Using the LIS and Workflow Redesign to Improve Specimen Management in the Lab

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Outline

1. Basics of Lean Six Sigma
2. Common Mistakes in Pathology Labs
3. Practical Solutions through the LIS
4. Real World Examples
5. Q&A
THE BASICS

What is ‘Six Sigma’?

- A manufacturing concept introduced by Motorola (1980s)
- Aimed at eliminating ‘defects’ and ‘variance’ in a production process
- Proposes a systematic approach to doing this:
  - DMAIC
  - DMADV or DFSS

\[ \text{No more than 3.4 defects in 1 million opportunities} \]
What is ‘Lean’?

• A manufacturing concept introduced by Toyota (1990s)
• Aimed at eliminating ‘waste’ in a production process (muda)
• Seven types of waste:
  1. Transportation
  2. Inventory
  3. Motion
  4. Wait
  5. Over-processing
  6. Over-production
  7. Defect

What is ‘Lean Six Sigma’?
Lean Six Sigma:

A systematic approach to minimizing defects and costs by controlling waste and variance in a production process.

Why is this Important for Pathology Labs?

• You don’t get paid for mistakes
• Errors are expensive … sometimes very expensive
• There is just too much at stake …
  – Critical Samples
  – Institution’s Reputation
  – Patient Safety
  – Patient Care
Study finds 4.3 surgical specimen identification errors per 1000 surgical specimens. These errors are common and pose important risks to all patients.

Only 69% surgical pathology cancer reports include all the required elements.

Nyack Hospital said in a statement it regretted that Aprile was misdiagnosed with cancer when his biopsy sample accidentally was switched with that of another patient.

By Carrie Melango, DAILY NEWS staff writer, NYDailyNews.com, Thursday, May 14, 2009
PATHOLOGY LABS

Typical Pathology Lab Workflow

Accessioning  Grossing  Processing
Staining  Slide Prep  Cutting  Embedding
Case Assembly  Pathologist Review  Reporting & Signout  Tissue Discard & Archival
Hundreds of Assets Generated per Day

- Specimen
- Blocks
- Slides

Room for Digitization …

- Paper Requisitions. vs Electronic Orders
- Narrative vs Synoptic Reports
  - CAP Checklists
  - Machine readable, discrete data
- AdHoc Reports vs Realtime Dashboards
Opportunities in Pathology Labs

• Defects
  – Misidentification
  – Misplaced Specimen

• Waste
  – Batch Label Printing
  – Relabeling

• Variance
  – Case Workup
  – Report Formats

PRACTICAL SOLUTIONS
Bad Workflow Eats Good Software for Lunch

Know it … Measure it … Own it

Start with the following …

1. Understand your SPOTs
2. Baseline ‘normal’ flow
3. Identify steps for exception handling
4. Define the rules and measure compliance
5. Leverage consulting services, if needed

“I am careful not to confuse excellence with perfection”
— Michael J. Fox

“Were I to await perfection, my book would never be finished”
— Chinese Proverb
Barcoding Promotes Positive Specimen Identification

Tracking Maintains Chain of Custody
‘Just in Time’ Reduces Waste/Defects

Comprehensive Specimen Management

Barcoding + Routing + Tracking = Safe, Consistent, Efficient Handling of Specimen
Middleware? OR Integrated?

But what about “0 to 1”?
Specimen Management starts from Point of Collection

- Positive Patient ID
- Instant Specimen Label
- Electronic Order to Lab
- Track Collection to Accession

Support for Foreign IDs eliminates Relabeling
Synoptic Reporting promotes Checklist Approach

- Structured and consistent reporting format
- Minimize errors in transcription and interpretation
- Preferred format for receiving clinician/oncologist
- Reduces inquiries, calls for clarification on reported content
- Compliance and Accreditation (CoC, CAP, CCO)
- Checklists fields in outbound interfaces

Business Analytics Promotes Lean Operation
REAL WORLD EXAMPLES

LEAN Experience at MGH

Histology Redesign Project

MGH incorporated Lean concepts of workflow analysis, re-design, standardization, including the barcode system.

Results:

• Reduced average routine surgical TAT from 48 hr to 20 hr
• Reduced average Biopsy TAT from 24 hr to 16 hr
• Reduced overtime from 3.5 FTE’s to 0.97 FTE’s
• Improved morale

Thomas M. Gudewicz, MD
Massachusetts General Hospital
Harvard Medical School
Quality Focus at Henry Ford

Sunquest CoPathPlus™

Henry Ford implemented barcoding and Sunquest CoPathPlus to streamline workflow and employ an overall quality program.

Results:
• Implemented 1,128 process improvements on their main campus including 150 in AP
• Reduced overall misidentification case rate by 62%, with 95% reduction in the more common slide misidentification defects
• Increased throughput at histology microtomy station by 125%
• The number of routine biopsies completed in a single day improved from 73% to 92%

“Integration of mTuitive’s xPert for Pathology with Sunquest CoPathPlus represents the biggest advance in pathology reporting since the invention of the typewriter.”
– Dr. Mark Tuthill, Division Head of Pathology Informatics, Henry Ford Health System

Business Analytics at NGM

Sunquest Diagnostic Intelligence™

NGM implemented real time dashboards to track and manage Key Performance Indicators (KPIs) critical to their lab operations.

Results:
• Time savings (Instant results) – Reports that used to take an hour to hour and half can now be accessed in seconds.
• Operational effectiveness – NGM is a large reference site and with DI dashboards they can gauge test volumes at each site. With these numbers they can forecast how much work will be done at each location and send the supply/inventory accordingly.
• Improved efficiency – Monitoring dashboards is helping to keep track of their workload and proper resource management.

“Advances in the areas of data analysis and understanding through BI will be used more pervasively throughout organizations and will lead to better patient care. Overall, it will become a mission critical tool for healthcare organizations to be successful.”
– Allana Cummings, EMBA, CHCIO, PMP, CPHIMS, CIO, Northeast Georgia Health System
### Summary

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Thank You