Back to Basics ~ Eliminating CLABSIs in an Adult Intensive Care Unit (ICU)

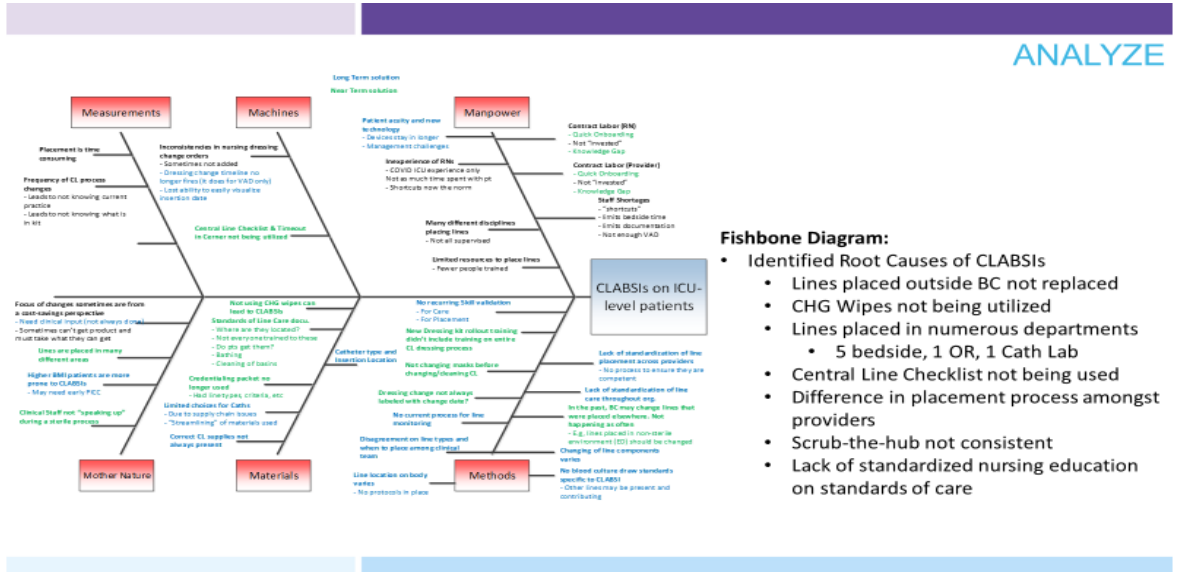
In one or two sentences, what was the problem or issue that you identified?

Based on the HAI surveillance data, collected from January through July 2022, seven (7), healthcare-associated central line-associated bloodstream infections (CLABSIs) were observed in the adult ICU.

Provide some background information, such as how or why the current process evolved to what it is? How does this affect patient safety? Were there any regulatory implications?

1. COVID-19 pandemic disrupted many care processes, increased the turnover of experienced staff, and the increase in very high-acuity patients led to observed increase in CLABSIs.
2. CLABSIs are preventable harm to patients. Increase lengths of stay, and do not align with Billings Clinic's commitment to reaching zero preventable harm.
3. CLABSI outcomes are reported to CMS as a publicly reported measure as part of their Value Based Purchasing (VBP) Program.
4. The Leapfrog Group also reports CLABSI outcome as part of the Hospital Safety Letter Grade.

What did you do to improve? Who was on your team and what resources did you use? Did you use a specific tool or model (e.g., PDSA, Fishbone (Cause & Effect)?



Fishbone Diagram:

- Identified Root Causes of CLABSIs
  - Lines placed outside BC not replaced
  - CHG Wipes not being utilized
  - Lines placed in numerous departments
    - 5 bedside, 1 OR, 1 Cath Lab
  - Central Line Checklist not being used
  - Difference in placement process amongst providers
  - Scrub-the-hub not consistent
  - Lack of standardized nursing education on standards of care

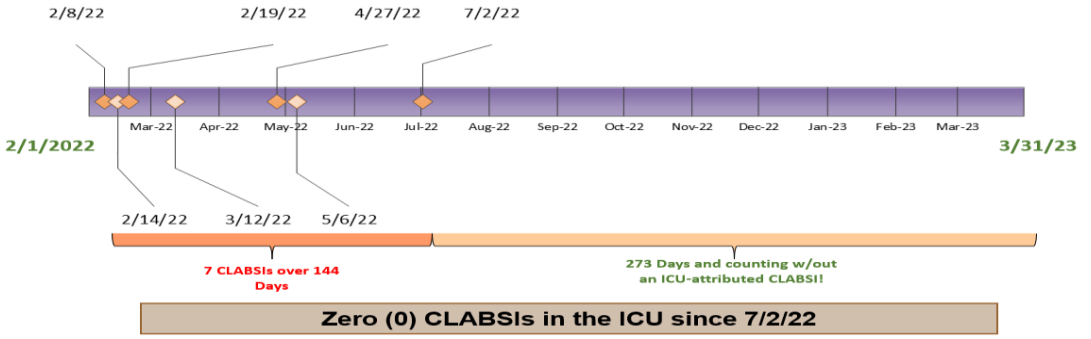
What was the outcome, and how have you sustained this improvement/success?

Results

Metric	Baseline	Actual
Y1: Total Number of CLABSIs on ICU	7 CLABSIs (Jan-Jul 2022)	0 CLABSIs (Jul 2022 – Feb 2023)
Y2: Attributable Cost* of CLABSIs on ICU	$336,756	Saved $336,756

CLABSI: Central Line Associated Blood Stream Infections

*Attributable Cost of CLABSI is $48,108 per occurrence (Scott, et. al. Journal of Infusion Nursing, April 2019)



APIC MONTANA

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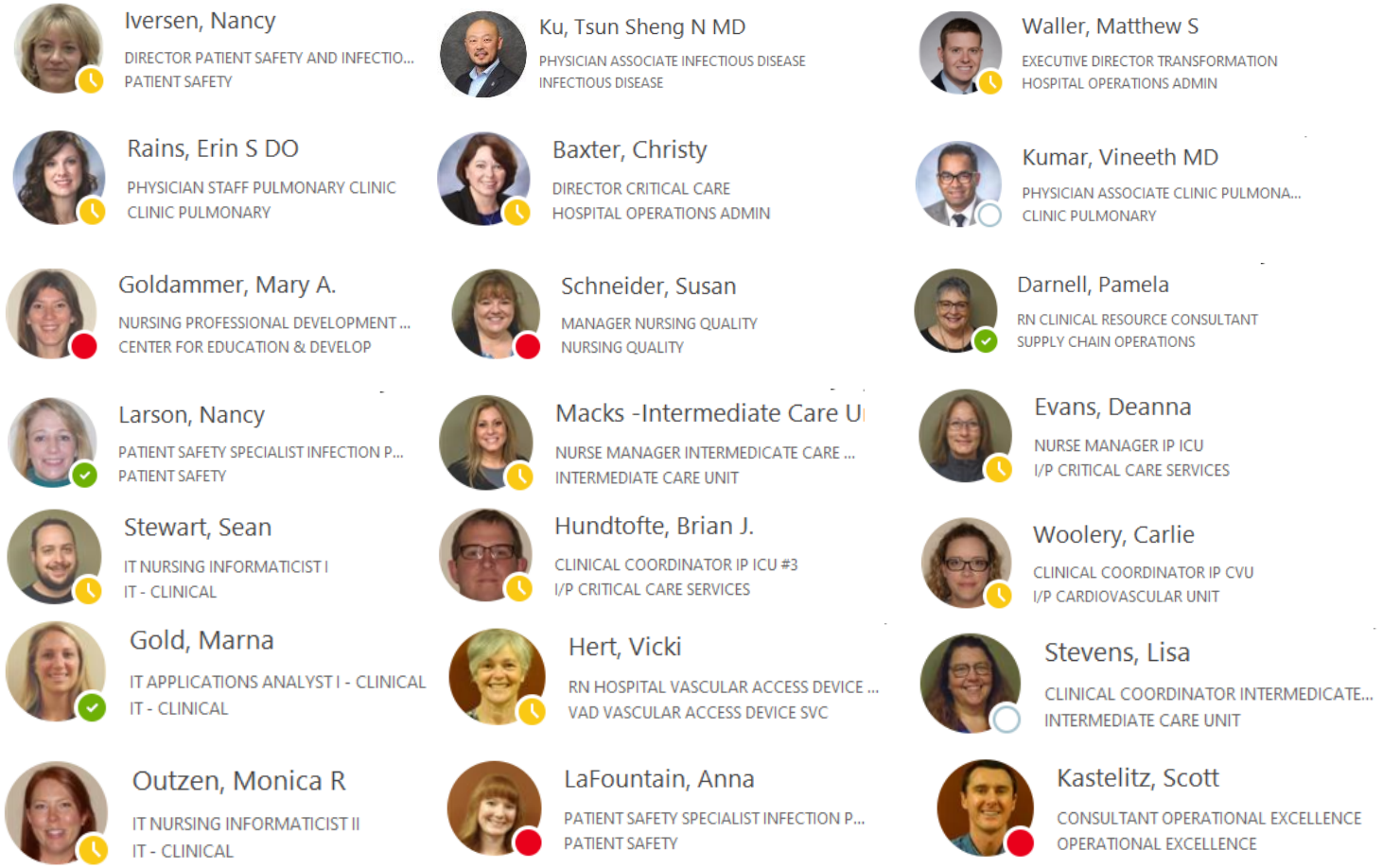
Project Start Date: January 2022
Control Phase Date: September 2022
Project Champion: Erin Rains, MD, Intensivist. Co-CMO
Process Owner: Nancy Iversen, RN, CIC, CPPS, Patient Safety & Infection Control
Black Belt: Scott Kastelitz

Core Team:



Supporting Team: Pam Berens, Jane Black Eagle, Dania Block, Jamie Candelaria, Keri Cross, Madeleine Hammond, Dee Hogue, Rhiannon Inabnit, Joley Kramer, Tiarelle McDowell, Jeanne Morse, Lyndsay Neibauer, Shanel Wirkman Lear

Burning Platform

- CLABSIs are considered a Never Event in healthcare, are preventable, and harmful to patients. A cluster CLABSI was observed from January-July 2022 and corrective action was needed.
- After COVID, Billings Clinic needed a back to basics focus on safety and quality as process improvements were slowed due to resource constraints.
- For example, one-third of the ICU RN team had under 2 years of experience. Many were oriented during times of “crisis standards of care”, therefore, practices led to an increase in CLABSIs.
- In 2018, the Inpatient Cancer Care Department completed a project reducing CLABSIs from 8 to zero. ICC observed their first CLABSI in Oct. 2022; a first in 6 years.

Current State

- **Problem Statement:** Based on the data collected from January through July 2022, seven (7) Healthcare-associated central line-associated bloodstream infections (CLABSIs) were observed in the Critical Care division on adult ICU-level patients (in ICU). Healthcare-associated CLABSIs represent preventable harm and do not align with our commitment to high reliability and reaching zero preventable harm.

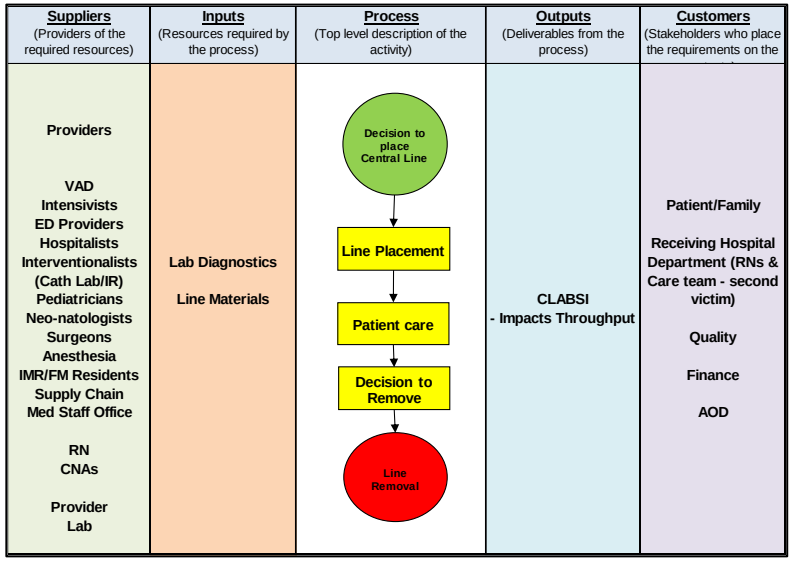
- **Primary Waste:** Defect (CLABSI occurrence)

Baseline Metrics and Target Project Objective

Metric	Baseline	Target
Y1: Total Number of CLABSIs on ICU	7 CLABSIs (Jan-Jul 2022)	3 CLABSIs in CY 2022
Y2: Attributable Cost* of CLABSIs on ICU	$336,756	$144,324 (over 7-month period)

CLABSI: Central Line Associated Blood Stream Infections

*Attributable Cost of CLABSI is $48,108 per occurrence (Scott, et. al. Journal of Infusion Nursing, April 2019)



SIPOC:

- Identified Key Stakeholders
  - Providers who place lines in various departments
  - ICU-level Care Team (Providers & Staff)
  - Supply Chain
  - Infection Prevention

Improvements Implemented

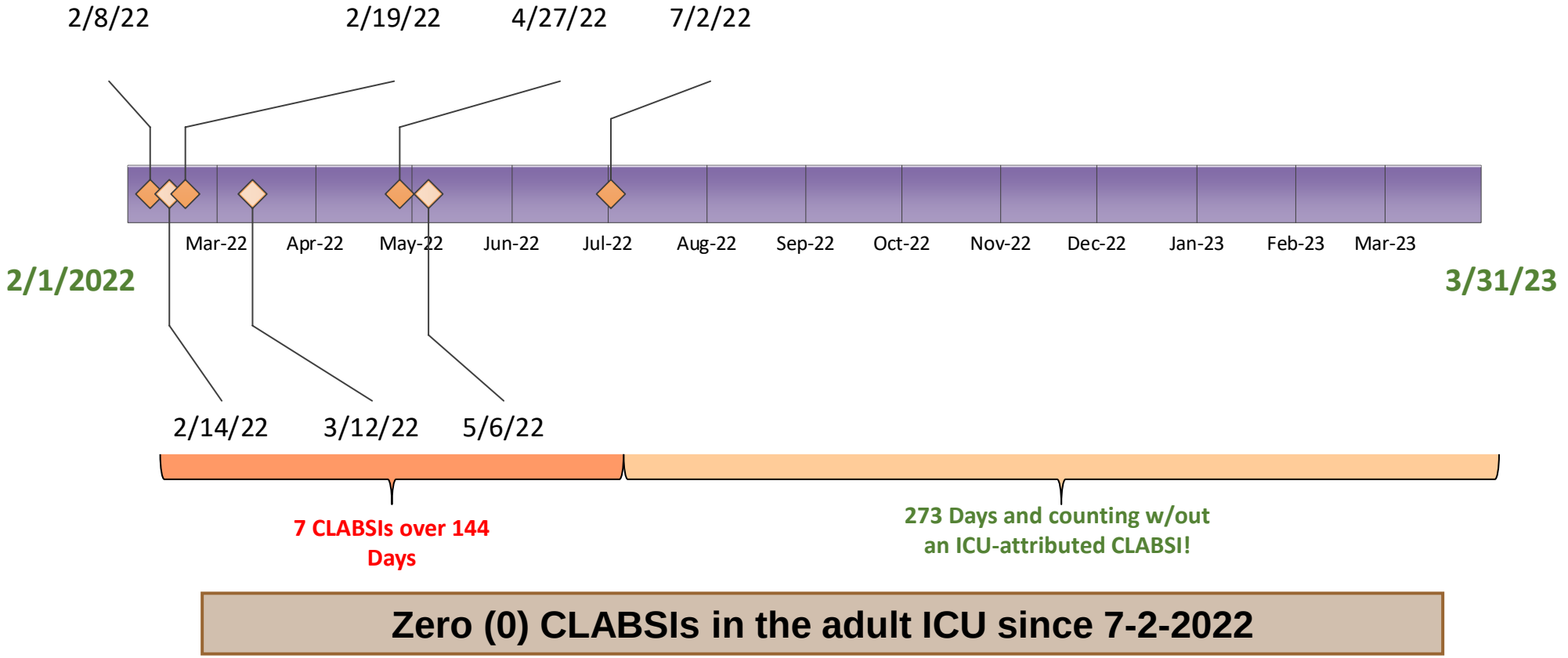
- Nursing staff
  - Re-educated the entire critical care Nursing staff via Teach back on standards of care
  - Nurses that are responsible for line care did the teaching
  - Now part of initial Nursing staff orientation and will continue as an annual competency
  - Included Scrub-the-Hub, use of CHG wipes, removed non-CHG soap
- Providers
  - Held provider education around location placement
  - Confirm where lines were places and replace when necessary
- Incorporated line discussion into Multi-disciplinary rounds
- Updated Central line dressing kit checklist
- IT Updates
  - Included central line placement date in Cerner
  - Rule fired to RNs for outside lines
  - Built outside-line placement report

Results

IMPROVE/CONTROL

***Primary metric*:** Total number of CLABSIs on ICU unit

Improvement: Zero (0) occurrences on ICU between July 3, 2022 – March 31, 2023



Zero (0) CLABSIs in the adult ICU since 7-2-2022

Control Plan

What to Check (KPIV's and KPOV's)	Requirements or Specification Limits	When to Check or Measure (Sampling Plan)	How to Measure (Measurement System)	Who Measures	When to React (Method of analysis or decision rule)	Actions to be Taken (Reaction Plan)	Who is responsible for those actions	How control is Institutionalized
# of ICU CLABSI	0 Clinical CLABSIs	Upon Occurrence	Apply NHSN criteria	Infection Control	Upon Occurrence	Infection Control investigates and notifies dept leaders. Lead group huddle.	Infection Control/ICU Leadership	Published in Annual Report;
Lines needed	N/A	During Rounding	Assess necessity of Tubes/Lines	Intensivists	If line not needed	Notify bedside RN to remove and order discontinuation of line	Intensivists	Daily Rounding
Central Line Insertion Checklists	TBD	Quarterly	BI Report	BI Report	TBD	Work w/VAD & Intensivist teams to determine who is not documenting	ICU Leadership	Intensivist team meetng
Length of line insertion	7 days	Quarterly	RNs perform checklist when line is inserted	BI Report	If a patient line is in over 7 days	Discuss long-term line option	Nursing Quality	Standing agenda item shared at ICU staff meetings

Project Summary & Celebration

Lessons Learned

- Importance of standardization & teach-back education
- Appreciating & acknowledging risks of central lines
- Tenacity of leadership to drive improvement by setting expectations and prioritizing
- Bringing things back to basics fixed the problem
- Large scale Improvement takes time

Next Steps

- Work with OR on patient prep
- Roll-out to non-ICU departments

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Questions?