Minimizing Healthcare Associated Infections: A Discrete Event Simulation Study

1 LIST OF INTERNAL PI/Co-PI

- PI: Eduardo Perez, PhD, Assistant Professor, Ingram School of Engineering, Industrial Engineering Program
- Co-PI: Rodney E. Rohde, PhD, MS, SV, SM(ASCP), MB, Associate Dean for Research, College of Health Professions & Associate Professor, Clinical Laboratory Science

2 LIST OF EXTERNAL PARTNERS

- Susan H. Fenton/ Health Informatics, UTHealth School of Biomedical Informatics, 7000 Fannin Suite 690, Houston, TX 77030
- Hania Wehbe-Janek/ Vice President of Academic Research Integration, Scott & White Healthcare, 2401 South, Temple, Texas 76508, E-mail: HWEHBEJANEK@sw.org
- Angela K. Hochhalter/ Vice President of Patient Experience, Scott & White Healthcare, 2401 South, Temple, Texas 76508, E-mail: AHOCHHALTER@sw.org

3 PROJECT ABSTRACT WITH RESULTS

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

- Title: “Reducing CAUTIs in the ICU by Using Systems Simulation Modeling”
  Source: Agency for Health Care Research and Quality (AHRQ)
  PI: Eduardo Pérez
  Amount: $2,158,515.00
  Time Period: 09/2015 – 08/2020
  Under review submitted February 2nd, 2015