Operational Transformation

Spring 5-21-2024

Creating Capacity to Accommodate Additional Cardiac Catheterization Procedures

Kristin Anthony

Project: MCPH- Creating Capacity to Accommodate Additional Cardiac Catheterization Procedures
Last Updated: 11-14-2023

Executive Sponsor: Kristin Anthony
Facilitator: Kristin Anthony

OpEx Operational Transformation

Team Members: Leadership from Surgical Services, Ambulatory Care Unit & Cardiology Medical Office. Staff RN's & ancillary staff involved in the preparation & recovery of patient in the ACU. Cath lab nursing staff & leadership. Others: Cardiologists, facilities and quality team members as needed.

Plan

Problem/Impact Statement:

Patient access to diagnostic outpatient (OP) cardiac catheterization is limited by a perceived lack of capacity. OP cardiac cath pts flow through the ACU for pre/post procedure care. Current schedule limits pts that may be scheduled through the ACU to two OP procedures/day. Cardiologists request the ability to schedule beyond the two procedures/day allowed. Significant variation in pre/postoperative care orders exist amongst cardiologists resulting in variability in length of stay. Cardiac procedures are booked either as 60/90/120 minutes – Epic case averaging technology is not active in the cath lab. As a result, the case minutes in the cath lab does not reflect actual provider and case averages. Additional unrealized capacity currently exists. Procedures are financially positive to the bottom line.

Scope:

Outpatient scheduled diagnostic cardiac catheterizations.

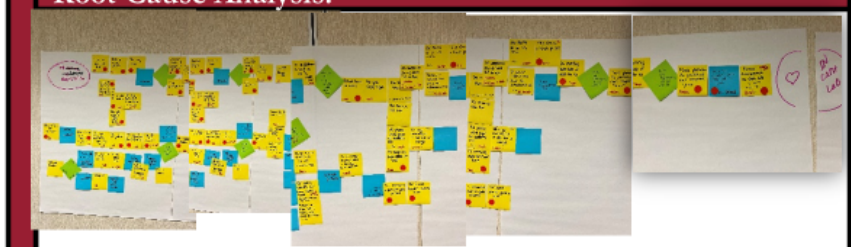
Baseline Metrics/Current State:

- Baseline to date cardiac cath block utilization of lab is 48%. Monthly range YTD 40-67%
- FY2023 cardiac catheterization volume -565 cases (47 procedures per month).
- FY2024 cardiac catheterization budget 68 cases per month
- Current utilization of ACU beds (2 per day) is variable from 50-80% daily.
- Baseline average post procedure LOS = 296 minutes
- Revenue per procedure $14,907

Goal/Objective:

- Implement standardized provider outpatient pre/postoperative cardiac cath order sets by 11-30-23.
- Reduce post procedural length of stay of outpatient cardiac cath patients by 10% by 12-31-2023.
- Identify opportunities within the current cath lab schedule to add additional capacity by 1-30-2024.
- Support organization to provide capacity to accept additional cases within the region.

Root Cause Analysis:



Do

Countermeasures

- Analyze current Post Cardiac Catheterization orders for radial and femoral access from local health system and other providers of like care within Maine Health by October 15, 2023
- Complete value stream map of patient outpatient arrival to discharge. Identify waste in process and other opportunities for improvement.
- Complete data analysis including length of stay by provider, and procedure – Create Pivot table.
- Analyze current Cath lab scheduling process including any perceived barriers to scheduling, utilization of pre and post operative beds in the ACU, scheduling rules created, current length of procedure (booked) versus EPIC averaging.

Study

Outcomes

(Comparison to baseline: run charts, control charts, voice of customer, and/or process maps)

- Standardized Order sets implemented – November 21, 2023
- Length of Stay reduction in procedure to discharge time 227 minutes
- Worked collectively with Mid Coast Cardiology, Diagnostic Imaging leadership to launch "Cath Lab Utilization" work group.
- February, 2024, CV service line began tracking/sharing time to next avail dx cath opening. Providers now know availability at Mid Coast lab when ordering diagnostic caths.
- Cardiac utilization is audited and reported weekly on 100% of cases.
- Quarter to date cardiac cath block utilization 62%
- Current cardiac cath volume increased month over month
- Average post procedure LOS=227 mins 23.3% decrease

Act

Next Steps

(Plans to standardize, sustain, spread)

Continue to work with Cath lab leadership and the Cardiac Service line to increase volume, and utilization. This includes continued daily analysis of the scheduling, staffing and schedule to sustain and improve. Ownership of the project will be transitioned to Director of Diagnostic Imaging at Mid Coast Hospital in conjunction with Mid Coast Cardiology team.

Problem/Impact Statement

Patient access to diagnostic outpatient (OP) cardiac catheterization is limited by a perceived lack of capacity. Outpatient cardiac cath pts flow through the ACU for pre/post procedure care. Current schedule limits pts that may be scheduled through the ACU to two OP procedures/day. Cardiologists request the ability to schedule beyond the two procedures/day allowed. Significant variation in pre/postoperative care orders exist amongst cardiologists resulting in variability in length of stay. Cardiac procedures are booked either as 60/90/120 minutes – Epic case averaging technology is not active in the cath lab. As a result, the case minutes in the cath lab does not reflect actual provider and case averages. Additional unrealized capacity currently exists. Procedures are financially positive to the bottom line.

Scope

Outpatient scheduled diagnostic cardiac catheterizations.

Baseline Metrics/Current State

- Baseline to date cardiac catheterization block utilization of lab is 48%.
  Monthly range YTD 40-67%
- FY2023 cardiac catheterization volume – 565 cases (47 procedures per month)
- FY2024 cardiac catheterization budget – 816 (68 cases per month)
- Current utilization of ACU beds (2 per day) is variable from 50-80% daily
- Baseline average post procedure LOS = 296 minutes
- Revenue per procedure $14,907

Goal/Objective

- Implement standardized provider outpatient pre/postoperative cardiac catheterization order sets by 11-30-23.
- Reduce post procedural length of stay of outpatient cardiac catheterization patients by 10% by 12-31-23.
- Identify opportunities within the current cath lab schedule to add additional capacity by 1-30-2024.
- Support organization to provide capacity to accept additional cases within the region

Root Cause Analysis

Value Stream Mapping

Gemba

Analysis of Order Set Opportunities

Post Cardiac Catheterization Analysis Report

Conclusion

There is a lack of cohesion in the care requirements between the MCH Post Cath Radial Access orders, and the MCH policy and clinical resources. ACU nurses report notable differences in IVF fluid requirements among providers. Clear post procedure nursing instructions that are readily available and reflected in an up-to-date policy as well as a standard of practice in post catheterization IV hydration would reduce some of the barriers to the timely discharge of cardiac catheterization patients who qualify for same day discharge. Improving the standard of care would provide a "blank slate" from which continuing barriers (e.g., development of bleeding or hematoma) could be more easily recognized and corrected.

Recommendations

1) Determine whether removal of radial band should be initiated 45-minutes after device is applied **OR** 45-minutes post procedure (after the patient has returned from cath lab).
2) Update MCH Cardiac Angiography Patient Care Policy and Flow Chart for removal of radial band to accurately depict current guidelines.
3) Improve the release compression device order by including the steps of removal and guideline for how to address bleeding in a similar fashion to the order used by SMHC.
4) Standardize and update IV fluids order to reflect shorter discharge time in patients who only have radial access.
5) Create online survey for nurses who are trained to care for catheterization patients to obtain formal qualitative data on barriers to care and additional recommendations.

Additional Considerations

If bleeding and hematoma continue to be a barrier after initiation of band removal at the 45-minute mark despite implementing the above recommendations, consider assessing potential differences in permissible bleeding, time of transport, and intra-procedure heparin use between MMC, MCH and SMHC.

Countermeasures

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- Complete value stream map of patient outpatient arrival to discharge. Identify waste in process and other opportunities for improvement.
- Complete data analysis including length of stay by provider, and procedure – create pivot table.
- Analyze current Cath Lab scheduling process including any perceived barriers to scheduling, utilization of pre and post operative beds in the ACU, scheduling rules created, current length of procedure (booked) versus EPIC averaging.

Outcomes

- Standardized order sets implemented – November 21, 2023
- Length of Stay reduction in procedure to discharge time 227 minutes – 23.3% decrease.
- Worked collectively with Mid Coast Cardiology, Diagnostic Imaging leadership to launch "Cath Lab Utilization" workgroup.
- February, 2024, CV serve line began tracking/sharing time to next available diagnostic cath opening. Providers now know availability in Mid Coast Lab when ordering diagnostic caths.
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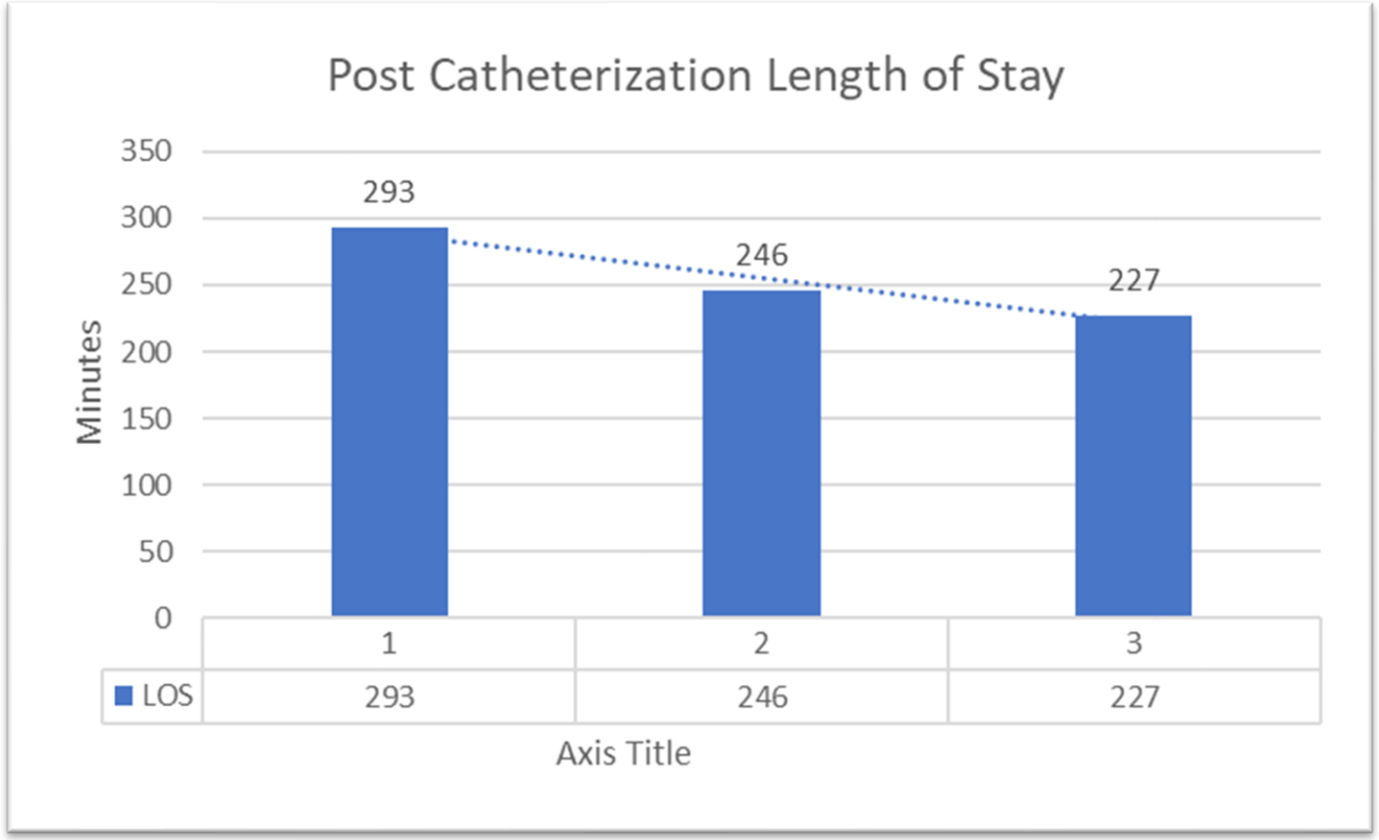
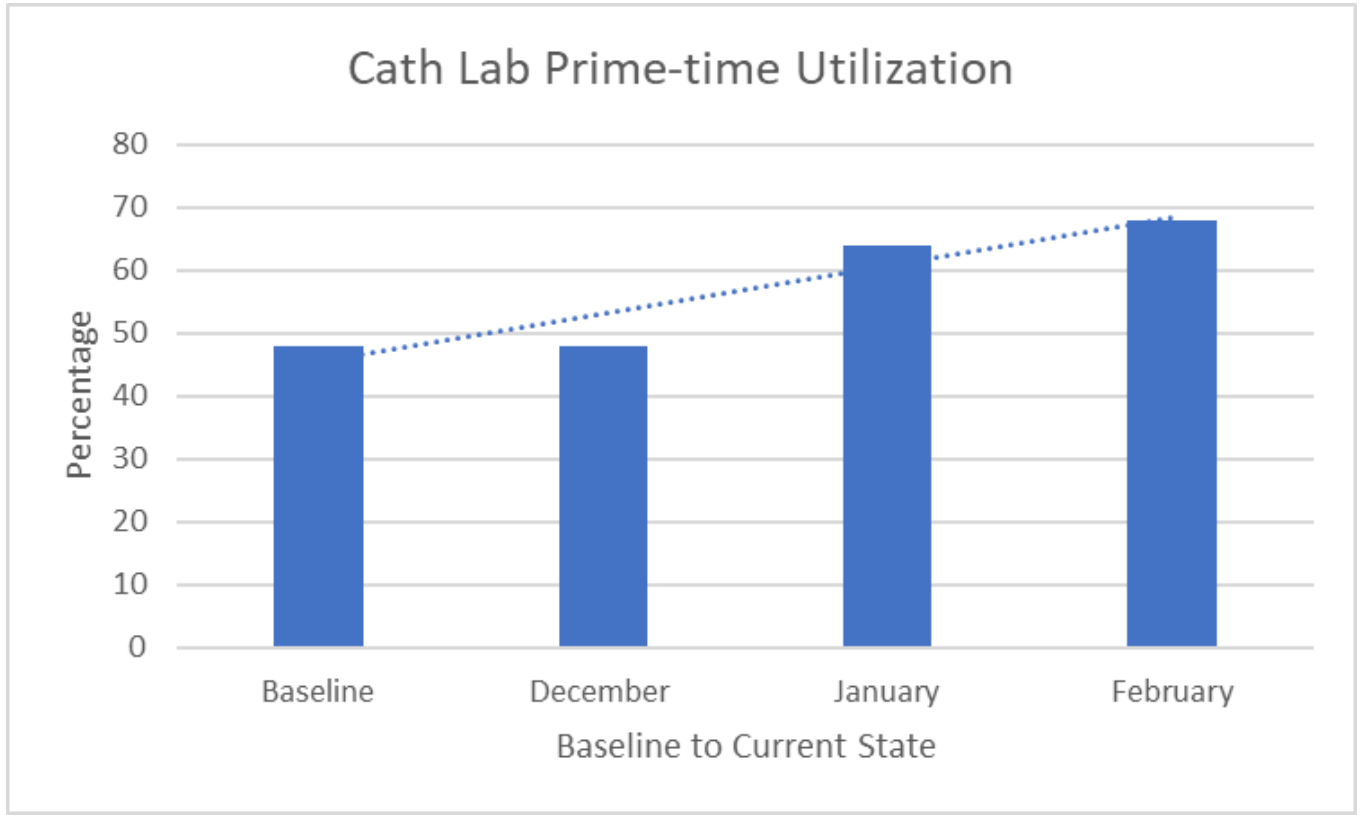
Length of Stay

- Decrease from 293 to 227 minutes

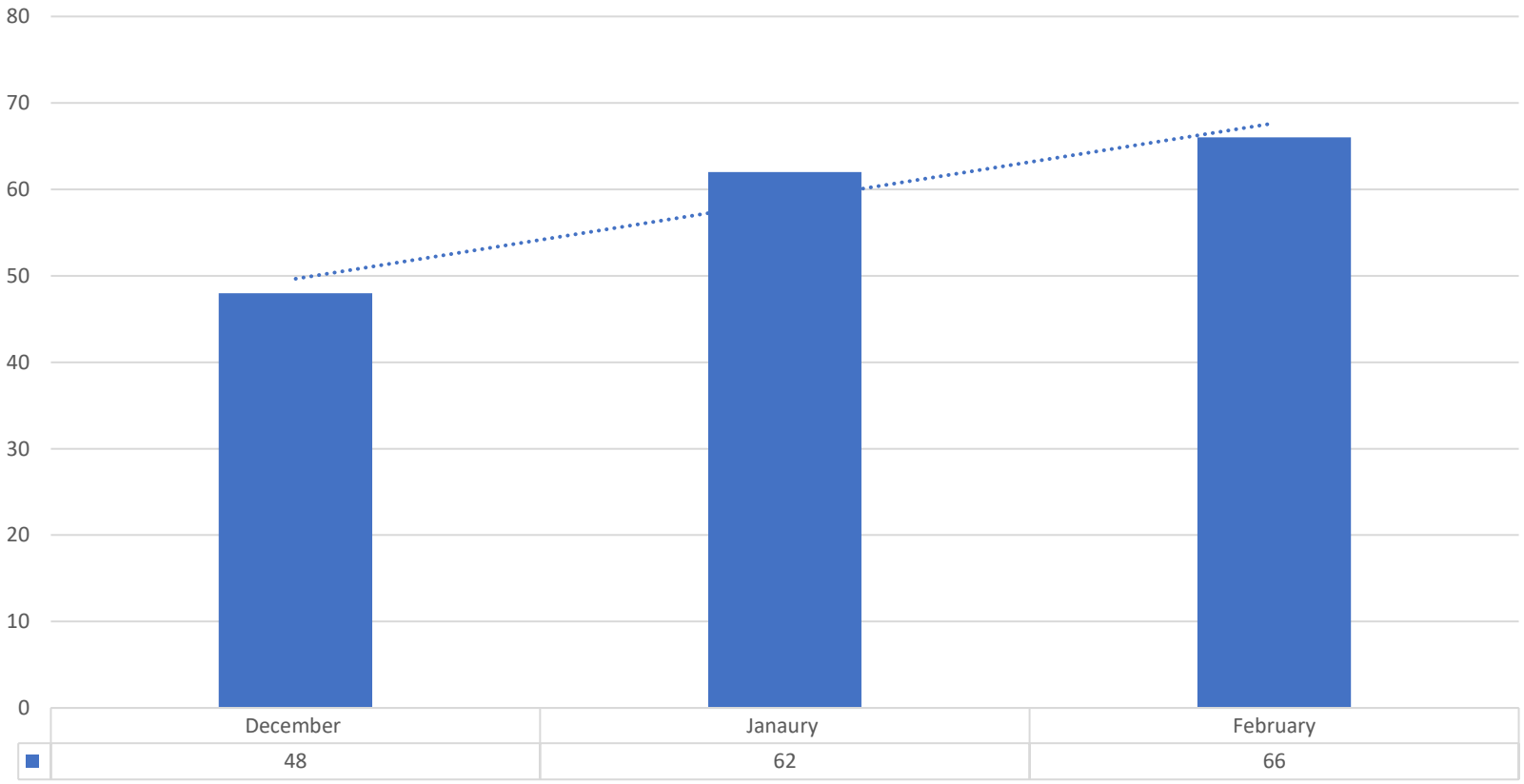


Utilization

- Increase in Prime time utilization from baseline



Volume



Next Steps

- Continue to work with Diagnostic Imaging Cath lab leadership and the Cardiac Service Line to increase volume and utilization. This includes continued daily analysis of the scheduling, staffing and schedule to sustain and improve.
- Ownership of the project will be transitioned to the Diagnostic Imaging Director at Mid Coast Hospital in conjunction with Mid Coast Cardiology team.