

Evaluation of Infectious Diseases Provider Ordering Practices Following Implementation of a Prosthetic Joint Infection (PJI) Guideline

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Introduction

- Prosthetic joint infection (PJI) is a serious complication of joint arthroplasty, requiring both surgical management and prolonged antimicrobial therapy which has historically been administered via outpatient parenteral antibiotics (OPAT).¹
- Recent studies show oral (PO) antibiotics are non-inferior to intravenous (IV) antibiotics in the treatment for PJI and result in fewer catheter related complications.²

Objective

To examine the impact of an institutional PJI guideline designed to encourage the use of PO antibiotics for PJI treatment on provider ordering practices at a specialty orthopedic hospital.

Methods

Population/Design:

- Retrospective study of 176 PJI patients who underwent surgical management at our orthopedic and spine specialty hospital.

Time:

- Pre-intervention period: November 1, 2023 – October 31, 2024
- Post- intervention period: November 1, 2024 – October 31, 2025

Definitions:

- Prosthetic Joint Infection (PJI)*: ICD-10 code (T84.5)
- Antibiotic Days of therapy (DOT)*: No. days where a patient received ≥1 antibiotics on a given calendar day.

Primary Outcomes of interest:

- Proportion of patients with OPAT orders
- Proportion of Peripherally Inserted Central Catheters (PICC) lines placed.

Statistical analysis:

- χ² or Fisher’s exact tests for proportions (OPAT orders, PICC lines)
- Student t-tests to compare means for length of stay (LOS), IV DOT, and PO antibiotic DOT

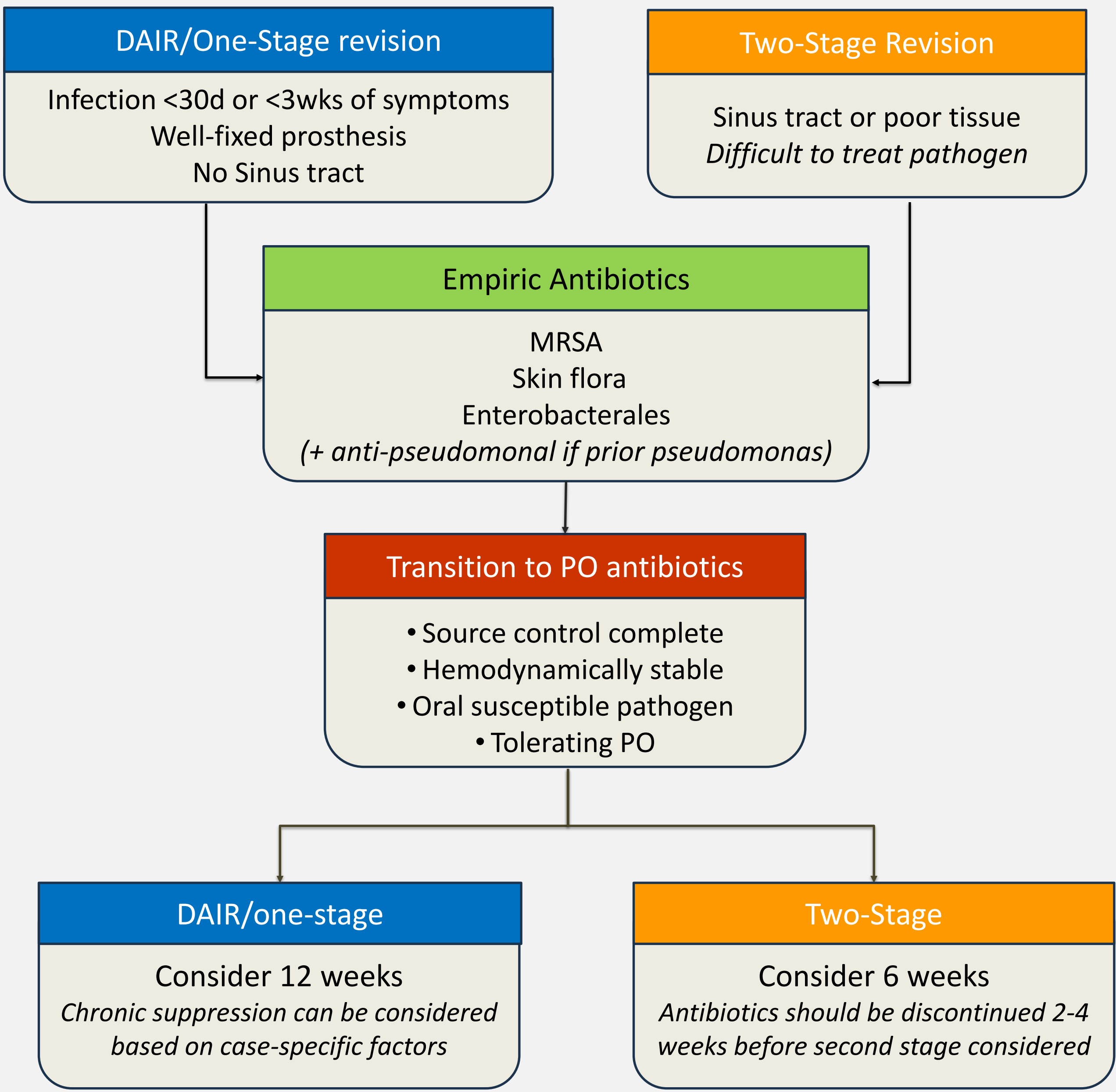
Results: Characteristics of prosthetic joint infection (PJI) cases pre- and post-guideline implementation

Metric	Pre-Intervention (n=82)	Post-Intervention (n = 94)	P-value*
OPAT orders, n (%)	30 (36.5)	45 (47.9)	0.25
PICC lines, n (%)	37 (45.1)	43 (45.7)	0.93
LOS, mean (SD)	5.9 (4.2)	6.2 (4.0)	0.68
Outpatient DOT, mean (SD)	45.7 (71.8)	47.8 (44.2)	0.82
IV DOT	22.5 (58.0)	22.8 (42.1)	0.97
PO DOT	25.6 (52.9)	28.0 (35.7)	0.73

- Mean LOS did not significantly change with intervention
- No significant differences in the proportion of OPAT orders placed or PICC lines placed between pre- and post- intervention periods.
- Neither outpatient IV DOT nor outpatient PO DOT changed significantly between pre- and post- intervention periods.

Intervention

a) Algorithm summarizing guidance outlined in the PJI guideline



b) Summary of PO antibiotic recommendations outlined in intervention

Gram Positive Organisms			Gram Negative Organisms		
Organism	Preferred	Alternative	Organism	Preferred	Alternative
MRSA/MSSA	Levofloxacin + Rifampin, TMP/SMX	Doxycycline, Cefadroxil (MSSA), Linezolid (MRSA)	Enterobacterales	Levofloxacin, TMP/SMX	Cefadroxil, Amoxicillin/clavulaunate
Streptococci	Amoxicillin	Cefadroxil, clindamycin	Pseudomonas	Levofloxacin	
Enterococci	Amoxicillin	Linezolid	Cutibacterium spp.	Amoxicillin, Doxycycline	Cefadroxil, Linezolid
Organism	Preferred	Alternative			
Culture Negative	Doxycycline + Amoxicillin/Clavulanate, Levofloxacin + Rifampin	Cefadroxil instead of Amoxicillin/clavulaunate, TMP/SMX instead of doxycycline			

Conclusions

- Implementation of guidelines for PJI not sufficient to change ID provider ordering practices for PJI treatment.
- Future work will evaluate utility of individualized feedback to increase appropriate use of PO antibiotics for PJI

References

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- Li HK, Rombach I, Zambellas R, et al. Oral versus Intravenous Antibiotics for Bone and Joint Infection. *N Engl J Med*. 2019;380(5):425-436. doi:10.1056/NEJMoa1710926