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Impact of a Bundle to Prevent Hysterectomy Surgical Site Infections

Yalda Barlas

Sydney Cooper

Marisa Griego

Sarina Pollat

Amber Lalla

See next page for additional authors

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Authors

Yalda Barlas, Sydney Cooper, Marisa Griego, Sarina Pollat, Amber Lalla, Madeline Palmer, Mingma Sherpa, Niharika Ravichandran, Meghan Brett, and Cara Ninivaggio

BACKGROUND

- According to the Center for Disease Control (CDC) Hospital Acquired Infection (HAI) report, there were 2,943 surgical site infections (SSIs) among patients who underwent abdominal hysterectomies in the United States in 2018
- Classification of SSIs include¹:
 - Superficial Incisional SSI
 - Deep incisional SSI
 - Organ/Space (including vaginal cuff) SSI
- Standardized Infection Ratios (SIRs) = a summary measure used by the National Healthcare Safety Network (NHSN) to track HAIs. It is the ratio of observed infections to the number of predicted infections, adjusted for various facility and patient specific factors²
 - SIR >1.0 = More HAIs observed than predicted
 - SIR <1.0 = Fewer HAIs observed than predicted
- University of New Mexico Hospitals (UNMH) has elevated rates of abdominal hysterectomy SSI compared to national benchmarks
 - Results in increased morbidity and associated healthcare costs
- In response, a multi-disciplinary team was created to implement a bundle in effort to prevent SSIs
- Bundle rolled out March 2018

STUDY OBJECTIVES

To assess SSI bundle compliance of those elements trackable by the electronic medical record (EMR)

To assess abdominal hysterectomy SSI bundle compliance's impact on SSI rates and numbers

METHODS

- Retrospective chart review of the EMR
- Inclusion:
 - All women who underwent abdominal hysterectomies (open or minimally-invasive) at UNMH, excludes vaginal hysterectomy
 - Identified by CPT codes for abdominal, laparoscopic, robot-assisted laparoscopic hysterectomy
- Collection time: January 2018-December 2018

Select bundle elements extractable through the EMR include:

DAY OF SURGERY ELEMENTS
<ul style="list-style-type: none"> • Chlorhexidine use before surgery • Blood sugar checked
INTRA-OPERATIVE ELEMENTS
<ul style="list-style-type: none"> • Appropriate skin preparation used • Weight-based dosing of pre-incisional antibiotics with re-dosing, if appropriate • Maintenance of normothermia >35° C

- Monthly average bundle compliance was determined
- Pre-implementation rates were compared to post-implementation timeframes
- Pre- vs. post-bundle implementation SSI rates compared
- Descriptive statistics used

FIGURES

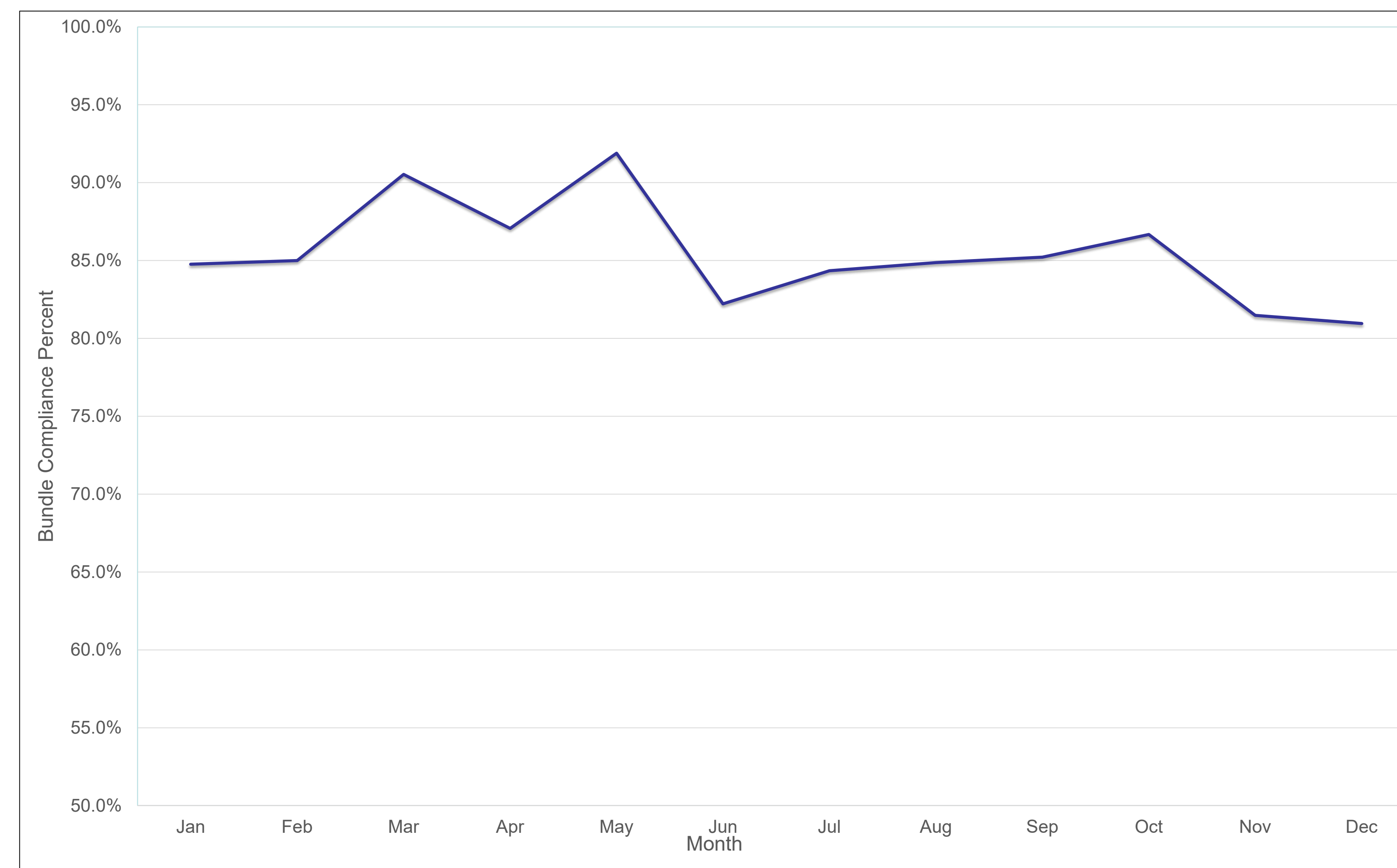


Figure 1. 2018 Abdominal hysterectomy average bundle compliance by month

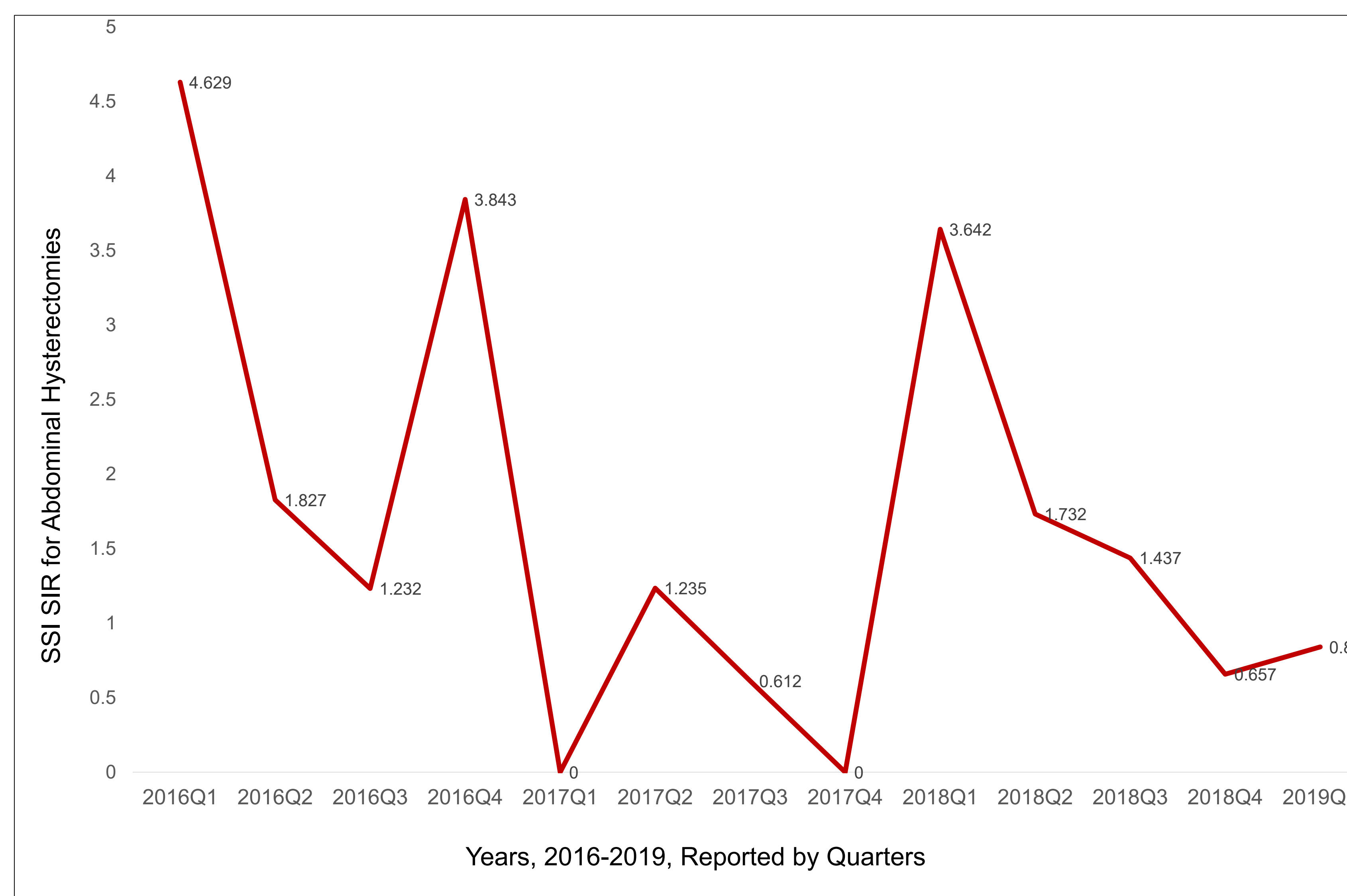


Figure 2. Surgical Site Infection (SSI) Standardized Infection Ratio (SIR) for Abdominal Hysterectomies

RESULTS

- 2018: 291 abdominal hysterectomies performed
- Ten women developed SSIs
 - 2: Superficial incisional
 - 1: Deep incisional
 - 7: Organ/Space
 - 3 intra-abdominal
 - 4 vaginal cuff-related
- Overall reportable SSI rate for 2018: 2.7% (8/291)
- Overall bundle compliance for 2018: 85.5% (Figure 1)
 - Temporary increase for the 2 months after initial rollout with nadir in December 2018 (81% compliance) (Figure 1)
- Compliance for specific bundle elements that were <90%:
 - Blood glucose assessment on day of surgery (68%)
 - Maintenance of normothermia >35° C (68%)
- UNMH's SIR was > 1.0 for the entirety of 2016 and for 50% of 2017. The SIR was also >1.0 for ¾ of our study period (2018) (Figure 2)

CONCLUSIONS

- Overall, abdominal hysterectomy SSI rates increased from 2017 to 2018 (2.2% vs. 2.7%)
- SSI prevention bundle compliance for the assessed elements did not change over the study timeframe, therefore its impact on SSI rates cannot be determined
- Other elements unable to be tracked by the EMR may impact outcomes
- Ongoing efforts should be made to comply with the SSI bundle to assess whether it changes abdominal hysterectomy SSI rates at UNMH, especially regarding hypothermia and assessment of preoperative blood glucose

REFERENCES

1. CDC Procedure Associated Module SSI <https://www.cdc.gov/nhsn/pdfs/pscmanual/9pscscscurrent.pdf>
2. The NHSN Standardized Infection Ratio (SIR): A guide to the SIR. <https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf>