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## Background

Coagulase-negative Staphylococcus (CoNS) is a common cause of catheter-related bloodstream infection (CRBSI). Current Infectious Disease Society of America (IDSA) 2009 guidelines are to provide 10-14 days of antibiotics plus lock antibiotics in the absence of catheter removal, and if the catheter has been removed, 5-7 days after removal [1]. However, these guidelines were last updated in 2009, and there is growing yet limited studies on shorter therapy durations in uncomplicated CoNS line infections [2]. Determining the optimal shortest duration of therapy can possibly help reduce resistance, adverse effects, costs, and possibly hospital length of stay. Olive View UCLA-Medical Center (Sylmar, CA) is an academic county hospital, serving the medical needs of the underserved community. The purpose of this study was to evaluate differences in treatment durations for CoNS CRBSI on clinical outcomes including relapse of infection, duration of bacteremia, readmission, and hospital length of stay to determine the optimal duration and evaluate the potential impact on antimicrobial stewardship.

## Methods

**Study Design:** retrospective, single centered, cohort study comparing patients who receive longer total durations of therapy for CoNS CRBSI versus shorter total durations and durations post catheter removal

**Inclusion Criteria:** All central line-obtained blood cultures positive for CoNS from January 2018 through December 2021 at Olive View-UCLA medical Center

**Exclusion Criteria:** Suspected contamination or no antibiotic treatment, invasive CoNS infection including spinal osteomyelitis and endovascular infections, and concomitant infection treated with an antibiotic that have activity against CoNS for treatment >2 weeks.

**Groups:** (1) >10 days versus ≤10 days of antibiotic treatment with or without catheter removal. (2) >7 days versus ≤7 days of antibiotic treatment post catheter removal

### Primary outcomes:

- Recurrence of CoNS CRBSI with positive culture within 90 days
- 30 day hospital readmission related to line infection

### Secondary outcomes:

- Hospital length of stay (LOS)
- 30 day all-cause mortality
- Days of blood culture positivity

**Statistics:** Continuous variables were compared using Wilcoxon rank-sum and Fisher's exact test was used for categorical variables using Stata (version 15, College station, Texas. A P-value of less than 0.05 was considered statistically significant.

## Results

**Table 1. Baseline characteristics**

Group	>10 Days (n=22)	≤ 10 Days (n=18)
Age	59 (49-66)	61.5 (56-66)
Female sex	5 (23%)	6 (33%)
Ethnicity		
Central American	5 (23%)	6 (33%)
Mexican	9 (41%)	2 (11%)
Multiple	1 (5%)	0 (0%)
Hispanic or Latino	18 (81%)	10 (55%)
Unknown	0 (0%)	2 (11%)
SARS-CoV-2 Detected	5 (23%)	10 (56%)
Intensive care unit	9 (41%)	12 (67%)
Dialysis	9 (41%)	12 (67%)
Chronic kidney disease	0 (0%)	3 (17%)
Injection drug use	0 (0%)	0 (0%)
Structural heart disease	1 (5%)	3 (17%)
Methicillin resistant CoNS	16 (76%)	12 (86%)

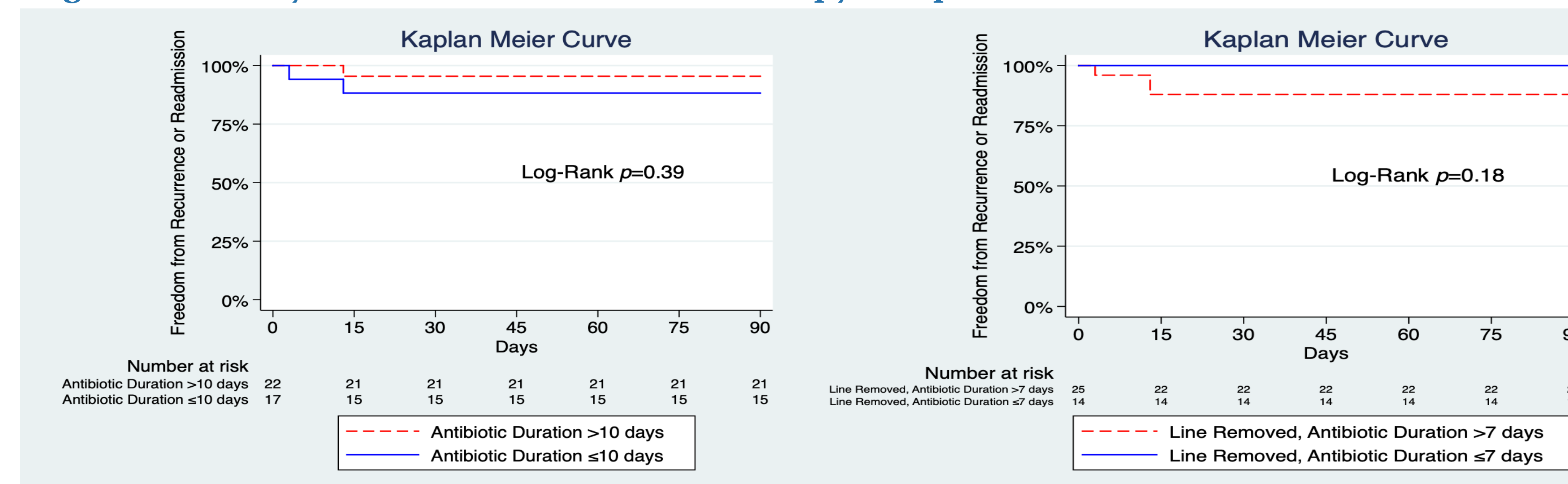
**Table 2. Outcomes according to total days of therapy**

	>10 days (n=22)	≤10 days (n=18)	p-value
<b>Primary outcomes:</b>			
30-day readmission	2 (9%)	1 (7%)	1
90-day recurrence	1 (5%)	3 (17%)	0.31
<b>Secondary Outcomes:</b>			
Duration of bacteremia in days (IQR)	1 (1-3)	1 (1-1)	0.48
30-day mortality	1 (5%)	1 (7%)	1
Length of stay in days (IQR)	13 (7-33)	14 (8-47)	0.55

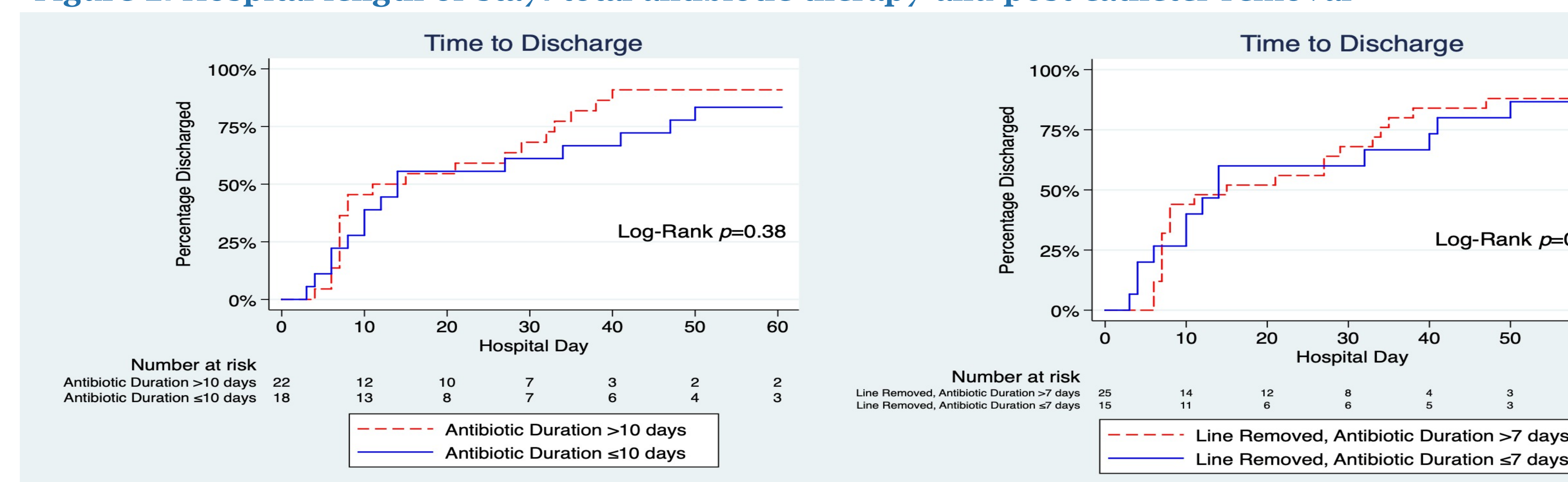
**Table 3. Outcomes post catheter removal days of therapy**

	>7 days (n=18)	≤7 days (n=15)	p-value
<b>Primary outcomes:</b>			
30-day readmission (n)	2 (11%)	0	0.49
90-day recurrence (n)	2 (11%)	1 (6%)	1
<b>Secondary Outcomes:</b>			
Duration of bacteremia in days (IQR)	1 (1-3)	1 (1-1)	0.32
30-day mortality	1 (6%)	1 (6%)	1
Length of stay in days (IQR)	24 (7-35)	14 (6-41)	0.79

**Figure 1. Primary outcomes: total antibiotic therapy and post catheter removal**



**Figure 2. Hospital length of stay: total antibiotic therapy and post catheter removal**



## Conclusions

- Shorter total antibiotic treatment durations, ≤10 days versus >10 days, for CoNS CRBSI did not demonstrate a significant difference in recurrence, readmission, 30 day mortality, duration of bacteremia, or hospital LOS.
- Additionally, shorter antibiotic treatment duration post line removal, ≤7 days versus >7 days, did not demonstrate a significant difference in primary and secondary outcomes.
- A shorter course of treatment for CoNS CRBSI is as effective as longer courses in all outcomes measures studied and therefore should be considered as a target for antimicrobial stewardship to minimize antibiotic exposure and risk of adverse events.

## References

- [1] Mermel, L. A., Alon, M., Bouza, E., Craven, D. E., Flynn, P., O'Grady, N. P., Raad, I. I., Rijnders, B. J., Sherertz, R. J., & Warren, D. K. (2009). Clinical practice guidelines for the diagnosis and management of intravascular catheter-related infection: 2009 Update by the Infectious Diseases Society of America. Clinical infectious diseases : an official publication of the Infectious Diseases Society of America, 49(1), 1-45.
- [2] San-Juan R, Martínez-Redondo I, Fernández-Ruiz M, Ruiz-Ruigómez M, Corbella L, Hernández-Jiménez P, Silva JT, López-Medrano F, Recio R, Orellana MÁ, Aguado JM. A short course of antibiotic treatment is safe after catheter withdrawal in catheter-related bloodstream infections due to coagulase-negative staphylococci. Eur J Clin Microbiol Infect Dis. 2019 May;38(5):977-983. doi: 10.1007/s10096-019-03545-8. Epub 2019 Mar 28. PMID: 30924012.