

Elmhurst Memorial Healthcare Reference Laboratory Demonstrates Benefits of Automation to Hospital Administrators

Laboratory Profile

Elmhurst Memorial
Healthcare Reference
Laboratory
Elmhurst, Illinois, USA

- Serves licensed 427-bed Elmhurst Memorial Hospital and other institutions
- Operates 24 hours a day, seven days a week
- Performs 1.8 million total billable tests per year
- Integrated Automation System: Power Processor sample-processing system connected to two SYNCHRON LX®20 Clinical Systems, one UniCel® DxI 800 Access® Immunoassay Systems, centrifuge, decapping and aliquotting modules; DL2000 Data Manager



EMH Lab Director Sam Terese justified an automation system by emphasizing its financial return on investment, as well as its quality and service benefits.

Elmhurst Memorial Healthcare and the EMH Reference Laboratory in Elmhurst, Illinois, USA, faced some significant challenges in meeting its financial and service goals. Sam Terese, Director of EMH Laboratory Services, believed lab automation was the answer, but he knew he would have to justify the expense. To win support, he crafted a strong business case that appealed to hospital administrators, demonstrating how automation would deliver improvements in revenue, turnaround time and service delivery.

Under Pressure

Elmhurst Memorial Hospital sits roughly 20 miles east of Chicago and serves a target market of 350,000 people in the surrounding area, making the 427-bed hospital a busy place.

Before automation, the EMH laboratory faced enormous pressure. Physicians wanted reports faster, but test turnaround time (TAT) was bogged down by manual processes. Every physical touch not only slowed the delivery of results, it increased the risk of error. “We were under a lot of pressure and it was taking its toll,” says Terese.

With an industry-wide shortage of lab technologists and budget concerns, Terese knew he could not increase staff size. Adding staff simply was not the answer. Instead, he began researching stand-alone automation and automated workcells. After sending a team to visit other automated labs, the hospital came to an important realization. “To achieve our goals, we needed more than just stand-alone automation,” he says. “We needed a fully integrated system.”

Making a Business Case

While some of the key drivers for automation are improved TAT and quality, Terese knew that these benefits alone were not enough to convince hospital administrators to invest in such a system.

“Naturally, we are all committed to improving quality and service,” he says, “but the reality is, as laboratory directors, we must show *financial* benefits in order to justify investment. So that’s where our business case began.”

To appeal to administrators, the lab stressed the economic advantages of replacing labor costs with a one-time capital investment that would lower costs, improve cash flow and generate more revenue – and it promised that the project would be self-funded within two years. The lab also emphasized how automation would deliver faster turnaround time, which would help the hospital reduce overall operating costs. In addition, they pledged that the entire project would be complete within four months, minimizing disruption and transition time.

“In general, I approach the laboratory as if it is a stand-alone business and I am an owner,” says Terese. “I needed to think like the leader of a company and make sure any lab investment makes business sense. This is the mindset all lab directors should use when trying to convince hospital administrators to make significant capital investments in the lab.”

Terese’s business-focused approach worked – and soon the laboratory found itself in the midst of a transformation.



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All Systems Go

The transformation included Beckman Coulter's Power Processor automation system integrated with a centrifuge, tube decapping and aliquotting modules, two SYNCHRON LX[®]20 chemistry analyzers and a UniCel[®] Dxl 800 Access[®] Immunoassay System. The lab also added DL2000* Data Manager, which consolidates results from various instruments.

Manual processes have all but disappeared. "Now, when a specimen arrives in the lab, we place it on the automation line and let robotics and software take over," says Terese. "The system even retrieves tubes for repeat testing, add-on tests and dilution. This frees our technologists from mundane tasks and allows them to focus on other activities that require their expertise."

Meanwhile, with the DL2000, 85 percent of results are automatically reviewed and sent directly to physicians with no manual intervention.

Terese is quick to note that the transformation required a close partnership between the EMH laboratory and Beckman

Coulter. "We knew we needed a business partner that truly cares about our success and stands by us every step of the way," he says. "We have been impressed with the level of attention we received. It has been a critical part of achieving our goals."

Delivering on Its Promises

Once the automation system was up and running, the lab provided frequent updates to the hospital's key executives to demonstrate how it was helping the institution meet financial goals and improving the patient care process.

From a financial standpoint, the laboratory staff decreased by 20 full-time equivalents (FTEs) through attrition. During that same time, testing volume rose and the lab had no trouble adjusting to the heavier workload.

Before automation, the lab's expenses were growing by roughly US\$1 million per year. But now the lab estimates that it is saving approximately US\$750,000 in annual labor costs per year and roughly US\$1 million in non-labor costs. Ultimately, the system paid for itself in little more than one year instead of the two years promised.

Equally important, automation has enabled the hospital to increase its reference lab business, which boosts overall hospital revenue. To date, reference lab volume has grown by 15 percent, with no increases in laboratory staff.

TAT also measurably improved. Physicians want all in-house lab results in hand by 8 a.m. when they make their rounds. Before automation, the lab met the goal 55 percent of the time. With automation, they meet the goal 96 percent of the time.

In addition, 90 percent of the time the lab is able to deliver cardiac troponin I results to emergency department physicians within 45 minutes compared with 72 percent of the time before automation. For basic metabolic panels, the lab returns results in 35 minutes 94 percent of the time – up from 58 percent of the time pre-automation.

Another benefit has been the response from technologists. "They love it," says Terese. "They have more time and energy to focus on the abnormal samples, and this makes better use of their training."

Turnover is well below local level, he says, and the laboratory is positioning itself as an employer of choice. "Before, we operated under a great deal of pressure trying to meet service targets and often unsuccessfully," he recalls. "Now, every day we meet our targets. Every day is a success story."

Hospital administrators are so impressed with the laboratory's success, they are looking to leverage additional automation opportunities. Already, plans include connecting refrigerated storage to the automation line, as well as adding automated recapping technology. Other laboratory areas may see automation, as well, including transfusion medicine, cytology, microbiology and histology.

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Sam Terese

Laboratory Goals	Laboratory Results
Increase revenue and lower costs	<ul style="list-style-type: none"> • Boosted reference lab volume by 15 percent with no increases in staff.
Improve turnaround time	<ul style="list-style-type: none"> • Delivery of in-house lab results by 8 a.m. improved from 55 percent to 96 percent. • Delivery of cardiac troponin I results to ED within 45 minutes improved from 72 percent to 90 percent. • Delivery of metabolic test results within 35 minutes improved from 58 percent to 94 percent.
Reduce stress among laboratory staff	<ul style="list-style-type: none"> • Improved staff morale, freeing laboratorians to focus on abnormal test results and positioning the lab as an "employer of choice."

*Marketed as Remisol 2000 in some countries



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