



Our risk-adjustment model for CLABSI using electronically available comorbidities demonstrated better discrimination than did the CDC model. The CDC should strongly consider comorbidity-based risk adjustment to more accurately compare CLABSI rates across hospitals” Jackson et al (2017).

Abstract:

BACKGROUND: Risk adjustment is needed to fairly compare central-line-associated bloodstream infection (CLABSI) rates between hospitals. Until 2017, the Centers for Disease Control and Prevention (CDC) methodology adjusted CLABSI rates only by type of intensive care unit (ICU). The 2017 CDC models also adjust for hospital size and medical school affiliation. We hypothesized that risk adjustment would be improved by including patient demographics and comorbidities from electronically available hospital discharge codes.

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METHODS: Using a cohort design across 22 hospitals, we analyzed data from ICU patients admitted between January 2012 and December 2013. Demographics and International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM) discharge codes

were obtained for each patient, and CLABSIs were identified by trained infection preventionists. Models adjusting only for ICU type and for ICU type plus patient case mix were built and compared using discrimination and standardized infection ratio (SIR). Hospitals were ranked by SIR for each model to examine and compare the changes in rank.

**RESULTS:** Overall, 85,849 ICU patients were analyzed and 162 (0.2%) developed CLABSI. The significant variables added to the ICU model were coagulopathy, paralysis, renal failure, malnutrition, and age. The C statistics were 0.55 (95% CI, 0.51-0.59) for the ICU-type model and 0.64 (95% CI, 0.60-0.69) for the ICU-type plus patient case-mix model. When the hospitals were ranked by adjusted SIRs, 10 hospitals (45%) changed rank when comorbidity was added to the ICU-type model.

**CONCLUSIONS:** Our risk-adjustment model for CLABSI using electronically available comorbidities demonstrated better discrimination than did the CDC model. The CDC should strongly consider comorbidity-based risk adjustment to more accurately compare CLABSI rates across hospitals.

Reference:

Jackson, S.S., Leekha, S., Magder, L.S., Pineles, L., Anderson, D.J., Trick, W.E., Woeltje, K.F., Kaye, K.S., Stafford, K., Thom, K., Lowe, T.J. and Harris, A.D. (2017) The Effect of Adding Comorbidities to Current Centers for Disease Control and Prevention Central-Line-Associated Bloodstream Infection Risk-Adjustment Methodology. *Infection Control and Hospital Epidemiology*. July 3rd.

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