



# Getting to the Heart of Cardiology Workflow

Children's Hospital of Wisconsin in Milwaukee, WI, USA

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# “Echocardiography is the nerve center for everything that happens in pediatric cardiology ...”

Small things can make a big difference in a child's heart. Dr. Michele Frommelt examines a fetal echocardiogram on a computer screen at the Pediatric Echocardiography Laboratory of the Herma Heart Center at Children's Hospital of Wisconsin. Such studies sent by regional hospitals used to be mailed or couriered to the hospital. Reports would take days to be returned. Now, with a small click, studies are shot across the Internet from hospitals hundreds of miles away, landing on the computer screen Frommelt is looking at with a satisfied smile. “For our surgeons to be able to pull up a study almost instantaneously and for people to get feedback right away is a dramatic change,” she says. “It helps us do our jobs better.”

*syngo*® Dynamics is the multi-modality PACS management and reporting system of the Siemens *syngo*® Suite, incorporating cine-angiographic, echocardiographic and CT & MR digital images and patient data into a flexible, evidence-based report. Since implementing the system,



Dr. Michele Frommelt, Pediatric Cardiologist and Co-director of the Pediatric Echocardiography Laboratory at Children's Hospital of Wisconsin

Children's Hospital of Wisconsin is experiencing significant improvement in their workflow. Staff efficiency and patient throughput has increased while reporting accuracy and consistency has improved. And that may be just the beginning. Though the hospital is already on the cutting edge of evidence-based reporting technology, doctors believe they've only scratched the surface of the benefits possible through *syngo* Dynamics.

## **The Challenge:** Finding a solution that meets the unique and dynamic needs of pediatric cardiology

Children's Hospital of Wisconsin is a 236-bed state-of-the-art facility, with a 4,000-person staff caring for over 22,000 admissions a year. The facility was recently named one of the top ten children's hospitals in the country by *Child* magazine. The Herma Heart Center was rated the eighth best Cardiac program in the nation for both cardiology and CT surgery, and it is easily one of the busiest. Drawing patients from a three-state area, the center performs about 750 surgeries, 450 catheterizations, and more than 7,000 echocardiograms a year.

“Echocardiography is the nerve center for everything that happens in pediatric cardiology,” says Dr. Peter Frommelt, Director of the Pediatric Echocardiography Laboratory. “It defines anatomy, physiology and hemodynamics for all patients. It's absolutely critical.”

Quick and accurate reporting of echo studies is vital in pediatric cardiology, where each heart is as distinct as the



Dr. Peter Frommelt, Director of the Pediatric Echocardiography Laboratory

snowflakes that fall past the windows of the Milwaukee hospital in the winter. “Adults deal with coronary artery disease, and so the heart anatomy is almost always the same,” Dr. Peter Frommelt says. “In pediatric cardiology, no two hearts are the same. They all have different congenital abnormalities that require specialized imaging techniques to identify the abnormalities, and specialized surgical techniques to correct them.” In the late 1990s, the center became



the first pediatric echo lab in the nation to upgrade its archives from analog videotape to digital computer storage. The switch offered a dramatic improvement in the quality of archived studies, but that improvement stopped at the door of the lab. Reports made to referring physicians were still produced the way they had been for decades, in a multi-step process that often took days. Final reports sometimes didn't make it to the desks of referring physicians in surrounding cities for days. It was a frustrating half-step forward.

"If we know the information and nobody else does, it doesn't help anybody," says Dr. Peter Frommelt. "You reviewed a study, you dictated into a phone, a transcriptionist received that information, and at some point – it could be four hours or twenty-four hours – the dictation was transcribed onto an electronic document. Then the physician had to remember that that transcription was going to be ready, go to a different archive, review the transcription, correct the transcription if necessary, and then sign it, so then it could be sent out to physicians." Studies sent from outside facilities for re-

## Hospital profile Children's Hospital of Wisconsin

### General Information:

- No. of beds: 232
- No. of employees: approx. 4,600
- No. of exams per year: 115,000
- Approximately 650 cath lab patients per year
- Image data generated:  
6 TB per year for Radiology,  
3 TB per year for Cardiology

### Several Imaging Systems including:

- 1.5T MAGNETOM Symphony Tim Platform
- SOMATOM Sensation 16
- 2 ECAM
- Digital Fluoroscopy
- Multiple Sequoia Cardiovascular Ultrasound systems
- Multiple Cathlabs

### Installed Systems:

- syngo Workflow
- syngo Dynamics
- syngo Imaging
- Workstations
  - Reporting Advanced: 5 currently
  - Reporting Basic: 30 currently
  - Web based Studio: 50 user license currently
- Archive: Dual EMC Centera





“The tools we have that allow me to configure *syngo Dynamics* are far and away the best thing I’ve seen in the industry.”

view were an even bigger headache. “If they do a study offsite and they send it here on a weekend, well, there’s nobody here on the weekend, so where does that piece of media end up?” recalls David Organ, IT Project Leader for Children’s Hospital of Wisconsin. “Did it get into the physician’s hands? Did it get into the sonographer’s hands? We had cases that weren’t read as quickly as they should have been because media got lost. And sometimes we’d get media we couldn’t read, so they’d have to start over. It would increase costs – every study couriered here cost \$75 to \$100.” Money was lost, and so was patience. “It was a business problem for us,” says Organ.

#### **The Solution:** **Evidence-based reporting and distribution with *syngo Dynamics***

For Children’s Hospital of Wisconsin, the road to the Siemens system was long and bumpy. “We started out early with a vendor that provided digital archiving but didn’t have a good reporting tool,” says Dr. Peter Frommelt. “Then we went to a different vendor who didn’t even have a good image review system, let alone reporting. We spent a couple years trying to help them improve their image review system as well as developing a reporting system, but they were not providing us what we needed. I knew from working with other people [at echo labs around the country] that Siemens had the Cadillac of review stations – and I knew if we brought them in, we would be able to review echo imaging seamlessly.”

The *syngo Dynamics* solution allowed the hospitals to create evidence-based reports that for the first time included both notes and images. “Installing *syngo Dynamics* was the easy part,” says Organ. “The part that took longer was configuring the reports and testing that with our EMR system.” The hospital customized a template borrowed from a hospital in Rochester, New York that was already using the *syngo Dynamics* system, a process that took four to six weeks. The hospital was able to transfer several years’ worth of archived digital images from the sys-



“Being able to provide this information as quick as we do has dramatically impacted how patients get cared for. It has helped us drive improvement in patient safety.”

tem of another vendor. This was a huge relief for hospitals such as Children’s Hospital of Wisconsin looking to switch



David Organ, IT Project Leader  
for Children’s Hospital of Wisconsin

systems. “The partnership has been very good,” says Organ. “The tools we have that allow me to configure *syngo* Dynamics are far and away the best thing I’ve seen in the industry. With the last PACS system we had [from another vendor], every time I made a configuration change, I had to restart the server. With *syngo* Dynamics, I can just add devices as needed on the fly.”

The hospital had nine work stations when it went live with the reporting system in November 2006, and quickly expanded to twenty. Today, staff members are able to access reports from the cath lab and echo reading room, from every exam room, and from the pump room between two surgical suites. A laptop allows studies to be examined on a large screen in a conference room at weekly physician meetings.

#### **The Success:** **Improvements in patient care and referring physician satisfaction**

Even *syngo* Dynamics’ biggest proponents at the hospital were surprised by the dramatic improvements in efficiency. The echo lab completed a study comparing the last month of transcription-based reporting to the newly templated system. “Our median time went from twenty-four hours to about an hour and a half,” says Dr. Peter Frommelt. “In the past, we had sonographers hand-writing information so the consumer physicians would have something. Now, once you finish the report, there is a point-and-click to sign it, and it is uploaded to the referring physician. We’ve gotten tremendous feedback from referring physicians saying they really appreciate the speed of the reports, that it really helps in their



Secure access allows for easy retrieval of data to support referring physicians and request for records. Department of Pediatric Cardiology staff members Patti Laren and Dawn Guida.

ability to deliver care quickly." Doctors at Children's Hospital of Wisconsin are now spending less time generating reports, giving them more time for patient care. Sonographers can complete echocardiography studies faster. "The time from when a patient came into the room until a final [echo] study was completed went from 31 minutes to 26 minutes – and that was despite increasing the list of images they needed to capture to complete a study," explains Dr. Peter Frommelt. "We now take 85 different pictures just for a regular study."

Increasing throughput was a bonus that physicians at the hospital didn't expect. The echocardiography lab director believes the standardized template "triggers in [staff] an ability to organize their thoughts more quickly. Our time is under tremendous demand. We were very happy to see our time to complete a study had gone down."

*syngo* Dynamics is also driving referrals from outside hospitals and clinics. "Everybody has been happy with it – the physicians and the customers," says Or-

gan. "They can send studies through VPN (Virtual Private Network) connections with no loss of quality, and have our cardiologists read them immediately. If we make it easy for sites to bring us studies, volume will go up."

"Echocardiographic information is the lifeblood of managing pediatric heart disease," adds Dr. Peter Frommelt. "Being able to provide this information as quickly as we do has dramatically impacted how patients get cared for. It has helped us drive improvement in patient safety."

Doctors at Children's Hospital of Wisconsin have noted improved consistency in reporting. "Each physician had his own style for describing a heart lesion in dictation. With the templates, because every-

thing is structured, everyone is reporting things in a more uniform way," explains Dr. Peter Frommelt. "There's no question that it's easier for the referring physician to sort through the reports, because every report is set up in the same way." In the beginning, the system had its share of doubters. "Initially, people thought it was a burden," says Dr. Peter Frommelt. "I think everyone has come to realize that the standardization and the improvement in turnaround time more than offsets that extra work at the computer to create the report. There's not a single physician who would want to go back to dictation."

There's no turning back from what Dr. Peter Frommelt calls an "evolution" in pediatric cardiology. In fact, the echo lab director is already thinking of ways to create even more efficiencies in the system.

What is happening at Children's Hospital of Wisconsin is so revolutionary that Dr. Peter Frommelt believes it will rewrite pediatric imaging standards. "I don't think there is anyone out there who can tell you how long it should take for a finalized echocardiogram report to be available in an electronic medical report to the referring doctor," he says. "But what we've found is that it shouldn't be days – it can be just hours."

"Everybody at the hospital has been happy with *syngo* Dynamics – the physicians and the customers."





### The Challenge

- Finding a vendor who could provide a solution that would meet the unique needs of pediatric cardiology
- Achieving quick and accurate reporting

### The Solution

- *syngo* Dynamics, the multi-modality Cardiac PACS solution for imaging labs, allowing evidence-based reporting including notes and images
- Structured reports
- An IT solution that is easy to manage and configure
- Quick access to previous and new reports from all exam rooms
- Prompt service to referring physicians through VPN connection

### The Success

- Improvements in patient and referring physician satisfaction leads to increased volume
- Improved patient safety
- More time for patient care
- Faster report creation
- Customizable reporting templates lead to uniform reporting

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