

## NEW IMAGE ARCHIVING SYSTEM MAKES GOOD BUSINESS SENSE FOR COLUMBUS CHILDREN'S HOSPITAL

By Dave Melvin, Manager, Information Services and John P. Cheatham, MD

Columbus Children's Hospital is a 112-year-old pediatric healthcare network that annually provides more than 575,000 patients with a multitude of services. Long known as a high-quality community hospital in Central Ohio, the hospital as-



Figure 1. Columbus Children's Hospital Heart Center Cath Lab

pires to become a nationally-known academic medical center and is in the middle of expansion of facilities and services that will help achieve its goal. The \$145 million expansion has resulted in a children's research institute, a pediatric education institute, and the growth of its outpatient care center.

### Building a World-Class Pediatric Cardiology Center

Developments in the cardiology department have also been part of the hospital's growth spurt. When the hospital board and administrators decided to develop a national presence, part of the plan was to expand the cardiology department into a dedicated, world-class heart center that could provide advanced care to a greater number of patients. Columbus Children's Hospital improved its heart program by recruiting a highly-regarded team of cardiologists and researchers, centralized its cardiology facilities, and is in the process of adding additional space for the Heart Center.

One of the most significant improvements in


the pediatric cardiology department has been the upgrade of imaging technology. In May, the Heart Center added two cardiac catheterization labs that contain state-of-the-art imaging equipment for both diagnostic and interventional procedures. Physician recruitment, new facilities, and the new cardiac cath labs have helped the Heart Center attract new patients and increase its workload.

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For example, the number of cardiac patients served by Children's Hospital has increased nearly 150 percent since 2001. The number and type of cath procedures has increased as well. Before 2001, the department annually performed around 200 cath procedures and only about 33 percent of them were interventional. Now the Heart Center performs nearly 500 cath procedures a year, and approximately 75 percent of them are interventional.

### Image Archiving Technology Critical to Expansion


The increase in quantity and difficulty of cardiology procedures could not have occurred without a change in patient image and data archiving technology. Columbus Children's Hospital realized that a state-of-the-art image archive is imperative for an organization that wants to grow its cardiology department.



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The hospital's legacy system was adequate for a community hospital that performed a small number of interventional procedures, but not robust enough to meet the hospital's aggressive growth targets. They only could store between ten and twelve cases on a disk; once the disk was filled, the studies had to be archived to tape and deleted from the disk. If the case was needed again, the correct tape had to be identified, located and the study had to be loaded back into the disk before it could be viewed.

The need for a new cardiology image archive increased with the growing workload at the new Heart Center. In 2002, the department exceeded its online storage capacity of ten cases in about two weeks. By 2003, online storage capacity was surpassed after only about two days. However, as workload increased, online storage capacity was surpassed after only about two days. In addition, Heart Center staff knew that the installation of the two new cath labs would completely overload the legacy system, and that they needed to upgrade their imaging archive for higher performance, more flexibility, and greater expandability.

**Heartlab Encompass: Image Archiving as a Business Advantage**

About a year before the new cath labs opened, the Heart Center installed a new archiving system – Encompass from Heartlab, Inc. Very quickly, Encompass proved its abil-

ity to meet the needs of a growing institution with national aspirations. As expected, image and information storage is now virtually unlimited – thousands of cases can be stored online. As a result, patients at Columbus Children's Hospital have



Figure 2. HeartLab Workstation

seen a positive difference in the quality of care.

The new image and information archiving system has provided much more than increased storage, better workflow, and improved patient care. Administrators and clinicians at the Heart Center quickly discovered that one of the Heartlab system's greatest strengths is that it provides the Heart Center with a business advantage enabling it to achieve its goal of building its reputation beyond central Ohio. The Heart Center's administrative and medical staff found that having a better imaging archive provided multiple business-related benefits:

- *Competitive advantage.* Cardiol-

ogy patients, potential patients, and referring physicians perceive that institutions with state-of-the-art technology provide better service than those without. A demonstrated commitment to innovation helps an organization maintain, and even increase, market share.

- *Marketing tool.* Improved technology, such as state-of-the-art image archiving systems like Encompass, is a powerful marketing tool. A new archiving system, along with other new imaging equipment, gain attention in community and national marketing promotions such as mailings, brochures, or news articles. Open house events featuring the new system provide effective regional outreach.
- *Increased referrals.* A critical attribute of the Heartlab system is the ability to provide access to the image archive from any Internet-connected computer – with image quality that is on par with a diagnostic workstation. Any referring physician with an Internet-enabled PC can be given secure access to cases in the Children's Heart Center database. Remote access increases referrals because it provides referring physicians with the immediate ability to review cases.
- *New business opportunities.* Remote access can be expanded beyond traditional phy-



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sician referrals to create a multitude of new business opportunities. For example, the Children's Heart Center offers consultations from its pediatric cardiologists to hospitals that are as much as 150 miles away, by providing them with easy-to-use software and a secure Internet connection to the Heart Center's image archive. Thus, smaller institutions with limited technology and staffing resources can offer their patients the benefits of a larger institution. Because the service is not limited by physical distance, the Heart Center can expand this service to other hospitals as its reputation grows.

- **Recruitment tool.** Top pediatric cardiologists are well-versed in technology and understand the positive relationship between technology, workflow, and their own work-life balance. Recruiting the best doctors is easier when a hospital can publicize the benefits provided by an easily-accessible, flexible, high-performance, scalable image and information archiving system.

These benefits make good business sense, but they also enable the Heart Center to provide better care for children throughout the region and support the Heart Center's goal of achieving a national presence.

### Conclusion

When Columbus Children's Hospital made the decision to increase patient volume and enhance patient care in their cardiology department, its staff and administrators knew that improvements in imaging tech-



Figure 3. Columbus Children's Hospital

nology would help transform its Heart Center into a world-class diagnostic and treatment facility. It required an image archiving system that could keep up with an increased workload and more complicated interventional studies.

***“The Columbus Children's Hospital expects its investment in cutting-edge image and information archiving technology to enable its Heart Center to become one of the top-rated pediatric cardiology facilities in the nation.”***

As expected, the image archiving system it chose, Heartlab's Encompass, dramatically enhanced image storage capability, departmental workflow, and patient care. It also provided a number of business advantages that are helping the Heart Center reach its business growth goals. The Columbus Children's

Hospital expects its investment in cutting-edge image and information archiving technology to enable its Heart Center to become one of the top-rated pediatric cardiology facilities in the nation.

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