

The Child First and Always®

Salt Lake City, Utah

Overview of Services and Specialties





EXECUTIVE SUMMARY

Primary Children's Hospital and the University of Utah pediatric specialists have a long history of providing pediatric specialty care for children in Utah and throughout the western United States. Approximately 13% of our inpatient admissions are patients from outside of Utah, with the majority traveling from Idaho, Wyoming, Montana, and Nevada. We serve many communities with full-time specialists, visiting specialists, educational opportunities, and partnerships with local hospitals and providers.

As a full-service children's hospital, we provide care across almost all pediatric specialties and conditions. Our hospital prides itself on meeting the needs of patients who must travel for care, so we focus on building services and developing partnerships for traveling families. Some of these include:

- Partnership with Ronald McDonald House Charities® to provide both on- and off-site accommodations.
- Guest Services designed to help families with housing, food, travel, and entertainment.
- Dozens of outreach clinics across a five-state region to bring care closer to home.
- Robust telehealth services to reduce travel for outpatient care and serve broader geographies.
- Collaboration with local providers to improve access.
- Regional partnerships focused on improving the level of local pediatric care.
- Care coordinators helping families identify follow-up services in their community.

All of the specialties highlighted in this overview use multi-disciplinary teams comprised of physicians, advance practice clinicians, nurses, therapists, care coordinators, social workers, dietitians, and pharmacists – to name a few. Some highlights of these specialty centers include:

- High-volume heart program with some of the best outcomes in the U.S. We are one of two sites in the country to be a Pediatric Heart Network core site, part of the Cardiac Development Consortium and the Pediatric Cardiac Genomic Consortium.
- World-renowned providers in brain and spine care with expertise in everything from epilepsy to spine surgery. This specialty is ranked by *U.S. News and World Report's Best Children's Hospitals.*
- Care for hundreds of children with cancer each year using the latest research and cutting-edge treatment. The Children's Oncology Group ranks our program in the Top 10 of 220 institutions nationally.
- Accredited transplant programs by United Network for Organ Sharing (UNOS) with exceptional, acuity-adjusted outcomes. We have had zero deaths within the first year post-transplant for all of our solid organ programs.
- Only Level IV NICU in a five-state region with surgical and subspecialty care, including ECMO.
- Only Level I Pediatric Trauma Center in the region with a dedicated pediatric and neonatal transport team, as well as a CARF-accredited rehab facility to support patients as they heal.

As a member of the Children's Hospital Association, we regularly submit cost and quality data. Our acuity-adjusted cost index to payers is the lowest of any children's hospital in the western United States. In addition, our patient length of stay is the lowest of any children's hospital in the data set.

When partnering with Primary Children's Hospital, you can be certain you will receive the highest value in both the quality of care and cost-effectiveness.

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Our Mission

Helping People Live the Healthiest Lives Possible®

Our Vision

We will provide the highest value in outstanding pediatric clinical care, medical education, child advocacy, and research in the United States.

Our Philosophy

The Child First and Always®

BACKGROUND & EXPERIENCE

Overview

- Freestanding Children's Hospital
- Level I Pediatric Trauma Center
- 60 Medical and Surgical Pediatric Specialties and Subspecialties
- 3,000+ Physicians & Medical Staff Specializing in Pediatrics
- Part of Intermountain Healthcare, a not-for-profit Healthcare System
- Pediatric Teaching Hospital for the University of Utah School of Medicine
- Dedicated Pediatric & Neonatal Medical Transport Teams

Primary Children's Hospital ranks among the best children's hospitals in the United States and has been helping children, families and communities in the West for more than 95 years. Located in Salt Lake City, Utah, our 289-bed freestanding children's hospital is focused on providing the best care to more than 1 million children living in a 400,000 square-mile service area. Our simple, yet powerful, philosophy of *The Child First and Always*[®] informs every decision we make, and how we care for patients and families.

A Legacy of Specialty Pediatric Care

- » 1922 The Primary Association, a children's organization of the LDS Church, opened a 35-bed facility for children in Salt Lake City. Surgeries took place at LDS Hospital and children convalesced at Primary Children's Hospital. There were approximately 6,000 inpatients and 3,500 outpatients during the first 30 years.
- » 1952 New building in the Avenues of Salt Lake City, expanded facility to 170 beds
- » 1961 Hospital mission broadens to focus on acute care
- » **1975** LDS Church divests of hospitals and Intermountain Healthcare is created, which includes Primary Children's Hospital and 14 other community hospitals
- » **1977** Partnership with University of Utah School of Medicine to become pediatric teaching hospital and add pediatric specialties and subspecialties
- » 1990 New building on the University of Utah campus, eventually licensed for 340 beds
- » 2002 Received Level I Pediatric Trauma Center verification
- » 2010 Expansion of outpatient care locations to improve access and serve growing communities
- » 2014 New ambulatory care building opens on main campus
- » 2016 Care network expansion in Montana, Idaho, and southern Utah

Partnership with University of Utah

Primary Children's and the University of Utah have been collaborating on pediatric specialty and subspecialty care for more than 40 years. More than 90% of the physicians at Primary Children's are employees of the University of Utah School of Medicine. As the pediatric teaching hospital for the School of Medicine, we help train 85 residents and 60 fellows each year. This partnership ensures the latest treatment and research are available for the most complex and serious conditions. It also attracts nationally renowned physicians and researchers interested in pediatric clinical care and academic research.

HEALTH

Pediatric Specialties & Subspecialties

- Adolescent Medicine
- Aerodysphagia
- Allergy
- Asthma
- Behavioral Health
- Bone Marrow Transplant
- Cancer & Blood
- Cardiology (EKG, ECHO)
- Cardiothoracic Surgery
- Colorectal
- Comprehensive Care
- Craniofacial/Cleft Palate

Family-Centered Care

- Cystic Fibrosis
- Dental
- Dermatology
- Diabetes
- Dialysis
- Dietitians

- EEG
- Endocrinology
- ENT
- Gastroenterology
- General Surgery
- Genetics/Metabolic
- Hearing Assessment/ Audiology
- Heart Transplant
- Hematology/Oncology
- Immunology
- Infectious Disease
- Integrative Medicine
- Kidney Transplant
- Liver Transplant
- Imaging/Radiology
- Nephrology
- Neurology (EMG)
- Neurosurgery
- Nutrition

- Ophthalmology
- Orthodontics
- Orthopedics
- Physical Medicine and Rehab
- Plastic Surgery
- Pulmonary Care
- Pulmonary Function Testing
- Rheumatology
- Sleep Medicine
- Speech/VPI & Swallow Endoscopy
- Spina Bifida, ISTP
- Trach Vent
- Urology



HOSPITAL BEDS

PICU	28
NICU	50
Cardiac ICU	16
Neuro Trauma	28
Cancer/ Transplant	32
Medical/ Surgical	115
Behavioral Health	71

We understand how important it is to support the entire family when a child has serious health issues. In addition to focusing on excellent clinical care, we have dedicated significant resources to developing family support services. Our team includes physicians, therapists, child life specialists, teachers, and volunteers to engage patients and family members with therapeutic activities, positive distraction, and social support. Our goal is to not only promote physical healing, but emotional and spiritual healing as well.



Building a Community of Support

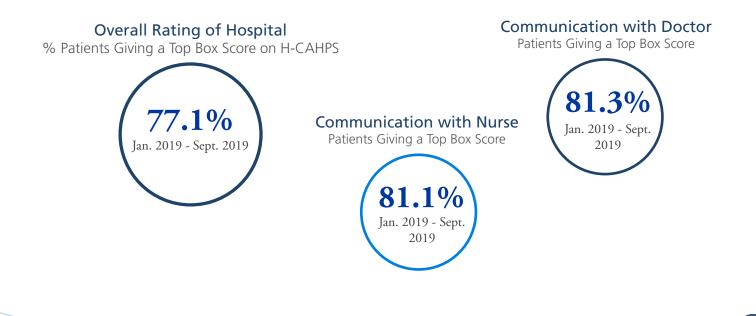
- Close partnership with Ronald McDonald House[®], which has 72 newly remodeled rooms for housing, 2 miles from the hospital.
- Two Ronald McDonald Family Rooms[®] inside the hospital, including the largest in the U.S.
- Discounted rates at 11 nearby hotels for patient families
- Guest Services available by phone or in person before and during visits to help families identify resources and navigate the hospital
- Family Support Services has 135 employees and 900 volunteers dedicated to helping patients and families

Accreditation & Recognition

- » Ranked in 8 pediatric specialties U.S. News & World Report Best Children's Hospitals 2019-2020
- » Accredited by The Joint Commission
- » Level I Pediatric Trauma Center American College of Surgeons
- » Level IV NICU American Academy of Pediatrics
- » ECMO Program Center of Excellence Extracorporeal Life Support Organization
- » Best Children's Hospitals Honors List Women's Choice Award
- » Best Children's Hospitals 15th Overall Parent's Magazine
- » Computerized Tomography Imaging & Nuclear Medicine Accreditation American College of Radiology
- » Pediatric Rehabilitation Program Accreditation Commission on Accreditation of Rehabilitation Facilities (CARF)
- » Recognition Status for Diabetes Program American Diabetes Association
- » Kidney Transplant Program listed by United Network for Organ Sharing (UNOS)
- » Recognized Transplant Center National Marrow Donor Program (NMDP)
- » Pediatric Pulmonology Program Accreditation Cystic Fibrosis Foundation
- » Sleep Center Accreditation American Academy of Sleep Medicine (AASM)
- » Level 1 Children's Surgery Center Designation The American College of Surgeons

Patient Satisfaction

We are committed to measuring and improving the patient experience and satisfaction. We participate in both H-CAHPS and CG-CAHPS. From Sept 2015 - Sept 2016 we had 1,451 patient satisfaction surveys returned. Additionally we have a full-time director of patient experience who works to educate staff, round with families, and improve all aspects of the patient experience. Our hospital has a Family Advisory Council and Patient Advisory Council that regularly meet to ensure the patient voice is heard and considered in all operations of the hospital. We also have a seat on our hospital board designated for a parent of a child with a chronic condition.





Ease of Provider & Patient Access

We have long served the high-acuity pediatric healthcare needs of children across Utah and surrounding states. In the last decade, approximately 13% of inpatient admissions were patients from outside of Utah, with the majority traveling from Idaho, Wyoming, Montana and Nevada. We believe care should be provided close to home when safe and appropriate. We partner with local community hospitals, medical staffs, visiting clinics, and telehealth solutions to keep care close to home. When a family must travel, we work to get them back home as quickly as possible. Because community providers are a key member of the care team, we work very hard to ensure good communication. A few examples of services we've developed to make care transitions smooth and efficient for families and referring providers include:



- » **Coordinated Scheduling** a non-local patient with two or more outpatient appointments can use this service to get appointments on the same day. This reduces travel costs, time, and stress to the family.
- » **Multi-Disciplinary Clinics** designed for patients with complex needs, they can see several specialties within the same clinic visit. This ensures coordination of care, saves time, and reduces travel to the hospital.
- » **Physician Access Line (PAL)** available to any provider who needs to speak with our specialists. Operators ensure live connections between providers. Providers can request a 30-minute call back or before end of day.
- » **Pediatric Transport Team** available 24/7 by land and air. Our uniquely experienced pediatric transport team brings more than 1,500 critical pediatric and neonatal patients to our facility each year. Transport nurses and respiratory therapists have worked an average of 12 years in Primary Children's Pediatric ICU.
- » Access to Electronic Medical Record referring providers can request read-only access to our EMR, allowing them to check on the progress of patients.
- » **Patient Discharge Communication** we send discharge summaries and provide discharge phone calls on the status of patients before they return home.
- » **Education and Training** in 2018 we offered 1,439 education events on- and off-site. We also provide speakers for educational seminars upon request, in order to bring additional education to physician practices, discuss care models, and answer questions.
- » **Telehealth** we are continuing to build robust telehealth programs. Today, some of our telehealth clinics include pediatric nutrition, craniofacial, and diabetes. We also offer a pediatric teletrauma service, as well as a pediatric telecritical care consultation.

PATIENT EXPERIENCE COMMENT

My son felt very well taken care of. He told me that he felt he was the only kid in the entire hospital!

While our full-service children's hospital offers the entire range of pediatric specialties and subspecialties, we are nationally recognized and serve the largest geographic area with our centers of excellence. These centers combine various pediatric specialties and subspecialties with multi-disciplinary teams.

Pediatric Specialty & Subspecialty Centers



HEART

As the only regional provider of comprehensive care for children with heart disease, we combine clinical excellence, innovation, and compassion. There are five pillars in our heart center - anesthesia, cardiac intensive care, cardiology, cardiothoracic surgery, and nursing. We have a 16-bed cardiac intensive care unit located near two cardiac operating rooms, ensuring a smooth transfer of patients from surgery to intensive care. Some of our subspecialty programs include:

- Adult Congenital Heart Disease
- Fetal Cardiology
- Cardiac Genetics
- Comprehensive Electrophysiology
- Heart Failure & Cardiomyopathy
- Pulmonary Hypertension
- Transplant
- Single Ventricle Survivorship

Multi-Disciplinary Team Approach

More than 40 highly-skilled physicians work tirelessly to treat the most complex congenital heart conditions. They are supported by more than 300 staff members

including: nurse practitioners, physician assistants, cardiac sonographers, nurses, perfusionists, respiratory therapists, social workers, genetic counselors and child life specialists. Collaboration between these teams is essential, along with safety and open communication.

We prioritize consistent communication with families and provide common contacts to guide them every step of the way. Communication with our referring physicians is also important and we are committed to providing timely updates related to both hospitalization and outpatient care. In addition to seeing patients at Primary Children's, we have 10 outreach clinics throughout the states of Utah, Idaho, Wyoming, and Alaska.

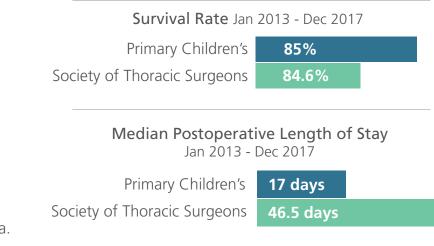
Highlights, Volumes, & Outcomes

2018 14,192 Outpatient Cardiology Appointments 480 Cardiothoracic Surgeries 686 Cath Lab Procedures

Outreach Cardiology Clinics located in: Utah, Idaho, Wyoming & Alaska.

Norwood Procedure - A Case Study

The Norwood Procedure is one of the most complex and difficult heart surgeries for children. We have some of the best survival rates in the nation, far exceeding national benchmarks.





Research & Evidence-Based Care

Research plays a vital role in offering innovative care. In 2015, more than 80 research papers and 8 book chapters were published by our clinicians. Other research highlights include:

- 1 of 9 facilities chosen as a core site of the Pediatric Heart Network
- 1 of 4 Cardiac Development Consortium sites
- 1 of 5 participants in the Pediatric Cardiac Genomes Consortium
- 1 of 2 institutions nationwide that participates in all three major research consortia for National Institutes of Health and National Heart, Lung and Blood Institute (see map)

We also participate in these national quality initiatives:

- American College of Cardiology's Adult Congenital & Pediatric Cardiology Quality Network
- National Pediatric Cardiology Improvement Collaborative
- Catheter Associated Blood Stream Prevention Initiative
- Ohio Children's Hospital Solutions for Patient Safety

Syncope & Appropriate Testing: The goal was to decrease resource

utilization and variability in evaluation and management of syncope patients. Baseline data revealed variability in testing, resource utilization, and cost. By implementing an evidence-based shared baseline, providing a mechanism to track ordered tests, and providing education handouts, we have seen a 13% reduction in overall tests performed per syncope patient (including echo, holter, event monitor, CXR, MRI, EP) as well as a 52% decrease in the number of patients receiving testing outside of standard guidelines. This baseline is now used by neurology, and distributed to both specialties quarterly.

Accreditation & Recognition

- » Ranked in the top 50 in Cardiology & Heart Surgery U.S. News & World Report Best Children's Hospitals 2018-19
- » Ranked 9th for Best Children's Heart Care Parent's Magazine (since 2013)
- » Echo Lab Accreditation Intersocietal Accreditation of Echocardiography Laboratories (Accredited in: Transthoracic, Transesophageal & Fetal echogradiographic testing)
- » National Pediatric Cardiology Quality Improvement Collaborative (1 of 47 heart centers)
- » National Cardiovascular Data Registry participant in IMPACT (Improving Pediatric and Adult Congenital Treatment) and ICD registry.
- » Society of Thoracic Surgeons
- » Optum Health Congenital Heart Center of Excellence (since 2015)

PATIENT EXPERIENCE COMMENT

The CICU staff has so much heart. Very well trained. Always kept my daughter so happy and calm. Nurses are a blessing. ng Pediatric and

HEART SURGER

- Pediatric Heart Network Core Site
- ★ Cardiac Development Consortium
- Pediatric Cardiac Genomics Consortium

BRAIN & SPINE

Our providers are nationally recognized in pediatric brain, spine, and cervical deformities and disorders. Our program has attracted patients from as far away as Kentucky, Oklahoma, and Mississippi. Interest in our program is based on our unique ability to provide innovative care for children with complex brain and spine conditions.

Multi-Disciplinary Team Approach

All of our programs and clinics use a multi-disciplinary team approach to care. Some of our focus areas include:

- Epilepsy evaluation by a team of neurosurgeons, epileptologists, neuropsychologists, social workers, nurses, dietitians, and electroneurodiagnostic (END) technicians all trained in pediatric epilepsy. Comprehensive epilepsy care includes full-spectrum neurodiagnostics (outpatient EEGs, long-term EEGs and intra-operative monitoring services).
- Headache & Chiari Malformation personalized care from a team of providers, which includes neurologists, neurosurgeons, neuroradiologists, nurses, behavioral health specialists, social workers, headache educators and care coordinators.
- Neuromuscular clinic conducted by a core provider team, which consists of a neurologist, pulmonologist, nurse practitioner, social worker, dietitian, behavioral health, rehab therapist and genetic counselor.
- Spina Bifida works closely with community practitioners and consists of a neurologist, neurosurgeon, pediatrician, urologist, orthopedist, orthotist, ophthalmologist, nurse, occupational therapist, physical therapist, psychologist, social worker, speech therapist, dietitian, and genetic counselor.
- Spine collaboration spanning orthopedics, neurosurgery, rehabilitation medicine, pain management, nursing, behavioral health, and social work. Provides care for both operative and non-operative disorders.

Patients are screened upon referral and prioritized based on severity of condition and urgency of care. Most patients with significant issues can be seen within 1 to 2 weeks.

Highlights, Volumes & Outcomes

2018 11,500 **280** Spine Surgeries Unique Patients in

576 Neurosurgeries

Over the past 10 years, we eliminated the need for blood transfusions in Adolescent Idiopathic Scoliosis patients

Brain & Spine Clinics

Clinic	Patients
New Onset Seizures	2,040
Neuromuscular	1,160
Headache	1,516
Autism Spectrum	805
General Metabolic	902
Neonatal Neurology	756



Surgical site infections in adolescent

idiopathic scoliosis patients since developing new recommendations in 2013

3,221 **EEGs** Completed & Analyzed in 2018

Research & Evidence-Based Care

- 164 individual IRB approved clinical studies
- Founded Children's Spine Study Group, a national organization focusing on early onset scoliosis research
- Co-Founded Hydrocephalus Clinical Research Network to improve diagnosis, treatment, and outcomes
- Prospective research studies to improve pain management after scoliosis surgery
- Helped develop national consensus best practice guideline to prevent spine surgery site infection
- Leaders in genomic analysis of Chiari 1 Malformation, leveraging resources of the Utah Genome Project, Heritage 1K Project, and Utah Population Data Bank.
- Participate in national research consortia, including
 - Park-Reeves Syringomyelia Research Consortium
 - Patient-Centered Outcomes Research Institute-Funded Chiari Surgery Trial

Reducing Infection in Scoliosis: We have eliminated the need for blood transfusions over the past 10 years in Adolescent Idiopathic Scoliosis. After developing and implementing recommendations in 2013 to reduce surgical site infection for spine patients, we have had zero infections in AIS patients.

Accreditation & Recognition

- » Level IV Epilepsy Center (highest level) in January 2016 by the National Association of Epilepsy Centers
- » EEG Inpatient Lab accredited in August 2016 by American Board of Registration of Electroencephalographic and Evoked Potential Technologists (ABRET)
- » EEG Outpatient Lab accredited in 2015 by ABRET
- » Ranked 27th in Neurology & Neurosurgery by U.S. News & World Report Best Children's Hospitals 2019-2020
- » Pediatric Rehabilitation Program accredited by Commission on Accreditation of Rehabilitation Facilities (CARF)
- » Inpatient rehab program participates in Universal Data System for Medical Rehabilitation (UDSMR)





PATIENT EXPERIENCE COMMENT

She's BACK! She is laughing all day long, she is feisty in a very good way again, she is caring and loving again, and her smile won't stop! My heart is so happy to see her like this. I can't even believe what she is accomplishing!

CANCER & BLOOD DISEASE

We use the most promising new treatments for cancer. Patients are followed by the same team throughout care, from diagnosis through long-term follow-up or bereavement. Our team includes 17 pediatric oncologists, 4 researchers, 6 fellows, 13 advanced practice providers, 2 PhD scientists, and more than180 support staff. We care for all cancers and blood diseases including:

- Leukemias (ALL, AML)
- Bone Tumors
- AnemiasSolid Tum
- Solid Tumors
- Brain Tumors Lymphomas
- Bone Marrow Transplants (Perform Auto, Allo, Haplo, Cord, Stem Cell, Immunotherapy, and CAR-T.)

Approximately 30% of our cancer patients live outside the state of Utah. Our hospital has a 32-bed inpatient unit with HEPA filtered private rooms, 13 clinic exam rooms, and nine infusion bays. When care can be delivered closer to home, it is coordinated closely with community providers by our physicians and nurses.

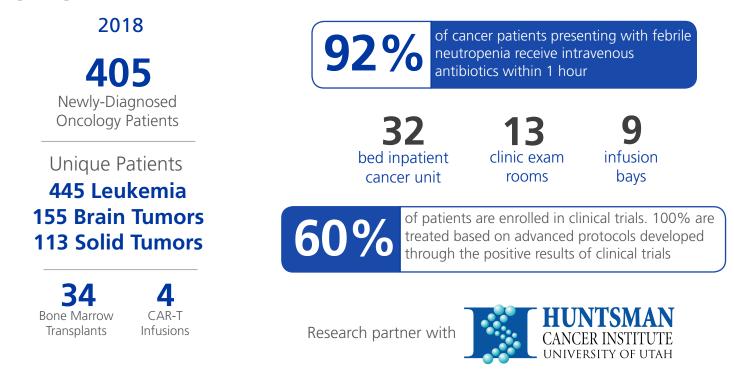


Multi-Disciplinary Team Approach

Each patient is assigned a primary subspecialty pediatric hematology/oncology physician, social worker and nurse care coordinator based on the child's disease diagnosis. This core subspecialty team works collaboratively to create a specific care plan. Care is also coordinated, as appropriate, with local physicians, home care agencies, local schools, and service providers closer to a child's home.

Patients are scheduled and evaluated (typically within one week of referral) in our outpatient clinic or as an inpatient based on the child's clinical needs, medical urgency, and family availability. Emergent needs are addressed on the same day.

Highlights, Volumes & Outcomes



Research & Evidence-Based Care

We participate in many research studies and innovative treatments. We have 54 active clinical trials: leukemia/ lymphoma (21), solid tumors (20), CNS tumors (9), transplants (2), and trials of biologically targeted novel agents that are not disease-specific (2).

Clinical Research Networks & Affiliations:

- National Cancer Institute Cancer Center
- Children's Oncology Group
- National Cancer Institute Phase 1/Pilot Consortium
- Pediatric Brain Tumor Consortium
- New Approaches to Neuroblastoma Therapy
- Sarcoma Alliance for Research Through Collaboration
- Department of Defense Neurofibromatosis Consortium
- Therapeutic Advances for Childhood Leukemia and Lymphoma
- Collaborative Ependymoma Research Network
- Pacific Pediatric Neuro-Oncology Consortium
- Head Start 4
- Pediatric Oncology Experimental Therapeutics Investigators Consortium (POETIC)
- Beat Childhood Cancer

Weekly Conferences & Discharge Guidelines: In weekly leukemia/lymphoma conferences, staff discusses each new diagnosis from the prior week, patients currently being treated, protocol enrollment, genetic and molecular markers, compliance, response, toxicities, and plans for treatment and evaluation. This has led to improved care and compliance, more effective communication among team members and with the family/patient, improved patient and family satisfaction, and a decrease in complications and toxicities by early intervention and monitoring.

Accreditation & Recognition

- » Accredited by the Foundation for the Accreditation of Cellular Therapy
- » Ranked in the Top 10 of 220 institutions by the national Children's Oncology Group
- » Ranked 30th in Cancer U.S. News & World Report Best Children's Hospitals 2019-2020
- » Member of:
 - Neuroblastoma and Medulloblastoma Clinical Trial Consortium
 - Pediatric Blood and Marrow Transplant Consortium
 - Clinical Trials Network
 - Primary Immune Deficiency Consortium
 - Pacific Pediatric Neuro-Oncology Consortium
 - Sarcoma Consortium
 - Sunshine Consortium for Pediatric Solid Tumors
- » Optum Center of Excellence
- » Cigna Provider of Excellence

PATIENT EXPERIENCE COMMENT

The oncology team at Primary Children's has been phenomenal to work with. From scheduling to monitoring our daughter's health care, we always feel like we are in the most attentive hands and that gives us peace of mind so we can just relax and be our daughter's parents.





TRANSPLANT

Our transplant teams provide excellent care and facilitate support throughout the entire transplantation process. We provide comprehensive transplant care for:

- Heart Transplant
- Kidney Transplant
 Bone M
- Liver Transplant (Full & Split)Bone Marrow Transplant

Weekly family meetings are held with specialty care teams for each listed and post-transplant patient. This provides a forum for discussing medical plans, reviewing test results, addressing concerns, providing resources, and emotional support. Social workers play a significant role in arranging care and services for out-of-state transplant patients. Our physicians have strong relationships with regional providers, essential for coordinated care in a patient's hometown.

Multi-Disciplinary Team Approach

Linda Book, MD - GI, Liver Transplan

Heart: Care for heart failure and heart transplant patients. Four board-certified

pediatric transplant cardiologists supervise and coordinate all pre- and post-transplant care. New patients are seen within a week. During pre-transplant all families meet with a social worker, transplant cardiologist, cardiothoracic surgeon, transplant coordinator, pharmacist, financial counselor, and dietitian. In addition, pulmonologists, gastroenterologists, radiologists, electrophysiologists, infectious disease specialists, renal specialists, pharmacists and dentists are available.

Liver: Care for liver disease and liver transplant patients. Three board-certified pediatric transplant hepatologists supervise and coordinate all pre- and post-transplant care. New patient and follow-up appointments are scheduled within 15 days. Medical support consists of pediatric intensivists with daily multidisciplinary inpatient rounds with pediatric transplant hepatology, transplant surgery, transplant pharmacy, social work, and dietitians. Patients are followed in a multidisciplinary clinic directed by a pediatric hepatologist with comprehensive discharge planning and education.

Kidney: Care for kidney transplant patients. Four board-certified pediatric transplant nephrologists supervise and coordinate all pre- and post-transplant care. New patients are seen within a month with no wait for follow up appointments. Our team includes transplant surgeons, pediatric nephrologists, a dedicated social worker, dietitian, child life specialist, coordinator, pharmacist, discharge planner and financial counselor. Continuity of care for children and adolescents is provided throughout chronic kidney disease, dialysis, and transplantation.

Bone Marrow: Care for stem cell and bone marrow transplants, including auto, allo, and haplo. The team consists of physicians, advanced practice clinicians, nurse care coordinators, social workers, child life specialists, language interpretation, neuropsychiatry, dietary, and pharmacy. Patients are typically scheduled and evaluated within a week of referral and emergent needs are addressed on the same day. Our team coordinates closely with community providers and ensure they have access to the entire BMT team. Patients are followed by the same care team.

Highlights, Volumes, & Outcomes

deaths within 100 days of stem cell transplant*



deaths within 1 year of heart transplant* deaths within 3 year of kidney transplant*

Research & Evidence-Based Care

We participate in many research studies and innovative treatments to improve pediatric organ transplant. Some of our research includes:

KIDNEY

- •Antihypertensive trials in children and adolescents
- Mycophenolate mofetil in children and adolescents
- •Valganciclovir for CMV prophylaxis
- Effects of dietary changes on immunosuppressive exposure
- Extended use of valganciclovir prophylaxis in select organ recipients is being evaluated
- Pharmacokinetic, pharmacodynamic, and pharmacogenetic evaluation of mycophenolate in children and adolescents undergoing renal transplantation, in collaboration with Cincinnati Children's Hospital

LIVER

- Relationship between intravenous lipid infusions to cholestasis
- •TPN-associated liver disease in children with short bowel syndrome
- •Analysis of pediatric recipient/ donor allocation for liver
- transplantation •Collaborative study on frailty
- through the SPLIT Consortium
- Everolimus use in posttransplant immunosuppression
- •Renal failure and management
- Impact of portal vein thrombosis

HEART

- Pediatric Heart Transplant Study (1 of 46 participants)
- NIH Pediatric Cardiomyopathy Study and Biomarkers Study (1 of 11 participants)
- •NIH Genotype Phenotype Study
- •Berlin Heart Post Approval Study

BONE MARROW

- •Pediatric Blood and Marrow Consortium
- •Clinical trials network
- •Therapeutic advances in childhood leukemia

PATIENT EXPERIENCE COMMENT

Primary Children's provided our son with exceptional care. The doctors and nurses worked as a team. We didn't see any delay in our son's care. True example of human kindness all around!!

Accreditation & Recognition

- » Allogenic Stem Cell Transplant Facility Foundation for the Accreditation of Cellular Therapy
- » Recognized Transplant Center National Marrow Donor Program
- » Member of the Pediatric Blood and Marrow Transplant Consortium
- » Pediatric arm of the Utah Transplantation Affiliated Hospitals (U.T.A.H.) Cardiac Transplant Program
- » Member and Executive Council Participant of SPLIT (Studies of Pediatric Liver Transplant)
- » Pediatric Transplant Committee Member United Network for Organ Sharing
- » Data Safety Monitoring Board (for cystic fibrosis) and Children's Cholestatic Liver Disease Consortium
- » One of the most active pediatric Donation after Cardiac Death (DCD) programs in the country
- » Medal of Honor U.S. Health Resources & Services Administration's National Collaborative on Organ Donation and Transplantation (received each year it has been awarded)
- » Optum Center of Excellence
- » Cigna Program of Excellence
- » Ranked in Nephrology, Gastroenterology & GI Surgery, Cardiology & Heart Surgery, and Cancer U.S. News & World Report Best Children's Hospitals 2019-2020



NEONATAL & FETAL

Our Neonatal ICU cares for the tiniest patients who need specialized, intensive, neonatal care. We are the only Level IV NICU in the Intermountain West, which means we provide surgical services including general and all subspecialty surgeries. We are also the only NICU in the Intermountain West that can offer Extracorporeal Membrane Oxygenation (ECMO). This machine takes over the work of the lungs and sometimes the heart, and enables a very sick baby time to rest and recover. Our NICU staff have dedicated their careers to caring for critically ill babies and using evidence-based practices to get the best possible outcomes.

Multi-Disciplinary Team Approach

We offer every subspecialty in a multi-disciplinary team environment. Our team includes 19 board-certified neonatologists, physician assistants, neonatal hospitalists, neonatal nurse practitioners, and registered nurses. Our average

daily census is 36 patients. Specialized care includes on-site pharmacists, certified lactation specialists in our mother's milk center, as well as respiratory, physical, occupational, and speech therapy. We have medical social workers on staff, child life specialists, and a parent coordinator.

All members of the care team provide individualized and group parental support, a focus on siblings, and the family as a whole. Partnering with our parents is essential and we consider them important members of the healthcare team. Our treatment decisions are based on family-centered care and our goal is to help out-of-state families return home as soon, and as safely, as possible.

Highlights, Volumes, & Outcomes

>>

36 average daily census less than 18 patients per board-certified neonatalogist

less than 9 patients per neonatal nurse practitioner

100% anesthesiologists are board-certified in pediatric anesthesia

Mother's Milk Center

with dedicated breast milk technicians

7,884

breast milk feeding days with no administration errors (wrong milk to baby) **LEVEL IV NICU** serving a five-state region





Research & Evidence-Based Care

Our NICU is a member of the Children's Hospital Neonatal Database—the nation's only clinical outcomes database to improve quaternary care for infants in children's hospital NICUs. With data from more than 25 children's hospitals, CHND participants collaborate to improve NICU patient care and outcomes through peer benchmarking, quality improvement initiatives and analytics. Primary Children's also participates in the National Research Network, Vermont Oxford Network, Extracorporeal Life Support Organization, and many other neonatal clinical studies.

ROP Laser Surgery Sedation: We identified a potential process change due to the need for additional intubation and ventilator days associated with our neonates who required ROP laser surgery. Our unit typically has just under 10 infants a year who require ROP laser surgery. Our team reviewed literature and engaged the anesthesiologist in charge of sedation. A multi-disciplinary NICU team developed a standardized guideline, checklist and order set to use moderate sedation for ROP laser surgery that did not require intubation. A select group of neonatologists, nurse practitioners, and nurses piloted the process and order set. After a few modifications, the rest of the provider group was trained. As of the end of 2015, our unit had completed 12 cases of ROP laser surgery using moderate sedation, successfully resulting in no infants requiring intubation for laser ROP surgery and no additional intubation or ventilator days for this procedure. There were no negative outcomes that required intubation during the procedure or an increase in second surgeries.

Accreditation & Recognition

- » Level IV NICU American Academy of Pediatrics
- » ECMO Program Center of Excellence Extracorporeal Life Support Organization
- » Ranked 32nd in Neonatology U.S. News & World Report Best Children's Hospitals 2019-2020

The Utah Fetal Center at Primary Children's Hospital provides integrated, quality care to achieve the best possible outcomes for babies and families. Started in January of 2016, Our goal is to optimize the health of those affected by congenital anomalies, both during and after birth, and provide a single point of contact and care coordination. Our center is staffed by physicians from Intermountain Healthcare and the University of Utah. We are a national referral center overseen by experienced physicians who work with specialists in pediatric cardiology and cardiovascular surgery, urology, genetics, neurology and neurosurgery, radiology, maternal fetal medicine, pediatric surgery, neonatology, and otolaryngology. Generally, patients are seen within 2-4 weeks from time of referral, however, we see patients urgently when needed. After evaluating a pregnant mother and family we share our recommendations, which may include guidance for monitoring pregnancy, further testing and interventions, therapy during and after delivery, coordination of delivery time and location, and follow up after the baby is born.



PATIENT EXPERIENCE COMMENT

With our child in your NICU, our comfort increases and our anxieties go out the window.

Referrals in 2018

TRAUMA

Our nationally accredited trauma program cares for injured children, from infants to adolescents. In 2018, Primary Children's completed the American College of Surgeons site survey and was re-verified, for the 16th consecutive year, as a Level I Pediatric Trauma Center. Our hospital serves as the pediatric trauma referral center for Utah and surrounding states. In 2015, 12% of trauma victims admitted were from outside of Utah.

Pediatric trauma experts are involved in all aspects of care, including consultation before arrival, emergency department triage, inpatient care, operative management, and rehabilitation.

Multi-Disciplinary Team Approach

Our trauma program is supported by pediatric surgical subspecialists including: orthopedic surgery, neurosurgery, plastic surgery, anesthesia and

pediatric trauma surgery. Patients also benefit from 24-hour support services such as pediatric radiology coverage and CARF-accredited rehabilitation facilities. Our multidisciplinary approach allows us to provide trauma patients with exceptional care and serves as a resource for injury prevention and education for our region.

Highlights, Volumes & Outcomes

2015

42,000 emergency room visits

1,500 pediatric & neonatal patient transports to Primary Children's by our specialized medical transport team

Trauma Volumes by Severity

Trauma I	Trauma II	Trauma Consult
90	173	332

12%

of Trauma victims at our hospital were transfers from outside of Utah 16 years as a verified level I pediatric trauma center

Level 1 Pediatric Trauma Center

- Serves 5-state region
- One of the busiest trauma programs in the country
 - Pediatric Critical Care
 - 32-bed Pediatric ICU
 - 44-bed Neonatal ICU
 - 16-bed Cardiac ICU
 - 28-bed Neuro Trauma





Research & Evidence-Based Care

We participate in the American College of Surgeon's Trauma Quality Improvement Project, which utilizes riskadjusted benchmarking to compare mortality, complications, and resource use with other pediatric trauma centers across the nation. Researchers at Primary Children's have led innovative projects to assess pre-hospital emergency medical service, acute medical and surgical management, rehabilitation, and family and community services that impact the short- and long-term outcomes of injured patients.

Examples of recent published research from our trauma team include:

- Prediction model to identify injured children at high-risk of blunt cerebrovascular injury
- Risk factors for ventilator-associated pneumonia in pediatric traumatic brain injury and recommendations for empiric therapy in the highest risk group
- Review of traumatic biliary injuries in children
- Hyperglycemia as an independent risk factor for poor outcomes in children with traumatic brain injury
- Effect of high-dose barbiturates for refractory intracranial hypertension in children
- Avoiding early complications and re-operation during occipitocervical fusion

Evidence-based care in our trauma team includes: utilization of computerized tomography in minor blunt head trauma; cervical spine imaging after traumatic brain injury; a clinical prediction rule for pediatric abusive head trauma; management of children with isolated skull fracture; ECMO utilization for environmental hypothermia; and blunt solid organ injury guidelines for management.

Accreditation & Recognition

- » Level I Pediatric Trauma Center certified by American College of Surgeons (16th consecutive year)
- » American College of Surgeon's Trauma Quality Improvement Project
- » CARF-Accredited Pediatric Acute Inpatient Rehabilitation Team
- » Ranked 27th in Neurology & Neurosurgery and 37th in Orthopedics U.S. News & World Report Best Children's Hospitals 2016-17
- » Member of Western Pediatric Trauma Conference

PATIENT EXPERIENCE COMMENT

Thank you! It made a huge difference in our nightmare to have great care for our daughter. The staff made the hard times a little bit easier.

TELETRAUMA NETWORK

In 2015, a research study by our trauma team found that 27% of trauma transfers to our hospital in the most recent ten years could have been prevented. In fact, a third of these children were discharged from the emergency department without admission. Such transfers add extraordinary cost, not only in dollars but in resources, time and burden to families. As a result, Primary Children's has developed a Pediatric Trauma Network for our state and broader region. This includes collaborative quality review and improvement projects, standard care pathways, and live support by trauma advance practice clinicians, surgeons and neurosurgeons via audio and video teletrauma services.



ADDITIONAL SPECIALTIES

Diabetes

Our Diabetes program provides ongoing, specialized care for more than 2,000 children with type 1 and type 2 diabetes. Our multi-disciplinary team includes 9 board-certifited pediatric endocrinologists, 2 board-eligible pediatric endocrinologists, 3 nurse practitioners who are certified diabetes educators, 6 nurse certified diabetes educators, 3 dietitian certified diabetes educators, 2 nurses, and 2 licensed clinical social workers. Together, they develop an individualized plan of care and follow patients in the outpatient clinic setting ever 3 to 6 months until they transition to adult diabetes care. We hold outreach clinics in Logan, Layton, Riverton, and St. George, as well as a telehealth clinic in St. George. Our diabetes clinic and education program maintains recognition by the American Diabetes Association.



Parent Comment: "They taught me a lot and followed up with me every week! It was so great to know there were people to help us. Thank you so much!"

Cleft Palate & Craniofacial

Our Cleft Palate and Craniofacial program is accredited by the American Cleft Palate Association. It is a multidisciplinary service providing care to nearly 300 patients. We are the only pediatric hospital-based craniofacial team between Colorado and California. New patients are seen within one to two weeks. Our multi-disciplinary team includes craniofacial pediatric plastic surgery, otolaryngology, craniofacial orthodontics, speech therapy, medical social work, nursing and audiology. Clinics are held two to three times a month with outreach clinics in Riverton, Layton, and Provo. We offer prenatal counseling visit at all our locations and via telehealth. Patient appointments are scheduled annually from birth to late teens as the team monitors the child's progress and builds a coordinated treatment plan.

Parent Comment: "It's nice to have all of the doctors in one place and the staff are great to work with."

Colorectal

Our Colorectal Center is one of the few places in the western United States that provides care for children and adolescents with anorectal malformations, Hirschprung's Disease, and other issues related to bowel function such as severe constipation and fecal incontinence. Our multidisciplinary team consists of surgery, gastroenterology, urology, nursing, social work, child life, and pelvic floor physical therapy. We currently manage more than 500 patients.



The center includes motility disorders and bowel management programs. We also provide esophageal, duodenal, colon, and anorectal manometry studies to better understand motility issues and direct treatment.

Clinic is offered weekly with a multidisciplinary clinic each month.

Patient Story: "Thank you again for everything you have done for our family. It's hard to put into words the gratitude I feel for Dr. Rollins and team. 'Thank you' is inadequate to express how grateful we are."

Michael Rollins, MD - Pediatric Surgery/Colorectal

Gastroenterology & GI Surgery

Gastroenterology includes multi-disciplinary, comprehensive care for children with liver disease, intestinal disease and nutritional disorders. This team includes physicians, advanced practice nurses, dietitians, social workers, nurse care coordinators, medical assistants, and support staff. Coordination and communication is essential with pediatric surgical subspecialties, pediatric radiologists and pediatric pathologists. Subspecialty expertise crosses several domains and each has a dedicated physician and RN-level support:

- Pediatric Liver Center
- Pediatric Comprehensive Nutrition Clinic
- Food Allergies and Eosinophilic GI Disorders Clinic
- Penelope Program for Children with Undiagnosed Disease

Patient Story: A patient with ulcerative colitis was admitted to an out-of-state community hospital and then required urgent transfer to Primary Children's Hospital. Surgery and gastroenterology arranged for a combined procedure to avoid multiple anesthetics. After successful hospitalization, the patient returned to her community, although she needed a new medication that required home injection. Our nurse coordinator arranged for medication prior authorization, medication delivery and injection teaching. To avoid multiple trips to Salt Lake City, our nurse coordinator also arranged for clinic visits with gastroenterology and surgical staff.



Pulmonology

The division of Pediatric Pulmonary and Sleep Medicine cares for a diverse pediatric patient population with breathing difficulties in the hospital and as outpatients. Several outpatient clinics are offered including:

- General pulmonary clinic for asthma, interstitial lung disease, thoracic cage abnormalities associated with restrictive lung disease and other pulmonary conditions
- Sleep medicine clinic for children with sleep-disordered breathing such as obstructive and central apnea, disorders of excessive daytime sleepiness and insomnia
- Aerodigestive clinic for children with difficulties swallowing, lung disease, upper airway anomalies and gastrointestinal issues
- Tracheostomy and ventilator clinic which cares for children with chronic respiratory failure and who are dependent on a tracheostomy and ventilator
- Pulmonary care of premature infants with chronic lung disease and children with difficulty breathing due to neuromuscular weakness
- Cystic fibrosis center

Our clinical team includes six pulmonologists, four sleep medicine providers, three mid-level practitioners (two nurse practitioners and one physician assistant), three nurses, six respiratory therapists and a number of medical assistants. Our sleep laboratory is accredited by the American Academy of Sleep Medicine and conducted 1,136 sleep tests in 2015.

Parent Comment: "Our [sleep study] visit was wonderful as usual. The technologist who worked with my son was very friendly and helped my son be at ease. He was nice and quiet each time he had to come into the room during the night. In the morning he was quick to get us done."

QUALITY & OUTCOMES

Population Health

The population health model at Primary Children's Hospital is the only model in the country built primarily to support pediatric subspecialty care. Started in mid-2014, Pediatric Specialty Services (PSS) is the collaboration between Primary Children's and the University of Utah Medical Group pediatric subspecialists representing the University's School of Medicine. More than 90% of physicians at Primary Children's are employed by the University of Utah.

PSS is the exclusive subspecialty care provider for Intermountain Healthcare's shared accountability model. As a result, PSS has taken financial responsibility for pediatric subspecialty care for 20% of the Utah population, or 180,000 children. Investments in this population health model ensure the best possible outcomes at the lowest appropriate cost - benefiting patients from both in and outside of Utah.



Our record of clinical value improvement has resulted in Primary Children's having the lowest mix-adjusted length of stay of any freestanding children's hospital.

The University of Utah has an aligned mission to improve value, and has appointed a chief value officer in every academic department. Each year, every university physician specialty group works on value improvement projects. University physicians have prominent roles in Intermountain Healthcare's clinical programs as the source for pediatric clinical quality improvement across the system. PSS has commissioned key improvement projects. Some of the projects include:

- **NICU Home Enteral Feeding Transitions:** Led by a NICU hospitalist, we have implemented a model that shortens NICU length of stay for patients who meet discharge criteria but are still learning how to eat. The model standardizes inpatient care and provides improved outpatient follow-up and builds community-based support for assisted feeding.
- **Improving Asthma Care:** Led by a university emergency department pediatrician, we decreased the proportion of asthma patients who were admitted to the hospital following an ED visit from 50% to 33%, with no increase in returns to the ED. We did this by delivering evidence-based medications at the appropriate doses in a more timely manner.
- Using Ultrasound to Diagnose Appendicitis: Led by pediatric radiologists, surgeons and emergency medicine physicians, we decreased the CT rate in suspected appendicitis patients from 98% in 2008 to 18% in 2013 without misdiagnoses. We did this through benchmarking with other children's hospitals and consulting published literature proving the concept. Teams collaborated to develop best practices and ensure smooth patient flow.
- Central Line-Associated Bloodstream Infection Reduction: Led by nursing leadership, we significantly reduced CLA-BSI rates in all inpatient units. We went from a rate of 3.71 infections per 1,000 line days in January 2011 to a rate of 1.45 infections per 1,000 line days in December 2013. We did this through ensuring that well-documented, standard practices were in place and reliably performed. Utilizing simple checklists and empowering staff to hold each other accountable was crucial.

Cost Effectiveness

As a full-service children's hospital, we can provide care for innumerable and varied pediatric patient needs. As a result, it is not possible in this document to outline the costs or charges of the many services patients might receive at our hospital and clinics. However, as a member of the Children's Hospital Association, we regularly submit cost and quality data to the analytics arm of the association known as Pediatric Health Information System (PHIS). Through PHIS we receive regular reports on how our cost and quality indicators compare to other children's hospitals across the country for the care of the same types of patients, acuity adjusted. We consistently outperform other children's hospitals on key metrics, including:

- Our acuity-adjusted cost index to payers has been shown to be the lowest of any children's hospital in the western U.S.
- Our observed-expected patient length of stay is the second lowest of any children's hospital included in the dataset.

Data sharing agreements with PHIS restrict publishing these results in graphs or charts. However, it does allow us to review the data in person or over a webinar. We are happy to present this data to demonstrate the exceptional value you will receive when partnering with Primary Children's Hospital.

Data Sharing

Intermountain Healthcare is well-known for being a leader in using big data to track the implementation of evidence-based care standards and associated patient outcomes. Beginning in the mid-1950s, Dr. Homer R. Warner, one of the founders of clinical computer systems, began using computers for decision support in cardiology at LDS Hospital in Salt Lake City. His innovative work set the stage for a new field of academic study called medical informatics. In the 1970s, Dr. Warner and his Intermountain colleagues created one of the nation's first versions of an electronic medical record. Designed to assist clinicians in decision-making, Intermountain's renowned "HELP" (Health Evaluation through Logical Processing) system was operational for more than 40 years. Not only did the HELP system provide support to clinicians during the care process, it feed all of the collected data into an Enterprise Data Warehouse (EDW).



Intermountain's EDW is one of the richest longitudinal data sets of any patient population in the country. Not only does it contain decades of clinical information, but it is also tied to a robust activity-based cost accounting system. As a result, we know what care happened and at what cost. The data in the EDW is used daily by clinicians, analysts, and operational leaders to make decisions for the best care outcomes at the lowest appropriate cost. For a children's hospital in particular, this data allows us to track patient care and outcomes over decades. We can see what care was provided to a small child and how this impacts additional care needs into adolescence and adulthood. In this way, we can improve health outcomes for life through childhood interventions.

(continued)

In 2015, Intermountain began transitioning to a new electronic medical record in a partnership with Cerner. With this new EMR, known as iCentra, we're seeing improvements in the clinician-facing capabilities while maintaining the back-end data collection that allows us to track patient outcomes and costs.

As part of our current population health contracts for 180,000 pediatric members, we have developed several meaningful quality metrics that we report to our population health payer partners on a monthly basis. Some of these metrics include: serious safety event rate, adverse drug events, CLA-BSI rates, surgical site infections, new patient access metrics, overall hospital satisfaction (CAHPS), university provider patient satisfaction (Press Ganey).

Patient Safety

In 2011 we started a new patient safety initiative called Zero Harm. While the safety and reliability in our hospital was high, we felt there was room for improvement and to ultimately attain a goal of no harm to any patient while in our care. Developed in collaboration with the consulting firm HPI, this initiative takes the safety and high-reliability principles found in nuclear power and aviation and applies them to healthcare. Our focus over the last decade has been on improving the culture of safety at our hospital and

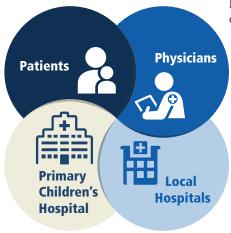


clinics. This includes empowering every employee, from housekeepers to physicians, to speak up if they have a safety concern, stopping in the face of uncertainty, and ensuring effective communication between teams.

Through Zero Harm, we consistently train on safety commitments and error-prevention techniques. Every employee completes a 4-hour, in-person safety training course, safety coaches are integrated on every team, and daily safety huddles are used in every department. We not only train and practice these techniques each day, but we celebrate and recognize employees who demonstrate a commitment to safety. Since starting on this journey, we have seen a 47% reduction in serious safety events.

Building a Network of Care

With our focus on providing the highest value in pediatric clinical care, we only want families to travel for care when absolutely necessary. We want to support high-quality care being provided close to home when it is safe and appropriate. Because of this unique network philosophy approach, we are working collaboratively with community



providers, local hospitals, payers, and other health care systems. Highlights of our network of care include:

- Multiple clinic locations for specialty and subspecialty care
- Telehealth including specialty clinics, trauma, and critical care
- Training and education to improve local pediatric care
- Partnerships with community hospitals to improve local pediatric care and ensure access to critical and specialty care. Partnerships include:
 - » Utah Valley Hospital, Utah
 - » Riverton Hospital, Utah
 - » St. Vincent Healthcare, Montana



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