

Greenbelt Project: Reducing Central Line Utilization

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Timeline

August 2022 – April 2023

Project Overview

- Define
- Measure
- Analyze
- Improve
- Control

Goals

- Decrease SUR to <1 on 1,2,3 East
- Reduce indication of “inadequate peripheral access” by 10%

In Scope:

Inpatients with central lines

Central line utilization

PICCs

Scope Exclusions:

ICU

Step Down Units

Line Maintenance

Insertion Practices

HD lines

Mediport

Define

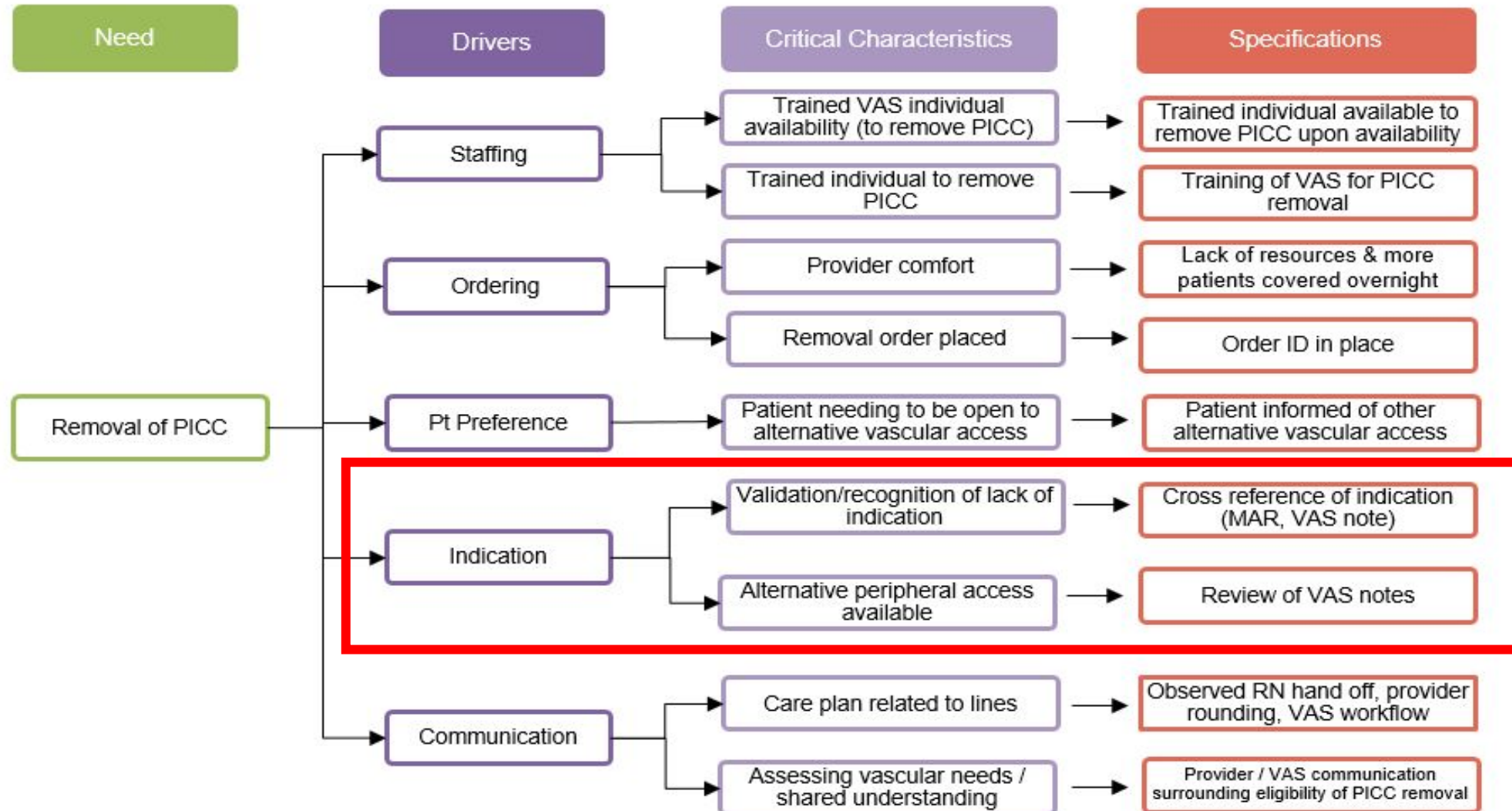
SIPOC

Supplier	Input	Process	Output	Customer
• Provider • Patient • Nursing	• Lumens • Indication	Central Line Ordered	• Number of Lumens • Order w/ appropriate indication	• Patient • VAS • Provider (primary or consulting)
• VAS • Patient • Provider (primary or consulting)	• Number of Lumens • Order w/ appropriate indication	Central Line Verification (Appropriateness)	• VAS • Confirmed Order	• VAS • Patient
• VAS • Patient • Radiology tech	• Number of Lumens • Order w/ appropriate indication	Central Line Placed	• Radiologic confirmation • Inserted Central line • eDH note / LDA	• VAS • Nursing • Patient • Primary provider
• Nursing • Patient • Provider (primary)	• Observation • Report	Central Line Daily Need Assessment	• Appropriate CL indications	• Nursing • Patient
• VAS • Patient • Provider • Nursing	• Removal order • Access obtained • Indication no longer needed	Central Line Removed	• Site care directions provided • CL removed	• Patient

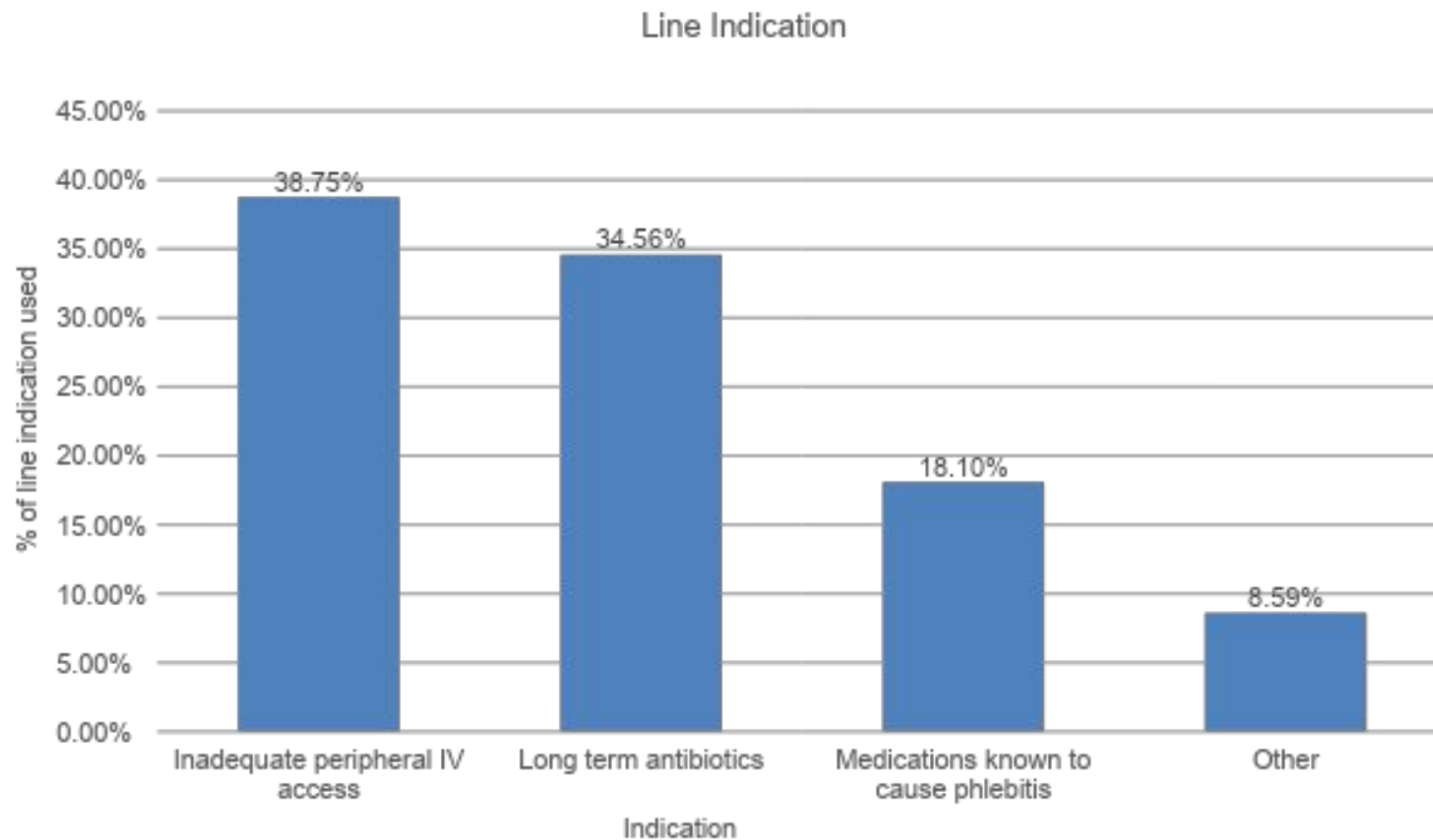
Voice of the Customer Data:

Staffing	Communication	Indication	Ordering
IV Team Constraints	Transitioning of care teams	No clear indication of line ★	Lack of PICC DC order
PICC Room availability	Lack of communication ★	VAS refusal of removal of line	Comfort of placing order during PM hours
	Unclear discharge disposition	Hesitancy / fear regarding removal	Time between order and PICC removal

CTx Tree: Reducing Central Line Utilization

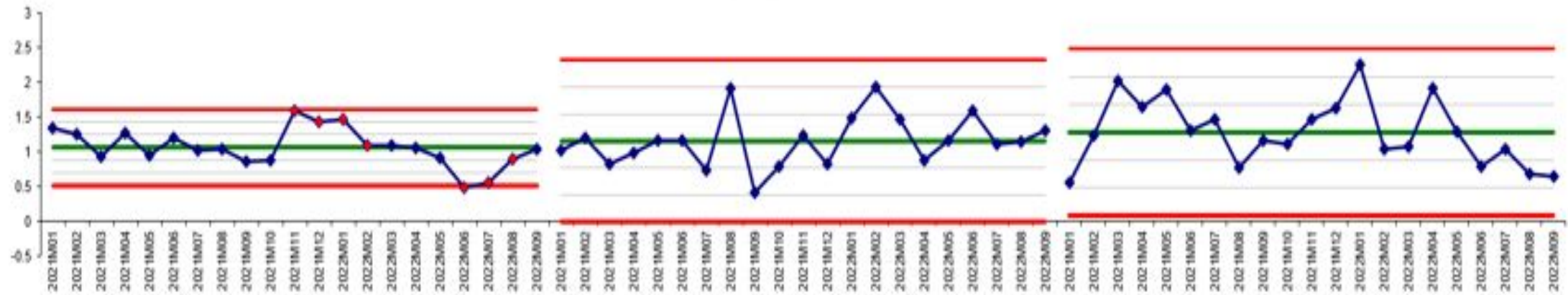


Measure



SUR by Month

Individuals Chart



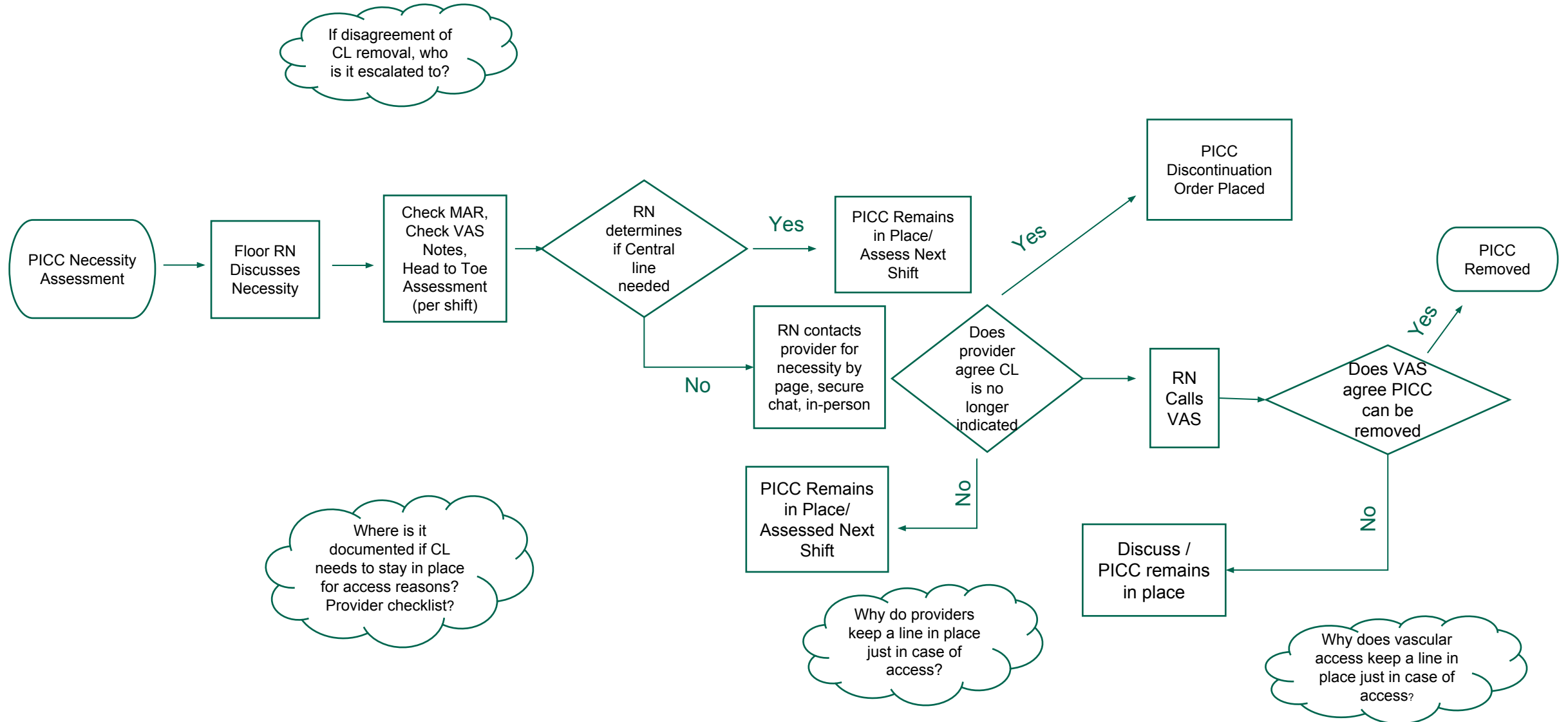
1 East

2 East

3 East

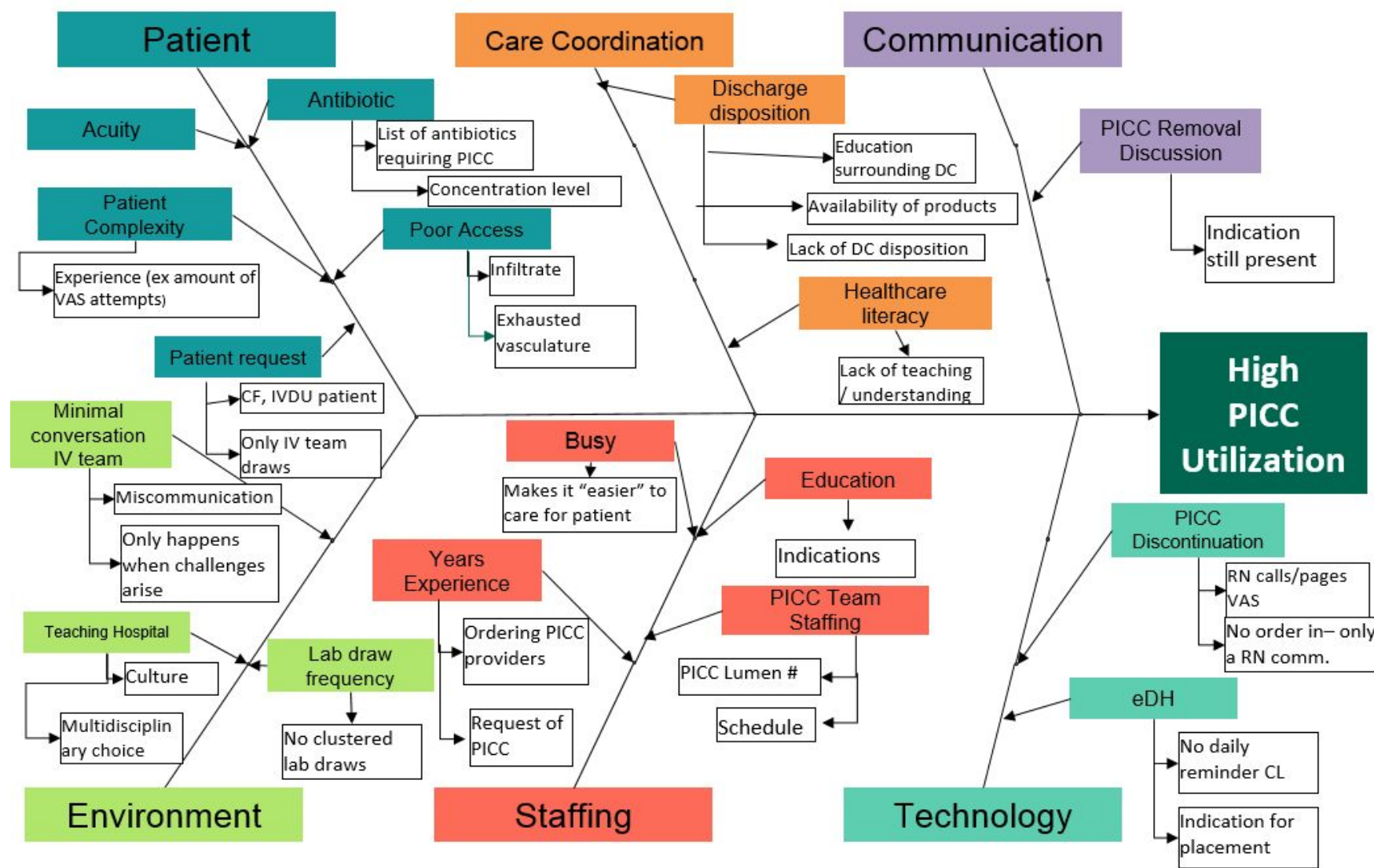
2 & 3 East SUR have remained in control over the past two years, while 1 East has had some special cause variation. The goal SUR is: <1

Reducing Central Line Utilization Flowchart



Analyze

Fishbone



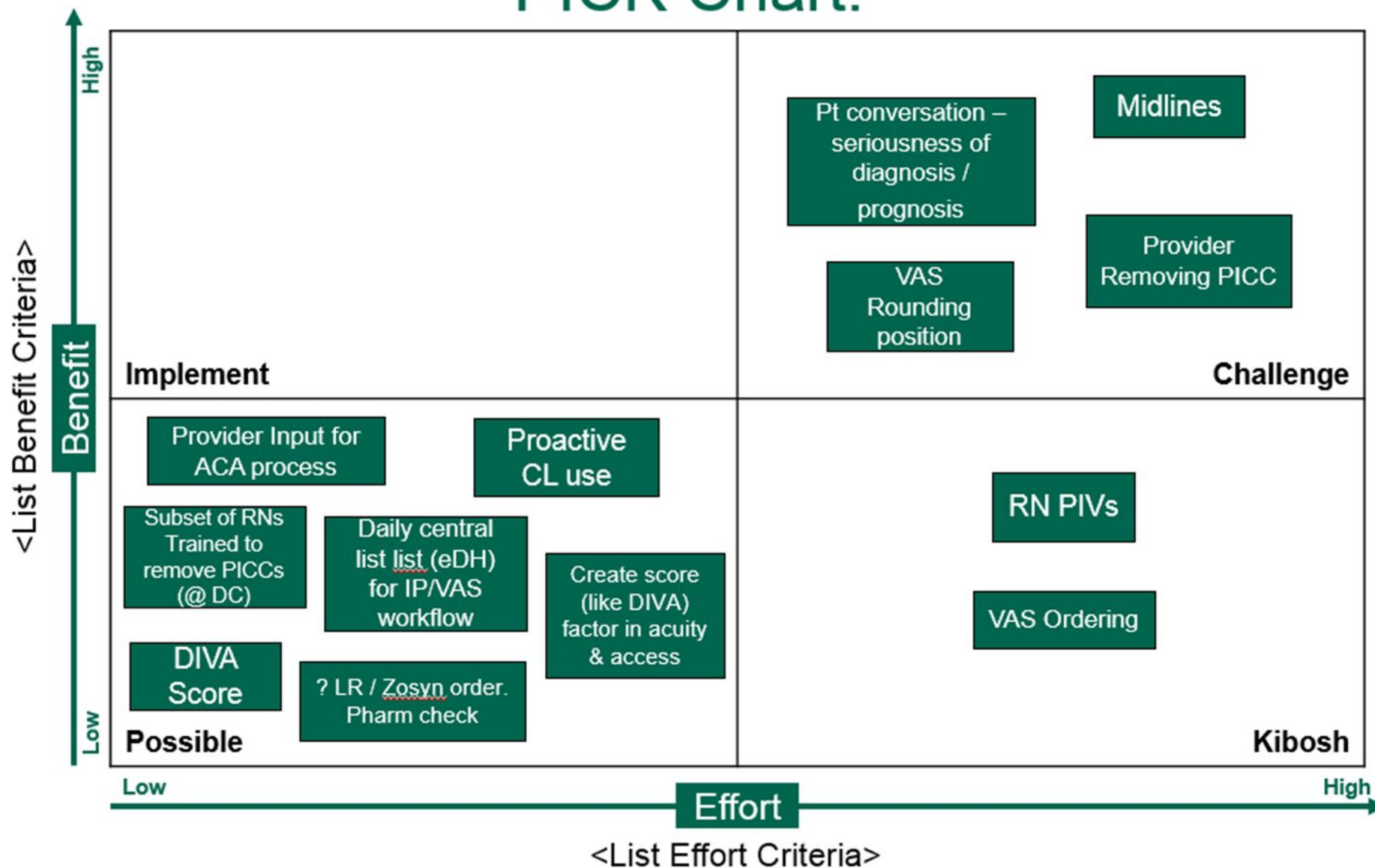
Root Cause for High PICC Utilization



Brainstorming Interventions

Improve

PICK Chart:



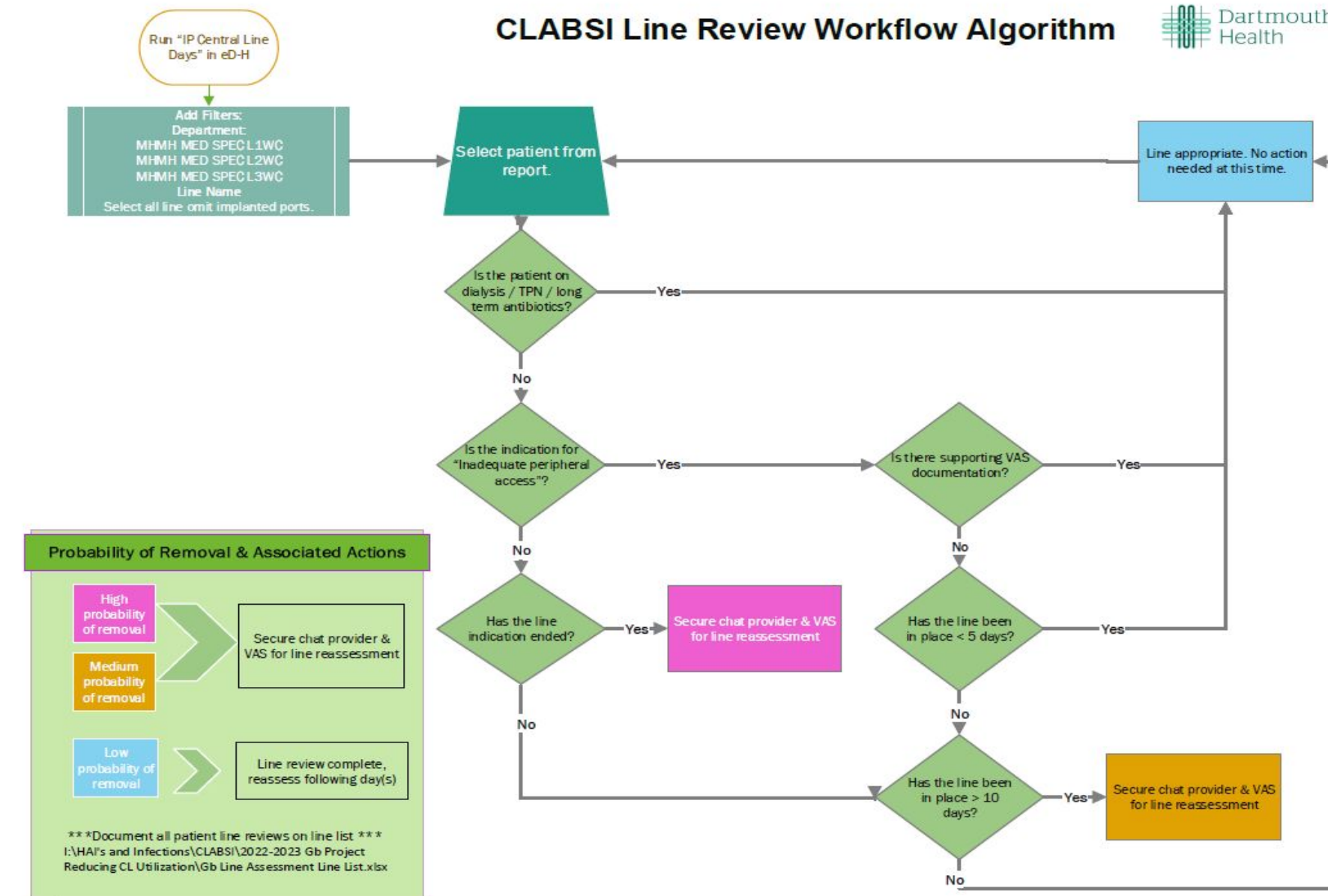
Solution Selection Matrix						
Reducing Central Line Utilization						
Weight for each metric (total to equal 100%)-->	40%	15%	15%	15%	15%	100%
Potential Solutions	Impact on Decreasing CL Utilization	Cost to Implement	Time to Implement	Change Management needed for Implementation	Impact on improving CL Use	Ranking
Subset of RNs Trained to remove PICCs	1	3	1	1	1	1.3
Daily CL Review List (eD-H)	5	3.5	1	3	4.5	3.8
DIVA / Alternative Score	1	1	1	2	1	1.15

Pilot #1

Daily CL review list in eDH

Start Date: 1/17/2023

CLABSI Line Review Workflow Algorithm



Secure Chat Statement:

Good morning,

The Reducing CL Greenbelt Team has identified this patient to have a central line that is eligible for possible removal based on several indications (line duration, indication etc.), please reassess the central line for necessity. If you have already re-assessed for necessity, could you share why the line remains in place? This information will help the Greenbelt Team target interventions strategically. Additionally, if the primary indication is for “poor peripheral access” please page VAS #9260 for reassessment of vasculature.

Thank you in advance.

The Reducing CL Greenbelt Team

Pilot #1 Successes

Engagement

Removal of 7 central lines

Control

Reducing CL Utilization Control Plan

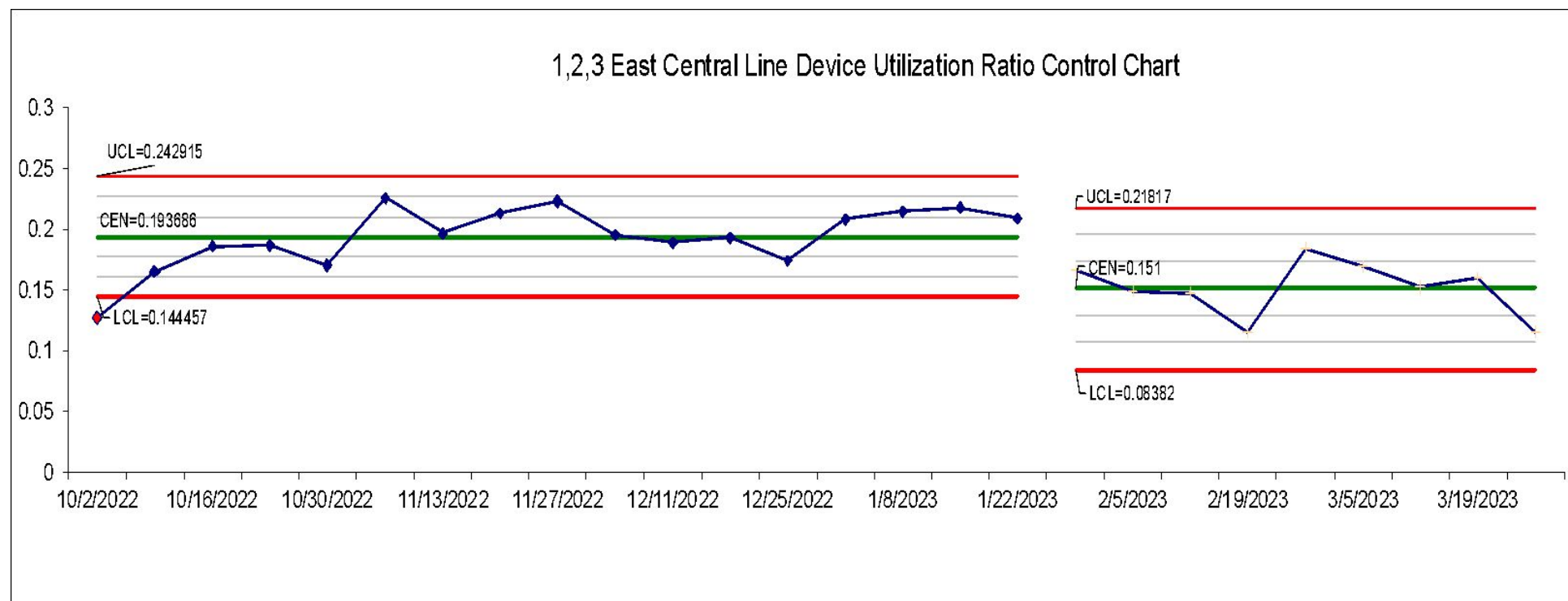
Control Variable	How Measured	Where Measured	Standard	Who Analyzes	Who Acts	What is Done
Algorithm Followed	Manual	Excel	Indication reviewed per algorithm 100% of time.	Infection Prevention & VAS	VAS & Provider	1. Assess CL necessity based on algorithm created. 2. Determine vasculature 3. Removal if indicated
CL Indication for Poor Peripheral Access	Manual	eDH	Maintain poor peripheral access at around 50% of the time	Infection Prevention	VAS & IP	1. Determine the % of poor peripheral access 2. If above 50%, discuss with VAS regarding reduction strategies
SUR Tracking	Manual / Automatic	NHSN	SUR <1	Infection Prevention	IP	1. Investigate if the SUR >1 2. Discuss reduction strategies at CHIP

Reducing CL Utilization

Purpose: To standardize work surrounding reassessing central line necessity

Responsible: Stephanie

Step	Task Description	Tools/Supplies Required	Responsible	Due
1	Document for IP Daily Surveillance	Policy Tech Checklist	Stephanie	3/31/2023
2	Assign alternative VAS to assess vasculature	eDH chart review	Thomas	3/31/2023
3				
4				
5				
6				



Test of Proportions			
Hypothesis Tested: H0: Group #1 Proportion = Group #2 Proportion			
H1: Group #1 Proportion not equal to Group #2 Proportion			
User defined parameters			
Number Defective Group #1 (x1)		128	
Sample Size of Group #1 (n1)		273	
Number Defective Group #2 (x2)		208	
Sample Size of Group #2 (n2)		370	
Results			
Sample Proportion Group #1 (p1)		0.46886	
Sample Proportion Group #2 (p2)		0.56216	
p-value (probability of Type I Error)		0.019	
Confidence that Group #1 proportion		98.1%	
Conclusion Drawn	H0 H1	True State of Nature	
		H0	H1
		Correct	Type II Error
		Type I Error	Correct
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Situation:

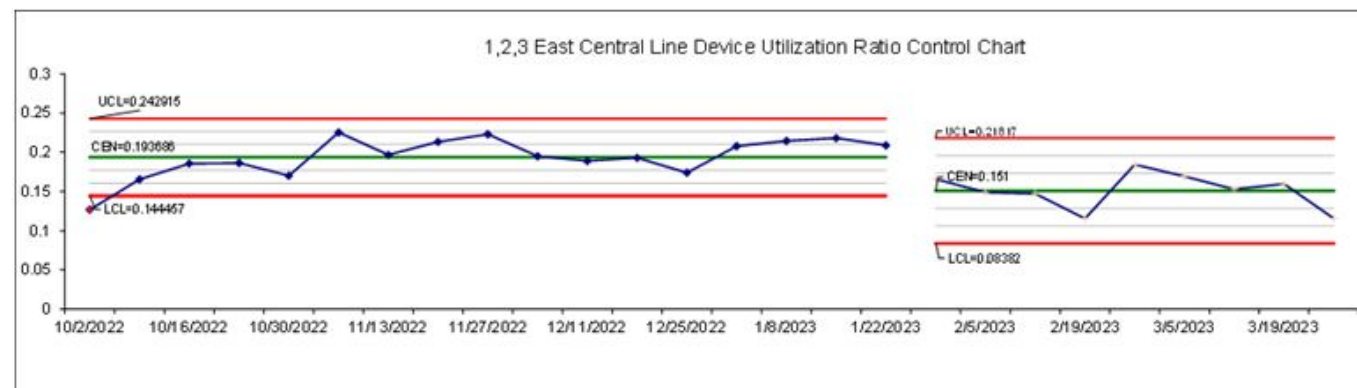
Infection Prevention, Vascular Access Services (VAS), and Medical Specialties L1/2/3 WC participated in a Greenbelt project to reduce PICC utilization from August 2022 – April 2023.

Background:

In FY22, there were 36 central line-associated blood stream infections (CLABSIs), five of which were identified were on Medical Specialties L1/2/3 WC. After reviewing the data, these units had a 36% higher standardized utilization ratio (SUR) compared to the national average, and a device utilization ratio (DUR) of 0.22. This may have had an impact on CLABSI rates during FY22. During scoping of the project, PICC utilization was the focus due to the most opportunity for removal.

Assessment:

Through the DMAIC (Define, Measure, Analyze, Improve, Control) process, the Reducing Central Line Utilization Greenbelt team identified several root causes that may have increased central line utilization. After working through the DMAIC process it was determined that the team would work on central line necessity. The pilot consisted of a bi-weekly central line review from Infection Prevention, VAS, and the Attending provider. During the course of the project, 7 central lines were removed, and SUR decreased 22%.



Device utilization ratio is central line days per patient day. The split in charts refers to improvement seen with pilot.

Recommendation:

Infection Prevention and VAS will utilize an algorithm twice per week to help aid in the review of central lines that are potentially no longer indicated on Medical Specialties L1/2/3. Future endeavors to continue this work include spreading the central line necessity review to other units within the hospital. **The first step in this expansion is to review the necessity of central line for all hospital medicine patients starting on May 1, 2023.**

Thank you all for your continued efforts to reduce central line utilization.

If you have questions regarding the reducing central line utilization Greenbelt project, please email Stephanie.c.casale@hithcock.org

Charter Goals

1. Decrease SUR/**DUR** on 1, 2, 3 East :

Decreased DUR by 22%

2. Reduce indication of “inadequate peripheral access” documented in flowsheet by 10%:

Decreased indication by 17%

Project Successes

- Increasing communication
- Removal of central lines

Lessons Learned

DMAIC Process

Increased engagement with Infection Prevention

Multidisciplinary Approach

Thank you!

Questions/Comments?