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BUILDING CARDIOLOGY CENTERS OF EXCELLENCE



University of Colorado Hospital
Cardiac & Vascular Center

Connecting Silos of Information Results in Best-Quality Care, Makes Best Business Sense

Electronic Scheduling, Inventory and Structured Physician Reporting Improve Access, Streamline Multiple Workflows at the Cardiac & Vascular Center, University of Colorado Hospital

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Becky Loucks-Schultz
Systems Analyst
Cardiac & Vascular Center
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Highlights

Centralized Database Integrates and Communicates. The goal at University of Colorado Hospital’s Cardiac & Vascular Center is to integrate as much clinical and administrative information as possible so that they can easily push it out to hospital systems. Connecting silos of information enables the hospital to enjoy the highest levels of business efficacy and deliver the highest level of clinical care.

Scheduling, Physician Structured Reporting and Inventory Management Automated. Moving to automated, electronic systems for scheduling, physician reporting and inventory supports clinical and business goals, both for the Cardiac & Vascular Center and for the enterprise as a whole.

Clinical Data Is Accessible Anywhere. Physicians and others with access privileges can sign on and review cases whether they’re in the EP lab in Aurora, Colorado or waiting for their plane in an airport in Singapore. This improves quality of life for physicians and quality of care for patients.

Ranked as one of America’s top hospitals by *U.S. News & World Report* for 14 consecutive years, the physicians, clinicians and staff at University of Colorado Hospital are continually striving to improve the care they provide. Across the hospital, innovative medicine is supported by advanced technology. Nowhere is this more evident than in the Cardiac & Vascular Center, where the recent introduction of integrated information systems is radically streamlining clinical and administrative workflows.

For several years, the Cardiac & Vascular Center had been operating a few homegrown databases, using these in the Cath and EP labs for structured reporting. “Over time we had staff and physician changes which impacted our systems. These changes showed some of the vulnerabilities of homegrown databases to upper management,” explains Becky Loucks-Schultz, Systems Analyst for the Cardiac & Vascular Center. So management and the Information Systems team developed a plan for a centralized CV database.

“When [a new] Executive Director came on board in 2005 we were able to get the funds together for a centralized database and modules,” says Becky.

Integrating Systems Unburdens Staff and Physicians

The Cardiac & Vascular Center recognized the need for a fully integrated Cardiovascular Information System (CVIS). Managing the data that two Cath labs, four PVI labs, two EP labs, eight Echo labs and three surgery rooms produced was overtaxing physicians and staff. Moreover, it was slowing down the flow of crucial clinical and administrative information. Management understood that data is only useful when it’s accessible; getting clinical data out of the individual labs and into an EMR at University of Colorado Hospital had become time-consuming and unpredictable.

“Having broader availability of data was critical,” says Becky. “And the most vocal proponents for this were the doctors. They wanted to see the reports. With our old systems we might see a delay of two-to-three weeks until the report got out onto the EMR.”

“In the past, secretaries in the Cath lab would cut and paste data from one system and then reformat it. We wanted to take that workload off our staff,” says Becky. “And of course getting data out wasn’t the Cath secretaries’ sole responsibility. So they were only going to get that data out once the report was final. And then there might be delays because they could only do as much as they could do in a day or a week given that this wasn’t their only task. Other priorities would pop up.”

To connect the silos of data, the Cardiac & Vascular Center first purchased Apollo Advance™ clinical data repository, CardioSchedule™ electronic scheduling solution and CardioDoc™ physician structured reporting.

“We started implementing CardioSchedule first, in all interventional areas and interventional clinics,” recounts Becky. They then began implementing CardioDoc, Apollo modules and interfaces in Cath and EP.

Enhancing Scheduling and Structured Reporting

Before implementing CardioSchedule, the labs and clinics were using either physical schedule books or Excel spreadsheets. “The problem with books and spreadsheets is that spreadsheets can get corrupted and the book can disappear. Or someone can change something in the schedule without notifying everyone and no one knows who did it or when or why,” says Becky. CardioSchedule operates in real-time, and works to eliminate scheduling conflicts and double booking of rooms, equipment and resources. It has provided busy clinical areas—Cath, EP and now PVI—at the Cardiac & Vascular Center new levels of stability, consistency and accountability.

Furthermore, CardioSchedule supports University of Colorado Hospital’s efforts to broaden access. “CardioSchedule lets us make the schedule available to many other departments. We couldn’t do this with a book or a spreadsheet. For example, we have a transplant area and they schedule quite a few procedures with us. They have access to the schedule and this makes the process much smoother,” Becky says.

CARDIAC & VASCULAR CENTER AVERAGE YEARLY VOLUMES

- 250 Open Heart Surgeries
- 2,500 Caths
- 5,000 PVIs
- 600 EPs
- 10,000 Echos

Introducing CardioDoc structured physician reporting has also smoothed flow of clinical information substantially. “CardioDoc has improved our productivity and access,” says Becky.

The IS team had expected CardioDoc to accelerate reporting and decrease the time it took to get CV data into the EMR, but they discovered an added bonus: CardioDoc has improved quality of life for physicians. “We use Citrix so it’s easy. Doctors can access information from anywhere in the hospital. And we also have made access available from any location,” Becky says.

“We have fellows. Many of them have young children,” notes Becky. “And we’ve enabled secure remote access to CardioDoc. That means our fellows can go home and see their kids at night instead of being stuck in the hospital working on reports. After the kids go to bed, they finish their reports. It improves the quality of their lives.”

Managing Inventory in Interventional Radiology

After deploying Apollo, CardioSchedule and CardioDoc, the IS team turned their attention to Interventional Radiology. IR had been managing its inventory levels through a paper-based system. The IR department has five labs and an overflow room; given the high numbers of items to track each day, moving to an electronic inventory solution was the next logical step for the Cardiac & Vascular Center.

“IR doesn’t have a hemo system yet,” says Becky. “So for now they’re managing their par levels and doing their ordering through CardioInventory. The techs in the labs are responsible for tracking the supplies used in the cases.”

Becky explains the IR inventory timeline, “Our hospital-wide supply system is Lawson. We get supply items master list from Lawson. And in IR we’re turning around and sending orders back to Lawson. Lawson sends us Changes/Additions/Deletes every day at 3 a.m. and we’re able to export our orders hourly. We weren’t turning things around nearly that quickly before”.

Becky says they implemented a couple of small customizations that have made a big impact. “We made some changes to get our Lawson information to flow,” Becky recounts. “We get an import in from Lawson and there’s a Lawson name for the item, which is usually somewhat cryptic because their system doesn’t have room for descriptive names. So we added fields in our system for the department name for the item. We’ll call it something like ‘Catheter balloon 3mm x 10mm,’ something people in the department will see and know immediately. We also added drop-down menus so we can add items to the inventory. These were the only areas we customized.”

“It’s great to have an electronic log of IR’s supplies. In our homegrown databases for Cath and EP, we always had a log of supplies. So if a physician came in and said, ‘I need to know how many balloons I used of this type on this day, or ‘There’s been a recall of this item, and I need to know what we’ve used,’ I could search for it. But we never had that capability in IR so to get that has been a big improvement.”

“They’re also using bits of CardioInventory in Cath and EP,” says Becky. “Cath and EP both have hemodynamic systems. So they’re tracking their inventory as they’re doing their cases, and that exports into Apollo. Cath runs reports just to see what was used. And EP is getting to that point.” Becky notes that when IR gets a hemodynamic system they will be able to extend their inventory automation and make greater use of CardioInventory’s analytic capabilities.

IR Procedure Volumes

- Total per year – 5000
- Average – 10-15 per day
- PICC (Peripherally Inserted Central Catheter) Lab – 5-10 cases per day

Typical Number of Items Used per Procedure

- PICC case – 3-7 items
- Average case – 12-15 items
- Neuro case – 30 items

Building on Successes in the CVIS Evolution

According to Becky, “There have been many of improvements since we introduced our CVIS. Apollo is a much more stable platform than our old databases. Doctors, nurses, administrators can access information anywhere in the hospital. A doctor can log in at an airport in Singapore and finish his reports.”

They are also billing with Apollo now, which both shortens the billing cycle and opens the door for operational and cost analyses. Becky says they are comparing what CV is billing to what the hospital is billing as a whole. “And we’re able to pull information up quickly. I can pull up everything we billed on August 11, for example, including supplies and procedures with no problem. It helps because this shows at a glance what are productivity levels are.”

And because University of Colorado Hospital is a research institution, the ability to run reports and queries with ease is critical. “If physicians come to me and want to see all our CABGs for male patients over 55, I can pull that data out for them right away. And if we were doing dictated reports I’d never be able to do that. This is almost immediate.” In general, Becky explains, “We run a lot of reports and queries. And I do quite a bit of data mining for various reasons. It’s just much easier [with Apollo].”

The IS team at the Cardiac & Vascular Center is building on their successes by implementing more modules across the CV service line. First, they have both immediate and far-reaching plans for IR. “Our next big step, after getting a hemo system for them, is to move electronic record keeping into IR,” says Becky. Documentation of cases in IR is currently done on paper. Electronic charting will come in. And we want to get the IR doctors to do structured reports. Cath and EP are using CardioDoc for their reports, so we want to get IR on the same level. In the long run, we also want to get Echo on board. We want to re-work EP a bit. We’d like to see the Peripheral Vascular Diagnostic group up using Apollo, too.”

The Cardiac & Vascular Center’s plans support University of Colorado Hospital’s effort to build an end-to-end electronic healthcare environment, with fully integrated, easily accessed information. “The vision of the hospital is to consolidate data and get everything into an EMR so it’s instantaneously available to anyone who needs it. The hospital wants to get away from siloed information. Our CVIS helps in that we can easily push our data out to the hospital systems—and we can do it quickly, mostly through interfaces so it’s automatic,” says Becky.

KEY LUMEDX SOLUTIONS AT THE CARDIAC & VASCULAR CENTER

- Apollo Advance
Clinical Data Repository
- Apollo Toolkit
- CardioDoc
Physician Structured Reporting
- CardioGate
Interface Manager
- CardioInventory
Inventory Management
- CardioSchedule
Electronic Scheduling Solution
- CardioManager
Performance Management System
- ACC Registry Module
- STS Registry Module

About LUMEDX: With over 500 heart center clients worldwide, LUMEDX is the market leader in fully integrated cardiovascular information and imaging systems and the No. 1 independent integrator of cardiology information solutions. LUMEDX offers the most proven, comprehensive package of clinical information tools, cardiovascular products, and services to help medical institutions enhance quality of patient care, reduce costs, streamline workflow, increase patient volume, and grow revenue.