

Hands-On Time Assessment

A Case Study



Introduction

This case study was carried out in a laboratory in the United States. Workflow analysis was performed by a team of expert consultants who employed LEAN/Six-Sigma principles. They conducted unbiased, in-depth, real-time observation and analysis of laboratory assets, processes and methods. With a clear understanding of the laboratory's current operation, the consultants provided innovative, tailored solutions and actionable insights designed to reduce cost and increase laboratory efficiency and productivity.

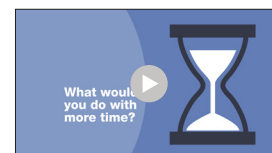
The Challenge

Even with four technicians dedicated solely to A1c testing, this laboratory was struggling to manage their daily workload of 6,000 A1c samples/day. The existing protocols run on an immunoassay analyzer were labor intensive and required significant hands-on time. Results were often delayed due to the backlog of samples waiting to be processed.

The Solution

The D-100 System was able to significantly reduce the hands-on time required to perform A1c testing. With no daily maintenance and no need to mix samples or orient barcodes, performing A1c testing became a load-and-go operation.

[View the Hands-On Time Assessment video](#)



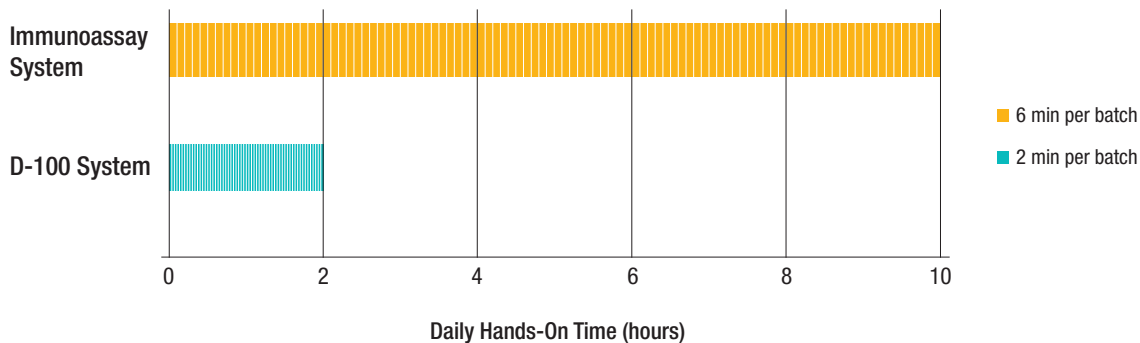
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Sample Preparation

With an immunoassay analyzer, sample preparation was taking 6 minutes per batch of 60 samples. Manual barcode orientation and carefully-timed sample mixing were critical to prevent processing errors.

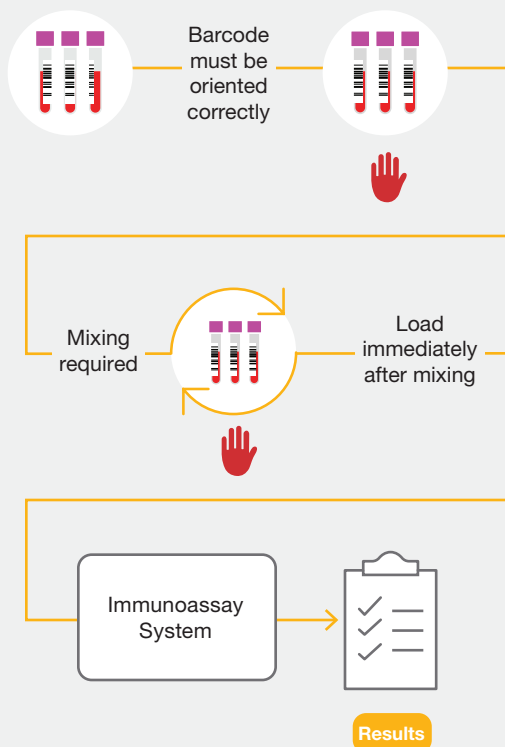
The D-100 System eliminates these low-value, redundant tasks by 1) automatically rotating every tube to read the barcode and 2) sampling from the bottom of the tube (making sample mixing irrelevant). With the D-100 System, sample loading time is just 2 minutes per batch of 100 samples. Over the day, sample preparation for all 6,000 samples dropped from 10 hours of direct labor down to just 2 hours.

Hands-On Time for Sample Preparation (6,000 samples/day)



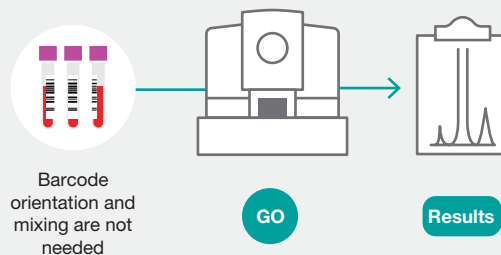
Immunoassay System

Sample preparation takes 6 min for every batch of 60 samples



D-100 System

Sample preparation takes 2 min for every batch of 100 samples



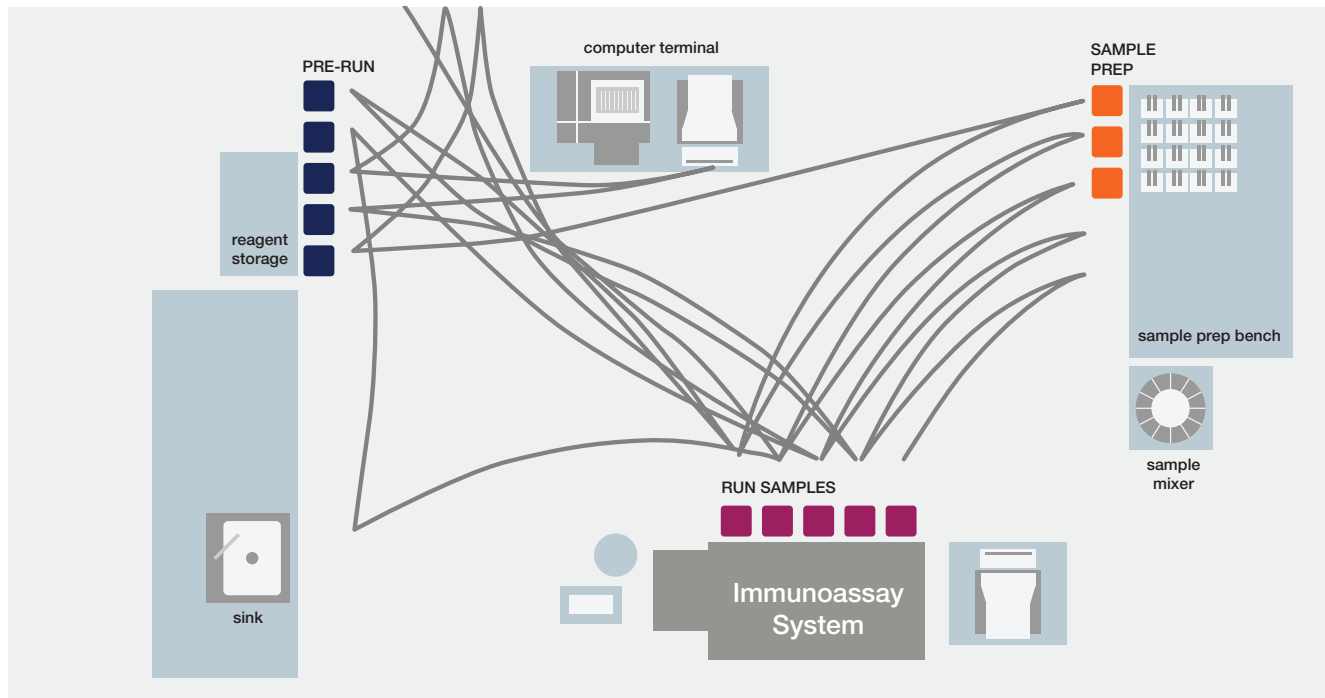
Pre-Run Setup

With an immunoassay analyzer, pre-run setup involves multiple steps. Manual activities consumed 33 minutes per run, but they were interspersed with automated processes, requiring frequent trips to and from the instrument. After 80 minutes of elapsed time not a single patient sample had been run.

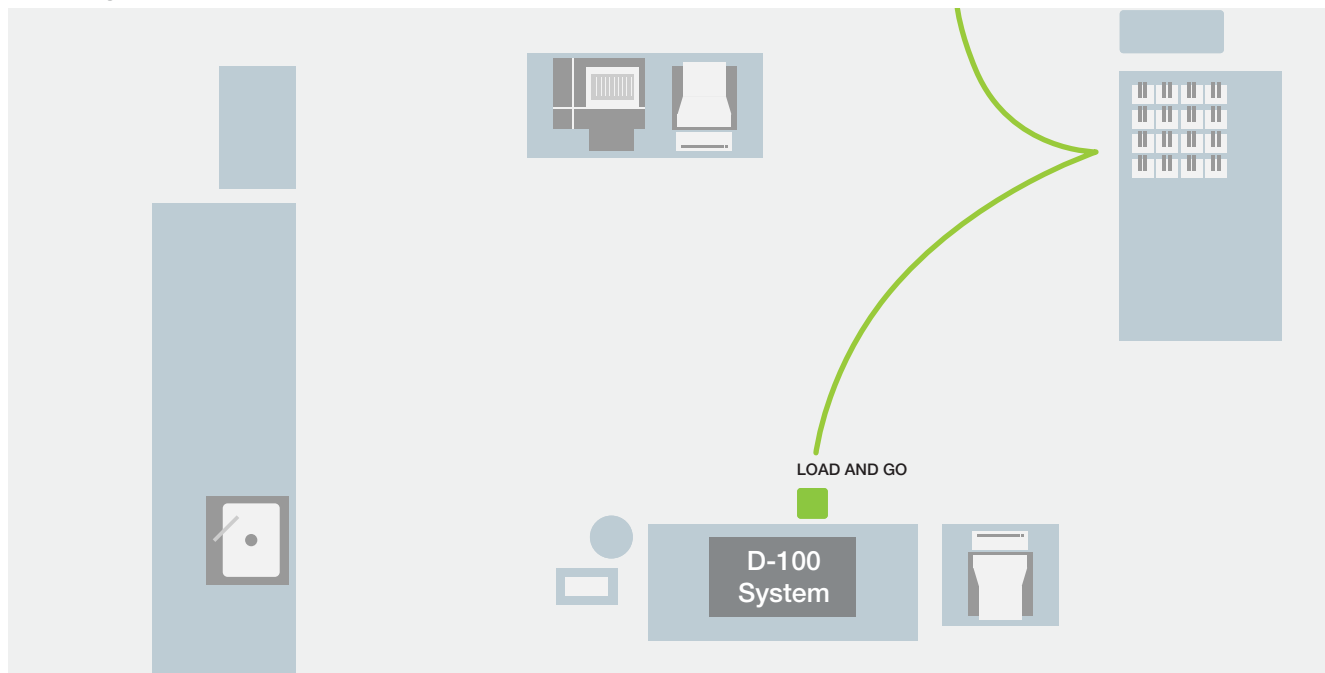
On the D-100 System, there is no daily maintenance. All startup activities are fully automated. The operator simply loads their daily QC and patient samples and touches the Run button. Manual tasks and automated tasks are done in parallel, both taking less than 7 minutes.

A Comparison of Operator Movement During Setup and Sample Processing for Immunoassay versus the D-100 System

Immunoassay System



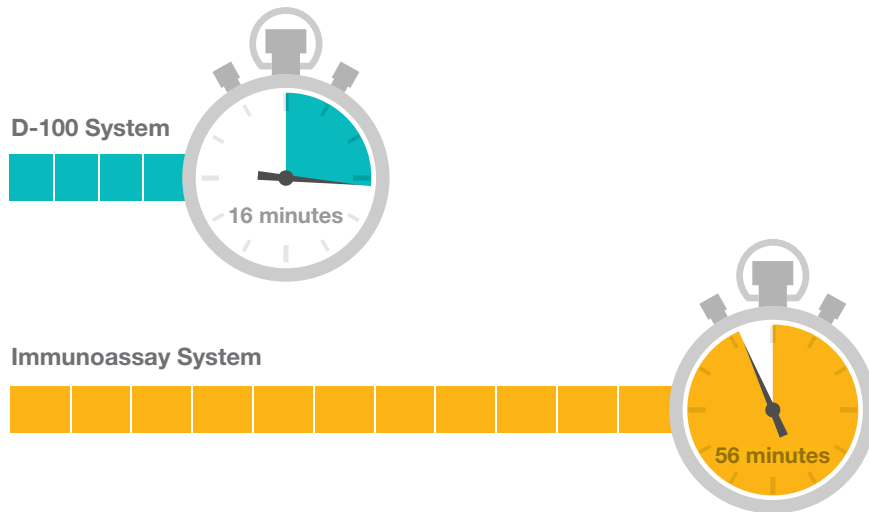
D-100 System



Conclusion

For this laboratory performing 6,000 A1c samples per day, the D-100 System saved time and labor. After analyzing all aspects of sample processing from pre-run setup, sample preparation and result review activities, the consultants concluded that the D-100 System significantly reduced hands-on time. To generalize the results, the consultants compared the two systems performing a hypothetical run of 300 samples. They found that the D-100 System saved 72% in overall hands-on time from start to finish.

The D-100 System reduces hands-on time by 72% for a run of 300 samples



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