Prevention of Catheter Associated Urinary Tract Infection (CAUTI): Literature Review

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Catheter-acquired urinary tract infections (CAUTI) remain a high burden across hospitals nationwide despite multicomponent interventions implemented by the Centers for Disease Control. Success in the prevention of CAUTI remains variable. This literature review aims to identify methods of CAUTI prevention.

Quantitative Results of a National Intervention to Prevent Hospital-Acquired Catheter-Associated Urinary Tract Infection

STRIVE (States Targeting Reduction in Infections via Engagement) is a Centers for Disease Control and Prevention (CDC)-funded national project created to support hospitals that are struggling with catheter-associated urinary tract infections (CAUTIs) and other hospital-associated infections (HAIs). Interventions included assessments, training modules, a 2-tiered approach to help hospitals prioritize interventions, and a framework to prioritize preventative activities. Pre-and post-intervention periods were measured, showing no substantial quantitative improvements between the two periods.

Key Points

The CDC STRIVE initiative aimed to lower CAUTI using multimodal interventions (Meddings et al., 2019). The STRIVE initiative measured success based on rates of *Clostridiodes difficile* infection, central line-associated bloodstream infection, CAUTI, and hospital-onset methicillin-resistant *Staphylococcus aureus* bloodstream infection. STRIVE hospitals struggle with disproportionately high burdens of these HAIs. The study provided the results from 3 cohorts with a 12-month pre-and postintervention period. Each cohort contained a balanced mix of acute care, long-term acute care, and critical access hospitals. STRIVE hospitals completed

Infection Control Assessment and Response (ICAR) and the Practice Change Assessment (PCA) questionnaires. They answered questionnaires at baseline and follow-up to self-evaluate their infection and prevention control (IPC) activities and identify their specific gaps. Other interventions included web-based, on-demand modules that targeted foundational infection control practices like hand hygiene and the use of personal protective equipment. HAI-specific prevention strategies used a 2-tiered approach; tier 1 focused on basic prevention strategies, and tier 2 was implemented if a better intervention was required. Tier 2 was more costly and resource intensive. The CDC created the targeted assessment for prevention (TAP) framework for quality improvement to prioritize preventive activities where they will have the biggest impact. Out of the 355 hospitals that reported pre- and post-intervention outcomes, a total of 71 (20.0%) reported CAUTI rates of zero in both periods, whereas 116 (32.7%) met the CDC reduction goal of 25% over the two periods (Meddings et al., (2019). The multimodal interventions did not significantly lower the rate of CAUTI.

Assumptions

The prevention of catheter-associated urinary tract infections (CAUTIs) is a problem that persists in many hospitals. In a patient sample of primarily (85%) in the non-ICU setting, recent research on HAI prevalence in acute care hospitals indicates statistically significant decreases in the percentage of patients with CAUTI and urinary catheters between 2011 and 2015. The development of multicomponent interventions reduces the incidence of CAUTIs. Success in preventing CAUTI with the interventions remains variable.

Deficit/Conclusion

Over the study period, the CAUTI rate was low and relatively steady with a slight decline from 1.12 to 1.04 CAUTIs per 1000 catheter days (Meddings et al., 2019). The number of catheter utilization days per 100 patient days dropped from 21.46 to 19.83 between the pre-and post-intervention periods (Meddings et al., 2019). The analyses and interventions had limitations. Confounding variables may have impacted the outcomes of the before-and-after quasi-experimental design. Reevaluation of the interventions should address fidelity measures in utilizing the learning resources, accessibility of the learning resources, and the length of the study to gather more meaningful data. Although this multimodal intervention did not significantly improve in reducing CAUTIs, more research is required to address the barriers that can affect the success of interventions aiming to change clinical behavior to reduce infection rates.

References

Meddings, J., Manojlovich, M., Ameling, J. M., Olmsted, R. N., Rolle, A. J., Greene, M. T., Ratz, D., Snyder, A., & Saint, S. (2019). Quantitative results of a national intervention to prevent hospital-acquired catheter-associated urinary tract infection. *Annals of Internal Medicine*, *171*(7_Supplement). https://doi.org/10.7326/m18-3534