

What’s New in the Patient Safety World

October 2024

Successful SSI Bundle

Banner Health recently reported outcomes from its implementation of an SSI (Surgical Site Infection) bundle on over 57,000 cases at its hospitals in Arizona, California, Colorado, Nebraska, Nevada and Wyoming between January 2019 and December 2023. The study was presented at the APIC 24 Annual Conference and Exposition ([APIC 2024](#), [D’Souza 2024](#)). The bundle emphasized surgical antimicrobial prophylaxis (SAP) but contained elements common to most SSI bundles. They monitored adherence to the appropriate selection of preoperative antibiotics, dose, administration times, and redosing. Starting from a baseline of 67.1% in 2019, adherence to this process measure increased to 82.2% by 2023.

Hip arthroplasty procedures saw a 32.8% decrease in SSI rates and 48.3% drop in SIR (Standardized Infection Ratios), while knee arthroplasty procedures resulted in a 15.2% reduction in SSI rates and 33.1% decrease in SIR. Additionally, adherence to the SAP bundle in colorectal surgeries and abdominal hysterectomy procedures decreased SSI rates by 17.4% and SIR by 8.11%, respectively.

Moreover, compliance with the bundle produced the beneficial effect of shortening length of stay (LOS) by 4 days, decreasing overall mortality rates by 4.4%, and lowering the average 30-day readmission rates by 3.9%. Similarly, compliance with the SAP bundle in hip arthroplasty procedures evidenced a statistically significant ($p < 0.0001$) reduction in average 30-day readmission rates from 11% to 7%.

Lead author Aarikha D’Souza also pointed out that reducing length of stay likely also leads to other important benefits, such as decreasing the chances of patients developing deep vein thrombosis, pneumonia, pressure injuries, or having a fall.

Core elements of the SSI bundle ([Tsioulis 2024](#)) included chlorhexidine gluconate preoperative body wipes, chlorhexidine and alcohol-based skin preparation; hair removal method standardization (clippers, hair removed in preoperative department); preoperative antimicrobial prophylaxis guidelines (appropriate dose, choice, timing and redosing of antibiotic); maintaining normothermia with active warming methods (warmed IV fluids, warm forced air to keep body temperatures $>3^{\circ}$ C); perioperative glycemic control and

postoperative oxygenation. There were also some supplemental elements specific to procedure types:

- Colorectal surgery: Use of silver dressings, new sterile closing instruments/tray, gown and glove changes, combined oral and mechanical bowel prep for elective procedures and wound protectors.
- Abdominal hysterectomy: Vaginal preparation with povidone-iodine or CHG; use of new sterile closing instruments/tray; gown and glove changes.
- Orthopedic: Use of silver dressings; nasal decolonization; povidone-iodine irrigation of the surgical wound prior to closure; traffic restriction and control during the procedure.

Pretty impressive results!

Some of our prior columns on HAI's (hospital-acquired infections):

December 28, 2010	“HAI's: Looking In All The Wrong Places”
October 2013	“HAI's: Costs, WHO Hand Hygiene, etc.”
February 2015	“17% Fewer HAC's: Progress or Propaganda?”
April 2016	“HAI's: Gaming the System?”
September 2016	“More on Preventing HAI's”
November 2018	“Privacy Curtains Shared Rooms and HAI's”
December 2018	“HAI Rates Drop”
January 2019	“Oral Decontamination Strategy Fails”
February 2019	“Infection Prevention for Anesthesiologists”
March 2019	“Does Surgical Gowning Technique Matter?”
May 2019	“Focus on Prophylactic Antibiotic Duration”
July 2019	“HAI's and Nurse Staffing”
February 2020	“NICU: Decolonize the Parents”
June 16, 2020	“Tracking Technologies”
August 2020	“Surgical Site Infections and Laparoscopy”
December 2020	“Do You Have These Infection Control Vulnerabilities?”
May 2021	“CLABSI's Up in the COVID-19 Era”
August 2021	“Updated Guidelines on C. diff”
October 2021	“HAI's Increase During COVID-19 Pandemic”
June 2022	“Guideline Update: Preventing Hospital-Acquired Pneumonia”
June 21, 2022	“Preventing Post-op Pneumonia”
June 28, 2022	“Pneumonia in Nervous System Injuries”
August 2022	“Resistant Infections Up During COVID-19 Pandemic”
November 15, 2020	“Which Antiseptic?”
December 2022	“Game Changer to Prevent SSI's in Abdominal Surgery?”
May 30, 2023	“Non-Ventilator-Hospital-Acquired Pneumonia Finally Gets Attention”
August 2023	“New MRSA Guidelines”
September 12, 2023	“Radiology and Hospital-Acquired Infections”
January 2024	“HAI's Drop Sharply Post-Pandemic”

February 2024 [“Remember the Toothbrush!”](#)
March 2024 [“Battle of the Antiseptics”](#)
April 2024 [“Hospital Beds and C. diff Infection”](#)

References:

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D’Souza A, Dizon ME, Leimkuehler RE, et al. Effect of a Standardized Preoperative Prophylactic Antimicrobial Guideline on Improved Postoperative Surgical Site Infection (SSI) Outcomes. APIC 24 Annual Conference and Exposition. Oral Abstract ISR 11; June 4, 2024
<https://2024apic.eventscribe.net/SearchByBucket.asp?f=PresentationSessionType&bm=Oral%20Presentation&pf=OralAbstracts>

Tsioulis A. Surgical Site Infection Bundle Improves Patient Outcomes. Anesthesiology News 2024; September 11, 2024
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