



Why Automation Bollixed Efficient Workflow in Microbiology and How LEAN Fixed It

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Our Reference Lab Experience with LEAN in Microbiology

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Disclosure

✍ David Chow does not have stocks in BD

Warning

Sex
Drugs
Religion
Politics

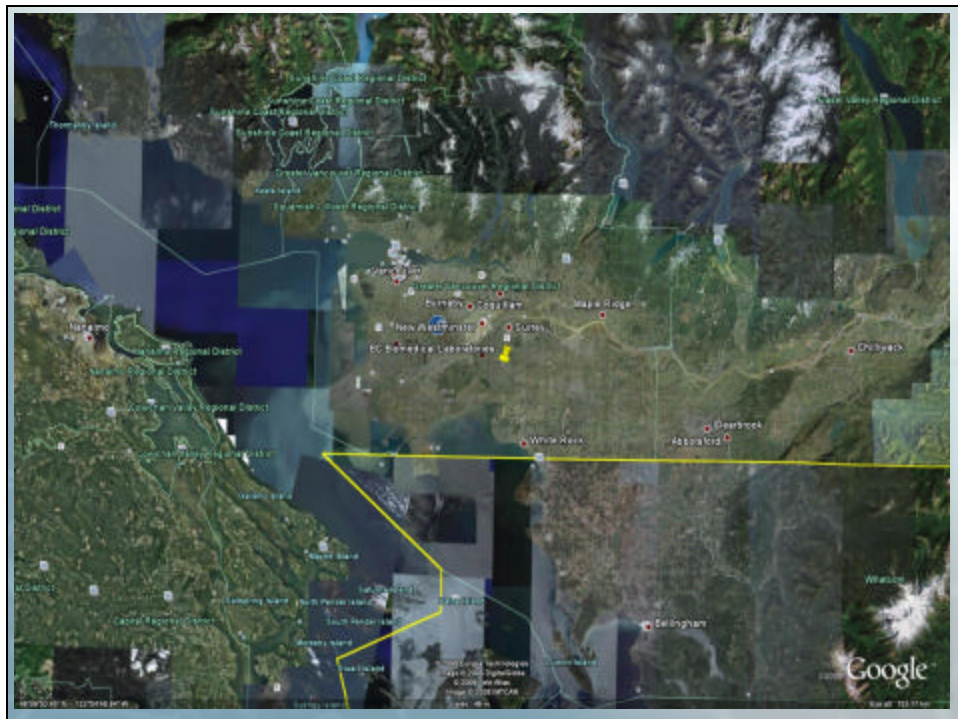


Objective

- ✍ To describe our Microbiology lab's LEAN journey
- ✍ To consider the application of LEAN to the Microbiology department
 - ✍ Semi-automated NAT process
 - ✍ Manual "traditional" bacteriology
- ✍ To have the audience consider LEAN in a new way

Overview

- ✍ BC Biomedical Laboratories
- ✍ Our first LEAN experience
- ✍ LEAN adoption in Specimen Receiving
- ✍ LEAN adoption in Micro Specimen Set-up
- ✍ LEAN for Bacteriology benches
- ✍ Lessons learned
- ✍ What is LEAN? (Rated R version)
- ✍ Summary





Unique Integrated Practice Model

- ✍ Dr. C.J. Coady Associates
- ✍ Partnership of >40 pathologists
- ✍ Full spectrum subspecialty pathology services including forensic pathology and cytogenetics
- ✍ Sole owner of BC Biomedical
- ✍ Dr. C.J. Coady Associates provides pathology services for the Fraser Health Authority (FHA) 12 acute care hospitals (community hospitals ✍ tertiary care)
- ✍ FHA is the largest health authority serving 1.6 million patients (1/3 of the province)





BC Biomedical Laboratories

Region	Population:
✎ Vancouver Coastal Health Authority	1,200,000
✎ Fraser Health Authority	1,600,000
	2,800,000
✎ 1.7 million patients visit one of our 43 Patient Service Location (PSC) every year	
✎ 32,000 Tests/Day	
✎ 700 Employees	
✎ CAP accredited laboratory	
✎ Engaged Workforce – For the past 7 years, BC Biomedical has been rated as one of the 50 Best Employers in Canada	



Background

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- ✎ BD Viper ER was purchased and installed in February 2006. Prior to Viper, 2 BD ProbeTec instruments were run by 2 FTE's (7 hour work day).
 - ✎ After implementation of the Viper, the two FTE's were working 8.5 hour days and urine specimens were still being run on the ProbeTec.
 - ✎ Numerous workflow efficiency attempts could not address the increasing volume and the doubling of our urine Chlamydia and *N. gonorrhoeae* (CT/GC). Urine CT/GC were growing at twice the rate of swabs
 - ✎ Workload was unsustainable and we were unable to move all of the work to the Viper
 - ✎ “How could adding a robot increase workload?”
 - ✎ Workload in the rest of Microbiology and the inability to recruit suitable staff compounded the situation



Our First LEAN experience

- ✍ BD LEAN Consultant came to BC Bio for 3days.
- ✍ Mapped our current state process and created future state process
- ✍ Implemented single piece flow (specimens were given to the technologist in smaller batches (46 specimens instead of 92)
- ✍ Color coated racks, labelled work areas, and preparing one tray of specimens the previous day all saved time.
- ✍ Implemented standard work-everyone doing the same processes the same way. Collaborative effort to determine standard work.



Standardized work: Where did my individuality go?



Standardized work: Where did my individuality go?

- ✍ Standardized work reduces contamination
- ✍ Allow flexibility between two people sharing a bench
- ✍ Should be determined by the Technologist performing the test in conjunction with manufacturer/clinical direction
- ✍ Others can take over anyone else's work at any point and know what has to be done
- ✍ IT IS BEST PRACTICE
 - ✍ Resistance is futile



Standardized Work

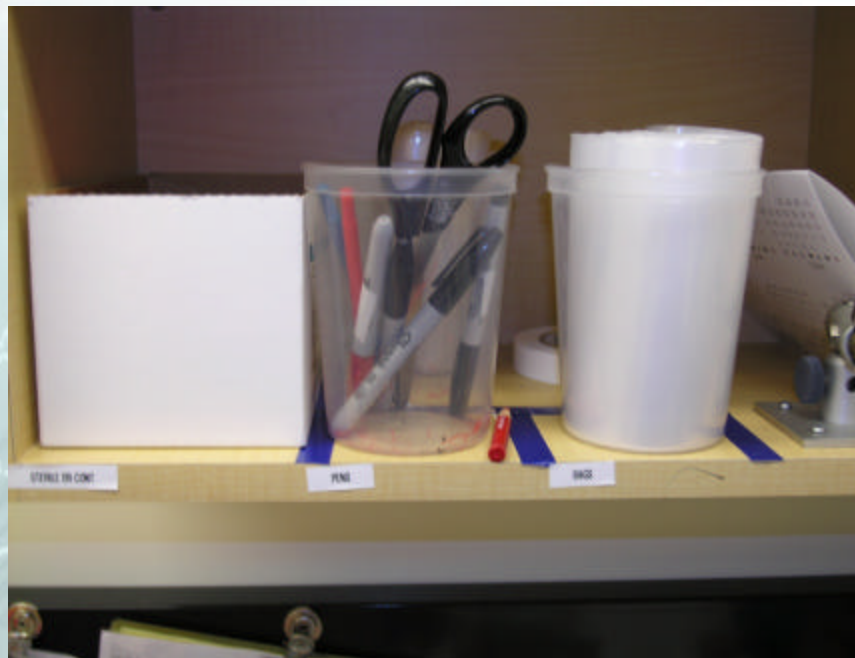


- ✍ All areas used to perform testing are 'taped off' and labelled
- ✍ Racks are color coated and labelled



LEAN our first experience

- ✍ Continuous process improvement -a paradigm shift from 'can we save minutes/hours' to 'a few second here and there sure add up'
- ✍ Standardized work reviews when:
 - ✍ variability in processes are seen
 - ✍ when changes to the workflow are implemented
 - ✍ volumes change significantly
 - ✍ other changes
 - listen to the staff to keep track of changes
- ✍ Regular communication meetings
 - ✍ Daily 5 minute meetings
 - ✍ Weekly department meetings to follow up on unresolved items from daily meeting and big procedural changes that can't be implemented by 5 minute meeting



Viper Today

- ✍ The volume in this area has increased 7% in the last year. This increase has led to an extra run per day which we have easily absorbed
- ✍ The second technologist is now able to dedicate at least 1.5 hour to the other areas in the laboratory (20% more volume performed today vs.. 2006)
- ✍ The instrument and technologists can still absorb one more run per day without running past their scheduled day.
- ✍ Technologists are continuously making improvements. Everything is a learning opportunity. Our back up experience.



LEAN in Specimen Receiving

- ✍ Lean principles were introduced to the organization, then further sessions delivered to the department
- ✍ The goal was to increase capacity and efficiency.
- ✍ Historically, specimens were batch received into a central processing area, entered into the LIS and placed back into the Tupperware containers they arrived in and passed onto the next department
- ✍ Instituting single piece flow and keeping sort function throughout process was a significant change for the staff.



WARNING!!!!

FUZZY PHOTOS OF GENITALS

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LEAN in Specimen Receiving

- ✍ Significant challenge for the staff to let go of their old process.
- ✍ Collaboration of different departments to solve problems
- ✍ Single piece flow vs. batch process
- ✍ Reducing inventory and wait times
- ✍ Use metrics and pilots to demonstrate how different methods can yield higher quality and efficiency
- ✍ Critical to Customer Events (CCE's) down by 21%. Productivity elevated

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LEAN in Microbiology Specimen Set-up

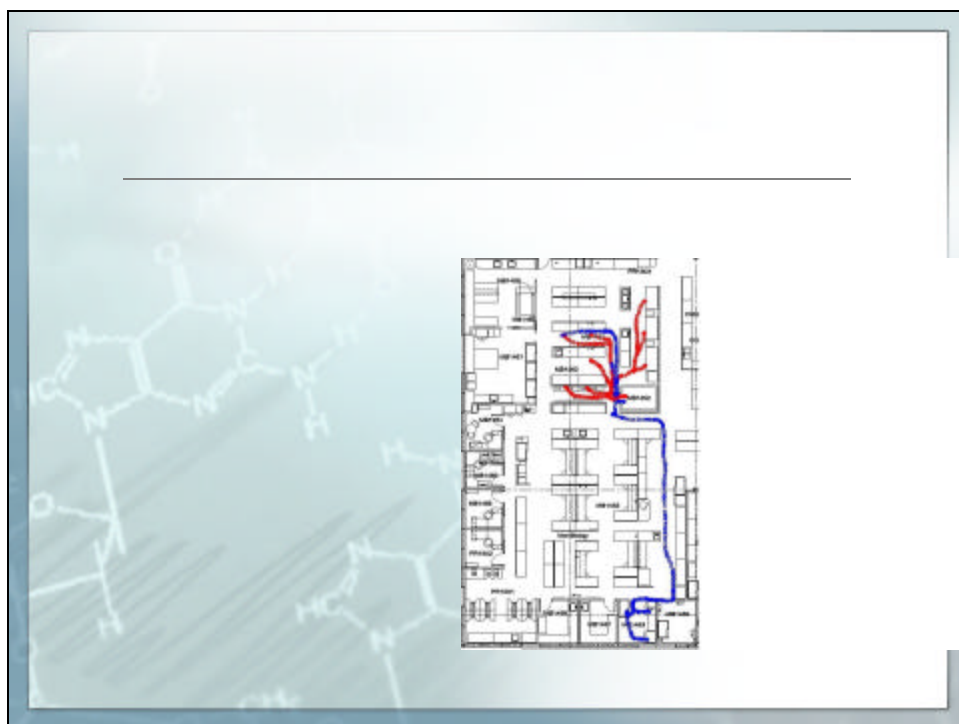
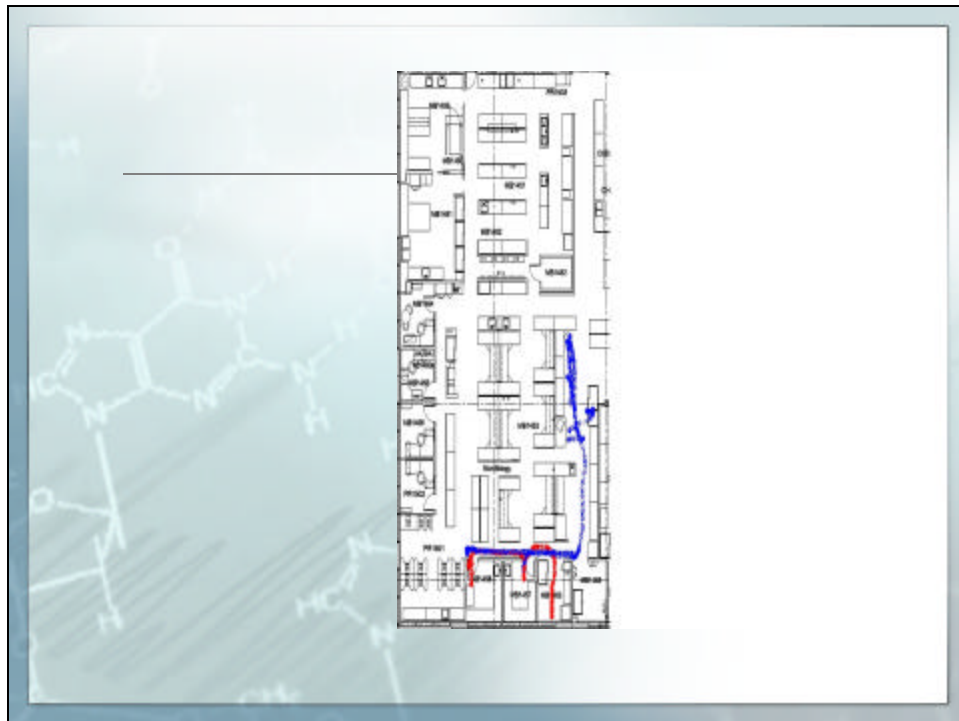
- ✍ Same principles applied (single piece flow, first in first out, maintain sort function)
- ✍ Low tech first. Simplify process before automating it
- ✍ Specimens are now placed into incubators sooner
- ✍ 10% increase in volume
- ✍ Start time moved back ½ hour earlier



LEAN in Bacteriology

- ✍ Lean principles applied as far up the process as possible has the most impact.
- ✍ Genital culture and Hepatitis
- ✍ Bugs were “juicier” – Less reincubation (decrease TAT).
- ✍ Standardization of Urine bench yielded 100 minutes of time savings per day.
- ✍ Standardization of LIS entry





LEAN-Lessons learned

- ✍ Determine the scope and boundaries of the project and commit to it. Set clear expectations to others especially the support departments for timing and resources
- ✍ Run it as a formal project – Project Manager with time committed to project, timelines, goals, etc
- ✍ Outlining the goals of the project allows for easier metrics – formal or informal
- ✍ Be prepared for scope creep- have a parking lot and a commitment from others in the organization to address these at a later date.



LEAN-Lessons learned

- ✍ Clarify rationale and purpose of project to the staff. To alleviate their workload and to build capacity. This is not a staff reduction exercise.
- ✍ Pilot projects were started: Make one change in isolation:
 - ✍ give the change time and see what happens.
- ✍ Be prepared to pull the plug for near disasters but allow for honest trials (even if they are painful at first). Don't discard ideas, they may work after other changes go first.
- ✍ Let go of ownership. The process is not optimal-not you. You are a steward of the process.
- ✍ Keep a list, give feedback to those who make suggestions
 - ✍ It's not "No" It's "Not right now"



Definition of LEAN

✍ Courtesy of Dr. Scott Henwick

LEAN is like sex

Before you have done it-you make excuses why you shouldn't or others tell you why you shouldn't

If your first experience is good-you can't wait to try it again



“If you keep touching it, it will fall off!”

“If you participate, they’ll just eliminate your job”





“You’ll go blind if you keep on doing it!”

“But this is the way we’ve always done it”



Change in Outlook

Before LEAN



Change in Outlook

Into LEAN



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Summary

- ✍ LEAN enhanced our productivity for the CT/GC and beyond
- ✍ Engaged our staff to another level
- ✍ “What are **you** going to do about it?” ✍ “What can **we** try first to resolve this?”
- ✍ It’s a never ending process of sustainable continuous improvement

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