GETTING THE MOST OUT OF BARCODING IN YOUR PATHOLOGY LABORATORY

LORETTA SAYLES HT(ASCP)
SAYLES LAB CONSULTING

OBJECTIVES

- Basic understanding of how barcodes work
- Identifying the barcoding needs of YOUR laboratory
- Steps required for barcoding implementation in the lab
- Understand the opportunities using data being collected

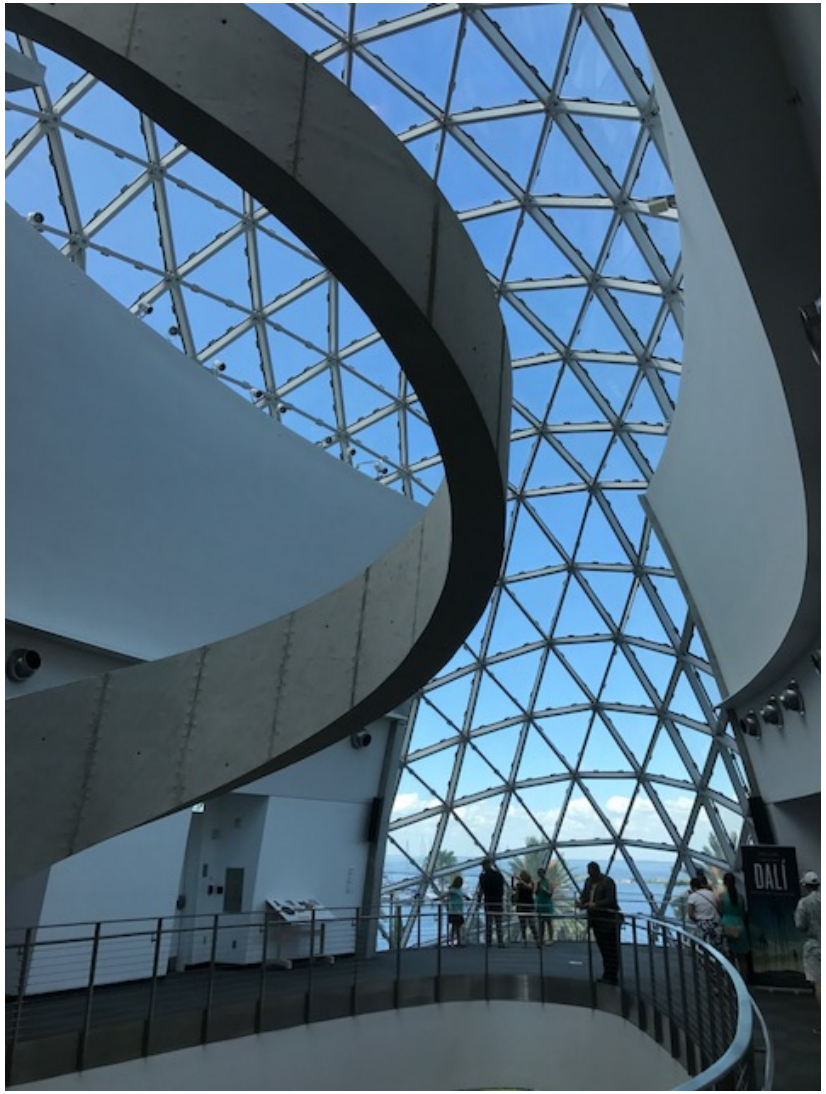
US HEALTHCARE SYSTEM

- Changing from a Fee-For-Service System to a Value-Based Reimbursement System
  - Not going to be paid for volume but for quality and value
  - FFS has been a major cause of healthcare costs, insurance premiums and high deductibles spiraling out of control.
  - Reporting began in January of this year and payments will begin in January of 2019.
  - Starting with Medicare with the intent to eventually include commercial contacts and will affect all reimbursement.

Our New World!

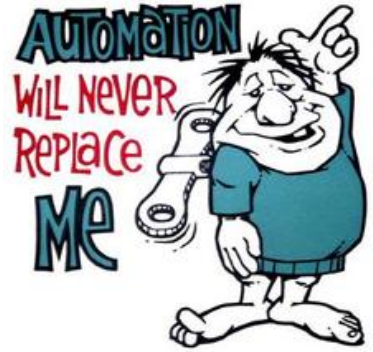
- Reductions in reimbursement are driving lean processes
  - We are required to do more with less while improving quality
  - To be successful in this environment we need to increase efficiencies and decrease cost
    - Two largest costs are labor and supplies
- To be successful we must change
  - Invest in technology and instrumentation
  - Efficiency or Growth are the only two alternatives
  - Barcoding will help us make the difference

BARCODING IS EVERYWHERE



BARCODING IN HISTOLOGY

- **Why do we want to barcode in Histology ?**
  - Automate data entry to eliminate manual data entry errors
  - Automate downstream barcode enabled processes to improve Quality and Patient Safety
  - Reduce or eliminate non-value added tasks
    - Manual checks we perform in Histology to check and recheck our work
    - Relabeling the same sample
  - **Greatly Improves productivity**
    - **Will completely change your workflow**



ERROR STATISTICS

- Up to 70% of Laboratory errors are in the pre- and post- analytic phases
  - Many errors caused by batching
  - Analytic phase error rate has had a dramatic decrease in errors due to standardization of our processes, reagents and instrumentation
- Histology error prone tasks
  - Accessioning- Label the specimen and the requisition
  - Grossing- Label the cassettes
  - Sectioning- Labeling the slides
  - Case Assembly- Label the slides and /or matching samples

ERRORS

- Lean Processes eliminate waste/non-value added tasks
  - Improve patient care while improving quality
  - One-piece workflow
    - Handle one specimen at a time
- BARCODING WILL GREATLY REDUCE YOUR ERRORS!

Improving Quality and Patient Care

- BY REDUCING ERRORS
- MAINTAINING SPECIMEN INTEGRITY
- IMPROVING PRODUCTIVITY
- IMPROVING TAT
- ELIMINATING NON VALUE ADDED TASKS

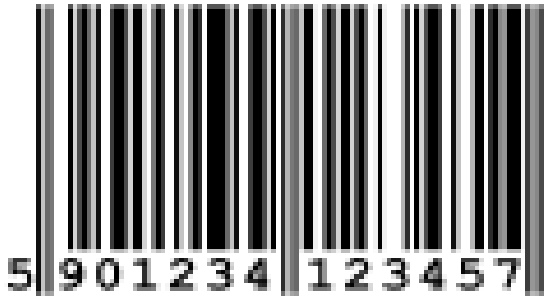
Improve Productivity

LEAN ANALYSIS RESULTS-

- Small lab-barcoding led to improved TAT by 20%
  - While improving error rate by 70%
- Research lab- elimination of manual checks savings equivalent to 1.5 FTE
- Large lab- full quality system-one year savings equivalent to 1 FTE

HOW BAR CODES WORK

- Barcodes were designed to automate the identification of an item and eliminate the need for manual data entry in an effort to reduce labor and eliminate mistakes.
- There is a wide range of barcode symbologies, the size and data encoded in the barcode vary greatly for individual application.
- We will discuss characteristics of barcodes that can be used in Histology
  - Two types of barcodes
    - Linear (1D)
    - Two –Dimensional barcodes

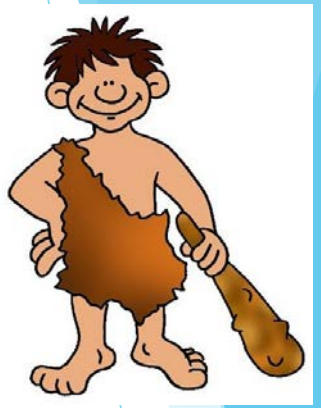


  - Linear-
    - Up to 7 to 15 characters depending on the system, linear barcodes get too wide for slides and cassettes.
    - Creates a wide barcode use characters to determine the beginning and end of the barcode
    - Linear scanners are less expensive than 2D barcode scanners

HOW BAR CODES WORK

- 2D- (Data Matrix, Aztec, and QR code)
  - Can hold 25 to 30 characters
  - Requires a 2D barcode scanner
  - Data Matrix is a very efficient, 2D barcode that uses a small area of square modules with a unique perimeter pattern and is smaller than a linear barcode with the same information.
  - The encoding and decoding process of Data Matrix is very complex and has been standardized
  - Data Matrix barcodes error correction algorithms allow the recognition of barcodes that are up to 60% damaged
  - The Department of Defense uses Data Matrix Barcodes

WHAT TOOK SO LONG TO GET TO HISTOLOGY



- Only in the last few years have we perfected the ability to put a barcode on a cassette that was machine readable-
  - Cassettes and slides have small rough surface
    - The printed barcodes must be resistant to the chemicals used in Histology
    - All primary specimens must have two human readable unique patient IDs
      - Are blocks primary specimens?
    - Patient blocks and slides are specimens which must be maintained and retrievable for 10 years
      - Most labs struggle with this largely manual process

GETTING STARTED

- What are the options with barcoding?
  - A lab may just want to barcode cassettes and slides
    - small labs
  - A lab may want to add verification
    - QA for case assembly
  - A lab may want to have a full quality system built around barcoding
    - a.k.a- Tracking
    - large labs
    - GLP Labs

GETTING STARTED

- Determine Ultimate Goals
  - Reduce Errors
  - Improve Quality and Patient safety
  - Lean Implementation
  - Improve Productivity
  - Generate Statistics and workload
  - Interface with LIS
  - All the Above
- Document Errors and Source
  - Both before Implementation and following
- Write each step in your workflow
  - Determine where barcoding will allow you to eliminate non-value tasks and errors

Time to Begin!

- Where do you want barcoding to start?
  - With client?
    - Barcode on req
    - Barcode generated when loaded into computer
  - With courier?
  - Accessioning?
  - Grossing?

INSTRUMENTATION REQUIRED

- CASSETTE LABELER
  - Determine your needs
    - Size, speed, cost, accuracy, quantity, flexibility and interface capabilities
  - Determine data you want in the cassette barcode
    - Patient name, Patient ID, Lab name, accession number, prefix, suffix, special stains, IHC
    - Placement of the barcode is important for readability

INSTRUMENTATION REQUIRED

- SLIDE LABELING
  - Methodology
    - Print on slides or labels
      - Printing Directly on slide is a leaner process
    - Must be performed at Microtome-one block at a time!
  - Determine your needs
    - Size, speed, accuracy, quantity, built in scanners, Wifi and interface capabilities
    - Determine data you want to print on the slide and the layout

INSTRUMENTATION REQUIRED

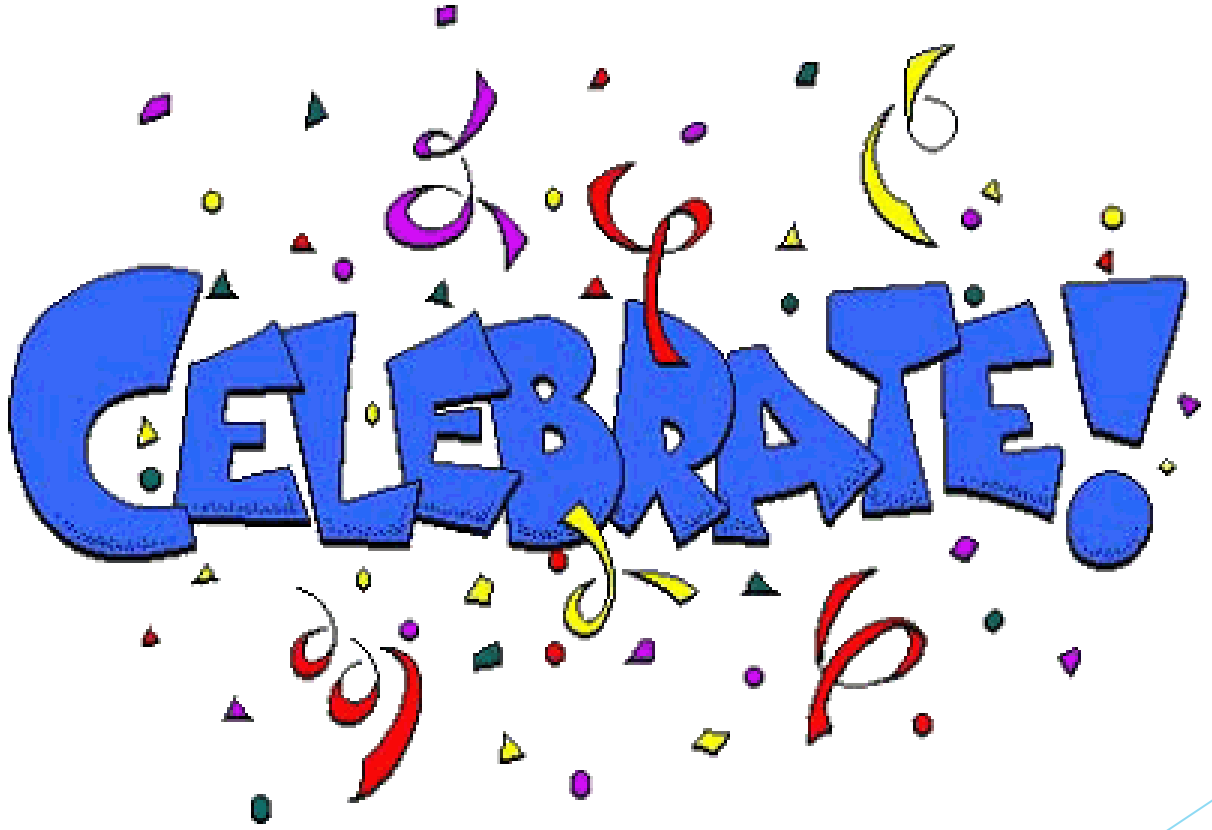
- BAR CODE SCANNERS
  - 1D or 2D scanners
  - Select Locations for scanning
- OPTIONAL
  - Block Tracking system
  - Verification- Utilizing barcode on block and slide as part of your QA

Summary- Build the Right System for Your Needs

- Barcoding-
  - Can be as simple as just cassettes and slides
- Add Verification-
  - To help decrease the manual time required for verification of block and slides
- Add a full quality system- (Tracking)
- Add Archiving System- Fully automated system
  - Full traceability of blocks
  - Reduce labor costs
  - Reduce retrieval and return cost with offsite storage company

CONGRATULATIONS!

- You are ready to begin !



References

- CAP Today – July 2017
- Sayles Lab Consulting – Lean Assessments- 2015-2017
- Institute of Medicine Committee on Quality of Health Care in America:2000
- Errors in Health Care-A Leading cause of death and injury
  - http:www.ncbi.nih.gov /books/NBK225187
- White paper- Diagnostic Error and Laboratory Medicine
  - Published on-line January 27, 2015
- IDAutomation.com,INC- How Bar codes Work