

Machine learning can be used to develop accurate models to predict the risk of CLABSI in real time prior to the development of infection” Beeler et al (2018).

Abstract:

Background: Central line-associated bloodstream infections (CLABSIs) contribute to increased morbidity, length of hospital stay, and cost. Despite progress in understanding the risk factors, there remains a need to accurately predict the risk of CLABSIs and, in real time, prevent them from occurring.

Methods: A predictive model was developed using retrospective data from a large academic healthcare system. Models were developed with machine learning via construction of random forests using validated input variables.

Results: Fifteen variables accounted for the most significant effect on CLABSI prediction based on a retrospective study of 70,218 unique patient encounters between January 1, 2013, and May 31, 2016. The area under the receiver operating characteristic curve for the best-performing model was 0.82 in production.

Discussion: This model has multiple applications for resource allocation for CLABSI prevention, including serving as a tool to target patients at highest risk for potentially cost-effective but otherwise time-limited interventions.

Conclusions: Machine learning can be used to develop accurate models to predict the risk of CLABSI in real time prior to the development of infection.

Reference:

Beeler, C., Dbeibo, L., Kelley, K., Thatcher, L., Webb, D., Bah, A., Monahan, P., Fowler, N.R., Nicol, S., Judy-Malcolm, A. and Azar, J. (2018) Assessing patient risk of central line-associated bacteremia via machine learning. *American Journal of Infection Control*. April 13th. .

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