



The Power of Process™ in Action

St. Joseph Hospital's Automated Lab Solution Helps Speed Turnaround Time and Increase Overall Efficiency

Laboratory Profile

- St. Joseph Hospital, Phoenix, Arizona
- 477-bed acute care facility
- 1.2 million tests-per-year run on LX®20 systems
- Operates 24-hours-a-day
- Equipped with: Two SYNCHRON LX®20 Clinical Systems; a Power Processor core system with a CHEMExpress upgrade

Making the decision to adopt a cutting-edge automation system and new chemistry platform didn't come easy to the laboratory at St. Joseph Hospital in Phoenix, Arizona. The decision was preceded by a number of challenging factors that forced the laboratory to take a hard look at its current processes and instrument platforms.

Today, however, the laboratory is more efficient than ever. And much of its success is credited to one simple switch — a switch to Beckman Coulter.

Situation Overview

St. Joseph Hospital, a member of the Catholic Healthcare West (CHW) system, is a 477-bed acute care facility and a busy medical hub for brain injury, intensive care and trauma patients in the greater Phoenix area.

It is home to the internationally recognized Barrows Neurological Institute, the only Level 1 Trauma Center in the state verified by the American College of Surgeons, and has a 50-bed neonatal intensive care unit. In 1999, U.S. News and World Report ranked St. Joseph Hospital among the best hospitals in several specialties.

Laboratory Goals	Laboratory Results	
<ul style="list-style-type: none"> • Decrease Morning Turnaround Time • Minimize Errors Associated with Specimen Handling • Reduce STAT Turnaround Time • Meet Increasing Workload Demands with Fewer Staff 	<ul style="list-style-type: none"> • Reduced TAT by 1.5 hours • Improved Sample Processing Eliminated Manual Errors • Decreased STAT TAT by 20 Minutes • Increased workload by 30 percent 	<p>Seventy percent of the laboratory's service mix is devoted to inpatient and clinic testing, and thirty percent comes from a separate reference lab business.</p> <p>In 1995, the health system hired consultants to perform system-wide profitability and improvement studies — and they recommended major staff reductions at St. Joseph Hospital. The laboratory lost its full service phlebotomy staff and 10 medical technologists, leaving only 14 FTEs in place to conduct central processing.</p>

Problems in the Process

With these changes, the St. Joseph Hospital laboratory struggled to meet the needs of the hospital. Testing turnaround time was unacceptable. Morning results were not fully complete until 9:00 a.m. and test results were not available to treat critically ill patients or to begin surgeries on time.

In addition, STAT turnaround time varied significantly, which led to frequent complaints by the medical staff to hospital administration. Nursing floors began to investigate the possibility of bypassing the laboratory through the acquisition of point-of-care testing.



Specimen processing was also an issue. The lab experienced errors associated with clots, resulting in compromised test results and equipment problems. There were sample dilution calculation errors as well as processing errors associated with pour-offs. Central processing bottlenecks delayed work during peak periods.

Additionally, the laboratory's workload was steadily increasing and its aging Paramax chemistry systems were being phased out by Dade Behring.

Laboratory Objectives

The laboratory needed new instrumentation and pre-analytical automation that would allow it to:

- Decrease morning turnaround time to an acceptable level
- Minimize errors associated with specimen processing
- Reduce variability of STAT turnaround time
- Meet increasing workload demands with a reduced staff

"I think a lot of people look at automation as 'too overwhelming' but it's really not," says McMillan. "Beckman Coulter has the expertise, the experience gained from many installations and the commitment to automation that can make all the difference for a successful solution."

To meet all of these goals, the lab would need to find an instrument platform that offered a wide menu for workstation consolidation; high volume processing to accommodate the lab's increasing test volume; quick turnaround time for improved delivery of STAT metabolic panels; and improved checking for sample integrity.

A New Laboratory Solution In Place

The right choice for St. Joseph Hospital's laboratory was a combination of two SYNCHRON

LX[®]20 chemistry analyzers and a Power Processor core system, that was eventually connected to the two analyzers through a CHEMxpress upgrade.

When the two LX20 systems were installed in August, 1999, the laboratory process dramatically improved.

"We were immediately impressed with the LX20 systems' throughput, which is double the speed of our old analyzers, as well as the systems' one minute turnaround time for critical tests," says Susan McMillan, Chemistry Supervisor.

"As a result of using the LX20 systems, our laboratory's morning work is now out an hour and a half earlier than it was before — it's now done by 7:30 a.m. versus 9:00 a.m.,"

she says. "In addition, our STAT turnaround time to the emergency department has decreased by 20 minutes. There is no daily maintenance — hands-on time is only ten minutes for weekly maintenance and 20 minutes for monthly maintenance."

"We are especially pleased with CVs now being lower than with our previous chemistry system, and the excellent correlation between our two instruments," she says. "Simple calibration with all-liquid calibrators, minimal reagent handling and the reliability of the assays and the instrument all add up to time savings for our lab. Our technologists find the systems easy to learn and easy to use. Without a doubt, the LX20s were the right decision for our lab — and the perfect fit."

Four months later, the laboratory installed its Power Processor, which supplied the front-end automation technology necessary to streamline its sample processing and eliminate manual errors.

Today, the Power Processor automates test routing, centrifugation, decapping, routing to the instruments, loading, offloading and sorting of 700 tubes a day. It also facilitates automatic test rerun and repeat.

"Reducing time-intensive, manual processes frees up our staff members to do other things in the laboratory and helps them speed up turnaround to all lab departments," says McMillan. "The benefits of our automation system transfer to every single department."

The Benefits of Automation

As a result of its new laboratory solution, the laboratory experienced some dramatic improvements.

The variability of STAT turnaround time decreased. There is virtually no distinction between STATs and routine tests since both are completed equally as fast.

The post-automation laboratory also has been able to assimilate a 30 percent increase in workload, despite the effects of a smaller workforce. Plus, the lab has effectively eliminated compromised test results due to fibrin clots, dilution calculation errors and aliquotting errors. The complaint calls disappeared and all was accomplished with only a slight increase in cost per test.

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