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PROBLEM STATEMENT

To what extent do surgical site skin scrub preparation and operating room traffic control reduce surgical site infection incidence in Coronary Artery Bypass Graft patients?

BACKGROUND/SIGNIFICANCE

- Surgical Site Infection (SSI) is an infection occurred within 30 days of surgery (no implant) and infection within 1 year of implant placement.
- Centers for Disease Control and Prevention (CDC) reported over 14 million surgeries performed in the United States (US) and 110,800 developed SSIs.
- SSI is a Healthcare-Associated Infection (HAI) with \$3.3 billion estimated annual cost in the U.S.
- Coronary Artery Bypass Graft (CABG) surgery is the most common and high-risk cardiac procedure worldwide.
- 7% readmission rate within 30 days of surgery.

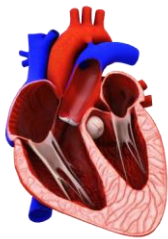
AIM & OBJECTIVES

- To evaluate SSI strategies implemented in the past to eliminate or decrease the incidence of SSI in all CABG patients.
- Evaluate the effects of surgical site skin scrub in CABG patients through staff and surgeon survey on knowledge, attitudes, and practice.
- Evaluate the effects of OR traffic monitoring in CABG patients through staff and surgeon survey on knowledge, attitude, and practice.
- Conduct a chart review of CABG patients' charts to determine the incidence of SSI and those contributing factors that may have influenced the surgical outcome.
- Assess the clinical effectiveness of SSI prevention surgical site skin scrub and OR traffic control in reducing the SSI infection rate at the site for CABG patients.

METHODOLOGY

Setting:

- ✓ Academic Medical Center, Central NJ
- ✓ 3 cardiac operating rooms



Study Population:

- ❑ Inclusion criteria: CABG patients, >18 years old, readmission within 30-90 days, and no previous cardiac surgery

Design:

- ✓ Retrospective Program Evaluation

Timeframe:

- ❖ August 2020 – January 2022 (18 months)

Sample:

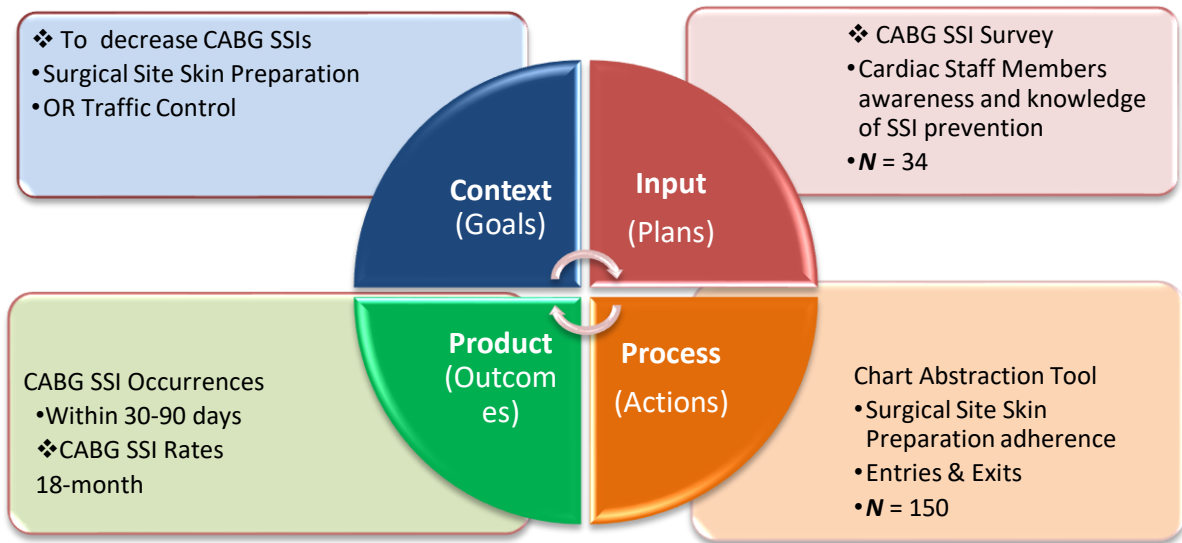
- ✓ Medical Chart Review (N = 150)
- ✓ CABG SSI Survey (N = 34)

Instruments / Tools:

- ✓ Surgical skin preparation audit tool (AHRQ)
- ✓ OR traffic control monitoring tool
- ✓ Chart abstraction tool
- ✓ Recruitment letter and survey consent:
- ✓ CABG SSI survey (5 point Likert-type scale survey)

Cardiac Surgical Team:

- ✓ Surgeons
- ✓ Registered Nurses
- ✓ Anesthesiologists
- ✓ RNFAs
- ✓ PAs
- ✓ ORTs /ATs



INTERVENTION

An 18-month retrospective program evaluation of surgical site infection in Coronary Artery Bypass Graft patients using Context, Input, Process, and Product (CIPP) evaluation model.

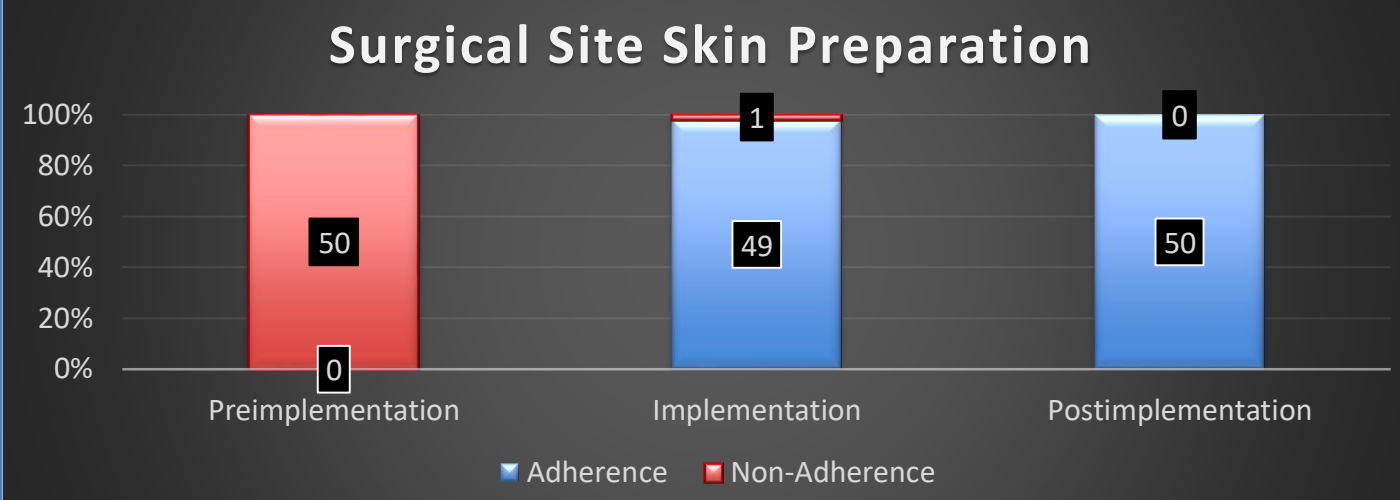
Quality Improvement Initiatives:

- CABG surgical site skin preparation
- OR traffic control in three cardiac operating rooms

Preimplementation	(n=50)	(August 2020 - January 2021)
Implementation	(n=50)	(February 2021 – July 2021)
Postimplementation	(n=50)	(August 2021 – January 2022)

OUTCOMES MEASURED

Key Findings	Pearson χ^2 Value = 145.633 $p = <.001$
Surgical Site Skin Preparation	N = 150 Adherence Group = 99 Non-adherence Group = 51



CABG SSI Staff Survey	n = 17 Highest Mean Score Question #8 (M = 4.59) Lowest Mean Score Question #6 (M = 2.47)
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Likert-type scale questions	Mean	Median	Standard Deviation
Q5. All CABG patients' surgical hair clipping is done outside the cardiac operating room.	3.35	4.0	1.367
Q6. All CABG patients' chest and legs were free of debris with no visible marks of ECG leads	2.47	2.00	1.328
Q7. The surgical skin preparation in the operating room is adequate to prevent SSI.	4.53	5.00	.800
Q8. All cardiac staff members adhere to the surgical skin preparation protocol following the manufacturer's recommendations.	4.59	5.00	.507
Q9. All cardiac staff members' behavior in traffic control is acceptable.	3.71	4.00	.686
Q10. The stop sign barriers outside cardiac OR doors effectively control traffic flow during the CABG procedure.	2.76	2.00	1.033
Q11. The number of staff members during the CABG procedure is excessive.	3.71	4.00	.849

RESULTS

Surgical Site Skin Preparation: (N=150)

- ❖ A *p-value* of $<.001$ showed a significant improvement in surgical site skin preparation, including 66% (99) in adherence and 34% (51) in non-adherence group.

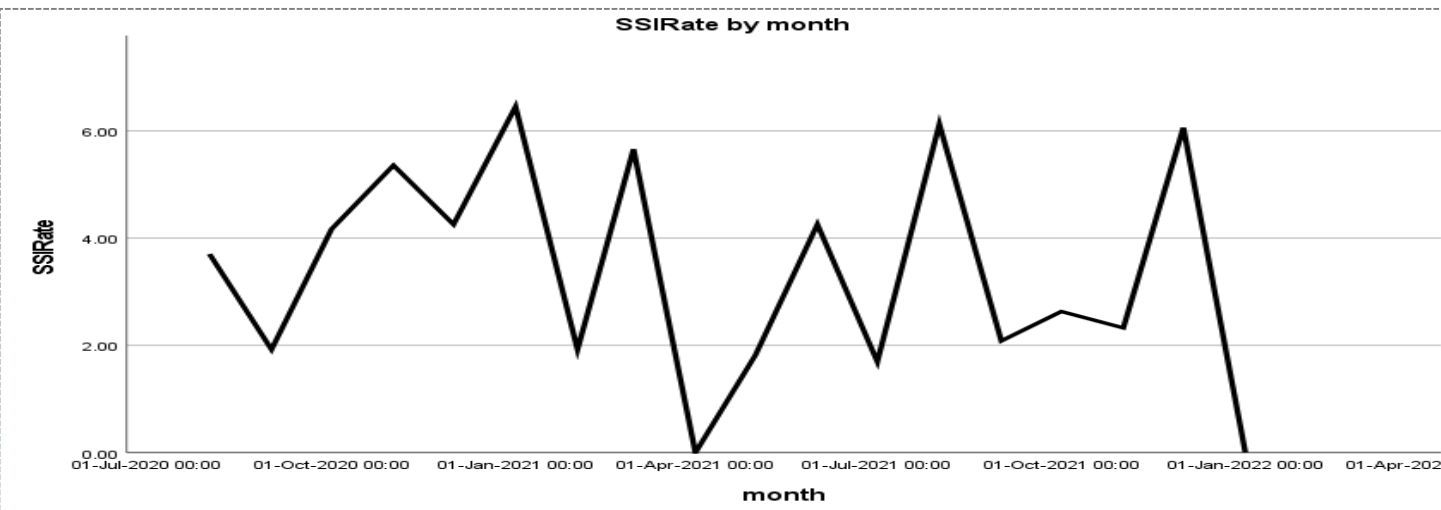
OR Traffic Control: (N = 150)

- ❖ The number of staff members present during CABG procedure decreased in implementation phase (M=11.54) compared from preimplementation (M=12.68) and postimplementation (M = 12.16)

CABG SSI Staff Survey: (n=17)

- ❖ There were 17 cardiac staff members completed and consented CABG SSI survey. Cardiac RN's (58.82%), RNFAs (23.53%), Anesthesiologists (11.76%), and PAs (5.88%). Cardiac survey participants were mostly female with 64.71% followed by male with 35.29%.

CABG SSI Rate:



The 18-month retrospective program evaluation showed 100% compliance in surgical site skin preparation and decreased OR traffic during CABG procedure.. These two quality improvement initiatives exhibited positive outcome in CABG SSI rate of 8 CABG SSI incidences in post-implementation phase compared to 12 CABG SSI incidences in pre- implementation phase.

REFERENCES

