Reducing Hip Arthroplasty Surgical Site Infections – The Joint Project

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Aim Statement

Emory Johns Creek Hospitals' hip arthroplasty surgical site infection standardized infection ratio (SIR) will be reduced from 2.4 to <1.0 by 5/1/2021.

Background

Infections following joint replacement surgery can be devastating for the patient. The resultant care includes long term antibiotic therapy, potential additional surgeries and at least temporary loss of function. Surgical site infections are also the most costly of hospital associated infections with costs ranging from $14k to $68k per incident.

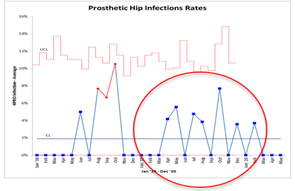
Infection prevention surveillance data identified a persistent increase in the number of prosthetic hip surgical site infections at Emory Johns Creek Hospital. When benchmarked to the CDC's National Healthcare Safety Network (NHSN), we had twice the number of infections than were expected during the 1st 3 quarters of FY 2020 and in FY 2019.

Baseline Conditions

As of May 2020, there were 5 hip prosthesis infections with 2 expected for the 1st 3 quarters of the 2020 reporting period with a standard infection ratio (SIR) of 2.4. There were also more than twice the number expected in FY 2019 with an SIR of 2.4

Our team

	Q1-Q3 2020			
FY 2020 Procedure	infection count	# infections predicted	SIR	2019 annual SIR
HPRO	5	2.061	2.426	2.369

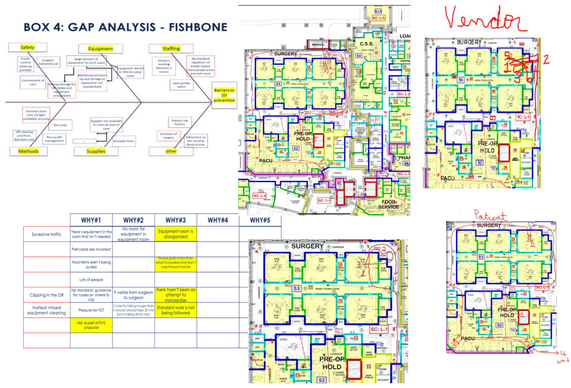


Analysis

Discovery process included: fishbone diagram, 5 why's, role process mapping and traffic flow exercises. We then conducted an impact effort analysis.

Through these process we identified our priorities as:

1. Traffic control in the OR room during case:
2. Reducing clipping in the OR
3. Environmental/equipment cleanliness



Measures

Qualitative

- All clipping should be done in pre op setting
- Only people in the OR that are needed, minimize traffic
- OR traffic will be measurable
- Equipment used in room and on patient should be clean

Quantitative

- Hip arthroplasty procedure SIR <1
- Use of hallway entrance after the sterile field is open will be reduced to the minimum (target <3)
- ATP readings on ortho equipment = 90% of items will have ATP reading of <250
- 90% of joint replacement procedures would have clipping completed prior to arrival in OR

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Actions/Tests of Change

Traffic control in the OR room during case:

- Perceived excessive traffic during OR cases
- No way to measure
- Visual cues to limit traffic ignored

Interventions

- Updated surgeon preference cards to limit circulator going in and out of room
- Installed traffic counters
- Developed standard work for their use
- Installed barriers to Hallway entrance

Reducing clipping in the OR

- No standard clipping process to ensure clipping completed prior to arrival in OR
- Pre-intervention data showed that of patients requiring clipping, the majority were clipped in OR

Interventions

- Nurse residents project – survey of staff regarding clipping practices and provided education (not limited to ortho)
- Assess surgeons clipping preferences
- Developed standard clipping diagram based on surgeon preference

Ortho positioning equipment

- ATP identified that ortho positioning equipment was not clean
- No standard process for cleaning and storage

Solution:

- Developed bin system – clean/not clean.
- Everything that comes out of the dirty bin gets cleaned prior to placing back in the clean bin

Maintenance:

- Weekly ATP readings with just in time (JIT) coaching to staff

Environmental cleaning

Problem:

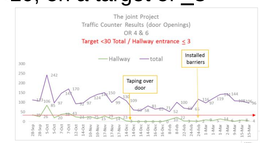
- No standard process for room turnovers
- Use of Ultraviolet (UV) light at terminal clean inconsistent

Solution

- OR team created standard work (SW) documents for room turnover.
- Added UV use to the OR terminal clean checklist to ensure a rotation so that UV used according to schedule.

Results

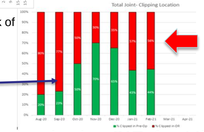
OR entrance hallway traffic was significantly reduced to <10, on a target of ≤3



ATP reading of Ortho equipment improved from 19% to 78% with a target of 90%

Outlier removed due to suspected lack of resetting counter.

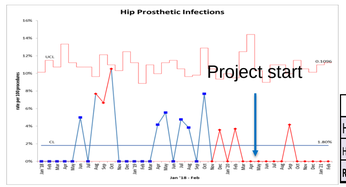
Clipping education intervention



Clipped In OR

Achieved a 60% reduction in the SIR for Hip Arthroplasty procedures (HPRO)

	Jul '20-Feb '21					
CMS 2020 Procedure	procedure count	infection count	# infections predicted	SIR YTD	2020 annual SIR	2019 annual SIR
HPRO	93	1	1.23	0.815	2.033	2.369



Non-risk adjusted rates for hip arthroplasty to date

	2019 FY	FY '20	FY '21
Hip prosthetic procedures	244	262	122
Hip Prosth. Infections	7	5	1
Rate per 100 proc	3%	2%	1%

Reflection/Follow-up

Limitations and Barriers

- Covid-19 Pandemic
  - Reduced resources
  - Reduced surgical volumes
- Provider participation
- Project timeline extended to June 2021

Next Steps

- Implement clipping diagram in pre-op holding with nurse to nurse hand off process
- Sort and standardize products for Ortho rooms to further reduce the need to leave the room during cases
- Implement standard work tools for OR turnover when staffing levels optimized