VersaCell System Reduced Average Processing and Operator Time by Half

Northridge Diagnostic Laboratory (NDL) conducted a head-to-head comparison of the VersaCell™ System with the laboratory’s own stand-alone analyzers. The laboratory’s daily workflow was recorded and reproduced on the VersaCell System, which included a clinical chemistry (CC) analyzer, an immunoassay (IA) analyzer, and the VersaCell unit. In this trial, the VersaCell System reduced turnaround time by 54% while requiring only one operator instead of two.

Background

Northridge Diagnostic Laboratory (NDL) in Northridge, CA, is a reference laboratory that serves physician offices, boarding care facilities, and nursing care hospitals in the greater Los Angeles area. Their clients span from San Francisco to the Mexican border.

The laboratory processes approximately 1000 CC and IA tests every day using an IMMULITE® 2000 IA system from Siemens Healthcare Diagnostics and an Olympus CC analyzer. A typical NDL workload consists of 180 samples per day with an average of more than 5 tests per sample. Since both analyzers are completely stand-alone, any sample that requires more than one type of test must be manually prioritized and moved between the two systems. At NDL, two laboratory technicians handle the workload that is processed on the CC and IA analyzers, including preparing samples, prioritizing sample flow, and manually transferring samples.

"When I heard about the VersaCell System, it seemed like a natural way of making our workflow more efficient—having just one point of sample entry for both the clinical chemistry and immunoassay analyzers. I was very interested in seeing how much difference automating could make," Mr. Bostanian said.
The NDL VersaCell System Trial

How the VersaCell System Works

The VersaCell System links two clinical chemistry (CC) and/or immunoassay (IA) analyzers to meet a laboratory’s specific needs. With easy-access drawers for continuous loading and unloading of specimens, operators have a single point of entry to the linked analyzers, allowing for efficient sample handling without the need for tube sorting or aliquoting. The VersaCell System automatically prioritizes and manages samples as needed between analyzers, using a robotic arm that intelligently moves samples within the system while analyzing workload. The single VersaCell System user interface provides consolidated reports on all the analyzers and samples in the system.

The NDL VersaCell System Trial

Method

A two-day trial was conducted at NDL comparing the laboratory’s existing protocol for processing samples on the stand-alone CC and IA analyzers against an identical protocol using the VersaCell System. Samples arriving into the laboratory were processed in three batches per day, ranging from a low of 6 samples to a high of 99 samples per batch. As specimens arrived at NDL during the course of the trial, the NDL laboratory technicians manually prioritized and moved patient samples between the stand-alone CC and IA analyzers. The time necessary to process the entire workload was recorded.

An identical workload was then recreated on the VersaCell System using secondary samples, which were filled with water and labeled with nonspecific identification numbers to avoid patient confidentiality issues. At the VersaCell System workstation, Mr. Bostanian loaded the secondary samples into the system, replicating the batch sizes and arrival times of the actual workflow. In addition, the same tests were run on each sample, duplicating the original test mix.

Productivity of the two systems was then compared at the end of the trial.

Results of the Trial

Using the VersaCell System, average processing time per batch was reduced from 5 hours, 20 minutes to 2 hours and 25 minutes (320 to 145 minutes).

“I had expected that the VersaCell System automation would reduce turnaround time, maybe from 6 hours to 4,” said Mr. Bostanian. “I was surprised that the VersaCell System actually cut the time to less than half.” That’s important to laboratories like NDL that face the need to provide clients with timely results for optimal patient care.

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Comparison of Total Processing Time

Although the comparison study conducted at NDL did not include any STAT orders, Mr. Bostanian was impressed with the STAT processing feature that was discussed in his training program. “STAT orders are one thing that really can interrupt the workflow in a laboratory,” he said. “With the VersaCell System, you put a sample in the STAT drawer, and it automatically prioritizes and manages the testing according to protocol for processing samples on equipment that handles other types of tests, it will only add more value.”

“Additional observed benefits

The automated VersaCell System virtually eliminated the chance that a sample could be dropped or misplaced in the course of sample transfer.

Ease of use

In Mr. Bostanian’s experience, the VersaCell System was simple and easy to use. Loading any of the four separate 50-tube sample drawers takes seconds and doesn’t stop or interrupt the workflow of the system. With a capacity of 200 samples onboard, all could be loaded at once, regardless of batch size. The drawers accept a wide variety of racks and tube sizes, and individual tubes could be added as needed.

Mr. Bostanian also felt that the software was easy to use. The VersaCell System’s high-resolution touch screen made inputting instructions and checking results fast and easy. All connected instruments could be controlled from the single user interface. Communication with the IMMULITE 2500 IA analyzer was particularly well-designed, with limited menu navigation needed to accomplish most tasks.

In conclusion, he said, “The VersaCell System’s single point of sample entry naturally makes the workflow more efficient. It cuts down on processing time by more than half, and one person can do the work of two. When you have a client base focused on general internal medicine and boarding care, the VersaCell System is the most efficient way of dealing with chemistry and hormone panels.”

In every batch, regardless of sample size, the VersaCell System was not only faster, it required only one operator, rather than two.

“Fewer full-time equivalents (FTEs)

In addition to a reduction in processing time, the entire workload was easily managed by one person, instead of two. “I would much rather put a thinking employee to work improving customer service or performing value-added tasks than have that person simply moving samples from one instrument to another,” said Mr. Bostanian.

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