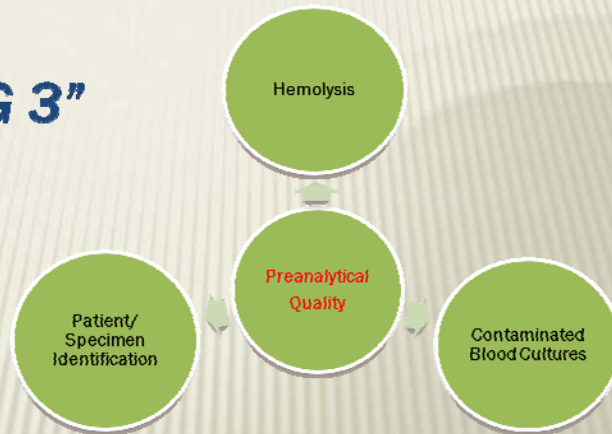


ATTACKING THE PREANALYTICAL

“BIG 3”



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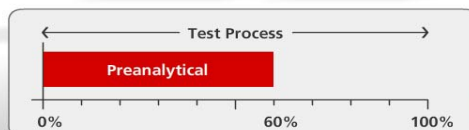
Let's Look at the Facts!

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The Facts

Where do the errors occur?

The Laboratory Test Phase



Preanalytical Errors = 68% of the Total!

- There are many silos containing Preanalytical elements
 - Registration
 - Physician Orders
 - Nursing Orders
 - Nursing Patient Identification or
 - **Laboratory Identification**
 - **Laboratory processing and aliquoting**
- There are more areas that the Lab DOESN'T own than they do own!

How do you assess the cost impact of a PAE?

- > **Redraw costs**
 - Blood Collection supplies, resources etc.
- > **Lab reanalysis costs**
 - Instrument analyzer, reagents, resources, etc.
- > **Lab Instrument downtime due to PAE**
 - Labor, parts, repair time etc.
 - Impact on Lab/Hospital reputation?
- > **Patient treatment costs**
 - Additional stay, additional diagnostic procedures, etc.
- > **Others????**

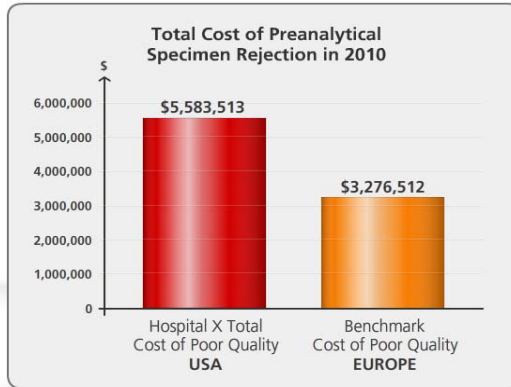


That's only part of the financial picture.



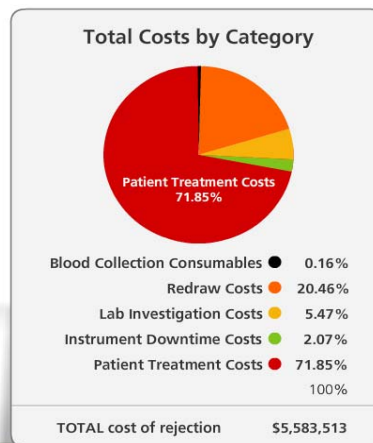
Preliminary Studies in USA

- > Cost of PAE is 70% higher (less favorable) than European institutions in the database
- > Average cost of a PAE is \$349



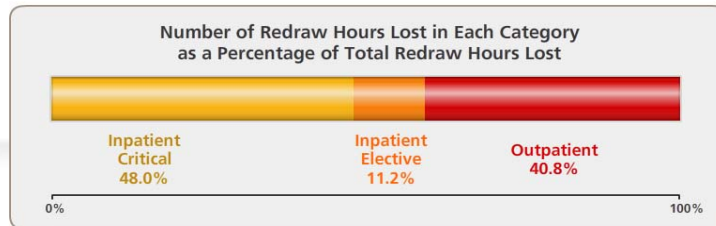
Financial Impact – Cost by Category

- > Patient treatment cost is the largest category of cost at 71.8%
- > Laboratory investigation and redraw costs is 25.9%
- > Collection consumables cost is 0.16%



Hours Lost Due to Sample Redraw – Efficiency Impact

- > 22,275 lost patient treatment and redraw hours
- > An additional 1,983 patients could be treated annually



Review of Benchmarks

Range of COPQ as % of total hospital costs ranges from 0.15 (best in class) to 2.16 (worst in class)

| Hospital Type | Total COPQ (\$M) | % of total oper cost | Cost per PAE | Patient Shortfall | Hours Lost |
|---------------|------------------|----------------------|--------------|-------------------|------------|
| Academic | \$5.60 | 0.57 | \$348 | 1,983 | 22,275 |
| Teaching | \$0.30 | 0.15 | \$166 | 264 | 3,497 |
| Academic | \$4.10 | 0.47 | \$275 | 1,445 | 24,027 |
| Academic | \$0.60 | 0.15 | \$219 | 775 | 5,147 |
| Teaching | \$0.80 | 0.33 | \$340 | 3,043 | 9,138 |
| Teaching | \$4.90 | 2.16 | \$321 | 20,883 | 62,718 |
| Community | \$4.70 | 1.21 | \$219 | 3,769 | 70,475 |
| Community | \$1.18 | 0.31 | \$210 | 966 | 18,022 |
| Average | | 0.67 | \$262 | | |

Cost per PAE ranges from \$166 (best in class) to \$348 (worst in class)

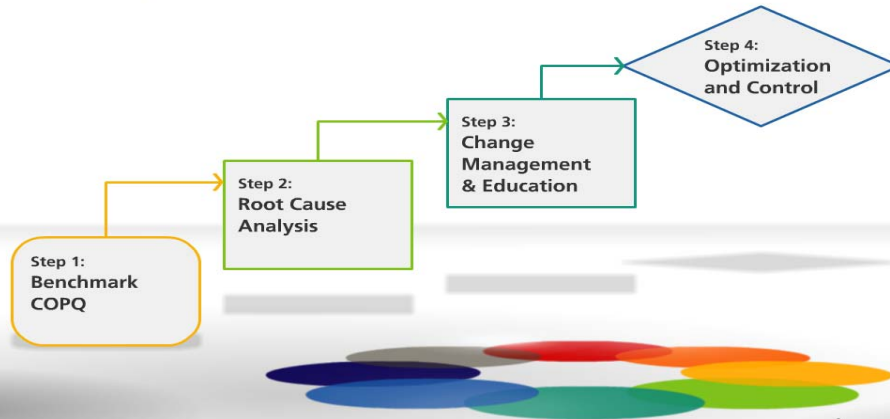
So How Do We Avoid the Errors and their Costs?

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The Solutions

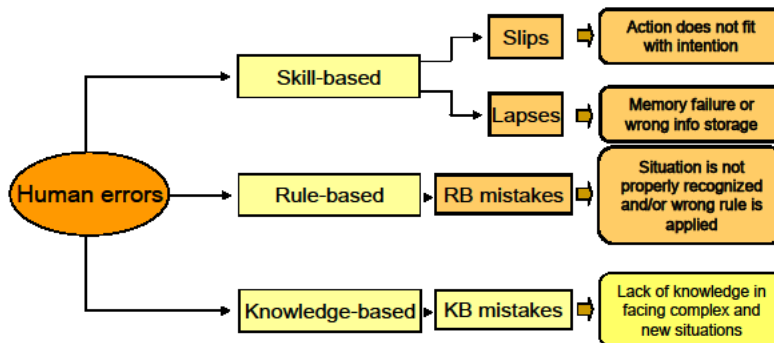
Preanalytical Improvement Methodology

➤ Improving the Preanalytical Process involves four key steps



Human Factors Affecting Errors

Human errors can be defined as the **failure of planned actions to achieve their desired ends, without the intervention of unforeseeable events**



Patient Identification

- Understand How Patients are Identified
 - Standardize identification across all areas and departments
 - Mandate processes and actions for failure to comply
 - Utilize error proofing techniques such as bar codes and bio-metrics
 - Hand-held devices
 - EVERYONE must use the device!

Hemolysis

- Education is the key to success
 - Everyone hears the same story
 - Everyone practices the same technique
 - Outliers are well documented
 - Errors/hemolyzed samples receive 100% follow-up with the care provider *not* the charge nurse!
- Re-education and re-certification sustains the practices

Tips to Prevent HEMOLYSIS

- Drawing Blood from an IV - ONLY to be done at the time of insertion. Use Luer Lock adapter to fill tubes from IV site
- Drawing Blood by Venipuncture - Best way to prevent hemolysis, least amount of trauma to the red blood cells
- Syringe or Butterfly Draw with Syringe – Don't pull the plunger back too far during blood collection (creates enough pressure to cause hemolysis)
 - Don't push the plunger too forcefully when transferring blood.
 - Use Blood Transfer Device
- Alcohol and/or Chloraprep® Drying Time - Allow the cleansed site to dry thoroughly (~30 seconds)

Tips to Prevent HEMOLYSIS

- Tourniquet Time - *Do not leave the tourniquet on for more than 1 minute*
- Order of Draw for Multiple Tube Collections - To prevent cross contamination of anticoagulant or other tube additive
- Volume per Tube - Fill with the *correct blood volume* to ensure the proper ratio of tube additive to blood
- Mixing Tubes - *Gently rotate each tube 6-8 times* (or 3-4 times for coag tubes) as they are removed from the holder and before engaging the next tube. Vigorous mixing or shaking of the tubes may cause hemolysis
- Specimen Transport - *Mechanical trauma during transport* may occur in a pneumatic tube system, resulting in hemolysis. Tubes not filled with enough blood have more air space within the tube for blood to move back and forth during tube transport

Contamination (Blood Cultures)

- Utilizing the Same Products and Procedure for Every Patient
 - You can categorize patients such as pediatric, neonates, difficult sticks, etc. and use appropriate processes for each
 - Standard kits for cleaning
 - Instructions for use of kits
 - Standardized techniques

Success can only be achieved 1 patient at a time

Assessment
(What to do)

Solution
Design/Planning
(How to do it)

Solution
Dev & Implementation
(Help you do it)

Solution
Control & Audit
(Help you sustain it)

Someone ***MUST*** Take
Ownership For this Task!
Why not the ***Lab!***