2020

Evaluation of the diagnosis and treatment of asymptomatic bacteriuria at a community hospital

Halie McMillan

Abby L. Todt PharmD, BCPS

Sarah Ferrell PharmD

Jamie Gaul PharmD, BCPS

Evaluation of the diagnosis and treatment of asymptomatic bacteriuria at a community hospital

Halie McMillan, PharmD Candidate[1], Abby Todt, PharmD, BCPS[2], Sarah Ferrell, PharmD[2], Jamie Gaul, PharmD, BCPS[2]
[1] Manchester University College of Pharmacy, Natural & Health Sciences, Fort Wayne, Indiana
[2]Parkview Health, Parkview Regional Medical Center, Fort Wayne, Indiana

OBJECTIVE

- To evaluate the diagnosis and treatment of asymptomatic bacteriuria (ASB) within a community hospital setting.

BACKGROUND

- Asymptomatic bacteriuria (ASB) is defined as bacteria in a urine specimen without signs or symptoms of a urinary tract infection.[1]
- In 2019, the Infectious Diseases Society of America published clinical practice guidelines for the management of ASB. These guidelines provided more concrete definitions to aid in the diagnosis of ASB.[1]
- These guidelines state that the screening and treatment of ASB is only appropriate in women who are pregnant.[1]
- Populations such as functionally impaired older adults residing in the community, older residents residing in long term care facilities, and diabetics should not be screened or treated for ASB.[1]
- Based on increasing antimicrobial resistance, along with an emphasis on antimicrobial stewardship, the accuracy of diagnosing and treating urinary laboratory results is of most importance.[1-2]

METHODS

- This Institutional Review Board (IRB) approved quality improvement project was a retrospective chart review including patients with a resulted urine analysis (UA) during hospitalization between July 2019 and July 2020.
- Exclusion criteria: Patients with complicating factors, such as, urinary stent placement, spinal cord injury, history of kidney transplant, sexually transmitted diseases, pyelonephritis diagnosis, candida diagnosis.
- Data extracted from the electronic medical record (EMR) included patient gender and age, urine analysis and culture results, antimicrobial administration data, and ordering provider specialty of both the UA and antimicrobials.
- Extensive manual data collection was needed to identify urinary specific and non-specific symptoms at the time the UA was ordered and to determine if an alternative source of infection within the differential diagnosis resulted in an indication for antimicrobial use.
- Standard definitions were developed to group each patient into one of four categories:
  - ASB Appropriate: asymptomatic, no antimicrobial treatment
  - ASB Inappropriate: asymptomatic, received antimicrobial treatment
  - UTI Appropriate: symptomatic, received antimicrobial treatment
  - UTI Inappropriate: symptomatic, no antimicrobial treatment

RESULTS

Table 1: Demographics

	# of Patients	Average Age (SD)
Male	12	73.8 (± 16.6)
Female	38	69.2 (± 9.4)

Figure 1: Provider Specialty of UA and UCs Ordered

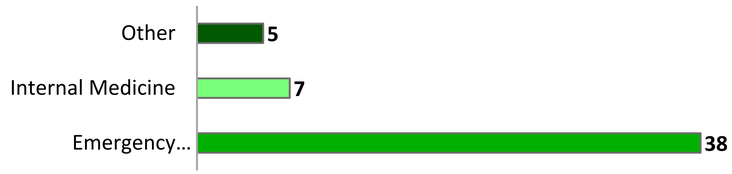


Figure 2: Percentage of ASB and UTI Categories

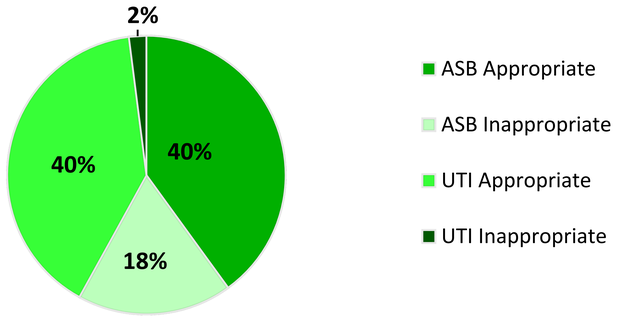
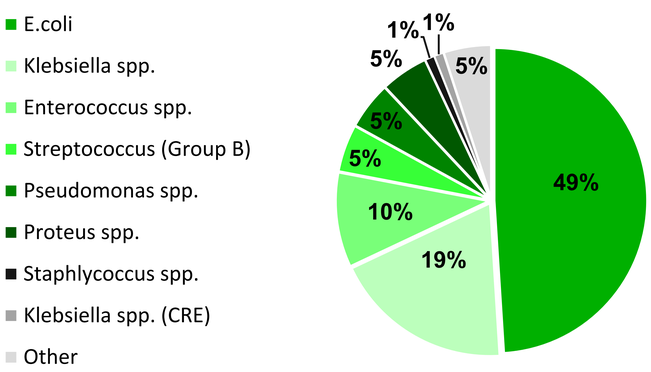


Figure 3: Percentage of UC Bacteria



RESULTS

Table 2: Provider Specialty Ordering Antibiotics in ASB Inappropriate Group

Internal Medicine	10
Emergency Medicine	3
Cardiology	1
Pulmonary Disease	1
Cardiovascular Disease	1

Table 3: Bacteria on UC in ASB Inappropriate Group

Escherichia Coli	6
Klebsiella pneumoniae	3
Klebsiella pneumoniae (CRE)	1
Stretococcus agakactiae (Group B)	1

Table 4: Antibiotics Used in ASB Inappropriate Group by Patient

Ceftriaxone	8
Cephalexin	5
Nitrofurantoin	2
Cefazolin	1

Table 5: Cost in ASB Inappropriate Group

Total doses administered	59
Total cost of antibiotics	$78
Total cost of UA and UC	$1,150

DISCUSSION & CONCLUSIONS

- The diagnosis and treatment of ASB within the community hospital setting appears to be less than optimal.
- Patients who presented with non-specific symptoms had a significant risk of being misdiagnosed as UTI rather than ASB, and thus treated inappropriately.
- Due to a low patient enrollment, further assessment should be considered before extrapolating to a large population.
- Regardless, these results suggest that there is ongoing inappropriate ordering of UAs, and subsequent UCs, which lead to increase in unnecessary cost to the patient and institution.
  - Over 5,600 patients qualified for our study. Applying this data to a population this size, the organization could potentially save ~$137,500 a year by optimizing care of ASB.
- Expanding on this patient population by collecting more data on the current prevalence and treatment of ASB will allow for strong, accurate conclusions to be drawn. These conclusions can then be applied in practice.

REFERENCES

1. Nicolle LE, Gupta K, Bradley SF, et. al. Clinical Practice Guideline for the Management of Asymptomatic Bacteriuria: 2019 Update by the Infectious Diseases Society of America. *CID* 2019;68(10):e83–75. doi: 10.1093/cid/ciy1121.
2. Gupta K, Hooton TM, Naber KG, et. al. International Clinical Practice Guidelines for the Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women: A 2010 Update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. *CID* 2011;52(5):e103–e120. doi: 10.1093/cid/ciq257

Disclosure
The authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:
McMillan: Nothing to disclose | Todt: Nothing to disclose | Ferrell: Nothing to disclose | Gaul: Nothing to disclose