

Urine Luck: A pharmacist-led educational intervention

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May 21st, 2018



Abstract #9
RDS# 8761

Disclosure Statement

- Morgan Alonzo
 - Potential conflicts of interest: None
 - Sponsorship: None
- Proprietary information or results of ongoing research may be subject to different interpretations.
- Speaker's presentation is educational in nature and indicates agreement to abide by the non-commercial guidelines provided.

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Learning Objectives

1. List first-line treatment options for uncomplicated urinary tract infections (UTIs)
2. Describe the potential benefits associated with a pharmacist-led educational intervention on prescribing habits for uncomplicated UTIs in an outpatient clinic

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1. Background

Guidelines

- Official guidelines for uncomplicated UTIs: Infectious Disease Society of America (IDSA)
- **Purpose:** Assist providers in choosing appropriate antimicrobial therapy for uncomplicated UTIs
- UTIs are one of the most common reasons to receive antibiotics in the outpatient setting

Gupta K, et al. Clinical Infectious Diseases. 2011;52(5).

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First-line Treatment Options for Uncomplicated UTIs

Generic Drug Name	Strength and Duration
Nitrofurantoin monohydrate /macrocrystals	100 mg bid X 5 days
Trimethoprim-sulfamethoxazole	160/800 mg (one double strength tablet) bid X 3 days
Fosfomycin trometamol	3 gm single dose

Gupta K, et al. Clinical Infectious Diseases. 2011;52(5).

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Outpatient Studies

Study #1: Kim, et al.	Study #2: Grover, et al.
Retrospective chart review	Retrospective chart review
University-based internal medicine clinic	Mayo internal medicine clinic
Time: 1 year	Time: 1 year
61 uncomplicated UTIs	68 uncomplicated UTIs
Sulfamethoxazole-trimethoprim: 39% Ciprofloxacin: 25% Nitrofurantoin: 21%	Ciprofloxacin: 53% Sulfamethoxazole-trimethoprim: 38%

Kim M, et al. *Infection*. 2015;43(1):89-94.
Grover ML, et al. *Mayo Clin Proc*. 2007;82(2):181-5.

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Pharmacist's Role in Guideline Adherence

- **Inpatient setting:** pharmacists have proved themselves as an asset in regards to antimicrobial stewardship
 - CDC outline for antimicrobial stewardship 2014 for inpatient setting
- Most effective interventions have included multifaceted approaches
- **Outpatient setting:** CDC provides an outline for antibiotic stewardship in the outpatient setting (2016)

Van der velden AW, et al. *Br J Gen Pract*. 2012;62(605):e801-7.
Bartlett JM, et al. *Am J Health Syst Pharm*. 2014;71(11):943-9.
Chen JR, et al. *Curr Allergy Asthma Rep*. 2017;17(6):40.
Czapinger C, et al. *Am J Health Syst Pharm*. 2016;73(24):2043-2054.

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2. Effects of a pharmacist-led educational intervention on prescribing habits for uncomplicated UTIs in an academic ambulatory care clinic

Project Objectives

- To assess new practitioner knowledge and application of the IDSA guidelines regarding treatment of uncomplicated UTIs
- To determine the impact of a multifaceted, pharmacist-led educational intervention on prescribing habits of new practitioners

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Clinic Setting

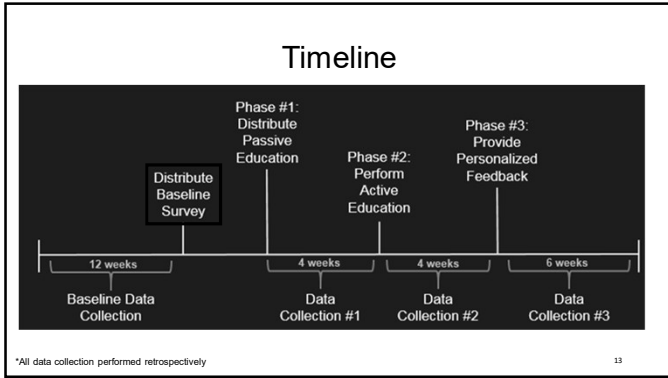
- Medical resident-driven internal medicine clinic
- 76 total medicine residents ranging from 1st to 3rd year in training
- Estimated patients seen per week: 300
- Patient population is predominantly uninsured or Medicare and/or Medicaid
- Multidisciplinary
 - Medical doctors
 - Nurses
 - Pharmacist
 - Social worker
 - Students

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Project Design

- Prospective study measuring the impact of pharmacist-led education
- 3 phases of education
- Retrospective chart reviews
 - Baseline data collection
 - 3 rounds of data collection surrounding educational phases
 - Statistical analysis of each phase
- Medicine residents are true subjects
- Patient charts are being used to evaluate resident progress

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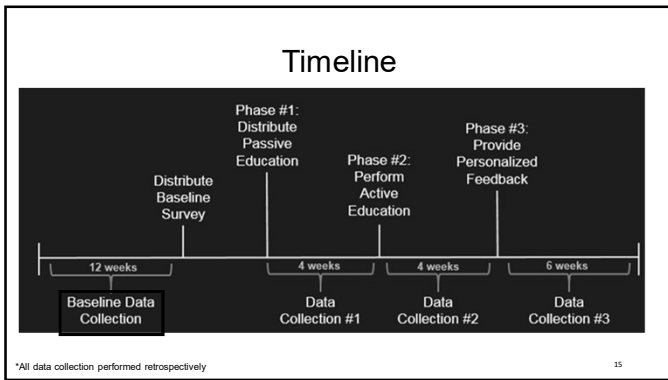


Survey Specifics

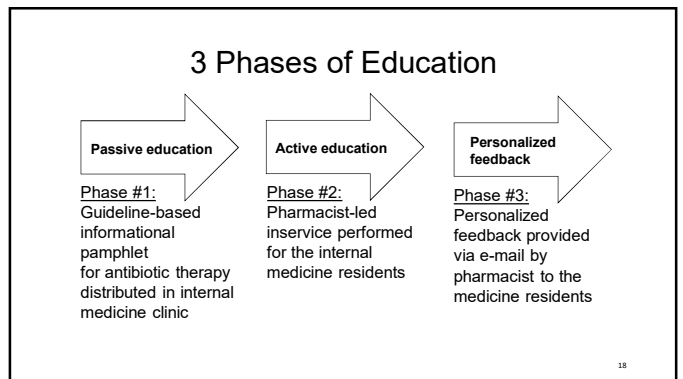
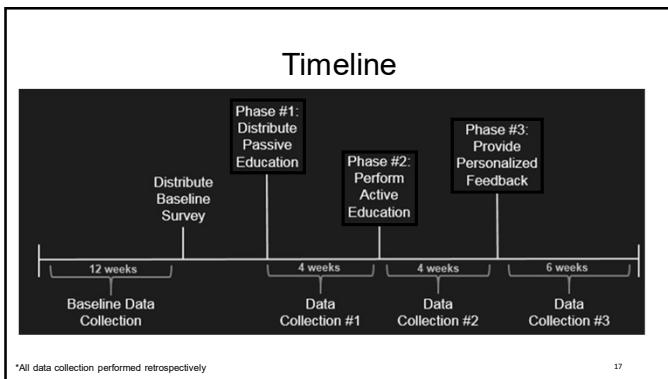
- Administered by clinic pharmacist over a two-week period of time during normal clinic hours

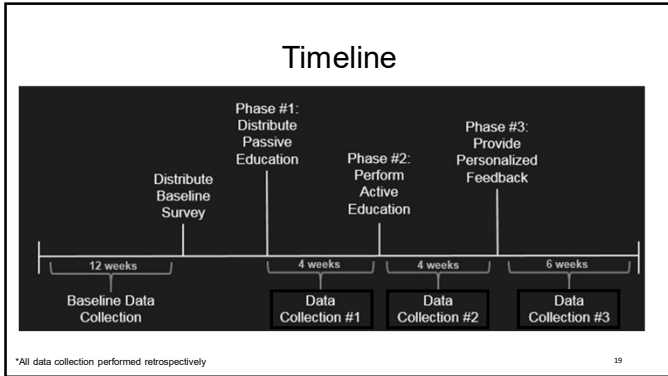
Question numbers	Question type	Question description
1-4	Ranking	Real-world, scenario-based questions Rank most appropriate first-line therapy out of 6 options
5	Ranking	Rank which factors are most likely to influence the final decision regarding antimicrobial therapy out of 8 options
6-7	Likert scale	Rate confidence level regarding knowledge of IDSA guidelines and confidence applying that knowledge

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- ### Baseline Data Collection
- 12 weeks of retrospective data preceding survey
 - Start data collection after survey completion
 - Consistency between survey results and actual prescribing patterns
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Data Collection

Data Collection (#)	Duration of collection time (weeks)	Start of data collection	Effects measured
1	4	<ul style="list-style-type: none"> After completion of Phase #1 Immediately preceding initiation of Phase #2 	<ul style="list-style-type: none"> Passive education
2	4	<ul style="list-style-type: none"> After completion of Phase #2 Immediately preceding initiation of Phase #3 	<ul style="list-style-type: none"> Passive education Active education
3	6	<ul style="list-style-type: none"> 6 weeks after completion of Phase #3 	<ul style="list-style-type: none"> Passive education Active education Personalized feedback

- ### Data Collected
- Medical resident level of training
 - Patient chart information:
 - Age
 - Allergies
 - Antibiotic prescribed, dose, duration, and directions for therapy
 - Renal function
 - Previous antibiotic use
 - Previous UTI
 - Insurance

- ### Patient Specific Selection Criteria
- | | |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inclusion criteria | <ul style="list-style-type: none"> • Female patients • ≥18 years of age • Diagnosis of an uncomplicated urinary tract infection using ICD-9 codes |
| Exclusion criteria | <ul style="list-style-type: none"> • Male patients • Pregnancy • Diagnosis of complicated UTI or recurrent UTI • Abnormal structural or functional urinary tract |

- ### Statistical Analysis
- Descriptive statistics to summarize results
 - Survey results versus actual prescribing patterns
 - Proportion of patients who received treatment meeting guidelines will be calculated for each resident in each phase
 - Measures impact of education sessions

- ### Resident Survey Completion
- 27 residents (35.5%) completed the survey
 - First year residents: 10
 - Second year residents: 10
 - Third year residents: 7

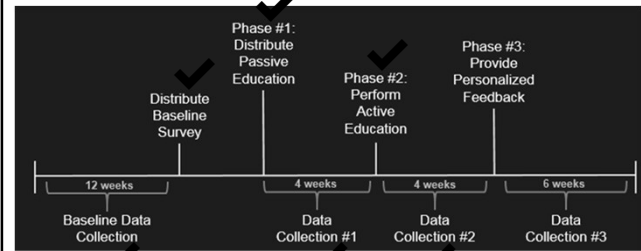
Baseline Survey Results

Question	Median value Resident 1st Year	Median value Resident 2nd Year	Median value Resident 3rd Year	Kruskal-Wallis Test p-value
Q1: Guideline Application	4	4	5	0.4515
Q2: Drug Allergy Knowledge	4.5	3	4	0.3062
Q3: Guideline Knowledge	4.5	5	5	0.1344
Q4: Asymptomatic	6	6	6	0.6949

1: Levofloxacin
 2: Sulfamethoxazole/trimethoprim
 3: Nitrofurantoin
 4: Ciprofloxacin
 5: Cefdinir
 6: No therapy needed

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Current Project Progress



*All data collection performed retrospectively

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Conclusion

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Limitations

- Unpredictable number of patients meeting study criteria
 - Baseline data collection: 3 month retrospective data collection yielded 7 uncomplicated UTIs
 - Data collection #1 and #2: 6 uncomplicated UTIs
 - Not sufficient data to provide personalized feedback at this time
- Reluctance of medicine residents to participate
- Lack of patient history due to retrospective collection
- Lack of culture and susceptibility data

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Project Update

- Expand into 2nd clinic
- Two resident-run clinics
 - Internal medicine clinic
 - Family medicine clinic
- 2 year timeframe
- UTI prescribing habits with pharmacist intervention versus without pharmacist intervention

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Future Implications

- Demonstrate a pharmacist's role in antimicrobial stewardship in the outpatient setting
- Demonstrate of the multifunctional role that pharmacist's fulfill
- Pharmacist-led patient counseling in the outpatient setting

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Acknowledgements

I would like to express my gratitude to my entire research team for their input, enthusiasm, and guidance throughout my study.

Katherine S. O'Neal, PharmD, MBA, BCACP, CDE, BC-ADM, AE-C
 Jamie Miller, PharmD, BCPS, BCPPS
 Ann E. Lloyd, PharmD, BCPS-AQ ID
 Stephen Neely, MPH
 Daniel Nguyen, PharmD Student
 Mary Zoe Baker, MD

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Check your understanding

Which antibiotic is used as first-line options for uncomplicated UTIs?

- a. Ciprofloxacin
- b. Cefdinir
- c. **Nitrofurantoin**
- d. Amoxicillin

Which is/are the potential benefit(s) associated with a pharmacist-led educational intervention on prescribing habits for uncomplicated UTIs in an outpatient clinic?

- a. Increase in guideline-based prescribing habits
- b. Contribute to antimicrobial stewardship
- c. Engage as a member of a multidisciplinary healthcare team
- d. **All of the above**

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