

2023-24 Transplant Outcomes



To refer a patient for transplant
or ask questions, please contact:



Pediatric Solid Organ Transplants
314-577-5351

Pediatric Blood & Bone Marrow Transplants
314-268-4000

SSM Health Cardinal Glennon Children's Hospital pediatric transplant program

SSM Health Cardinal Glennon Children's Hospital in St. Louis has one of the most successful pediatric transplant programs in the region. With excellent outcomes and a skilled transplant team, we offer a comprehensive array of services for infants and children who need solid organ transplants or blood/bone marrow/stem cell transplants, including CAR-T services. We also perform multi-organ transplants, including kidney and liver transplants. Significantly, for many of our patients, we have among the shortest median wait times to transplant.

As we debut a newly constructed pediatric hospital, we are proud that our transplant programs are vibrant and growing, with added surgeons, specialized clinics, and novel clinical research all aimed at ensuring that children who receive a transplant can thrive to the utmost. Not only do we provide the best care, we're also working hard to research better ways to detect the first signs of any complications that may arise after transplant.

At SSM Health Cardinal Glennon, we are devoted to kids needing pediatric transplants and are committed to providing holistic, individualized care in a dedicated program that walks children and their families through the transplant process, from pre-evaluation through hospitalization and long-term follow-up care.



Our pediatric transplant programs

- Heart
- Kidney
- Liver
- Blood, bone marrow & stem cell
- Living donor

Partners with SSM Health
Saint Louis University Hospital for
Living Donor Program

Pediatric transplant program leadership

Heart transplant



Medical Director
Vernat Exil, MD



Surgical Director
Charles Huddleston, MD

Kidney transplant



Medical Director
Craig Belsha, MD



Surgical Director
Chintalapati Varma, MD

Liver transplant



Medical Director
Ajay Jain, MD



Surgical Director
Chintalapati Varma, MD

Blood, bone marrow, and stem cell transplant



Medical Director
William Ferguson, MD

Transplant coordinators


Solid Organ Transplant Coordinator
Ellen Webb, RN, BSN
314-577-5351

Solid Organ Transplant Coordinator
Amanda Manley, RN, BSN
314-577-5351

Blood and Bone Marrow/Stem Cell Transplant Coordinator
Courtney McKinney, RN, BSN
314-268-4000

Pediatric Solid Organ Transplant Quality Nurse
Laural Sosa, RN, BSN
314-268-3502

By the numbers*

83 
heart
transplants

189 
kidney
transplants

67 
living donor
kidney transplants

109 
liver transplants

*Since program inception

Why choose SSM Health Cardinal Glennon?

Results matter. We have some of the best pediatric transplant survival rates and outcomes in the country. Our programs are also ranked among the best by U.S. News & World Report and our team of specialists receives referrals from across the United States.

**BEST
CHILDREN'S
HOSPITALS**

U.S. News & World Report

RANKED IN
7 SPECIALTIES
2024-2025

Outcomes



1-year and 3-year
graft survival rates
Pediatric **HEART**
transplants



1-year & 3-year
graft survival rates
Pediatric **KIDNEY**
transplants



1-year & 3-year
graft survival rates
Pediatric **LIVER**
transplants

Ranked Nationally

Top 50 Nationwide**

- #19** in Gastroenterology, making it the top Gastroenterology program in the state.
- #32** in Cardiology & Heart Surgery, making it the top program in St. Louis.
- #46** in Neonatology
- #48** in Cancer Care
- #27** in Nephrology
- #27** in Pulmonology & Lung Surgery
- #48** in Urology Care

** Best Hospitals in America, U.S. News & World Report, 2024

Participation in national transplant collaboratives

- Children's Oncology Group
- Improving Renal Outcomes Collaborative (IROC)
- Mid America Transplant Study
- Nonalcoholic Steatohepatitis Clinical Research Network
- North American Pediatric Renal Trials Cooperative Studies
- Pediatric Heart Transplant Study Group
- Pediatric Blood and Marrow Transplant Consortium
- Studies of Pediatric Liver Transplantation (SPLIT)

Heart transplant

The experienced heart transplant team at SSM Health Cardinal Glennon Children's Hospital has a long-standing history of excellent patient and graft survival rates. Current data published by the Scientific Registry of Transplant Recipients (SRTR) notes that the team has 100% 1-year and 2-year overall survival rates. As a result, the pediatric cardiology and cardiothoracic programs have ranked among the best in the country by U.S. News & World Report for more than nine years.

Bridge to transplant/mechanical circulatory support devices

Our team has demonstrated expertise in the care of infants and children who need implantation of mechanical circulatory support devices for either short- or long-term use.

For babies diagnosed with life-threatening injury or infection in the heart or lungs, we are a designated Gold Level Center of Excellence in Life Support by the Extracorporeal Life Support Organization (ELSO) for providing exceptional high-quality care for infants placed on extracorporeal membrane oxygenation (ECMO).

For the treatment of advanced heart failure or for long-term mechanical circulatory support, we have expertise in the implantation of Heartmate 3™, CentriMag™, HeartWare™, and Berlin EXCOR™ devices.

Specialty cardiac care clinics

The Pediatric Cardiology and Cardiothoracic Surgery Division at SSM Health Cardinal Glennon offers several specialized care clinics and programs devoted to coordinating multidisciplinary care of children with heart conditions.

- Congenital Heart Disease
- Cardiac Device Clinic
- Fetal Heart Care Program
- Heart Failure & Cardiomyopathy
- Pediatric-to-Adult Congenital Heart Disease Transition Program

Fetal heart care services

Through a collaborative partnership in the St. Louis Fetal Care Institute, SSM Health Cardinal Glennon Children's Hospital, SSM Health St. Mary's Hospital and Saint Louis University School of Medicine specialists provide a wide array of early diagnostic testing and clinical care services for moms to be who may be facing a prenatal diagnosis of congenital heart disease or heart defect.

The team includes pediatric cardiologists, cardiothoracic surgeons, neonatologists, and maternal-fetal medicine specialists. With advanced technology, the team can detect heart defects as early as 18 weeks of gestation.

Outreach clinics

The pediatric cardiology team leads several outreach clinics in Eastern Missouri and Southern Illinois. The clinics enable easier access to heart care services for patients and their families who live throughout the region.

Dorothy and Larry Dallas Heart Center

Outpatient cardiology services are provided in the hospital's Dorothy and Larry Dallas Heart Center, which logs more than 5,500 outpatient clinic visits each year. The center provides advanced diagnostic testing and cardiac imaging services and has a pediatric hybrid cardiac catheterization lab.

Cardiac ICU

Our hospital has a dedicated eight-bed Neonatal Cardiac Intensive Care Unit (Cardiac ICU) within its nationally recognized Level IV Neonatal Intensive Care Unit (NICU) for babies who need specialized care prior to and/or after heart surgery.

Advanced 3D heart modeling

A large 3D Printing Center of Excellence enables heart specialists at SSM Health Cardinal Glennon to create and use 3D printed heart models for both surgical planning and patient education. Research also is under way in collaboration with Saint Louis University's School of Engineering and the Department of Physics to develop 3D artificial heart valves for customized valve replacement in young patients.

Transplant cardiologists



Vernat Exil, MD
Division Director,
Pediatric Cardiology
Medical Director,
Pediatric Heart Transplant



Erica Bonura, MD
Pediatric Cardiology and
Pediatric Cardiothoracic Surgery

Cardiothoracic surgeons



Charles Huddleston, MD
Division Director, Pediatric
Cardiothoracic Surgery
Surgical Director,
Pediatric Heart Transplant



Corinne Tan, MD
Pediatric Cardiology and
Pediatric Cardiothoracic Surgery

Pediatric transplant nurse practitioner



Katherine Gruenkemeyer, RN, CPNP
Pediatric Transplant Nurse
Practitioner

The pediatric cardiology and cardiothoracic programs have ranked among the best in the country by U.S. News & World Report for more than a decade.

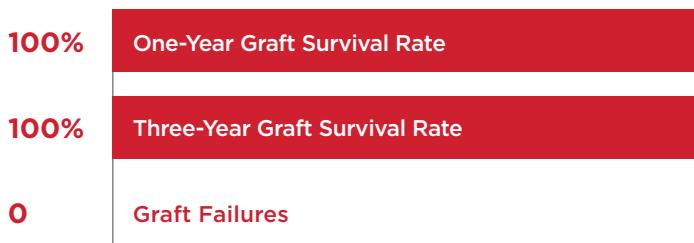




Kidney transplant

Both living and deceased donor kidney transplants are offered at SSM Health Cardinal Glennon Children's Hospital. Our outcomes are excellent and the result of a multidisciplinary approach to reduce transplant rejection and improve both hypertension control and medication adherence among post-transplant patients.

Renal transplant outcomes thru 2023



*Data from Scientific Registries of Transplant Recipients (SRTR)

We have a long-standing history in advancing the care of children with end-stage renal disease (ESRD). We were the first hospital in the St. Louis region to offer dialysis as a bridge to transplant for infants diagnosed with chronic kidney disease. Since then, we have advanced the treatment of infants and young children needing specialized dialysis care. This includes the use of Carpediem™, a continuous renal replacement therapy (CRRT) for newborns and babies weighing between 5 and 20 pounds that reduces the risk of low blood pressure in very young babies while undergoing CRRT. The infant hemofiltration technology is available only in a handful of hospitals across the country.

Our renal specialists participate in national collaboratives such as the North American Pediatric Renal Trials and Collaborative Studies network and the Improving Renal Outcomes Collaborative (IROC). Through these national initiatives, we are focused on enhancing hypertension control and better adherence to medication regimens to minimize the risk of graft loss and improve outcomes in renal transplant patients.

We were the first hospital in the St. Louis region to offer dialysis as a bridge to transplant for infants diagnosed with chronic kidney disease.

Nephrologists



Craig Belsha, MD
Medical Director,
Kidney Transplant
Division Director,
Pediatric Nephrology



Kevin Barton, MD
Pediatric Nephrology



Anne Beck, MD
Pediatric Nephrology



Richard Feldenberg, MD
Pediatric Nephrology



Joseph Maliakkal, MD
Pediatric Nephrology

Transplant surgeons



Chintalapati Varma, MD
Director, Pediatric
Abdominal Transplant



Vidyaratna Fleetwood, MD
Abdominal Transplant



Mustafa Nazzal, MD
Abdominal Transplant

Pediatric transplant nurse practitioner

Katherine Gruenkemeyer, RN, CPNP

Liver transplant

The UNOS-certified liver program at SSM Health Cardinal Glennon Children’s Hospital has continued to exceed national graft and patient survival outcomes. Our expertise is recognized for both patient care and liver disease research that not only has advanced the potential of biomarkers to detect early transplant rejection but also in testing various pharmaceuticals for optimal donor organ viability.

Renal transplant outcomes thru 2023



*Data from Scientific Registries of Transplant Recipients (SRTR)

Whole and split liver transplants

The liver transplant team has expertise with both living-donor and cadaver liver transplantation. It also is known for excellent outcomes with both whole organ and split liver transplants.

Liver transplants are an option to treat liver failure from conditions such as Hepatitis B and C, alcoholic and nonalcoholic fatty liver diseases, and biliary atresia. Rare genetic conditions such as Alagille syndrome, Alpha-1 antitrypsin deficiency, and Wilson disease may also necessitate a liver transplant.

Liver transplant transitional care program

SSM Health Cardinal Glennon is debuting a teen-to-adult Liver Transplant Transitional Care program that includes pediatric gastroenterologists and hepatologists as well as specialists from Saint Louis University School of Medicine. The program will provide patient education and clinical care as young transplant recipients grow into adulthood.

Internationally recognized clinical and laboratory research

Gastroenterologists at SSM Health Cardinal Glennon are internationally renowned for their research into several chronic liver diseases, including:

- Alpha-1 Antitrypsin Deficiency (AAD)
- Nonalcoholic Steatohepatitis (NASH)
- Nonalcoholic Fatty Liver Disease (NAFLD)
- Hepatitis B and C
- Biliary atresia
- Liver transplant outcomes

Faculty in the Division of Pediatric Gastroenterology, Hepatology & Nutrition have received millions of dollars in funding from the National Institutes of Health to advance laboratory and clinical investigations into pediatric liver diseases. The hospital is a long-standing member of the Studies of Pediatric Liver Transplantation (SPLIT) registry, an international research collaborative, and is one of only a handful of pediatric centers in the United States to participate in the Nonalcoholic Steatohepatitis Clinical Research Network.

Research by liver disease specialists here has resulted in the development of a protein biomarker that shows promise as an indicator of early liver rejection in transplant patients. Clinical trials at SSM Health Cardinal Glennon are ongoing to track long-term success in the use of the biomarker.

In 2024, a research team at SSM Health Cardinal Glennon and Saint Louis University School of Medicine received a provisional patent for a specially designed split-liver perfusion system that can more rapidly and accurately test drugs designed to improve the health of a liver before transplant. The system, called the Perfusion Regulated Organ Therapeutics with Enhanced Control Testing (PROTECT) system, uses perfusion pumps to circulate blood while also maintaining a physiological environment for a donated split liver. For this research, investigators received a Transplant Visionaries Challenge Award from the American Society of Transplantation (AST).



Transplant gastroenterologists



Ajay Jain, MD, DNB, MHA
Medical Director,
Pediatric Liver Transplant

Division Director,
Pediatric Gastroenterology,
Hepatology & Nutrition



Jeffrey Teckman, MD
Pediatric Gastroenterology

Transplant surgeons



Chintalapati Varma, MD
Director, Pediatric
Surgical Transplant



Vidyaratna Fleetwood, MD
Pediatric Surgical Transplant



Mustafa Nazzal, MD
Pediatric Surgical Transplant

Pediatric transplant nurse practitioner

Katherine Gruenkemeyer, RN, CPNP

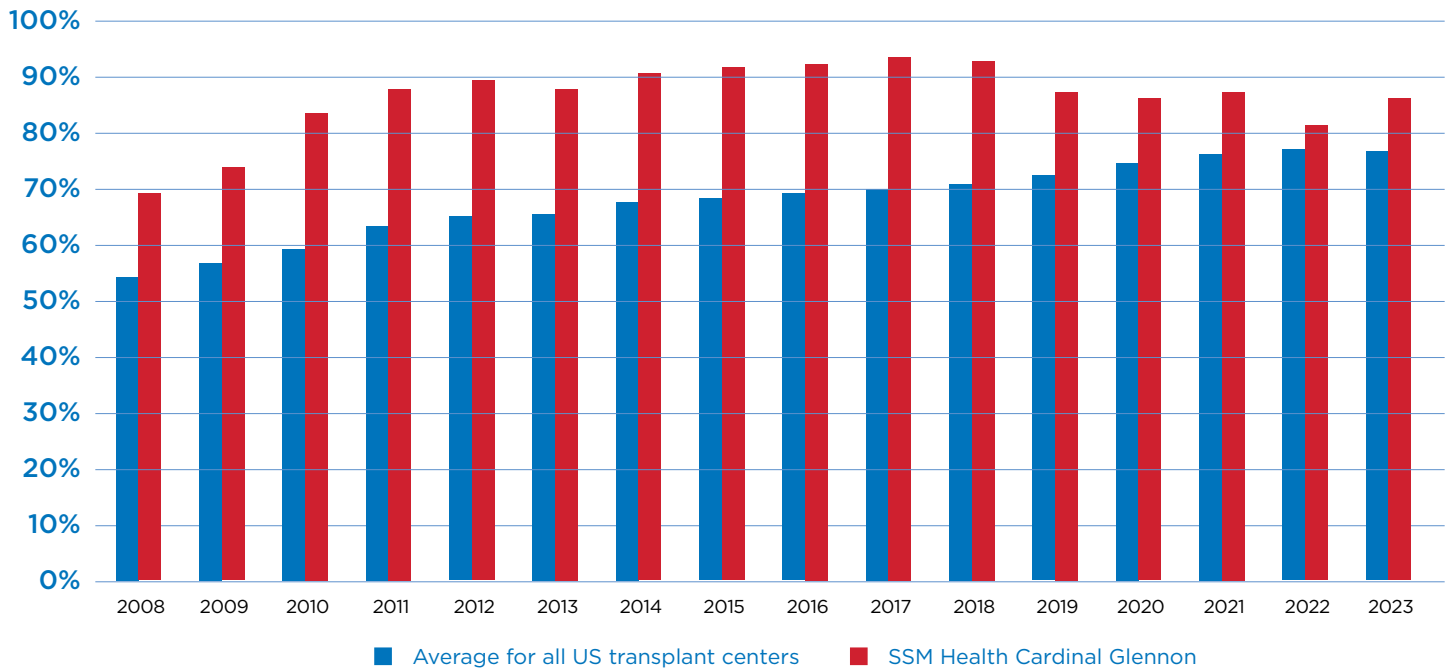
Ongoing research efforts include the identification of pioneering strategies to mitigate ischemia-reperfusion injury in livers after transplant.

Specific to Alpha-1 Antitrypsin (AAT deficiency), researchers here were among a team of researchers that identified a breakthrough RNA interference therapeutic, fazirsiran, which can reduce liver fibrosis associated with AAT, the first time an RNA interference therapeutic has been shown to improve liver health and potentially avoid the need for liver transplant in this patient population.

Blood and bone marrow/stem cell transplant

Our Blood and Bone Marrow Transplant (BMT) program is nationally recognized for outstanding patient care and excellent outcomes. For almost 20 years, our 1-year overall survival rates have consistently exceeded average survival rates across the country, placing our program within the top 10% of all transplant centers.

Bone marrow transplant program: 1-year overall survival by year



With proven outcomes, the BMT program is seeing an increased demand for services. In 2024, the program added additional hematology/oncology specialists and a bone marrow transplant specialist to its experienced team.

We treat a wide range of childhood cancers, including leukemia, lymphoma, and neuroblastomas. In addition, our specialists treat other blood disorders such as sickle cell disease, aplastic anemia, and some immune deficiencies. We serve as a designated Sickle Cell Center for both Missouri and Illinois and provide diagnosis, treatment, and long-term support and care for children with all types of sickle cell disease.

We also offer CAR T-cell therapy for children and young adults up to age 25 for the treatment of relapsed or refractory B cell acute lymphoblastic leukemia (B-ALL).

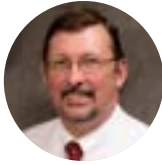
Inpatient services include an expanded 18-bed hematopoietic stem cell and bone marrow transplantation unit, which has all private rooms for patients that are equipped with sleeper sofas for parents. The unit also includes a dedicated playroom and family lounge.

Comprehensive and coordinated outpatient care is provided in the Costas Center at SSM Health Cardinal Glennon, a large center that sees hundreds of patients for the treatment of leukemia, lymphoma, bone and soft tissue cancers, brain and spinal cord tumors, clotting disorders, and sickle cell anemia. Online telehealth appointments are also available to families.

The Blood and Bone Marrow Transplant Program is accredited by the Foundation for Accreditation of Cellular Therapy. It is designated transplant center for the Children's Oncology Group and our specialists participate in the Pediatric Blood and Marrow Transplant Consortium.

For almost 20 years, our 1-year overall survival rates have consistently exceeded average survival rates across the country.

Bone marrow transplant physicians



William Ferguson, MD
Division Director, Pediatric
Hematology-Oncology &
Cellular Therapy
Medical Director,
Bob Costas Cancer Center



Deepika Bhatla, MD

Jamie Truscott, MD
Not pictured



Shermini Saini, MD

Hematology/oncology physicians



Margaret Cupit-Link, MD



Lily Dolatshahi, MD



Chris Hugge, MD



John Puetz, MD



Abbey Rocco, MD

Cellular therapy lab and collection facility

Aleksandar Babic, MD
Medical Director, Cellular Therapy Lab &
Collection Facility
BMT Quality Director

Phanomvanh Soukpraseuth, MD

BMT nurse practitioners

Bobby Parker, CPNP

Lauren Delashmit, CPNP, CPHON

BMT coordinators

Cortney McKinney, RN, BSN (allo)

Jessica Hoxha, RN, BSN (auto/CAR-T)

BMT quality team

Jennifer Pugliese, RN, MSN, MEDSURG-BC
BMT Quality Manager

Mary Miller, MSN, RN, CPHON, CNL



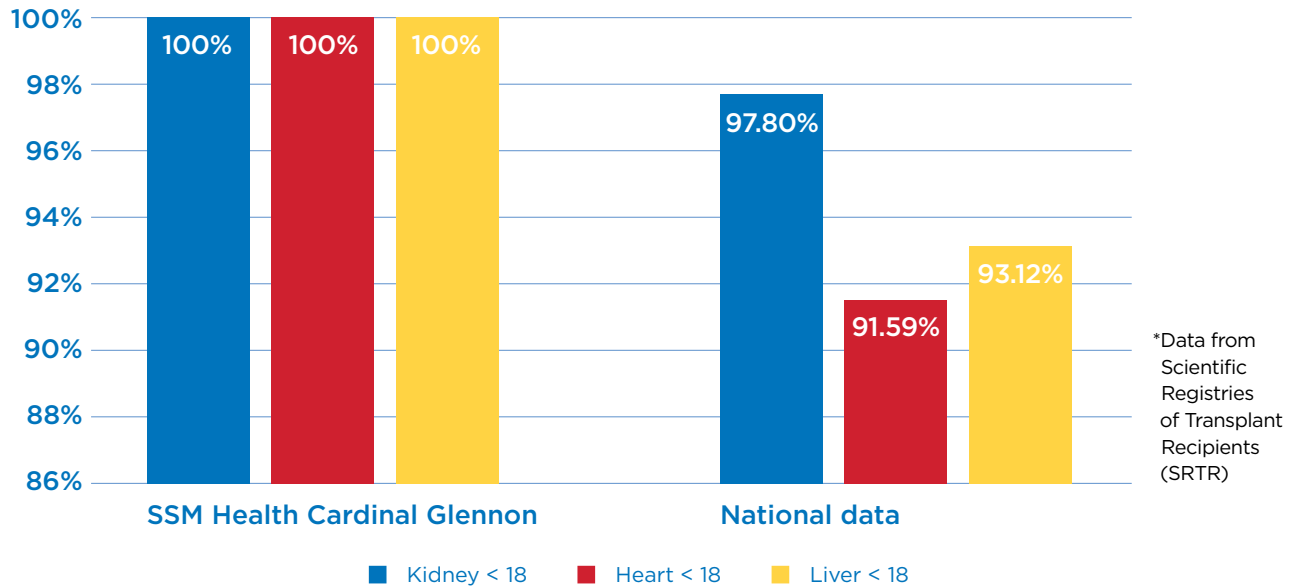
Graft outcomes

1-Year Post Transplant

Single organ transplants performed between 07/01/2019 to 3/12/2020, and 06/13/2020 to 12/31/2021

Follow-up ends on 3/12/2020

Based on SRTR: Last update January 5, 2023



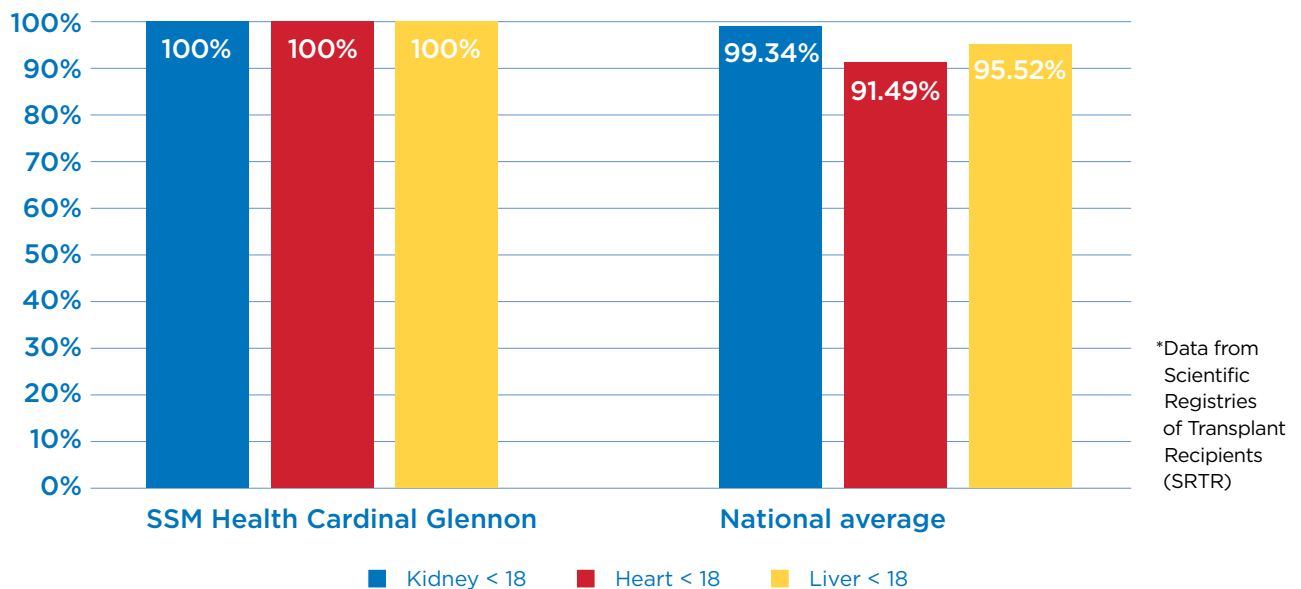
Patient survival

1-Year Post Transplant

Single organ transplants performed between 07/01/2019 to 03/12/2020, and 06/13/2020 to 12/31/2021

Follow-up ends on 03/12/2020

Based on SRTR: Last update January 5, 2023



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