

# Cook Children's Cardiac Magnetic Resonance (CMR) Imaging program

Cook Children's CMR program was developed in January 2011 and is led by pediatric cardiologist Steve Muyskens, M.D. Dr. Muyskens trained in pediatrics and pediatric cardiology at Washington University School of Medicine in Saint Louis, Mo. He received additional training in CMR through Boston Children's Hospital/Harvard School of Medicine and the Mallinckrodt Institute of Radiology at Washington University and is certified by the Society of Cardiovascular Magnetic Resonance. Dr. Muyskens has training and experience in performing CMR on both children and adults.



## Who performs CMR at Cook Children's?

Dr. Muyskens personally trained his selected staff and is present at the scanner for all studies. This ensures that all images acquired are of the highest quality possible and clinical findings can be interpreted and explored at the time of acquisition. MRI results are read and interpreted by Dr. Muyskens and given to the referring physician within one to two days of the test. Since the program was introduced, more than 300 cardiac MRIs have been performed on children and adults at Cook Children's.

## Why choose CMR over other imaging modalities?

Magnetic resonance imaging (MRI) is noninvasive and creates images of the heart and surrounding structures using a large magnet, radio waves and a computer. No radiation is used. Additionally, non-iodinated contrast, called gadolinium, may also be used to help enhance certain qualities of the heart or better define the thoracic or coronary vasculature. Gadolinium has a very low side effect profile and is not nephrotoxic. Unlike many imaging modalities, patients of all sizes can be imaged and obtain excellent quality. While metallic medical devices and implants may create imaging artifacts, most devices are MRI compatible, and good quality images can be obtained.

## When should you order a CMRI?

CMR has useful applications in patients of all ages. CMR is especially useful in diagnosing and managing patients with complex congenital heart disease. The images can be used to further define anatomy that is not well seen by other modalities, monitoring specific cardiovascular changes over time, or in pre-operative staging and post-operative monitoring.

There are many heart conditions where a CMRI may be ordered. Some of the most common we see include:

- Suspected unknown congenital heart disease (pediatric and adult)
  - Evaluation of cardiovascular anatomy and function in patients with inadequate echocardiographic windows or high risk for cardiac catheterization
  - Evaluation of ventricular volumes, mass and ejection fractions
  - Evaluation of coronary anomalies
  - Evaluation of the pulmonary arteries and aorta
  - Quantification of blood flow through abnormal valves or surgically placed shunts
  - Congenital anomalies of the systemic and pulmonary veins
- Assessment of cardiac tumors (pediatric)
  - Defining location and extent of the tumor
  - Establishing a diagnosis to aid in surgical planning
- Evaluation of certain cardiomyopathies (pediatric)
  - Arrhythmogenic right ventricular dysplasia
  - Hypertrophic cardiomyopathy
  - Myocarditis



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To better serve our treating clinicians, we can assist you with:

- Non-emergent transfer requests
- Direct admissions
- Specialist consultations



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