

Fillion, Sandy RN, PI Coordinator; Collins, Diane RN; Performance Improvement Administrator;

Agarwal, Ritu MBBS, MS; Data Analyst III; Curtis, Jephtha MD; Yale Cardiology; Desai, Nihar MD, Yale School of Medicine; Elizabeth Peters RN, Senior Clinical Data Specialist; Arnar Geirsson MD, Yale School of Medicine; Tantawy, Hossam MD, Medical Director YNH CTICU; Keith Churchwell, MD; Senior VP HVC and Transplant Services, Yale New Haven Health- Sponsor; Francine LoRusso RN, Vice-President, Yale New Haven Health – Sponsor

Aim

To improve STS star rating performance metrics in coronary artery bypass graft (CABG) and cardiac valvular surgical populations.

Methods

Yale New Haven Hospital (YNHH) Heart and Vascular Center (HVC) participate in Society for Thoracic Surgery Registry (STS). See Figure 1.

Figure 1

The participant rating system assigns participants to rating categories designated by one, two, or three stars. The rating categories are defined as follows:

- ★★★ → Participant performance is significantly higher than STS mean.
- ★★ → Participant performance is not statistically different from STS mean.
- ★ → Participant performance is significantly lower than STS mean.

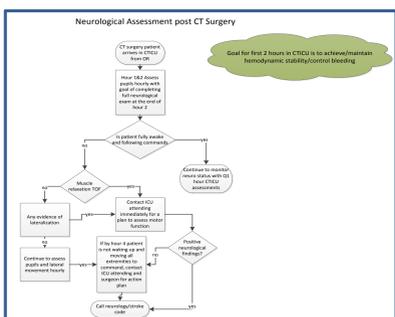
Performance metrics include medications; complications such as stroke, sternal wound infection, prolonged ventilation time, acute kidney injury; absence of morbidity and mortality; and readmissions.

Concurrently we are working to improve all performance while highlighting several initiatives that impacted 2018 Harvest 1 Star rating for YNH.

Through Plan-Do-Study-Act (PDSA), facilitated sessions and Priority Matrix methodology Implemented the following critical strategies for CABG and valvular surgical population targeting at risk areas:

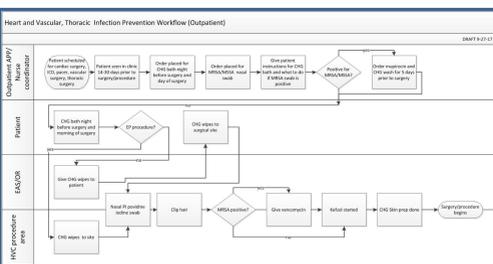
- Standardized order sets: beta blockers, anti-platelets, statins
- Employed a *Neurology Assessment Post Cardiothoracic Surgery* process map (Figure 2)

Figure 2



- Infection prevention bundle to reduce deep sternal wound infections (Figure 3)

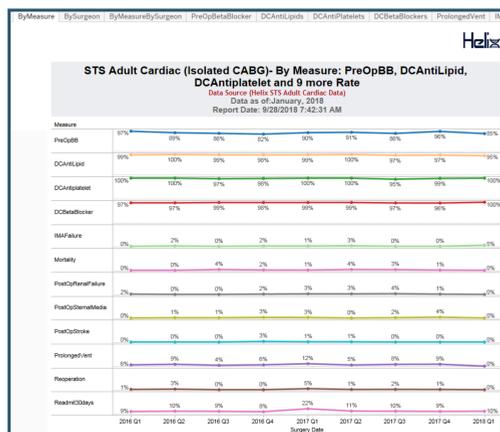
Figure 3



Methods (Continued)

Tracking and trending performance occurs through STS and YNH internal cardiac surgery reports. YNH internal reports (see example in Figure 4) are harvested through the patient's electronic health record. YNH data analysts and collaborate and crosscheck monthly data pulls for accuracy.

Figure 4



Results

HVC at YNH is proud to present the following results (Figure 5):

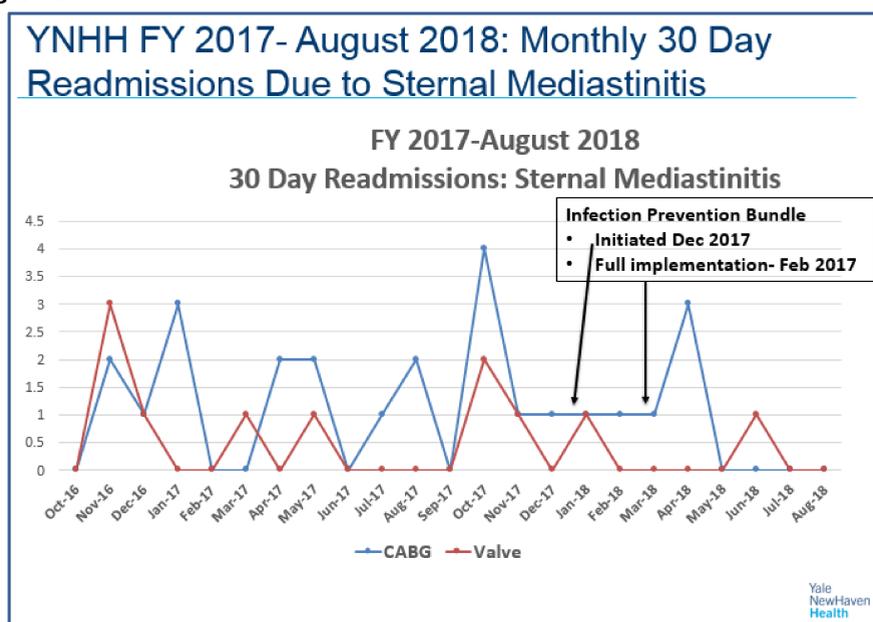
- Calendar year (CY) 2017, YNH performed:
 - CABG-2 star rating; 89.21% of all STS participants
 - AVR – 3 star rating; 4.68% of all STS participants
 - MVRR- 3 star rating; 10.71% of all STS participants
 - CABG/AVR- 3 star rating; 4.51% of all STS participants
 - CABG/MVRR- 3 star rating; 5.48% of all STS participants
- Compared to CY 2016 STS Harvest 1 report, YNH sustained or improved in elements of the star metrics.

Figure 5

STS 2018 Harvest 1 Report (Jan. 2017-Dec. 2017)					Number of participants
Total STS Participants= 1012					
Participant Performance CABG vs. AVR +CABG vs. AVR vs. MVRR + CABG vs. MVRR					
Overall Composite Score:					
★★★	★★★	★★★	★★★	★★★	2
★★	★★	★★	★★	★★	149
★	★	★	★	★	0

- CY 2017 performance improvement in metrics: Medications & stroke complication- No different or better than STS mean
- Infection prevention bundle implementation (Feb. 2018)- results are not reflected in 2018 Harvest 1 STS report
 - Mean monthly rate of deep sternal wound infection through YNH internal reports (Figure 6):
 - CABG- Pre-bundle implementation (CY 2017) 0.63, post- implementation (Feb 2018- Aug 2018) 1.3
 - Valvular surgeries- Pre-bundle implementation (CY 2017) 0.42; post bundle implementation (Feb 2018- Aug 2018) 0.13

Figure 6



Discussion

- With a focus on changing the culture of quality and safety in our Heart and Vascular Center, an interdisciplinary team of physician and nursing leadership, MDs, Advanced Practice Providers, pharmacists, data analysts, nurse coordinators and nursing educators including performance improvement coordinators meet monthly to focus on performance improvement in the cardiac surgery population
- Performance outcomes have been attributed to a heightened awareness, strategic targeted approaches and data transparency
- Despite success with the outcomes we identified. Sustainability of these initiatives has been an ongoing challenge.
- Future YNH targeted initiatives to sustain and improve star ratings include reducing prolonged ventilation and acute kidney injuries
- Staff utilized High Reliability Organization (HRO) behaviors to minimize harm in the CABG and valvular population

Implications for Yale New Haven Health

- STS Star performance outcomes are shared with the YNH Heart and Vascular Center and across delivery networks within Yale New Haven Health.
- Replication of performance outcomes at other health systems can occur with a dedicated interdisciplinary team, process solutions, and transparency through use of internal and external data.

Reference

Data Analyses of the Society of Thoracic Surgeons National Adult Cardiac Surgery Database; 2018 Harvest 1 Report

Acknowledgements

We want to recognize contributors from the YNH HVC STS Committee including:

- YNHH HVC Performance Improvement Team
- YNHH CTICU nursing leadership
- YNHH CICU nursing leadership
- YNHH HVC nursing coordinators
- Yale Cardiology
- Yale Cardiac Surgeons
- YNHH pharmacists
- YNH data analysts