



TO SCREEN OR NOT TO SCREEN

Using epiXact to Determine if Large Scale Healthcare Worker Screening for MRSA is Merited

BACKGROUND

During weekly surveillance in the NICU of a large academic medical center, cultures from three separate patients turned positive for methicillin-resistant *Staphylococcus aureus* (MRSA). The MRSA-positive babies were all being cared for in the same area of the NICU, indicating a possible outbreak. To prevent further transmission, a standard intervention package was implemented including intensified daily cleaning, contact precautions, monitoring of hand washing procedures, dedicated staffing, and continued surveillance. Despite implementing this package of interventions, two additional cases of MRSA with similar antibiograms were subsequently diagnosed.

MRSA in the NICU is associated with significant morbidity, increases in hospital length of stay, and excess treatment costs.¹

The High Stakes Decision

The infection control team worried that the additional cases of MRSA represented a possible failure of the standard infection control interventions. If so, the next step in controlling the outbreak would require screening the entire NICU healthcare workforce (200-300 staff), and decolonization of anyone found to harbor MRSA. This presented several challenges, including:

- Organizing staff across different departments and multiple shifts to conduct the screening without disrupting operations and union-negotiated work schedules
- Processing the high volume of screening tests through an already fully utilized microbiology lab
- Absorbing the cost of screening, decolonization and ongoing staff surveillance
- Reluctance of some staff members to be screened due to concerns about negative personal consequences if they were found to carry MRSA

The hospital needed clear and definitive answers quickly, so that a decision could be made on whether to proceed with healthcare worker screening.

Solution

Infection Control contacted Day Zero Diagnostics to perform an epiXact HAI investigation to help them determine if the new MRSA cases were related to the previous putative outbreak. A whole genome sequencing-based analysis provided a higher resolution method of determining relatedness than traditional molecular methods such as PFGE or MLST typing. Day Zero Diagnostics provided the final report to Infection Control within 2 working days of receiving the culture isolates.

Outcome

EpiXact analysis confirmed that the first three samples were indeed part of a single outbreak, but also determined that the two new MRSA cases were genomically unrelated to the prior MRSA samples despite the close time and space relationship and similarities in the antibiograms. Infection Control concluded that the first intervention had controlled the initial outbreak and chose not to move forward with the screening of healthcare workers, saving the hospital money, time, and disruption.

1. Nelson Melissa U. et al. Methicillin-Resistant *Staphylococcus aureus* in the Neonatal Intensive Care Unit. *Semin Perinatol.* 2012 Dec; 36(6): 424–430. *Disclaimer: Details of the project may have been omitted or changed to clarify the use case and to ensure confidentiality.*

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