

# Impact of Implementing an IV to PO Antibiotic Treatment Protocol for Orthopedic Infections on Prescribing Habits and Health Utilization Outcomes

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## ABSTRACT

### Background

The Oral versus Intravenous Antibiotics for Bone and Joint Infection Trial concluded that oral antibiotics administered during the first six weeks of therapy for orthopedic infections were non-inferior to parenteral antibiotics. Previously, we also conducted a retrospective cohort study of patients at our center with an orthopedic infection. Patients transitioned to oral therapy had significantly fewer adverse events and similar incidences of one year treatment failure compared to patients maintained on parenteral vancomycin.

### Methods

To increase use of oral antibiotics for orthopedic infections, we created a protocol for changing IV to PO antibiotics prior to hospital discharge. We evaluated its effect on prescribing practices and healthcare utilization outcomes. Patients with an orthopedic infection were included if they were discharged within the 90-day pre- and post-protocol study periods, had an inpatient Infectious Disease consult, and were initiated on parenteral vancomycin while inpatient. The primary outcome compared the incidence of oral antibiotics prescribed at discharge. Secondary outcomes included incidence of adverse drug reactions, discharge dispositions, hospital length of stay, canceled follow-up appointments, unplanned readmissions, and early treatment failure.

### Results

Fifty patients were included, 22 and 28 patients in the pre- and post-protocol groups, respectively. Twenty-three (82%) patients in the post-protocol group were prescribed oral antibiotics at discharge compared to 8 (36%) patients in the pre-protocol group. Twenty-three (82%) patients in the post-protocol group were discharged home compared to 13 (59%) patients in the pre-protocol group. Of note, 7 (25%) patients in the post-protocol group had early treatment failure compared to 1 (5%) patient in the pre-protocol group, and 8 (29%) patients in the post-protocol group compared to 4 (18%) patients in the pre-protocol group had an unplanned readmission.

### Conclusion

Providing physicians with an oral antibiotic protocol for orthopedic infections significantly increased the number of oral antibiotic prescriptions at hospital discharge, but the higher rates of treatment failure observed after protocol implementation are concerning and warrant further investigation.

## METHODOLOGY

### STUDY DESIGN

- Aim:** To evaluate the effectiveness of implementing a discharge IV to PO antibiotic interchange protocol for orthopedic infections
- Design:** Single-center pre- and post-intervention and quality improvement analysis



### INCLUSION CRITERIA

- Received IV vancomycin on two separate days while hospitalized
- Discharge prescription for IV vancomycin or oral antibiotics

### EXCLUSION CRITERIA

- Less than 18 years old
- Pregnant
- Chronic renal replacement therapy
- Follow-up care outside of the University of Utah Health Infectious Disease Services

### PRIMARY OUTCOME

Incidence of oral antibiotic prescriptions at hospital discharge pre- and post-protocol implementation

### SECONDARY OUTCOMES

Adverse Drug Reactions

Canceled Follow-up at ID Clinic

Hospital Length of Stay

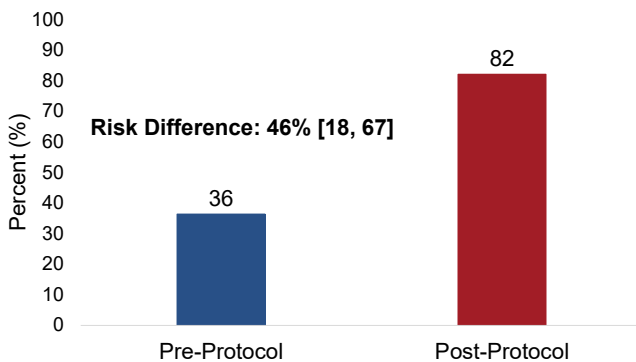
Unplanned Readmissions

Early Treatment Failure

Discharge Disposition

## RESULTS

### Primary Outcome: Incidence of PO Antibiotic Prescriptions at Hospital Discharge



Secondary Outcome	Pre-Protocol (n=22)	Post-Protocol (n=28)	Risk Difference [95% CI]
Adverse Events, n (%)	5 (23)	3 (11)	-12% [-33, 10]
Early Treatment Failure, n (%)	1 (5)	7 (25)	20% [-1, 38]
Canceled Follow-up, n (%)	2 (9)	7 (25)	16% [-6, 35]
Unplanned Readmission, n (%)	4 (18)	8 (29)	10% [-14, 32]
Hospital Length of Stay, average (SD)	7 (6)	5 (4)	-1.4 [-4.4, 1.6]*
Discharge Disposition, n (%)			
Skilled Nursing Facility	9 (41)	5 (18)	-23% [-46, 3]
Home	13 (59)	23 (82)	23% [-3, 46]

\*absolute difference

## DISCUSSION

- There was ready adoption of oral antibiotics by the ID division, and significantly more prescriptions for oral antibiotics at hospital discharge following implementation of an IV to PO therapy protocol for the management of orthopedic infections
- Many patients on oral antibiotics with treatment failure had a diabetic foot infection, therefore, including more careful selection criteria in the protocol may be warranted for this type of orthopedic infection
- Further investigation is necessary to determine the overall effect of early transitioning to oral antibiotics on effectiveness outcomes

## DISCLOSURES

Russell Benefield has an active investigator-initiated research grant from Paratek Pharmaceuticals

Poster and Abstract



IV to PO Protocol

