicol, A. Kiel, A., R.M. Maltz, J.L. Dotson, H.K. Michel, B. Boyle: “Proactive therapeutic drug monitoring and vedolizumab dose optimization in children with inflammatory bowel disease”, *Journal of pediatric gastroenterology & nutrition*, January 2024

Jodie Ulloa, S. Sykes, D. Steward: “Midline catheter use in the neonatal intensive care unit” *Critical care nursing clinics of North America*, March 2024

Maria Streng, K. Abbas, E.W. Barnhardt, P.L. Nash, D.L. Coury: “A review of amphetamine extended release once-daily options for the management of attention-deficit hyperactivity disorder”. *Expert review of neurotherapeutics*, February 2024

Erika Osborn, Kailyn Marcano, M. Njeh, R. Helmick, E. Alshaikh, K. Marcano, A. Alexander, S.R. Jadcherla: “The irritable infant in the neonatal intensive care unit: Risk factors and biomarkers of gastroesophageal reflux disease” *Journal of pediatrics*, January 2024

Jenne Hickey, Rachel Metzger, W.H. Marshall, M.L. Mah, J. DeSalvo, S. Rajpal, L.T. Lastinger, A. Salavitarab, A.K. Armstrong, D. Berman, B. Lampert, L.K. Wright, R. Metzger, D. Nandi, R. Gajarski, C.J. Daniels: “Novel uses for implanted haemodynamic monitoring in adults with subaortic right ventricles”, March 2024

Jodi Ford, L.H. Smith, M.D. Nist, C.A. Fortney, B. Warren, T. Harrison, S. Gillespie, K. Herbell, L. Militello, C.M. Anderson, S. Tucker, M. Chang, C. Sayre, R. Pickler: “Using the life course health development model to address pediatric mental health disparities”, *Journal of child and adolescent psychiatric nursing*, January 2024

Christine Fortney, S. Sealschott, R. Pickler, M. Bailey, B. Loman: “Gut microbiota and symptom expression and severity in neonatal abstinence syndrome” *Biological research for nursing*, March 2024

Christine Fortney, A.J. Vance, M.L. Farmer, A. D'Agata, T. Moore, M. Esser: “NANN membership recommendations: Opportunities to advance racial equity within the organization”, *Advances in neonatal care*, February 2024

Media Esser, A. Brodbeck, E. Jacobson, G. Helminiak, D. Islas: “Topical use of human milk in the neonatal intensive care unit: An integrative review”, *Advances in neonatal care*, February 2024

Virginia Cox, Matthew Deitemyer, J. Gauntt, V. Duffy, E. Lloyd, A. Bigelow, P. McConnell, J. Simsic: “Negative pressure therapy for ECMO cannula stabilization”, *Perfusion*, February 2024

Daisy Award

Lyndsay Martinelli, MSN, RN, CPN

The quarterly Nationwide Children's Hospital Daisy Award was presented to Lyndsay Martinelli, MSN, RN, CPN, of H9A. The Daisy Award is given in appreciation of the important difference our nurses make in the lives of our patients and families at Nationwide Children's.



Says Lyndsay's nominator, a parent of a patient: "My son was transferred to Nationwide Children's Hospital while my family visited Ohio during spring break. I was terrified and alone with my husband being deployed across the world. Lyndsay provided my son with phenomenal care, comfort and gentle expertise as the only person on the floor to successfully place an IV. Most notably, she worked directly with the Red Cross Emergency to coordinate an immediate extraction and return home for my deployed husband so he could be present for our son's procedures. I'm extremely grateful for the lengths she went to ensure our visit was the smoothest it could possibly be. If 'above and beyond' is a person, it is Lyndsay."

To learn more about our Daisy winners, and read their full nomination, visit NationwideChildrens.org/Daisy-Award

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