Pediatric Brain and Spine Services Impact Report

Intermountain Children's Health

Primary Children's Hospital

Pediatric Brain and Spine Services

About Us

At Intermountain Children's Health, we believe that collaboration is the cornerstone of exceptional pediatric care. As the flagship children's facility for Intermountain Health and the pediatric teaching hospital for the University of Utah School of Medicine, Primary Children's Hospital is recognized for its leadership in pediatric neurology and neurosurgery. Our partnership fuels groundbreaking research and provides an exceptional foundation for training the next generation of physicians. Together, they ensure that young patients and their families receive world-class care and compassionate support.

BEST CHILDREN'S HOSPITALS U.S.News & WORLD REPORT RANKED IN 11 SPECIALTIES 2024–2025

Intermountain Primary Children's Hospital has been named one of the nation's best children's hospitals in 11 of 11 pediatric specialties, including neurology and neurosurgery, by U.S. News & World Report's "Best Hospitals" rankings in 2024-2025. The Brain and Spine Program is ranked #10 in the country and is the #1 program for clinical outcomes. We're accredited as a Level IV Epilepsy Center, the highest level of specialized epilepsy care, and our inpatient rehabilitation program is CARF-accredited.

Within the Brain and Spine program, 43 specialists treat over 12,000 complex pediatric patients with neurological and spine conditions. The six specialties our multidisciplinary team brings together include epilepsy, neuromuscular, leukodystrophy, stroke and vascular, neuro-oncology, and spine. We train three fellows and 10 residents, who play a vital role in patient care and will become the next generation of specialists, serving both our local community and healthcare centers across the country.

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Annual Highlights

900+ Neurosurgeries

170+ Epilepsy Surgeries

300+ Spine Surgeries

3,300+ Completed and Analyzed EEGs

185 IRB Approved Clinical Studies

3,700 Telehealth Visits

12,000+ Brain and Spine Patients, with 21,000+ Outpatient Visits

1,550 Hospital Admissions

RESEARCH

Advancing Pediatric Stroke Research

At the Primary Children's Hospital Brain and Spine Program, research and clinical care are closely intertwined and shape our commitment to continually improving outcomes for children. Our program has earned national recognition for excellence in pediatric stroke and vascular care. It is distinguished by a multidisciplinary approach that brings together experts from across specialties to provide highly coordinated treatment. One of the key strengths of our program is the close collaboration among pediatric neurosurgery, vascular neurosurgery, and hematology specialists. Our dedicated team, including Dr. Craig Kilburg, Dr. Vijay Ravindra, and Dr. Sasidhar Goteti, works seamlessly to ensure that each patient receives the most comprehensive and individualized care possible.

Primary Children's participates in multiple pediatric stroke research studies and a clinical trial. We contribute to the International Pediatric Stroke Study (IPSS), a large international, multicenter registry and research collaborative that collects data on risk factors and outcomes in pediatric cerebrovascular disorders. We are also involved in the Save ChildS Pro study, the first international multicenter prospective thrombectomy registry, and the FOcal Cerebral Arteriopathy Steroid (FOCAS) trial.

Our dedication to research and innovation has helped us achieve top national rankings in neurology and neurosurgery. Our aim is to provide outstanding, compassionate care for every child in our community.

Studying and treating rare diseases, such as pediatric stroke, presents significant challenges due to limited patient populations and data. That's why we prioritize multicenter research and collaboration, driving innovation that has helped us achieve top national rankings in neurology and neurosurgery.

Pediatric Stroke Care and the FOCAS Trial

Pediatric stroke remains a rare but devastating event, with focal cerebral arteriopathy (FCA) representing a leading cause of arterial ischemic stroke in otherwise healthy children. FCA is an acute disease, suspected to be inflammatory, that can cause narrowing and occlusion of blood vessels leading to stroke. This process often worsens over the first few days and weeks, increasing the risk of recurrent and expanding strokes. Primary Children's Hospital is a leading enrolling site in this trial, led locally by Lisa Pabst, MD, director of the pediatric stroke program and assistant professor of pediatric neurology at the University of Utah School of Medicine, who serves as site principal investigator. To note, this is currently the only NIH-funded acute care pediatric stroke trial and an exceptional milestone for the field given the significant challenges of enrolling children acutely with such a rare condition.

What is the FOCAS Trial?

The FOCAS trial is a pivotal, multicenter clinical study designed to answer a critical question in pediatric stroke: Does early use of corticosteroid treatment prevent FCA progression in children? FCA is a condition where brain arteries narrow, increasing stroke risk. Pediatric patients aged 1 to 18 eligible for this trial are those diagnosed with symptomatic FCA presenting with arterial ischemic stroke.

Comparing Treatment Strategies

This study is a comparative effectiveness trial designed to evaluate two treatment strategies for FCA-related stroke:

Arm A: Early corticosteroid therapy for all children with suspected FCA will be initiated at the time of diagnosis.

Arm B: Delayed corticosteroid treatment, only given to children who have disease progression.

Both approaches allow the study to determine whether immediate steroid treatment improves vascular outcomes and neurological recovery compared to a more conservative, progression-triggered approach.

Why This Trial Matters

Because FCA is one of the most common causes of stroke in otherwise healthy children and can have lasting effects, it has been identified as a top research priority in the pediatric stroke field. Dr. Pabst says, "Our goal is to provide the best possible care from the moment a child arrives at our hospital," and she is enthusiastic to participate as a contributing site in this study because of the importance of establishing evidence-based guidelines for the use of corticosteroids in FCA. "One key question this trial aims to answer is whether it's best to treat children immediately when FCA is suspected or wait to see if it progresses," she says, acknowledging that the diagnosis can be challenging to confirm until the disease progresses.

Timeline and Expectations

Primary Children's began enrolling patients in the FOCAS trial in 2024, with a projected duration of five and a half years to reach the target sample size of up to 80 children. More than twenty children's hospitals across the U.S. and Canada are participating in the study, and Primary's Children's is currently the leading enrolling site with five patients enrolled in the first year. Each child is closely monitored during their hospital stay and receives routine follow-up assessments at one month, six months, and one year after discharge.

Dr. Pabst expects that the trial will help inform optimal timing of corticosteroid initiation in cases of suspected FCA, which could lead to significant changes in care protocols and improve long-term neurological outcomes for children with this condition.

RESEARCH

Transforming Pediatric Stroke Care

The Save ChildS Pro study is a groundbreaking international registry that brings together multiple centers worldwide to prospectively evaluate the safety and effectiveness of endovascular thrombectomy for children who experience arterial ischemic stroke caused by large vessel occlusion. Endovascular thrombectomy is a procedure in which a surgeon navigates through the blood vessels to restore blood flow to the brain. This is the first prospective study to compare the outcomes of children with large vessel occlusion who undergo this procedure with those who undergo medical management alone. There has been increasing evidence for the use of thrombectomy in adult patients with stroke, but this has not previously been systemically studied in children. Given the different causes of strokes and challenges of their physically smaller size, many unknowns on optimal management remain.

Primary Children's Hospital has played an active role in this ongoing landmark study, enrolling 26 pediatric patients in the registry to date. The initial results from Save ChildS Pro are compelling: endovascular thrombectomy is associated with improved functional outcomes in children with large- and medium-vessel occlusions compared to best medical treatment alone. Data from this study also recently suggested that in children who are found to have a large vessel occlusion in the first 24 hours after stroke onset may benefit from thrombectomy even if the stroke is already large. Notably, clinical centers tended to select children with more severe strokes for thrombectomy. Yet, these patients still experienced better recovery, underscoring the potential of this intervention to change the trajectory of pediatric stroke care.

The Save ChildS Pro study is poised to shape clinical guidelines and future standards of care, offering hope for improved quality of life and reduced disability for children affected by stroke.

"It's incredibly exciting to be part of a study generating such critical data—data that is not only shaping international practice but is also driving meaningful change in how we care for patients at Primary Children's Hospital," says Lisa Pabst, MD, assistant professor of Pediatric Neurology. "This research suggests that endovascular thrombectomy is generally safe and effective in certain children with stroke due to large vessel occlusion and supports expanding its use. Because thrombectomy and restoring blood flow are extremely time-sensitive, the growing evidence base highlights how essential it is to raise awareness for pediatric stroke to ensure rapid recognition, evaluation, and treatment. For pediatric patients who have the potential for decades of life ahead, improving long-term outcomes after stroke through timely intervention is especially meaningful. This is exactly why our program participates in research, and we are committed to doing everything possible to advance knowledge and improve care for children with stroke."

Lisa Pabst, MD
Assistant Professor of Pediatric Neurology, Director of the Pediatric Stroke Program, Primary Children's Hospital

To Learn More: For those research at Primary Children's Hospital, or joining the team, please contact Dr. Lisa Pabst or the Intermountain Children's Health Brain and Spine program.

Call: **801-213-3599**

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Our Specialized Programs

To address the diverse and complex needs of our patients, the Brain and Spine Center offers a full spectrum of specialized programs, including:

General Child Neurology: Comprehensive evaluation and management of neurological conditions in children, from common concerns to rare disorders.

Headache: A specialized program focused on diagnosing and treating tension headaches, cluster headaches, and migraines, combining both medical treatments and behavioral approaches to headache care.

Epilepsy: Advanced care for children with seizures, including diagnostic testing, medication management, and surgical options when needed.

Stroke/Vascular: Expert evaluation and treatment for pediatric stroke and other vascular conditions affecting the brain and spinal cord.

Neuromuscular: Specialized care for disorders affecting nerves and muscles, such as muscular dystrophy and neuropathies. The specialty clinic includes seeing newborn infants and providing gene therapy.

Leukodystrophy: One of the oldest and largest programs in the country, the Leukodystrophy program sees children (and adults) with genetic white matter disorders, including providing diagnosis, specialized care, and access to novel treatments.

Neuro-autoimmune: Diagnosis and management of autoimmune conditions that impact the nervous system, including multiple sclerosis and related disorders.

Neuro ICU: Intensive care for children with severe neurological illnesses or injuries, providing round-the-clock monitoring and support.

Neuro NICU: Specialized neonatal intensive care for newborns with neurological conditions, ensuring the best possible start for our youngest patients.

Dysautonomia: Comprehensive evaluation and treatment for disorders of the autonomic nervous system, tailored to each child's needs.

Neurogenetics: Genetic testing and counseling for inherited neurological conditions, helping families understand and manage complex diagnoses.

Spine: Multidisciplinary care for children with complex spinal disorders, including scoliosis and spinal deformities.

Chiari Malformation: Providing expert diagnosis and surgical treatment for Chiari malformations, guided by the latest research and proven clinical practices to achieve the best possible patient outcomes.

Craniosynostosis/Head Shape: Advanced surgical and non-surgical options for craniosynostosis and other head shape abnormalities.

Neuro-Oncology: Comprehensive care for children with brain and spinal cord tumors, integrating neurology, oncology, and supportive services.

Endovascular Neurosurgery: Minimally invasive procedures for vascular conditions of the brain and spine, performed by experienced specialists.

Spina Bifida: Offering support throughout every stage of development — from before birth through the teenage years — and providing a transition program that helps foster independence, personal growth, academic achievement, and strong social connections.

CLINICAL SPOTLIGHT

Team Approach Drives Access to Novel Therapies in Pediatric Epilepsy Care

Intermountain Health Primary Children's Hospital's epilepsy program is nationally recognized for its expertise in pediatric neurological care. Under the leadership of Robert J. Bollo, MD, chief of pediatric neurosurgery, the program has become one of the nation's busiest, thanks to its advanced technology and the broad spectrum of treatment options available to its youngest patients. The team approach is further strengthened by Shanna Swartwood, MD, who serves as the medical director of the Comprehensive Epilepsy Clinic. Together, Dr. Bollo and Dr. Swartwood, along with Chris Espinoza, MD, lead a team that delivers highly individualized care and offers the latest neuromodulation therapies, including the pioneering use of responsive neurostimulation (RNS) in pediatric patients.

Epilepsy in kids presents unique challenges — about one-third of pediatric patients do not achieve seizure freedom with medication alone. Because uncontrolled seizures can significantly impact brain development, the epilepsy program at Primary Children's Hospital intends to close this treatment gap. By offering an individualized, data-driven approach, the team aims to provide every child with the best possible chance at reducing seizures. "We just want to give every child the best possible treatment and surgical option that gives them the best chance of eliminating seizures," says Dr. Bollo.

This personalized approach is exemplified in the Neuromodulation Clinic, led by Dr. Swartwood and Dr. Espinoza. "We help patients who have tried two or more anti-seizure medications and still experience seizures," Dr. Swartwood explains. "At that point, patients are classified as having drug-resistant epilepsy and we discuss non-medication treatment options, including neurostimulation devices." The clinic's multidisciplinary team evaluates and manages candidates for advanced therapies, including Vagus Nerve Stimulation (VNS), Deep Brain Stimulation (DBS), and, most notably, responsive neurostimulation or RNS.

Robert J. Bollo, MD
Chief of pediatric neurosurgery

The device selected is tailored to each patient and considers factors like epilepsy type, age, and family preferences. "For younger children, VNS or DBS may be preferred, but RNS has become our favored option for older children and those with focal, multifocal, and even generalized epilepsy," Dr. Swartwood notes. A unique advantage of the RNS device is its ability to record brain activity in real time, allowing the team to analyze data before each clinic visit and optimize therapy for every patient.

Responsive neurostimulation (RNS) is a closed-loop device that detects abnormal brain activity in real time and delivers targeted stimulation to prevent seizures before they start. While RNS is FDA-approved for adults, Dr. Bollo and his team have pioneered its off-label use in children, performing over 100 procedures in the past eight years and currently implanting about 10 pediatric patients with this device annually. "We've found that the RNS device is especially effective for children with drug-resistant epilepsy, and Primary Children's is now at the forefront of advancing surgical therapies for pediatric patients," says Dr. Bollo. The results have been remarkable: on average, patients experience a 50% or greater reduction in seizures within the first year, roughly 70% after two years, with some "super responders" achieving a reduction of over 90%. These outcomes not only improve seizure control but also have a transformative effect on neurocognitive development and overall quality of life.

Dr. Swartwood and her team hold bi-monthly RNS clinics, reviewing all patient data in advance and fine-tuning device settings during each visit. "We look for three main things: is the device detecting abnormal brain activity that precedes a seizure as early as possible, is the stimulation stopping the seizure, and are there trends over time that we need to address?" she explains. She notes the device's effectiveness often improves over time, likely due to its neuromodulating effects. This long-term outlook is especially meaningful for children, as each year of reducing seizures can profoundly influence development and quality of life.

Shanna Swartwood, MD
Assistant professor and medical director of the Comprehensive Epilepsy Clinic

Creating individualized, data-driven care is matched by the program's national reputation for excellence. The hospital's neurosurgery and neurology programs are ranked among the top in the nation, with patient outcomes consistently rated first in the country by U.S. News & World Report for four of the last five years.

The program's collaborative environment and broad spectrum of treatment options make it an exceptional training ground for future residents and fellows eager to shape the future of pediatric epilepsy care. "We have the volume, the need, and a dedicated epilepsy fellowship program," Dr. Swartwood emphasizes. "Our collaborative environment, patient-centered care, and opportunities for hands-on experience with advanced neuromodulation therapies make this a really good team to work for." Dr. Bollo agrees, noting, "The neuro program at Primary Children's is the busiest in the country. It's also very diverse in what we treat beyond epilepsy, such as brain tumors, spinal and congenital disease, and the expertise is what makes us so unique." For trainees passionate about shaping the future of pediatric epilepsy care, Primary Children's offers an unmatched environment for growth and impact.

PATIENT STORY

Ryan Ford: The First Child with Dravet Syndrome to Receive RNS Therapy

Eight-year-old Ryan Ford, from Sandy, Utah, is the first pediatric Dravet syndrome patient to undergo surgical treatment with a Responsive Neurostimulation (RNS) device at Primary Children's Hospital. Her story highlights the challenges of living with this rare and severe form of epilepsy, and the hope that novel treatments can provide.

Early Struggles and Diagnosis

Ryan's challenges started almost as soon as she was born. When she was only two weeks old, trouble with feeding revealed that she was silently aspirating, something her family and doctors hadn't expected to find so early. At four months old, she had her first prolonged seizure, and after repeated ICU visits, was diagnosed with Dravet syndrome at 14 months. "Her seizures were the worst, which could be 300 to 400 per day," recalls her mother, Nicole Ford. "Hour-long seizures are the norm and no rescue meds work."

The Ford family faced daily seizures, frequent hospitalizations, and the financial and emotional strain of constant care. "From the beginning of diagnosis, we knew we needed to live differently," she says. With two older sons — now ages 15 and 12 — who needed support and encouragement in their sports and activities, life didn't pause for Ryan's diagnosis. "We needed to give our two boys something beyond Dravet syndrome," Nicole shares.

Choosing RNS: A Leap of Faith

When other treatments weren't working, the family turned Robert Bollo, MD at Primary Children's. He introduced them to RNS, a device usually used for focal epilepsy. In May 2023, at just six years old, Ryan became the first child with Dravet to have this procedure.

"Ryan is so social, so lovable. Everyone who meets her absolutely falls in love with her," Nicole says. "But we also knew we couldn't live the way we were living. We had to try something."

Life After Surgery: New Possibilities

The first six months post-surgery were challenging, but the improvements have been life changing. "The most significant change in our lives is not living in status," Nicole says. "It gave us the confidence we needed to go on a cruise as a family." Ryan now experiences fewer than five short seizures per day. She can recover from a seizure in minutes and is able to learn and engage more at school. Although seizures at night are still difficult, the progress Ryan has made during the day has brought the family new hope and a greater sense of freedom.

Ryan's journey with Dravet syndrome and her recovery following RNS surgery has been anything but straightforward. She's paving the way for others with Dravet who might consider RNS, but it's important to remember that this treatment isn't a one-size-fits-all solution. "There have been a lot of unknowns, and working beyond the basic settings of the device has been complete trial and error," says Nicole. While Primary Children's continues to achieve excellent clinical outcomes for complex cases like Ryan's, her story also underscores that there is still much work to be done to improve the journey for families and their youngest patients.

Pediatric Neurology Metrics

100+

Children have received responsive neurostimulation (RNS) device implants

Annually, around **10** pediatric patients are treated with RNS device implants

70%

reduction of seizures within two years of RNS device treatment

To Learn More:

For those interested in learning more about how Primary Children's Hospital treats its youngest patients with epilepsy, including neuromodulation therapies, please contact the pediatric epilepsy program at Intermountain Children's Health.

Scan this QR code to visit our website.

Call: **801-213-3599**

EDUCATION SPOTLIGHT

Residents and Fellows in Pediatric Brain and Spine Care

At Intermountain Children's Health, we believe that education is essential to caring for children and their families. Through our Brain and Spine program, we offer thorough, family-focused treatment for neurological and spine conditions, while also helping train future medical professionals. Here, we're proud to introduce three remarkable team members whose clinical work and research is making a real difference for our patients and helping to advance the field of pediatric neurology.

First-of-Its-Kind Hybrid Pediatric Stroke Fellowship Launches

McKenna Coletti, MD is blazing a new trail as the first-ever pediatric stroke fellow at Intermountain Health Primary Children's Hospital and the University of Utah. Her fellowship program is a unique hybrid model created specifically to match her passion for pediatric stroke — a field that is rapidly growing but still under-recognized. This program allows Dr. Coletti to gain experience with both adult and pediatric stroke patients, preparing her to be board-certified in adult stroke while focusing on the unique needs of children.

What sets this fellowship apart is its collaborative spirit and the breadth of clinical exposure. Dr. Coletti notes, "We serve a huge geographic area and care for a high volume of stroke cases, including many children from underserved communities. The breadth of things I will see in this program is high."

The partnership between Primary Children's and the University of Utah means fellows benefit from mentorship, a robust teaching environment, and access to the largest telestroke network in the country. "This ability to be in both spaces — the adult side and the pediatric side — is really special," she says. "I expressed my interest in seeing pediatric stroke patients and the program was willing and able to make it happen."

McKenna Coletti, MD
Pediatric neurology stroke fellow at Primary Children's Hospital

Dr. Coletti's commitment extends beyond clinical care. She is also a key contributor to the FOCAS trial, a groundbreaking study led by Dr. Lisa Pabst investigating corticosteroids for children experiencing stroke due to focal cerebral arteriopathy (FCA). "What is really special about the FOCAS trial is that it is one of the first and most robust randomized trials that is happening with kids with stroke," Dr. Coletti explains. Her role includes enrolling patients, supporting follow-up, and ensuring comprehensive data collection, all of which are vital to advancing pediatric stroke care.

For residents and fellows exploring their next steps, Dr. Coletti's journey demonstrates the unique collaboration between Primary Children's Hospital and the University of Utah apart. "I will have a lot of pediatric ICU experience," she says. "There is excellent mentorship, and I am happy to be a part of this really special neurology program."

The Pediatric Neurology Training Experience

Now in her fifth year of residency at Primary Children's Hospital, Reilly Philliben, DO, is known for her passion for blending hands-on patient care with ongoing research. She is dedicated to finding innovative treatments for childhood epilepsy. Dr. Philliben shares her perspective on what sets this residency program apart and why it has been such a fulfilling journey.

"I understood the connections made between attendings and the residents and staff who worked here," she explains. "Primary Children's also checked all the boxes for being happy outside of work, which I think is key to being happy at work." She describes the hospital as "a really safe learning environment, where you can have a lot of autonomy and still feel like you have support."

What truly sets the pediatric neurology program at Primary Children's apart is its people and the unique region within Utah. "I think the catchment area at Primary Children's is different than anywhere else in the country and in the world," she says. The breadth and diversity of cases, especially from rural and underserved regions, provide residents with exposure to a wide spectrum of neurological conditions.

Reilly Philliben, DO
5th year, pediatric neurology resident at Primary Children's Hospital

Dr. Philliben has also taken advantage of the program's robust research opportunities in the field of epilepsy. "Coming into my third year as a resident, I reached out to the epilepsy division for mentorship and so many people volunteered that I feel like I now have four mentors that I am engaged in different projects with."

Primary Children's is one of the few centers nationwide with the patient volume and expertise to conduct large-scale RNS research in children. Dr. Philliben's case report on the first pediatric patient with Dravet syndrome to receive RNS — a device typically reserved for adults — demonstrated a dramatic reduction in seizure frequency and a significant improvement in quality of life. The significance of this work is profound, as RNS is not yet approved for pediatric use, and Primary Children's is among the rare centers able to offer this option to children with drug-resistant epilepsy who have exhausted other surgical options. "The fact that there can be more options for pediatric patients with epilepsy can have a big impact in development long term."

A distinctive feature of the five-year pediatric neurology residency at Primary Children's is the integration of pediatric residents into neurology rotations during their third year. It's a style that sets it apart from other programs. "I feel really appreciated here by the administration, and I think that makes a huge difference in your residency." This supportive environment, combined with innovative training approaches, positions Primary Children's as a leader in preparing the next generation of pediatric neurologists.

Training with Experts in Neurosurgery

Elena Kurudza, MD, a sixth-year neurosurgery resident at Primary Children's Hospital has an interest in tumor-related disease and cancer within pediatric neurosurgery. Initially upon starting her medical training, she intended to focus on becoming a pediatrician, then realized she enjoyed the creativity and unique challenges in treating patients with brain and spine tumors. "I found counseling sick patients and their families provided a lot of meaning and purpose," Dr. Kurudza says.

She chose the neurosurgery program at Primary Children's for its unique blend of high-volume, complex cases and a culture of humility and collaboration. "During my sub-internship here, I was immediately impressed by the collaborative team environment and knew it was a team I wanted to be a part of," she recalls. The program's breadth and depth of surgical experience, with 900-1,000 cases per year, far surpass those of many other programs. "You can be a junior resident operating on complex tumors and gain amazing experiences side-by-side with some of the greatest leaders in pediatric neurosurgery."

Elena Kurudza, MD
6th year, pediatric neurosurgery resident at Primary Children's Hospital

Dr. Kurudza describes the program environment as "the rainbow and sunshine part of residency," where world-class faculty are approachable and deeply invested in resident growth. "You would have no idea walking into a room that these are some of the top people in their field because they are so humble and in the trenches with you taking care of patients."

A hallmark of the neurosurgery program is its support for resident-driven research. Dr. Kurudza recently completed two years of benchwork focused on neuro-oncology. She explored therapies that utilize the adaptive immune system to target and kill brain cancer cells. "We are on the cusp of providing ultra-personalized therapy instead of a one-size-fits-all approach for each patient," she explains. The program's flexibility allows residents to tailor their research and clinical experience to ensure they graduate as strong clinicians and researchers.

For prospective residents and fellows, Dr. Kurudza offers this encouragement: "You're going to get a lot of high-quality experience and individualized feedback with a high-volume of patients. You're going to see it all and do it all." The unique combination of surgical depth, research opportunity, and a supportive culture makes Primary Children's Hospital a great place to train in the field of brain and spine care.

OUTREACH SPOTLIGHT

Expanding Access Within Utah and Surrounding States through Outreach Programs – The Virtual Hospital

Primary Children's Hospital, a nationally ranked leader in pediatric neurological care, is expanding the delivery of neonatal neurology care across Utah and the Intermountain West. Dr. Betsy Ostrander is a pediatric neurologist specializing in neonatal neurology. She leads the hospital's outreach, consultation, and telehealth services that extend vital care to outlying communities across Utah, Montana, Arizona, and Colorado. The approach ensures that families in remote areas have access to the same high-quality and specialized neurological care available to them.

Betsy Ostrander, MD
Pediatric neurologist and director of the fetal natal neurology program, and neuro NICU consult service and telehealth program.

Vision for Equitable, Family-Centered Care

The Neuro NICU program began with a straightforward goal: to provide all babies with neurological needs with the same high-quality care, regardless of their location. At first, Dr. Ostrander visited nearby hospitals in person. As more families needed help, the team launched a telehealth program in 2019, initially in Montana and subsequently expanding to Utah, Colorado, and beyond. This approach enables Primary Children's to support level 2 and 3 NICUs across the region, allowing families to stay closer to home while receiving expert care.

How the Neuro NICU Telehealth Program Works

Neonatology colleagues at partner hospitals initiate the process, and after careful planning — including protocol customization, neuro-monitoring, and imaging capability assessments — a pathway is established with a partner hospital. When a consult is needed, the transfer center coordinates with Primary Children's neurology to connect local providers with a specialist in real-time. With telehealth visits, families can meet with the neurologist, review scans together, and stay in touch for follow-up care. It has helped more families return for follow-up, made it easier for them to understand their child's condition, and provided local doctors with the support they need to provide advanced care with confidence.

Reducing Burden

One of the program's most profound impacts is its ability to keep families together. In the past, a transfer to Salt Lake City could mean being away from home for months. "Removing a family from their support network and the financial burden is difficult," says Dr. Ostrander. "It is such a bonus to keep kids where they are and provide the same standard of care in rural communities."

Now, 90% of babies can remain in their local NICUs, with only the most complex cases requiring transfer to a specialized facility. It reduces costs and stress for families, while also strengthening community hospitals and keeping children within their support systems. The program is especially important in rural areas, where long distances, not enough doctors, and fewer resources have often made it hard for families to get the specialized care they need.

Speed and Comprehensive Support

What sets the Primary Children's Neuro NICU program apart is its commitment to continually improving the care of newborns. The team has managed to cut the wait for genetic diagnoses from around six months to just a week or two — even for babies who remain in their referring NICUs. Getting results this quickly can make an enormous difference, allowing doctors to start the right treatments sooner and helping families find the support they need much faster. The program also features an early diagnosis initiative for cerebral palsy, which starts evaluations in the NICU and expands to additional locations each year. Around-the-clock neurology support ensures urgent needs are met, and outreach clinics bring pediatric neurology expertise directly to rural communities, further reducing the need for long-distance travel.

"We are lending our unique pediatric neurology expertise to rural locations that wouldn't otherwise be able to afford to come to Primary Children's. Keeping the care of the child first and foremost is what drives us every day."
– Dr. Betsy Ostrander

A Unique Training Ground for Future Leaders

Residents and fellows at Primary Children's benefit from a truly distinctive training experience. They work directly with patients facing a wide range of neurological conditions — from the more routine to the exceptionally rare — and get plenty of practical, hands-on learning. Because the hospital serves a large and diverse region, trainees also care for patients from diverse backgrounds and encounter a wide range of complex cases. "I think there is a strong culture of collaboration between Intermountain Health and the University of Utah that allows us to be innovative in how we deliver care," says Dr. Ostrander.

The program is setting new standards for what is possible in neonatal neurology and community outreach. Primary Children's Neuro NICU program is a lifeline for families and a model for rural healthcare delivery. For those seeking to make a difference in the lives of children and families, there is no better place to train, practice, and innovate.

To Learn More:

For those research at Primary Children's Hospital, or joining the team, please contact Dr. Betsy Ostrander or the Intermountain Children's Health Brain and Spine program.

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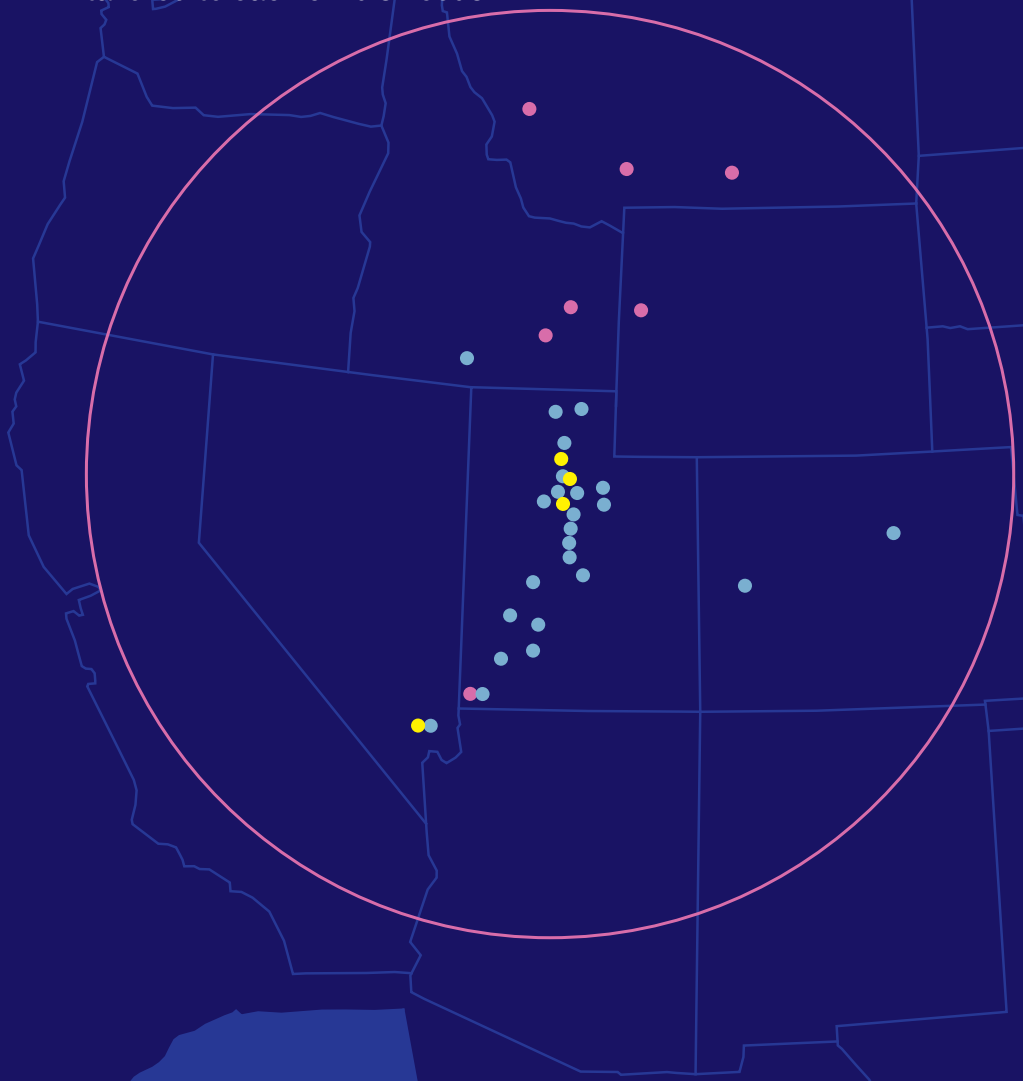
Call: **801-213-3599**

Brain and Spine Locations

The Intermountain Children's Health Brain and Spine program provides specialized pediatric care for neurological and spinal conditions with locations across Utah, Idaho, Colorado, Wyoming, Montana, and Nevada. These clinics provide families with expert care nearby, making it easier to get quick diagnoses, personalized treatment, and ongoing support tailored to each child's needs.



Brain & Soine Locations

Salt Lake City, Utah
Lehi, Utah
Layton, Utah
Las Vegas, Nevada

Outreach Clinic

St. George, Utah
Billings, Montana
Bozeman, Montana
Missoula, Montana
Pocatello, Idaho
Idaho Falls, Idaho
Jackson, Wyoming

Virtual Hospital & Telehealth

Utah
Nevada
Colorado
Wyoming
Montana
Idaho

To Learn More:

Visit Primary Children's Hospital, or Intermountain Children's Health Brain and Spine program.

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