MHA Green Belt Lean Six Sigma Project Summary

INITIATIVE TITLE: *CLABSI(Central Line Blood Infections)*

ORGANIZATION NAME: *Freeman Health System*

ELECTRONIC MED RECORD: Meditech

PARTICIPANT / CONTACT INFORMATION

Angela Tucker	Director System Quality Improvement	altucker@freemanhealth.com
Chelsea Mertens	Clinical CQI Coordinator	cmmertens@freemanhealth.com

DEFINE – Problem Statement & Goal

Freeman Health System had 38 CLABSIs for 2021.

Freeman Health System Goal:
To reduce defects in central line care from 350,000 DPMO to 35,000 DPMO, improving the sigma score from 1.8 to 3.3.

DEFINE –BIG Y

CTQ is Discrete

BIG Y

 # central lines being maintained per CDC guidelines/total # of central lines

DEFINE - Initiative Scope

Adult Patients with a central line present(present on arrival or placed inhouse) in ICU, TCU, and CMU to monitor central line bundle compliance.

MEASURE - Data Collection / MSA

We conducted an MSA with our team and the Director of ICU (our subject matter expert). Our reproducibility score was 91.7 % and our agreement score was also 91.7%.

We proceeded to round on 300 patients with 105 total defects. We identified the DPMO of 350,000 and Sigma Score of 1.8

PROJECT CTQ TREE

CTQ is DISCRETE.

Customer Need

Eliminate central line bloodstream infections based on CDC and NHSN Guidelines

CTQ

 # central lines being maintained per CDC guidelines/total # of central lines

Big Y
(Process Output)

Central lines that do not meet CDC guidelines

Defect Definition
(discrete)

Each central line day

Opportunity
(discrete)

Central Line Maintenance Bundle
- Hand Hygiene
- Aseptic technique for accessing and changing needleless connectors
- Standardized tubing change
- Daily review of Catheter Necessity

ANALYZE - Critical Xs / Root Causes Identified

We performed analysis on Critical X's. We determined that two of critical X's were significant. These two Xs had a zero Chi-Square.

- Antimicrobial caps
- Tubing Labeled Correctly

IMPROVE - What was Implemented

-Antimicrobial caps stocked next to the medication dispensing machine (easier access to supplies).

-Tubing Labels are now also located next to medication dispensing machine.

- Tubing Labeled with Date to be changed

-Daily rounding to check dressings, tubing labels, and antimicrobial caps.

-PICC nurse to complete dressing changes twice a week.

IMPROVE – What was Implemented

- Additional education for new hires.
- Updated central line policy.
- Blood culture collection education
- Worked with ED and ICU physician to decrease femoral line utilization
- Additional rounding conducted
- Hierarchical SOP Created and Presented to Team

IMPROVE – Results to Date

Rounded on 71 patients and had 28 defects. The Sigma Score was 1.7 which is worse than our initial phase.

Root Cause determined to be new hires requiring additional education.

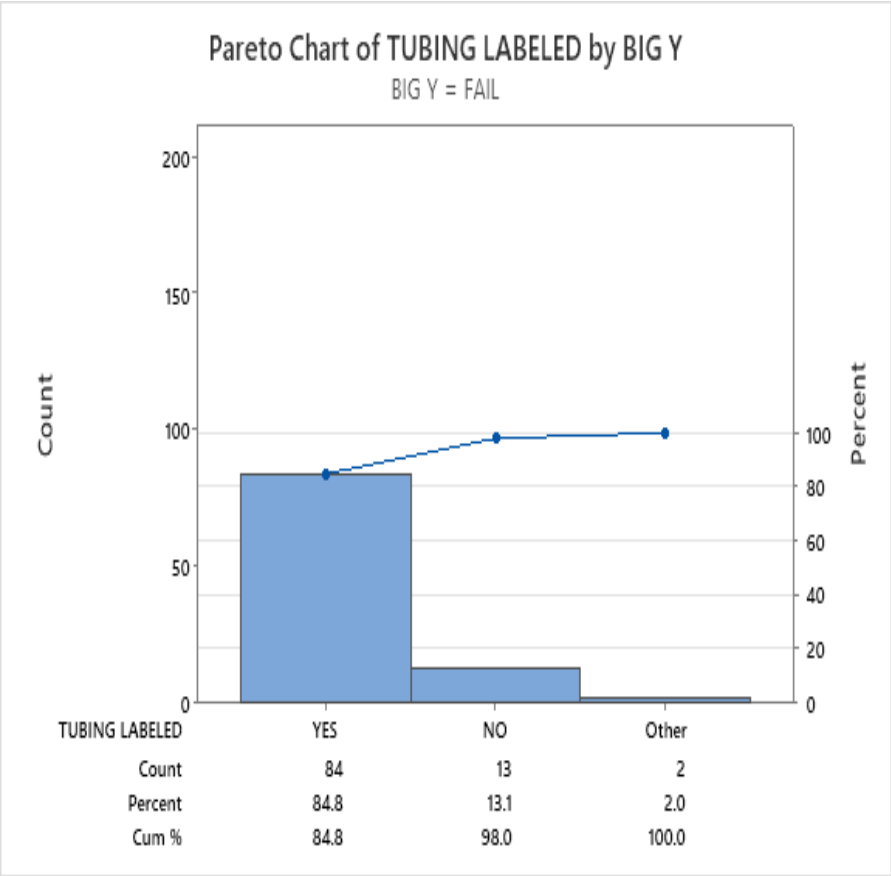
As of August 1st , 2022 we have had 7 CLABSIs compared to 38 in 2021.

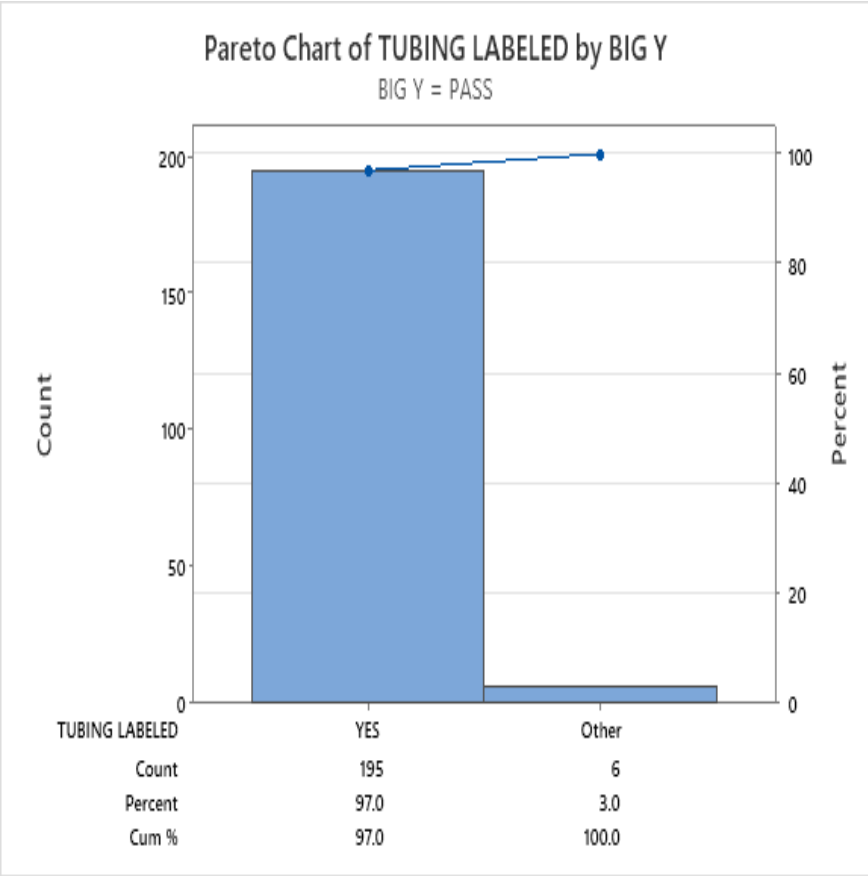
SIGMA SCORE

DMAIC PHASE	DEFECTS	OPPS	DPMO	SIGMA SCORE
Baseline	105	300	350,000	1.8
Improve	28	71	394,366	1.7
Improve	14	71	197,183	2.3

Analysis of Critical X – Tubing Labeled

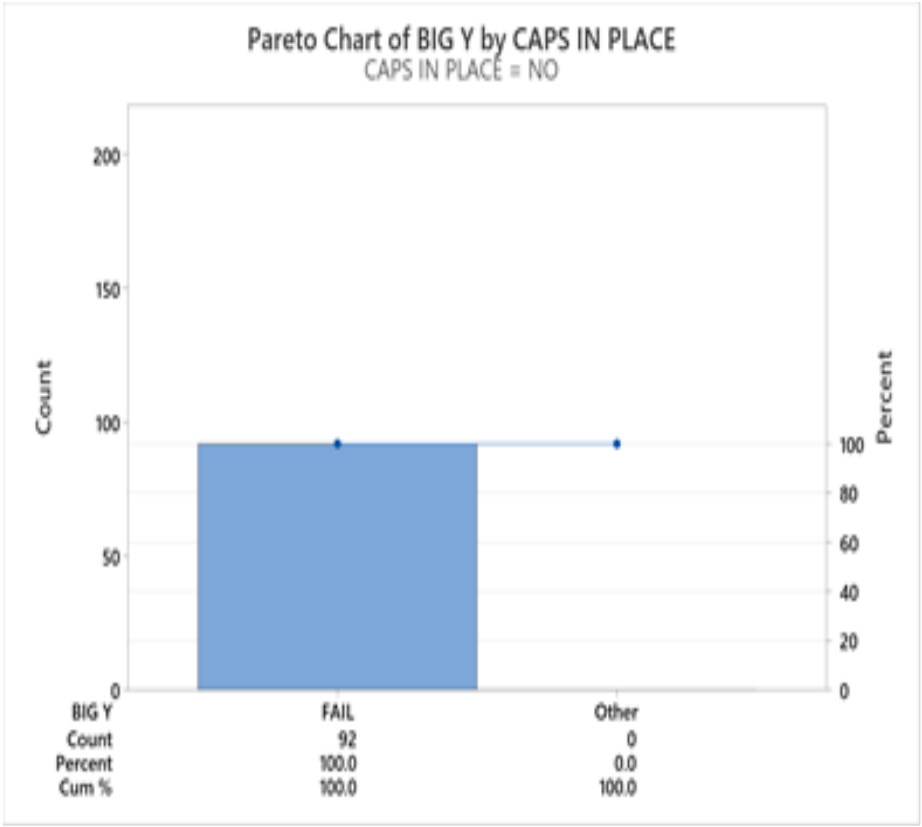
Chi Square Test = 0.000

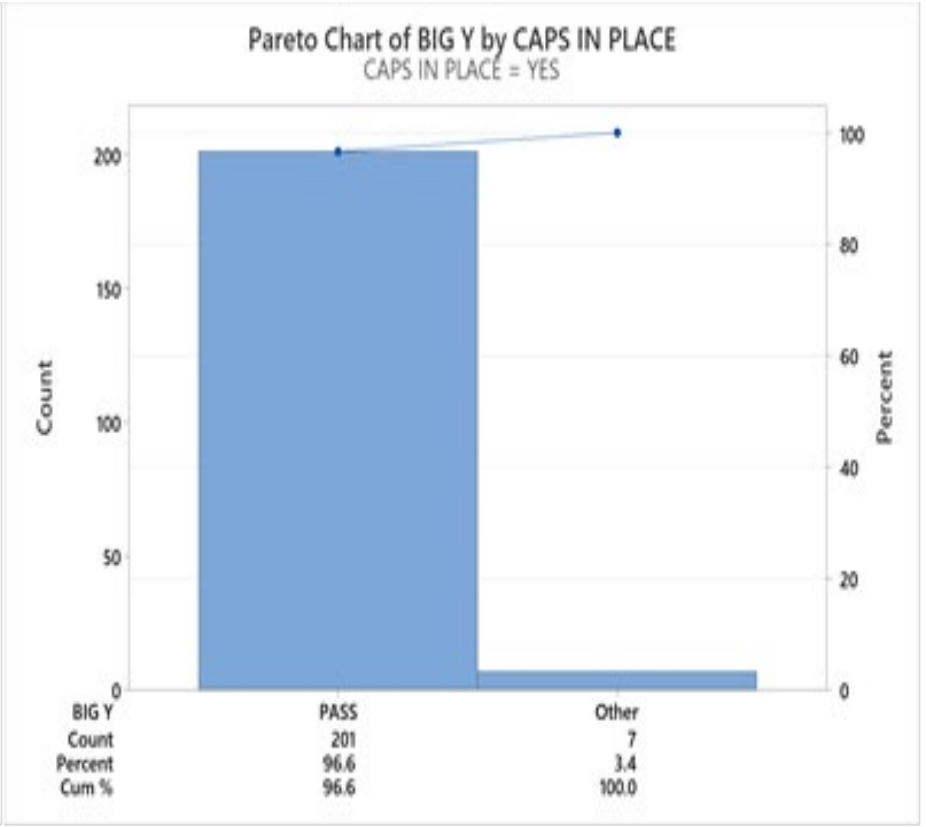




Analysis of Critical X - Caps in Place

Chi Square Test p=0.000





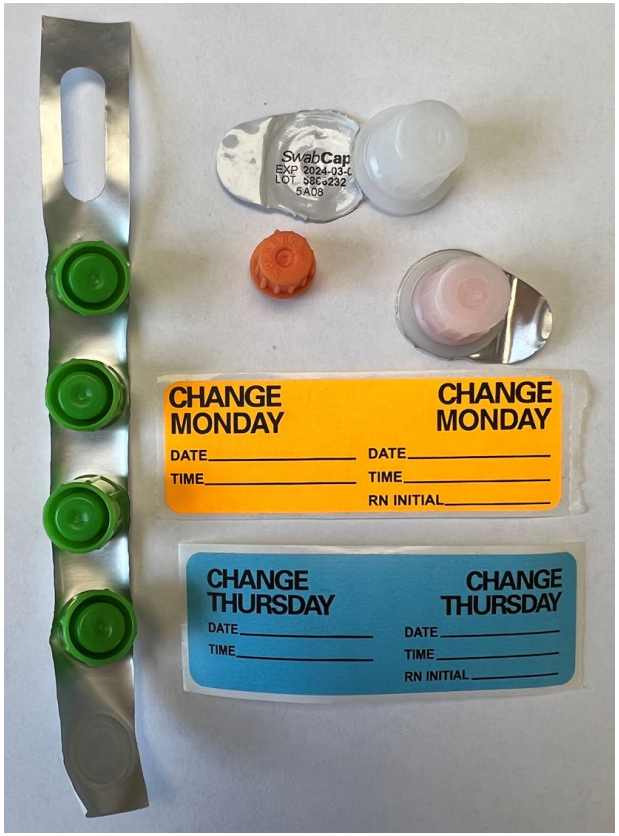
Hierarchical SOP

Tubing labeled by patient's assigned RN

- tubing labels are located next to pyxis
- all tubing is changed Mondays and Thursdays (Monday on Night Shift, Thursday on Day Shift)
- labeled with orange label on Monday
- labeled with blue label on Thursday
- labels to be filled out with date tubing will be changed next, time, and RN initials
- label placed around IV tubing

Open ports on IV tubing and central lines are covered with antimicrobial caps

- caps are located next to pyxis
- caps are changed each time tubing is changed if not before (when medications administered)
- there are 5 green caps per strip
- strip can hang from hook on IV pole
- each blue port on IV tubing is to be covered with an antimicrobial cap
- any open ports on central lines are to be covered with an antimicrobial cap
- caps are one time use and to be discarded after removed from port



CONTROL – Next Steps

After implementation of some of the items in the improve stage, we rounded on an additional 71 patients. We had 14 defects. This is an improved DMPO of 197,183 with a Sigma Score of 2.3.

We held a wrap up team meeting and presented our findings.

We discussed the continuation of rounding. The responsibility for rounding will be transferred to Infection Prevention. We will work closely with unit on boarders to educate new hires.

We will continue to meet every other month to review data and discuss any additional changes. Infection Prevention will review data for positive blood cultures.

OVERALL LESSONS LEARNED

When we began the project, we had some initial push back. Once we provided education and additional direction the nurses were quick to adopt the new process.

We feel we should have involved the ED and ICU Physicians earlier in the project. There seemed to be a lack of communication between our Physician Champion and the rest of the Physicians.

NEXT PROJECT(S)

We are planning a project with CAUTI. We may also evaluate a project with utilizing the SEPSIS order set.

REWARD AND RECOGNITION

Angie Tucker-Director SQI
Greg Stahl-SQI (assisted with rounding)
Kaleb Schlessman-Director ICU
Erin Derrick-Assistant Director ICU
Nathan Cantwell-Director CMU & TCU
Janay Jones-ICU On Boarder