Improving Reliability in the Histology Laboratory: iFREEZE

The Problem

Although efforts have been made to improve patient identification in the clinical labs with bar coding and point of care timeouts, in anatomic pathology, the nature of the work makes it impossible for patients to self identify. Incorrect tissue identification can lead to significant patient harm, including incorrect diagnoses, wrong surgery, inappropriate therapy, and emotional distress for patients and providers. Nationally, histology laboratories have been aware of this vulnerability but the rate and nature of mix-ups have not been rigorously studied or reported.

Aim

To study the occurrence of incorrectly identified histology specimens, perform a root cause analysis to dissect specific workflow vulnerabilities, and design an innovative frontline solution to identified problems based on known quality principles and subject expertise.

The Team

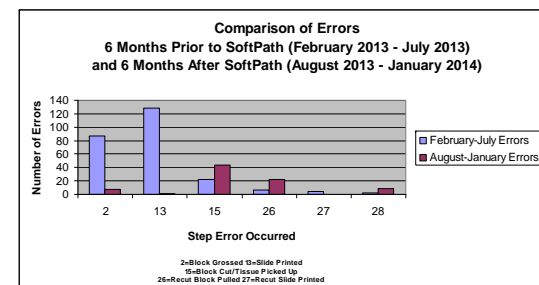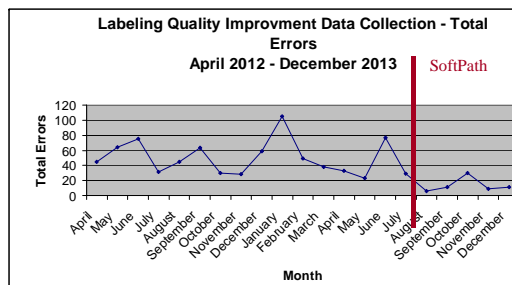Histology Quality Improvement Committee (Department of Pathology)
- Christine Spiliakos, Administrative Assistant for Quality
- Michael Hallett, Laboratory Support Assistant
- Benjamin Edwards, Histotechnologist
- Shaelyn Casey, Histotechnologist
- David Bowman, Supervisor, Histology Laboratory
- Donna Fayad, Manager, Anatomic Pathology
- Gina McCormack, Operations Director
- Sergey Pyatibrat MD, Senior Resident
- Jeffrey Goldsmith MD, Director, Surgical Pathology
- Yael Kushner MD, Director, Quality Improvement

The Results

- Total Number of Cases Reviewed: 104,623
- Total Number of Errors: 872
- Average Histology Error (April 2012-July 2013): 1.03
- External Errors: 741
- Internal Errors: 131
- Total Time Wasted (Re-Work): 10,163 Min (~169 Hours)
  - 461 Min/Month (~8 Hours/Month)

Labeling Quality Improvment Data Collection - Total Errors
April 2012 - December 2013   SoftPath

Comparison of Errors
6 Months Prior to SoftPath (February 2013 - July 2013)
and 6 Months After SoftPath (August 2013 - January 2014)

2=Block Grossed 13=Slide Printed
15=Block Cut/Tissue Picked Up
26=Recut Block Pulled 27=Recut Slide Printed

The Interventions

- Process mapping for histology workflow
- Development of a novel Numerical Step Key (NSK)
- Identification of vulnerable steps in workflow
- Design and implementation of solutions
  - Additional patient identifier on block
  - New information system rollout with partial bar coding
  - Coming soon: single piece workflow at the microtome **(iFreeze)**

What should happen next?

- **iFREEZE:**
- **Innovative Framework to Engage and Effect Zero Errors**
  - March 4, 2014 – Roll out of iFREEZE
- Continue to collect data
- Monitor microtome step
- Visual cues and weekly PDSA cycles
- Watch for unintended consequences

iFREEZE DESIGN

Potential Issue	Resolved
Batching	YES
No standardization	YES
Case #s not visible	YES
Block and slide separate	YES

BEFORE

iFREEZE: AFTER

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