

To increase reliability of the algorithm used in our fully automated electronic surveillance system by adding rules to better identify bloodstream infections secondary to other hospital-acquired infections” Snyders et al (2015).

Abstract:

OBJECTIVE: To increase reliability of the algorithm used in our fully automated electronic surveillance system by adding rules to better identify bloodstream infections secondary to other hospital-acquired infections.

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METHODS: Intensive care unit (ICU) patients with positive blood cultures were reviewed. Central line-associated bloodstream infection (CLABSI) determinations were based on 2 sources: routine surveillance by infection preventionists, and fully automated surveillance. Discrepancies between the 2 sources were evaluated to determine root causes. Secondary infection sites were identified in most discrepant cases. New rules to identify secondary sites were added to the algorithm and applied to this ICU population and a non-ICU population. Sensitivity, specificity, predictive values, and kappa were calculated for the new models.

RESULTS: Of 643 positive ICU blood cultures reviewed, 68 (10.6%) were identified as central line-associated bloodstream infections by fully automated electronic surveillance, whereas 38 (5.9%) were confirmed by routine surveillance. New rules were tested to identify organisms as central line-associated bloodstream infections if they did not meet one, or a combination of, the following: (I) matching organisms (by genus and species) cultured from any other site; (II) any organisms cultured from sterile site; (III) any organisms cultured from skin/wound; (IV) any organisms cultured from respiratory tract. The best-fit model included new rules I and II when applied to positive blood cultures in an ICU population. However, they didn't improve performance of the algorithm when applied to positive blood cultures in a non-ICU population.

CONCLUSION: Electronic surveillance system algorithms may need adjustment for specific populations.

Reference:



Snyders, R.E., Goris, A.J., Gase, K.A., Leone, C.L., Doherty, JA, and Woeltje, K.F. (2015) Increasing the Reliability of Fully Automated Surveillance for Central Line-Associated Bloodstream Infections. Infection Control and Hospital Epidemiology. September 2nd. .

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