The Power of Process™ in Action

Health and Hospital Corporation (HHC) Queens Health Network Uses Customized Automation To Meet Growing Demands

Laboratory Profile

- HHC Queens Health Network, Queens, New York
- Serves a population of 2.5 million people
- Supports two hospitals, 17 satellite clinics and several long-term facilities
- Provides service 24 hours a day, seven days a week
- Performs approximately 6.5 million tests annually
- Maintains 150 FTE staff members in its rapid response laboratory and core laboratory combined

Through customized automation, the laboratories at two New York hospitals successfully provide better service to patients and physicians and continue to thrive in a very competitive environment.

The two hospitals - Elmhurst Hospital and Queens Hospital - are public facilities that are part of the Health and Hospital Corporation (HHC) Queens Health Network. Elmhurst Hospital, the only Level 1 trauma center in Queens, has 561 beds and receives more than 700,000 outpatient visits each year. Queens Hospital has 200 beds and has 400,000 yearly outpatient visits. Both hospitals serve a high percentage of indigent, uninsured and Medicaid patients.

The Queens Health Network was formed in 1996 and the laboratories were reconfigured to reduce the operating budget and streamline testing workflow. A core laboratory was established at Elmhurst Hospital; a rapid response laboratory was set up at Queens Hospital.

In 1996, the patient demographics for the hospitals began to change dramatically. The hospitals began to perform more outpatient testing, due to an increase in outreach programs.

Migrating To Automated Front-End Sample Preparation

To address these demographic changes the network began a series of instrument acquisitions. First, the network acquired three SYNCHRON LX®20 analyzers for the core lab at Elmhurst Hospital. In 1999, it introduced front-end automation into the core lab with a Power Processor and automated aliquot unit. This workstation enabled the laboratory to sort tubes by department, centrifuge samples, decap tubes, label daughter tubes and aliquot secondary samples as necessary.

As a result of these changes, the laboratory reduced turnaround time from 45-50 minutes to 20-30 minutes. In addition, the lab minimized aliquotting errors and reduced its staff size by several FTEs.

The core lab later added Access® Immunoassay Systems and three Gen•S Hematology Systems with SlideStainers.

The rapid response laboratory at Queens Hospital also significantly improved its processes by acquiring two SYNCHRON CX®7 systems and a COULTER® Gen•S™ system.

New Demands, New Solutions

Today, hospital outpatient testing continues to rise — along with the subsequent workload in both laboratories.

"We continue to experience a 10 percent increase in testing volume each year," said Dr. Susanna Levy, Regional Chief of Clinical Chemistry/Immunology, Director of Rapid Response Laboratory. "We needed faster throughput and the ability to add a hematology outlet. These benefits could only be achieved with the second generation Power Processor."

In 2001, the core laboratory at Elmhurst upgraded to a second generation Power Processor that included the hematology outlet and an (upgraded) intelligent aliquot unit.

"This second generation Power Processor accommodates not only chemistry, immunology and endocrinology tests, but also hematology tests, which helps increase our overall productivity." said Levy.

The laboratory also uses the intelligent aliquot unit to sort daughter tubes into five different, user-defined testing categories. These categories streamline the movement of tubes from the Power Processor to the individual testing analyzers by eliminating manual sorting. Dr. Levy's lab sorts tubes into the following categories: immunology-hepatitis, immunology-syphilis, general chemistry (for the LX), general chemistry (non-LX), endocrinology and send-out tests.

"In addition to improving efficiency, the aliquoter increases precision over manual pour-off methods, reduces mislabeling errors and eliminates confusion in our immunology department," said Dr. Levy.

Health System Goals	Health System Results
• Decrease turnaround time	• Reduced turnaround time by as much as 25 minutes
• Increase lab accuracy and efficiency	• Minimized aliquotting errors and manual processes with the intelligent aliquot unit
• Cost savings	• Accommodated an increase in testing volume with no increase in operating budget • Reduced total lab staff by several FTEs

The laboratory also appreciates other features of the intelligent aliquot unit, such as the automatic serum level detector, which is unique in the industry. The ability to aliquot samples based on the requirements of the ordered tests helps the lab maximize use of sample. And the secondary tube labeler is a boon to productivity and accuracy.

A Second-Generation Automation Solution

"Today, we have the automation and instrumentation capacity to handle our increasing volume and to speed turnaround times," said Levy. "In hematology alone, our three Gen•S systems with SlideStainers help us process more than 1,400 hematology tubes a day. And the fact that the LX systems can run plasma samples helps us expedite our turnaround time, making it possible to meet the emergency response regulations for trauma centers."

"With automation, we have been able to enhance efficiency further by redirecting some of our lab personnel," added Levy. "Indeed automation allowed us to redistribute our work force in the most efficient way."

Standardization has also helped the laboratories improve testing quality and performance. "The results from the Gen•S systems in Queens and Elmhurst are identical," said Levy. "The same is true for our chemistry systems. Even though Elmhurst uses LX systems and Queens uses CX systems, both product platforms use the same methodologies and reference ranges, so the test values are the same across the network. This helps our test management tremendously."

"Our cost savings have been demonstrated by the fact that all these improvements have been made while our budget has not increased at all during the past three years," said Levy. "We have not needed to hire any new people. In fact, with attrition, we have actually reduced our total number of lab staff."

"This partnership between Beckman Coulter and our network has enabled us to use existing space, utilize an existing staff and accommodate a tremendous increase in volume through automation technology," said Steve Alexander, Senior Associate and Executive Director of HHC Queens Health Network. "This has very much been a win-win situation for our network."

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