

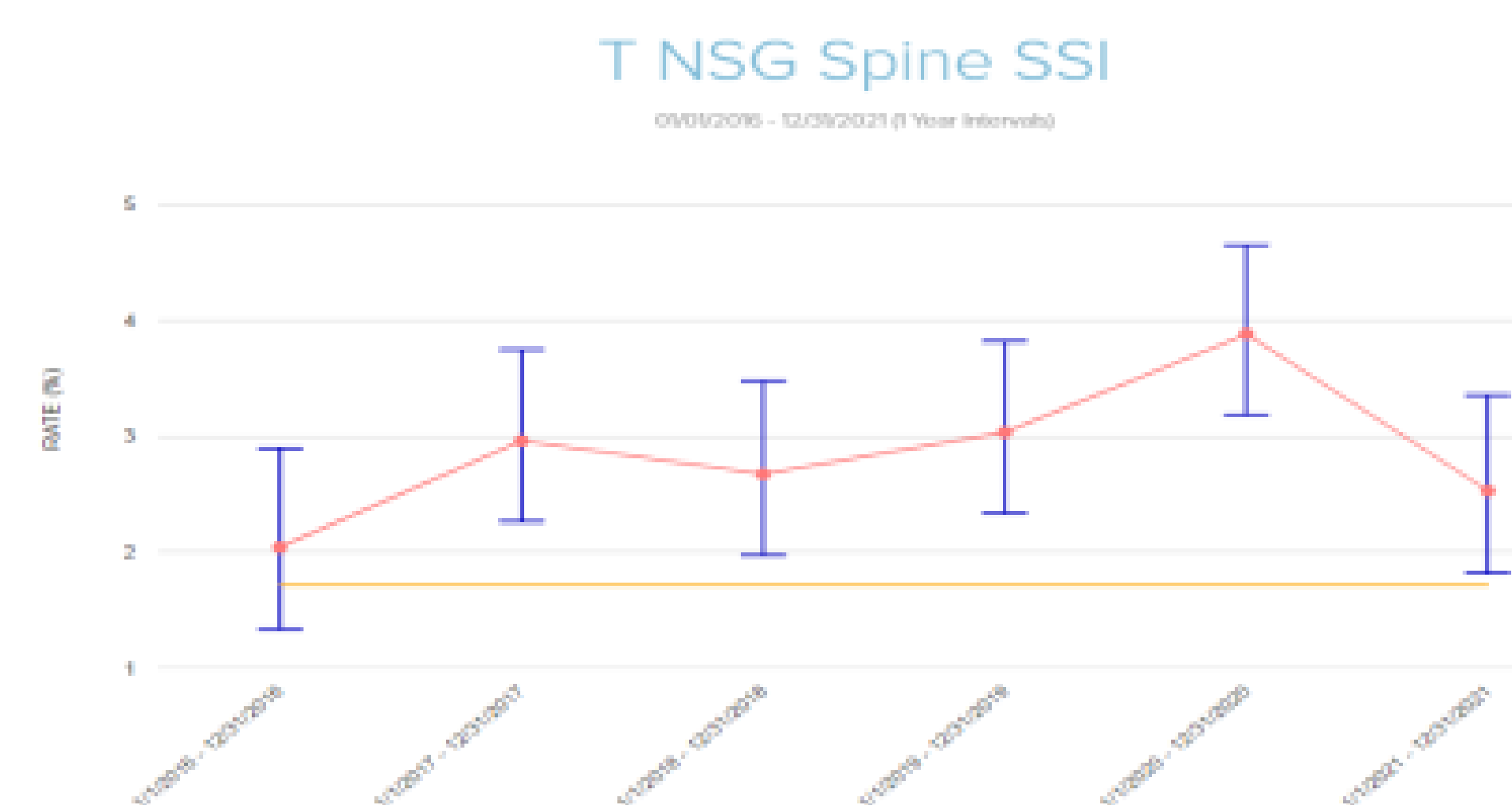
Pre-op Nasal Decolonization via Photodisinfection: A Pilot Study in Spinal Surgery Procedures at the Ottawa Hospital

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Define the Problem

Background: Surgical site infections affect approximately 0.5% to 3% of patients undergoing surgery, are associated with longer hospital stays¹ and costs are estimated to be \$3,937 per case in Canada². To monitor performance, The Ottawa Hospital (TOH) joined the American College of Surgeons' National Surgical Quality Improvement Program (ACS-NSQIP) and via this platform, has been tracking data on 100% of all spine cases since 2017. During this time, surgical teams have worked collaboratively to implement best practices aimed at preventing and reducing SSIs. Despite these concentrated efforts, monitoring of processes and evaluation of outcomes, the spine SSI rates at TOH continue to rank above the expected NSQIP rates.

Project Objective: Decrease TOH's SSI rates in spinal surgeries by reducing the nasal bacteria responsible for some of these infections.

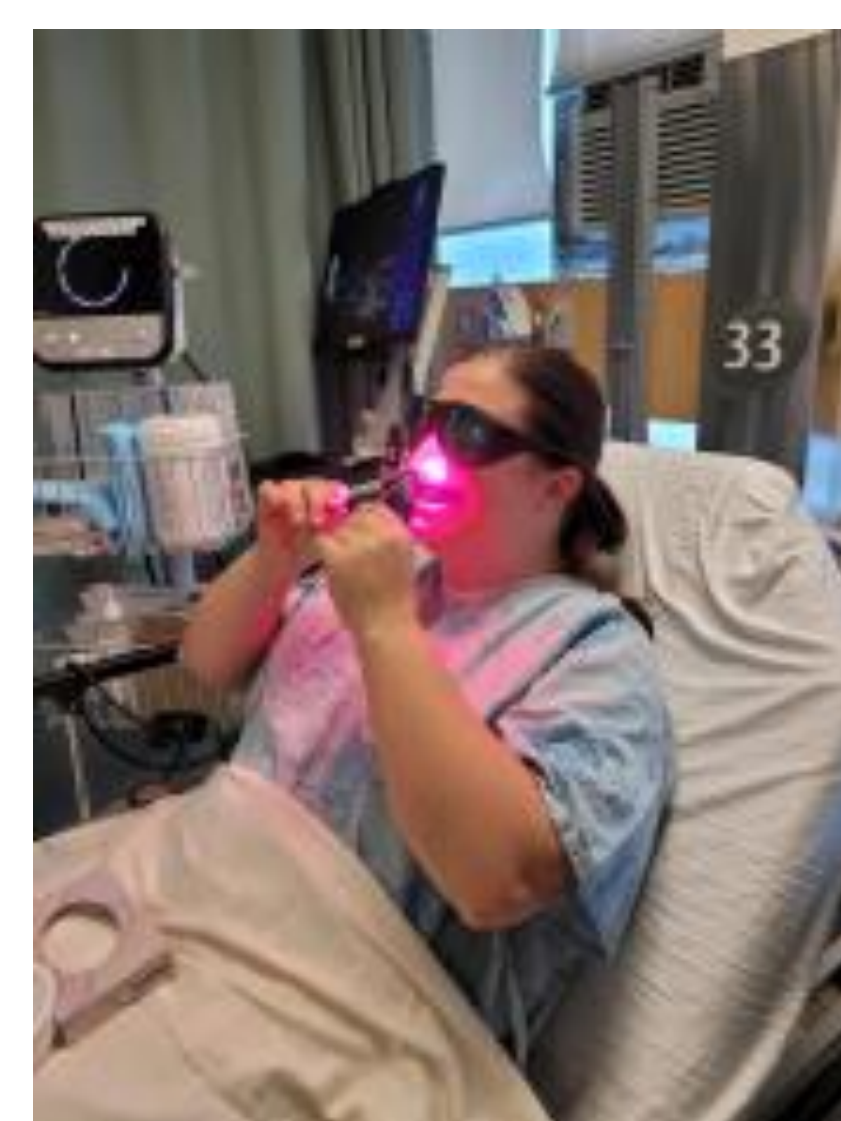


Intervention

- Implementation of a photodisinfection technology program for all spine cases at the Ottawa Hospital.
- Photodisinfection technology: Single application, that provides immediate broad-spectrum efficacy, lasts 48 hrs., administered by a pre-op Nurse resulting in high intervention compliance.

SSI Bundle	
Did you have a bath/shower in the last 24 hours?	Yes
Did you have any prep skin prep?	Chlorhexidine I
Did you have Nasal Decontamination?	Yes
What Type?	

142023.0649	What Type?
Select single option (FS)	
Staphero	
Mipiroch	
Other (add comment)	
Comment (0/250)	



Method: The Ottawa Hospital Innovation Framework

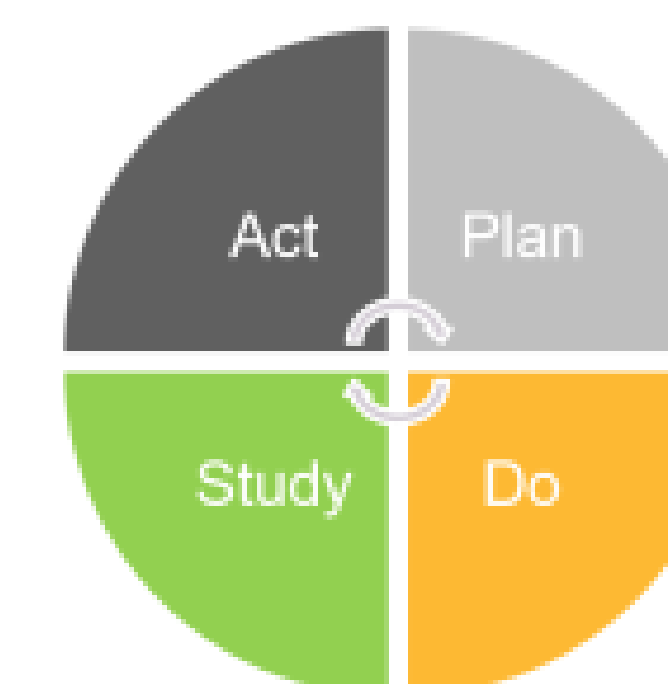
- Leadership support established
- Processes mapped and standard work outlined
 - Gemba walks
 - Engagement with key stakeholders.
- Data Collection:
 - EHR workflows created to document intervention compliance.
 - Key quality indicators identified in EHR
 - NSQIP on-demand data platform
- Ongoing PDSA cycles to improved upon the initial processes.



Measures	Details
Outcome	Primary <ul style="list-style-type: none"> Antibiotic prescribing within 30 days post op (0-48hrs, 48hrs-72hrs, 72hrs-30days intervals) Secondary <ul style="list-style-type: none"> LOS, 30-day post-op re-admissions, 30-day post-op return to OR, ED visits within 30 days post-op Lagging indicator: NSQIP SSI rates for spine procedures
Process	• % of intervention compliance
Balance	• Patient & Staff Experience data

Cycles of Change

- Training champions
- Laminated tip sheet
- Patient & staff educational material
- Visual management
- Workflow video
- Standard work documented



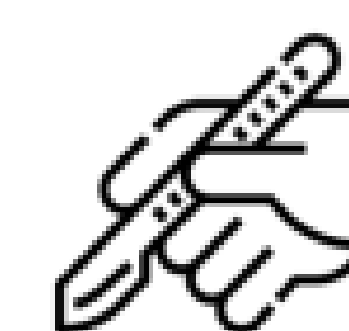
Results: Jan-Dec 2022 pilot data when compared to 2021 data



58.6% (median)
Intervention compliance
p value<0.01



↓ 2.7%
(32 ED visits)
p value=0.02

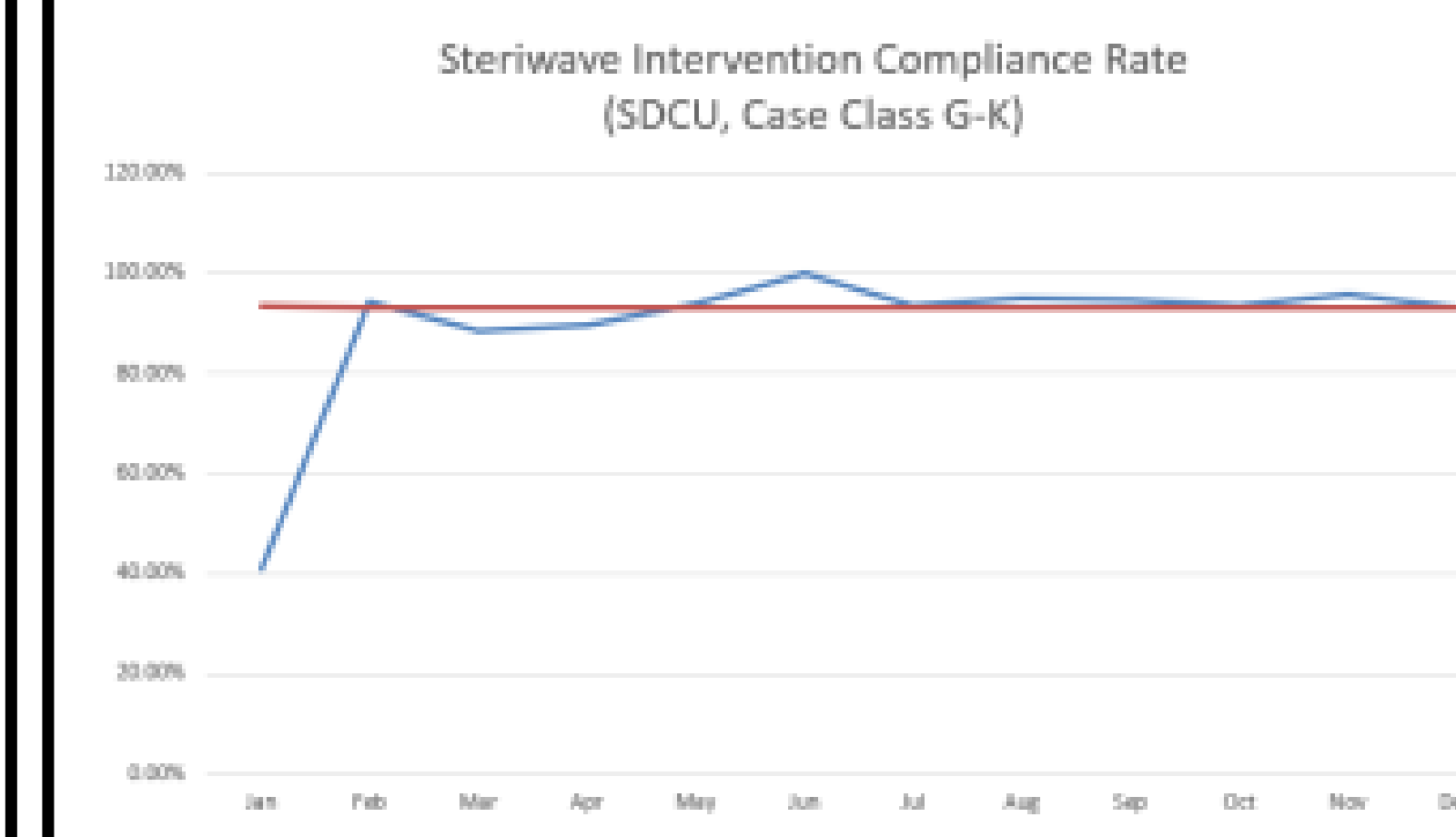


↓ 1%
(12 Return to OR cases)
p value=0.2



↓ 3.5%
(42 Readmissions)
p value<0.01

Results

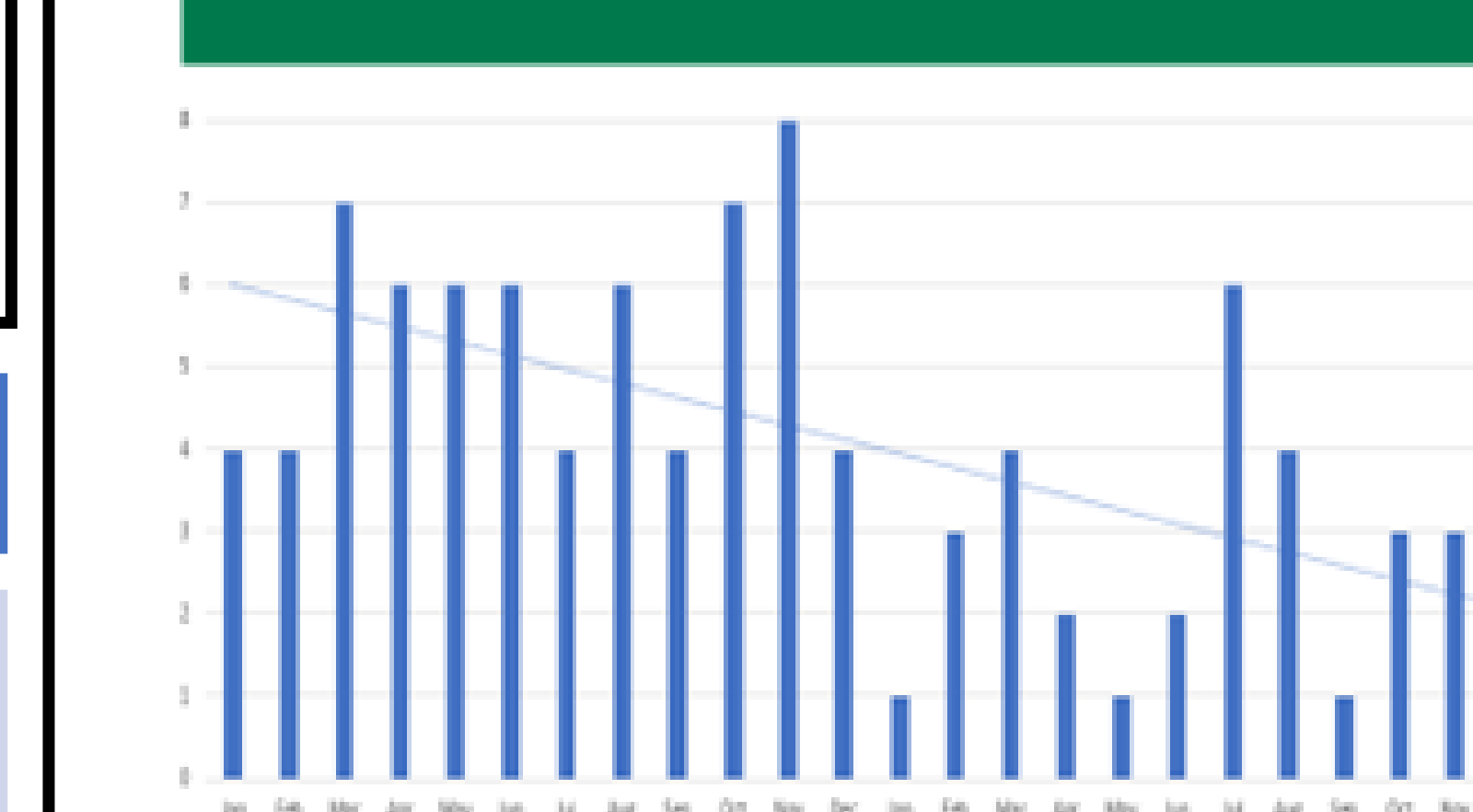


Results: surrogate measure for SSI

(Pilot data January 2022 to April 2023)

Post-op antibiotic prescribing	No Steriwave	Steriwave	P-Value
0 to 48 hrs.	420 (73.8%)	488 (77.6%)	0.128
48 to 72 hrs.	79 (13.9%)	42 (6.7%)	<.001
72 hrs. to 30 days	150 (26.4%)	77 (12.2%)	<.001

Readmission in 30 days



Return to ED in 30 days



Conclusions

- 50% reduction in long term antibiotic prescribing & re-admissions seen with a 93% intervention compliance for elective cases
- NSQIP definition for superficial SSIs make it difficult to capture impact (e.g., antibiotic prescribed by GP for minor redness)
- Hypothesis: the absence of intervention for urgent cases likely driving up SSI rates (coming in via ED, higher risk)
- Improved overall compliance rate (80-90%) needed to make final determinations on efficacy

Next Steps

- Boost compliance for urgent spine cases (Main OR intervention)
- Conduct patient experience and staff satisfaction surveys
- Standardize and implement other elements of a more comprehensive SSI reduction bundle including pre-operative bath with a chlorhexidine solution
- Expand the intervention to other high risk surgical patient populations at TOH (business case)
- Regular EHR report or dashboard for ongoing monitoring of results.
- Standardized order set in the EHR

References

- Seidelman JL, Mantyh CR, Anderson DJ. Surgical Site Infection Prevention: A Review. *JAMA*. 2023;329(3):244–252. doi:10.1001/jama.2022.24075
- Zoutman D, McDonald S, Vethanayagan D. Total and attributable costs of surgical-wound infections at a Canadian tertiary-care center. *Infect Control Hosp Epidemiol*. 1998 Apr;19(4):254–9. doi: 10.1086/647804. PMID: 9605274.