

PROGRAM NAME: Public Health Laboratory
 PROJECT TITLE: Increase Rapid Laboratory Confirmation of *M. tuberculosis* complex by the Use of Nucleic Acid Amplification Tests (NAAT)
 DPH STRATEGIC GOAL/OBJ.: Goal 5.1: Improve effectiveness in preventing and controlling infectious diseases. Obj. 5.1.(a)(b)(c)
 PROJECT TIMELINE: December 2013 thru December 2014
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PLAN
 Identify an opportunity and Plan for Improvement

1. Getting Started

The PHL Quality Improvement Project was to increase the number of TB NAAT performed by targeting high risk sites. In the past, most patients did not get a TB NAAT test ordered to confirm disease and start treatment but rather received confirmation of disease by culture which can take more than 1 month.

2. Assemble the Team

Public Health Laboratory (PHL) Director, DHS OVMC Medical Director, PH Microbiology Supervisor II (Admin), PH Micro Supervisor I (Molecular epidemiology unit), Microbiologists (Mol. epi testing personnel), TB control staff, CDC consultant, PHL and DHS IT personnel, DHS and LAC USC physicians.

3. Examine the Current Approach

The current method of NAAT testing by the MTD test had system disadvantages. With the introduction of the TB real-time PCR (TB-PCR) the expectation was to remove some of these barriers. In December 2013, the TB RT-PCR for detection of TB was introduced.

	<i>M. tuberculosis</i> Direct Test	<i>M. tuberculosis</i> real-time PCR Test
Type of Diagnostic Test	FDA approved	Laboratory Developed Test
Acceptable Specimens	Pulmonary Sources	*Pulmonary and Extrapulmonary Sources
Acceptable Samples	Smear-Positive and Smear-Negative Specimen Concentrates	Smear-Positive and Smear-Negative Specimen Concentrates
Minimum Volume of Sample required	1 ml	*0.2 ml (remaining sample available for other tests)
Number of tests per day	10 specimens	*48 specimens
Instrumentation	Heat Blocks, waterbath and Luminometer	*4 real-time instruments available increasing daily testing surge capacity to 192 patient tests *Closed tube system
Target amplification and Detection	Open tube	(reduces possibility of test contamination)
Time to results	6 hours	6 hours
System Advantages		

4. Identify Potential Solutions

- Educate the Dept. of Health Services medical providers and community based organizations.

- Cross-train testing personnel
- Monitor work load and turn-around-time (TAT).
- Simplify the ordering process.

5. Develop an Improvement Theory

Through collaboration with the Los Angeles County TB Control Program, reach out to health care providers from Community Health Service clinics and the Department of Health Service hospitals to inform them of the benefits on the use of NAAT procedure to increase the use of NAA tests and simplified the ordering process.

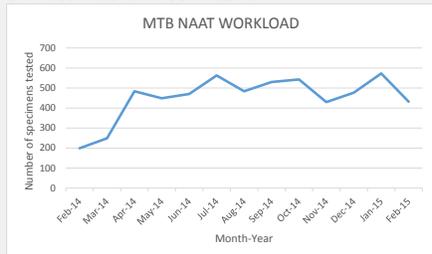
DO
 Test the Theory for Improvement

6. Test the Theory

- Train additional testing personnel
- Order larger stock of test reagents with long shelf-life
- Hold meetings with health care providers to increase the use of NAA tests
- Hold meetings to decrease barriers in the ordering process
- Increase test frequency of the TB PCR to 5 days per week

CHECK
 Use Data to Study Results of the Test

7. Check the Results



- NAAT testing more than doubled within two months of implementation of the TB RT- PCR

- The TB RT-PCR is now performed for 12 CHS clinics and 3 County hospitals



- Increased number of tests allowed earlier detection of TB from patient samples

ACT
 Standardize the Improvement and Establish Future Plans

8. Standardize the Improvement or Develop New Theory

- Monitor Turn-around-time and TB NAAT workload on a monthly basis.
- Train additional testing personnel.
- Work with TB control to provide additional training and outreach to medical providers about TB NAAT testing for high risk population.
- Continue to have monthly meetings with the TB control program on progress on this Performance Improvement project.

9. Establish Future Plans

- In June 2015, the PHL is incorporating a rapid method for TB PCR extraction. This addresses a recognized barrier to reducing TAT. The rapid method introduces a dedicated instrument for extraction that will help expedite daily TB PCR test results.