

Impact of Weekend Initiation of Vancomycin or Piperacillin/Tazobactam on Days of Therapy Received upon Hospital Admission

Jessina C. McGregor, PhD¹; Caitlin M. McCracken, MA¹; Samuel F Hohmann^{2,3}, PhD; Amy L. Pakyz, PharmD MS PhD⁴

¹ Oregon State University College of Pharmacy; ² Vizient; ³ Department of Health Systems Management, Rush University; ⁴ Virginia Commonwealth University School of Pharmacy



INTRODUCTION

- Antibiotic therapy for inpatients with suspected infections is typically empirically initiated
 - Vancomycin and piperacillin-tazobactam are frequent empiric choices
- Therapy is narrowed or altered when additional diagnostic evidence becomes available
- Hospital staffing specialist availability may differ on weekends
- Antibiotic therapy initiated on a weekend may impact the timing of necessary therapy changes

OBJECTIVE

Compare the duration of therapy of vancomycin and piperacillin-tazobactam between those who had therapy initiated on a weekday versus a weekend day.

METHODS

- Retrospective cross-sectional study
- Sample included U.S. hospitals that contributed pharmacy data for inpatients to the Vizient clinical database in 2016
- We identified IV vancomycin and piperacillin-tazobactam courses initiated on day of admission
- Courses were categorized as weekend initiation (Friday, Saturday, Sunday) versus weekday initiation
- Median days of therapy were compared between weekend and weekday initiation using the Wilcoxon rank-sum test

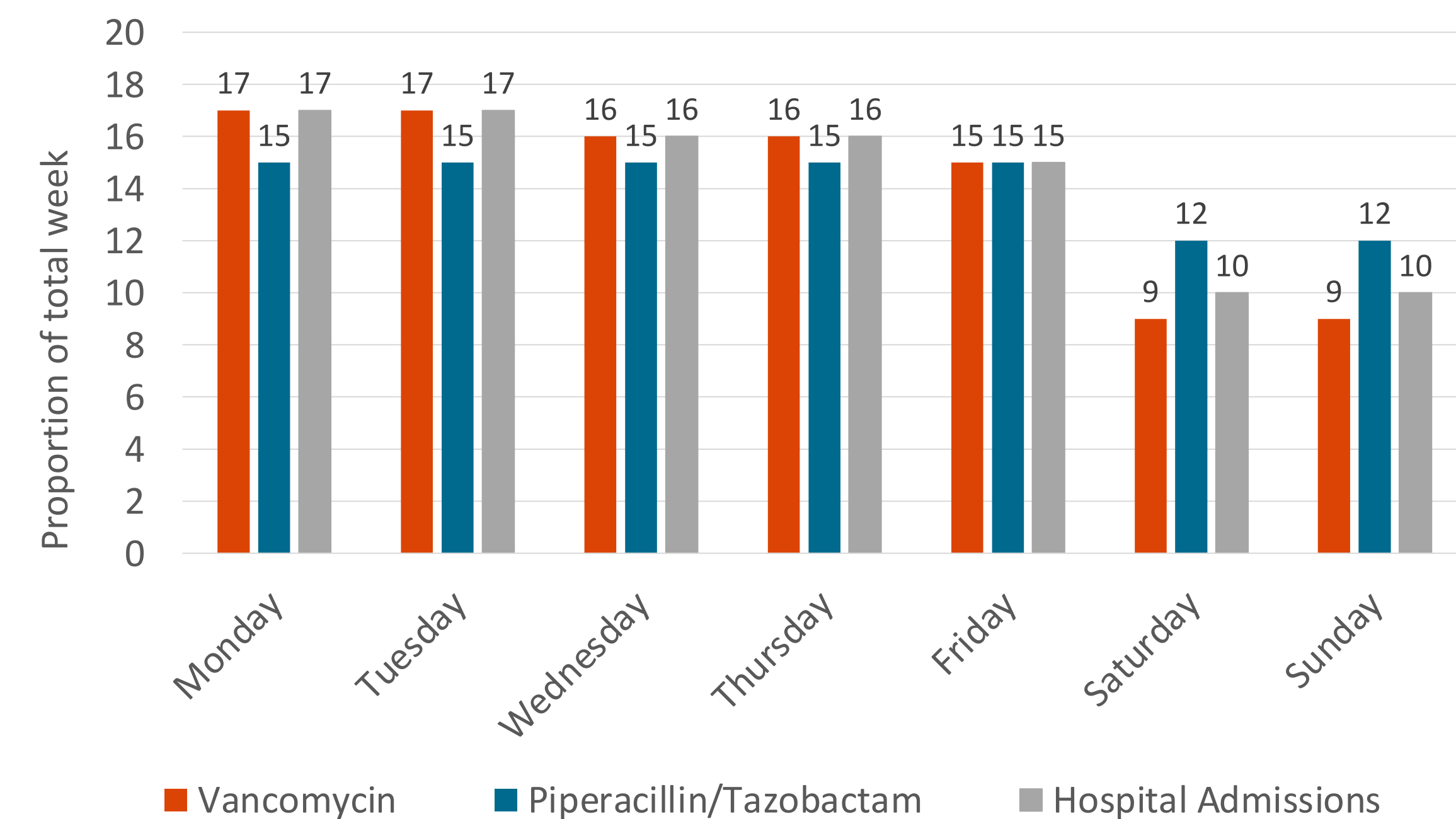
RESULTS

- Vizient data: 145 hospitals; 3.7 million patient encounters
 - 49% of hospitals with 500+ beds
 - 65% were teaching hospitals
 - 67% with transplant service
- 401,101 encounters with vancomycin initiated on admission
- 221,751 encounters with piperacillin-tazobactam initiated on admission

Table 1. Characteristics of patients receiving vancomycin (VAN) or piperacillin-tazobactam (TZP) upon hospital admission

Patient Characteristic	2016 Vizient Cohort n = 3,727,338	VAN or TZP upon admission n = 498,014
Age (Mean, SD)	47 (26)	57 (19)
Male (n, %)	1,718,222 (46%)	263,682 (55%)
Race (n, %)		
White	2,383,202 (64%)	343,640 (69%)
Black	754,185 (20%)	93,187 (19%)
Asian	103,082 (3%)	10,783 (2%)
Other	364,119 (10%)	38,961 (8%)
Unknown	61,545 (2%)	5,709 (1%)
Declined	34,875 (1%)	3,905 (1%)
Hispanic (n, %)	457,459 (12%)	46,889 (9%)
Insurance (n, %)		
Private	1,195,499 (32%)	136,201 (27%)
Medicaid	1,424,359 (38%)	169,752 (34%)
Medicare	984,063 (26%)	176,522 (35%)
Other	123,417 (3%)	15,539 (3%)
ICU during encounter (n, %)	65,2587 (18%)	13,3871(27%)
Length of stay (Median, IQR)	3 (2-6)	4 (2-8)

Figure 1. Administration of Vancomycin and Piperacillin-Tazobactam upon hospital admission by day of week



RESULTS

- 13.3% (498,014/3,735,266) of encounters received either vancomycin, piperacillin/tazobactam or both upon hospital admission
- Patients receiving either vancomycin or piperacillin-tazobactam upon admission were (Table 1):
 - Approximately 10 years older than the full 2016 Vizient cohort & more likely to be on Medicare
 - Had more ICU admissions during encounter
 - Spent ~1 day longer in the hospital
- 33% of vancomycin and 40% of piperacillin-tazobactam of total weekly administrations were started on a weekend day (Figure 1)
- 20% of total weekly hospital admissions were on a weekend day
- Median (IQR) days of therapy for vancomycin initiated on a weekend was 2 days (1-4 days) compared to 2 days (1-3 days) when initiated on a weekday (p<.01) (Table 2)
- Median (IQR) days of therapy for piperacillin-tazobactam was 3 days (2-5 days) for courses initiated on either a weekend or weekday

Table 2. Duration of therapy for Vancomycin and Piperacillin-Tazobactam when started on a weekend compared to weekday

	Administrations on Day of Admission n, (%)	Duration of Therapy (MD.IQR)
Vancomycin		
Weekday	266,997 (67%)	2 (1-3)
Weekend	134,104 (33%)	2 (1-4)
Piperacillin-Tazobactam		
Weekday	133,646 (60%)	3 (2-5)
Weekend	88,105 (40%)	3 (2-5)

DISCUSSION

- Patients receiving vancomycin or piperacillin-tazobactam upon admission were older, sicker and had a longer hospital stay than the 2016 Vizient cohort
- There was a slightly larger proportion of total weekly administrations of vancomycin upon admission than there was total proportion of weekend hospital admittances
- There was a statistically significant difference in the days of therapy received by patient encounters with vancomycin initiated on weekdays versus weekends
- Among encounters with vancomycin upon admission, the 75th percentile received at least one additional day of therapy when initiated on a weekend versus a weekday
- Due to large a sample size in this study there was enough power to identify small differences as statistically significant
- Further exploration is needed to identify if weekend initiation is associated with extended durations of therapy in specific sub-populations of patients

CONCLUSIONS

The duration of therapy of IV vancomycin administered on day of admission was longer between those who had therapy initiated on a weekday versus a weekend day. The proportion of weekend administrations of vancomycin upon day of admission was slightly larger than the proportion of total weekend admissions.

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FOR MORE INFORMATION

Jessina C. McGregor, PhD FSHEA
Associate Professor
College of Pharmacy
Oregon State University
mcgregoj@ohsu.edu

