Title: Evaluation of Inappropriate Inpatient Antibiotic Use Following a Urinalysis

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Purpose/Background: Over 10.8 million patients in the U.S visited the emergency department (ED) for the treatment of urinary tract infection (UTI) between 2006-2009. At Sentara Martha Jefferson Hospital (SMJH), it has been observed that patients may be receiving treatment for UTIs based on urinalysis (UA) results rather than clinical symptoms. Pallin et al (2014) found that 19% of patients who had UAs performed in the ED of an urban teaching hospital had no significant signs and symptoms of a UTI and 43% of patients had only nonspecific UTI symptoms. This study sought to quantify inappropriate antibiotic use for presumed UTIs at our institution.

Objective: The objective of this study was to gather baseline data to determine the percentage of antibiotics inappropriately ordered after a negative urinalysis for inpatients.

Methods: This study was a retrospective review of patients’ electronic medical records. Patients included in the analysis were those admitted to medical/surgical floors, the observational unit, or the intensive care unit during February 2018 with a negative urinalysis, defined as negative leukocyte esterase, negative white blood count (<10 WBC/mm$^3$), and negative nitrite. The number of patients with negative UAs that received antibiotic treatment was recorded. Secondary endpoint measures included the proportion of antibiotics ordered on a patient with clinical symptoms, those treated that met the sepsis criteria, the length of antibiotic therapy, and the number of repeat UAs that were ordered after a contaminated primary UA (>2 squamous cells/HPF).

Results: Of 636 urinalyses analyzed the inclusion criteria was met for 135 patients. Antibiotics were inappropriately started to treat for a UTI on 5.2% (n=7) of patients with a negative UA. Out of the seven inappropriate antibiotic treatments, 14.2% (n=1) received antibiotics with symptoms of a UTI, and 42.8% (n=3) met the sepsis criteria. The median number of antibiotic days was two days. Repeat urinalyses were ordered for only three contaminated primary UAs (3.7%).

Conclusion: Treatment was appropriately withheld for the majority of patients having a negative UA result. Those patients that were inappropriately treated likely met the sepsis criteria and had the antibiotics discontinued after the urine cultures came back negative. Based on the results of this study, future efforts will include reducing the overuse of antibiotics by limiting the number of urinalyses collected unnecessarily and improving collection techniques in order to reduce contaminated results.