



# Comparison of Vancomycin and Daptomycin Complications and Interventions in Outpatient Infusion

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## Background & Objective

### Background

- Outpatient parenteral antimicrobial therapy (OPAT) is standard treatment for patients that require parenteral antibiotics for longer than a few days<sup>1-3</sup>
- While the benefits of OPAT include decreased hospital length of stay, decreased healthcare costs and increased patient satisfaction, OPAT also comes with potential complications, such as adverse drug events, vascular access issues and hospital readmissions<sup>4</sup>

### Objective

- To compare the rates of complications and antimicrobial interventions for adult patients who receive vancomycin versus daptomycin in the OPAT setting

## Methods

- Study Design:** Single-center retrospective cohort study
- Inclusion Criteria:** Adults that received  $\geq 72$  hours of vancomycin or daptomycin via home infusion, infusion center, or SNF between January 1, 2017 – August 31, 2019
- Exclusion Criteria:**
  - Transferred care to an outside provider
  - Concurrent outpatient antibiotic therapy (except rifampin)
  - Pregnant women, prisoners, decisionally impaired
- Endpoints:**
  - Primary: Complication rates associated with OPAT (adverse drug reactions, elevated laboratory markers, line complications, emergency department visits, and hospital readmissions)
  - Secondary:
    - Rates of interventions and additional phone calls
    - Incidence of changes to alternative antimicrobial therapy
    - Time on the original antimicrobial agent

## Patient Characteristics

Characteristic	Vancomycin (n=130)	Daptomycin (n=50)	P-value
Age (years), mean (SD)	60 (16)	51 (16)	< 0.001
Female, n (%)	73 (56)	27 (54)	NS
Benefit Group, n (%)			
Medicare	65 (50)	11 (22)	P < 0.001
Medicaid	32 (25)	19 (38)	NS
Private	26 (20)	13 (26)	NS
Other	7 (5)	7 (14)	NS
Hospital LOS (days), median (IQR)	8 (5-13)	7 (5-13)	NS
ICU LOS (days), median (IQR)	0 (0-0)	0 (0-0)	NS

## Patient Characteristics, cont.

Characteristic	Vancomycin (n=130)	Daptomycin (n=50)	P-value
OPAT Setting, n (%)			
Home	66 (51)	35 (70)	0.020
SNF	54 (42)	5 (10)	< 0.001
Infusion Center	10 (8)	10 (20)	0.019
Infection, n (%)			
Bone & Joint	86 (66)	30 (60)	NS
SSTI	14 (11)	4 (8)	NS
Uncomplicated Bacteremia	8 (6)	6 (12)	NS
Complicated bacteremia	7 (5)	6 (12)	NS
Endocarditis	6 (5)	2 (4)	NS
CNS Infection	5 (4)	2 (4)	NS
Pulmonary	4 (3)	0 (0)	NS
Positive Blood Culture, n (%)	36 (28)	21 (42)	NS
Pathogen, n (%)			
MRSA	38 (29)	21 (42)	NS
Polymicrobial	40 (31)	9 (18)	NS
Coagulase-negative <i>Staphylococcus</i> sp.	24 (18)	9 (18)	NS
Cultures negative	13 (10)	3 (6)	NS
Other gram positive organisms	9 (7)	2 (4)	NS
MSSA	4 (3)	4 (8)	NS
<i>Enterococcus</i>	1 (1)	2 (4)	NS
No cultures	1 (1)	0 (0)	NS
Anticipated OPAT course (days), median (IQR)	33.5 (20-37)	36 (24-38)	NS
Actual OPAT course (days), median (IQR)	25 (12-36)	35.5 (22-39)	0.036

CNS: Central Nervous System; IQR: Interquartile Range; MRSA: Methicillin-Resistant *Staphylococcus aureus*; MSSA: Methicillin-Sensitive *Staphylococcus aureus*; OPAT: Outpatient Parenteral Antimicrobial Therapy; SD: standard deviation; SNF: Skilled Nursing Facility; SSTI: Skin and Soft Tissue Infection

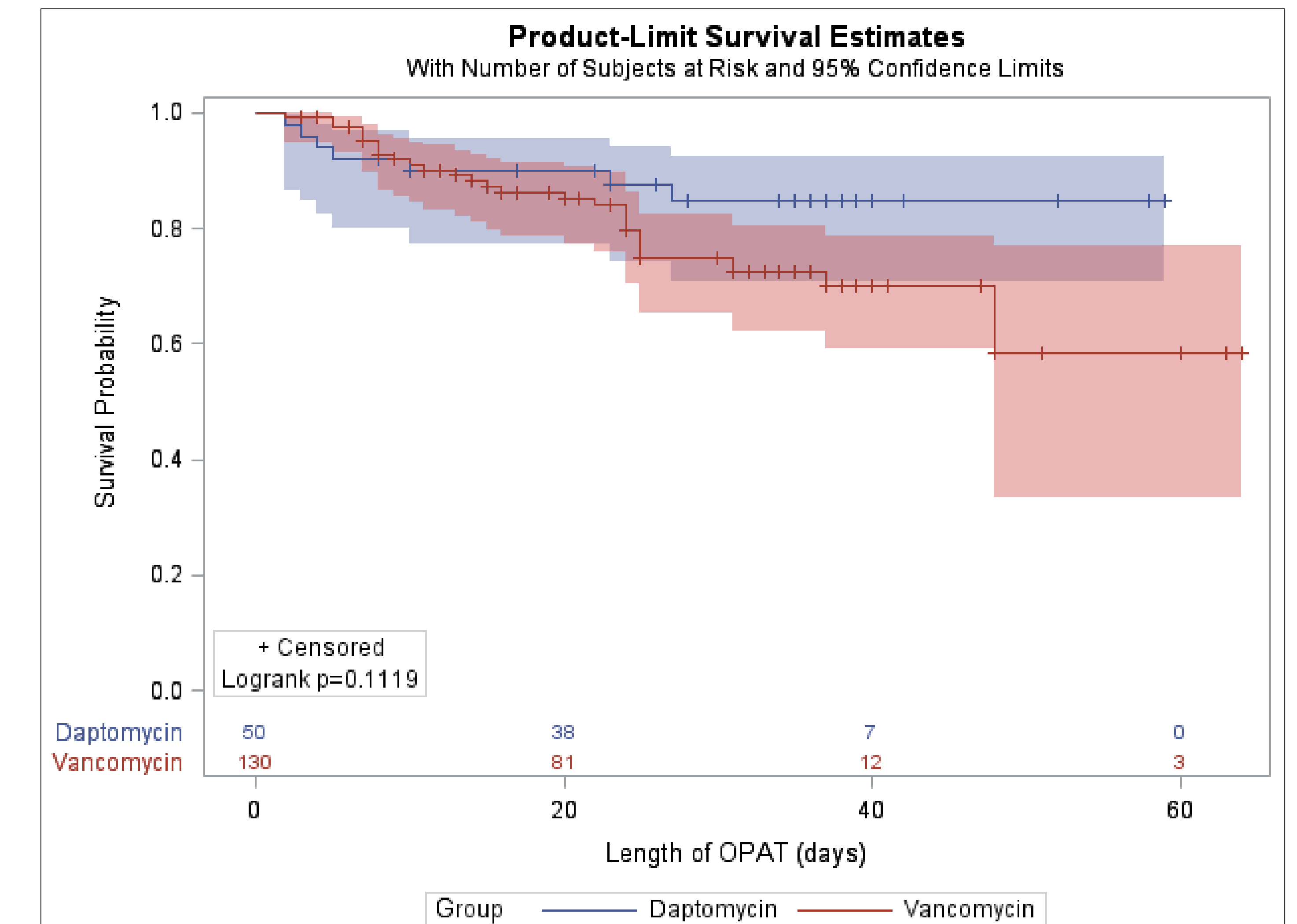
## Results

Outcome	Vancomycin (n=130)	Daptomycin (n=50)	Rate Ratio (95% CI)
Total Adverse Drug Reactions	22	18	1.78 (0.96-3.32)
Vancomycin Trough >20 mg/dL, Creatine Kinase >500 units/L	42	3	0.16 (0.05-0.50)
Line Complications	59	18	0.66 (0.39-1.13)
Emergency Department Visits	7	5	1.56 (0.49-4.90)
Hospital Readmissions	9	8	1.94 (0.75-5.02)
Total Additional Interventions	213	36	0.37 (0.26-0.52)
Total Additional Phone Calls	285	73	0.56 (0.43-0.72)

Emergency department visits and hospital readmissions were included if related to the patient's infection, antimicrobial therapy, or line access.

## Results, cont.

### Likelihood of Maintaining Originally Prescribed Antimicrobial Over Time



## Discussion

- Vancomycin-treated patients experienced supratherapeutic vancomycin serum concentrations more frequently than daptomycin-treated patients experienced elevations in CK.
- Vancomycin-treated patients required higher healthcare utilization via additional interventions to successfully complete an OPAT course.
- These results suggest there are significant cost-considerations beyond solely the drug acquisition cost for OPAT patients.
- Further prospective studies and cost-effective analyses may be helpful in directing antimicrobial selection in OPAT.

## References

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**Disclosure:** The authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation; IRB Approved.