

# PERFORMANCE IMPROVEMENT STORY BOARD



PROGRAM NAME: Public Health Laboratory  
 PROJECT TITLE: HIV Viral Load Testing – Lean Project  
 DPH STRATEGIC GOAL/OBJ.: Goal 5.1: Improve effectiveness in preventing and controlling infectious diseases. Obj. 5.1.(a)(b)(c)  
 PROJECT TIMELINE: September 2015 – July 2016  
 PI SPECIALIST: Elizabeth Cordero EMAIL/PHONE NUMBER: ecordero@ph.lacounty.gov / 562-658-1344

## PLAN Identify an opportunity and Plan for Improvement

### 1. Getting Started

We would like to initiate a process improvement project based on Lean principles for the HIV viral load testing unit. Specifically we would like to increase efficiency in specimen processing workflow and decrease turn-around-time (TAT). This unit has a high workload volume.

### 2. Assemble the Team

Public Health Laboratory (PHL) Director Dr. Nicole Green; Microbiology Supervisor II (Admin) Dr. Lee Borenstein; PH Micro Supervisor I (HIV Viral Load) Debbie Emlein; Microbiologists (Viral Load testing personnel), PHL IT personnel Tony Argueta; Support Supervisor (Central Accessioning/Receiving) Lynda Rivas

**AIM Statement:** The Public Health Laboratory HIV viral load testing unit will 1) Increase efficiency in specimen processing workflow; 2) Standardize and improve inventory management; 3) Decrease TAT in viral testing; and 4) Implement instrument interface for automated reporting of results.

### 3. Examine the Current Approach

Baseline data from monthly QA reports in the HIV viral load unit indicated that operational issues were occurring on a monthly basis.

- The average TAT from date of receipt of specimens to release of test results was more than 5 days for HIV viral load.
- Inventory supplies of test controls often ran short.
- Two FTEs were utilized to perform HIV viral load testing.
- Automation was not interfaced.
- Automation was not used efficiently. Only one test was performed on the instrument.
- Errors in automated bar-code scanning of specimen labels often resulted in entering the data with either 1) a hand held bar-code reader or 2) Manual entry.

### 4. Identify Potential Solutions

The HIV testing unit consulted with a LEAN team to assess workflow in the areas of sample receiving and processing focusing on the large number of tests for viral load.

Recommendations included:

- Run full test plates of 96 specimens each instead of running partial plates to streamline workflow.
- Interface automation to eliminate manual data entry of laboratory results.
- Explore other tests to run on the existing platform for efficiency and instrument standardization.
- Create inventory worksheets for reagents and consumables. Include minimum quantity on hand and order trigger points.
- Research other manufacturer bar-code specimen labels
- Explore altering staff schedules to optimize staff time
- Utilize staff talents to perform other essential tasks during down time.

### 5. Develop an Improvement Theory

By successful in implementation of Lean principles to improve processes, eliminate waste, and increase efficiency, we believe we can decrease TAT and have both a labor and reagent cost saving in the HIV viral load unit.

## DO Test the Theory for Improvement

### 6. Test the Theory

The following actions were implemented:

- Staff were trained to run full test plates
- Instrument interface was implemented
- Hepatitis C viral load and genotype tests were added to platform
- In-house inventory worksheets were created
- New specimen bar-code labels were tested

## CHECK Use Data to Study Results of the Test

### 7. Check the Results (refer to charts below)

Introduction of full plate testing:

- Reduced FTE for testing from two to one
- Reduced reagent and consumable costs
- Utilized one instrument instead of two each day
- Freed second instrument for HCV testing

Use of new barcode labels resulted in:

- Reduced number of scanning errors to almost zero
- Time savings of 15-25 minutes per day
- Eliminated the possibility of manual scan/ transcriptional errors

Interfacing the M2000 instruments:

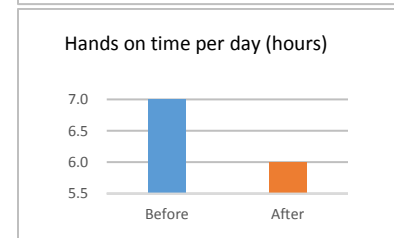
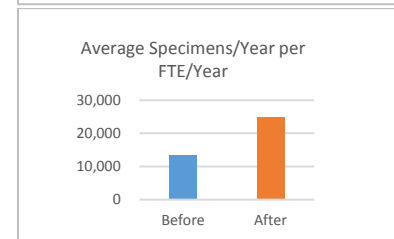
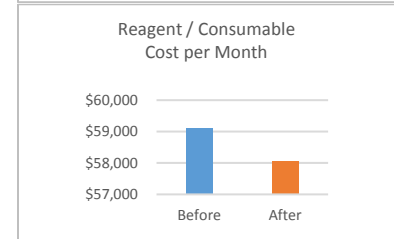
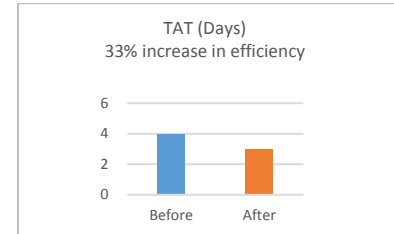
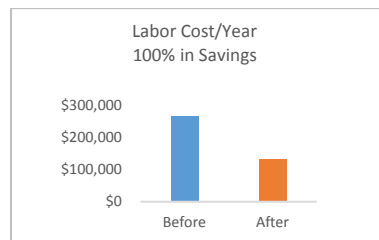
- Eliminated need for manual worksheets
- Eliminated manual entry of results
- Saved 45-60 minutes per day

Introduction of in-house inventory worksheets

- Reduced number of emergency OLR orders

Efficiency metrics and benefits

- Testing efficiency (specimens/FTE) increased 100%
- Turn-around-time reduced by 1 day
- Reagent/supply costs reduced \$1000/month
- Viral load unit test menu increased from 2 to 4 assays
- Increased staff availability for inter-unit cross-training activities



## ACT Standardize the Improvement and Establish Future Plans

### 8. Standardize the Improvement Or Develop New Theory

The PHL plans to explore additional tests to run on the platform, such as the emerging disease ZIKA virus.

### 9. Establish Future Plans

The four objectives in the AIM statement have been met. The HIV viral load unit will continue to monitor TAT. The PHL plans to expand the LEAN principles to the entire molecular wing and implement in-house inventory management software for tracking all consumables, reagents and supplies.