Auto*Mate* 800 and UniCel DxC 660i Help Dameron Hospital Streamline Testing, Increase Consistency and Safety

Core Laboratory Fast Facts

- Performs testing 24/7
- 2,000 square feet
- Averages 8,700 chemistry/immunoassay tests per month
- 361,000 billable tests per year
- Currently has 32 FTEs
- Current Beckman Coulter equipment: Auto*Mate* 800, UniCel DxC 660i, Synchron LXi 725, REMISOL Advance, Command Central, PROService

Richard Wong
Administrative Director, Dameron Hospital

About Dameron Hospital

Dameron Hospital Association is a fully accredited, 188-bed community hospital that offers a broad range of medical, surgical and health maintenance services for emergency and acute care.

Both not-for-profit and non-sectarian, Dameron Hospital's sole purpose is to serve the healthcare needs of its community — including residents of Stockton, California and surrounding areas. The hospital provides advanced technology and state-of-the-art diagnostic and therapeutic equipment — as well as facilities for inpatient, outpatient and occupational patient care.

A Need for Change

In 2004, when Richard Wong joined Dameron Hospital's core laboratory as Administrative Director, the lab was characterized by crowded spaces, manual processes and its share of inefficiencies.

Pre-analytical processing was bogged down by manual specimen receiving, manual centrifugation and manual aliquotting — steps that sapped productivity and lengthened turnaround time.

An ongoing labor shortage didn't help matters. After some recent attrition, the lab was down by three FTEs, which directly affected the testing process. Furthermore, manual sample processing — in addition to being time-consuming and labor-intensive — posed safety concerns, in terms of repetitive motion injuries and potential exposure to biohazards.

In order to accommodate more growth and better organization, the hospital moved the lab across the street — a decision that gave Wong plenty of freedom to re-engineer the lab properly.

"It was an administrative director's dream — I got to help design an entirely new lab from the ground up, basically re-engineering the whole thing," he said.

Reengineering the Core Lab

As Wong approached the re-engineering strategy, he took a holistic view of the entire process — and had automation in mind from the start.

"Fortunately, my COO agreed to go with me to visit Beckman Coulter's Vision Center in Brea, California," explained Wong. "This enabled him to see my vision and exactly where I wanted to take our lab."

"One of my goals was to look at the entire pre-analytical process, starting at the bedside where the specimens were collected," he added.
"I encouraged the hospital to install an automated blood collection system at the bedside. We had to make sure we were identifying the patient correctly and positively; and also that all specimens coming to the lab were bar-coded. These things all had to be in place before we could even consider an automation system."

These changes, together with a new LIS system in the core lab and PDAs for phlebotomists, helped to eliminate labeling errors, wasted time and the need for collection lists.

"By replacing collection lists with PDAs, phlebotomists could now see their orders in real time and manage their blood draws in a more productive way," he said. "There was one other mechanism we had to have — a pneumatic tube transport system that would physically move the samples from the hospital to our off-site lab."

The Solution: Auto*Mate* 800

After relocating to the new building in 2004, the core lab could now focus on increasing automation.

"Originally, I was planning to get a Power Processor, but administrators decided we needed to complete our re-engineering process first," explained Wong. "After learning that the Auto*Mate* 800 sample processor was coming soon; I built that into our new lab design and ensured that all the proper infrastructures — like electrical and data communications — were already in place. If I couldn't have total automation yet, this was the next best thing."

Several years later, this planning paid off.

A Smooth Transition

In November 2008, Dameron Hospital became the second U.S. installation of the new Auto*Mate* 800 — and took one giant step closer to its goal.

The Auto*Mate* offers a single point of entry to manage all tubes from sample receipt to disposal, as well as automated sample loading and sorting, fully integrated centrifugation for faster test turnaround time and less variability, through-the-label sample volume detection, a decapper and intelligent aliquotting.

"Since everything was modular, it was easy to install the Auto*Mate* 800 — without having to remodel the area," said Wong. "I also had the forethought to put our most recent chemistry and immunoassay systems (the UniCel DxC and UniCel DxI) right next to the Auto*Mate* 800, in order to facilitate higher efficiency."

"With the Auto*Mate* just three feet away from the instruments, our staff could quickly unload the Auto*Mate* sample processor, turn around and immediately load the receiving analyzer — either for chemistry, immunoassay, hematology, urinalysis or coagulation," he said. "This organization and system placement has made it faster to get samples on and off the systems. Basically, the Auto*Mate* automatically receives, centrifuges, aliquots and sorts the tubes into specialty racks, then a staff member turns around and puts those tubes right onto the analyzers, which is very efficient."

Adding the UniCel DxC 660i Integrated System

Turnaround time improved even further in February 2009 when the lab upgraded and transformed its UniCel DxC chemistry analyzer and UniCel DxI immunoassay analyzer into a single, integrated system: the UniCel DxC 660i Synchron Access Clinical System.

By adding a UniCel Closed Tube Aliquotter (UCTA) and joining the systems together with robotic technology, the lab took another giant leap toward optimal productivity.

"Before, we had to put a primary sample on the DxI for immunoassay testing, wait for the sample to come off and physically move it over to the DxC for chemistry testing," said Wong. "Or to get a quicker turnaround, we had to manually aliquot the primary sample and put the aliquot on one machine and the primary sample on the other machine. Now both types of testing can happen simultaneously with just one sample. We just put all our samples on one analyzer that will automatically create aliquots, if necessary, and run chemistry and immunoassay tests at the same time.

Thanks to ClozCap closed-tube aliquotting and closed-tube sampling technology (a unique feature offered on Beckman Coulter integrated systems), the UCTA also eliminates staff members' need to manually decap, sort and recap samples. The UCTA automatically pierces the specimen, removes an aliquot and the primary tube moves on for chemistry processing. By eliminating manual, repetitive motion steps, lab safety issues may be significantly reduced.

Furthermore, the Auto*Mate* 800 and DxC 660i systems can handle additional workload, which means any increases in test volume won't force the lab to add more staff members.

Adding REMISOL Advance for data management also helped increase productivity, by consolidating patient test information from multiple instruments onto a single workstation.

In the future, Dameron Hospital looks forward to adding to its automation system with a refrigerated stockyard for more organized archiving of completed samples.

"Our new equipment from Beckman Coulter enables our whole lab to be more flexible, which helps us better service our physicians' needs and deliver better patient care," said Nicholas Arismendi, Chief Operating Officer. "Furthermore, it helps our lab accomplish its goals with fewer people, which is especially important in today's tough economy. This technology was definitely worth the investment."

A Better Fit

"Having the Auto*Mate* has changed our entire workflow," said Wong. "Before, our processes were totally manual — and highly inconsistent. Now the Auto*Mate* is receiving all our samples, which not only increases consistency but also eliminates occupational hazards and safety issues with manual capping, decapping and repetitive motion injuries."

Wong also credits the Auto*Mate* with providing greater staffing flexibility — since he can shift some lab personnel to other areas that still require manual processes.

"The bottom line is that we have fewer pre-analytical errors, faster turnaround time, better consistency, smoother traffic flow and increased worker safety," he said. "Overall, things are working wonderfully. I'm thrilled by our new process."

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