ORIGINAL RESEARCH

Are Oritavancin and Dalbavancin More Cost Effective for Outpatient Parenteral Antimicrobial Therapy at a Veterans Affairs Medical Center?

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Background: Dalbavancin and oritavancin are long-acting lipoglycopeptides frequently used off-label to avoid outpatient parenteral antimicrobial therapy or placement of a central line at hospital discharge for patients with infections. Although dalbavancin and oritavancin have higher acquisition costs compared with commonly used antibiotics, such as vancomycin and daptomycin, they may reduce overall cost of health care.
Methods: This single-center, retrospective, cost-minimization analysis compared treatment with oritavancin and dalbavancin vs vancomycin and daptomycin. Adult patients treated with oritavancin or dalbavancin between September 2017 and November 2022 were matched by indication to patients who received vancomycin or daptomycin. Costs were calculated using a decision tree base model.
Results: Fifty-five patients were included in the analysis: 22 received oritavancin, 15 received dalbavancin, 10 received vancomycin, and 8 received daptomycin. The mean cost of therapy per patient receiving oritavancin, dalbavancin, vancomycin, and daptomycin was $35,630, $59,612, $73,333, and $73,708, respectively.
Conclusions: The cost of using oritavancin and dalbavancin was lower than that of vancomycin and daptomycin, especially for osteomyelitis. As safety and effectiveness data continue to emerge, the use of long-acting lipoglycopeptides appears to be an increasingly attractive alternative to traditional outpatient antimicrobial therapy.

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Oritavancin and dalbavancin are long-acting lipoglycopeptides indicated for the treatment of acute bacterial skin and skin structure infections (ABSSSI).[1,2] Largely due to their long half-lives, prolonged tissue concentrations at sites of infection, tolerability, and minimal requirement for therapeutic drug monitoring, these agents are attractive options in outpatient settings.[3,4] A 1- or 2-dose treatment of oritavancin and dalbavancin may be sufficient for conditions traditionally treated with outpatient parenteral antimicrobial therapy (OPAT) via peripherally inserted central catheter (PICC).

Limited research supports the use of dalbavancin and oritavancin for bone and joint infections, infective endocarditis, and bloodstream infections (BSIs). However, the US Food and Drug Administration has approved an indication for the treatment of ABSSSI.[3-9] Dosing for these off-label indications varies but typically consists of an initial intravenous (IV) dose (1000 mg, 1200 mg, or 1500 mg), with a subsequent dose 1 to 2 weeks later or administered once weekly.[6-10]

Due in part to the recent availability of oritavancin and dalbavancin relative to the publication of practice guidelines, their appropriate place in therapy continues to evolve based on emerging literature.[11,12] One potential barrier of use for these medications is their cost. Based on the number of doses administered, the 2022 estimated total acquisition cost of therapy for oritavancin and dalbavancin was $1014 to $4397 and $3046 to $7150, respectively (eAppendix, available at doi:10.12788/fp.0571). Despite the high acquisition costs, these agents do not require the placement of an indwelling central line, can be administered in outpatient settings, and require minimal therapeutic dose monitoring compared to vancomycin.[13-15] This medication use evaluation (MUE) compared the total cost of treatment with oritavancin and dalbavancin vs therapies traditionally used for OPAT or prolonged IV inpatient therapy.

METHODS

This retrospective MUE was conducted at the Boise Veterans Affairs Medical Center (BVAMC), a level 2 facility with an extensive rural catchment area. BVAMC provides many OPAT services, including medications, supplies, and dressing changes after initial clinic or inpatient education. Contracted vendors may also assist with at-home nursing care using supplies provided by the BVAMC. Cases were identified using an internal database

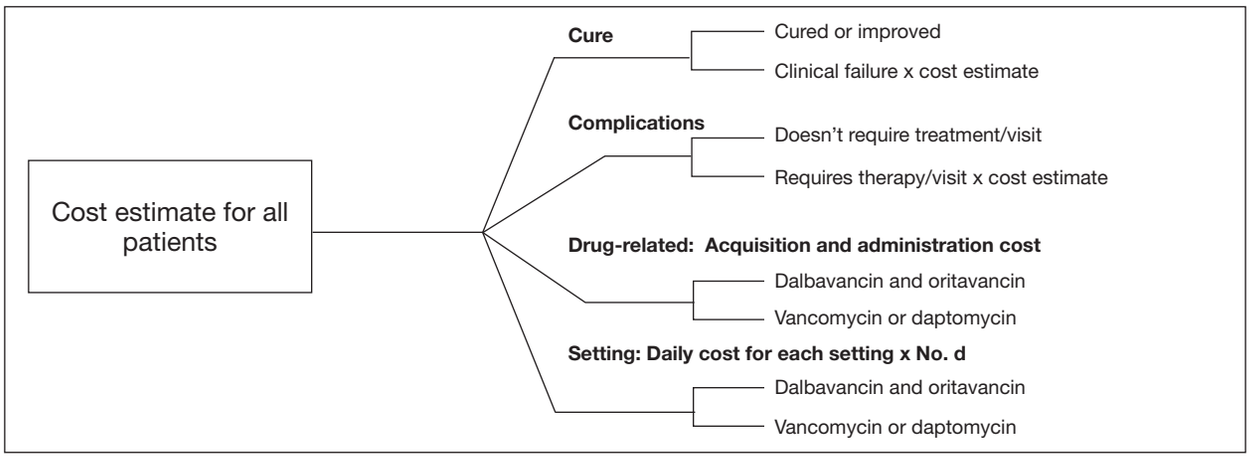

FIGURE 1. Costs were calculated using a decision tree.

of OPAT patients and those who received oritavancin or dalbavancin between September 1, 2017, and November 1, 2022. Patients aged ≥ 18 years who received ≥ 1 dose of oritavancin or dalbavancin for ABSSSI, osteomyelitis/joint infections, endocarditis, and BSI were included. Comparator treatments consisting of ≥ 1 week of vancomycin or daptomycin for ABSSSI, osteomyelitis/joint infections, endocarditis, and BSI were identified through review of OPAT and Infectious Diseases service consults during the same timeframe. Patients were excluded if any antibiotic was prescribed by a non-VA clinician, if medications were not provided by OPAT, or if chart review did not identify an ABSSSI, osteomyelitis/joint infection, or BSI diagnosis.

Electronic medical record review was conducted using a standardized data collection form (eAppendix). Data collected included demographics, infectious diagnosis, treatment administered, administration procedures and related visits and treatment locations, outcomes including clinical failure, adverse events (AEs), and hospital readmission.

Clinical failure was defined as readmission or death due to worsening infection or readmission secondary to a documented potential AE to the evaluated antibiotics within 90 days after initiation. Clinical failures excluded readmissions not associated with infection including comorbidities or elective procedures. AEs included new onset renal failure (serum creatinine ≥ 0.5 mg/dL), neutropenia (neutrophils ≤ 500), thrombocytopenia (platelets < 100,000), eosinophilia (> 15% eosinophils), or creatine phosphokinase > 10 times the upper limit of normal, and *Clostridioides difficile* (*C. difficile*) infection. Line complications included thrombophlebitis, local inflammation, or infection requiring line replacement (eAppendix).

A cost-minimization approach was used to assess the total cost of treatment.[16] Patients who received oritavancin or dalbavancin were matched with patients that received vancomycin and daptomycin for the same indication and about 1 month of initiation through the randomization function in Microsoft Excel. This accounted for changes in personnel, nonformulary drug approvals, cost, and changes in practice during the pandemic. Costs were calculated using a decision tree as a base model (Figure 1). In this model, each treatment dyad was assessed for the presence or absence of clinical failure, adverse event (medication and line complications), and treatment setting endpoints. Cost estimates were tabulated for each patient that received treatment using published VA data, literature, pharmacoeconomist guidance, or best faith effort based on workflow.[17-20] All cost estimates were based on 2022 figures or adjusted for inflation if obtained prior to 2022. Secondary endpoints of this analysis included estimated total cost of medication acquisition, administration supplies, laboratory monitoring, and human resources for OPAT visits or receiving home-health services.

TABLE 1. Baseline Characteristics

Characteristic	Oritavancin/ dalbavancin	Vancomycin	Daptomycin
Patients, No.	24 oritavancin 15 dalbavancin	10	8
Age, mean (SD), y	67.7 (10.9)	68.5 (8.6)	73.3 (8.9)
Male sex, No. (%)	35 (90)	10 (100)	8 (100)
Weight, mean (SD), kg	94.66 (17.5)	94.6 (15.8)	100.9 (19.7)
Indication, No. (%)			
ABSSSI	3 (8)	0 (0)	0 (0)
Osteomyelitis/joint infection	27 (69)	7 (70)	7 (88)
Bloodstream infection	9 (23)	3 (30)	1 (12)
Endocarditis	0 (0)	0 (0)	0 (0)
Concomitant antibiotic, No. (%)			
β-Lactams	1 (3)	2 (20)	1 (13)
Cephalosporins	3 (8)	3 (30)	1 (13)
Tetracyclines	1 (3)	0 (0)	0 (0)
Clindamycin	0 (0)	0 (0)	0 (0)
Fluoroquinolones	2 (5)	0 (0)	1 (13)
Linezolid	0 (0)	0 (0)	0 (0)
Trimethoprim/sulfamethoxazole	2 (5)	0 (0)	0 (0)
Other	1 (3)	1 (10)	0 (0)
None	29 (74)	4 (40)	5 (63)
Culture results, No. (%)			
MRSA	9 (23)	3 (30)	3 (38)
MRSE	2 (5)	3 (30)	3 (38)
MSSA	10 (26)	0 (0)	0 (0)
Polymicrobial infections	14 (36)	3 (30)	1 (13)
Other gram positive (only)	4 (10)	1 (10)	1 (13)
Other gram negative (only)	0 (0)	0 (0)	0 (0)

Abbreviations: ABSSI, acute bacterial skin and skin structure infection; MRSA, methicillin-resistant *Staphylococcus aureus*; MRSE, methicillin-resistant *Staphylococcus epidermidis*; MSSA, methicillin-susceptible *Staphylococcus aureus*.

This evaluation was classified by the BVAMC Medication Use Evaluation research determination subcommittee as a quality improvement project and was considered exempt from VA Human Subjects Research requirements based on the VA Policy Handbook guideline 1058.05.

RESULTS

The study identified 44 patients who received dalbavancin or oritavancin between September 1, 2017, and October 31, 2022. Thirty-nine patients were included in the analysis: 24 received oritavancin and 15 received dalbavancin and were matched by indication to 10 patients who received vancomycin and 8 patients who received daptomycin. Three patients could not be matched by indication of ABSSSI (Figure 2). Most patients were male, aged > 65 years, and were treated for osteomyelitis (Table 1). No patients were treated for infective endocarditis. A myriad of concomitant antibiotics were used to treat patients and culture results indicated that most infections treated with oritavancin and dalbavancin were polymicrobial.

The mean total cost of therapy per patient receiving oritavancin, dalbavancin, vancomycin, and daptomycin was $35,630, $59,612, $73,333, and $73,708, respectively (Figure 3). When stratified by indication, 27 patients (69%) in the oritavancin/dalbavancin group were treated for osteomyelitis/joint infections (16 oritavancin, 11 dalbavancin), 9 patients (23%) were treated for BSI (6 oritavancin, 3 dalbavancin), and 3 patients (8%) were treated for ABSSSI (2 oritavancin, 1 dalbavancin). The mean cost per patient for osteomyelitis/joint infections with oritavancin, dalbavancin, vancomycin, and daptomycin was $34,678, $54,224, $87,488, and $85,044, respectively. The mean cost per patient for BSI for oritavancin, dalbavancin, vancomycin, and daptomycin was $35,048, $75,349, $40,305, and $68,068, respectively. The mean cost per patient for ABSSSI for oritavancin and dalbavancin was $44,771 and $71,672.51.

Estimated total drug cost represents the cost of drug acquisition, administration supplies, laboratory monitoring, and human resources for OPAT visits or receiving home health services. The mean cost per patient of drug-related therapy for oritavancin, dalbavancin, vancomycin, and daptomycin was $2203, $5924, $3637, and $7146, respectively (Table 2).

The mean cost per patient for osteomyelitis therapy for oritavancin, dalbavancin, vancomycin, and daptomycin was $2375, $6775, $4164, $8152, respectively. The mean cost of per patient for BSI treatment with oritavancin, dalbavancin, vancomycin, and daptomycin was $1737, $3475, $2409, and $1016, respectively. The mean cost per patient for oritavancin and dalbavancin for ABSSSI treatment, was $1553 and $3910, respectively.

Setting-related costs include expenses from inpatient admissions and postdischarge stays at community living centers (CLCs), skilled nursing facilities (SNFs), or rehabilitation facilities (RFs) for the

duration of antimicrobial therapy. The mean setting-related therapy cost for osteomyelitis treatment with oritavancin, dalbavancin, vancomycin, and daptomycin was $27,852, $17,815, $83,324, and $72,856, respectively. The mean setting-related therapy cost per patient for BSI treatment with oritavancin, dalbavancin, vancomycin, and daptomycin was $33,310, $60,668, $37,734, and $67,074, respectively. The mean setting-related therapy cost per patient for ABSSSI treatment for oritavancin and dalbavancin was $43,218 and $67,762.00, respectively.

Six of 39 patients (15%) had clinical failure: 2 patients with oritavancin and 4 patients with dalbavancin. Four patients were readmitted for worsening infection and 2 for AEs. One patient (13%) in the daptomycin group had clinical failure due to readmission for worsening infection. There was no clinical failure with vancomycin. The costs associated with clinical failure per patient for oritavancin, dalbavancin, vancomycin, and daptomycin were $2925, $23,972, $0, and $3601, respectively (Table 3).

Thirty-eight patients (97%) who received oritavancin or dalbavancin had difficulty adhering to vancomycin or daptomycin OPAT. Oritavancin or dalbavancin was used in 10 patients (26%) who lacked support at home and 15 patients (38%) who had either a contraindication or previous failure with other antimicrobials, which were the most common explanations.

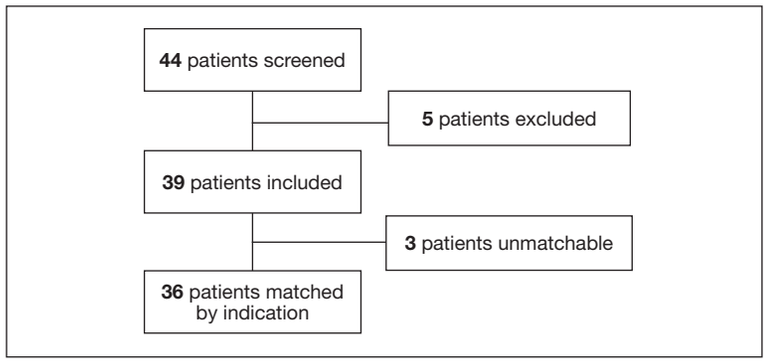

FIGURE 2. Patients who received dalbavancin or oritavancin for acute bacterial skin and skin structure infection.

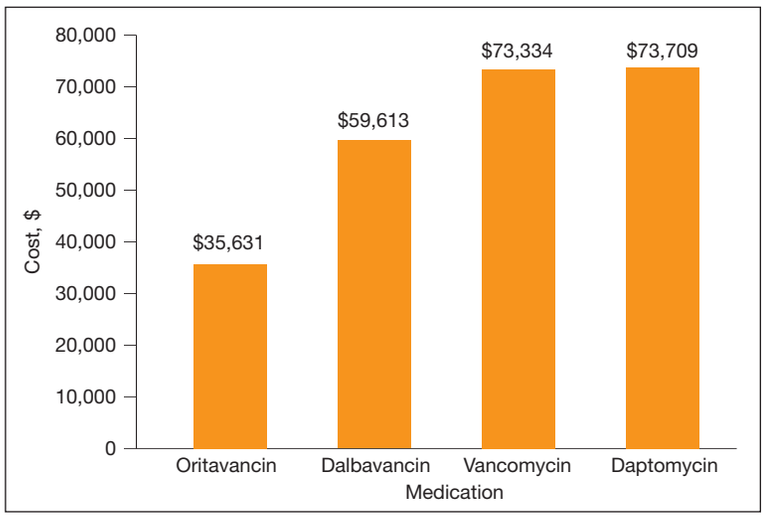

FIGURE 3. Total per-patient therapy cost (medication-related cost + setting-related cost + cost of clinical failure + cost of complications) adjusted for inflation to 2022 dollars.

DISCUSSION

Long-acting lipoglycopeptides represent a potential alternative to home IV therapy that can avoid prolonged IV access with traditional OPAT. This offers significant advantages, allowing patients to be discharged from the hospital early, especially in rural areas with little OPAT infrastructure or those with logistic challenges. In this analysis, treatment with oritavancin for osteomyelitis, BSI, or ABSSSI, yielded an estimated cost savings of about $37,000 per patient, compared to treatment of matched indications with vancomycin and daptomycin. For every patient treated with dalbavancin for osteomyelitis, BSI, or ABSSSI, the cost savings was about $13,000 per patient, compared to treatment of matched indications for daptomycin and vancomycin. The estimated cost savings per patient for oritavancin was similar to previously published projections ($30,500 to $55,831).[15]

Cost savings were primarily driven by setting-related costs. The greatest contrast between the oritavancin and dalbavancin group compared to the vancomycin and daptomycin group was the length of stay in a postdischarge CLC, SNF, or RF setting. This analysis estimated that for every patient treated with oritavancin for osteomyelitis, the setting-related cost savings per patient was about $55,000 compared with vancomycin, and about $45,000 per patient compared with daptomycin. Furthermore, the estimated setting-related cost savings for osteomyelitis treatment with dalbavancin was about $65,000 compared

TABLE 2. Cost Comparison[a]

Cost per patient	Oritavancin, $	Dalbavancin, $	Vancomycin, $	Daptomycin, $
Drug-related	2203	5924	3637	7146
Setting-related	30,497	29,716	69,647	72,133
Clinical failure-related	2925	23,972	0	3601
Complication	40	0	48	40

[a]Inflation adjusted to 2022 dollar.

with vancomycin and about $55,000 compared with daptomycin.

Clinical failure occurred with greater frequency in the oritavancin and dalbavancin groups (15%), compared with the vancomycin (0%) and daptomycin (13%) groups. Although the clinical failure rates in patients with osteomyelitis treated with oritavancin and dalbavancin compared with daptomycin were like those in previously published research (10%-30%), the rates of clinical failure for vancomycin in this analysis were lower than those in the oritavancin and dalbavancin group.[8,21,22] The discrepancy in clinical failure rates between this analysis and previous research is likely due to selection bias. Based on the percentages of clinical failure found in the analysis, it is not surprising to note that the total clinical failure-related cost per patient was higher for oritavancin and dalbavancin compared to vancomycin, but similar between oritavancin and daptomycin.

This analysis also found that 15% of patients in the oritavancin and dalbavancin group experienced an AE compared to 10% of patients in the vancomycin group and none in the daptomycin group. In the oritavancin and dalbavancin group, the 2 most common AEs were infusion-related reactions and *C. difficile* colitis. Although infusion-related reactions are easier to correspond to oritavancin and dalbavancin, it becomes difficult to definitively attribute the occurrence of *C. difficile* to these drugs as many patients were receiving concomitant antibiotics. Although not a primary or secondary objective, the rate of IV-line AEs were more prevalent in the vancomycin (10%), and daptomycin (13%) groups, compared to none in the oritavancin and dalbavancin group. This finding was expected; oritavancin and dalbavancin do not require a central IV line for administration.

Pharmacoeconomic literature continues to emerge with long-acting lipoglycopeptides. A 2024 Italian retrospective single-center analysis of 62 patients reported mean cost reductions > €3200 per patient (> $3400) given dalbavancin compared with the standard of care for ABSSSI or more deep-seeded infections such as osteomyelitis.[23] A 2023 Spanish observational multicenter analysis of 124 patients with infective endocarditis demonstrated high efficacy, safety and cost-effectiveness with dalbavancin vs conventional treatments, with a mean savings of > €5548 per patient (> $6200).[24] An analysis of the implementation of a dalbavancin order pathway for ABSSSI to avert inpatient admissions at 11 US emergency departments found a mean cost savings of $5133 per patient and $1211 per hospitalization day avoided, compared with inpatient usual care.[25]

Conversely, a multicenter, retrospective study of 209 patients in a community-based health care system failed to show a financial benefit for dalbavancin use when compared to standard of care for ABSSSI with higher readmission rates.[26] Turco et al also reported increased cost results for 64 patients who received dalbavancin vs standard of care for ABSSSI.[27] These discordant findings in ABSSSI studies may be impacted by the authors' patient selection choices and cost assumptions, especially with significantly cheaper oral alternatives. More data are needed to best identify the optimal therapeutic use for the long-acting lipoglycopeptides.

Limitations

The most significant limitation in this analysis was selection bias: 38 of 39 patients (97%) who received dalbavancin or oritavancin had a documented reason that described why OPAT therapy with traditional medications would not be optimal, includ-

TABLE 3. Study Participant Outcomes

Criteria	Oritavancin/dalbavancin	Vancomycin	Daptomycin
Patients	24 oritavancin/15 dalbavancin	10	8
Length of hospital stay, mean (SD), d	7.2 (8.3)	8.6 (4.9)	12 (10.2)
Postdischarge length of stay, mean (SD), d[a]	0.2 (1.1)	15.0 (14.97)	5.9 (10.4)
Readmission length of stay, mean (SD), d	2.5 (16.1)	NA	0.8 (0.0)
Reason to avoid outpatient IV therapy, No. (%)	38 (97)	NA	NA
IV drug use	2 (5)		
Geographical location	4 (10)		
Lack of support at home	10 (26)		
Toxicity profile	15 (38)		
IV access complication	2 (5)		
Early discharge	5 (13)		
Other/unknown	1 (3)		
ADR, No. (%)	6 (15)	1 (10)	0 (0)
Nephrotoxicity	0 (0)	0 (0)	0 (0)
Neutropenia	0 (0)	0 (0)	0 (0)
Thrombocytopenia	0 (0)	0 (0)	0 (0)
Elevation of CPK	0 (0)	0 (0)	0 (0)
Rhabdomyolysis	0 (0)	0 (0)	0 (0)
Eosinophilic Pneumonia	0 (0)	0 (0)	0 (0)
Eosinophilia	1 (17)	0 (0)	0 (0)
Infusion-related reactions	2 (33)	0 (0)	0 (0)
Rash	1 (17)	1 (10)	0 (0)
Clostridioides difficile colitis	2 (33)	0 (0)	0 (0)
IV line complications, No. (%)	0 (0)	1 (10)	1 (13)
Venous thrombosis	0 (0)	0 (0)	0 (0)
Phlebitis	0 (0)	0 (0)	0 (0)
Local inflammation	0 (0)	0 (0)	0 (0)
PICC line infection	0 (0)	0 (0)	0 (0)
PICC clot	0 (0)	0 (0)	0 (0)
Other (requiring PICC intervention)	0 (0)	1 (10)	1 (13)
Clinical failures, No. (%)	6 (15)	0 (0)	1 (13)
Worsening infection	4 (67)	0 (0)	1 (100)
Relating to ADR	2 (33)	0 (0)	0 (0)
Presence of infectious disease consult, No. (%)	39 (100)	10 (100)	8 (100)

Abbreviations: ADR, adverse drug reaction; CPK, creatine phosphokinase; IV, intravenous; NA, not applicable; PICC, peripherally inserted central catheter.
[a]Patient postdischarge stays occurred at a community living center or skilled nursing facility.

ing logistics, AEs, or clinical failures. Most patients treated with vancomycin and daptomycin were admitted into a SNF, RF, or CLC for the remainder of their treatment, allowing for closer monitoring and care compared to patients treated with oritavancin and dalbavancin, but at a greater cost. For patients sent to a community-based SNF or RF, laboratory data were not available unless internally drawn or documented in the electronic medical record.

Additionally, not all cost data were available from VA sources; some were applied from literature, pharmacoeconomist, or best faith effort based on workflow. The cost data from third party contractors providing OPAT services to some BVAMC patients during the time frame of this analysis were not available. Due to its small sample size, outliers had the potential to affect averages reported and accuracy of the cost analysis. Emerging evidence suggests that daptomycin doses higher than the manufacturer-recommended regimen may be required for select indications, a factor that could affect cost, AEs, and efficacy outcomes.[28] The acquisition cost of oritavancin and dalbavancin may vary by institution (ie, VA contract prices vs non-VA contract prices) and change over time. A current assessment of cost is needed to best visualize institutional benefit.

Finally, while the patient demographic of this MUE was highly representative of the demographic treated at the BVAMC (males aged > 65 years), it may not be applicable to external patient populations. This analysis evaluated off-label indications for these medications. Consequently, this analysis would likely not be applicable to non-VA institution, as third-party payers (eg, insurance) are unlikely to cover medications for off-label indications.

CONCLUSIONS

This study found cost savings associated with the use of oritavancin and dalbavancin compared with vancomycin and daptomycin, particularly for the treatment of osteomyelitis. As safety and efficacy data continues to emerge, the use of long-acting lipoglycopeptides appears to be an increasingly attractive alternative option compared to traditional outpatient antimicrobial therapy, depending on the structure of the program. Larger, multicenter cost-effectiveness studies are needed to further establish the impact of these novel agents.

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Ethics and consent

Based on the VA Policy Handbook guideline 1058.05, which defines operations activities that constitute research, this evaluation was classified as a quality improvement project and exempt from VA Human Subjects Research requirements.

References

1. Dalvance. Package insert. AbbVie Inc.; 2025.
2. Orbactiv. Package insert. Melinta Therapeutics; 2022.
3. Cooper CC, Stein GE, Mitra S, Abubaker A, Havlichek DH. Long-acting lipoglycopeptides for the treatment of bone and joint infections. *Surg Infect (Larchmt)*. 2021;22(8):771-779. doi:10.1089/sur.2020.413
4. Simonetti O, Rizzetto G, Molinelli E, Cirioni O, Offidani A. Review: a safety profile of dalbavancin for on- and off-label utilization. *Ther Clin Risk Manag*. 2021;17:223-232. doi:10.2147/TCRM.S271445
5. Bloem A, Bax HI, Yusuf E, Verkaik NJ. New-generation antibiotics for treatment of gram-positive infections: a review with focus on endocarditis and osteomyelitis. *J Clin Med*. 2021;10(8):1743. doi:10.3390/jcm10081743
6. Thomas G, Henao-Martínez AF, Franco-Paredes C, Chastain DB. Treatment of osteoarticular, cardiovascular, intravascular-catheter-related and other complicated infections with dalbavancin and oritavancin: a systematic review. *Int J Antimicrob Agents*. 2020;56(3):106069. doi:10.1016/j.ijantimicag.2020.106069
7. Rappo U, Puttagunta S, Shevchenko V, et al. Dalbavancin for the treatment of osteomyelitis in adult patients: a randomized clinical trial of efficacy and safety. *Open Forum Infect Dis*. 2018;6(1):ofy331. doi:10.1093/ofid/ofy331
8. Cain AR, Bremmer DN, Carr DR, et al. Effectiveness of dalbavancin compared with standard of care for the treatment of osteomyelitis: a real-world analysis. *Open Forum Infect Dis*. 2021;9(2):ofab589. doi:10.1093/ofid/ofab589
9. Van Hise NW, Chundi V, Didwania V, et al. Treatment of acute osteomyelitis with once-weekly oritavancin: a two-year, multicenter, retrospective study. *Drugs Real World Outcomes*. 2020;7(Suppl 1):41-45. doi:10.1007/s40801-020-00195-7
10. Cooper MM, Preslaski CR, Shihadeh KC, Hawkins KL, Jenkins TC. Multiple-dose dalbavancin regimens as the predominant treatment of deep-seated or endovascular infections: a scoping review. *Open Forum Infect Dis*. 2021;8(11):ofab486. doi:10.1093/ofid/ofab486
11. Baddour LM, Wilson WR, Bayer AS, et al. Infective endocarditis in adults: diagnosis, antimicrobial therapy, and management of complications: a scientific statement for healthcare professionals from the American Heart Association. *Circulation*. 2015;132(15):1435-1486. doi:10.1161/CIR.0000000000000296
12. Berbari EF, Kanj SS, Kowalski TJ, et al. 2015 Infectious Diseases Society of America (IDSA) Clinical Practice Guidelines for the Diagnosis and Treatment of Native Vertebral Osteomyelitis in Adults. *Clin Infect Dis*. 2015;61(6):e26-46. doi:10.1093/cid/civ482
13. Arrieta-Loitegui M, Caro-Teller JM, Ortiz-Pérez S, López-Medrano F, San Juan-Garrido R, Ferrari-Piquero JM. Effectiveness, safety, and cost analysis of dalbavancin in clinical practice. Eur J Hosp Pharm. 2022;29(1):55-58. doi:10.1136/ejhpharm-2020-002315
14. Pascale R, Maccaro A, Mikus E, et al. A retrospective multicentre study on dalbavancin effectiveness and cost-evaluation in sternotomic wound infection treatment: DALBA SWIT study. *J Glob Antimicrob Resist*. 2022;30:390-394. doi:10.1016/j.jgar.2022.07.018
15. Antosz K, Al-Hasan MN, Lu ZK, et at. Clinical utility and cost effectiveness of long-acting lipoglycopeptides used in deep seated infections among patients with social and economic barriers to care. *Pharmacy (Basel)*. 2021;10(1):1. doi:10.3390/pharmacy10010001
16. Roberts MS. Economic aspects of evaluation. In: Friedman CP, Wyatt JC, eds. *Evaluation Methods in Biomedical Informatics*. 2nd ed. Springer; 2006:301-337.
17. US Department of Veterans Affairs. HERC inpatient average cost data. Updated May 1, 2025. Accessed May 9, 2025. https://www.herc.research.va.gov/include/page.asp?id=inpatient
18. US Department of Veterans Affairs. HERC Outpatient average cost dataset. Updated May 1, 2025. Accessed May 9, 2025. https://www.herc.research.va.gov/include/page.asp?id=outpatient
19. Ektare V, Khachatryan A, Xue M, Dunne M, Johnson K, Stephens J. Assessing the economic value of avoiding hospital admissions by shifting the management of gram +

acute bacterial skin and skin-structure infections to an outpatient care setting. *J Med Econ*. 2015;18(12):1092-1101. doi:10.3111/13696998.2015.1078339
20. Ruh CA, Parameswaran GI, Wojciechowski AL, Mergenhagen KA. Outcomes and pharmacoeconomic analysis of a home intravenous antibiotic infusion program in veterans. *Clin Ther*. 2015;37(11):2527-2535. doi:10.1016/j.clinthera.2015.09.009
21. Nakrani M, Yu D, Skikka M, et al. Comparison of vancomycin and daptomycin complications and interventions in outpatient parenteral antimicrobial therapy. *Open Forum Infect Dis*. 2020;7(Suppl 1):S361-S362. doi:10.1093/ofid/ofaa439.791
22. Scoble PJ, Reilly J, Tilloston GS. Real-world use of oritavancin for the treatment of osteomyelitis. *Drugs Real World Outcomes*. 2020;7(Suppl 1):46-54. doi:10.1007/s40801-020-00194-8
23. Segala D, Barbieri M, Di Nuzzo M, et al. Clinical, organizational, and pharmacoeconomic perspectives of dalbavancin vs standard of care in the infectious disease network. *Glob Reg Health Technol Assess*. 2024;11(Suppl 2):5-12. doi:10.33393/grhta.2024.3094
24. Hidalgo-Tenorio C, Sadyrbaeva-Dolgova S, Enríquez-Gómez A, et al. EN-DALBACEN 2.0 Cohort: real-life study of dalbavancin as sequential/consolidation therapy in patients with infective endocarditis due to Gram-positive cocci. *Int J Antimicrob Agents*. 2023;62(3):106918. doi:10.1016/j.ijantimicag.2023.106918
25. LoVecchio F, McCarthy MW, Ye X, et al. Single intravenous dose dalbavancin pathway for the treatment of acute bacterial skin and skin structure infections: considerations for emergency department implementation and cost savings. *J Emerg Med*. 2024;67(2):e217-e229. doi:10.1016/j.jemermed.2024.03.003
26. Gonzalez J, Andrade DC, Niu J. Cost-consequence analysis of single-dose dalbavancin versus standard of care for the treatment of acute bacterial skin and skin structure infections in a multisite healthcare system. *Clin Infect Dis*. 2021;73(7):e1436-e1442. doi:10.1093/cid/ciaa1732
27. Turco NJ, Kane-Gill SL, Hernandez I, Oleksiuk LM, D'Amico F, Pickering AJ. A cost-minimization analysis of dalbavancin compared to conventional therapy for the outpatient treatment of acute bacterial skin and skin-structure infections. *Expert Opin Pharmacother*. 2018;19(4):319-325. doi:10.1080/14656566.2018.1442439
28. Jones TW, Jun AH, Michal JL, Olney WJ. High-dose daptomycin and clinical applications. *Ann Pharmacother*. 2021;55(11):1363-1378. doi:10.1177/1060028021991943

Project Definitions

Clinical failure: Readmission or death due to worsening infection or readmission secondary to adverse drug reaction to antibiotic therapy within 90 d from first dose of medication. Clinical failures did not include readmissions unrelated to OPAT including comorbidities or elective procedures.

Therapy complication (adverse drug reaction or line complication) included the following:

Nephrotoxicity (increase in SCr > 0.5 mg/dL from baseline or a doubling of baseline SCr); neutropenia (neutrophils < 500/mL); thrombocytopenia (platelets < 100,000/mL); eosinophilia (≥ 15%); elevation of CPK 10 x ULN; clinician documentation of development of a drug allergy; infusion-related reactions; *Clostridioides difficile* colitis infections.

Intravenous line complications were assessed and included the following:

Venous thrombosis, phlebitis, local inflammation, PICC infection, PICC replacement not otherwise indicated.

Cost Estimates

Cost estimates were obtained from several sources. Costs associated with clinical failure were obtained through national VA data and published literature. Drug and supply acquisition costs were obtained from the pharmacoeconomics pharmacist using distributor data (McKesson Corporation, accessed 2022). Costs associated with administration of medications through OPAT were obtained through OPAT pharmacist best faith estimate and literature estimates, setting of care costs (inpatient, CLC, SNF/Rehab, OPAT) were obtained through available national VA data as well as the literature, and cost of home health was obtained from literature sources (See below). To aid in calculation of human resources cost for OPAT-related visits, time spent for each OPAT visit (pharmacist, pharmacy technicians, and nurses) was obtained from OPAT pharmacist (See below). All cost estimates have been adjusted for inflation to 2022 dollars using an inflation calculator.[a]

Data Collection Form

A list of patients who received oritavancin, dalbavancin, daptomycin, or vancomycin and their dates of therapy initiation was generated by the OPAT pharmacist with assistance from informatics pharmacist.

Patient-specific information collected from electronic health record: Age; sex; weight; drug administered; concomitant antibiotic given; infection type; culture results; medication administration dates; duration of total antimicrobial therapy; duration of therapy with drug of interest; No. and amount (mg) of doses delivered; No. and nature of intravenous line complications; No. and nature of documented adverse drug reaction from antibiotic therapy; No. OPAT visits; No. and nature of clinical failures; No. readmissions (within 90 d of first dose of drug related to infections); No. readmissions during treatment for infection-related diagnosis; documentation of inability to self-administer or comply with traditional OPAT; presence of OPAT or infectious disease consult; No. type of laboratory value drawn for therapeutic drug monitoring; hospital stay location (ward); hospital stay duration; presence and duration of home health nurse to help administer medication; presence of a third party (eg, Coram to provide OPAT therapy); postdischarge stay location and duration; and readmission length of stay and location.

[a]CoinNews Media Group Company. US Inflation Calculator. Accessed May 9, 2025. https://www.usinflationcalculator.com/

Preliminary Estimation of Cost for Inpatient, Rehabilitation, Nursing Home Settings[15]

Location/type of care	2022 hospitalization cost/d, $[a]
Inpatient medicine	4802
Rehabilitation	3986
Nursing home	1890

[a]Costs from 2020 applied to 2021 and 2022 to exclude confounding for COVID-19 hospitalization costs, which include overhead.

Clinical Failure Cost Estimate

Cause for readmission	Cost/d, $
Infection related	4802 (same for inpatient medicine)
Adverse drug reaction related	4802 (same for inpatient medicine)
Discharge to skilled nursing facility	1890
Discharge to rehabilitation facility	3986

Therapy Complication Preliminary Cost Estimate[16,17]

Medical resource	Cost, $
Visit type	
VA physician	159
Outpatient infusion	189[a]
Emergency room	820[a]
Cost calculation for PICC complications	
Alteplase: Cathflo	95 per 2 mg vial
Average PICC complication cost[17]	325[a]

[a]Costs obtained adjusted for inflation to 2022 dollars.

Estimated Cost for Medication Acquisition and Administration

Criteria	Cost
Medication	2022 acquisition cost, $
Oritavancin	338/400 mg vial
Dalbavancin	1021/500 mg vial
Daptomycin	30/500 mg vial
Vancomycin	2/per 1000 mg vial
Human resources[a]	Annual salary estimation, $
OPAT pharmacist	119,041
OPAT nurse	85,000
Pharmacy technician	36,070
Estimated HH/d cost[18]	338/patient/d[b]
Supplies needed for administration[c]	**Supply costs during therapy (wk 1-8), $[b]**
Vancomycin (3 doses/d OPAT RN)	47, 95, 141, 190, 237, 285, 332, 380
Vancomycin (3 doses/d with HH nurse)	76, 153, 229, 305, 381, 458, 534, 610
Vancomycin (2 doses/d with HH nurse)	97, 195, 292, 329, 486, 584, 681, 778
Vancomycin (2 doses/d OPAT RN)	34, 68, 103, 137, 171, 205, 240, 274
Vancomycin (1 dose/d with HH nurse)	72, 145, 217, 290, 362, 435, 507, 580
Vancomycin (1 dose/d with OPAT RN)	22, 44, 64, 87, 109, 131, 153, 175
Daptomycin (1 dose/d with OPAT RN)	22, 44, 64, 87, 109, 131, 153, 175
Daptomycin (1 dose/d with HH nurse)	72, 145, 217, 290, 362, 435, 507, 580
Oritavancin/dalbavancin (1 dose/wk)	2, 5, 7, 10, 14, 16, 19
Laboratory monitoring	Cost, $[b]
Chem 8[17]	77/level
CPK	77
Vancomycin trough[17]	59/level
Complete blood count	77
Erythrocyte sedimentation rate	77
C-reactive protein	77

[a]Calculated using salary information and time spent for treatment.
[b]Costs obtained adjusted for inflation to 2022.
[c]Supplies and medications provided by VA if patient has a HH nurse helping administer the medication.

Time Spent for Outpatient Parenteral Antimicrobial Therapy Visits

Medication	Registered nurse, h	Pharmacy technician, h	Pharmacist, h
Oritavancin	Initial: 3.5 Follow-up: 3.5	0.5	Initial: 0.5 Follow-up: 1.0
Dalbavancin	Initial: 1.0 Follow-up: 1.0	0.5	Initial: 0.5 Follow-up: 1.0
Vancomycin	Initial: 2.0 Follow-up: 1.5	2.0	Initial: 2.0 Follow-up: 3.0
Daptomycin	Initial: 2.0 Follow-up: 1.0	1.0	Initial: 2.0 Follow-up: 1.0

Abbreviations: CLC, community living center; CPK, creatinine phosphokinase; HH, home health; OPAT, outpatient parenteral antimicrobial therapy; PICC, peripherally inserted central catheter; RN, registered nurse; SCr, serum creatinine; SNF, skilled nursing facility; ULN, upper limit of normal range; VA, US Department of Veterans Affairs.