

# Ceftriaxone versus cefazolin for the treatment of methicillin-susceptible *Staphylococcus aureus* bacteremia

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## BACKGROUND

- The duration of intravenous antibiotic therapy for MSSA bacteremia ranges from 2 to 6 weeks
- Ceftriaxone provides a more convenient option for patients requiring outpatient antimicrobial therapy (OPAT)
- Few studies have evaluated the use of ceftriaxone in the treatment of MSSA bacteremia
- Published studies are limited by a small number of patients with MSSA bacteremia and contain conflicting results

## PURPOSE

- To compare the safety and efficacy of ceftriaxone versus cefazolin for patients with MSSA bacteremia

## METHODS

- This was a multi-center, single health-system, retrospective cohort study
- Saint Luke's Health System (SLHS) is a multi-hospital system. System hospitals included in this study are 1 academic and 4 community hospitals
- Study period: April 1<sup>st</sup>, 2014 to July 30<sup>th</sup>, 2019

Inclusion criteria	Exclusion Criteria
At least 18 years old	Previous MSSA bacteremia within 6 months
Primary episode of MSSA bacteremia within Saint Luke's Health System	Confirmed or presumed poly-microbial infection
Received ceftriaxone or cefazolin as definitive therapy for the treatment of MSSA bacteremia	Receiving combination antimicrobial therapy as definitive therapy
	Started treatment at outside hospital
	Treated for less than 72 hours
	Palliative or comfort care

## 597 patients evaluated

### 349 patients excluded (58.5%)

- 118 Received other antimicrobial
- 61 Poly-microbial infection
- 59 Palliative or comfort care
- 27 Other<sup>s</sup>
- 22 Combination antimicrobial therapy
- 18 Treated for < 72 hours
- 18 Transferred to outside hospital
- 12 Treatment outside SLHS
- 7 MSSA bacteremia within 6 months
- 7 Age < 18 years

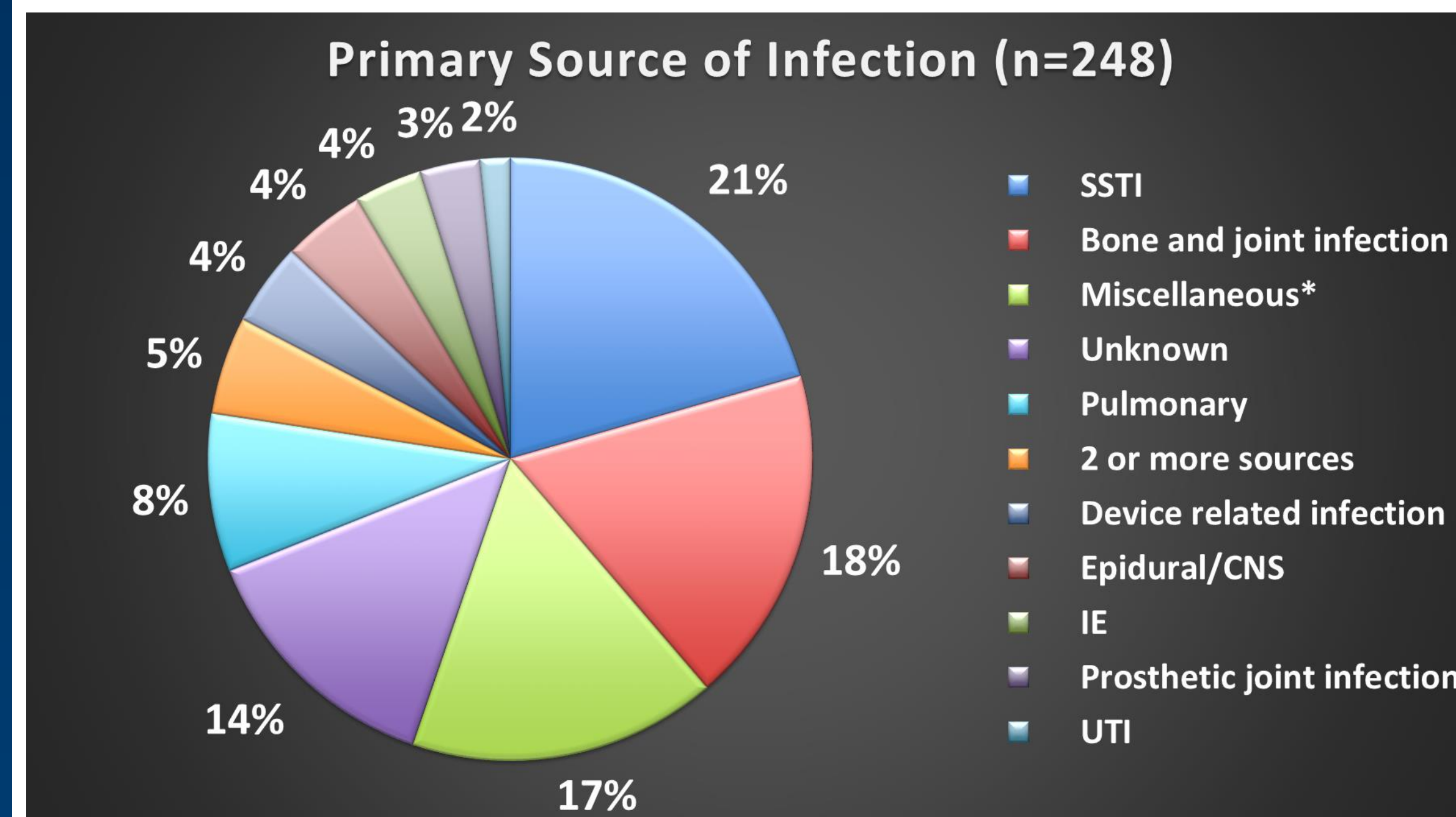
## 248 patients included

## Demographics

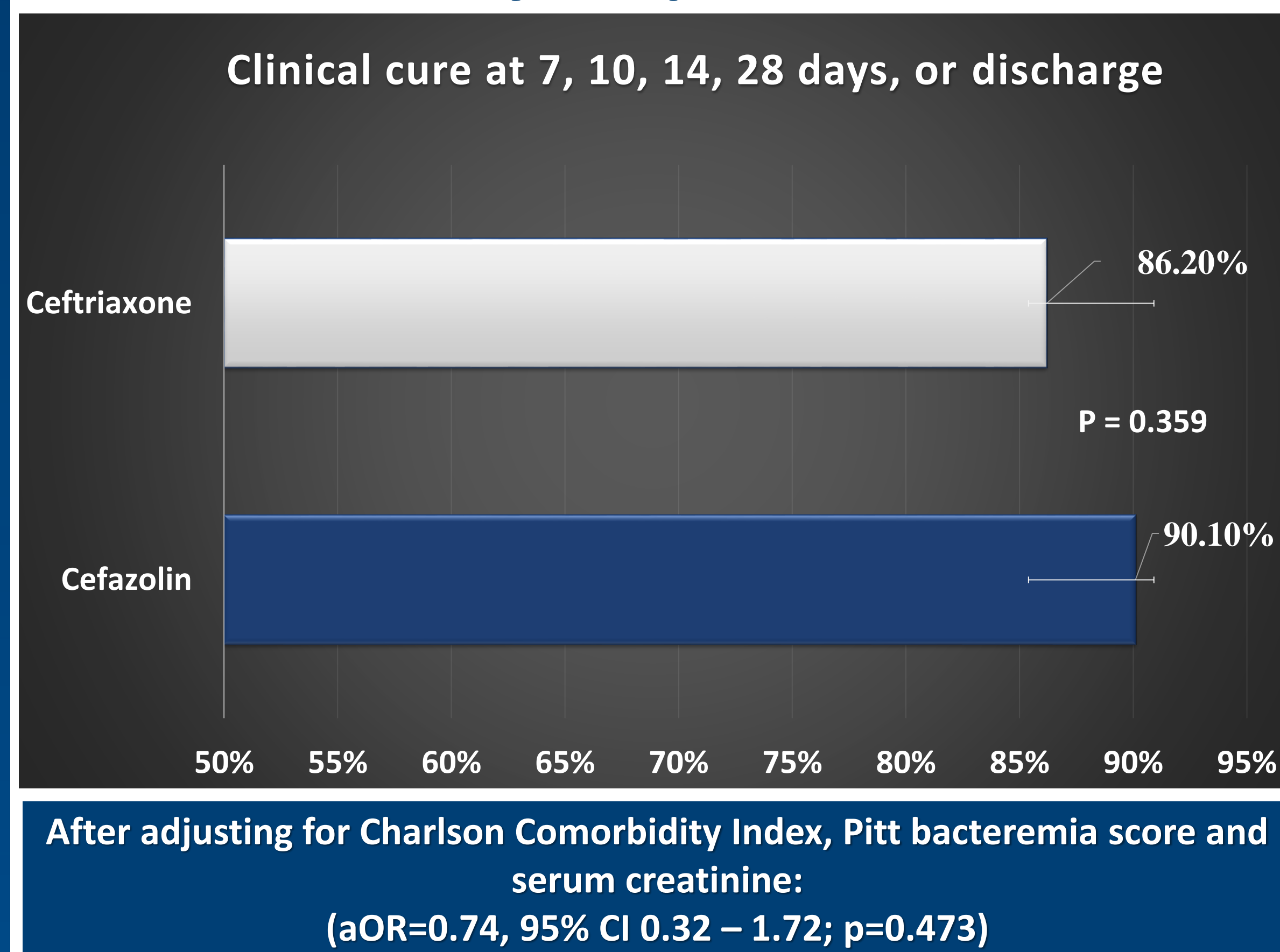
Baseline Characteristics	Cefazolin (n= 161)	Ceftriaxone (n= 87)	P-Value
Age, years (SD)	61 (15.9)	57.4 (16.8)	0.096
Male, n (%)	98 (60.9)	61 (70.1)	0.147
Body mass index, (SD)	29.7 (6.9)	29.2 (7.3)	0.624
Charlson Comorbidity Index, (SD)	5.1 (2.9)	4.3 (3.0)	0.039
Pitt bacteremia score, (SD)	1.7 (1.9)	1.2 (1.4)	0.015
Serum creatinine, mg/dl (IQR)	1.3 (0.8, 2.8)	1 (0.7, 1.3)	<0.001
Prosthesis <sup>¶</sup> , n (%)	30 (18.6)	8 (9.2)	0.048
Infective Endocarditis, n (%)	14 (8.7)	5 (5.7)	0.404

Treatment Characteristics	Cefazolin (n= 161)	Ceftriaxone (n= 87)	P-Value
Appropriateness of empiric antimicrobial regimen, n (%)	160 (99.4)	85 (97.7)	0.25
Time to definitive therapy, days (SD)	2.6 ± 1.8	2.9 ± 2.6	0.285
Time to start cefazolin or ceftriaxone, days (SD)	3.3 ± 2.4	5.1 ± 5.0	< 0.001
Total duration of parenteral antimicrobial therapy (IQR)	43 (28, 45)	44 (42, 46)	0.002

## Demographics



## Results: Primary Endpoint

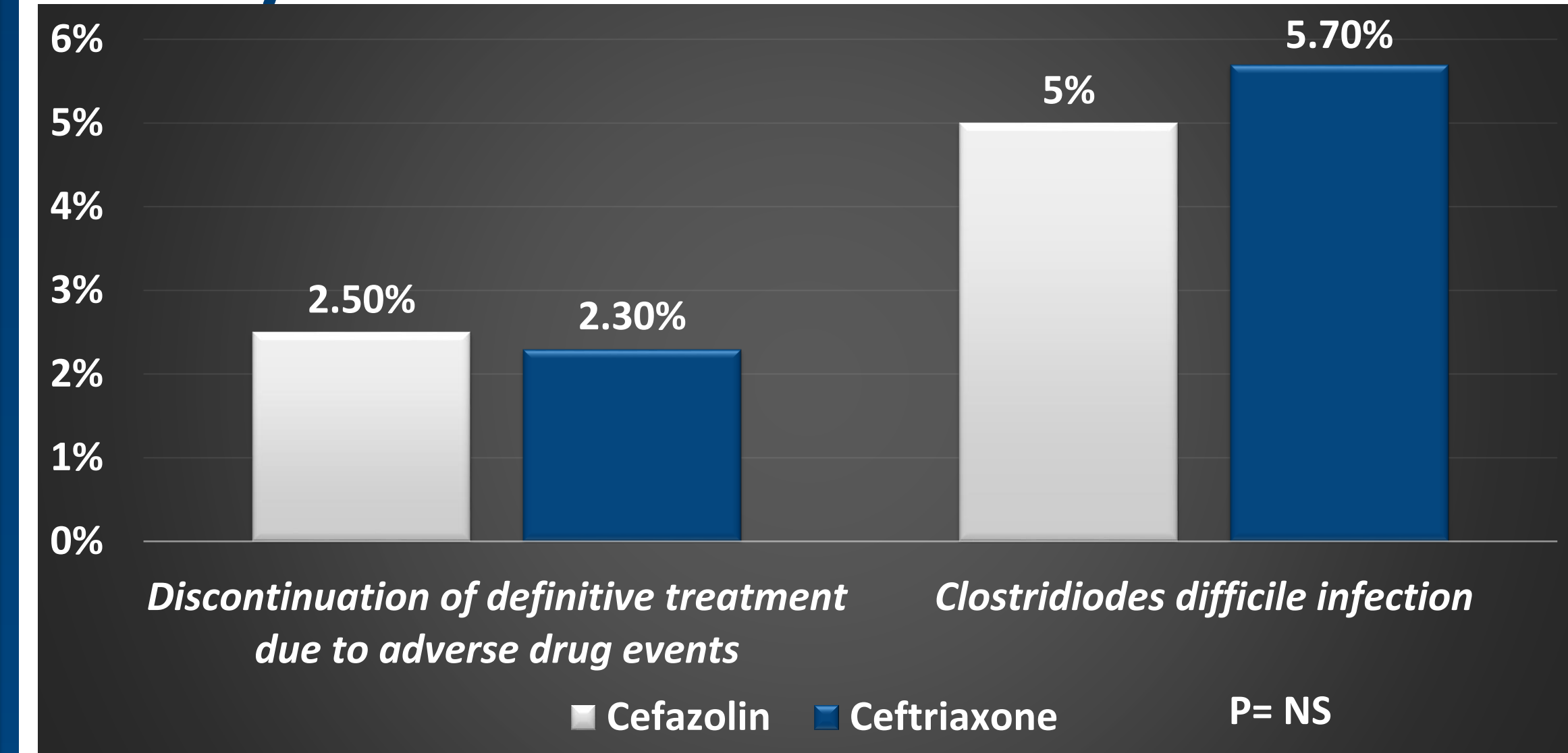


The authors have nothing to disclose

## Results: Secondary Outcomes

	Cefazolin (n= 161)	Ceftriaxone (n= 87)	P-Value
Time to clinical cure or discharge, days (SD)	6.4 ± 5.0	6.5 ± 4.6	0.855
Time to treatment failure, days (SD)	41.3 (22.6)	64.1 (23.4)	0.013
Treatment failure at 90 days, n (%)	28 (17.4)	9 (10.3)	0.137
Clearance of bacteremia within 72 hrs	113 (71.5%)	51 (58.6%)	0.040
Duration of bacteremia, days (SD)	2.8 (1.6)	2.9 (1.6)	0.517
Definitive therapy modification, n (%)	22 (13.7)	6 (6.9)	0.108
Readmission due to recurrent MSSA bacteremia at 30 days, n (%)	3 (1.9)	0 (0)	0.20
Readmission due to recurrent MSSA bacteremia at 90 days, n (%)	7 (4.3)	2 (2.3)	0.41
Hospital length of stay, days (SD)	12.3 (8.3)	11.9 (8.5)	0.712

## Safety Outcomes



## Conclusion

- Our study suggests there is no clinical difference in clinical cure between ceftriaxone and cefazolin for the definitive treatment of MSSA bacteremia
- Further studies needed to confirm these findings

<sup>S</sup>**Other:** leaving against medical advice, culture considered contaminant, did not receive treatment, unable to determine treatment details or investigators decision

<sup>\*</sup>**Miscellaneous:** central line-associated bloodstream infection, poracath infection, tunneled dialysis catheter, arteriovenous fistula, myositis, mycotic aortic aneurysm, thrombophlebitis

<sup>¶</sup>**Prosthesis:** spinal hardware, prosthetic joint or cardiac valve