LAB UTILIZATION AND COST REDUCTION IN THE PEDIATRIC CARDIOVASCULAR INTENSIVE CARE UNIT USING QUALITY IMPROVEMENT (QI) METHODOLOGY

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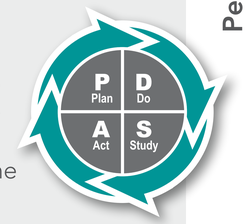
BACKGROUND

Unnecessary laboratory testing in the **Cardiovascular Intensive Care Unit (CVICU)** can lead to iatrogenic anemia, increased central line associated blood stream infection risk, increased healthcare costs and inefficiency for healthcare staff.

We aimed to reduce unnecessary laboratory testing, and therefore cost, using **Quality Improvement Methodology**.

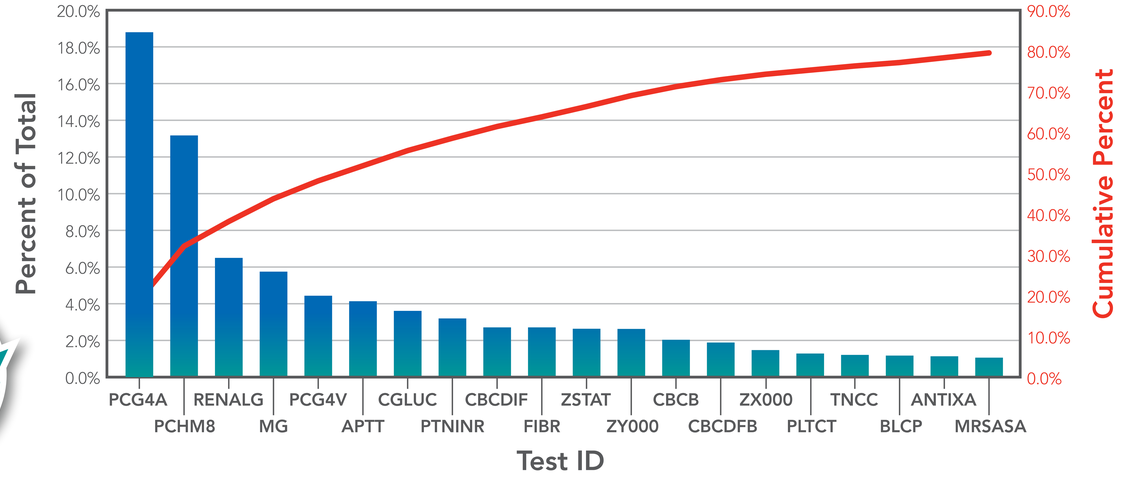
METHODS

A **Key Driver Diagram** and **Failure Modes Effects Analysis** were utilized in project planning and implementation. Multiple **Plan-Do-Study-Act** cycles were done to assess the impact of our interventions.

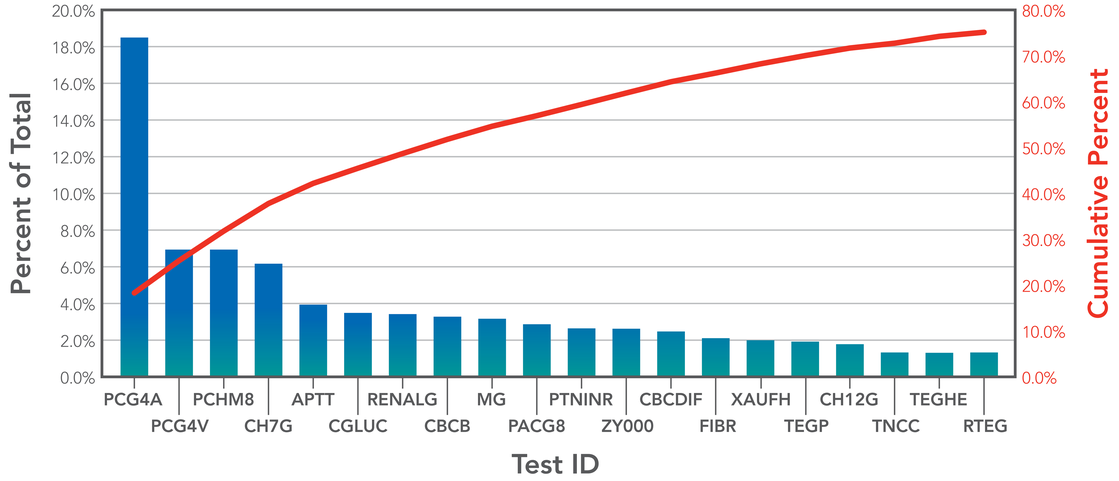


1. Educated CVICU providers (MD/APP/nursing) of cost differences between point of care (POC) blood samples versus blood samples sent to the central laboratory.
2. Developed and implemented a CVICU rounding checklist with a prompt to review lab frequency.
3. Changed the CVICU policy regarding PRN POC blood sampling so that POC labs are obtained only after a discussion with a provider.
4. Changed the standardized post-operative CVICU admission order sets to contain fewer recurring labs.
5. Changed the standardized CVICU electrolyte replacement guideline so that mild and asymptomatic electrolyte abnormalities are not automatically rechecked after replacement.

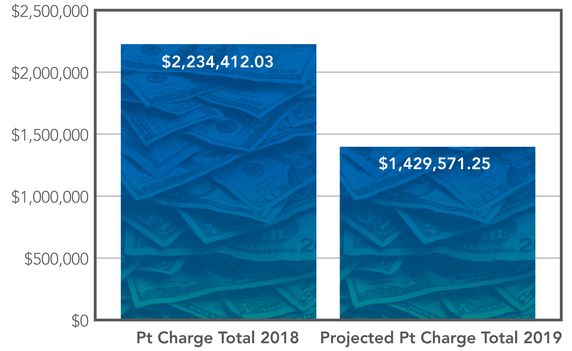
PRE INTERVENTION—Top 20 Test Orders



POST INTERVENTION—Top 20 Test Orders



TOTAL LAB CHARGES Pre/Post Intervention



RESULTS

Mean labs per patient day (PPD) fell by 45%, from 13.6 (95% CI 12.7–14.5) to 7.5 (95% CI 6.4–8.7) labs PPD. This resulted in projected **patient charge reduction of $2.7M** and **hospital cost reduction of $85,923**. There were no increases in balancing measures including mortality, cardiac arrest, reintubation, CVICU readmission or arrhythmia requiring therapy.

CONCLUSIONS

Process optimization about PRN POC laboratory testing can result in a substantial decrease in laboratory testing with a consequent decrease in patient risk, healthcare costs, and inefficiencies without an increase in potential complications.

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