

A MULTIDISCIPLINARY APPROACH TO CATHETER-RELATED BACTEREMIA CAUSED BY STENO IN HEMODIALYSIS PATIENTS

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DESCRIPTION

In Summer 2023, three cases of catheter-related bacteremia (CRB) were found in hemodialysis patients from blood cultures taken only a few days apart, highlighting a potential problem. Other cases arose overtime, with some severe enough to require emergency department care. The common causal agent was *Stenotrophomonas Maltophilia* (Steno), an antibiotic-resistant environmental bacterium, making treatment more complex and prevention of transmission a priority. This prompted a review, leading to several actions aimed at mitigating further patient risk.

OBJECTIVE

To reduce occurrences of CRB caused by Steno in Humber River Health's (HRH) hemodialysis patients.

ACTIONS TAKEN

The following interventions were implemented:

- Multidisciplinary CRB working group was established to review cases and recommend interventions, involving Infection Prevention and Control, Vascular Access, Pharmacy, Data Analytics, and the Nephrology Care group
- Standardized case reviews, using Bacteremia Case Review Forms, supported in identifying case presentation trends and root cause analysis
- Environmental scan of Chlorhexidine/Alcohol Aliquoting practices of local renal programs
- Genotyping of cases to identify potential patient transmissions
- Drain cultures performed to determine whether dialysis drains were the source, which were negative
- Standardized drain care through Dialysis Assistant competency review
- Environmental Services conducted monthly rounding to evaluate department cleaning practices
- Practices related to central venous catheter access and care were updated; changes were solidified through integration into annual staff skills days and unit policies

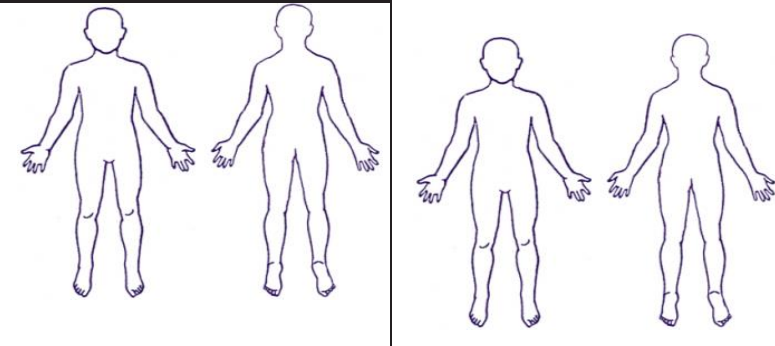
Nosocomial Bacteremia Case Review		
Patient Initials: _____	Age _____ Sex _____	Admission _____ Admitting _____
Diagnosis	Date Reviewed: _____	Reviewed by: _____
PICC Line Yes <input type="checkbox"/> No <input type="checkbox"/> IJ Yes <input type="checkbox"/> No <input type="checkbox"/> EJ Yes <input type="checkbox"/> No <input type="checkbox"/> Subclavian Yes <input type="checkbox"/> No <input type="checkbox"/> Femoral Yes <input type="checkbox"/> No <input type="checkbox"/> Antecubital Yes <input type="checkbox"/> No <input type="checkbox"/>	Other Risk Factors Decubitus Yes <input type="checkbox"/> No <input type="checkbox"/> Diabetes Yes <input type="checkbox"/> No <input type="checkbox"/> MRSA Colonization Yes <input type="checkbox"/> No <input type="checkbox"/> VRE Colonization Yes <input type="checkbox"/> No <input type="checkbox"/> Other Risk Factors Yes <input type="checkbox"/> No <input type="checkbox"/> Specify _____	Drains: Yes <input type="checkbox"/> No <input type="checkbox"/>  Location _____ specify _____ Location _____ specify _____
Date Line Inserted: _____ Physician _____ Date Line Removed: _____ Total line days: _____	Date temp > 38 _____ Date WBC 4>WBC>12 _____	Date of the positive blood cultures: Set #1 date _____ site _____ Set #2 date _____ site _____ Set #3 date _____ site _____ Organism Isolated: Date drawn: _____ Date Unit notified _____ Date Physician notified _____ Antibiotic Started _____
Insertion Location ICU <input type="checkbox"/> Inpatient unit <input type="checkbox"/> ER <input type="checkbox"/> OR <input type="checkbox"/> ICU <input type="checkbox"/> ER <input type="checkbox"/> Rad <input type="checkbox"/> Other <input type="checkbox"/> specify _____	Was Line used for drawing labs Yes <input type="checkbox"/> No <input type="checkbox"/>	Other Positive Cultures Urine: _____ Sputum: _____ Wound: _____ Other: _____
Additional comments:		
Recommendations/Opportunities for improvement from case review:		

Figure 1. Bacteremia Prevention Case Review Form

STENOTROPHOMONAS MALTOPHILIA BACTEREMIA IN HEMODIALYSIS PATIENTS

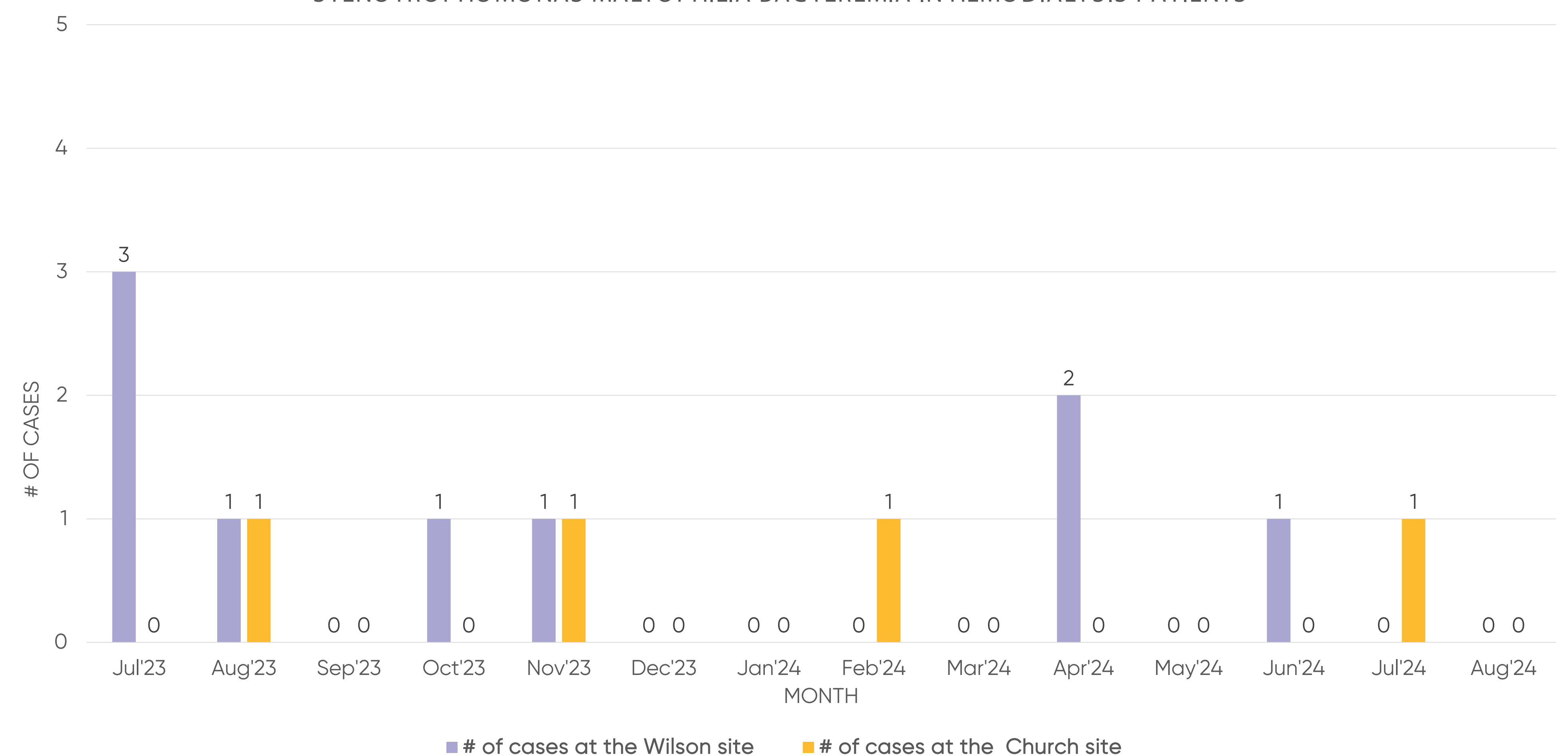


Figure 2. Cases of *Stenotrophomonas Maltophilia* bacteremia in Hemodialysis patients.

SUMMARY OF RESULTS

The clustered appearance of CRB cases caused by Steno led to the formation of a multidisciplinary team to investigate the root cause of transmission and action interventions. Multifaceted mitigation strategies successfully decreased the number of Steno-related bacteremia between zero or one new case per month for most months into August 2024. This approach correlated with reduced Steno cases within HRH's hemodialysis patient population.

LESSONS LEARNED

Multifaceted, multidisciplinary approach was required to combat CRB caused by Steno, as it is a complicated issue with several potential causal mechanisms.

