

CHILDREN'S SPOTLIGHT:

Cardiovascular Program



Christine Hills, MD


Children's
Hospitals and Clinics
of Minnesota

www.childrensmn.org/heart



Largest program in the Upper Midwest

David Gremmels, MD

At Children's Hospitals and Clinics of Minnesota it's more than our size that distinguishes our cardiovascular program, it's our team of nationally renowned staff. We specialize in diagnosing and treating heart and blood vessel conditions that affect kids. The 200 professionals from Children's of Minnesota and The Children's Heart Clinic, who comprise our team, have a wealth of experience, and it shows. We offer leading-edge techniques for treating kids' heart conditions — from before birth and into adulthood.



U.S. News & World Report has ranked us as one of the best children's hospitals in the nation for cardiovascular care. We provide a full range of care, from imaging tests to pioneering surgeries for babies, children, teens and adults born with heart defects.

Children's cardiovascular program by the numbers

WE PERFORM

6%

of the **PEDIATRIC CARDIAC SURGERIES** in the region.

90%

of patients undergoing the **most complex heart surgeries** (such as the Norwood procedure) **SURVIVED**, compared to The Society of Thoracic Surgeons (STS) average of 83% (and we're working tirelessly to increase that number).

24/7
ON-SITE CARE
BY PEDIATRIC
CARDIAC
INTENSIVISTS.

No other facility
in the region can
say that.

11
CLINICS

The most expansive
outpatient clinic
experience in the
Midwest, offering same-
day appointments for urgent needs.



11,000+
HEART SURGERIES

have been performed at Children's
since the inception of the
cardiovascular program in 1973.



Daily
TEAM ROUNDS

on every inpatient in our cardiovascular
care center. The entire care team,
families and referring providers can hear
the care plan and ask questions.

96%

of patients say they would
DEFINITELY
RECOMMEND

Children's cardiovascular
program, putting us in the top
10 percentile of pediatric
hospitals nationwide.

ANNUALLY:

300+ patients
treated by Children's cath lab

10,000+ EKGs
performed or interpreted

10,000+ echos
performed or interpreted

**400+ cardiovascular
surgical cases**

200

DEDICATED PROFESSIONALS from Children's and
The Children's Heart Clinic — including 10 pediatric cardiologists
and two pediatric cardiovascular surgeons — making us the
largest pediatric cardiovascular team in the Upper Midwest.

ONLY

CARDIOVASCULAR CARE CENTER
in the Upper Midwest with all its pediatric
services conveniently located on the
same floor and in a single building.



Best-in-class care

The Edward J. Phillips Cardiovascular Care Center at Children's – Minneapolis is designed to be a **home away from home** for patients while providing the highest level of clinical care and technology.

PATIENT-AND FAMILY-CENTERED: A philosophy of care that respects the pivotal role of the family as the constant in their child's life. It acknowledges that families are the experts of their children, and are the primary care givers and source of support. Informed patients and families make better decisions. We strive to provide clear, honest and useful information in a respectful way for everyone under our care.

SINGLE LOCATION: All pediatric cardiac services are in one location and on one floor, optimizing the continuity of patient care.

SPACIOUS ROOMS AND AMENITIES: Rooms are large enough to accommodate clinical equipment and technologies while allowing space for relaxation and healing.

- sleeper sofas
- work spaces
- phones
- storage closets
- refrigerators
- Geek Squad® precinct



HIGH-TECH:

- Advanced technologies enable clinician communication between rooms
- Image viewing from multiple sources allows physicians and staff access to critical information wherever it is needed
- Remote viewing of procedures ensures all staff members are aware of and can plan for patients' ongoing needs



WE ARE LEADING THE WAY

- First dedicated **pediatric cardiac catheterization lab** in the Upper Midwest
- First lab in the Upper Midwest exclusively for **pediatric electrophysiology studies**
- First facility in Minnesota to be nationally accredited in **pediatric transthoracic echocardiography**
- First program in the Upper Midwest to perform a complex, three-part surgery to treat **hypoplastic left heart syndrome**

Complete cardiac care

Children's cardiovascular program diagnoses and treats the full range of heart and blood vessel conditions in **fetuses, babies, children and teens**. Our patients also include **adults** who need long-term care for previously repaired congenital heart defects.

CONDITIONS TREATED

Children's is equipped to diagnose and treat all cardiac conditions, including:

- Atrioventricular septal defect
- Coarctation of the aorta
- Hypoplastic left heart syndrome (HLHS)
- Single ventricle defects
- Tetralogy of fallot
- Total anomalous pulmonary venous return (TAPVR)
- Transposition of the great arteries
- Ventricular septal defect
- Cardiomyopathy
- Congestive heart failure
- Lipid abnormalities
- Myocarditis



David Overman, MD

MIDWEST ADULT CONGENITAL CARDIAC (MACC) CENTER

Specialized in treating adolescent and adult survivors of pediatric heart defects, the MACC program offers:

- A multi-disciplinary team of physicians and clinicians who evaluate patients' entire well-being
- Outreach and education to help patients transition from adolescence to adulthood
- Research to identify best practices for adult patients with congenital heart disease

SERVICES OFFERED

Complex cardiac conditions require the latest evaluation and treatment tools, which we have at our fingertips:

- Diagnostic and less invasive services:
 - Arrhythmia monitoring
 - Cardiac catheterization
 - Echocardiography
 - Electrocardiography (EKG)
 - Electrophysiology studies
 - Fetal diagnosis
 - Genetic testing
 - Pacemaker interrogation
 - Cardiac CT scans and CT angiography
 - Cardiac MRIs / MRA
 - Stress testing
- Surgical services from simple to the most complex
- Other services:
 - Immediate EKG interpretation
 - Pediatric catheterization lab
 - Pediatric and congenital arrhythmia (PCA) program
 - Pediatric cardiology consultations

COMBINED CARE

Cardiovascular patients often need to see many specialists for complete care. We provide multi-specialty clinics so patients can visit all their specialists during one clinic visit. Our multi-specialty clinics include:

- Lipid clinic
- Fetal diagnosis and treatment clinic
- Neurodevelopmental follow-up clinic
- Velo-cardio-facial clinic (VCF)



Marko Vezmar, MD

Diagnosis and treatment begin before birth

When it comes to identifying and caring for congenital heart disease, time is of the essence. By collaborating with the Midwest Fetal Care Center, pediatric cardiologists use non-invasive fetal echocardiograms to evaluate babies in utero and diagnose heart disease as early as 12 weeks into a woman's pregnancy. Children's fetal cardiology team performs nearly 800 fetal cardiac scans each year.

Using fetal echocardiogram, our team can diagnose a range of heart conditions, including:

- Aortic valve stenosis
- Atrioventricular septal defects
- Coarctation of the aorta
- Ebstein's anomaly
- Hypoplastic left heart syndrome (HLHS)
- Single ventricle defects
- Tetralogy of fallot
- Transposition of the great arteries
- Truncus arteriosus

If a baby is diagnosed with a heart condition, Children's fetal cardiology team works closely with the Midwest Fetal Care Center and experts in maternal fetal medicine, obstetrics, genetics, fetal surgery, fetal imaging and neonatology to determine the best care for mother and baby well before birth, and after birth in newborn consultations.

IN THE COMMUNITY

We have fetal cardiology clinics in Minneapolis, St. Paul, St. Louis Park and Duluth, Minnesota, as well as in Fargo and Grand Forks, North Dakota.

Advanced imaging calibrated just for kids

Children's cares for patients with complex heart conditions. A majority of our diagnostic services are non-invasive, including state-of-the-art cardiac magnetic resonance imaging (MRI) and cardiac computed tomography (CT). These advanced technologies allow detailed evaluation of anatomy and function so that we can tailor each exam to the specific clinical needs of a patient.

CARDIAC CT SCANNING

Less sedation and anesthesia — Cardiac CT scans can now be performed in a fraction of a second or a single breath hold. This eliminates or reduces the need for sedation and anesthesia for our youngest patients.

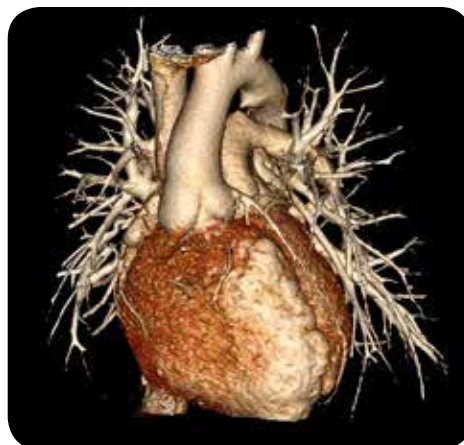
Calibrated just for kids — Each CT scan is tailored to the patient, with aggressive reduction of radiation dose to decrease the lifetime diagnostic risk. This is increasingly important since a majority of babies with even the most complex disease are expected to survive to adulthood. CT technology is especially useful when managing patients with metallic implants that cause MRI artifact and with patients that have pacemakers and cannot undergo a MRI exam.

MRI TECHNOLOGY

MRI imaging provides our team with quantification of heart function, blood flow and myocardial tissue characterization. It is the primary modality used when an echocardiogram is unable to provide the answers needed for clinical care.

UNSURPASSED EXPERTISE

Our highly specialized imaging team of radiologists and cardiologists includes members like pediatric cardiologist Kelly Han, MD. Dr. Han is one of only a handful of cardiologists trained in MRI and CT scanning.



MEET SAM, AGE 3

Sam was getting comprehensive care at Children's even before he was born. During her pregnancy, Sam's mom, Stacey, was told that her son has hypoplastic left heart syndrome (HLHS), a congenital heart defect. While scared and uncertain about her son's future, she was comforted to learn about Children's expertise in caring for kids with heart defects. And she's entrusted Children's with Sam's care ever since.

When he stays at Children's Sam brings a little monkey with five sewn hearts representing each of his surgeries, and a special cape signed by his care team. "We really consider Children's our family. We don't know what we would do without them," says Stacey.

Learn more:
www.childrensMN.org/sam

Committed to excellence

For over 40 years, Children's of Minnesota and The Children's Heart Clinic have been focused on innovation and compassionate care by diagnosing and treating heart and blood vessel conditions that affect kids. With dedicated pediatric resources, technology and facilities, we can treat some of the most complex needs of children from before birth into adulthood. This pursuit for changing the cardiac care experience has led to some of the best outcomes in the region.

HISTORICAL HIGHLIGHTS

1973	Children's heart program begins.
1977	First open heart surgery.
1985	First two Norwood procedures, for patients with hypoplastic left heart syndrome.
1987	Echocardiogram services became available in our clinic.
2000	First pediatric catheterization lab in the state opens at Children's.
2011	First Melody valve implantation.
2006	Adult congenital heart clinic opens.
2008	Children's becomes the first accredited pediatric echocardiography lab in the state.
2010	Open only pediatric cardiovascular care center in Upper Midwest offering all vital services on the same floor and in a single building.
2014	Over 11,000 heart surgeries performed at Children's.

ADVANCEMENTS IN OUR CARE EXPERIENCE

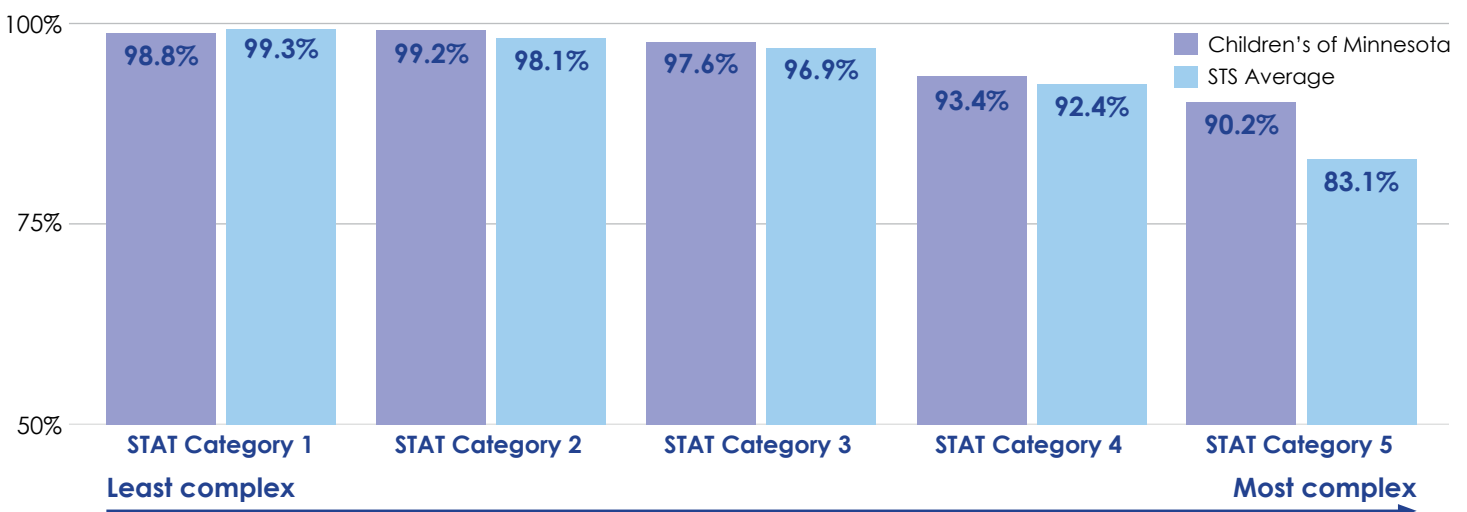
- Only facility in the region offering 24/7 on-site care by pediatric cardiac intensivists
- 200+ multidisciplinary team
- Primary cardiologists for continuity of care
- Care in one place — our cardiovascular care center (CVCC) offers the best in care delivery on the same floor and in a single building
- Quality and safety analysts to monitor and make improvements in the unit
- Participation in the NPC-QIC (National Pediatric Cardiology — Quality Improvement Collaborative)
- A Congenital Heart Surgeons Society (CHSS) and Pediatric Heart Network (PHN) affiliate member institution
- Real-time telemetry to monitor patient rhythms
- Home monitoring and neurodevelopmental follow-up program for our most complex patients.
- Fetal partnership with the Midwest Fetal Care Center

Exceeding standards for patient care, quality and safety

In addition to providing the highest quality of care to our patients, Children's is committed to being transparent about our outcomes. We participate in a variety of outcome tracking databases, including The Society of Thoracic Surgeons Congenital Heart Surgery Database (STS CHSD); Congenital Cardiac Anesthesia Society (CCAS) module within the STS CHSD; Improving Pediatric and Adult Congenital Treatment (IMPACT) registry; Pediatric Health Information System (PHIS) database; Virtual PICU System (VPS) and the National Pediatric Cardiology — Quality Improvement Collaborative (NPC-QIC).

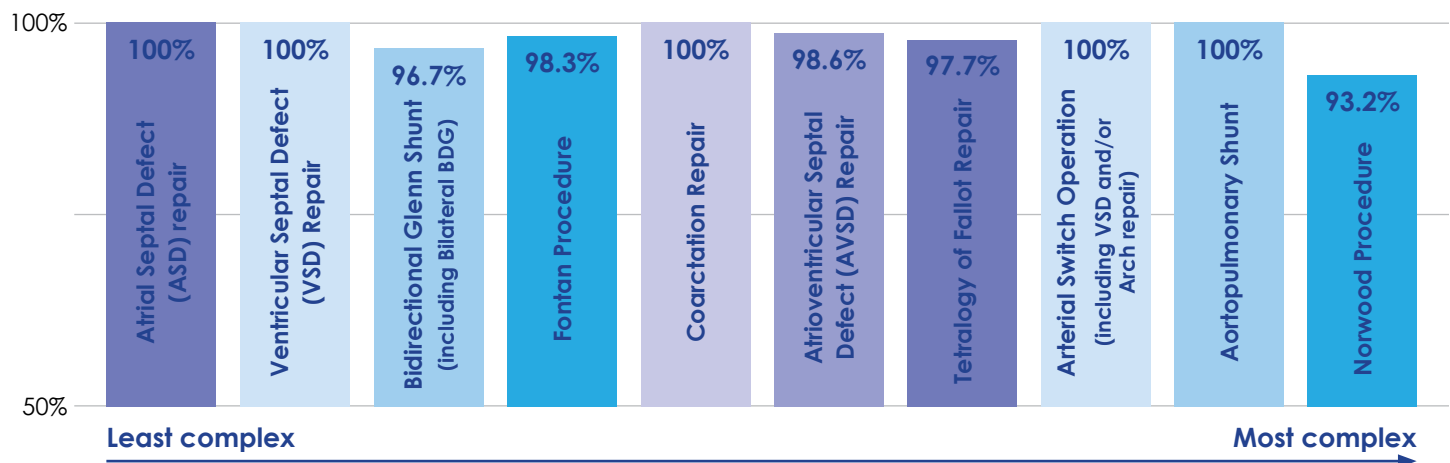
Our participation in the STS Congenital Heart Surgery Database, the largest database tracking outcomes for congenital cardiac conditions in the world, serves as a benchmark for quality improvement while comparing our outcomes against national data. Within the database, surgeries are assigned an STS-EACTS (STAT) Mortality Category from 1 to 5. The complexity of cases and risk of mortality increases with each STAT Category. STAT Category 1 includes cases such as ventricular septal defect (VSD) closures. Arterial switch operation is Category 3. The most complex cases, including the Norwood procedure, are included in Category 5.

2010-13 SURVIVAL RATES BY STAT CATEGORY



TREATING SIMPLE TO THE MOST COMPLEX CONDITIONS FOR 30 YEARS

Data shown for 2010-2013 survival rates.



Cardiovascular team

Children's Hospitals and Clinics of Minnesota collaborates with a team of doctors, nurse practitioners, nurses and more to provide expert care to kids. We'd like to introduce you to our doctors and cardiac leaders.

CARDIOVASCULAR MEDICAL DIRECTORS



Charles Baker, MD,
Medical Director,
Catheterization Lab



David Dassenko, MD,
Medical Director,
Pediatric Cardiac
Intensive Care Unit



David Gremmels, MD,
Medical Director,
Pediatric Cardiology



Francis Moga, MD,
Associate Chief,
Cardiovascular
Surgery



David Overman,
MD, Chief,
Cardiovascular
Surgery

PEDIATRIC CARDIOVASCULAR SURGEONS

PEDIATRIC CARDIOLOGISTS



David
Burton, MD



Christopher
Carter, MD



Kirsten
Dummer, MD



Kelly
Han, MD



Jocelyn Berbee,
MS, RN, CNP



Beth Johnson,
RN, CNP



Christine
Hills, MD



Rodrigo
Rios, MD



Thomas
Sutton, MD



Marko
Vezmar, MD



Danielle
Johnson, PA



Leah Zupancich,
PA-C

ADVANCED PRACTITIONERS

PEDIATRIC CARDIAC INTENSIVISTS



Robert Horvath-
Csongradi, MD



Kendra
Gram, MD



Kristine
Hendrickson, MD



Kelly
Rood, MD



Marnie Taylor,
MD



Eileen Nemec, RDCS

Our promise to you

Everything we do is centered around providing the highest level of cardiovascular care to patients. The cardiovascular team promises, you, our care partner:

ACCESS TO SERVICES

- Board-certified pediatric cardiologists available for consultation 24/7
- Same-day outpatient appointments always available for urgent needs
- Same-day in-hospital consultations available at all Twin Cities area hospitals
- Same-day mobile echocardiography services available at most Twin Cities area hospitals' NICU and PICU units

PROMPT TEST RESULTS

- EKG interpretations faxed within four hours
- Emergency EKG interpretation available 24/7
- Echocardiogram reports sent on the same day the echocardiogram is performed
- Results available within 24 hours for all other inpatient and outpatient diagnostic procedures

TIMELY COMMUNICATION

- Regular phone updates provided during hospitalization, post-operatively and upon discharge
- Timely consultation notes sent following outpatient visits

Locations



OUTPATIENT Clinics

Because we collaborate with The Children's Heart Clinic, we have the most expansive outpatient clinic experience to support same-day appointments for urgent needs.

INPATIENT Hospitals



Children's – Minneapolis

Edward J. Phillips Cardiovascular
Care Center
2525 Chicago Avenue South
Minneapolis, MN 55404



Children's – St. Paul

345 North Smith Avenue
St. Paul, MN 55102

Children's Hospitals and Clinics of Minnesota collaborates with a team of doctors, nurse practitioners, nurses and more to provide expert care to kids. See profiles for the doctors and nurses practitioners in the cardiovascular program by visiting www.childrensMN.org/CVTeam.

Children's Physician Access

**24/7 assistance: referrals,
consultations, admissions**

612-343-2121

866-755-2121



The Children's Heart Clinic

Patient/Family Access

**Appointments, questions
and more**

612-813-8800


Children's
Hospitals and Clinics
of Minnesota

www.childrensMN.org