



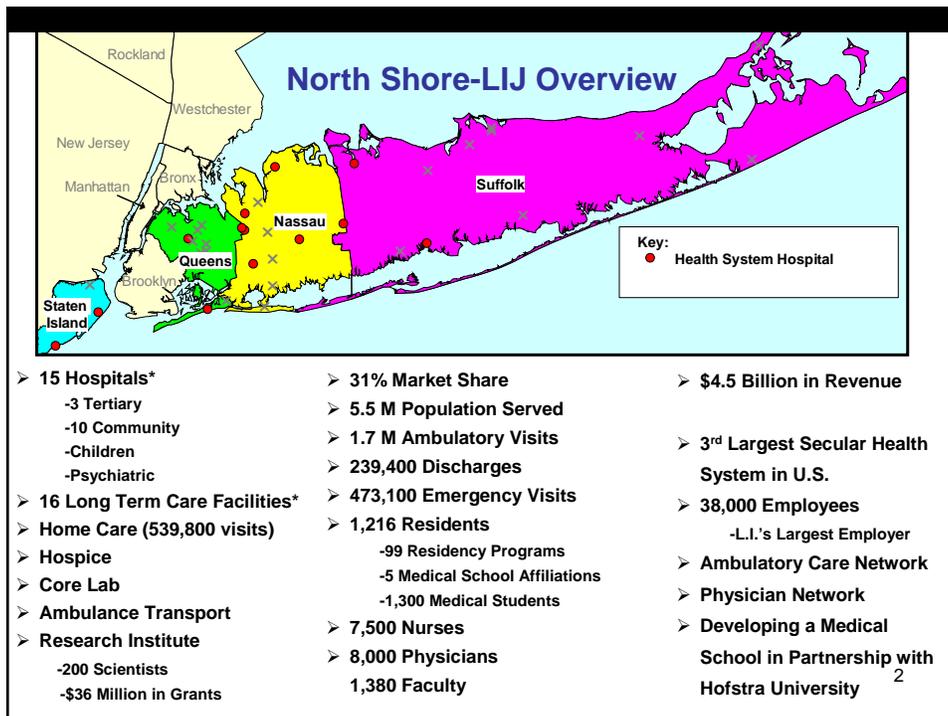
North Shore-Long Island Jewish Health System

Inventing the “Mini-Lean Model” To Achieve Fast, Lean, Efficient Results

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Greetings from
Long Island, New York



■ **NSLIJHS Laboratories**

Operating Statistics

- \$221 Million Annual Operating Budget
- 17 Million Billable Tests
- 1400 FTEs
- 2 Free Standing Central Labs
 - Core Lab and SI
- 9 Hospital Based Labs
- 28 Patient Service Centers

■ **Core Lab Business Lines**

<u>Business Line</u>	<u>\$\$</u>	<u>Volume</u>
- Hospital	\$42.6M	3.6M
- Reference	3.0M	0.1M
- Physician Office	38.1M	2.9M
- Nursing Home	3.0M	0.3M
- Clinical Trials	2.0M	0.2M
- Total	\$88.7M	7.1M

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Improving NSLIJHS Laboratories Operational Performance

- The NSLIJHS Laboratories has successfully adopted various Six Sigma, Lean and FTD methodologies to improve operational performance, quality of Lab testing and increase customer satisfaction through the years.

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From Theory to Practice

Six Sigma

Data driven, statistically validated methodology for quality measurement and improvement based upon customer needs and reduction of variation and process defects. Implementation time is typically 4-6 months.

LEAN

Taking the Fat Out – process improvement methodology focusing on value-added activities and removal of those activities which undermine optimal performance. The Kaizen Event lasts 2-3 days and results implemented in up to 3 months.

FTD

Fast Track Decision making facilitates problem solving activities with stakeholders to identify solutions in a compressed time frame (GE Workout). The FTD meeting requires only hours and results are attainable within a month.

“Mini Lean”

Combination of FTD and Lean tools in which much of the work is done “behind the scenes” to streamline processes and identify solutions in a rapid time frame. The event can occur within a day and improvements are implemented within a few months.



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Lean Process

- Developed a Charter and Contract
- Sensing Sessions
- Kaizen Event – 2 to 3 days
 - Value Stream Maps Created
 - Brainstormed and Prioritized Causes of Waste
 - T.I.M.W.O.O.D
 - Brainstormed and Prioritized Solutions
 - Assessed Solutions
 - Developed Action Plans (WWW)
- Monitored Results
- Report out at 30, 60, 90 days and Final



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When to Use LEAN

- When you need to...
 - Address chronic issue
 - Eliminate excessive waste (T.I.M.W.O.O.D)
 - Improve a multistep process with long cycle times
 - Increase flexibility and add capacity
 - Implement a solution quickly
 - Cut through excessive bureaucracy
 - Develop a long term control mechanism
 - Assess value added activities
 - Use readily available data
- Don't use Lean for...
 - Technical problems requiring complex analysis, rigorous problem-solving methodology or considerable data collection/analysis (Six Sigma)



North Shore LIJ is a leading provider of health care services.

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Fast Track Decision-Making Definition

- A process of concentrated team-based decision-making and empowerment used to resolve issues and improve processes
- A team of experienced, knowledgeable people with a stake in the issue is chartered to develop solutions and action plans.
- The team is empowered by key stakeholders to proceed with implementation, given a clear reason for not proceeding, or given a specific direction for further study.
- The team is accountable for implementation and follow-up of the action plans.



North Shore LIJ is a leading provider of health care services.

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Fast Track Decision-Making Process



FTD Planning	FTD Meeting	FTD Follow-up
<ul style="list-style-type: none"> Identify FTD topic Assign FTD Lead Facilitator Charter the FTD and contract with Sponsor Sensing Sessions to collect data, identify issues and refine the problem / opportunity statement Select / refine topic Collect background data and determine topic questions Draw a process map, if necessary Design FTD meeting agenda and plan logistics Identify participants and communicate expectations Coach / prepare FTD Sponsor Owner 	<ul style="list-style-type: none"> Sponsor sets challenge and expectations Team building Skill building Issue generation Issue prioritization Facilitate problem-solving teams Recommendation development <p>Report Out</p> <ul style="list-style-type: none"> Teams report out presentations Every idea gets a response Individual, team, Owner, and Sponsor commitments to action items 	<ul style="list-style-type: none"> Put follow-up mechanisms in place <p><u>Track Activity and Results Over Time</u></p> <ul style="list-style-type: none"> Communicate <ul style="list-style-type: none"> Headline Newspapers Meeting summary Status reports Remove Barriers Recognize and reward implementation



When to Use FTD

- When you need to...
 - Eliminate unnecessary work
 - Improve processes involving the key owners / stakeholders
 - Build momentum
 - Make on the spot decisions
 - Empower employees
 - Open up communication and dialogue
 - Improve interfaces and remove barriers between departments
- Don't use FTD for...
 - Issues over which participants have no control or do not feel strongly about
 - Technical problems requiring complex analysis, rigorous problem-solving methodology or considerable data collection/analysis (Six Sigma)



When NSLIJHS Labs Use “Mini-Lean”



- **Not Enough Time!**
- **Not Enough Money!**
- **Not Enough Staff!**
- **Not Enough Buy-In!**



“Mini-LEAN”

- Multiple Sensing Sessions
 - Much work done “behind the scenes”
- 1 day Event Max
- Initial report out
- Black Belts mentor teams
- Green Belts Actively Assist with project
- Baseline metrics established
- Monthly Progress Updates to PI Committee
- Sustainability achieved by reporting metrics monthly

When to Use “Mini-Lean”

- An FTD just won't work
- Process is moderately complex
- Dealing with an urgent issue
- Need quick buy-in across the board
- When a “band-aid” solution just isn't enough
- When working within the constraints of a busy day in the Lab



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Lean, “Mini-Lean” and FTD at NSLIJHS Labs

- Lean Methodology Has Been Used to Streamline Laboratory Workflow in RRLs and in the Core Laboratory
 - To decrease TAT of routine testing to 60min from point of draw at RRLs
 - To establish a workflow between MTs and a newly proposed position of Laboratory Technical Assistant (LTA) at the Core Laboratory
- “Mini-Lean” and FTD Processes Have Been Adopted to Address Issues Which Arise in the Core Laboratory
 - Outpatient Requisition Image Availability – “Mini-Lean”
 - Tracking of Specimens to Microbiology and Molecular Biology - FTD
- Influenza Sample Tracking – “Mini-Lean”
 - In Progress



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Medical Technologist Lean

- The Problem
 - There is a critical shortage of MTs. Recruitment is extremely difficult. Overtime is high as is the System-wide vacancy rate. This translates to lowered moral, lack of productivity and the inability to get work done quickly.
- The Goal
 - To remove non-value added, non-technical tasks from the job description of the MT. To create a new job category which will interact closely with MTs performing tasks historically reserved for technologists. MTs will then be able to focus on those tasks which they are now professionally licensed to perform.
- The Scope
 - In -Hematology, Coagulation, Chemistry, Special Chem, Serology
 - Out – Microbiology, Molecular Biology, Anatomic Pathology



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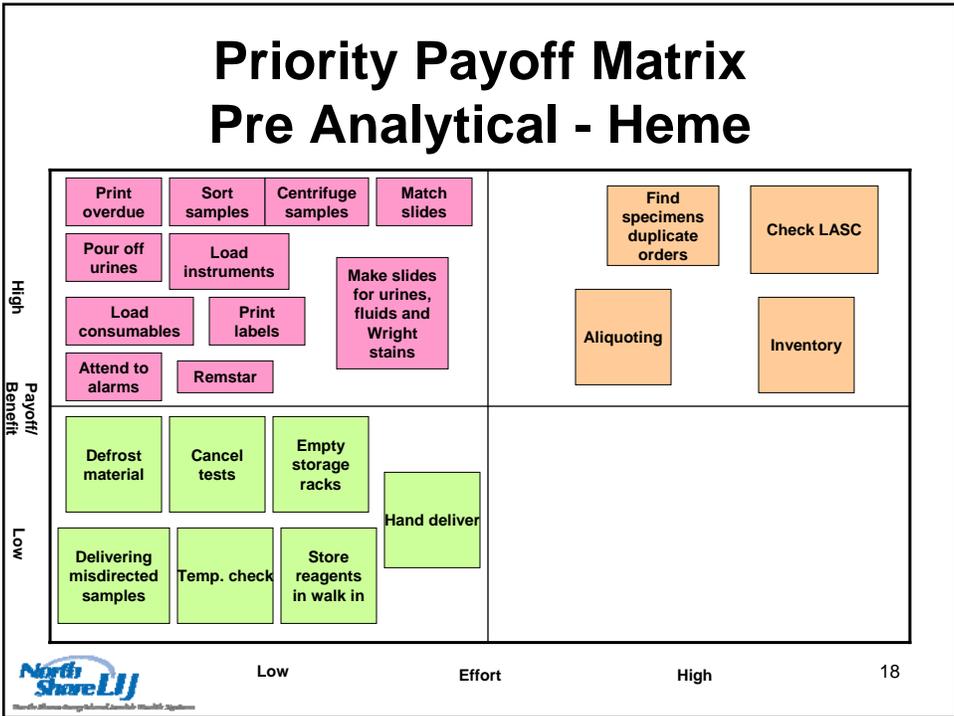
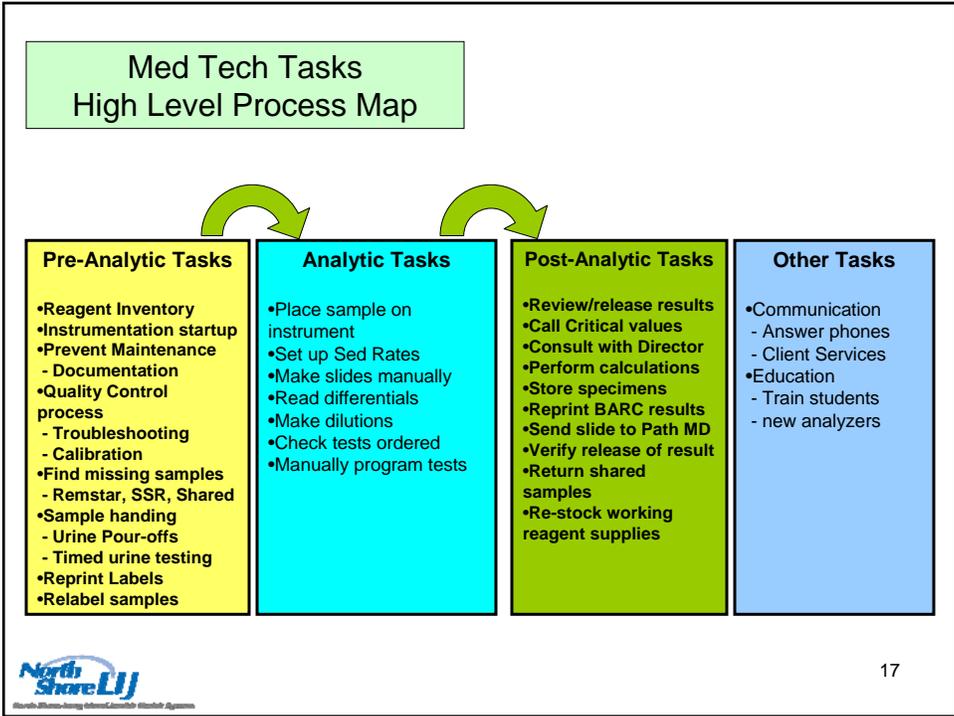
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Medical Technologist Lean CAP

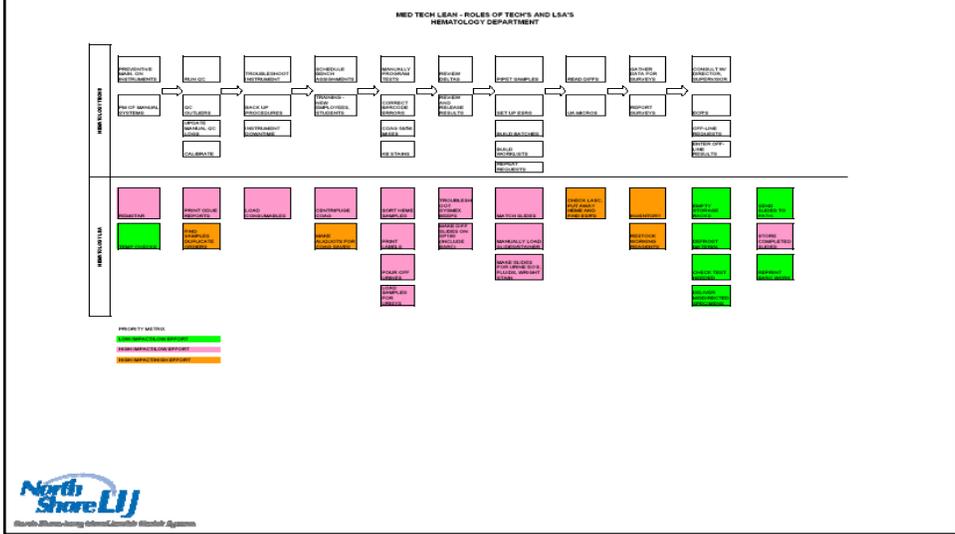
Elevator Speech

- A team met last month to reduce the amount of non-technical tasks that techs perform.
- Our goal is to enhance our workforce with the newly created position of LTA (Lab Technical Associate).
- The tasks and responsibilities of this new position are being addressed. This position should be a benefit to all of the technical staff, allowing us to operate more fully as lab professionals.
- Your support for this project will enable the lab to both grow and to continue to deliver quality lab services now and in the future.

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MT-LTA Workflow Timeline - Heme



The LTA Job Description

- Assists medical technologist/technician with pre- and post-analytical tasks including printing pending worksheets, gathering and preparing specimens for analysis and for proper storage of specimens upon completion.
- Assists in the preparation of reagents, aids technologist/technician in the performance of limited preventative maintenance according to established procedures and loads specimens on instrumentation.

The Hematology Plan / Pilot

- Maximize Productivity of MTs and Operational Performance
 - Focus on CBC testing and Differential performance
 - Right-size the number of Slide Readers on Day Shift
 - Working smarter by improving MT/LTA Team Interactions and work flow
 - Improve Hematology Service Levels to RRLs

- Pilot
 - LTA is a FT position in the Main Lab
 - The tasks and responsibilities as outlined previously
 - Trained and Competency Assessed
 - Adjust workflow

- Pilot Metrics
 - Ave number of diffs read by technical staff
 - Percent CBC outliers > than 180 min TAT and % Yield
 - Percent CBC outliers IP only > 240 min TAT and % Yield
 - Labor cost per test in Hematology



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Hematology Metrics

Good Improvement in Ave Diffs/hr and TAT Yield!	Day Shift	Heme 3 Hr	CBC Labor	Baseline Ave cost/test = \$1.39
	Ave Diffs/hr	TAT % Yield	Cost/test	
Baseline	5.4	92.8	\$1.39	Baseline Ave cost/test = \$1.39
Mar-09	6.0	90.6	\$1.37	
Apr-09	6.8	92.3	\$1.30	
May-09	6.2	93.0	\$1.46	
Jun-09	6.0	93.9	\$1.37	
Jul-09	10.0	95.1	\$1.10	Current Ave cost/test = \$1.14 1 FTE Savings
Aug-09	10.4	95.9	\$1.18	



Chemistry Plan / Pilot

- Maximize Productivity of MTs and Operational Performance
 - Focus on Automated and Immuno Chemistry Testing and Lead Testing
 - Work smarter by improving MT/LTA Team Interactions and work flow
 - Improve Chemistry Service Levels to RRLs
- Pilot
 - LTA is a FT Position in the Main Lab Hired
 - Tasks included samples handling, building worklists, pending review, pour-offs, PM, etc.
 - Initial Training and competence of LTA was completed 2 weeks later
 - Go-Live date was last month
 - Adjust Workflow
 - Evaluated and adjusted as necessary
- Pilot Metrics
 - Automated Chemistry 3 hour TAT- percent outliers greater than 180 min
 - Automated Chemistry 4 hour TAT - IP only % outliers > 240min
 - Immunochemistry 4 hour TAT - the percent outliers >240 min
 - Blood Lead TAT – in hours



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Chemistry Metrics

Good Chem Testing
TAT Improvement!

	AutoChem 3 hr TAT % Yield	ImmunoChem 4 hr TAT % Yield	Lead Testing TAT In Hr
Baseline	86.7	83.0	68
Aug-09	91.2	90.1	43
Sept-09	92.2	92.8	40



Great Lead Testing
TAT Improvement!



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MT Lean Outcomes

- Improvements in TAT
- Decrease Cost/Test and Increase in Capacity
- Optimized Staffing and Working Smarter
- Increased Employee Morale
- Eliminated Non-Value Added Tasks from MTs
- Created a Career Ladder for Lab Support Staff
- Improved Overall Service Levels
- Establish A Best Practice Model
- Lessons Learned to be adopted at other RRLs



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“Mini-Lean” Outpatient Requisition Availability

- The Problem
 - A large number of outpatient client requisitions were not readily available for electronic viewing by staff requiring such information
- The Goal
 - 100% of Requisitions Available for Viewing by 9:00am the following day
- The Scope
 - Outpatient Requisitions



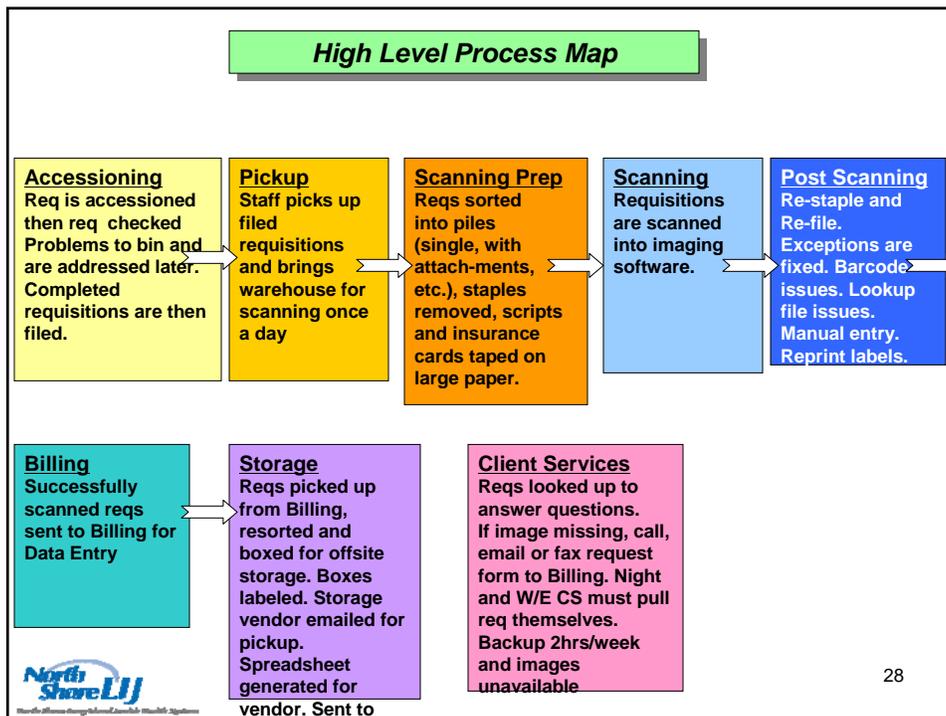
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The OP Requisition “Mini-Lean” Process

- Sensing Sessions
 - Defined High Level Process Map
 - Established the multi-disciplinary team of stakeholders
 - Identified Green Belt
 - Collected Baseline Data and Established Metrics
 - Set the Agenda
- “Mini-Lean” Event Held
 - Half day Event
 - Value Stream Mapping
 - Brainstormed, categorized, prioritized problems & solutions
 - Assessed Potential Solutions (Priority Payoff Matrix)
 - More Fully Developed Metrics
 - Action Plan

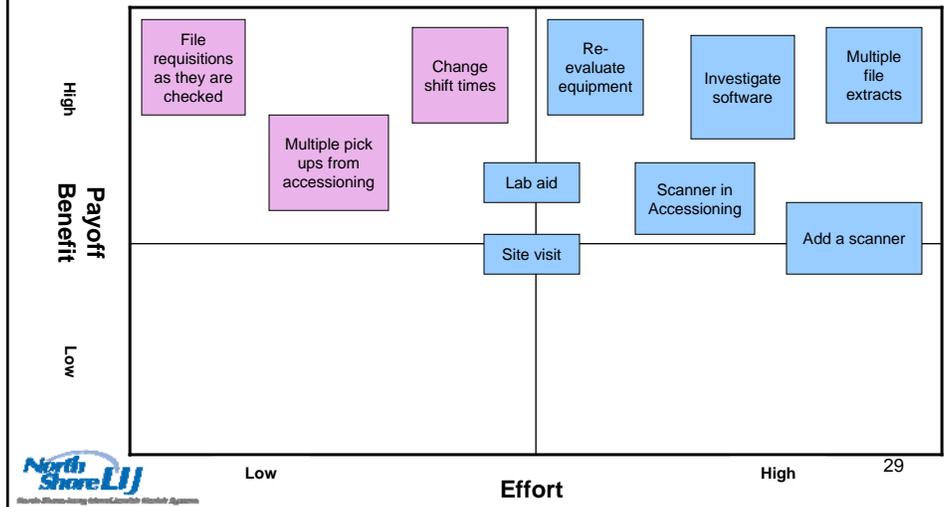


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Priority Payoff Matrix One Pick up



“Mini-Lean” OP Requisition Availability Issues Identified and Resolved

- ➔
 - Transportation Issues
 - Multiple req pickups from accessioning
 - File reqs as they are checked
 - Staffing Issues
 - Change shift times to match req availability
 - Start shift earlier to meet am cutoff
 - Assign someone to handle problem reqs
 - Cross-training
 - Scan requisitions over the weekends

“Mini-Lean” OP Requisition Availability Issues Identified and Resolved

- Process Improvement
 - – Decrease number of fields to be indexed to
 - Pt Name
 - Accession Number
 - – Multiple File Extracts
 - Scripts & insurance card copied on 1 page
 - Standardize Requisitions – long term



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“Mini-Lean” OP Requisition Availability Outcomes

- Number of “Exceptions” has Decreased 10-fold
 - Decreasing the indexing criteria from 5 fields to 2
 - From 1000’s per day to approx 100’s per day
- Percent of Requisitions Available for Electronic Lookup by 9:00am has Increased Substantially
 - Within 1 week improved from 0% to average of 30%
 - Currently averaging of 85% requisition availability
 - Attaining 100% periodically depending on staffing



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FTD - Reduction of Missing Molecular and Microbiology Specimens

- **The Problem**
 - Core Lab has had an increased number of missing specimens over the last several months many of which were shared

- **The Goal**
 - Improve tracking of specimens and reduce the number these missing samples
 - Minimize time spent searching for missing specimens

- **The Scope**
 - Accessioning, Microbiology and Molecular Departments

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FTD - Reduction of Missing Molecular and Microbiology Specimens

- **Sensing Session**
 - Identified Departmental Issues and global issues
 - Quick fixes were identified and addressed prior to the Meeting
 - Established an agenda for the FTD Meeting

- **Held FTD Meeting**
 - Brainstormed, categorized, prioritized problems & solutions
 - Examined Accessioning, Micro and Molecular departments' process flow
 - Developed an Action Plan based on Priority Payoff Matrix

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FTD – Reduction of Missing Microbiology and Molecular Specimens - Improvements

- Quick Fixes
 - Table lip on receiving area in Microbiology
 - Microbiology specimen transport cart dividers
 - Garbage can tops for all waste cans
 - Reorganize storage racks in freezer/refrigerators in Molecular
 - Direct accessioning transport of specimens to Micro & Molecular

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FTD – Reduction of Missing Microbiology and Molecular Specimens - Improvements

- Other Solutions
 - – Positive Specimen Tracking
 - Verify hardware in Micro and Molecular
 - » Workstation with scanner
 - Order necessary hardware
 - Place scanning (Millennium) program on computers
 - Run cabling where necessary
 - Define users
 - Validate scanning program
 - SOPs written for all related processes

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FTD – Reduction of Missing Microbiology and Molecular Specimens - Accomplishments

- **NO MISSING SPECIMENS!**
- **Utilized internal specimen tracking in other departments**
- **Minimize time spent looking for specimens**
- **Improve staff morale**
 - “He said, She said”
- **Increased client and management satisfaction**

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2009 Influenza A H1N1 in NY

- The 2009 Novel Influenza A H1N1 outbreak in the NY greater metropolitan area in April 2009 led to immediate increase in the volume of respiratory virus testing.
- During the normal influenza season, on average/month:
 - NS-LIJ labs performs - 676 Rapid Influenza/month
 - Core Lab Virology lab performs – 1,955 tests
- April 24-June 2009:
 - 11,624 patients were tested
 - 34,082 tests were performed (volume equal to a year's testing)
 - 8,766 Rapid Influenza A+B
 - 8,856 DFA
 - 5,786 viral culture
 - 4,853 RVP

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2009 Influenza A H1N1 in NY

- What did we accomplished:
 - Built-out of the physical plant
 - Converted testing paradigms from routine screening tests and viral culture to a high-capacity molecular assay for respiratory viruses
 - Built Laboratory Information System Interfaces
 - Increased Workforce (Client Service, Logistics, Accessioning, technical)
 - Built same-day epidemiologic reports
 - Established Rapid reporting (ECLRS) to NYSDOH and local DOH of tests results including influenza A subtyping
 - Enhanced communication

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“Mini-Lean” Flu Specimen Tracking

- The Problem
 - Core Lab, which was at the epicenter of the swine flu pandemic, had an increased number of missing flu specimens during the initial swine flu surge beginning Spring of 09 which contributed to the delay in TAT and incomplete testing
- The Goal
 - Improve tracking of specimens in the lab and reduce the number of missing flu specimens
 - Expedite specimen flow and handling within the laboratory
 - Minimize time spent looking for specimens
- The Scope
 - Flu specimens handled by Logistics, Accessioning, and processed in the Main Lab, Virology and Molecular Departments
 - Flu Testing including rapid EIA testing, DFA analysis and viral culture, molecular RVP and swine flu confirmation testing

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“Mini-Lean” Flu Specimen Tracking

- Several Sensing Sessions Held
 - General Meeting
 - Identified goals, objectives and scope
 - Key Stakeholders attended
 - Additional Sessions were held
 - Identified specimen arrival into lab, ordering issues, delivery to departments
 - Discussed major additional issues in each department
 - Considered communication with clients
 - » Who needs to know
 - » What they need to know
 - » How to communicate
 - High Level Process Mapping Meeting
 - » Black Belt assisted by Green Belt
 - » Process owners were invited individually
LIS, Accessioning, Virology and Molecular Biology
 - » Draft of High Level Process Map Generated

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“Mini-Lean” Flu Specimen Tracking

- Held “Mini-Lean” Event
 - Required two half day meetings
 - Cross sectional team of stakeholders
 - Team Mentored by a Black Belt
 - Assisted by a Green Belt
 - Event 1
 - » Posted the High Level Process Map
 - » Developed the Value Stream Map
 - » Identified sources of waste and bottlenecks
 - » Developed Preliminary Action Plan - WWW
 - Event 2
 - » Brainstormed solutions on highest ranking bottlenecks
 - » Assessed solutions using the priority payoff matrix
 - » Developed an Action Plan - WWW
 - » Developed a new streamlined process

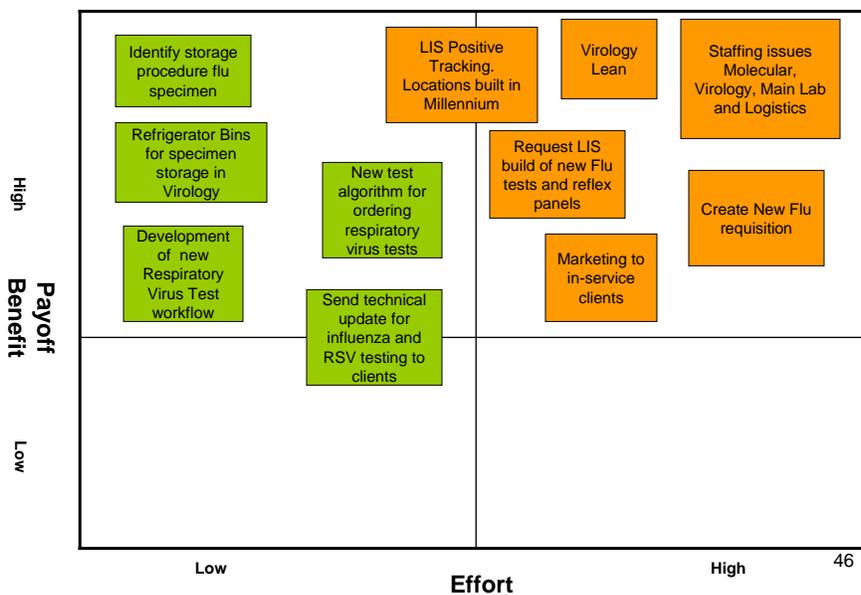
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Value Stream Map



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Priority Payoff Matrix

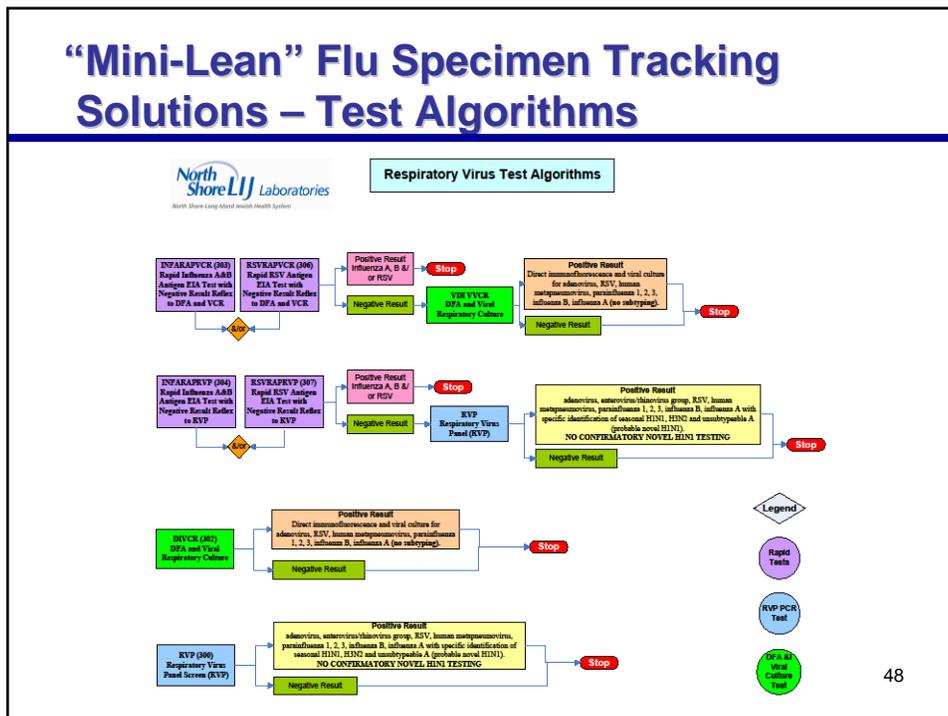


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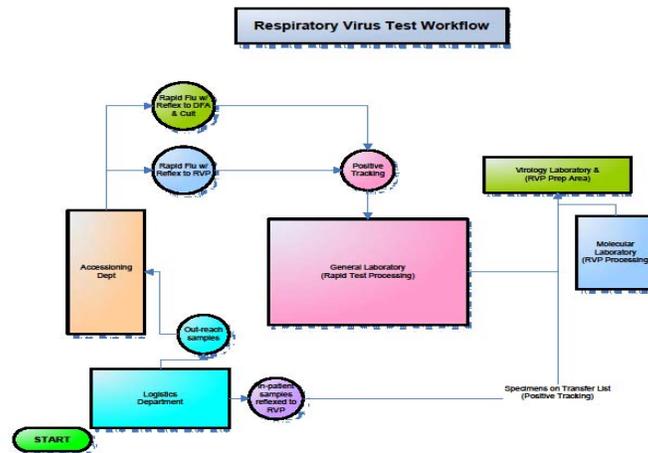
“Mini-Lean” Flu Specimen Tracking

- Issues Identified
 - Confusion Regarding Test Ordering
 - Excess Motion of Techs and Samples
 - Lack of Positive Tracking of Specimens
- Solutions Implemented
 - New Flu Tests and Reflex Rules Built in LIS
 - New Testing Algorithm Developed
 - New Flu Test Requisition Created for Outreach
 - Specimens Flow In Lab Was Streamlined
 - Specimen Storage In Virology
 - Scanning Station Established In Serology For Tracking of Samples For Rapid Flu Testing
 - Tracking Of Flu Specimen Delivery Into Virology (Prior FTD)
 - Recruitment of Additional Staff

“Mini-Lean” Flu Specimen Tracking Solutions – Test Algorithms



“Mini-Lean” Flu Specimen Tracking Solutions - New Specimen Flow Process



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“Mini-Lean” Flu Specimen Tracking Metrics

- Metrics developed to be compared against baseline data collected during the Spring Outbreak
 - Number of officially documented missing flu specimens - 4
 - Manhasset Hospital RVP TAT
 - Average TAT – 36hrs 98.8% compliance with Mon –Fri 48hrs and Weekends 72 hrs
 - Core Lab TAT Respiratory Virus Panel Testing
 - Average TAT - 55 hours

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“Mini-Lean” Flu Specimens Tracking

- **The Big Test Is Yet To Come...**
 - **Will the new robust process stand up to the anticipate flu surge this fall?**
 - Will newly developed flu panels and the Out Patient requisition result in streamlined specimen processing and testing?
 - Will positive tracking of flu specimens actually result in less time spent looking for missing specimens?
 - Will we be able to improve respiratory testing TAT?

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Comparison of Lean, “Mini-Lean” and FTD

	LEAN	“MINI-LEAN”	FTD
Process	Complex	Moderate	Other
Sensing Sessions	YES	YES <small>As Much Work Done Behind the Scenes As Possible</small>	YES
The Event	2-3 days	½ to 1 day <small>Customized to Project Needs and Staff Availability</small>	½ day
Implementation	Up to 90 days	30 – 60 days	Up to 1 month

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Other Advantages of Lean, “Mini-Lean” and FTD

- Create a Culture of Change
- Promote Employee Buy-in
- Establish Consensus
- Motivate Staff
- Increase Interdepartmental Knowledge
- Empower Employees
- Encourage Teamwork

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THANK YOU!

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Fast Track Decision-Making Meeting

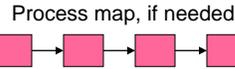
Kick-Off



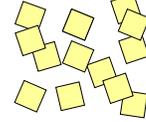
Ground Rules, Introductions, Roles, Teambuilding, etc



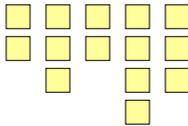
Define the Problem



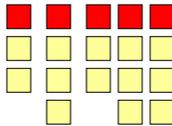
Brainstorm Problems / Barriers



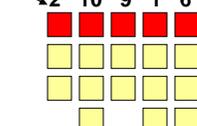
Categorize Problems / Barriers



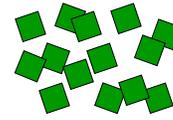
Define "Headers" for Categories



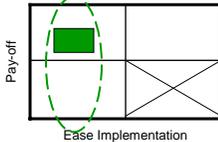
Prioritize Categories



Brainstorm/Categorize Potential Solutions



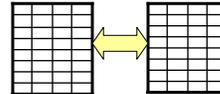
Assess Potential Solutions



Develop Report Out

Issue:	
Recommendation:	
Benefit:	
Resources Required To Implement:	Recommendation Owner:

Share Report Outs within Group



Report Out Decisions and Action Plans

