Dalbavancin Utilization and Associated Clinical Outcomes: A Case-Series

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Introduction

- Dalbavancin is an intravenous (IV) lipoglycopeptide with a spectrum of activity similar to vancomycin[1].
- In bacterial infections that require prolonged antimicrobial therapy, extended antibiotic courses may pose as a challenge due to:
  - Multiple or daily doses of IV antibiotics
  - Intermittent therapeutic drug monitoring (TDM)
  - Need for strict compliance from the patient and caregivers on infusions and follow-up appointments
- Dalbavancin exhibits an elimination half-life of ~ 14.4 days, allowing for bi-weekly dosing[1]. This could potentially decrease length of inpatient stay and limit concerns of therapeutic failure due to poor compliance.
- In recent studies, dalbavancin has demonstrated a clinical cure of ~81-89% in infections such as endocarditis, bloodstream infections, and osteomyelitis[2, 5-7].
- Our objective was to analyze the efficacy and safety of dalbavancin and its role as an alternative therapy in serious Gram-positive infections.

Methodology

- Institutional Review Board (IRB) approved
- Electronic health record (EHR) based retrospective case-series
- Study population:
  - Patients ≥ 18 years old
  - Received a first dose of dalbavancin at any hospital within the Providence Oregon health system
- Study period:
  - December 2019 through December 2021
- Exclusion criteria:
  - Negative specimen culture
  - Received dalbavancin as empiric treatment
  - Main pathogen was not a Gram-positive bacteria
  - Had a vancomycin-resistant isolate
  - Did not receive appropriate follow-up
- Outcomes:
  - 30 day and 30 to 90-day all-cause readmission, reoccurrence, and mortality
- Definitions:
  - **Clinical cure:** No clinical, laboratory, or microbiological evidence of persistent or recurring infection during the 90-day follow-up period
  - **Treatment failure:** Received other IV antibiotics, worsening or recurrence of infection, unable to control source, or new infection within 30-days after the last dose
  - **Appropriate follow-up:** attended scheduled appointments, outpatient clinic visits, and/or received anticipated subsequent dalbavancin dose(s) within the 90-day follow-up period

Results

Table 1. Cohort demographics and characteristics

Variable	n= 110 (%)
Age in years, average (SD)	50.5 (16.8)
Male sex	64 (58.2)
Body mass index, average (SD)	28.6 (10.5)
Charlson Comorbidity Index (CCI) score, average	3.0
Main pathogen	
Methicillin-susceptible *Staphylococcus aureus* (MSSA)	53 (48.2)
Methicillin-resistant *Staphylococcus aureus* (MRSA)	32 (29.1)
Streptococcus spp.	10 (9.1)
Coagulase-negative *Staphylococcus* spp. (CoNS)	8 (7.3)
Enterococcus faecalis	5 (4.5)
Corynebacterium spp.	1 (0.9)
Other gram-positive pathogens	1 (0.9)
Greater than one pathogen identified	20 (18.2)
Site of infection	
Osteomyelitis/ native joint infection	35 (31.8)
Infective endocarditis	15 (13.6)
Septic arthritis/tenosynovitis	11 (10.0)
Skin and soft tissue infection (SSTI)	22 (20.0)
Bacteremia of unknown source	13 (11.8)
Central line-associated infection	11 (10.0)
Prosthetic joint infection	1 (0.9)
Other	2 (1.8)
Total # with bacteremia	55 (50.0)
Duration of positive blood cultures, average # of days	2.8
Admission serum creatinine (mg/dL), average (SD)	1.0 (0.7)
Total number of doses given (inpatient or outpatient)	
1	75 (68.2)
2	64 (58.2)
3	9 (8.2)
Adverse reactions	5 (4.5)
Infusion related reaction	3 (2.7)
Anaphylaxis	1 (0.9)
Liver function test (LFT) abnormalities	1 (0.9)
No reaction	105 (95.5)
Reason for dalbavancin use	
IV drug use (IVDU)	45 (40.9)
Facilitate discharge/ outpatient convenience	42 (38.2)
Avoid peripherally-inserted central catheter (PICC)	13 (11.8)
Adherence/compliance concerns	2 (1.8)
Cost/insurance issues	2 (1.8)
Unable to tolerate other IV/PO options	4 (3.6)
Other/ unknown	2 (1.8)

Figure 1. 30-day all-cause readmission, recurrence, and mortality based on site of infection (n=110)

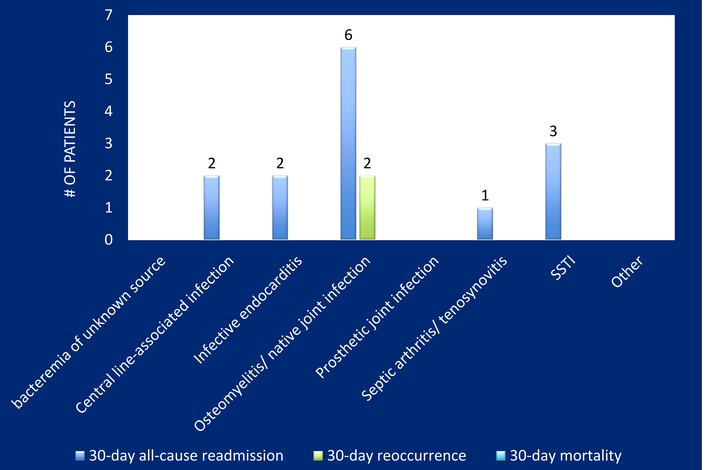
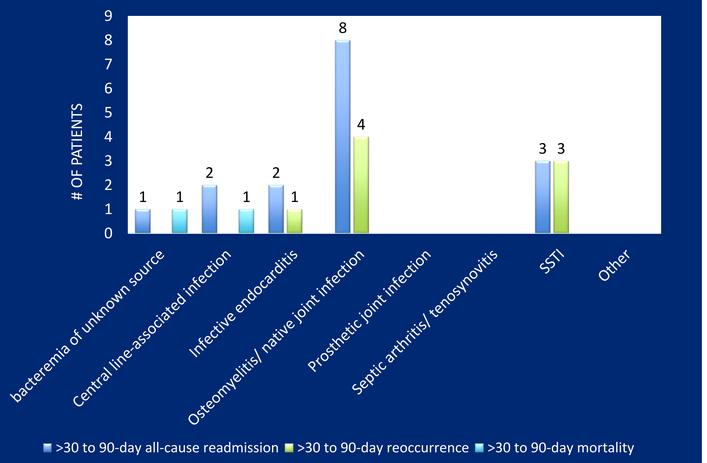
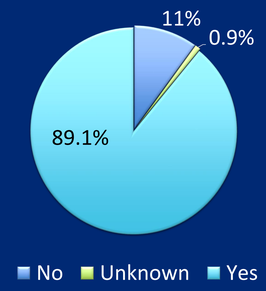


Figure 2. >30 to 90-day all-cause readmission, recurrence, and mortality based on site of infection (n=110)



Results Continued

Figure 3. Clinical cure within 90 days of the last dalbavancin dose (n=110)



Discussion and Conclusion

- Clinical cure was comparable to previous studies, ranging from 81-89%[2, 5-7].
- Of the 45 patients who received dalbavancin due to IVDU, 84.4% achieved clinical cure at 90 days.
- 30-day all-cause readmission, reoccurrence, and mortality occurred in 12.7% (14/110), 1.8% (2/110), and 0% respectively.
- >30 to 90-day all-cause readmission, reoccurrence, and mortality occurred in 14.5% (16/110), 7.3% (8/110), and 1.8% (2/110), respectively.
- No cases had recurrent bacteremia with the initial organism within the 90-day follow-up period.
- Treatment failure occurred in 12 cases (10.9%), primarily due to patients receiving other IV antibiotics within 30 days of the last dalbavancin dose.
- Low rate of adverse events occurred (4.5%).
- Some limitations include: 1) retrospective cohort; 2) limited generalizability due to single health system; 3) no comparison to other antibiotic therapies.
- In conclusion, dalbavancin appears to be a safe, effective, and convenient treatment alternative for Gram-positive infections requiring long term IV treatment.

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