

Switch from Intravenous to Oral Antibiotics on Discharge to Nursing Homes

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INTRODUCTION

- Antibiotic use is prevalent and often inappropriate among nursing home (NH) residents
- Advanced age, multiple comorbidities, presence of invasive devices, and functional decline result in frequent healthcare utilization and contributes to a high rate of infections and antibiotic-resistant organisms in this population
- Appropriate conversion from intravenous (IV) to oral (PO) antibiotics is a key stewardship strategy associated with shorter hospital stays and fewer treatment-related adverse events
- Patients transitioning from hospital to NH may pose a barrier to optimizing antibiotic stewardship due to atypical infection presentation and challenges associated with transitions of care

OBJECTIVES

- Quantify the distribution of antibiotic route of administration on discharge to nursing homes and frequency of IV to PO conversion

METHODS

Design and Patient Setting

- Retrospective cohort study of patients treated with IV antibiotics and discharged from Oregon Health & Science University Hospital to a NH between January 1, 2016 and December 31, 2018

Inclusion Criteria

- Hospitalized patients > 18 years old

Data Collection

- Data were collected from a repository of electronic health record data

Outcomes

- IV to PO switch on nursing home discharge

Statistical Analysis

- Descriptive statistics including means and standard deviations (SD) and frequencies and percentages

RESULTS

- 2,410 patients discharged from the hospital to a NH on antibiotics
- 1483/2410 (61.5%) patients received at least one IV antibiotic within 48 hours of discharge
- 692/1483 (46.7%) patients receiving IV antibiotics within 48 hours of discharge were switched to an oral antibiotic (Table 1)
- 94% of patients were prescribed another discharge medication for oral administration: 760/791 (96.1%) patients discharged on IV antibiotics and 629/692 (90.1%) patients discharged on oral

Table 1. Characteristics of patients prescribed IV antibiotics within 48 hours of discharge to nursing home (n = 1483)

Characteristics	n (%)		
Age (y); Mean (SD)	66.8 (15.1)		
Female Sex	46		
Route of administration for discharge antibiotic			
Intravenous (IV)	791 (53.3)		
Oral (PO)	692 (46.7)		
Co-morbidities	IV (n=791)	Oral (n=692)	P Value
Charlson co-morbidity index; Median (IQR)	2 (0-3)	2 (1-3)	0.07
Co-morbidities			
Cancer	119 (15.0)	141 (20.4)	0.007
Cerebrovascular disease	115 (14.5)	121 (17.5)	0.12
Dementia	36 (4.6)	85 (12.3)	<0.001
COPD	191 (24.1)	181 (26.2)	0.37
Liver disease	137 (17.3)	83 (12.0)	0.004
Renal disease	154 (19.5)	150 (21.7)	0.29

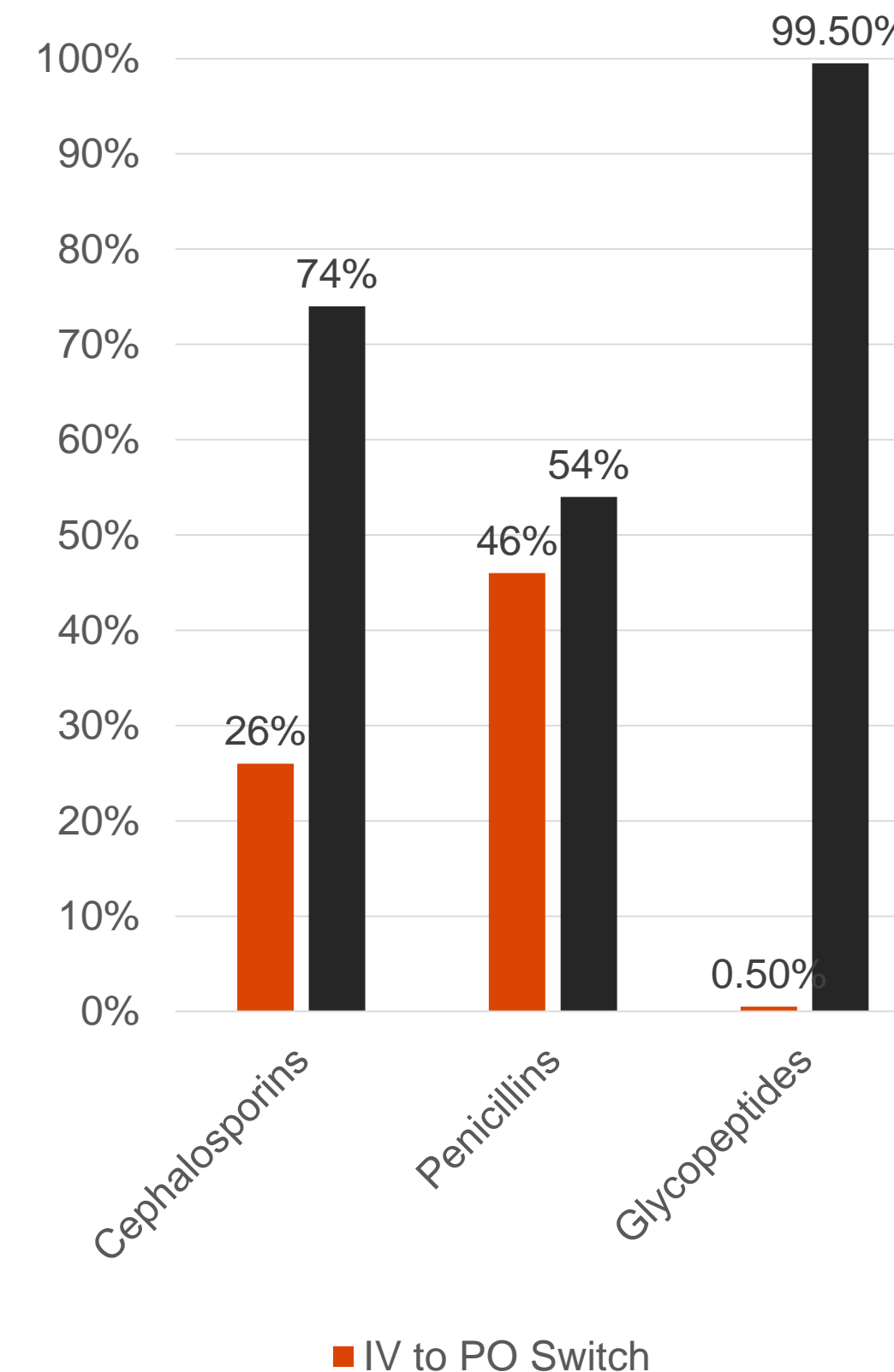
SD = standard deviation, IQR = interquartile range

RESULTS (CONTINUED)

Antibiotics Prescribed

- Most frequently prescribed IV antibiotics on discharge (Figure 1)
 - Cephalosporins (45%)
 - Penicillins (22%)
 - Glycopeptides (18%)

Figure 1. Frequency of IV to oral (PO) conversion on discharge among the most frequently prescribed antibiotics



RESULTS (CONTINUED)

Infectious Diagnoses (Table 2)

- Patients with pneumonia or urinary tract infection (UTI) diagnosis were significantly more likely to switch from IV to PO antibiotics at discharge compared to patients with a diagnosis of osteomyelitis

Table 2. Comparison of IV to PO conversion rates by infectious diagnoses

Diagnosis Code	IV Antibiotics (n=791)	Oral Antibiotics (n=692)	P Value
Pneumonia	40 (5%)	90 (13%)	<0.001
Urinary tract infection	16 (2%)	77 (11%)	<0.001
Osteomyelitis	111 (14%)	28 (4%)	<0.001

Table 3. Comparison of treatment characteristics based on discharge antibiotic route of administration

Characteristics	IV (n=791)	Oral (n=692)	P value
Outpatient days of therapy; Median (IQR)	22 (12-33)	7 (4-10)	<0.001
Length of hospital stay > 7 days	576 (73%)	217 (32%)	<0.001
ID consult ordered	267 (34%)	46 (7%)	<0.001
Surgical DRG	542 (69%)	234 (34%)	<0.001

CONCLUSIONS

- Approximately 62% of hospital patients discharging to NHs received IV antibiotics within 48 hours of discharge
- 47% of patients discharging to a NH were converted to oral antibiotics prior to discharge
- Approximately 96% of patients discharged on IV antibiotics were able to tolerate oral medications, based on other discharge medications received.
- Continuation of IV antibiotic therapy on discharge was associated with:
 - Longer treatment duration
 - Longer hospital stays
 - Greater number of infectious disease consults
 - Broad spectrum antibiotic regimens
- Interventions that help guide the appropriate conversion from IV to PO antibiotic therapy during transitions from hospitals to nursing homes are needed

DISCLOSURES

Nothing to disclose

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FOR MORE INFORMATION

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