

Kimberly Burke, MD, MSc; Lillian Kariko Braithwaite, MLT, BHA, CIC; Joan Osbourne Townsend, RN, BScN, MN, CIC; Ian Brasg, MD, MSc, FRCPC

DESCRIPTION

Serratia marcescens is an opportunistic gram-negative organism known to cause hospital-acquired infections, particularly in vulnerable populations such as neonates in the neonatal intensive care unit (NICU). In December 2024, a cluster of *Serratia*-positive specimens was identified at Humber River Health's (HRHs) NICU. This triggered an immediate response led by Infection Prevention and Control (IPAC), in collaboration with NICU leadership and a multidisciplinary team.

OBJECTIVE

This initiative aimed to prevent further transmission of *Serratia*, reinforce compliance with personal protective equipment (PPE) and hand hygiene protocols, and standardize cleaning and communication practices across disciplines.

ACTIONS TAKEN

- **Enhanced Environmental Cleaning protocols:** Environmental Services (EVS) implemented twice-daily cleaning of high-touch surfaces and introduced ultraviolet (UV) light disinfection for terminal cleans. Worn furniture was removed, and access to shared parent areas was temporarily restricted.
- **Staff Education & Auditing:** Daily huddles and compliance audits were initiated to reinforce best practices. Hand hygiene adherence was emphasized, including a ban on artificial nails. Targeted feedback sessions were conducted with respiratory therapy staff to improve equipment cleaning.
- **Improved Communication & Oversight:** Daily updates were shared among IPAC, EVS, and NICU leadership. Transparent communication with families was maintained throughout the outbreak.
- **Surveillance Measures:** Swabbing was introduced for in-centre births, and continued for approximately six months to identify potential sources and prevent further transmission.

Serratia Marcescens Cases Over Time (NICU Outbreak)

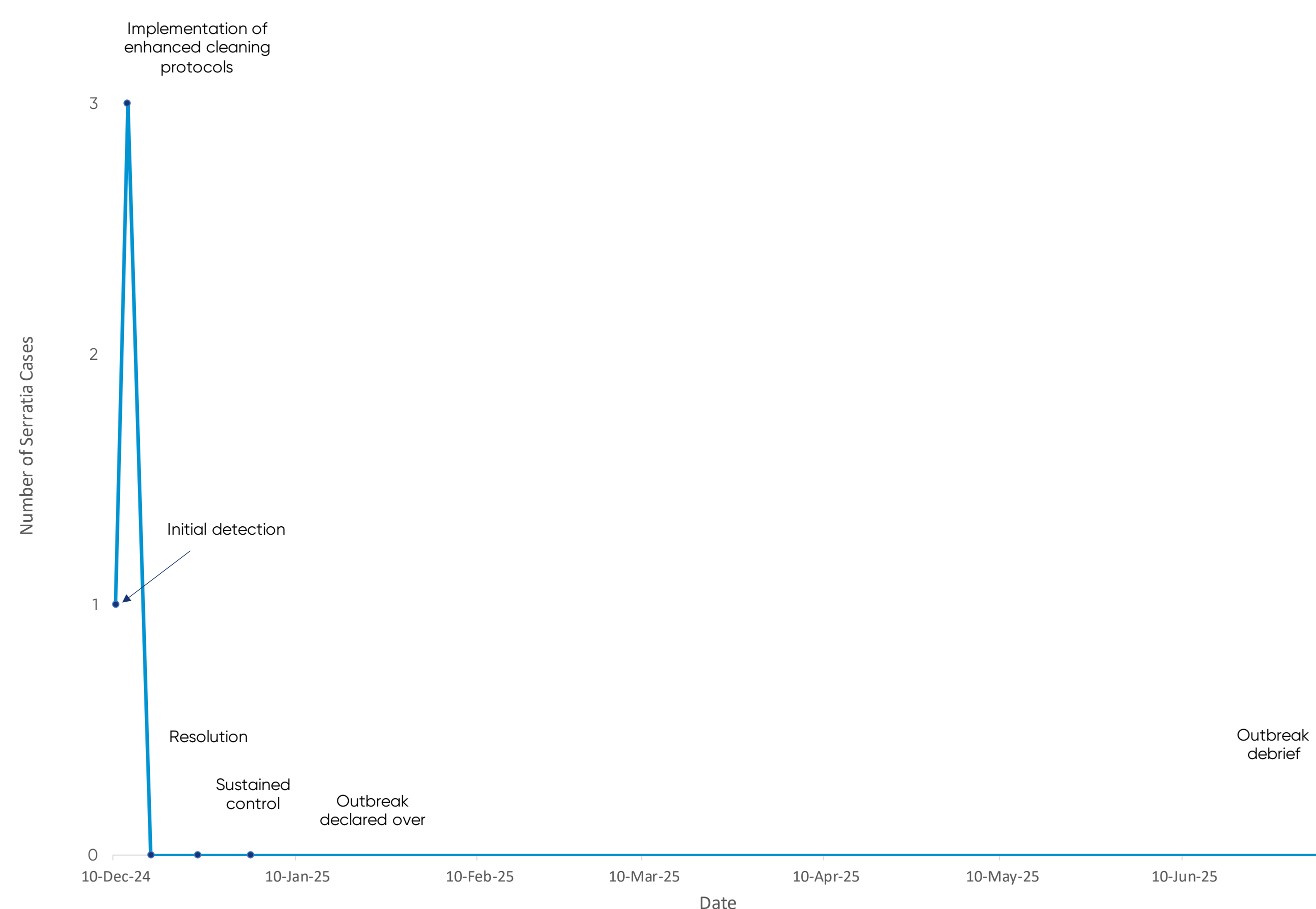


Figure 1. *Serratia marcescens* cases in the NICU before and after targeted infection-control interventions.

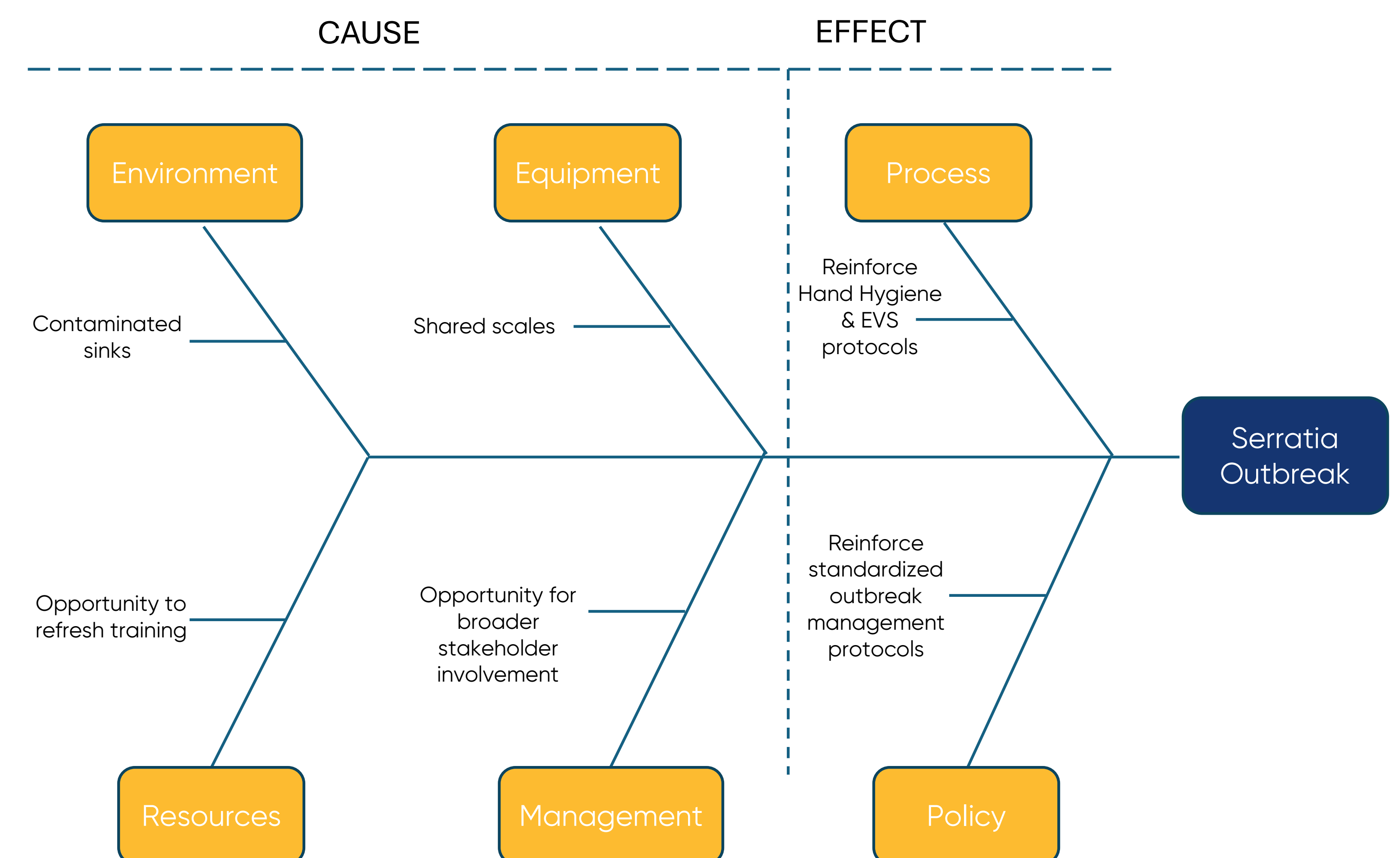


Figure 2. Fishbone diagram summarizing multifactorial contributors in the outbreak investigation and quality-improvement review.

SUMMARY OF RESULTS

Four confirmed *Serratia*-positive neonates were identified before the implementation of control measures. Hand hygiene compliance improved significantly after targeted education and auditing. Staff consistently demonstrated adherence to PPE and isolation protocols within one week. The collaborative approach between IPAC, EVS, and NICU leadership led to sustained improvements in both cleaning practices and communication efficiency.

LESSONS LEARNED

This initiative highlighted the importance of routine disinfection of shared equipment in preventing nosocomial outbreaks. Multidisciplinary collaboration enabled rapid response and containment. Ongoing education and auditing are essential to sustaining improvements.

