Evaluation of Empiric Antibiotic Prescribing for Urinary Tract Infection Patients in a Community Hospital Emergency Department

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Background

- Urinary tract infections (UTI) are a leading cause of infection among patients presented to the emergency department (ED).
- Absence of microbiologic data, reduced continuity of care, and increased patient turnover create a challenging situation for treating patients with antibiotic therapy in the ED.
- Increasing antibiotic resistance requires clinicians to prescribe effective empiric antibiotic therapy based on current guidelines and local antibiograms.
- Two previous studies determined that duration of therapy was the most inappropriate antibiotic treatment implication.
- Ensuring appropriate prescribing of empiric antibiotics would result in a reduction in antibiotic resistance rates, rate of return visits to the ED, adverse effects, and healthcare costs.

Objectives

- To assess the appropriateness of empiric antibiotic prescribing for patients with urinary tract infections in the emergency department
- To examine the impact of return visits to the ED within 30 days based on empiric antibiotic prescribing for UTI patients

Methods

- Retrospective, single-center, cohort study approved by TTUHSC IRB
- Study Site: Hendrick Medical Center- a 500-bed community hospital in Abilene, Texas
- Study subjects identified by International Classification of Diseases (ICD) diagnosis codes recorded in the electronic medical record during a time period of July 1, 2017 to September 31, 2018

Inclusion Criteria	Exclusion Criteria
• Age ≥ 18 years • Admitted to the ED for UTI	• Pregnant women • Admitted to the hospital on the first ED visit for UTI • Incomplete medical records • Refused treatment or left against medical advice • Age ≥ 90 years • Prisoners

Study Outcomes

- **Primary**: Percentage of patients in the ED prescribed appropriate empiric antibiotics for UTI
- **Secondary**: 30-day return visits to the ED for UTI

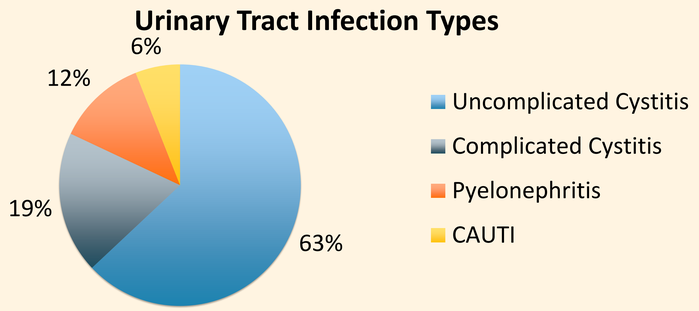
Statistical Analysis

- **Continuous data**: Student t-test
- **Nominal data**: Chi-square
- A p-value of less than 0.05 is considered significant

Results

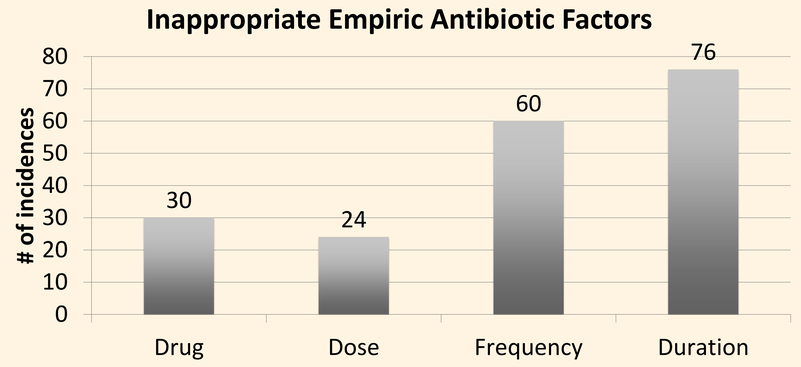
- **Baseline Characteristics**

	Total N=200	Inappropriate Treatment n=156	Appropriate Treatment n=44	P-value
Age, y, mean ± SD	51.69 ± 22.19	51.77 ± 22.27	51.39 ± 21.95	0.46
Female, n (%)	157 (78.50%)	126 (80.25%)	31 (70.45%)	0.14
Patient location, n (%)				
• Home	191 (95.50%)	153 (98.08%)	38 (86.36%)	< 0.05
• Nursing home	8 (4.00%)	5 (3.21%)	3 (6.82%)	0.28
• State school	1 (0.50%)	0 (0.00%)	1 (2.27%)	0.06
Baseline CrCl, n (%)				
• CrCl ≥60	142 (71.00%)	112 (71.79%)	30 (68.18%)	0.64
• CrCl 30-59	52 (26.00%)	40 (25.64%)	12 (27.27%)	0.83
• CrCl <30	4 (2.00%)	3 (1.92%)	1 (2.27%)	0.88
• N/A	2 (1.00%)	1 (0.64%)	0 (0.00%)	0.59
Diabetes, n (%)	58 (29%)	47 (30.13%)	11 (25.00%)	0.51
ESRD, n (%)	3 (1.50%)	2 (1.28%)	1 (2.27%)	0.63
Active cancer, n (%)	3 (1.50%)	2 (1.28%)	1 (2.27%)	0.63
Dialysis, n (%)	3 (1.50%)	2 (1.28%)	1 (2.27%)	0.63
HIV, n (%)	1(0.50%)	1 (0.60%)	0 (0.00%)	0.59



- **Primary Outcome**

Inappropriate Treatment	Appropriate Treatment	P-value
156 (78%)	44 (22%)	**< 0.05**



- **Secondary Outcome**

	Inappropriate Treatment n= 156	Appropriate Treatment n=44	P-value
Returned to ED within 30 days, n (%)	17 (10.90%)	2 (4.54%)	0.20

Discussion

- The most common prescribing error was duration of therapy, similar when compared with previous studies.
- **Strengths**: relatively large sample size, less stringent inclusion/exclusion criteria
- **Limitations**: single center, retrospective study, ED documentation may be variable, not all patients would qualify as having UTI despite ICD code diagnosis such as asymptomatic bacteriuria patients

Conclusion

- A high rate of empiric antibiotics prescribed in the emergency department for UTI are inappropriate
- Factors such as increased frequency and extended duration of antibiotic therapy could contribute to increasing antibiotic resistance rates over time

Disclosure

- The authors of this study do not have any conflicts of interest