



Secrets to Establishing and Sustaining Standard Work and Work Cells in the Histocompatibility Laboratory

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Background of Testing

Our state-of-the-art Histocompatibility Laboratory is designed to support active stem-cell transplant programs by providing rapid turnaround time for HLA typing. Sequence Based Typing (SBT) provides testing for HLA Class I and Class II alleles to help identify the best available donor for a patient in need of a stem-cell transplant.

The laboratory technical specialists and directors form strong relationships with our clinical partners, becoming part of the patient care team.



Roadmap of Today's Presentation

STANDARD WORK

"Why did we do this?"

Definition of Standard Work

Daily Demand

Current State Data Summary

Recommendations made from Standard Work Team



WORK CELLS

Definition of a Work Cell

Benefits of Using Work Cells

Our Goals

Cellular Spaghetti Map

Post Improvement Journey

Results

Impact of Results



TAKE AWAYS

Standard Work

Work Cell

Lessons Learned

PROBLEM

APPROACH

WHAT WAS DONE

RESULTS



Business Objectives and Goals

Business Objectives

- Laboratory growth
- Increase in Sequence Based Typing (SBT) capacity

Goal Statement:

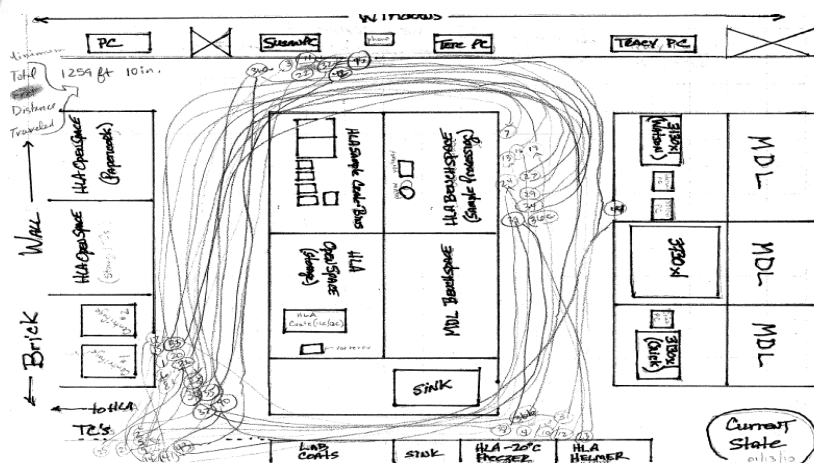
- Develop and implement a new process to:
 1. Improve turn around time (TAT) – **PRIMARY METRIC.**
 2. Increase/validate capacity for future growth – **SECONDARY METRIC.**
 3. Improve productivity through the use of Lean principles.
 4. Compartmentalize workflow to improve efficiency to maximize capacity.



Problem Statement

The observed manual time (touch time), machine time, and walk time in the Histocompatibility Laboratory Sequence Based Typing (SBT) area are consistently high resulting in potential process inefficiencies.

Current State HLA SBT Spaghetti Map



Total distance traveled is 2520 feet for two plates. Note: this is the path of travel for one plate; this distance does not include running multiple chemistries.

Basic Principles of Lean

- Identify **value** from the standpoint of the customer.
- Identify the **value stream** through the steps required to create each product/service - from concept to launch and order to delivery - and remove the wasted steps.
- Make the process of value creation **flow** smoothly and quickly to the customer.
- **Demand (pull)** comes from the customer.
- Pursue **perfection** by constantly improving the product or service and the value stream.



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Definition of Standard Work (SW) “Approach”

Standard Work (SW) – the most efficient method to produce a product, service, or result at a balanced flow to achieve a balanced output rate. It breaks down the work by elements, which are sequenced, organized, and repeatedly followed.

or

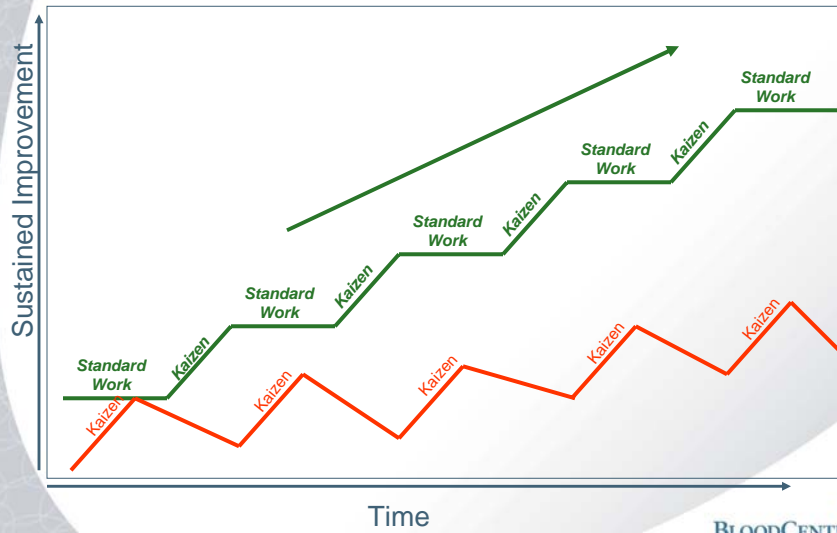
SW defines the most efficient methods to produce product, service, or result using available equipment, people, and material.

It's three key elements are:

1. Takt Time
2. Work Sequence
3. Standard Work In-Process (SWIP)



Standard Work – Key Concept for Sustained Improvement

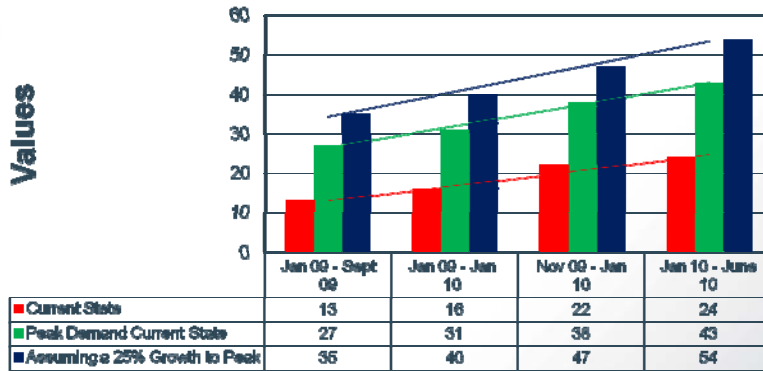


Standard Work Deliverable

Establish a new flow with reduction in waste

Daily Demand

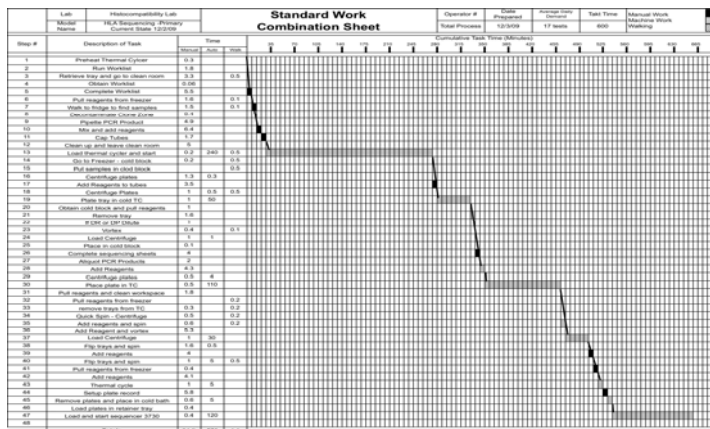
Daily Demand (tests resulted using a 3-day rolling average)



Increase growth, Increase efficiency, Increase capacity, and it is imperative that this does not affect the customer.



Standard Work Combination Sheet – Primary Phase



Graphically “combines” the interaction of the people and equipment. Provides for a repeatable standard to follow. Compares relative cycle times with takt times and is used to identify area improvement.



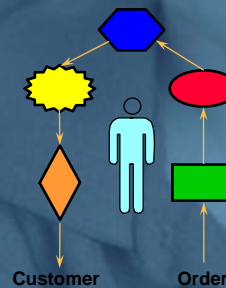
Recommendations for Improvement

- Develop an algorithm to move HARPs up the primary sequencing process.
- Clean up the TAT monitor for SBT only, install TAT monitor as a visual management board for test status.
- Move thermal cyclers to SBT area; CONCLUSION – Construct a work cell and a work flow (point-of-use) kaizen for the HLA SBT area.
- Track all tests that are older than 3 days as a loading indicator.

Cell Design Basics

Cellular Layout:

Significantly reduces transportation, inventory, and waiting time while improving quality, delivery, safety, and costs.



11/08/2010

Focus On Flow and Eliminate Waste

Areas of focus – Seven Wastes

- Time
- Inventory
- Motion
- Waste
- Over processing
- Over production
- Defects



Lean Work Cells For the Laboratory “What was done”

A Work Cell is an arrangement of equipment and manual workstations that follows the sequence of processes for a given test which supports continuous workflow and minimizes transportation and delay (waste).



Work Cell Goals

- Aid in reducing TAT and our “Promise to our Customer.”
- Minimize handling distances and walking.
- Improved visual management (ability to quickly assess the state of operations - Inventory management, Communication among staff).
- Reducing work in process-samples sitting in racks waiting for processing.
- Optimize work space.

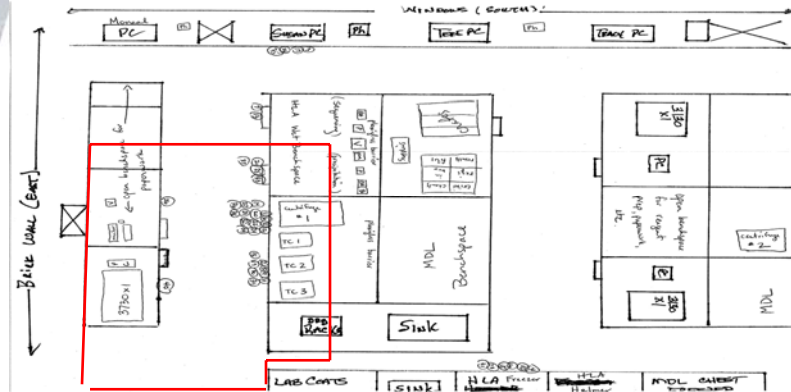


Next Steps

- Construct a Mock Work Cell
- Construct the Work Cell
- 5S
- Kanban
- Point-of-Use Positioning
- Visual Management



Post Improvement Cellular Map "Results"



Results of careful planning and constructing a mock cell. Performed 5S, Kanban inventory management system, Point-of-Use Positioning, and a Visual Management System.



Improvement Journey

PRE

ACTIONS

POST



Inefficient work area to an efficient and functioning work cell and improved TAT visual management system by relocating the TAT Monitor



In-Process Patient Folders



Additional Work Space

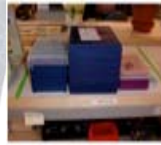


Improvement Journey

PRE

ACTIONS

POST



2-Bin Kanban
Inventory Management
System

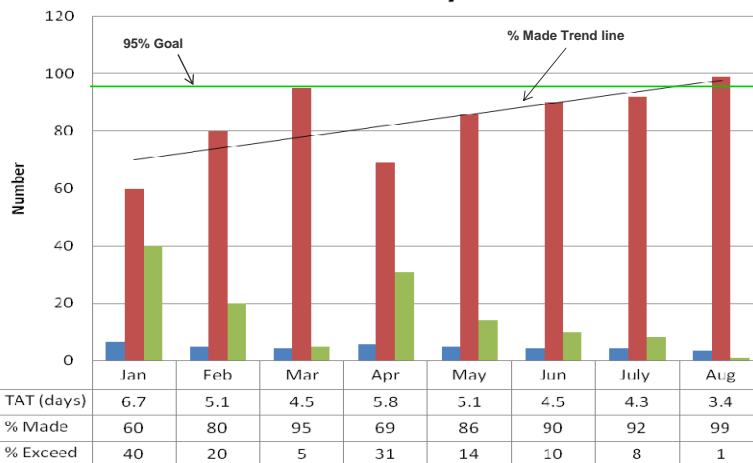


Test Analysis, Reporting,
and Customer Service



Impact of Improvement on Turn Around Time and Published Turn Around Time

HLA SBT TAT and PTAT by Month 2010



Key Take A Ways

Standard Work

Key Operator Points
Operator Procedures
Production Sequence
Safety Issues
Quality Checks

Work Cells

Bringing order to an often haphazard layout
Creation of efficient workflow
Optimization of workspace
Creating a solid foundation for gains in production and reduction in TAT
Necessitates the development of standard work practices and changes in inventory management



Lessons Learned - "Things that we think we did well"

- Obtaining full support from project champion and sponsors.
- Gemba walked the current state process.
- Scope management planning.
- Communication management planning.
- Clearly defined roles and responsibilities of project team.
- Passionate project team commitment to understand, participate, succeed, and sustain improvements.
- Planning Work Cell build.
- Obtaining support from cross functional support teams through the use of Change Control.
- Planned well around patient sample testing as to not compromise the quality of testing or compromise adequate testing resource personnel.



Lessons learned - “Things that we think we could have done better”

- Better planning around additional priority projects which competed for dedicated resources and resource time resulting in project phases taking too long to complete.
- Better planning with competing projects in project manager’s project funnel resulting in time resource management planning challenges.
- Earlier education of laboratory management (project sponsors) in Standard Work and Work Cells.
- Project time management planning.



Recommendations to all of you

- Have a solid Project Management Structure.
- Scope project appropriately.
- Define roles and responsibilities of project team members.
- Develop processes around Risk Management.
- Develop your effectiveness check (sustainment) plan in prior to initiating your control (close) phase of your project.
- Engage the team.
- Have fun and celebrate with the team.
- Share Lessons Learned.

Questions