An Investigation of Surgical Site Infections with *Serratia marcescens*

Tracey Rhodes, MSN, RN, CIC, LTC-CIP; Jasmine Watkins, MSHCA, MPH; Kelley Tobey, MPH, BSN, RN, CIC; Simone Godwin, DVM, MPH, MS, CIC; Christopher Wilson, MD, MPH; Donna Russell, MBA, BSN, RN, CIC, CPH-P, CHEP

Background

- The Healthcare-Associated Infections and Antimicrobial Resistance (HAI/AR) program within the Tennessee Department of Health (TDH) was contacted in Spring 2023 regarding a series of surgical site infections (SSIs) testing positive for *Serratia marcescens* within a small community hospital.
- HAI/AR houses a 16-member Infection Prevention (IP) team which consults with Tennessee facilities to investigate infection prevention and control breaches and clusters of unexpected infections.

Methods

- To assist the facility with its investigation, HAI/AR provided epidemiologic support and an onsite IP assessment focused on the facility's perioperative area.
- The investigation involved case ascertainment for January to June 2023 with medical record abstraction.
- The IP assessment was conducted in late June 2023 using tools from the Association of periOperative Registered Nurses (AORN), the Association for Professionals in Infection Control and Epidemiology (APIC), and the Centers for Disease Control and Prevention (CDC).

Results/Figures

- Nine SSIs were identified during the review period. Surgical procedures included orthopedic (spine, hip, knee), and general surgery (hernia, small bowel). Three different surgeons were associated with this cluster (figures 1, 2).
- The onsite assessment revealed gaps in facility infection prevention practices. Observations of importance included (figure 3):
  - Lack of standardized procedures for environmental services (EVS) or surgical staff for room turnover cleaning
  - Inappropriate contact times for disinfectants
  - Poor compliance with surgical hand rub instructions for use and hand hygiene opportunities in the OR
  - Contamination of the sterile field during skin antiseptic application
  - Moisture issues and wet packs post sterilization
- HAI/AR provided a comprehensive report with the facility agreeing to implement major recommendations.
- No additional *Serratia marcescens* cases have been reported to TDH since June 2023.

Figure 3: IP Observations

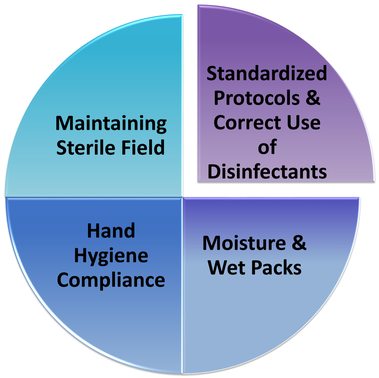

Figure 1: Timeline

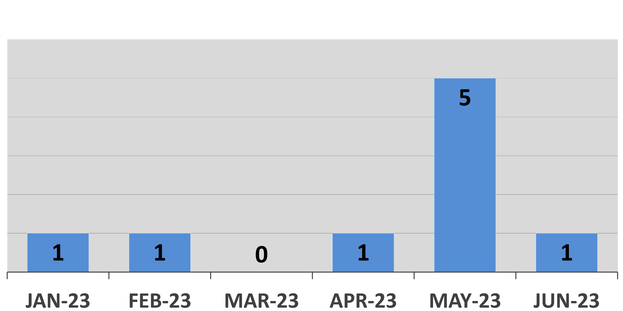

Figure 2: Procedure and Case Distribution

Procedure	Surgeon A	Surgeon B	Surgeon C
Spine	4		
Hip	2		
Knee	1	1	
Hernia/SB			1

Discussion and Conclusions

- This investigation demonstrates the importance of following a defined process for environmental cleaning and disinfection in the perioperative area.
- External assessments from programs such as HAI/AR can assist facility-led investigations by providing additional and targeted expertise and overcoming person power limitations.
- Tools available through AORN, APIC and CDC can assist with addressing gaps identified during investigations.

Disclosures

Nothing to disclose

Contact Information

Tracey Rhodes, MSN, RN, CIC, LTC-CIP
Tennessee Department of Health
HAI.Health@tn.gov