Outcomes of Quality Improvement Project: Integrating Loeb Minimum Criteria For UTI Diagnostic Into A Focused Urinary Assessment To Reduce Antibiotic Prescribing In A Long Term Care Facility

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Introduction and Background

Urinary tract infections (UTI) are the most commonly diagnosed infection in long-term care (LTC) nursing facilities, and are the most common cause of LTC facility–acquired bacteremia and subsequent hospitalizations. There is no clinical or laboratory gold standard to guide initiation of antibiotics. As a result, UTIs are often overdiagnosed, leading to unnecessary treatment. Older adults are at increased risk of adverse drug reactions, *Clostridium difficile* infections, and antibiotic resistance.

The LVN nursing staff plays a pivotal role in communicating changes in resident condition and recommendations for diagnostic testing with prescribing medical providers. Antibiotics are often prescribed in the absence of a medical provider's physical examination, based solely on nursing communication of the resident's status to the provider.

The Loeb Minimum Criteria for UTI Diagnostic represents the minimum criteria for urine culture in patients without an indwelling catheter in the LTC setting based on signs and symptoms localized to the urinary system. It guides urinary assessment and subsequent communication between the nursing staff and medical provider, promoting stronger evidence-based clinical decision-making.

Materials and Methods

Design: Quantitative descriptive study including 30-day retrospective chart reviews before and after an educational intervention and implementation of a SUP documentation checklist based on the Loeb Minimum Criteria for UTI Diagnostic.

Setting: Long Term Care Nursing Facility

Sample: Nurses (RNs, LVNs) providing direct care to LTC patients aged 65 and older. The of 86 patients were present in the facility during the pre-intervention period and 77 were present during the post-intervention period.

Intervention: A suspected UTI protocol (SUP) was developed based on the Loeb Minimum Criteria (LMC) for UTI Diagnostic.

Implementation: Nurses were trained and used a SUP documentation checklist to guide assessment and provider communication.

Purpose

The aim of this study was to facilitate more accurate diagnosis and treatment of UTI in LTC residents through improved nursing assessment and communication with providers.

Results

A 45% decrease was observed in antibiotic prescriptions for UTI between the pre- and post-intervention periods, suggesting a decline in the number of antibiotics prescribed (Figure 1). Comparison of the two groups using the Wilcoxon Rank Sum Test yielded a p-value of 0.135, indicating that the difference observed between the two groups was not statistically significant. As depicted in Figure 2, most of the SUP checklists were submitted during the first week of the post-intervention period, and the decrease in the number of completed SUP checklists was accompanied by a simultaneous decrease in antibiotic prescribing for UTI. Because there are few observations and the distribution of the data is skewed, a Spearman Rho coefficient was used (Spearman Rho=0.64818; p=0.2368) rather than a Pearson Correlation to determine the strength of this association. The alpha level was set at 0.05, therefore the null hypothesis (correlation coefficient=0) is accepted, indicating that although there is a moderate association between the completion of SUP checklists and antibiotic prescribing, the association was not statistically significant.

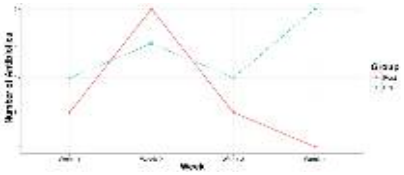

Figure 1. Number of antibiotics prescribed for UTI during the pre- and post-intervention periods.

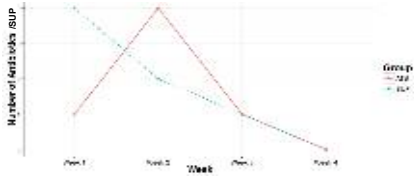

Figure 2. Number of SUPs collected and antibiotics prescribed during the post-intervention period.

Literature Cited

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Implications

The implementation of the SUP based on the LMC for UTI Diagnostic will improve the appropriateness of antibiotic prescribing by increasing urinary-focused knowledge and skills among the licensed nurses assessing the resident and improving communication with medical providers. This improved communication will strengthen decision-making and lead to better outcomes for LTC residents. More appropriate antibiotic prescribing may decrease the number of adverse drug reactions, the incidence of *Clostridium difficile* infections, and the prevalence of antibiotic resistance.

Conclusions

A moderate association between completion of the SUP checklists and antibiotic prescribing for UTI was found to be insignificant, however the sample was too small to reliably indicate whether a significant association exists. Nevertheless, a 45% decrease was observed in antibiotic prescribing for UTI between the pre- and post-intervention periods. During week 1, when the majority SUP checklists were completed, only one antibiotic was prescribed for UTI.

Although not statistically significant, this trend may indicate a potential positive correlation between completion of the SUP checklists and antibiotic prescribing for UTI that could be confirmed in a future study using a larger sample size and/or a longer observation period. In addition, the increased knowledge gained from the nurses' participation in the educational intervention may have influenced their assessment of suspected UTI and produced the observed reduction in antibiotics prescribed. Further study is needed to develop evidence-based guidelines for urinary-focused assessment and subsequent communication between nurses and medical providers to promote more appropriate prescribing and improve patient outcomes.

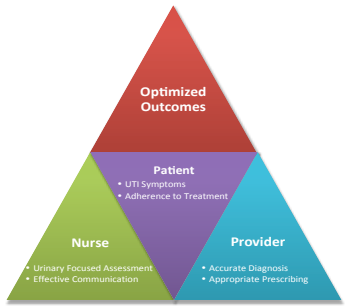

Figure 1. Model depicting the proposed quality improvement for more effective assessment, diagnosis, and treatment of UTI in LTC residents.