Successful control of a Methicillin-resistant Staphylococcus aureus outbreak in a neonatal intensive care unit: a retrospective, before-after study. BMC Infectious Diseases. 13(440).

Electronic full text.

Abstract:

Background - Aim of this study was to provide a detailed description of a Methicillin-resistant Staphylococcus aureus (MRSA) outbreak management strategy in the neonatal intensive care unit of a university hospital.

Methods - This was a retrospective, “before-after” study, over two consecutive 18-month periods. The outbreak management strategy was performed by a multidisciplinary team and included: extensive healthcare workers (HCW) involvement, education, continuous hand-hygiene training and active MRSA colonization surveillance. The actions implemented were identified based on an anonymous, voluntary, reporting system, carried out among all the HCW, and regular audit and feedback were provided to the nursing staff. The main measured outcome was the rate of MRSA infections before and after the implementation of the outbreak management strategy. Piecewise linear Poisson regression was performed and the model adjusted for confounding variables. The secondary outcome was the rate of laboratory-confirmed bloodstream infections before and after the outbreak management strategy. The rates of MRSA colonization, implementation of proposed actions, observed compliance for
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hand-hygiene and insertion/care of central lines were also recorded during the second period.

Results – 1015 newborns were included. The rate of MRSA infections throughout the two periods fell from 3.5 to 0.7 cases per 1000 patient-days (p=0.0005). The piecewise Poisson regression analysis adjusted for confounding variables showed a significant decrease in the MRSA infection rate after the outbreak management strategy (p=0.046). A significant decrease in positive laboratory confirmed blood cultures was observed over the two periods (160 vs 83; p<0.0001). A significant decline in the MRSA colonization rate occurred over the second period (p=0.001); 93% of the proposed actions were implemented. The compliance rate for hand-hygiene and insertion/care of central lines was respectively 95.9% and 62%.

Conclusions – The implementation of multiple, simultaneous, evidence-based management strategies is effective for controlling nosocomial infections. Outbreak management strategies may benefit from tools improving the communication between the institutional and scientific leadership and the ground-level staff. These measures can help to identify individualized solutions addressing specific unit needs.