

## EMH REGIONAL MEDICAL CENTER Elyria, Ohio

THE EMH REGIONAL HEALTHCARE SYSTEM is a 438-bed hospital system in north-central Ohio, serving residents in Lorain County and Greater Western Cuyahoga County. Its main campus is in Elyria, and sister facilities are located in Amherst and Avon.

EMH's cardiology department has been ranked by an independent healthcare rating expert as the top institution in Ohio for cardiac services and interventional cardiology. It received five-star ratings for numerous specialties within its cardiac program, including coronary bypass surgery, valve replacement surgery, and interventional procedures such as angioplasty.

EMH has five Siemens cardiac catheterization labs, two of which are Flat Panel Axiom Artis labs with high resolution 1024x1024 imaging that quadruple the size of an imaging file. In addition, it has three HP 5500 echo labs. Last year, EMH performed more than **9,400 cath procedures and 5,000 echo procedures.**



## ENCOMPASS

### Challenge

In late 2002, EMH was searching for a new cardiac image archiving system for its cath and echo labs. The facility had converted to digital image archiving nearly seven years before, and the capacity and functionality of its legacy system had reached its limits. "At that point we could only keep six months of data on the system," said Mark Inman, EMH's systems administrator. "Anything older than that had to be manually retrieved and re-loaded."

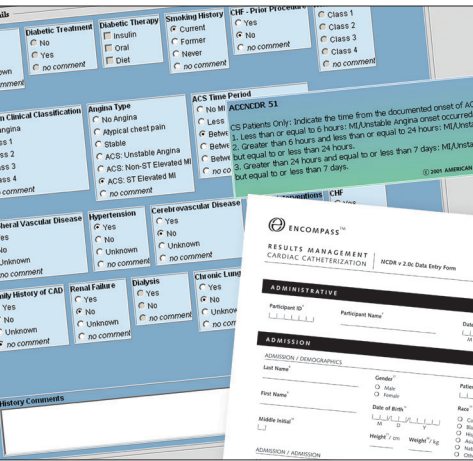
The legacy system wasn't just past its storage capacity – its performance had also degraded considerably. Clinicians had to wait too long to retrieve older cases and cases from referring

entities which were saved on CD. "It would sometimes take 15 to 20 minutes just to pull up a case in the archive," said Kenny Loughner, manager of the cath and echo labs.

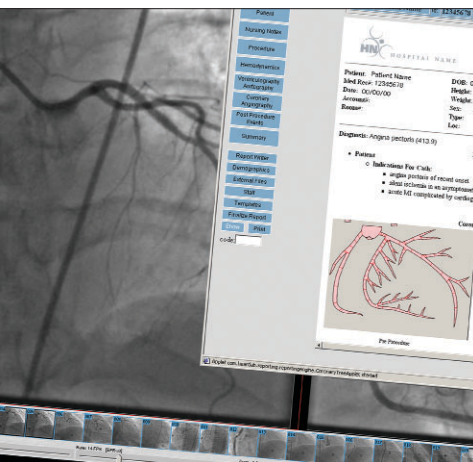
Finally, EMH's old image management system simply lacked the functionality needed by EMH to maintain its competitive advantage. Simple archiving functionality was no longer adequate; EMH also wanted better control of their data and advanced features such as reporting and web capability. They wanted a system that would scale to meet their needs as a growing institution and reinforce their position as a leader in cardiac care in Ohio.

### Solution

EMH chose the Encompass archiving system from Heartlab. According to cardiology administrator Charlotte Wray, EMH had been considering another vendor before seeing Encompass in action at a trade show. "I was walking around the exhibition area and I saw Heartlab's booth. I was impressed with their product," she said. "We changed our minds pretty quickly once we



- Encompass NCDR Data Export makes NCDR submission more efficient. Much of the information is collected at the point of care. Color-coded entry areas make it easy to identify NCDR-required data fields and NCDR definitions are available by clicking on the field.



- EMH uses Encompass Web software to provide hospital staff with access to cardiac images throughout the hospital. In the very near future, the hospital plans to extend its use of Encompass Web by providing access to the imaging archive to physicians in their offices and homes.

investigated our options with Heartlab.”

Inman was impressed with the scalability and flexibility of the Encompass architecture. “Heartlab’s architecture was one of the major things that convinced us that this is what we should implement,” he said, “because it was so different from what everybody else was doing.”

Heartlab’s architecture accelerated the image archiving process and enabled the system to deliver the performance that EMH needed. “Heartlab was the only company that could make ‘gigabit to the desktop’ a reality,” Inman added.

Wray agreed. “Encompass seemed a lot more robust than the other systems. The scalability was much more suitable for us,” she said. “We had more confidence that Heartlab was going to be able to meet our needs and partner with us on future initiatives.”

### Results

The installation of Heartlab Encompass enabled the EMH cardiac department to significantly improve its services and save money in several different areas.

#### Workflow improvements

Wray said that Encompass has completely changed the way that EMH’s cardiac department does business. “It’s hard to envision what the change in workflow and day-to-day ops is going to be like if you only know what you’re currently doing,” she said. “You have to keep an open mind and redesign your workflow, and that’s what we ended up doing.”

“It can be a little intimidating when a department dramatically changes the way things are done,” said Dr. Charles O’Shaughnessy, MD, Medical Director of the Heart Cath Lab, who is a user of EMH’s new Encompass system. “But my colleagues and I saw what [Encompass] could do, and we appreciated its functionality. It’s fast and easy to use and the images are great.”

As one example of improved functionality, patient data is now entered at the time and point of care, instead of retrospectively. When patients come into the hospital, all relevant images and data are accessible instantly. Before the Heartlab installation, preparation for a patient appointment might include gathering a combination of relevant paper and electronic

files. Now, the clinical staff no longer manages multiple paper documentations. “We don’t have to deal with a lot of paper trails like we used to,” said Loughner. “The information-gathering process is much more streamlined. Now, if there is an issue with information being input incorrectly, it is quickly caught and easily fixed.”

In addition, because the workstations are placed directly in the monitoring booths, physicians are able to review the images of the patient on the table and create an electronic report immediately.

With Encompass, EMH physicians have migrated from traditional report dictation to advanced digital reporting, drastically reducing the amount of time needed to create a report. They also make case notes directly on the workstation monitor, using the mouse to make annotations on relevant image areas. Their notes are then saved electronically as part of the image file.

EMH continues to work with Heartlab on strategies to improve workflow and efficiency. One new initiative will expand reporting capabilities to include advanced reporting in areas such as productivity and procedure volume. This type of advanced reporting requires multiple interfaces with various systems, such as hospital information systems and electronic medical records, and involves the integration of multiple vendors and protocols. EMH is in the process of deploying new software that manages these complex demands.

#### Increased Efficiency and Scalability

The new Encompass system also results in faster patient service and higher patient throughput. Now instead of waiting 15 to 20 minutes to retrieve an archived patient study, an EMH clinician only waits 15 to 20 seconds. Cases that are received on CD from referring facilities are also retrieved in seconds.

Unlike the older system, which had a six-month storage limit, all of EMH’s images are now stored in Heartlab’s expandable DVD-R archive. It’s no longer necessary to manually load shelved discs when an older case is needed. “It’s extremely quick,” said Loughner. “Even for cases older than six months, they’re right there on the screen – you just click on it and there it is.”

And when the archive approaches its capacity, EMH can expand it easily by purchasing more archive space from Heartlab. Unlike other solutions, Heartlab's archive enables EMH to estimate the archive space they will need in a future period and add just the amount that is optimal for their planned usage and budget.

#### **Enhanced Data Collection**

EMH has participated actively in the American College of Cardiology's (ACC) National Cardiovascular Data Registry (NCDR) for several years. In the past, the hospital accumulated paper patient records over a two to three month period and paid its staff overtime to enter the data into a database over the weekends.

With Encompass, the data is captured electronically as patients visit the clinic. "Now we're loading that information in real-time as the patients come in," said Loughner. "It's easier to manage because we're not playing catch-up anymore."

Not only is it easier, it's less expensive. Wray said that the hospital has saved \$65,000 annually by eliminating the expenses of overtime data entry.

#### **Better Access with Web Capability**

EMH uses Encompass Web software to provide hospital staff with access to cardiac images throughout the hospital. Encompass Web is deployed in areas such as ICU, CCU, and Progressive Cardiac Care. "Now, we can look at images and reports in the patient care areas. This allows us to make clinical decisions quickly and efficiently," said Dr. Michael Vicente, DO.

"Physicians that are reading images remotely are able to save a lot of time," added Wray. "They're able to view records [in other departments] while they're rounding on those very patients. They don't have to stop rounding to go down to the echo department and pull up a study, then go back upstairs to see the patient."

In addition, the Encompass Web application makes it possible for standard PC's on the network to offer doctors nearly the same functionality as the diagnostic review stations in the cardiac department, and the image quality is nearly equal. In order to transmit large data sets over the web, image files must be compressed at ratios greater than 2:1. The 2:1 ratio is considered "lossless" because no information is lost

due to compression. Encompass Web uses configurable compression ratios to provide fast web performance. Heartlab's unique compression algorithms ensure that the images are high-quality. "What you see on your diagnostic workstation is almost exactly what you see on the web-based product," said Inman. "It's not a lossless image, but the quality is basically the same."

In the very near future, the hospital plans to extend its use of Encompass Web by providing physicians with access to patient studies in their offices and homes. "Now that we have web connectivity on-site, we really can't live without it," Dr. Vicente said. "When we can use it in our office and home, it will make an even bigger difference in our ability to save time and provide faster patient results."

#### **Vision for Innovation**

Besides expanding their reporting capabilities and their use of Encompass Web, EMH has other eventual long-term goals for the Encompass system. In the future, EMH would like to incorporate Encompass into its new wireless point-of-care system; integrate Encompass with the radiology department's planned picture archiving and communication system (PACS); and implement digital reporting for peripheral vascular procedures.

#### **Conclusion**

Heartlab's Encompass helps EMH's cardiology department increase the quality of patient care and maintain its leadership in cardiac care in Ohio. Using Encompass, EMH was able to improve workflow and increase efficiency by providing faster access to cardiac images and data. It also enabled an overhaul of the hospital's data collection procedures, and it saves physicians' time by allowing web-based access to images. The system's scalability and flexibility ensure that it will continue to meet EMH's needs as the facility grows and expands.

*"Encompass has definitely improved clinical decision making. For example, for a surgeon who is waiting to find out if a patient needs to go to surgery or not, it really enhances their ability to make quicker decisions for the patient."*



## WHY ENCOMPASS?

- > Performance, image quality and ease of use
- > Standards-based support for all vendor's imaging equipment
- > Structured information that automates report generation, and enables data analysis and export
- > Reliable access to data and protected patient information
- > Scalability, upgradeability and protected technology investment

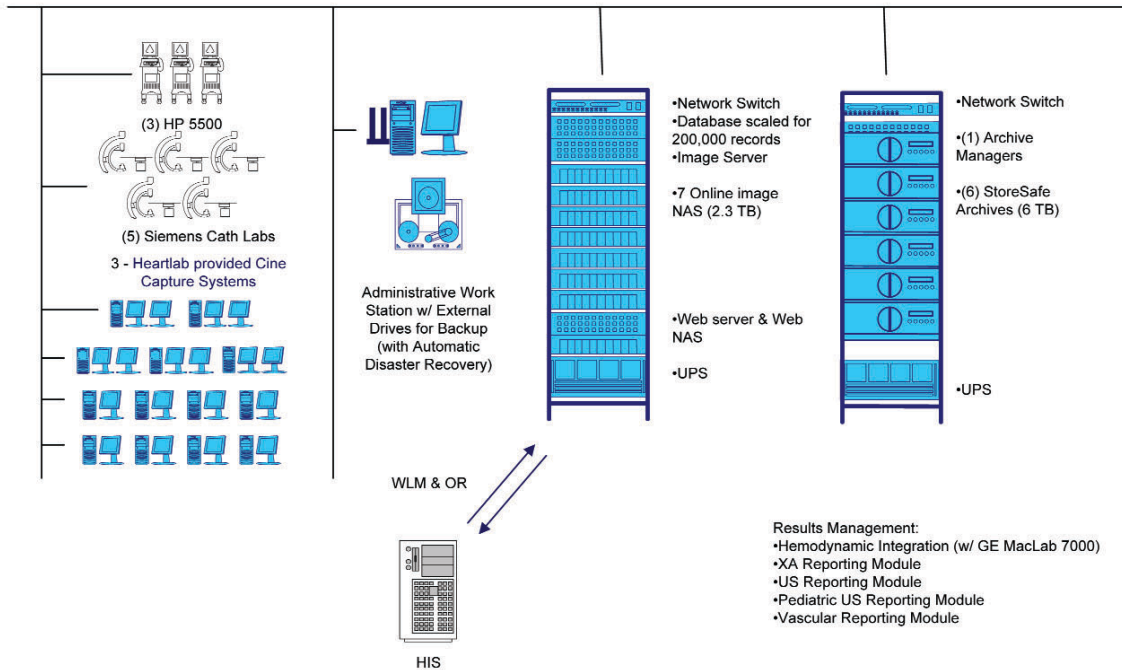


Remote Locations via Web



### Encompass Cardiac Network

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