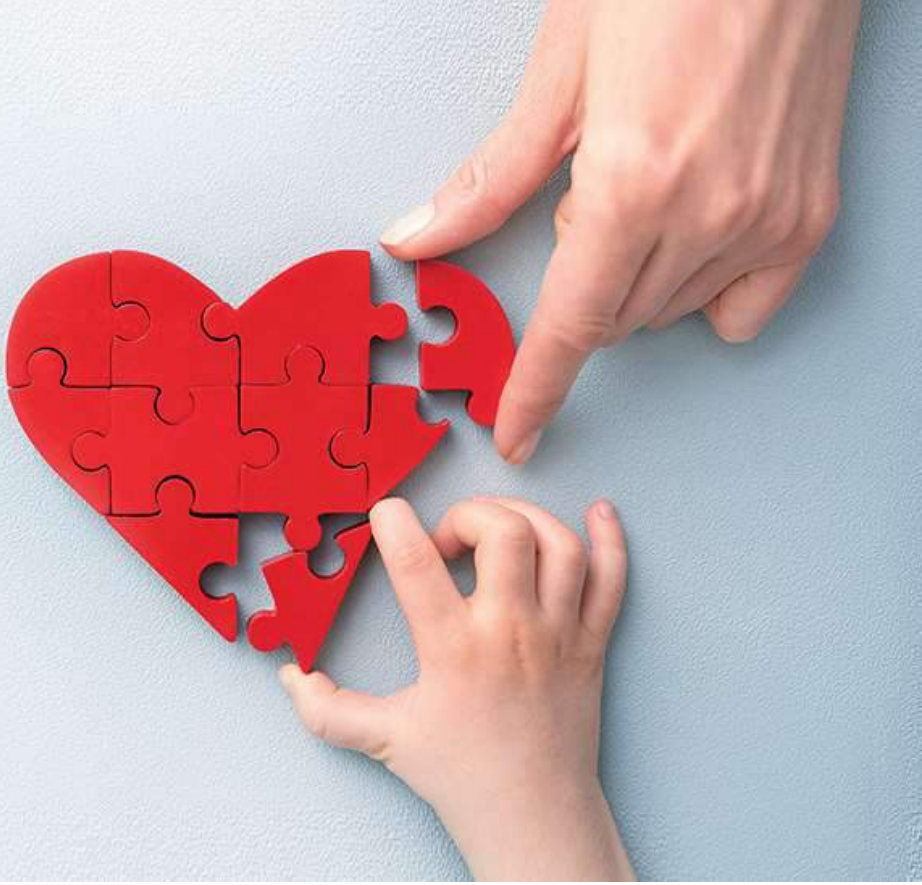
CARDIOLOGY 2024

# QI 2.0 in the Pediatric Cardiac Center: Addressing the Next Level of Challenges



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February 15, 2024

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Cardiac Center

# NO DISCLOSURES

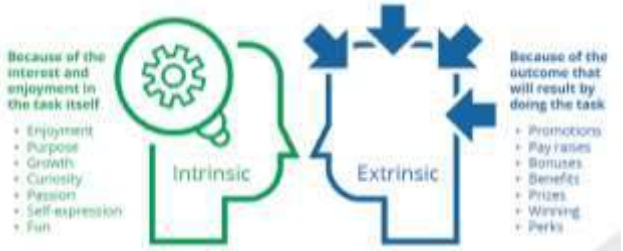
# OBJECTIVES

- Challenges to Quality improvement in a pediatric heart center
- Examples of complex initiatives
- How to move forward

# WHAT DO WE NEED TO IMPROVE PATIENT CARE IN THE ERA OF COMPLEX CARE MODELS?

Minimize silos & optimize collaboration amidst the multiple divisions, sections and disciplines with our heart centers

Understand what motivates us





Learn the scientific foundation to improve quality and reduce harm


Balance competing priorities for our time and effort

Absorb the vision, mission & values of the center

| Mission | Vision | Values |
|---|---|---|
| To advance health for everyone through outstanding education, research, clinical care and social responsibility. | Better health and wellness through transformative innovation. | • Excellence<br>• Integrity<br>• Collaboration<br>• Accountability<br>• Diversity, Equity and Inclusion |

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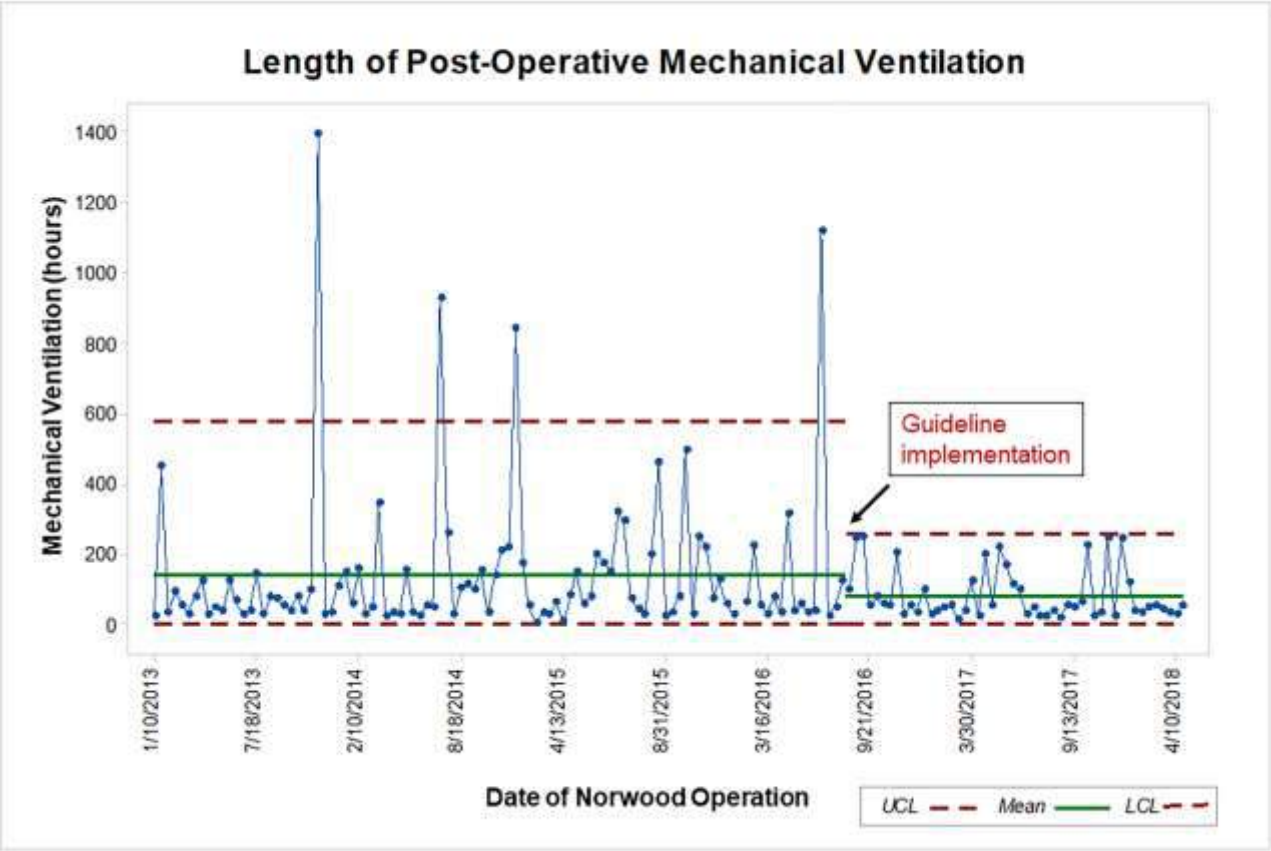
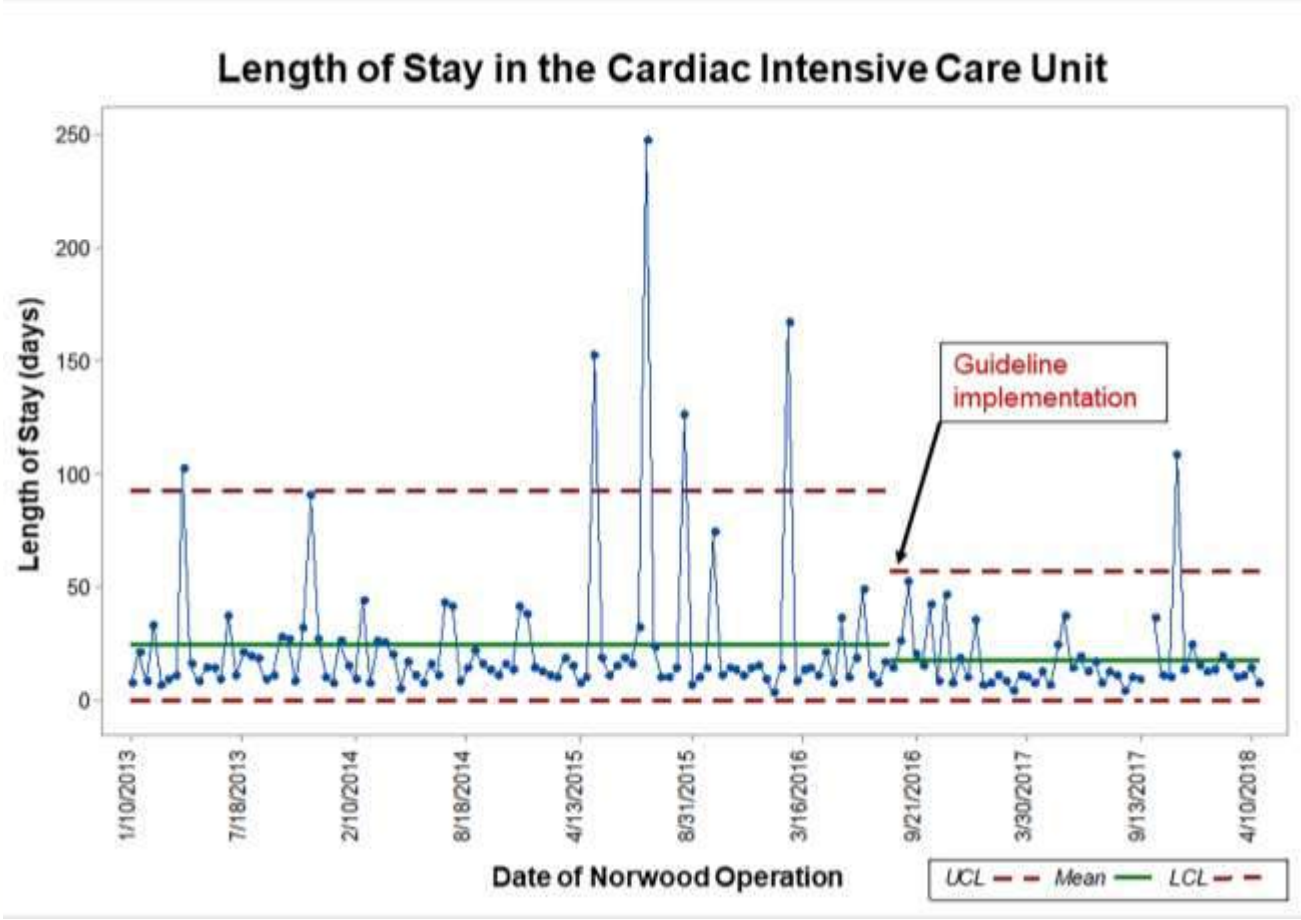
# EXAMPLES OF MULTI-DISCIPLINARY QUALITY IMPROVEMENT INITIATIVES THAT STARTED WITH A PROBLEM TO TACKLE

# PERI-OPERATIVE GUIDELINES FOR NEONATES UNDERGOING NORWOOD OPERATION

- Background: Morbidity and mortality in patients with HLHS during the neonatal hospitalization after the Norwood operation persists. Variation in care is found within and across centers and no best practice model currently exists.
- Aim: to decrease time to extubation and to decrease CICU length of stay within 6 months of implementing a standardized guideline for the peri-operative care of neonates undergoing the Norwood operation.
- Multi-disciplinary team with support from the Office of Clinical Quality Improvement


Length of Post-Operative Mechanical Ventilation
Mechanical Ventilation (hours)
1400
1200
1000
800
600
400
200
0
Guideline implementation
1/10/2013
7/18/2013
2/10/2014
8/18/2014
4/13/2015
8/31/2015
3/16/2016
9/21/2016
3/30/2017
9/13/2017
4/10/2018
Date of Norwood Operation
UCL
Mean
LCL


Length of Stay in the Cardiac Intensive Care Unit
Length of Stay (days)
250
200
150
100
50
0
Guideline implementation
1/10/2013
7/18/2013
2/10/2014
8/18/2014
4/13/2015
8/31/2015
3/16/2016
9/21/2016
3/30/2017
9/13/2017
4/10/2018
Date of Norwood Operation
UCL
Mean
LCL

# SUCCESSES

- We followed QI methodology
- We succeeded in both process and outcome metrics
- The initiative resulted in publication
- We spread to a guideline to include all neonates undergoing cardiac intervention

# SUCCESSES

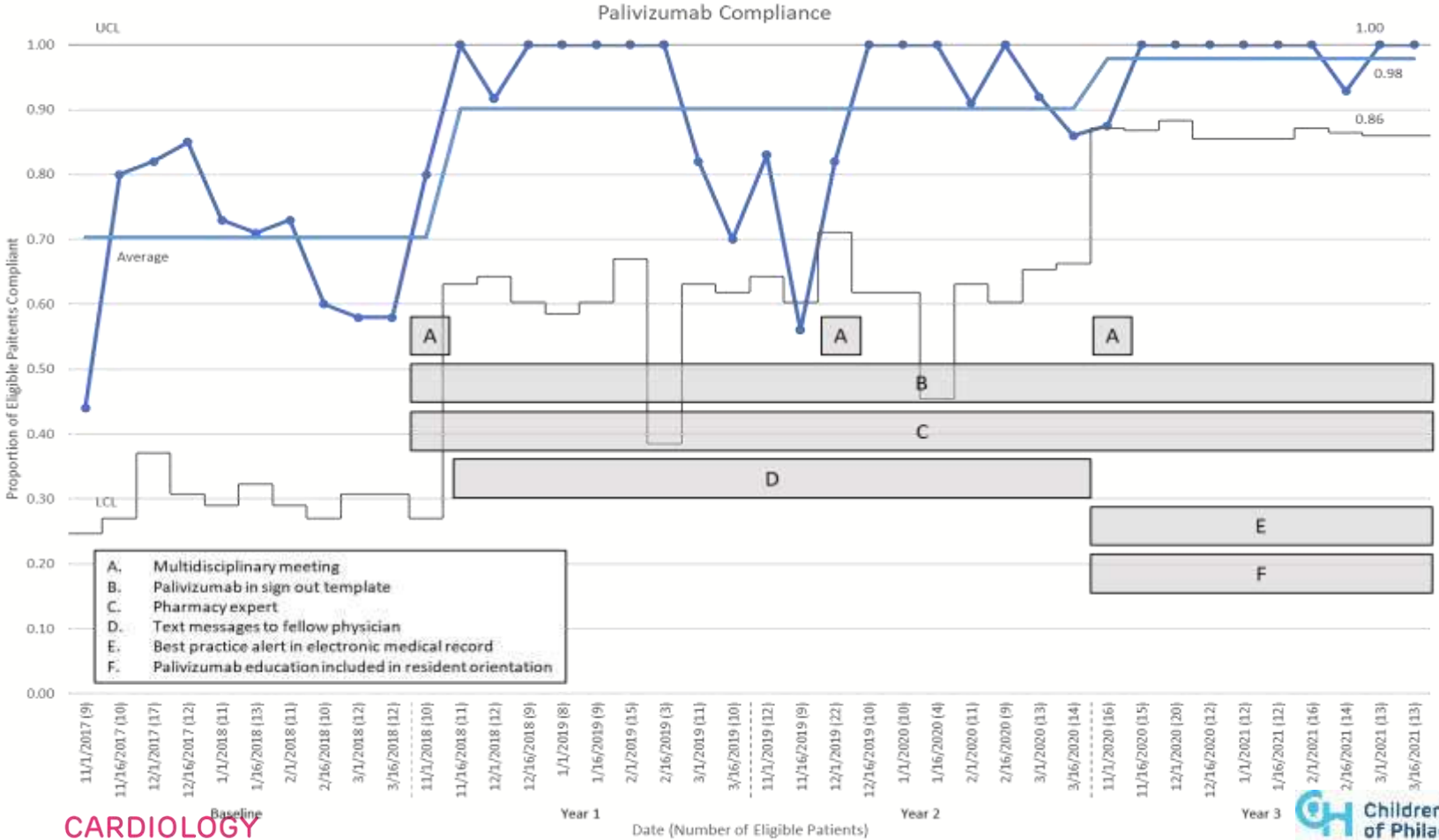
- We started a bi-weekly Neonatal Review in 2018 to discuss all aspects of peri-operative care for each patient in a non-hierarchical way. We engaged providers and staff in team learning and developed action items for important quality and safety issues.
- This review continues to this day

# FUTURE WORK

- There were changes to the the multi-disciplinary teams caring for these patients
- We hope to have the time and resources to revise the guideline to reflect changes in this care model so that improvement can continue

# PALIVIZUMAB COMPLIANCE IN THE CARDIAC CARE UNIT

- Background: Infants and young children with hemodynamically significant congenital heart disease are one of the highest risk groups for morbidity and mortality from respiratory syncytial virus (RSV) infection. Synagis, a monoclonal antibody against RSV, decreases RSV-related hospitalizations in high-risk patients by more than 50%.
- Aim: >95% of patients eligible for Synagis by the CHOP formulary guidelines will receive a dose of prior to discharge from the CCU by March 31, 2021, or have a reason for not giving Synagis documented in the discharge summary.

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# SUCCESSES

- Fellow-led project with a multi-disciplinary project team
- Achieved 100% compliance in year 3 of intervention
- Published this work

# FUTURE WORK

- This project required manual data collection so stopped analysis after year 3
- Once we have appropriate improvement and data support, we hope to spread this work to other units and to the outpatient setting (Synagis is monthly injection given during the respiratory season)

# MULTI-CENTER ECHO INITIATIVE TO REDUCE PRE-OP DIAGNOSTIC DISCREPANCIES

- Background: Echocardiography is the mainstay for diagnosis of congenital heart disease. Pre-operative diagnostic errors can occur, leading to suboptimal post-operative outcomes. Many errors may be preventable. Error rates are variable in single center studies.
- Aim: This multi-center initiative across heart centers around the country aims to decrease preventable diagnostic errors prior to congenital heart surgery that have significant impact on post-operative outcomes by 50% in one year

Benavidez OJ, et al., J Am Soc Echocardiogr. 2014
Stern KW et al., J Am Soc Echocardiogr. 2014
Benavidez OJ et al., Circulation. 2008

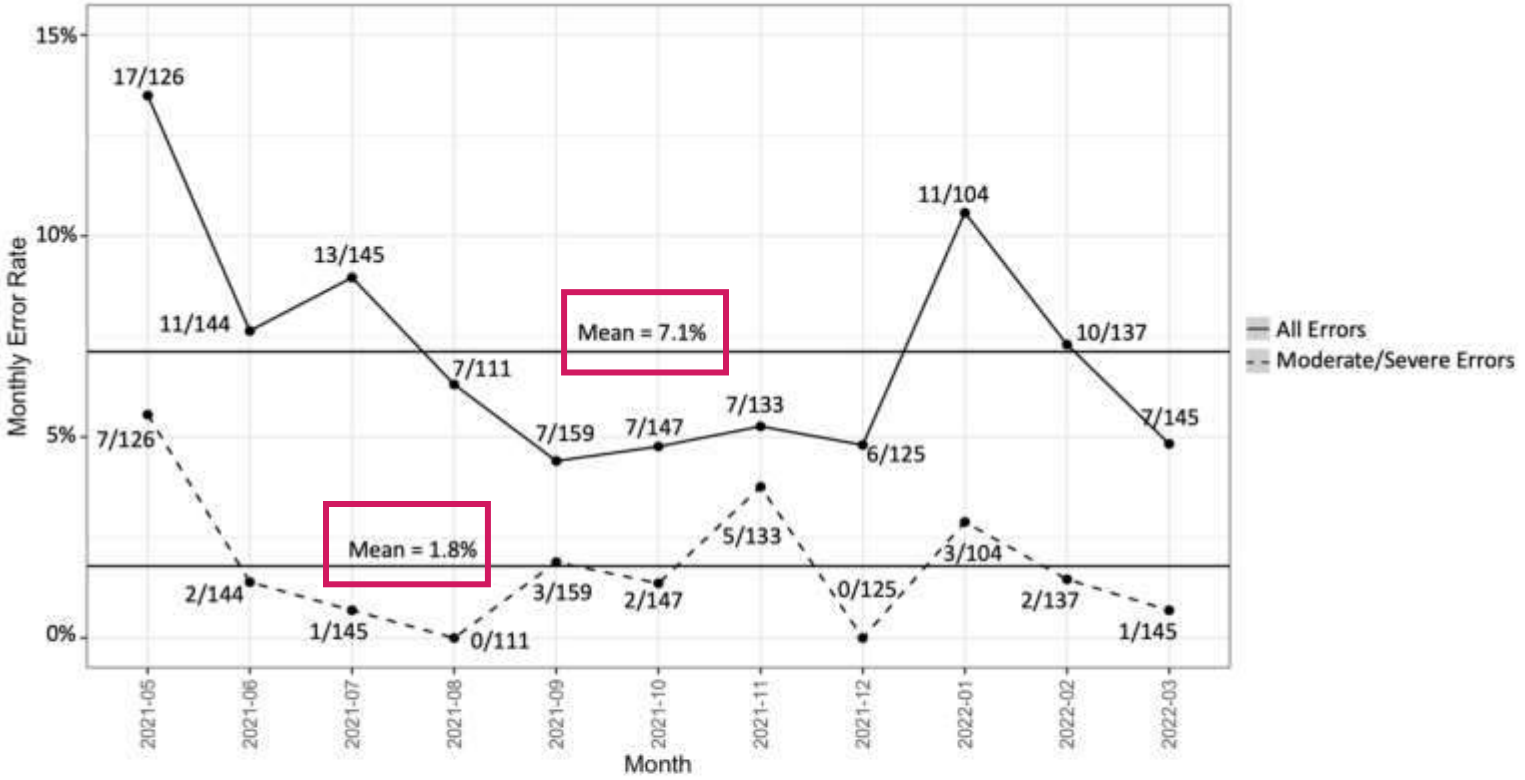



**Figure 1:** Overall pre-operative diagnostic error rate and diagnostic error rate for those errors with moderate or severe clinical impact throughout the study period.

**Table 2**: Summary of contributors to errors by preventability (28 errors had more than one contributor)

| Error Contributor | Overall N = 134 | Error Not Preventable or Unknown N = 31 | Error Preventable or Possibly Preventable N = 103 |
|---|---|---|---|
| Cognitive Errors | 36 (35%) * | 3 (11%) | 33 (43%) |
| Communication Error | 6 (5.8%) | 0 (0%) | 6 (7.9%) |
| Imaging Factors | 38 (37%) | 2 (7.4%) | 36 (47%) |
| Technical Factors | 17 (17%) | 4 (15%) | 13 (17%) |
| Limitation of Imaging Modality | 34 (33%) | 20 (74%) | 14 (18%) |
| Other | 3 (2.9%) | 2 (7.4%) | 1 (1.3%) |

*N is number of errors (%)

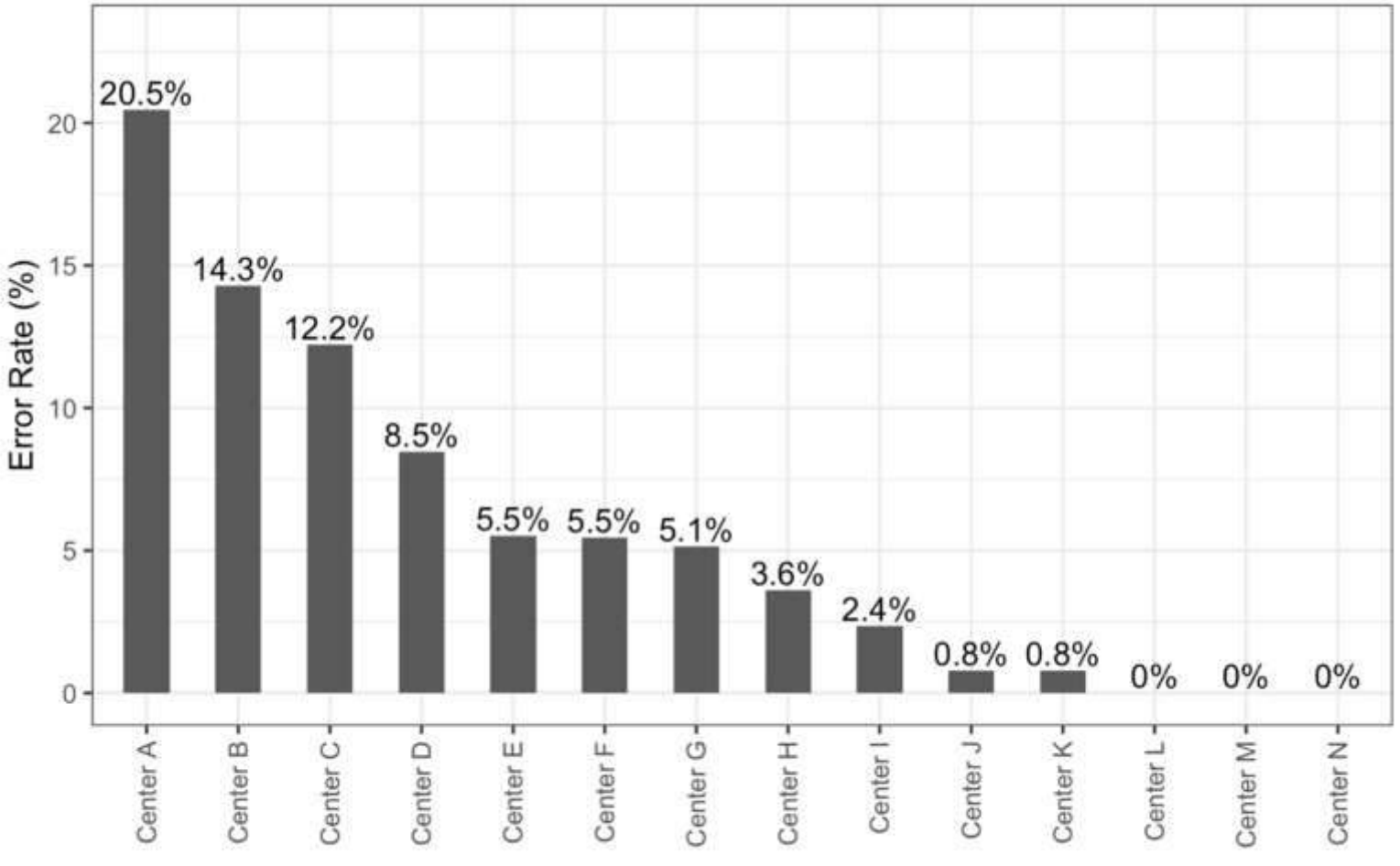



**Figure 4:** Pre-operative diagnostic error rate by participating center.

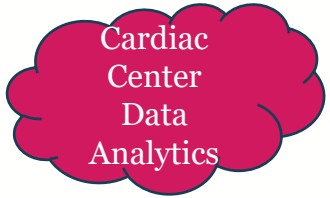
# SUCCESSES

- Under the auspices of the Society of Pediatric Echocardiography, 17 centers are currently participating
- Over 1700 patients have been entered into the database
- Manuscript to analyze baseline data is in preparation

# FUTURE WORK

- We hope to obtain improvement support for the next phase of this initiative
- It will take time for us to implement change ideas at the local level to see outcome improvement
- With the collaborative and transparent spirit of this group, we hope to drive positive change and improve pre-operative diagnostic accuracy across centers
- This work is part of a larger initiative to improve post-operative outcomes for these patients by decreasing important residual lesions, adverse events and length of stay in the intensive care unit

# FUTURE STRUCTURE IN THE CHOP CARDIAC CENTER




## Center for Healthcare Quality & Analytics

Senior IA + ½-1 FTE

- Drive RFP process and prioritization
- Focus on short and medium-term projects
- Give consultations
- Provide data and analytics

## Cardiac Center IA and Data Analyst

- Focus on medium- to long-term initiatives both from the front-line of care and from leadership / strategic plan

## Cardiac Center Clinical Quality & Operations Specialist

- Oversee QI program development, & education
- Direct project work in the sustain and spread phases
- Manage the morbidity, mortality and improvement conference, Neonatal Review, safety work

# 8 STEPS FOR LEADING A CULTURE OF CHANGE

**Implementing & sustaining for change**

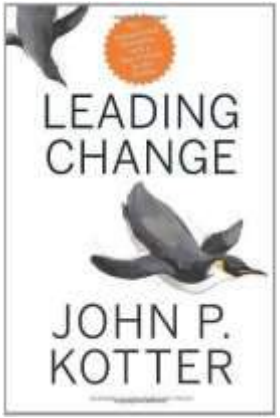
8. Make it stick
7. Build on the change

**Engaging & enabling the organisation**

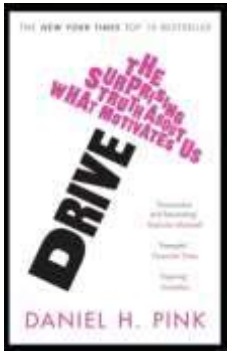
6. Create quick wins
5. Empower action
4. Communicate the vision

**Creating the climate for change**

3. Create a vision for change
2. Form a powerful coalition
1. Create urgency



# WHAT MOTIVATES US?

# SUMMARY

- There are many challenges to attaining sustained, high-quality care in a pediatric heart center in this era.
- Complex, multi-disciplinary initiatives are successful but continue to need resources for sustaining and spreading improvement
- The proper infrastructure is important to moving forward with optimizing care and reducing harm
- Leadership to evoke a culture of change in stages remembering that intrinsic motivation is what gives us purpose are key to investing in making care better for our patients, families and ourselves

# THANK YOU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