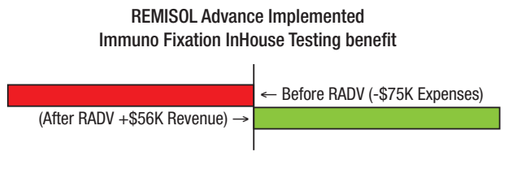
"Before Beckman Coulter, our emergency department never knew when it was going to get results, so they would call us all the time," said Ballou. "But now that we have automation, autoverification and a fairly tight TAT window, our ED knows they will get results between 30 and 60 minutes so we don't get near as many phone calls as we did before. It's been huge."

Having automation and autoverification has also helped the hospital keep up with its increasing workload, which essentially doubled between 2010 and 2013.

"After turning on autoverification, we also witnessed a 10% decrease in labor overtime in the first month alone," said Ballou. "Plus, we were able to reallocate resources that saved us another half-FTE. And because we went paperless, we've saved another $8,000-$10,000 per year just in paper and toner cartridges. I can't wait to see the additional performance gains once Troponin goes back on the line."



Of course, the lab also has fewer instrument interfaces and fewer maintenance contracts to support. Best yet, REMISOL Advance can order add-on tests as they come through, automatically retrieving samples from the stockyard and placing them back on the instruments—with absolutely no intervention.

As their network extended their standardization efforts, their other facilities saw such a tremendous success in delivering quality and patient safety, that they began deploying REMISOL Advance. Their facilities without as significant of volume have used it as a safety net to not only stop erroneous results released, but as well as to give them traceability of the sample throughout the chain of custody.

"The success, ease of use and level of comfort we all felt with REMISOL Advance really was again a key driver in staying with Beckman Coulter," she said. "REMISOL has just proven invaluable. I truly can't say enough about Beckman Coulter and its solutions. The team has been phenomenal."

LABORATORY GOALS	LABORATORY IMPROVEMENTS
Address increasing testing volumes Compensate for staff shortages	Accommodated a testing volume that doubled between 2010 and 2013 with no additional FTEs
Decrease turnaround time; reduce number of outliers	Implemented REMISOL Advance, autoverification, EQC and EWMA Reduced error rate 40% utilizing EQC Reduced average TAT from 39 minutes to 29 minutes Reduced TAT range from 10-99 minutes to 20-56 minutes Improved service consistency to the emergency department
Reduce costs and add revenue	Menu Growth: New Immuno Fixation Electrophoersis added without head count- $56,000 in new revenue Reduced staff overtime by 10% in the first month Reallocated resources, saving the cost of a half FTE Saved $8,000-$10,000 annually by going paperless Vitamin D Automation: Provided $70,000 in savings through automation

For Beckman Coulter's worldwide office locations and phone numbers, please visit www.beckmancoulter.com/contact

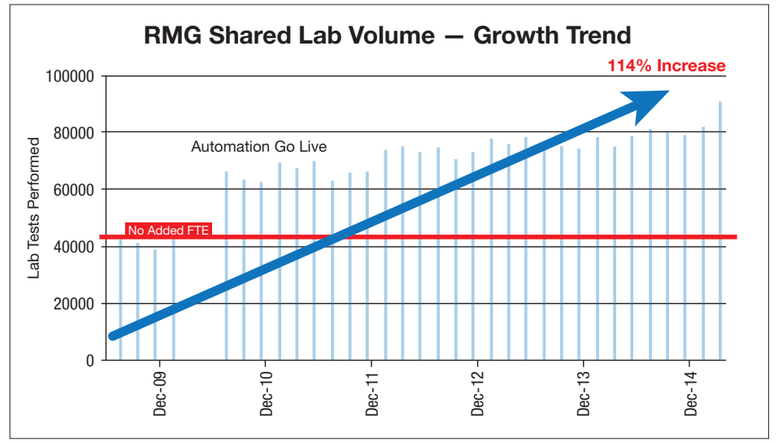
CS-50444

CASE STUDY: Riverside Health System

RIVERSIDE HEALTH SYSTEM DRIVES OPERATIONAL EFFICIENCIES THROUGH STANDARDIZATION, PROCESS IMPROVEMENT, AUTOMATION AND INTEGRATED INFORMATICS

Network Profile

- 5 Individual Hospitals in Riverside Health System
- Core Lab: Riverside Regional Medical Center, Newport News, Va.
- 450-bed facility
- Performs 3.5 million tests annually in the core lab
- 23 FTEs in the core laboratory
- Operates 24/7
- Solutions: Power Processor, two UniCel DxC 800 chemistry analyzers, two UniCel DxI 800 immunoassay analyzers, 3,000-tube stockyard, REMISOL Advance



THE CHALLENGE: MANAGING RAPID GROWTH WHILE CONSOLIDATING LABS AND CONSOLIDATING WORKFLOWS INTO ONE FLUID FLOW

In 2009, Riverside Regional Health System was bearing the weight of several burdens. Its mixed bag of instruments meant there were multiple LIS interfaces, plus numerous maintenance fees and time-consuming management tasks keeping each up to date. The network lacked standardization of processes as well as decision rules, which was a challenge to deliver consistency to their clinicians.

The core lab also faced increased competition, a limited supply of qualified techs, upcoming staff retirements and a growing focus on specimen tracking and patient safety concerns. "Patient safety and quality was becoming more and more paramount. We had multiple techs trying to manually verify results on outpatients and had a challenge catching shifts. We had a few instances where 30-40 patient samples were released. Physicians actually notified us that they believed the results were wrong. This led to an entire shift of corrective actions," says Lisa Ballou, Technical Services Manager.

Meanwhile, Riverside Regional Health System's testing volume was steadily rising, too, driven largely by its outpatient business, which accounts for roughly 40% of its test volume.

"We knew we needed to balance our acute care service requirements against the volumes brought in by our outpatient physicians," said Ballou. "We needed a solution and hybrid staffing model that would cover our need for both productivity and coverage. Automation made perfect sense."

To justify the cost, Riverside Regional Health System consolidated operations with a free-standing outpatient lab five miles away. The combined volume made smart business sense and helped make the automation purchase a reality.

10% Labor Savings

40% Error Reduction

26% ED TAT Reduction

ADDITIONAL GOALS: NETWORK RULE STANDARDIZATION WITH AUTOVERIFICATION AND ENHANCED QC MANAGEMENT

"We had attempted autoverification with our LIS in the past, but it proved to be far too cumbersome," said Ballou. "We kept running into glitches that required IT support, but our limited IT resources are in high demand across the hospital. The rule-building at the LIS was troublesome, too. We just couldn't get autoverification off the ground, so we pulled back and returned to manual verification."

"With the volume increases projected, we knew we wouldn't be able to handle it and we weren't getting any more FTEs, so we had to come up with another solution," she added. "Our hope was that REMISOL would do that."

Riverside Regional Heatlh System also wanted enhanced QC capabilities.

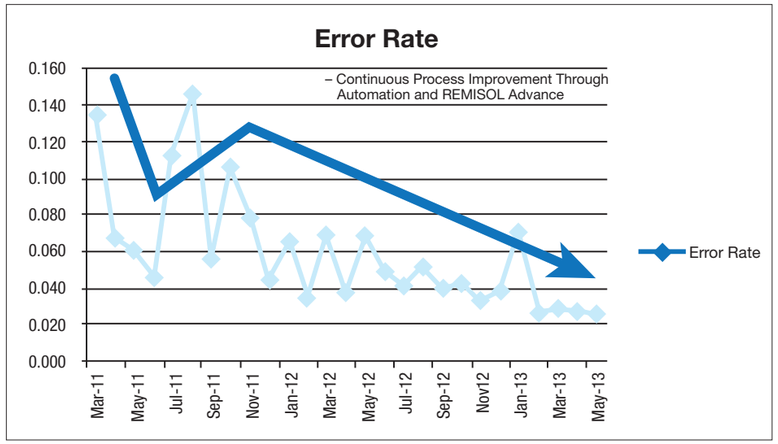
"With our existing LIS, there was no easy way to view QC performance from two analyzers at the same time on the same screen—so if one was running low and one was running high, I could begin troubleshooting," said Ballou. "We would be able to do that with EQC on REMISOL."

> "Since adding Troponin to the automation line with auto verification, we've seen a 17 minute reduction in TAT to our ED."
>
> Lisa Ballou, Technical Services Manager

THE RIGHT CHOICE: BECKMAN COULTER

After a comprehensive RFP process and several site visits, Beckman Coulter came out on top—and two sister hospitals within the health system decided to upgrade their equipment, too. The lab was gaining two UniCel DxC 800 chemistry analyzers, two UniCel DxI 800 immunoassay analyzers, a Power Processor, 3,000-tube stockyard and REMISOL Advance middleware.

"Throughout the entire process, the Beckman Coulter team really went above and beyond to make sure that every question we had was answered," said Ballou. "Beckman Coulter's automation line, methodology and middleware far exceeded what we saw with the competitor. Those three things were really what drove the decision."



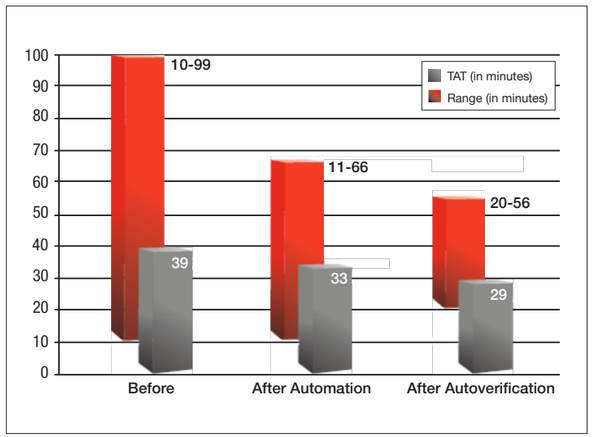
After choosing Beckman Coulter, the hospital constructed a new space for automation and four months later, the hospital went live with its first phase—the instruments, automation system and REMISOL plus EQC. The lab chose to temporarily hold off on implementing autoverification.

"Because we had new instruments and a new automation system, our pathologists did not feel comfortable turning on autoverification at the same time, so we went live with our basic rules and fine-tuned them for almost a year before adding autoverification," said Ballou. "Meanwhile, we were enjoying the safeguards and benefits of EQC and EWMA (Exponentially Weighted Moving Averages). That gave everyone the time and confidence they needed to feel comfortable taking the next step."

"In fact, when we began using EWMA, we virtually eliminated the errors associated with instrument shifts we used to have and were able to catch that in real time, saving us from releasing erroneous results to the clinicians."

"EWMA has absolutely improved the level of confidence with our physicians."A few months later, the lab adopted autoverification through the LIS, which now reported REMISOL results as "verified" instead of simply "performed."

INCREMENTAL PROCESS IMPROVEMENTS



The lab witnessed significant performance gains at each implementation interval—first, after the instruments and automation went live, then later, after autoverification was turned on.

Prior to the new solutions, the lab's average TAT time for ED samples was 39 minutes with a TAT range of 10-99 minutes. After automation, the average TAT dropped to 33 minutes with a range of 11-66 minutes. After adding autoverification, the average TAT dropped again to 29 minutes with a range of 20-56 minutes—far fewer outliers than ever before.