

Evaluation and Identification of Risk Factors Associated with Inappropriate Treatment of Asymptomatic Bacteriuria

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Background

Asymptomatic bacteriuria (ASB) is a common finding in many hospitalized patients and is often treated unnecessarily, leading to complications associated with antibiotics without providing benefit for an otherwise asymptomatic patient. The purpose of this study is to characterize the rate of unnecessary treatment of ASB at SSM Health St. Mary's Hospital – St Louis and identify specific patient risk factors that are more likely to result in unnecessary treatment of ASB.

Methods

This is a single center, retrospective cohort study that has been approved by the Institutional Review Board. The electronic medical record was used to identify patients with a positive urine culture who were initiated on antibiotics within 72 hours from January to June 2019. The following data was collected: age, gender, presence of fever within 24 hours of urine culture, WBC count at the time of culture, length of hospital stay, renal function, presenting UTI symptoms (flank/back pain, suprapubic pain, urinary frequency or urgency, hematuria), relevant patient background (documented falls, admission from nursing home or long term care facility), length of antibiotic regimen, if patient experienced symptom resolution after antibiotic initiation, presence of an indwelling urinary catheter, location in the hospital, and identification of ordering physician. If available, the clinical reason for ordering the culture, results of the urinalysis, and identification and susceptibilities of the infectious agent was also collected. All data was recorded and de-identified to preserve patient confidentiality. The proportion of patients who presented as asymptomatic was calculated and compared to the null hypothesis of 50%.

Results

163 patients were screened and 35 were excluded, for a total of 128 patients analyzed. The rate of treatment of ASB at St Mary's was found to be 36%, which was lower than the null hypothesis of 50%. 32.8% of treated patients had no documented justification for starting antimicrobial therapy, and only 1 treatment instance was associated with a pharmacist recommendation for discontinuation. Average length of stay between those treated for ASB and those not treated was not statistically different, but the average length of antibiotics was significant. Of the urinalysis results, only two categories were associated with a statistically significant higher likelihood of treatment: WBCs >100 and trace bacteria. 198 total days of unnecessary antibiotics over the studied 6 month period were prescribed to 128 patients.

Conclusion

Rates of ASB treatment are lower than expected compared to rates obtained from existing literature. Because a large portion of providers did not document justification for starting antibiotic therapy, it is difficult to identify risk factors that lead to treatment. It would be beneficial to further study more objective factors, like specific components of the urinalysis, to correlate to ASB treatment. Further education aimed towards providers to reduce ASB treatment would also be warranted.