

# Characteristics and Trends of Serratia Blood Stream Infections

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## BACKGROUND

- *Serratia* is an opportunistic pathogen.
- Causes an array of infections : UTIs, pneumonia, wound infections, skin and soft tissue infections, surgical site infections and although rare, endocarditis and bacteremia.

## RATIONALE

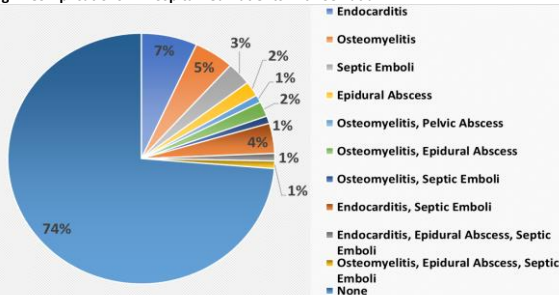
To identify the characteristics of patients with community-acquired *Serratia* blood stream infections within the TriHealth, Cincinnati (OHIO) inpatient population.

## METHODS

- Retrospective cohort study of patients admitted to 2 community hospitals, from 01-01-2014 to 12-31-2018.
- Inclusion: positive blood culture for or *Serratia* species.

## RESULTS

Fig 1: Complications in Hospitalized Patients with *Serratia*



## RESULTS

PATIENT CHARACTERISTICS AT ADMISSION	SERRATIA (n=103)
Age, Median (IQR)	56.8 (41.4-72)
Female, n (%)	40 (38.8%)
RACE, N (%)	
Black	12 (11.6%)
White	88 (85.4%)
Other	3 (2.9%)
COMORBIDITIES, N (%)	
Congestive heart failure	12 (11.6%)
Chronic obstructive pulmonary disease	10 (9.7%)
End-Stage Renal Disease	8 (7.8%)
Liver Cirrhosis	9 (8.7%)
Chronic kidney disease	13 (12.6%)
Diabetes Mellitus	26 (25.2%)
hepatitis C virus infection	40 (39.6%)
Immuno supression*	20 (19.8%)
Surgical procedure < 30 days*	13 (12.6%)
Instrumentation of GU** or Respiratory Tract < 30 da)	2 (1.9%)
Indwelling Catheter	32 (31.1%)
LIVING SITUATION, N (%)	
Long Term Care Facility or Hospital	20 (19.4%)
Home	79 (76.7%)
Jail	1 (0.97%)
Homeless	3 (2.9%)
LABORATORY RESULTS, N (%)	
Serratia Species, n (%)	
Serratia Liquefaciens	3 (2.9%)
Serratia Marcescens	94 (91.3%)
Serratia Odorifera	2 (1.9%)
Serratia Plymuthica	4 (3.9%)
Extended spectrum beta-lactamase (ESBL)*, n (%)	
Possible	26 (25.2%)
Confirmed	11 (10.7%)
Resistance to 3rd generation Cephalosporine, n (%)	15 (14.6%)
Other organisms in blood culture, n (%)	9 (8.3%)
SOURCE OF CONTAMINATION, N (%)	
Non IV Drug Users	61 (59.2%)
Urine	13 (21.3%)
Lung	2 (3.3%)
Intra abdominal	4 (6.6%)
Skin/soft tissue	10 (16.4%)
Indwelling Catheter	29 (47.5%)
History of IV drug use	42 (40.8%)
PATIENT TREATMENT, N (%)	
Antibiotics use at admission	98 (95.1%)

\* n=101, GU\*\* genitourinary tract

## RESULTS

PATIENT OUTCOMES	IV DRUG USERS N = 42	NON-IV DRUG USERS N = 61	P-value
Complications, n (%)	22 (52.4%)	5 (8.2%)	<.0001
Additional bacteremia	7 (16.7%)	1 (1.6%)	0.018
Septic shock (requiring vasopressor), n (%)	6 (14.3%)	4 (6.6%)	0.168
ICU admission, n (%)	10 (23.8%)	9 (14.8%)	0.182
Length of Stay in days, median (IQR)	8 (2.75-11.25)	6 (4-16)	0.591
In-hospital mortality, n (%)			
Due to Serratia	0	0	
Other causes	0	2 (3.3%)	
30-day mortality, n (%)			
Due to Serratia	0	0	
Other causes	2 (4.8%)	0	
90-day mortality, n (%)			
Due to Serratia	0	0	
Other causes	1 (2.4%)	1 (1.6%)	
90-day readmission, n (%)			
Due to Serratia	0	0	
Other causes	10 (23.8%)	12 (19.7%)	
Recurrence of Serratia infection*, n (%)	3 (7.1%)	3 (4.9%)	0.472

\* Positive culture after 2 or more weeks of negative culture

- IV drug users (42%) with *Serratia* bacteremia are at higher risk for complications (52.4% vs. 8.2%,  $p < .0001$ ) and have additional bacteremia (16.7% vs. 1.6%,  $p=0.018$ ).
- 30- and 90-day mortality is not related to *Serratia* bacteremia.

## CONCLUSIONS

- A significant proportion of patients hospitalized with *Serratia* bacteremia are injecting drug users (40%) and they frequently have hepatitis C coinfection.
- Patients with *Serratia* bacteremia have a high readmission rate and a prolonged length of stay.
- A significant proportion of patients with *Serratia* bacteremia have possible or confirmed ESBL producing isolates suggesting that Carbapenem antibiotic therapy may be appropriate for empiric treatment in this group of patients.