OUTCOMES AND ADHERENCE TO INSTITUTIONAL EMPIRIC THERAPY GUIDELINES FOR THE TREATMENT OF CYSTITIS IN AMBULATORY MALE VETERANS

U.S. Department of Veterans Affairs
Veterans Health Administration
Michael E. DeBakey VA Medical Center

Selena Pham, Pharm.D.
selena.ng.pham@gmail.com
2002 Holcombe Blvd,
Houston, TX 77030
713-791-1414 (x26904)

Selena N. Pham, PharmD[1], Chester N. Ashong, PharmD, AAHIVP[1], Maria C. Rodriguez-Barradas, MD [1,2], Andrew S. Hunter, PharmD, BCPS(AQ-ID)[1,2]

[1]Michael E. DeBakey Veterans Affairs Medical Center, [2]Baylor College of Medicine- Houston, TX

Abstract

Background: Guidelines provide primary literature demonstrating efficacy and safety of cystitis treatment in female patients, but not males. Increased antimicrobial resistance of urinary tract infection (UTI) pathogens to first line antibiotics are well-documented. In 2017, a change in institutional guidelines was made to recommend nitrofurantoin (NF) or cefpodoxime (CPD) as first-line antibiotics for cystitis in males. This study aims to evaluate the efficacy of NF and CPD as first-line treatment options in males with cystitis.

Methods: Single-center, retrospective chart review of male patients prescribed NF or CPD for treatment of cystitis in the outpatient setting from August 2017 to August 2018. Patients with asymptomatic bacteriuria, prostatitis or systemic signs and symptoms of UTI were excluded. Primary outcome was clinical response, defined as no new emergency department (ED) or patient aligned care team (PACT) visit within 30 days after initiation of antibiotic for unresolved symptoms. Safety outcomes were based on documented adverse effects (AE) associated with antibiotic use. Chi-square was the primary statistical test for analyzing primary outcomes and other nominal variables.

Results: A total of 450 charts were reviewed with 150 patients meeting inclusion criteria (NF n = 75, CPD n = 75). Baseline characteristics were equally distributed between the two groups although the CPD group had higher serum creatinine compared to the NF group (p = 0.05). Nine patients (12%) in the NF group versus 13 patients (17.3%) in the CPD group returned to ED or PACT within 30 days (p=0.36). Inappropriate dosing was seen in 13 patients (17.3%) in the NF group vs. 2 patients (2.7%) in the CPD group (p = 0.005) and 44 patients (58.7%) in the NF group vs. 37 patients (49.3%) in the CPD group who received an inappropriate duration of treatment (p = 0.25). None of the patients reported AE associated with antibiotic use.

Conclusion: Treatment success rate of NF and CPD (88% and 82.7%, respectively) suggests that these agents might be effective first line antibiotics for cystitis in males. High rate of inappropriate long duration of treatment indicates the need for staff education and prospective audit and feedback for outpatient stewardship interventions.

Introduction

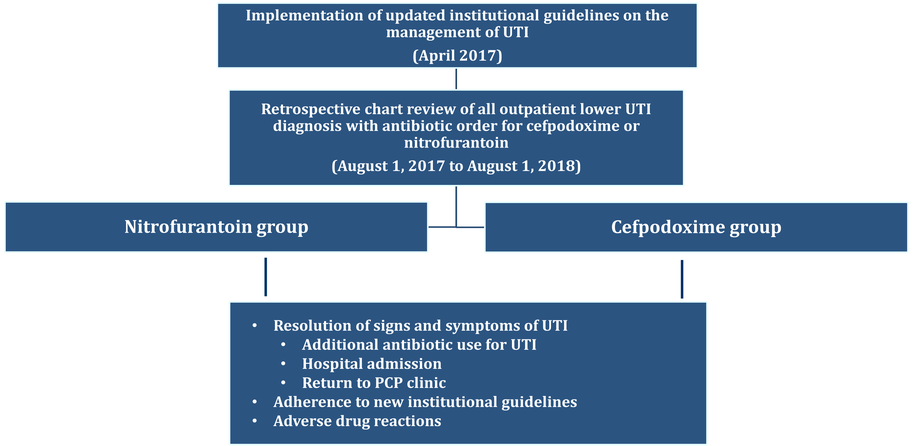
- In April 2017, Michael E. DeBakey VA Medical Center (MEDVAMC) developed empiric antimicrobial guidelines recommending nitrofurantoin 100mg twice daily or cefpodoxime 200mg twice daily for a duration of 7 days as first-line antibiotics for male veterans with cystitis.
- This project aims to assess the efficacy and safety of nitrofurantoin and cefpodoxime for the treatment of cystitis in male patients.

Methods

- **Project Design:**
  - Single-center, retrospective chart review
  - Study period: August 1, 2017 to August 1, 2018
- **Project Population:**
  - Male veterans who received nitrofurantoin or cefpodoxime from ED or PCP clinics for cystitis
- **Outcomes:**
  - Primary Outcome: clinical response
  - Secondary Outcome: adverse drug reactions, adherence to institutional guidelines including dosage and duration of treatment

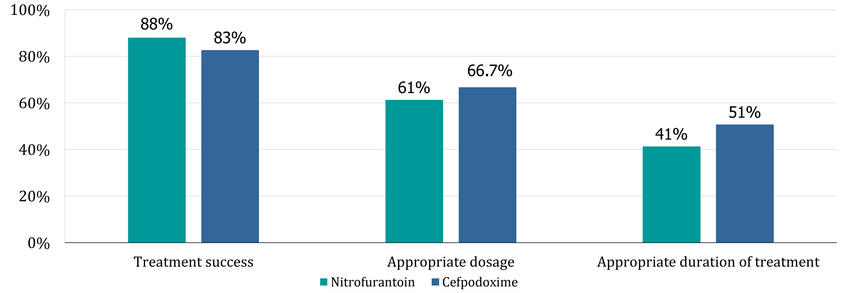
Methods

Figure 1: Project Design



Results

Figure 2: Outcomes



Results

Table 1: Patient Demographics

	Nitrofurantoin (n = 75)	Cefpodoxime (n = 75)	P - value
Age (mean, yr)	66	69.2	0.19
Antibiotic allergies, n(%)	15 (20)	12 (16)	0.57
Infections within 90 days, n(%)	17(22.7)	10(13.3)	0.137
Antibiotic exposure within 90 days, n(%)	20(26.7)	13(17.3)	0.168
Comorbidities, n(%)			
BPH	30 (40)	33 (44)	0.62
Recurrent UTI	11 (14.7)	9 (12)	0.63
Diabetes mellitus	24 (32)	29 (38.7)	0.39
Cultured organism, n(%)			
E. Coli	17 (22.7)	18 (24)	0.85
Klebsiella spp.	2 (2.7)	6 (8)	0.15
Proteus spp.	2 (2.7)	5 (6.7)	0.25

Table 2: Outcomes

	Nitrofurantoin (n = 75)	Cefpodoxime (n = 75)	P - value
Treatment success, n(%)	66 (88)	62 (82.7)	0.36
Appropriate dosage, n(%)	46 (61.3)	50 (66.7)	0.005
Appropriate duration, n(%)	31 (41.3)	38 (50.7)	0.25
Adverse drug reactions, n(%)	0 (0)	0 (0)	

Conclusions

- Nitrofurantoin and cefpodoxime may be effective and safe antibiotics for the treatment of cystitis in male veterans
- Implementing outpatient antimicrobial stewardship protocols and interventions can be beneficial to ensure appropriate antimicrobial prescribing for the treatment of cystitis in the outpatient setting, especially with antibiotic dosage and duration of treatment

References

1. Flores-Mireles, AL, Walker, JN, Caparon, M. Urinary tract infections: epidemiology, mechanisms of infection and treatment options. Nat Rev Microbiol 2015;13:269-284.
2. Sanchez G, Babiker A, Master R et al. Antibiotic resistance among urinary isolates from female outpatients in the United States in 2003 and 2012. Antimicrob Agents Chemother. 2016 May;60(5):2680-3.
3. Michael E. DeBakey VA Medical Center Guide for empiric antibiotic therapy. Accessed Aug 8, 2019. Available from: https://vaww.Houston.va.gov/Clinical_Guidelines/Clinical_Guidelines.asp