

CASE STUDY:

Rush University Medical Center

Toshiba's Infinix CF-i/BP: Foundation of Rush Center for Congenital and Structural Heart Disease's Hybrid OR Suite

SITUATION

Recognized as one of the top five medical centers in the U.S., Rush University Medical Center in Chicago was preparing to open the Rush Center for Congenital and Structural Heart Disease. Under the direction of one of the world's leading interventional cardiologists, Dr. Ziyad M. Hijazi, the center's vision was to practice a pioneering hybrid approach to treating congenital and structural heart conditions. However, Rush Center needed to acquire a state-of-the-art vascular X-ray system that could accommodate the entire clinical hybrid team without compromising quality, access or efficiency.

SOLUTION

The Rush Center for Congenital and Structural Heart Disease acquired the Toshiba Infinix™ CF-i/BP vascular X-ray system to serve as the foundation for its hybrid operating room (OR) suite. The Infinix CF-i/BP system features a

five-axis design allowing the C-arm to move around the exam table, making it ideal to perform hybrid procedures on pediatric and adult patients. Its high-definition flat panel detectors provide excellent contrast and dynamic resolution, allowing for easy visualization of small details including intricate blood vessels and small devices. In the first year of operation, Rush Center used the Infinix CF-i/BP in more than 200 patient procedures.

BENEFITS

- **Unparalleled Patient Access:** Infinix CF-i/BP's five-axis design allows C-arm movement around the exam table, providing unparalleled patient access during hybrid procedures
- **Imaging of Small Details:** High-definition flat panel detectors provide contrast and dynamic resolution, allowing for easy visualization of intricate blood vessels and small devices helping to improve patient care during pediatric procedures

- **Imaging Optimization:** Infinix CF-i/BP features Advanced Imaging Processing (AIP) technology to automatically optimize imaging during demanding interventional procedures and provide crisp, uniform images



The Rush Center for Congenital and Structural Heart Disease at Rush University Medical Center in Chicago.



The Rush Center for Congenital and Structural Heart Disease

As one of the top five medical centers in the U.S., Rush University Medical Center in Chicago planned to open the Rush Center for Congenital and Structural Heart Disease to address the needs of patients born with heart abnormalities and adults suffering from structural conditions, like leaky or narrowing heart valves. Congenital and structural heart conditions can range from asymptomatic to life-threatening.

Since we've acquired the Infinix CF-i/BP, I have been very pleased with its capabilities. The images are crisp; and the system has the ability to provide amazing views, especially when we perform hybrid intervention.

— Dr. Hijazi, director of the Rush Center for Congenital and Structural Heart Disease

To lead the new program, Rush University recruited one of the world's leading interventional cardiologists, Dr. Ziyad M. Hijazi. Under Dr. Hijazi's direction, Rush Center's goal is to bring together a distinguished team of cardiac specialists, including interventional cardiologists, electrophysiologists, transplant cardiologists, echocardiologists and cardiovascular surgeons, along with state-of-the-art X-ray vascular technology to handle the most complex cases and provide the best care possible.

Pioneering the Hybrid Approach

Recognized as a pioneer in the nonsurgical correction of congenital heart defects, Dr. Hijazi planned to employ his innovative "hybrid" approach to treating patients with heart defects. The hybrid approach brings interventional cardiologists, cardiovascular surgeons and other clinical experts together in the operating room (OR) to offer a complete, collaborative medical solution. Unlike most medical centers where patients are moved to various departments based on what procedures are being performed, the hybrid approach allows patients to be

treated in a single OR suite that includes state-of-the-art vascular imaging technology. The hybrid OR suite allows for vascular imaging, implanting small devices such as stents and open heart surgery to be performed in the same setting using a single vascular X-ray system.

At the time the Rush Center opened, it was one of only three places in the country employing this type of innovative hybrid approach to treating congenital heart disease.

Creating a Hybrid OR Suite with Toshiba's Infinix CF-i/BP

In order to make the hybrid approach successful, the Rush Center for Congenital and Structural Heart Disease needed to acquire a state-of-the-art interventional vascular X-ray system to serve as the foundation for the center's hybrid OR suite. The vascular X-ray system needed to be dependable and produce high-quality images. More importantly, the system had to allow the entire clinical team to work together around the patient in the OR without compromising quality, access or efficiency.

CASE STUDY: Rush University Medical Center *continued*



Dr. Hijazi of the Rush Center for Congenital and Structural Heart Disease has used the Infinix CF-i/BP to treat hundreds of patients with congenital and structural heart defeats.

“The five-axis design allows us to move the C-arm around the table without moving the patient, providing unparalleled access for myself and the cardiovascular surgeon during complex procedures,”

The Rush Center selected Toshiba's Infinix™ CF-i/BP to serve as the vascular X-ray system within the hybrid OR suite. The Rush Center uses the Infinix CF-i/BP for the diagnosis and treatment of patients with congenital and structural heart disease, including neonates, children and adults. The Rush Center also treats adults suffering from structural conditions, such as leaky or narrowing heart valves. Today, utilizing the Infinix CF-i/BP imaging system many procedures are done through percutaneous intervention. This sophisticated imaging system is utilized to help guide catheters, effectively place devices or perform less invasive repairs leading to shorter procedure times with better overall outcomes.

“Since we've acquired the Infinix CF-i/BP, I have been very pleased with its capabilities,” said Dr. Hijazi, director of the Rush Center for Congenital and Structural Heart Disease. “The images are crisp; and the system has the ability to provide amazing views, especially when we perform hybrid intervention.”

According to Dr. Hijazi, the design of the Infinix CF-i/BP makes it ideal for performing hybrid procedures on pediatric and adult patients. It also helps enhance collaboration between clinicians and critical equipment to aid diagnosis and treatment. The Infinix's five-axis system allows movement of the C-arm and lateral detectors away from the head of the table, providing better access for anesthesia, echo and procedures performed from the neck and upper chest area.

noted Dr. Hijazi. “Since many of our procedures are performed on infants, Infinix's high-definition flat panel detector provides excellent contrast, dynamic resolution and easy visualization of small details, including the infant's blood vessels.”

The Infinix CF-i/BP also features Advanced Imaging Processing (AIP), a Toshiba technology that automatically optimizes imaging during demanding interventional procedures. AIP technology automatically enhances contrast, edge detection and visualization of images.

Dr. Hijazi has employed the hybrid approach on many patients using the Infinix CF-i/BP. Many of those cases addressed atrial septal defects, ventricular septal defects, patent ductus arteriosus, coarctation of the aorta and heart and pulmonary valve replacements.

Live Hybrid Cases Using Infinix CF-i/BP

As a testament to the Infinix CF-i/BP's ability in hybrid cases, Dr. Hijazi has used the system to perform live cases at leading

international symposiums. These educational conferences bring together international faculty to provide demonstrations, live operations and the latest breakthroughs in interventional cardiology for congenital heart disease.

Dr. Hijazi used the Infinix CF-i/BP to perform complex pediatric cases during the Pediatric Interventional Cardiac Symposium (PICS) and the Hybrid Approach to Congenital Heart Disease (ISHAC) symposium for hundreds of clinicians via live satellite transmission. Rush Center's hybrid OR suite has state of the art broadcasting equipment installed to continue its long-term commitment to advancing education of pediatric patient treatment.

Future Hybrid Cases

Since the opening of the Rush Center for Congenital and Structural Heart Disease at Rush University Medical Center in 2007, the Infinix CF-i/BP has been used to treat hundreds of patients with congenital and structural heart defeats.

Many of these patients are treated through non-surgical methods while others are treated using the innovative hybrid approach. As the program at Rush Center continues to grow, along with the awareness of the hybrid approach, Dr. Hijazi anticipates Rush Center performing many more hybrid cases using the Infinix CF-i/BP.



Dr. Hijazi uses Toshiba's Infinix CF-i/BP in the hybrid OR approach where vascular imaging, implanting stents and open heart surgery are performed using a single vascular X-ray system.



**TOSHIBA AMERICA
MEDICAL SYSTEMS, INC.**

2441 Michelle Drive, Tustin CA 92780
(800) 421-1968

www.medical.toshiba.com

©Toshiba Corporation 2007 All rights reserved.