



## LABORATORY PROCESS IMPROVEMENT THROUGH POINT-OF-CARE TESTING

A STUDY COMPARING COSTS OF DELIVERING LABORATORY INFORMATION USING POINT-OF-CARE TECHNOLOGY VERSUS USING TRADITIONAL TESTING METHODS

The results shown here are specific to one health care facility and may differ from those achieved by other institutions.

### BACKGROUND

Over a four-year period, Methodist Clinical Laboratory Services of Indianapolis restructured all of its work processes.

- At the time of this study, the laboratory was part of the Methodist Health Group, a healthcare plan with more than 100,000 members and a multispecialty medical group with more than 400 physicians
- The group included Methodist Hospital, which had a Level I pediatric and adult trauma center, an active transplant program, a large neurologic intensive care unit, and 117 critical care beds
- The hospital lab performed approximately 1.7 million billable test panels per year



In one work process initiative, POC\* testing was implemented in an effort to optimize testing cycle time while reducing the overall cost of tabulating information.

Beyond increasing cost performance through improved lab efficiency, an important goal of the POC initiative was to truly understand the laboratory process and the needs of the customer.

- Healthcare professionals (HCPs) indicated they wanted:
  - Real-time laboratory information at the patient's bedside
  - Interactions with patients—including their need for critical laboratory information—to be provided in a smooth, efficient process that would optimize their ability to make patient care decisions (“decision cycle time”)
  - Laboratory information provided in a way that would expedite the decision cycle time
  - A point-of-care testing system that offered a range of tests that mirrored the most commonly ordered tests

\*point-of-care  
For *in vitro* diagnostic use only

# KEY FINDINGS: LABORATORY PROCESS IMPROVEMENT THROUGH POINT OF CARE TESTING



## METHODS

The study authors conducted a modeling study based on observational data from the Methodist Clinical Laboratory Services of the Methodist Health Group, Indianapolis.

The study evaluated and compared blood analysis processing using laboratory-based testing and POC testing with the *i-STAT*<sup>®</sup> System from Abbott Point of Care:

- Traditional blood analysis processing was observed during May, which was considered a “typical month” for hospital admissions and laboratory usage.
- The following March, the newly implemented POC-testing blood-analysis process was evaluated using the same model used to evaluate the traditional method.

## RESULTS

Comparison of both processes, cost per test panel, nursing time spent, and overall turnaround time were made between the two methodologies.

- POC testing with the *i-STAT* System reduced annual blood processing cost by 48%<sup>1</sup>  
**The hospital saved \$392,336 compared to the total annual cost of traditional testing**
- POC testing with the *i-STAT* System reduced turnaround time by 74% over the central lab and by 66% over the stat lab<sup>1</sup>  
**Shorter turnaround time helped expedite the caregiver decision cycle time**

**A SWITCH TO POC TESTING  
REDUCED COSTS &  
TURNAROUND TIME WHILE  
ELIMINATING STEPS IN THE  
TESTING PROCESS**

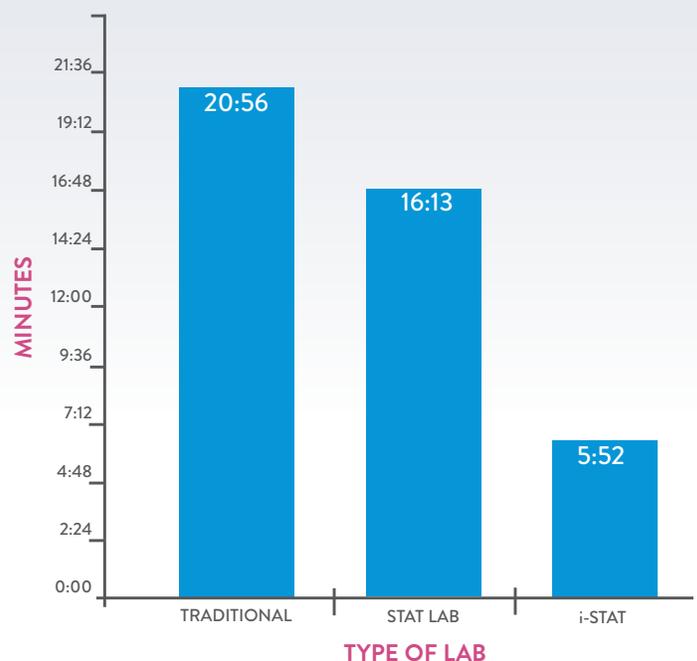
- Shifting the testing responsibility from lab to nursing did not increase nurse workload<sup>1</sup>  
**Unlike traditional testing, which required handling multiple processing steps, POC testing allowed nurses to focus on patient-care-related tasks**
  - Average time for tasks related to traditional blood processing was 3 min, 10 sec. versus 2 min, 57 sec. for POC testing
- Critical role of the lab shifted from managing testing to managing information<sup>1</sup>  
**Lab and nursing-unit directors jointly developed a day-to-day quality assurance plan for POC testing**

- The switch to POC testing resulted in a reduction in complex process steps<sup>1</sup>  
**Traditional lab testing was broken down into four process categories:**
  - BLOOD DRAWING
  - TRANSPORTATION OF THE SAMPLE
  - BLOOD ANALYSIS
  - TEST RESULT REPORTING**The latter three categories were all eliminated with the implementation of a POCT system.**

## ANNUAL COST COMPARISON



## TURNAROUND TIME COMPARISON



# KEY FINDINGS: SUMMARY

## IMPLEMENTATION OF POC TESTING WITH THE i-STAT SYSTEM<sup>1</sup>:

### CONCLUSIONS

Resulted in a 48% reduction in blood processing costs	The hospital saved \$392,336 compared to the total annual cost of traditional testing
Reduced turnaround time by 74% over the central lab	Helped expedite the HCP decision cycle time
Did not increase nurse workload	Nature of tasks changed; processing time was actually reduced
Resulted in a reduction of complex process steps	Streamlined processing from four process categories to just one

*“Most importantly, the impact of POC testing can be seen in staff’s ability to capitalize on laboratory information to better provide high-quality care.”*

### OBSERVATIONS

*“In our organization, POC testing became more than just an isolated change—it became a core strategy of moving laboratory testing out of the traditional laboratory setting to where it could become immediately accessible to caregivers as information.”*

*“By examining processes to determine the true value of each step and eliminating those that generated no value, unnecessary complexity is eliminated, associated hand-offs are minimized, and decision cycle time is improved.”*

*“By reframing the core business of the laboratory as information management directed at decreasing the decision cycle for caregivers, we now understood our role in the entire care process and how we generated value.”*

**Reference:** 1. Bailey TM, Topham TM, Wantz S, et al. Laboratory process improvement through point-of-care testing. *Jt Comm J Qual Improv.* 1997;23:362-380.