

**APHL Laboratory Systems Improvement Activity Grant
Final Report from the Unified State Laboratories: Public Health
July 29, 2011**

Project Title: Applying Lean Six Sigma Principles to the Public Health Laboratory System in Utah

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Project Summary

Details of the progress, challenges, and results of this project are available online at the project website: <http://lsslabs.weebly.com>

Among the areas of improvement identified during Utah's Public Health Laboratory System Assessment held in February 2007 was the absence of periodic evaluation of customer satisfaction with laboratory services (under Essential Service #9). Like many other states, Utah struggles with meeting the ever expanding services needed to support public health functions and the diminishing resources available to provide them. As a result, much of our personnel's time and efforts have increasingly been dedicated to addressing consecutive emergent issues, and few resources remain to commit to process improvements to address customer complaints as regards quality and timeliness of test results.

With funding under this grant, Utah's Unified State Laboratory took part in a 12-week pilot program to train staff to implement Lean Six Sigma principles in laboratory operations with the aim of improving customer satisfaction. Specifically, Lean Six Sigma was implemented in Utah's Forensic Toxicology laboratory, a Bureau of 11 staff members constantly struggling with increasing caseload, increasing complexity of casework, and increasing testimony appearances. The turnaround time for casework had deteriorated to the point that test results were often unavailable for driver license hearings, criminal trials, and for timely issuance of death certificates. Without timely results, impaired drivers remain on Utah roads, criminals cannot be prosecuted, and families of decedents are left to struggle financially.

Applying Lean Six Sigma principles to Forensic Toxicology operations has had the following impacts:

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- 1) We improved customer satisfaction by improving our productivity and turnaround time. The average turnaround time was reduced from 28-29 days down to 10-14 days. We increased the number of cases we reported daily by about 300% for DUI Toxicology cases and 200% for Postmortem Toxicology cases. Because of the improvements in productivity, we were able to reduce backlog by 50-75%. We have even received multiple accolades from our customers in appreciation of these improvements!

Objective	DUI Toxicology		Postmortem Toxicology	
	Before Project	After Project	Before Project	After Project
1. Reduce average turnaround time by 50%	28 days	10 days	29 days	14 days
2. Increase productivity by 100%	11 cases per day	32 cases per day	3 cases per day	7 cases per day
3. Reduce backlog by 50%	398 cases	107 cases	92 cases	58 cases

- 2) We enhanced employee satisfaction and morale.
- a. During the 12-week training period, all found it very challenging to maintain routine laboratory work and complete Lean assignments and activities. Now that we are 8 weeks into the launch of our Lean pilot program, staff actually prefer the Lean process and not one would ever return to the “old way” of laboratory operations.
 - b. Our Legislature recently passed a statute mandating that all state agencies revert back from the 4-10 schedule (favored by all our staff) to a 5-8 schedule in order to meet the needs of customers. However, because our Lean pilot based on our current schedule has met and even surpassed our customers’ needs, our Bureau is one of very few in the state that are being permitted to remain on our 4-10 schedule. This has been a huge morale boost for our staff!
 - c. The Bureau of Forensic Toxicology has become a model for process improvement at both the local and state health departments. Our work is highlighted by the state health department’s Performance Improvement Program and is being studied by other programs to see whether they can implement Lean principles in their areas.
- 3) Although not an intended outcome, we are now using Lean Six Sigma principles as a means to pursue accreditation. As with our Lean Six Sigma project, we will assemble a core team responsible for leading assignments and tasks and we will involve the rest of the staff sufficiently such that there is buy-in and a good foundation of the project’s objectives. We will keep the project period short (16 weeks) and outline measurable

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objectives. We hope to complete the project such that, like Lean, our staff prefer the accredited laboratory process over the existing process.

Responses to Specific Grant Questions:

1) What had prevented this project from taking place earlier?

Although our Department had an interest in implementing Lean Six Sigma, there was no internal resource for providing training in Lean concepts to our staff. We had explored the possibility of hiring a Lean Six Sigma consultant but prior to this grant, had never had the funding to pursue it further.

2) What examples or discussions during the assessment or follow-up identified the gap?

The gap was made evident during the assessment discussions about Essential Service #9: Evaluation of Effectiveness and Essential Service #4: Mobilize partnerships. Because we had no formal way of evaluating our performance from the customer's perspective, it was difficult to assess the areas needing improvement and therefore, improving relationships was hampered.

3) What is the impact that completing this project has or will have on your laboratory system?

Over the years, customer relations have been strained because from their point of view, services were declining both in quantity and quality. When we hosted a Kick-Off meeting for our customers to inform them of this project and our aim to address those needs, there was more than a little skepticism that it would have any impact, mainly because it involved no increase in personnel or equipment. Now that we have delivered on our promises and customers have begun to notice, it seems to have reminded us all that we have a common purpose and as a result, there is a new opportunity to improve on those strained relationships.

Following is a concrete example of these small but significant changes:

In the past, we had requested that one of our customers (the Office of the Medical Examiner) deliver their samples on certain days/times. Because of dissatisfaction with our services, that request was never fulfilled and we, in turn, struggled with managing our sample flow.

However, now that we have been able to improve our turnaround time for postmortem toxicology cases, we reiterated the request and even if it is somewhat less convenient for the customer, they have made an effort to deliver samples according to the proposed schedule.

With a little effort from them, we can make a big impact on our side, and in the end, both their and our work is more efficient.

In an effort to maximize the impact of this project, we recorded our progress on our project website (<http://lsslabs.weebly.com>) and welcome any opportunity to discuss with other agencies our experience and impart the knowledge we have gained.

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- 4) Please identify other gaps that have not yet been addressed. What are the barriers to carrying out improvement projects that would address or correct the issue?

Another gap we identified is common to Essential Services #3, 4, 5, and 7 and involve the laboratory system's poor performance in the areas of communication and dissemination of information. The main barrier to improving these areas is the lack of an ongoing forum for PH partners to exchange information routinely and to thereby, develop relationships. As was evident from our 2007 assessment, many in the system don't get the opportunity to meet with their partners and some were not even aware that their work impacted some of the agencies involved at our meeting. We attempted to address the issue by inviting key partners to participate in a "Public Health Advisory Committee" but due to changes in personnel for some key agencies and lack of any funding to support the group, the interest waned and it was unsuccessful. As our own laboratory leadership is in transition, we have not yet attempted to develop a new forum.