

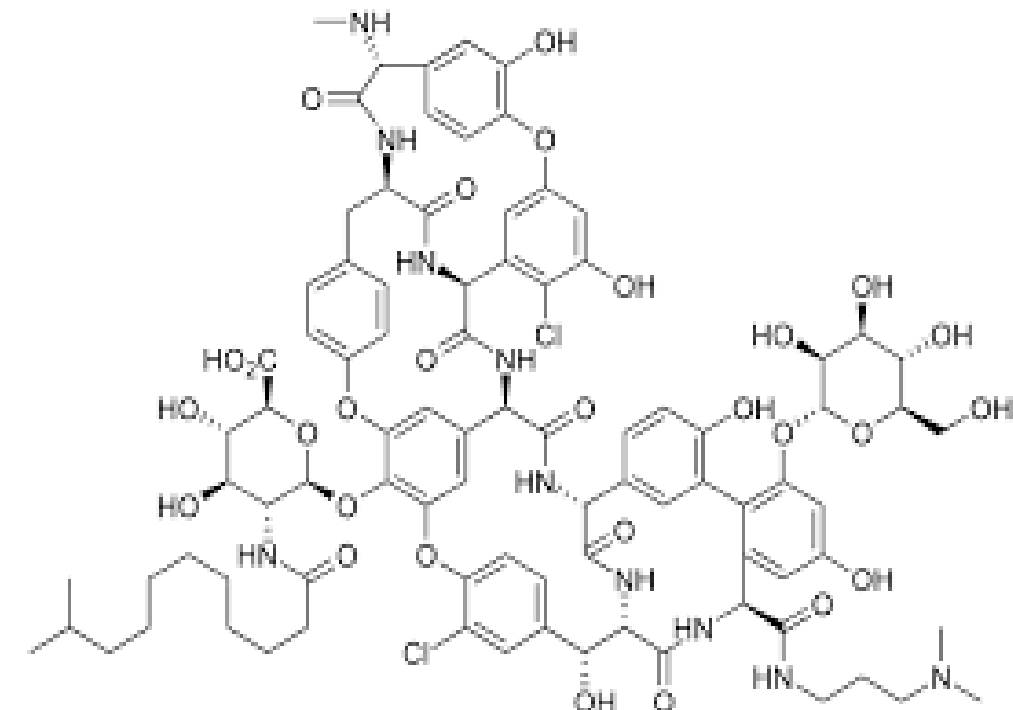
Therapeutic drug monitoring of dalbavancin: a step forward in personalized long-term therapy

J. Torra Garcia¹, J. Gómez-Junyent¹, F. Moreira Borim¹, M.L. Sorli Redo¹, R. Bueno Uceda², C. Raich-Gual¹, G. Rodríguez¹, M. Sanz¹, S. Luque¹, D. Pérez-Prieto¹

¹ Hospital del Mar, Barcelona, Spain | ² Hospital de Sabadell, Sabadell, Spain

1. INTRODUCTION & AIM

Dalbavancin is a potent, long-acting lipoglycopeptide antibiotic effective against Gram-positive pathogens. Its exceptionally long half-life makes it ideal for long-term therapy. However, despite multiple proposed regimens for treating complex infections, there is currently a lack of sufficient comparative pharmacokinetic (PK) data to safely guide customized treatments.



STUDY AIM

To evaluate, in a pilot TDM study, whether dalbavancin maintains sufficient plasma concentrations (Cp) at different time points after administration, potentially allowing extended dosing intervals.

2. MATERIALS AND METHODS

- Prospective, single-center PK study of adult patients undergoing dalbavancin clinical TDM between November 2024 and August 2025.
- Longitudinal compilation of demographics, comorbidities (Charlson Index), renal parameters, clinical progress, and microbiological isolates.
- Plasma concentrations measured at structured intervals post-administration: ≤1 week, 1–2 weeks, 2–3 weeks, and >3 weeks.
- Quantified using a validated Ultra-Performance Liquid Chromatography-Mass Spectrometry (UPLC-MS) method.

PHARMACOKINETIC TARGET

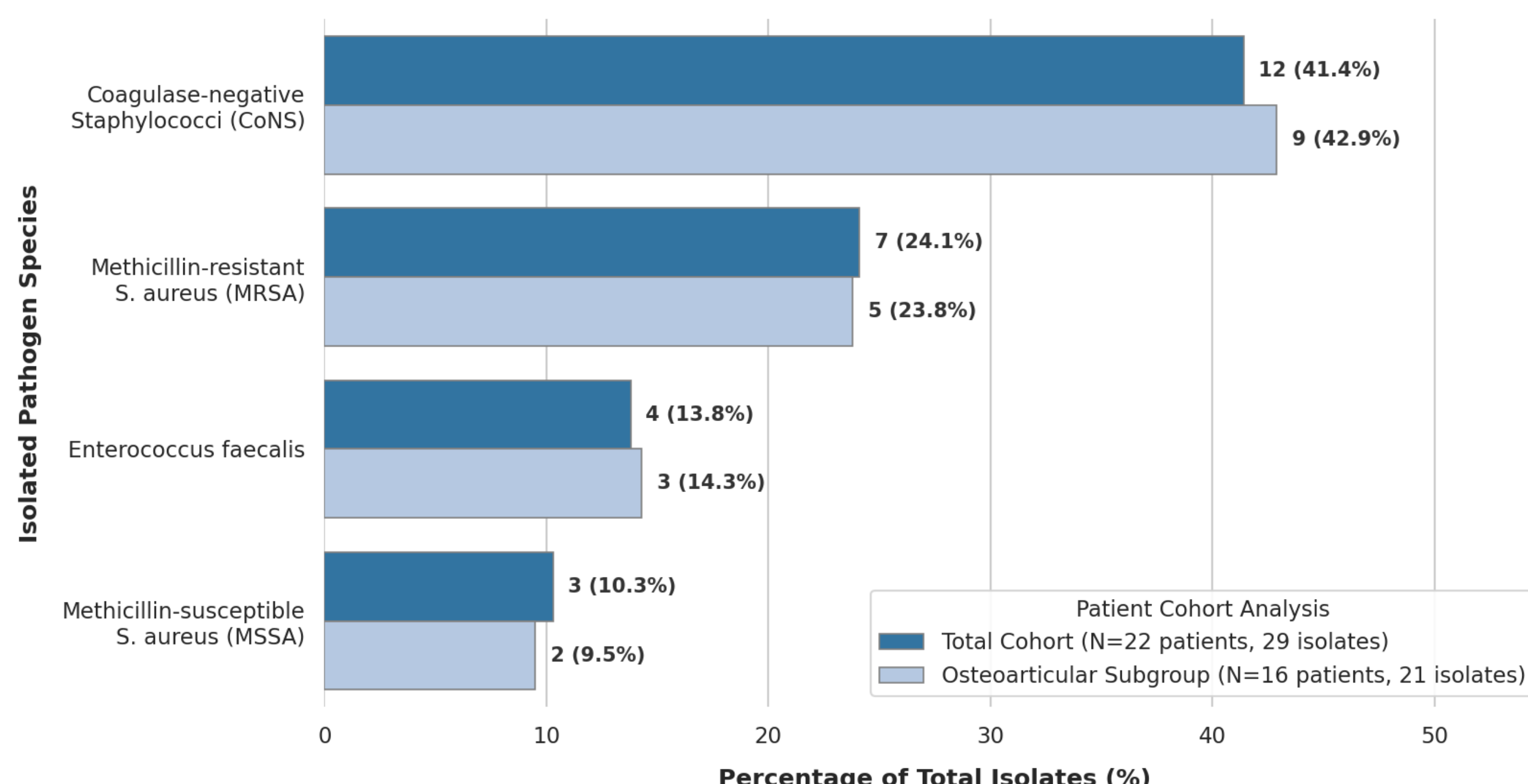
Establish Cp > 4–8 mg/L before the next dose
(preclinical target optimized against staphylococci with MIC ≤ 0.125 mg/L)

DEMOGRAPHICS & MICROBIOLOGICAL ISOLATES

- **Patient Cohort:** N = 22 total patients, with **n = 16** (72.7%) representing the osteoarticular subgroup.
- **Demographic Medians:** Age 72 years (range 28–95); 50% Female (n=11/22 total, n=8/16 subgroup); BMI 26.6 kg/m² (range 17.8–38.8).
- **Clinical Profile:** Charlson Index 2 (range 0–6); baseline eGFR 80 mL/min (range 31–119 mL/min); creatinine 0.9 mg/dL (range 0.5–1.7).
- **Targeted Therapy & Polymicrobial Infections:** Targeted therapy was utilized in 90.9% of total vs. 93.8% of subgroup; 31.8% of cases were polymicrobial.



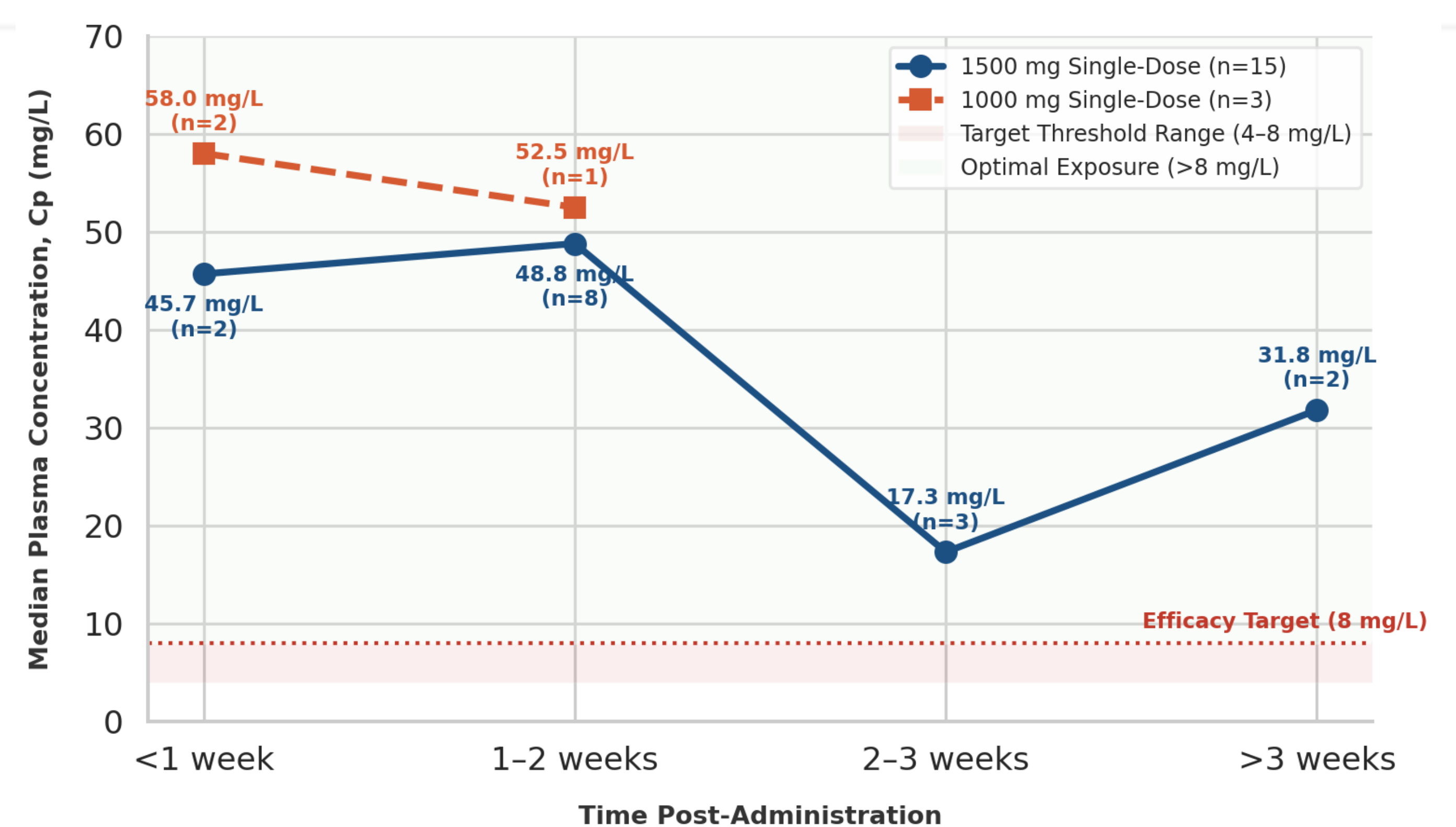
Staphylococci dominate both patient groups, accounting for ~65% of isolates



3. RESULTS (PK OUTCOMES)

- **Safe Exposure across All Cohorts:** All patients achieved Cp comfortably exceeding the therapeutic efficacy target threshold (>4-8 mg/L) across all time blocks.
- **1500 mg Single-Dose Cohort:** Median Cp remained extremely high at ≤1 week (45.7 mg/L, n=2) and 1-2 weeks (48.8 mg/L, n=8). Even at >3 weeks post-administration, median Cp was 31.8 mg/L (n=2), representing a ~4-fold therapeutic margin above the efficacy threshold.
- **1000 mg Single-Dose Cohort:** Median Cp was 58.0 mg/L at ≤1 week (n=2) and 52.5 mg/L at 1-2 weeks (n=1).
- **Suppressive & Maintenance Regimens:** Maintenance and suppressive therapies also comfortably met targets: 500 mg q2w achieved a trough of 25.0 mg/L; 1500 mg q2w achieved 51.0 mg/L; and 1500 mg monthly achieved 28.0 mg/L.

DALBAVANCIN PLASMA DECAY



Dalbavancin concentrations remains well above 8mg/mL efficacy target

CONCLUSIONS

- **Sustained Exposure:** Dalbavancin plasma concentrations achieved after both single and multiple doses remained consistently and comfortably above the preclinical efficacy threshold (>4–8 mg/L) across all measured intervals, including >3 weeks.
- **Clinical Safety:** pharmacokinetic results provide clinical support for the safety of extending dalbavancin dosing intervals, supporting personalized long-term outpatient antimicrobial therapies.
- **Economic & Operational Benefits:** Optimizing dosing schedules via TDM can significantly reduce healthcare costs, clinical visits, and catheter-related complications.

Cited Literature: [1] Turner NA, Hamasaki T, Doernberg SB, et al. Dalbavancin for Treatment of Staphylococcus aureus Bacteremia: The DOTS Randomized Clinical Trial. JAMA. 2025;334(10):866–877.

Abbreviations: PK: pharmacokinetic TDM: therapeutic drug monitoring. Cp: plasma concentrations. MIC: minimum inhibitory concentration

Acknowledgments: The authors would like to thank the patients and clinical staff at Hospital del Mar and Sabadell for their participation in this study.

Conflicts of Interest: The authors declare no conflicts of interest related to this work.