



How you want to be treated.



Putting Automation into a Post-Lean Histology Laboratory

Lab Quality Confab Atlanta 2008

Susan Finley

Holy Family Hospital | Mount Saint Joseph Hospital | St. Paul's Hospital | St. Vincent's Hospitals: Brock, Fairview, Langara, Reacher | Youville Residence

Presentation Outline

- About Providence Health Care
- What were our drivers for change
- Where we are now
- Instrumentation Selection
- What we did well
- What we could have done better



About Providence Health Care

St. Paul's Hospital

Mount St. Joseph



Drivers for change

- Manage staff shortages
- High lab costs compared to benchmark
- Increase capacity without increasing costs by
 - Improving turn around times
 - Reducing errors
 - Improving working conditions
- We also had to keep in mind that a new lab facility was on the horizon



Why Lean/Six Sigma

- Concepts fit our needs:
- Simple but rigorous tools
- Front-line driven
- Rapid change
- Simplification of complex processes
- Improve quality (TAT, errors)
- Increase test capacity
- Reduce costs



Anatomic Pathology Surgical Case load Pre-Lean

- Surgical grossing was performed at both sites
- SPH surgical cases were separate from MSJ cases
- All SPH cassettes were embedded before cutting started.
- Slides for H&E staining were batched based on staining rack size



Anatomic Pathology Surgical Case load Pre-Lean ⁽²⁾

- SPH cases completed before MSJ cases started
- SPH pathologists would begin reading massive volumes of surgical cases after 1pm, whereas, MSJ pathologists received their slides after 4pm.
- Additional stain requests began the following day.
- Average case TAT for SPH -4 days and MSJ -5 days+.



Sample flow pre-Lean



Consequences

- Batching slowed down case TAT.
- Bench space was cluttered and lab space was at a premium.
- Supplies were overstocked
- Sub sections of AP worked independently, each area had different approaches to similar tasks.
- As our workload and the need for new recruits increased, orientation and training become more difficult and expensive.
- Consequently, this process reduced efficiencies and increased the potential for error.



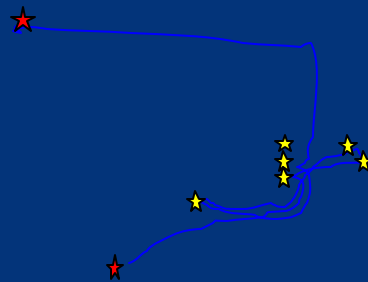
Initial Implementation

- Centralization of MSJ's AP grossing to St. Paul's
- New accessioning specimen drop-off location
- Transcriptionist moved into specimen drop-off/data entry area
- Redesign Histology's embedding and cutting work stations
- Level loading of cassette embedding and slide cutting



Specimen flow Post-Lean

250 feet



Areas of Focus

1. Accessioning Bench and Grossing rooms
2. Transcription
3. Routine Bench
4. Cytology Processing Area



Accessioning Bench - Implementation

- Histo techs and cyto techs crossed trained in the areas of accessioning, grossing, cytology processing and routine bench activities.
- Med steno data entry processes transferred to Accessioning area



Development of PHC's LEAN Accessioning Bench



Accessioning and Data Entry Bench, May 2008



Examples of grossing rooms and holdover distribution



The Development of the Third Grossing Room



Tissue Processors Relocation



Microwave Processing cont'd

Strategies for selection

- Lean principles
- Standardized process
- Supports ease of use
- Ergonomics
- Environmental
- Cost savings



Transcription – Implementation

Single case flow

- Smaller, sorted transcription dictation's were prioritized using visual aids.
- Data entry and gross dication remain in Histology routine bench area
- All other reporting formats between pathologist and stenographer remain in the transcription



Transcription work flow –5S



Med Steno Bench –5S



Design of New Transcription Data Entry Area



What the Routine Bench Area Looked Like Pre-LEAN



Routine Bench – Implementation

5S & Visual Management

before

after



Routine Bench Implementation

Single Case Flow

- Techs assigned positions in the “diamond”
- 1 embedder, 2 cutters, 1 slide sorter (QC Bench tech).
- Product flows through one case at a time.
- Drying oven, stainer and coverslipper aligned beside cutting area to reduce walk distance.
- Level loading – H&E stainer every 10 minutes.



The Evolution of the Diamond



The Diamond



H&E and QC Bench set up



Integrated Stainer

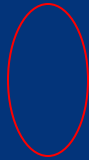
- LEAN Principles
- Supports ease of use
- Ergonomics
- Environmental
- Cost savings



Special Stains IHC & Cytology renovations

before

after



Before LEAN

Special Stains

Immunohistochemistry



After LEAN

IHC

Special Stains



Cytology before LEAN

Accessioning

Processing



Cytology Implementation

- Cytology moved next to Accessioning; Techs cross-trained
- Cytology processing automated (Thin Prep)
- Linear workflow reduced travel time and space needs
- Cytology samples processed as they arrive (single case flow)
- More time for biopsy pick-up and slide screening



Cytology – Implementation

Renovations

before

after



What we achieved - 2007

- Technology - Standardization of equipment
- Productivity - Increase of 8% without increase in staff
- TAT - from 4 days to 3 days
- Cost Savings - Reduced equipment - \$70,000
- supply inventory - \$0.04
- Misc - Renal lab 5S
- Satisfaction survey results



What we achieved - 2008

- Technology - Introduction of new technology
- New instrumentation layered over a new computer system
- Productivity - Increase of 10% without increase in staff
- Pathologists still able to cope with workload increases
- TAT - Technologist small biopsy dictation and microwave processing further reduced TAT by 25%
- Cost Savings - continued to see cost savings
- Misc - similar processes centralized
- extended hours of operation



What we learned

- Base management decisions on a long-term philosophy, even at the expense of short-term financial goals.
- Respect your extended network of partners and suppliers by challenging them and helping them to improve.
- Go and see for yourself to thoroughly understand the situation
- Make decisions slowly by consensus, thoroughly considering all options; implement decisions rapidly.
- Become a learning organization through relentless reflection and continuous improvement



Instrumentation Selection - accessioning and grossing areas

- Cassette labeler
- Portable Bench top fume hood



Instrumentation Selection - processing

- Microwave technology



Instrumentation selection- the Diamond

- Embedding center
- Microtomes
- Integrated H&E stainer



Instrumentation Selection – IHC & SS

- Upgrades automatic special stainers
- Upgraded IHC stainers



Instrumentation upgrades - cytology

Ergonomic microscopes



What we did well

- Listen to staff
- Instrumentation upgrades which complimented AP LEAN Redesign
- Involved technical staff in instrumentation selection
- Rewarded the teams
- Continued to reduce TAT



What we could do better

- Involve the pathologists in the instrumentation evaluation prior to purchase
- Understand the impact of automation on cost per test
- Avoid conflicting projects
- Sustainment



Questions 

Thank you!

