Congenital Heart Center

For more than six decades, the University of Chicago Hospitals has been mending the hearts of infants, children, teens and adults with congenital heart disease.

Today, the Hospitals pediatric cardiology and pediatric cardiac surgery services continue to provide innovative, responsive care for even the most complex cases, drawing from the expertise of their internationally recognized staff.

In addition, technology has expanded the possibilities for interventional cardiologists and pediatric heart surgeons, so congenital defects may be repaired in the tiniest of newborns, as well as in adults.

Aggressive yet compassionate care is delivered by a multidisciplinary team that includes cardiologists, surgeons, nurses, social workers and other professionals.

Interventional cardiologists at the University of Chicago Hospitals Congenital Heart Center provide comprehensive care plans to patients of all ages. Advanced cardiology services include:

**Echocardiography**
- pediatric and adult congenital
- fetal
- 3D
- intracardiac

**EKG**
- holter/event
- exercise stress/gas analysis/tilt tests

**Electrophysiology**
- pacemaker insertion
- ICD implantation
- studies/ablations

**Dedicated Pediatric Cath Lab**
- diagnostic/interventional

**Leading Edge Research Protocols**

**Intensive Care for Adults and Children**
- dedicated cardiac intensivist
- ECMO

**Transport Team (UCAN)**

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**Advanced Surgical Treatments**

When more complex cardiovascular problems call for surgical care, pediatric cardiologists work closely with cardiovascular surgeons to build the best treatment plan for patients. Non-surgical options are always considered first. When surgery is needed, the most advanced surgical treatments for congenital heart disease are available, including:

- arterial switch for transposition of the great arteries
- Fontan operation
- Ross procedure
- homograft valve conduit and valve insertion
- Norwood procedure for hypoplastic left heart syndrome
- Pediatric heart transplantation.

Valve repair and reconstruction are available to patients, using cryopreserved allografts, as well as prosthetic aortic and pulmonary valves and saphenous vein tissue.

To reduce the risk of trauma to patients, particularly low birth weight neonates, pediatric cardiac surgeons can perform minimal access pediatric cardiac surgery, as well as video-assisted thoracic surgery, for a number of conditions. Robotic technology has recently been integrated to reduce incision size and the trauma from the operation.

**Robotic Mitral Valve Repair**

Emile Bacha, MD, recently performed the first two pediatric mitral valve repairs in the world using robotic technology.

The $1.2 million robotic system retains the benefits of laparoscopic surgery for the patient, but provides the surgeon more freedom in operating with precision than standard laparoscopic instruments. The computer-controlled system can reduce a surgeon's minute tremors and provides excellent visualization of the surgical field.

**Hybrid Surgery**

The University of Chicago Hospitals is among the first medical centers in the world to offer hybrid surgery for the treatment of complex ventricular septal defect (VSD), atrial septal defect (ASD) and other challenging heart defects.

To avoid extensive open-heart surgery, physicians utilize hybrid surgery incorporating both catheterization and traditional surgical techniques during the same procedure, resulting in fast recovery and significantly reduced morbidity.

For the hybrid surgery Emile Bacha, MD, collaborates with Ziyad M. Hijazi, MD, who uses a catheter to position an Amplatzer device to occlude ventricular septal defects. Instead of a major incision, the physician makes a small incision in the chest to gain direct access to the heart. Using this approach of ventricular (perventricular) intraoperative closure eliminates the need to stop the heart during surgery. This technique has been performed on neonates and infants, including babies with multiple holes in the heart ("Swiss-cheese VSD").
Congenital Heart Disease in Adults

Our congenital heart disease team provides a special focus on the adult with congenital defects. Whether the disease is newly diagnosed or has been followed since childhood, our physicians can determine the optimum treatment plan. A number of the patients being treated here on an ongoing basis are in their late 80s. Children diagnosed with congenital heart disease today can be treated at the University of Chicago Hospitals throughout their entire lives.

Our internationally recognized staff of heart experts provides aggressive medical and surgical care for even the most complex cases of congestive heart failure, including:

--A full spectrum of diagnostic resources to uncover the specific cause of heart failure.
--Access to a wide array of heart failure medications, including new and experimental drugs not widely available.
--Sophisticated surgical solutions, including procedures to reshape the heart and repair faulty valves.
--Access to advanced mechanical circulatory assist devices, including the CardioVad, a revolutionary device that was first successfully implanted by a University of Chicago heart surgeon.
--An unmatched level of surgical expertise.

To schedule an appointment or for additional information, call us at 1-888-UCH-0200. Or visit us at uchospitals.edu.

Congenital Heart Center, cont.

Trans-Catheter Closure of Intra- and Extra-Cardiac Defects

Ziyad M. Hijazi, MD, Section Chief of Pediatric Cardiology, is one of the world’s most experienced physicians in using a series of Amplatzer occluder devices to plug defects such as ventricular septal defect (VSD), atrial septal defect (ASD), patient foramen ovale (PFO) and patient ductus arteriosus (PDA). In time the patient’s tissue grows over the device and forms a permanent seal.

Using the occluder device in clinical trial, Dr. Hijazi and University of Chicago colleagues now perform trans-catheter closure for congenital muscular VSD and acquired post-infarct muscular VSD. They recently began performing congenital perimembranous VSD closures as well. For patients with congenital muscular VSD, the trans-catheter approach may present significantly lower morbidity and mortality risks, as compared with conventional surgical closure. With the transcatheter approach, there is no need for a ventriculotomy, which can be risky. Trans-catheter closure presents a viable intervention for the surgically unstable population of patients with VSD following myocardial infarction.

Heart Failure & Transplantation

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Combining Electrophysiology with Other Interventions

Patients with arrhythmias as well as congenital heart defects can now be diagnosed or treated via electrophysiological therapies in combination with hemodynamic interventions.

Pediatric electrophysiologist Frank Zimmerman, MD, has teamed up with Dr. Hijazi to treat young patients who have combined supraventricular tachycardia (SVT) and congenital heart lesions (holes). During a single episode of intervention, Dr. Zimmerman can position pacing leads or treat arrhythmia with catheter ablation, while Dr. Hijazi repairs any holes that may be present.

Dr. Zimmerman’s team also has experience performing radiofrequency ablation for children with arrhythmias. Three-dimensional mapping systems enable the physician to locate the source of abnormal heart impulses with greater precision than with traditional diagnostic tools. With the improved accuracy, fewer catheters are needed for ablation. For most children, radiofrequency ablation can be accomplished with just one or two catheter insertions. The procedure is done on an outpatient basis, although young patients may be hospitalized overnight for monitoring.

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