

# Minimizing Healthcare Associated Infections: A Discrete Event Simulation Study

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## 3 PROJECT ABSTRACT WITH RESULTS

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Catheter associated urinary tract infections (CAUTIs) are second most common HAI, accounting for approximately 15% of infections in acute care hospitals. Important policy changes have occurred including mandating hospitals to report their CAUTIs publicly, using the National Healthcare Safety Network (NHSN) and a federal incentive performance measure that stops Medicare payments for patients with CAUTIs. DHHS has developed a national action plan to prevent HAIs, including CAUTIs, as a top priority. A viable approach to address the challenging problem of preventing CAUTIs is modeling and simulation (M&S). In this project, we considered a discrete event M&S approach for evaluating CAUTIs interventions in hospital intensive care units (ICUs). This project used systems analysis and M&S (cited as needed implementation science by HHS) to identify hidden healthcare delivery failure points leading to CAUTIs with the goal of reducing CAUTI rates. The results showed that on average a higher number of CAUTIs and a higher number of CAUTIs per 1000 device days is expected when the nurse capacity is at their lowest level. The highest number of CAUTIs is observed when the nurse capacity level is low

combined with a low % of catheters placed inappropriately, a low catheter daily removal chance, and a high late maintenance risk.

#### 4 LIST EXTERNAL GRANTS SUBMITTED RELATED TO MIRG GRANT

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