

Poster #5

NACFC 2025,
October 22–25, 2025
Seattle, WA, USA

Contact: Sean T. Nguyen, Shionogi Inc.
Email: sean.nguyen@shionogi.com

Cefiderocol Treatment for Gram-Negative
Bacterial Infections in Patients with Cystic Fibrosis:
Results from the Multinational Observational PROVE Study

Jeffrey C. Pearson¹, Francois Parquin², Karan Gill³, Stefano Verardi³, Anne Santerre Henriksen³, Sean T. Nguyen⁴
¹Department of Pharmacy, Brigham and Women's Hospital, Boston, MA, USA; ²Thoracic Intensive Care Unit, Foch Hospital, Suresnes, France; ³Shionogi BV, London, UK; ⁴Shionogi Inc., Florham Park, NJ, USA



Copies of this poster obtained through Quick Response (QR) Code are for personal use only and may not be reproduced without permission from NACFC 2025 and the authors of the poster.



SHIONOGI

BACKGROUND

- Pseudomonas aeruginosa*, *Burkholderia cepacia* complex, *Stenotrophomonas maltophilia*, and *Achromobacter xylosoxidans* are among the most common Gram-negative pathogens associated with cystic fibrosis (CF) lung infections, and chronic lung infections are the primary cause of morbidity and mortality in CF.¹
- The use of triple therapy (i.e., elexacaftor + tezacaftor + ivacaftor) has significantly improved clinical outcomes for many patients with CF and may confer benefits in terms of colonization diversity.² However, the need persists for treatments that address multidrug-resistant infections.
- Cefiderocol is a siderophore cephalosporin antibiotic with potent activity against a broad range of Gram-negative bacteria, including carbapenem-resistant strains. It has been approved by the US Food and Drug Administration for the treatment of complicated urinary tract infections (including pyelonephritis) and hospital-acquired and ventilator-associated bacterial pneumonia.³
- PROVE was an international, observational medical chart review study of cefiderocol use in patients with serious Gram-negative bacterial infections; this poster presents the data for the cohort of hospitalized patients with CF in the PROVE study.

METHODS

- PROVE collected data between November 2020 and July 2024 from patients who were hospitalized with confirmed Gram-negative bacterial infections and were treated with cefiderocol for the first time for ≥72 hours;⁴ CF was reported as a comorbidity.
- Information about baseline demographics, clinical characteristics, cefiderocol use, and rates of clinical response and all-cause mortality (ACM) were collected and analyzed descriptively.
 - Clinical response was defined as resolution or improvement of signs or symptoms at end of treatment (EOT) as judged by the physician, excluding patients who died during therapy.
 - ACM rates included patients who died within 14 or 30 days of cefiderocol initiation.
- Additional analyses are ongoing to collect more detailed information.

RESULTS

- Clinical outcomes data were gathered for 44 cefiderocol-treated patients with CF and serious Gram-negative bacterial infections; demographics and baseline clinical characteristics are shown in **Table 1** and **Figure 1**.
 - Twenty-three patients (52.3%) were enrolled in the United States.
 - Overall, 17 patients (38.6%) were in intensive care at initiation of cefiderocol.
 - The most common pre-existing medical condition was diabetes (61.4% of patients).
- The majority of the cohort (79.5%) had monomicrobial infections, mostly with *P. aeruginosa* (63.6%) (**Figure 2**).
- Approximately 90% of patients had risk factors for acquiring carbapenem-resistant strains, including 25% of patients who were immunocompromised, indicating that they may have been transplant recipients (**Table 1**).
- Overall clinical outcomes in patients with CF in PROVE are shown in **Figure 3**; the rate of clinical response at EOT was 72.7% (32/44).
- Higher rates of clinical response at EOT were recorded in patients receiving cefiderocol as empiric treatment or for documented infection rather than as salvage therapy (**Figure 4**).
- In patients with *P. aeruginosa* infections, clinical response and 30-day ACM rates were 71.4% and 21.4%, respectively (**Figure 5**).

Figure 1. Most Common Pre-existing Medical Conditions in Patients With CF in the PROVE Study (N=44)

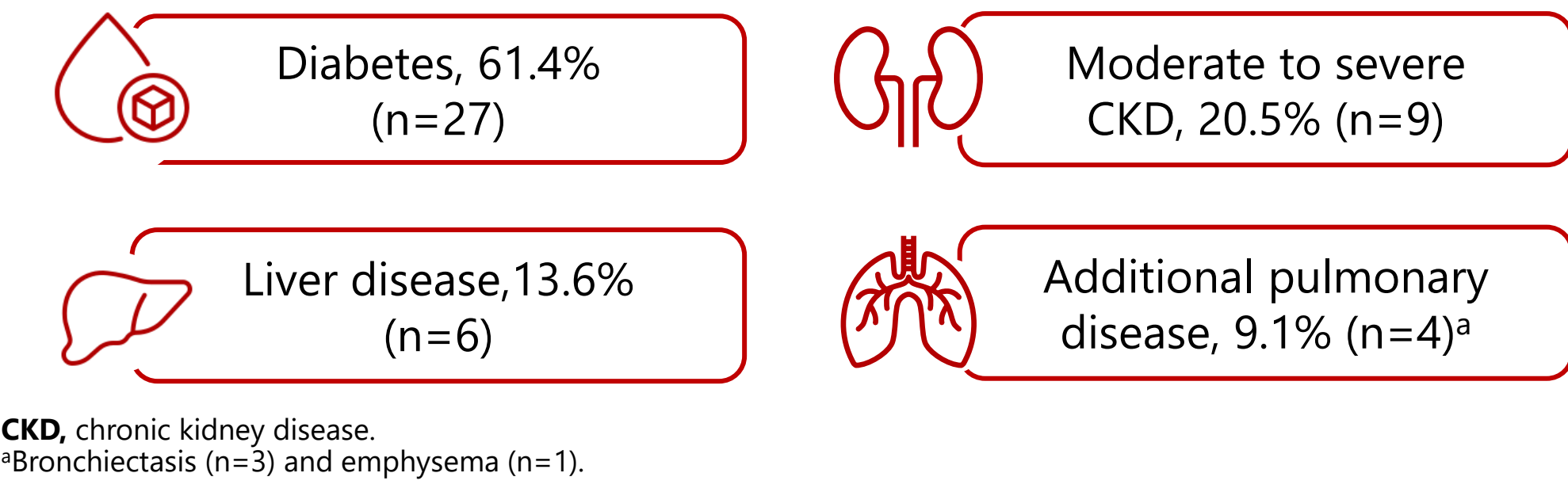
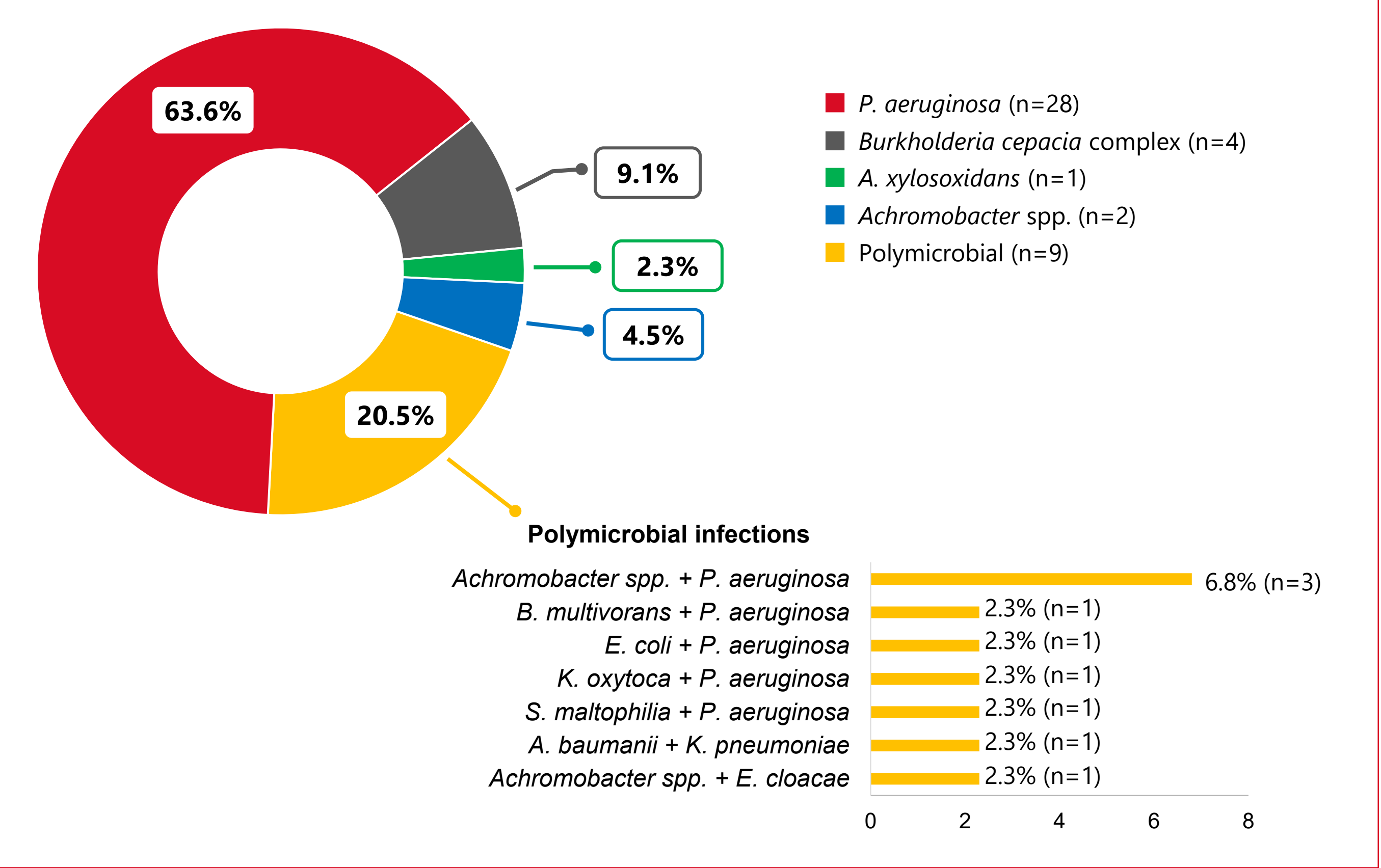


Table 1. Demographics and Baseline Clinical Characteristics in Patients With CF Receiving Cefiderocol in the PROVE Study (2020–2024)

Parameter	Patients with CF (N=44)
Demographics	
Age (years), median (IQR)	31.0 (25.5–40.5)
Sex, male, n (%)	21 (47.7)
Country of origin, n (%)	
United States of America	23 (52.3)
France	12 (27.3)
Germany	1 (2.3)
Spain	3 (6.8)
United Kingdom	5 (11.4)
Treatment pattern	
Length of hospital stay (days), median (IQR) ^a	21.0 (9.5–44.5)
Duration of cefiderocol use (days), median (IQR)	13.0 (7.5–17.5)
Combination therapy, n (%)	26 (59.1)
Severity of illness at cefiderocol initiation, n (%)	
ICU stay	17 (38.6)
Mechanical ventilation	9 (20.5)
Vasopressors	6 (13.6)
Site of infection, (%)	
Respiratory	38 (86.4)
Blood	1 (2.3)
Intra-abdominal	2 (4.5)
Skin and skin structure	1 (2.3)
Other	2 (4.5)
Risk factors for acquiring CR-GNBI	
None	4 (9.1)
Admitted to hospital in past 6 months	30 (68.2)
History of CR-GNBI or colonization within last 6 months	25 (56.8)
Received carbapenem or non-response to carbapenem in prior 30 days	17 (38.6)
Were on ventilator at any point before taking the index culture sample	12 (27.3)
Immunocompromised	11 (25.0)
Recent travel history to a foreign country	2 (4.5)
Other	1 (2.3)
Number of risk factors for CR-GNBI	
0	4 (9.1)
1	12 (27.3)
2	9 (20.5)
3	11 (25.0)
≥4	8 (18.2)

CR-GNBI, carbapenem-resistant Gram-negative bacterial infection; ICU, intensive care unit; IQR, interquartile range.
^aFrom admission date to discharge date.

Figure 2. Distribution of Gram-negative Pathogens in Patients with CF in the PROVE Study (N=44)



References:
1. Françoise A, Héry-Arnaud G. *Genes (Basel)* 2020;11:536.
2. Milczewska J, et al. *Eur Resp Rev* 2024;33:240068.
3. Fetroja® (cefiderocol) for injection for intravenous use. Prescribing Information. Shionogi Inc, Florham Park, NJ, USA; 2025.
4. Clancy CJ, et al. *Infect Drug Resist* 2024;17:4427–4443.

CONCLUSIONS

- A clinical response rate of 72.7% was observed with cefiderocol treatment in patients with CF, most of whom had risk factors for acquiring carbapenem-resistant infections.
- Patients receiving cefiderocol as salvage therapy had lower rates of clinical response than those treated empirically or for documented infections, suggesting better outcomes with earlier use in patients with CF.
- Cefiderocol may play an important role in addressing difficult-to-treat Gram-negative infections in patients with CF.

Figure 3. Overall Clinical Outcomes of Cefiderocol Treatment in Patients With CF in the PROVE Study (N=44), % Patients (95% CI)

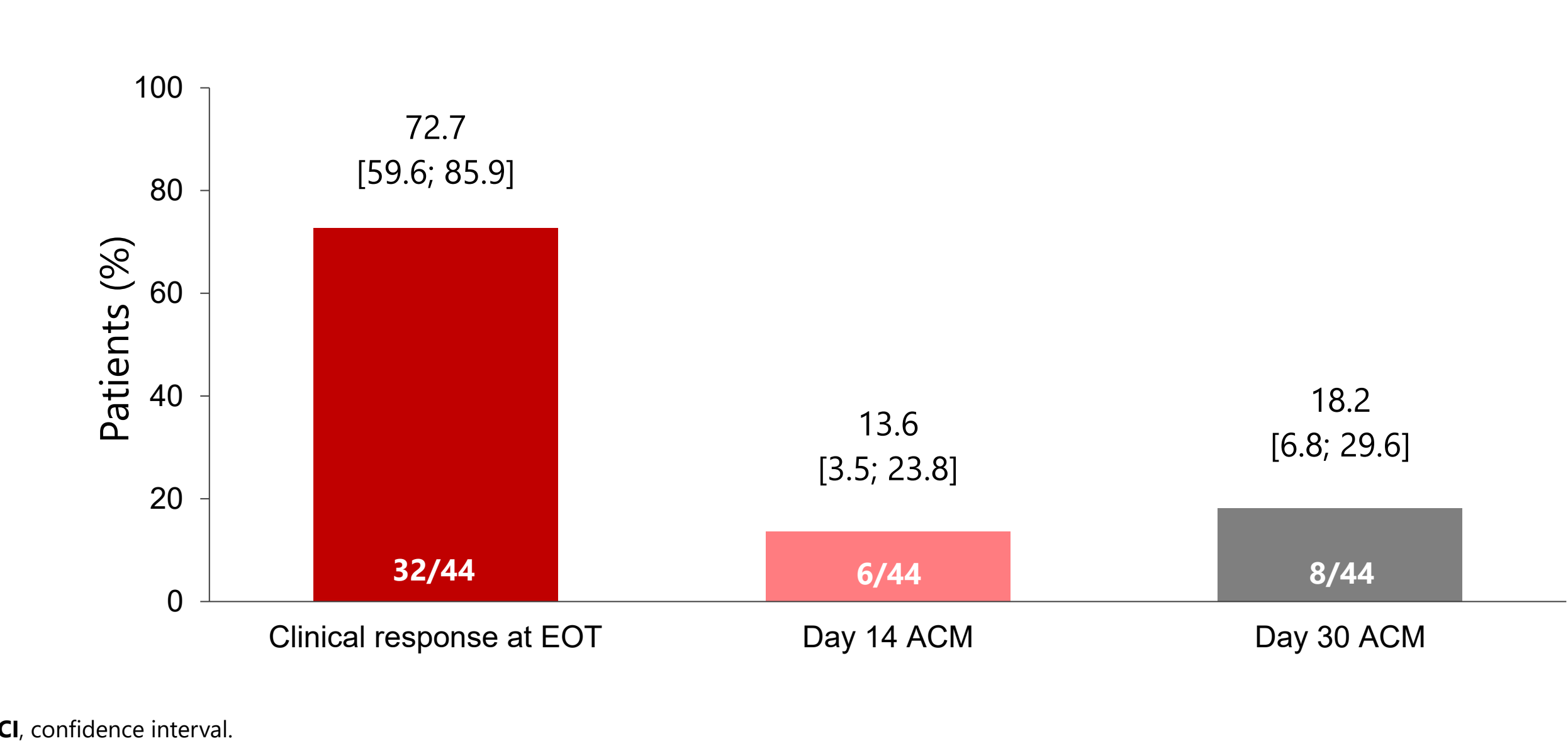


Figure 4. Clinical Response at EOT by Reason for Cefiderocol Use,^a Category % (95% CI)

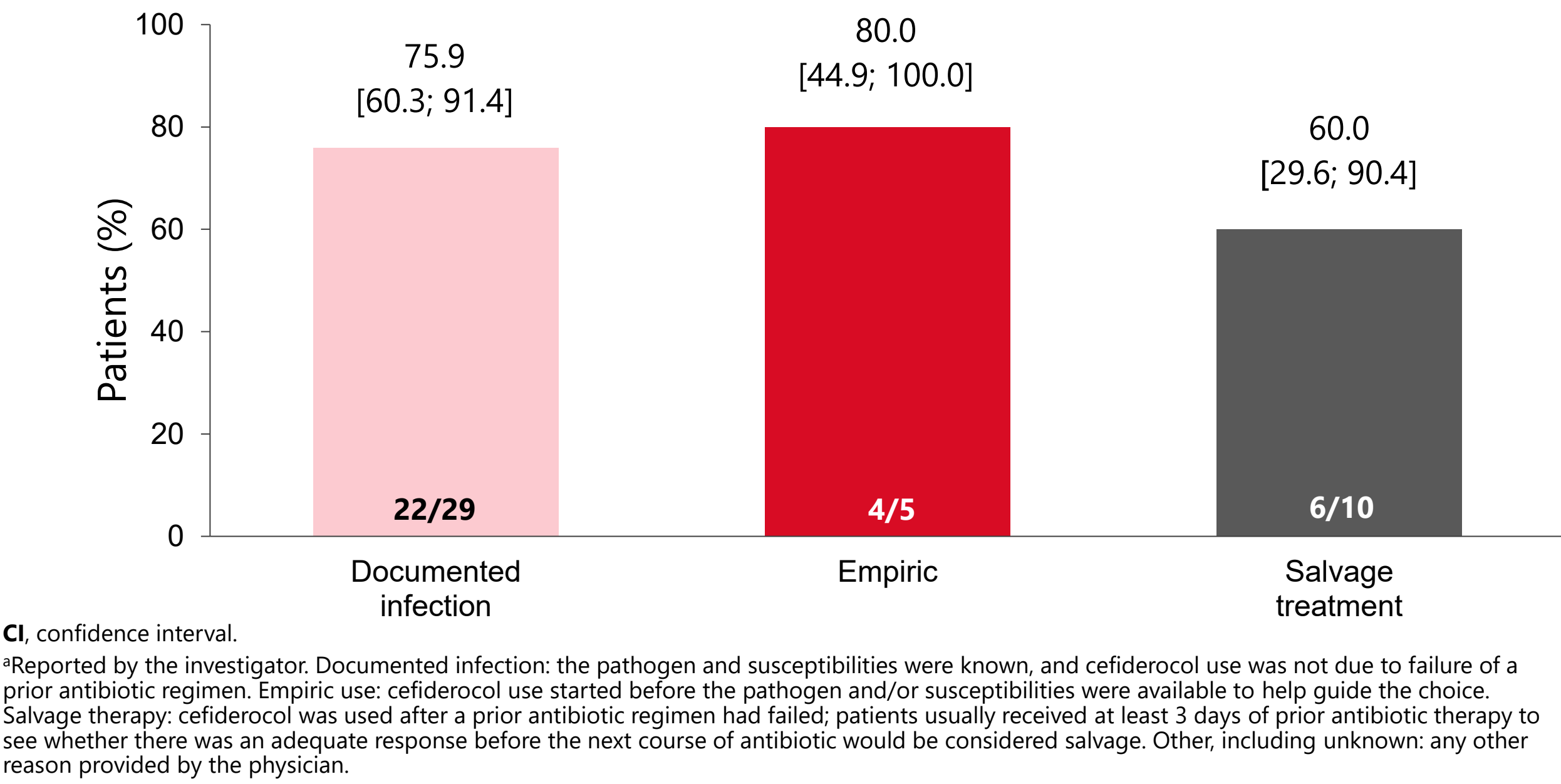
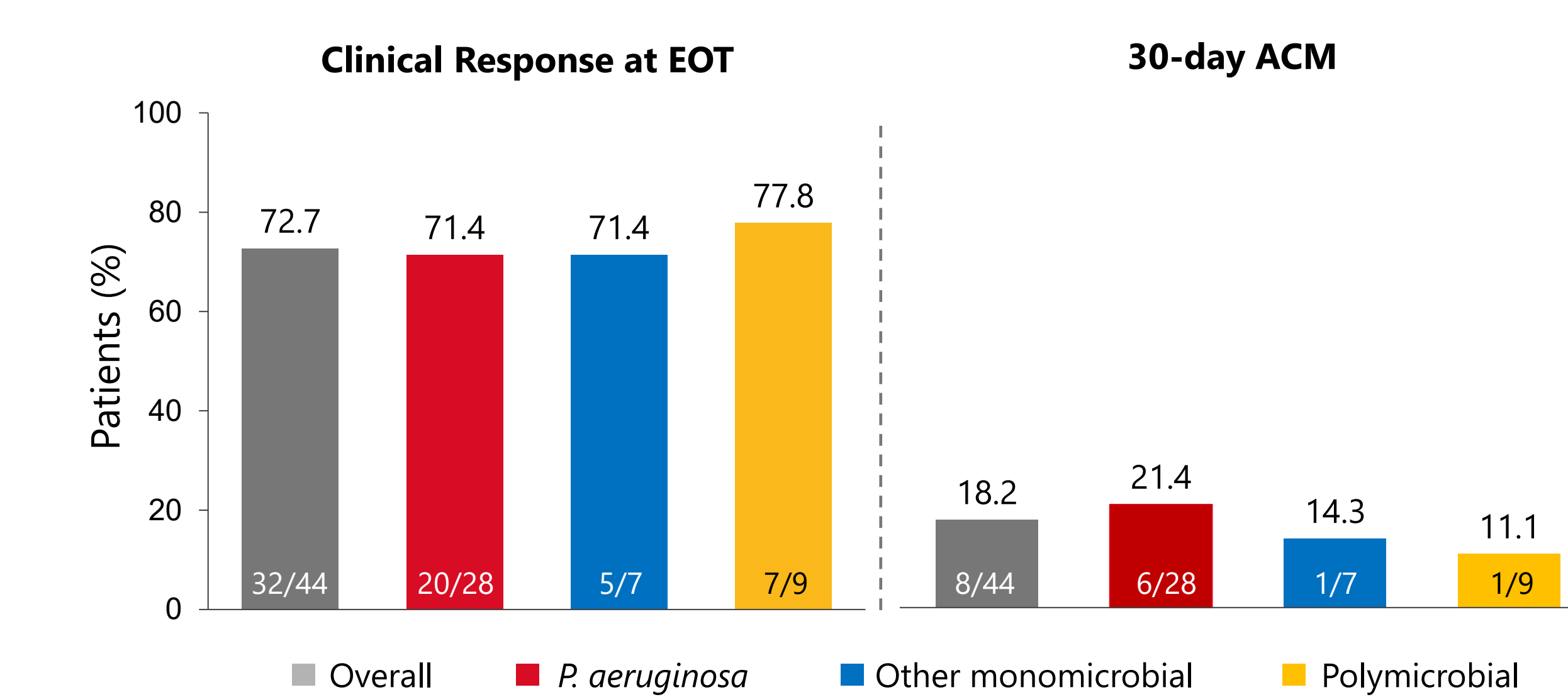


Figure 5. Clinical Response at EOT and 30-day ACM Rates by Pathogen in Patients With CF Receiving Cefiderocol Treatment in the PROVE Study (N=44)



Funding:
The study was funded by Shionogi & Co., Ltd., Osaka, Japan.

Acknowledgements:
Editorial support was provided by Highfield, Oxford, UK. This support was funded by Shionogi & Co., Ltd., Osaka, Japan.

Conflicts of interest:
KG, SV, STN are employees of the SHIONOGI Group. ASH is a contractor for Shionogi. JP participated in clinical research (PROVE) and served on an advisory board for Shionogi. The institution of FP has received research funding for participation in the PROVE study.