

Antimicrobial Efforts in the Emergency Room

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Objectives

- ▶ Describe which departments in a healthcare facility have the most opportunities for improvement in antimicrobial prescribing.
- ▶ Identify common barriers to antimicrobial stewardship in the emergency department.
- ▶ Examine the risks associated with one-time antibiotic dosing before discharge from the emergency department.
- ▶ Implement antimicrobial stewardship quality-improvement best adapted for the emergency department.



Focus of Resources

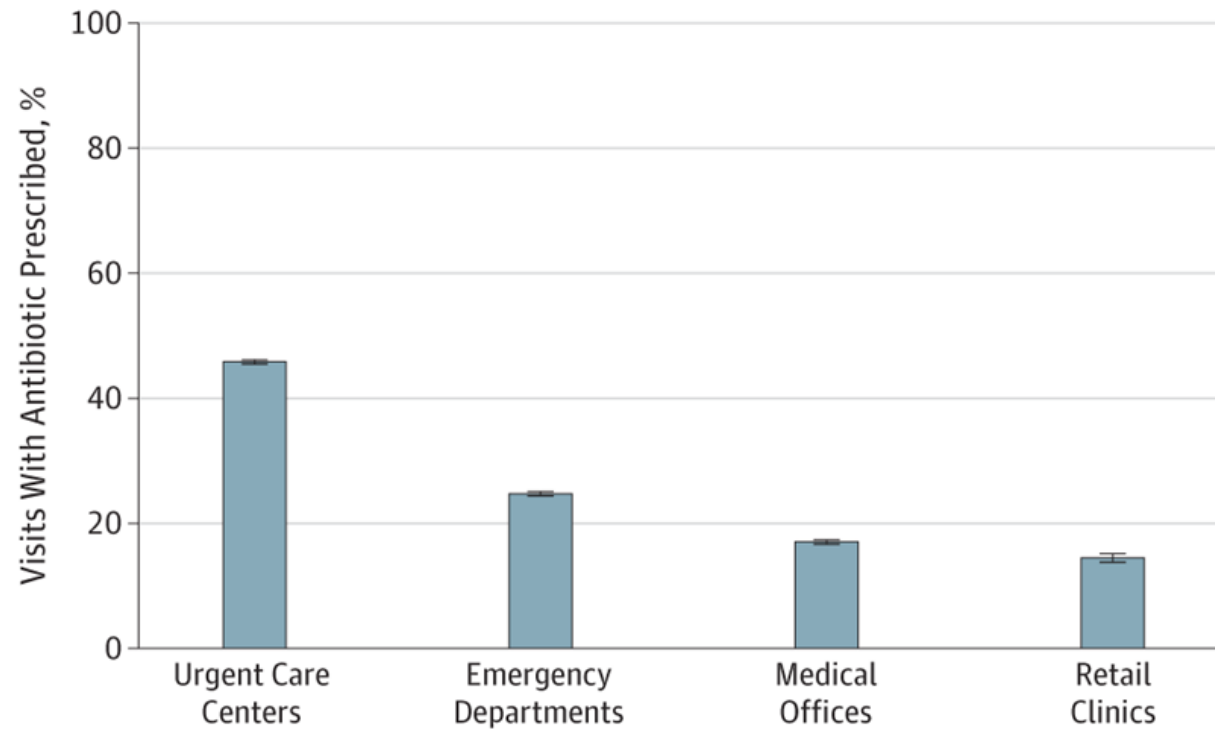
- ▶ Majority of antibiotics written in the outpatient setting
- ▶ Majority of fully functioning stewardship programs occur in inpatient setting
 - ▶ JCAHO standards?
 - ▶ Ability to better track outcomes?
 - ▶ More resources for these departments?

IHS Facilities Uniquely Positioned to Lead the Way in Outpatient Stewardship

- ▶ Most patients receive majority of healthcare from the same facility
- ▶ Antimicrobial stewardship programs have access abundance of data to track outcomes
- ▶ Facilities have greater financial incentive to avoid adverse outcomes and lower outpatient prescription cost



Breakdown of Inappropriate Prescribing by Departments in the Outpatient Setting





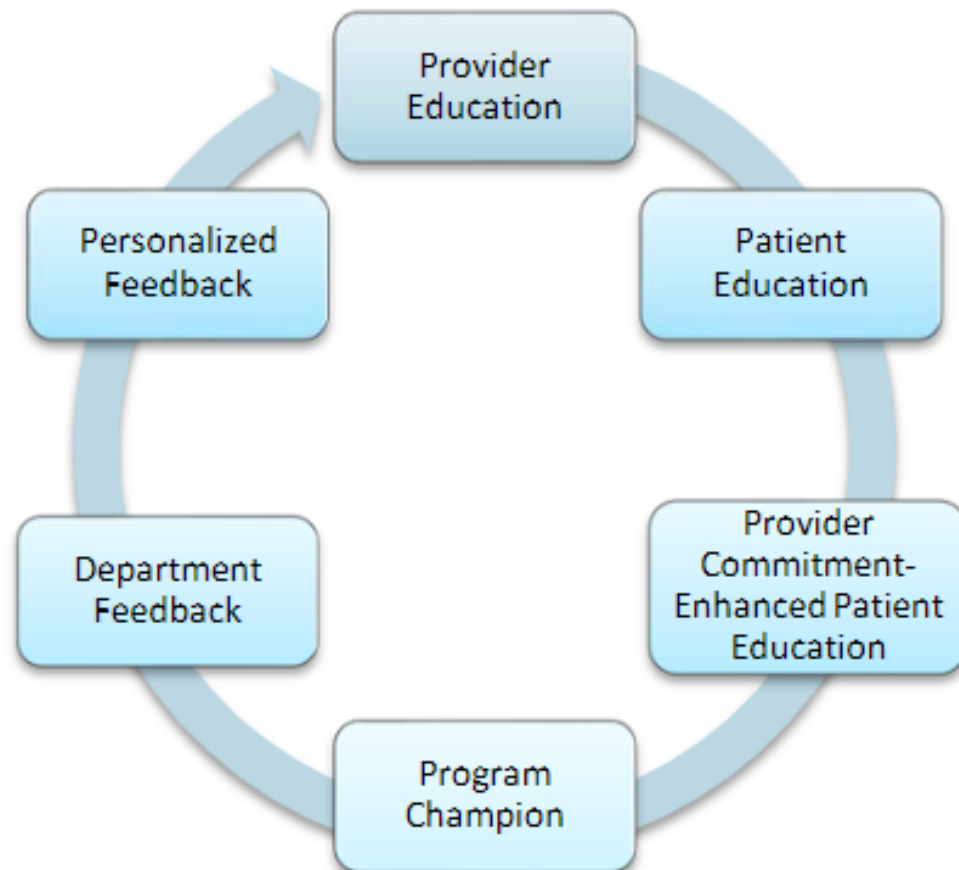
Challenges to Antimicrobial Stewardship in Urgent Care and Emergency Departments

- ▶ Patient expectations
- ▶ High workload
- ▶ Atypical prescriber scheduling
- ▶ Lack of real time pharmacist monitoring
- ▶ Lack of accountability for long term outcomes
- ▶ Lack of relationship based care
- ▶ Frequent interruptions
- ▶ Quick decisions
- ▶ Accurate coding

Problems More Specific to CIHA

- ▶ Lack of overnight coverage
- ▶ Acute care pharmacist lack of experience
- ▶ High turnover in emergency department
- ▶ No physician on leadership team

General Strategies for Outpatient ASP Interventions- MITIGATE Framework



Prescribers and Pharmacists Working Together

- ▶ ASP pharmacists are not police
- ▶ ASP pharmacists are a resource
- ▶ Working towards shared goals
 - ▶ Improved patient outcomes
 - ▶ Reduced re-admissions/repeat visits
 - ▶ Judicious use of facility resources

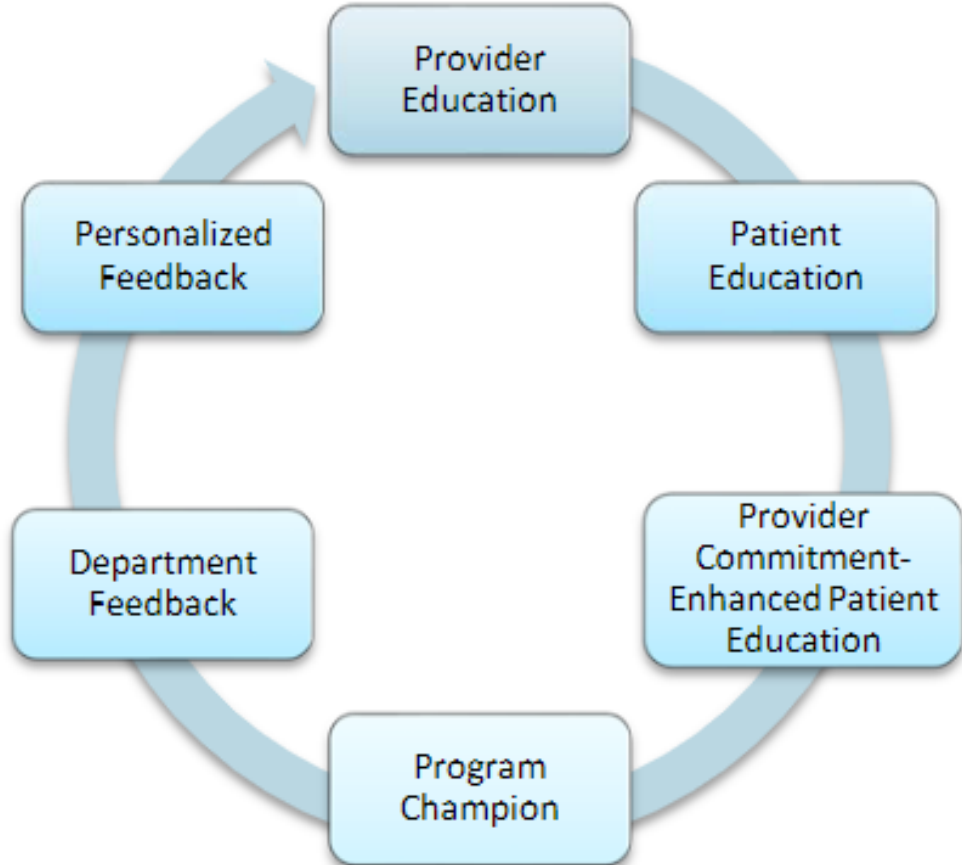
Problematic prescribing in the ED At CIHA

- ▶ Pharmacists noticed large number of IV vancomycin orders coming from the ED
- ▶ Orders often written for patients who were ultimately discharged
- ▶ Orders often written for uncomplicated SSTIs



Design

- Targeted presentations
- Guideline based order menus



- Report cards
- Retrospective restricted antimicrobials review

- Emails to department
- Reporting at P&T

- Patient handouts
- Posted signage

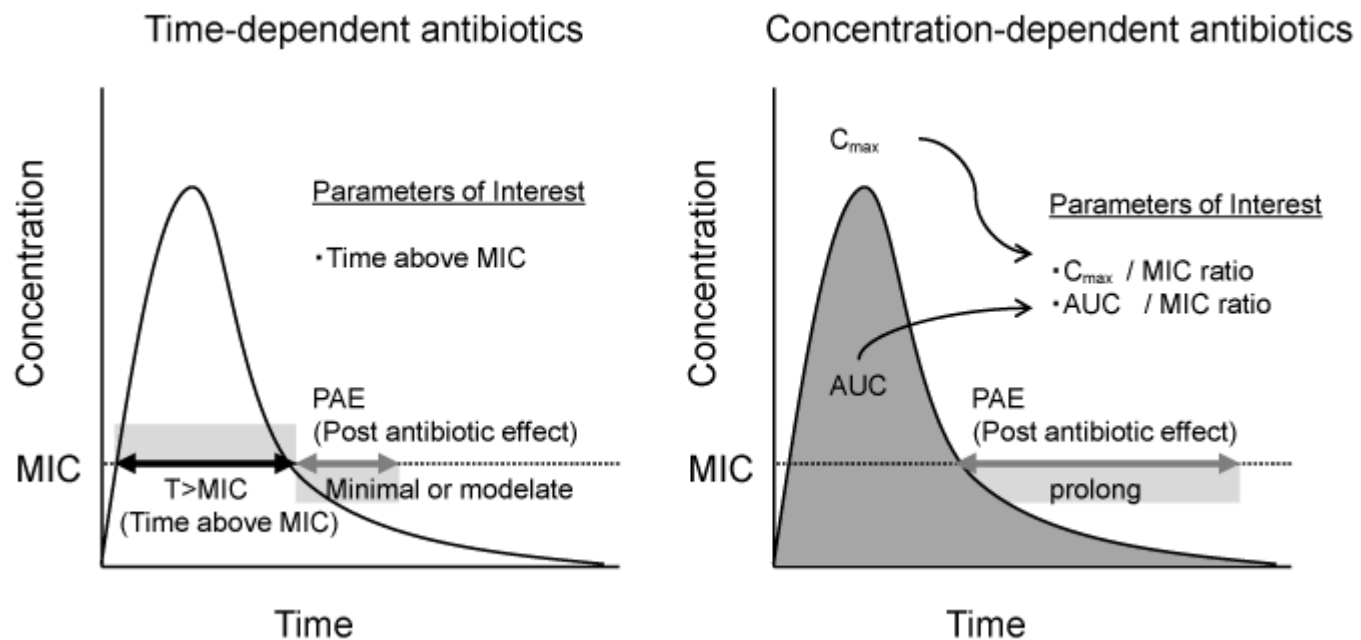
- Posted commitment signage

- ED physician representation

To-go IV Antibiotics

- ▶ One time dose of IV antibiotics given with the intent to discharge home on an oral antibiotic
- ▶ Generally not indicated except for cases of pyelonephritis when treating with an oral beta lactam

Antibiotic Pharmacokinetics





Vancomycin pharmacokinetics

- ▶ Target Levels
 - ▶ AUC/MIC: 400-600mg•h/L
 - ▶ Trough: 15-20mg/L
- ▶ Real world population levels after 1g q12h
 - ▶ After 1 dose: AUC: 113.51mg•h/L \pm 49.51
 - ▶ After 2 doses: AUC: 295.89mg•h/L \pm 153.82

Mail et al, Indian J Crit Care Med, 2019






Real World Data

- ▶ Retrospective, single center, urban, tertiary care center ED study evaluating appropriateness of “to-go” vancomycin prescribing
- ▶ 70% of patients dx with SSTIs
- ▶ 75% had MRSA risk factors
- ▶ 68% of patients only received 1 dose of vancomycin before discharge
- ▶ 73% of patients under-dosed

Mueller et al, J Emergency Med, 2015



Misconception 1: IV drugs have better bioavailability than oral drugs

Oral Drug	Bioavailability
Cephalexin	> 95%
Clindamycin	> 90%
Doxycycline	> 90%
Levofloxacin	> 95%
Linezolid	> 95%
Metronidazole	> 95%

Misconception 2: IV drugs allow for test dose to make sure patient doesn't have an allergy

- ▶ Can be done with a one-time oral dose while awaiting lab results
- ▶ Patients could have infusion reactions that are not related to a drug hypersensitivity

Misconception 3: IV drugs will work better/quicker

- ▶ Multiple doses required to get antibiotic to steady state
- ▶ Switching drugs is like starting over

Risks of IV Administration Over Oral in the ED

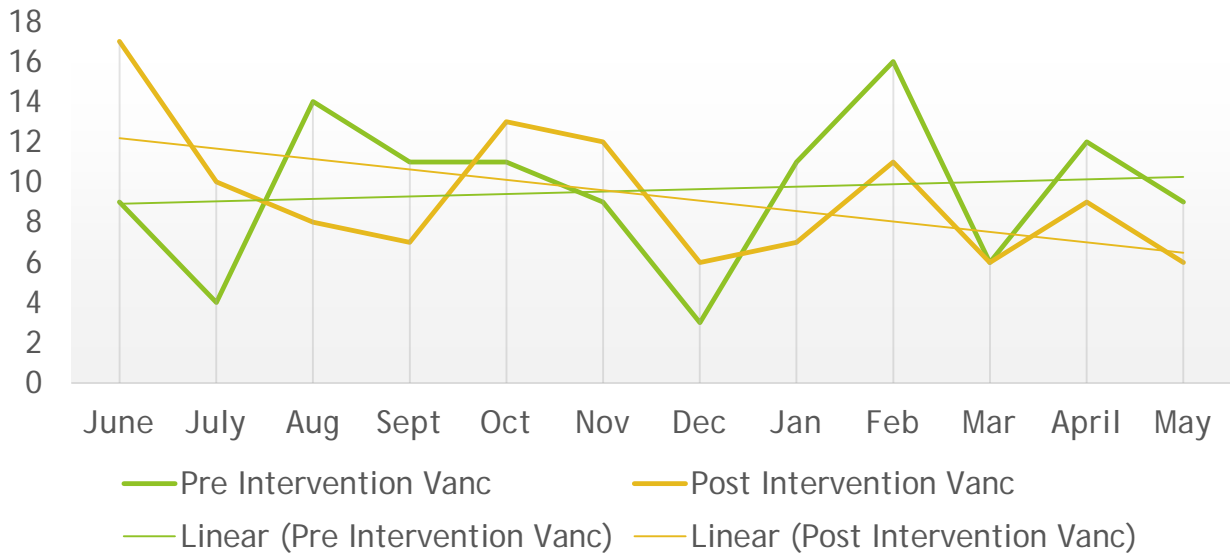
- ▶ Resistance
- ▶ Infusion reactions
- ▶ IV access
- ▶ Timely
- ▶ Expensive

Data Collection

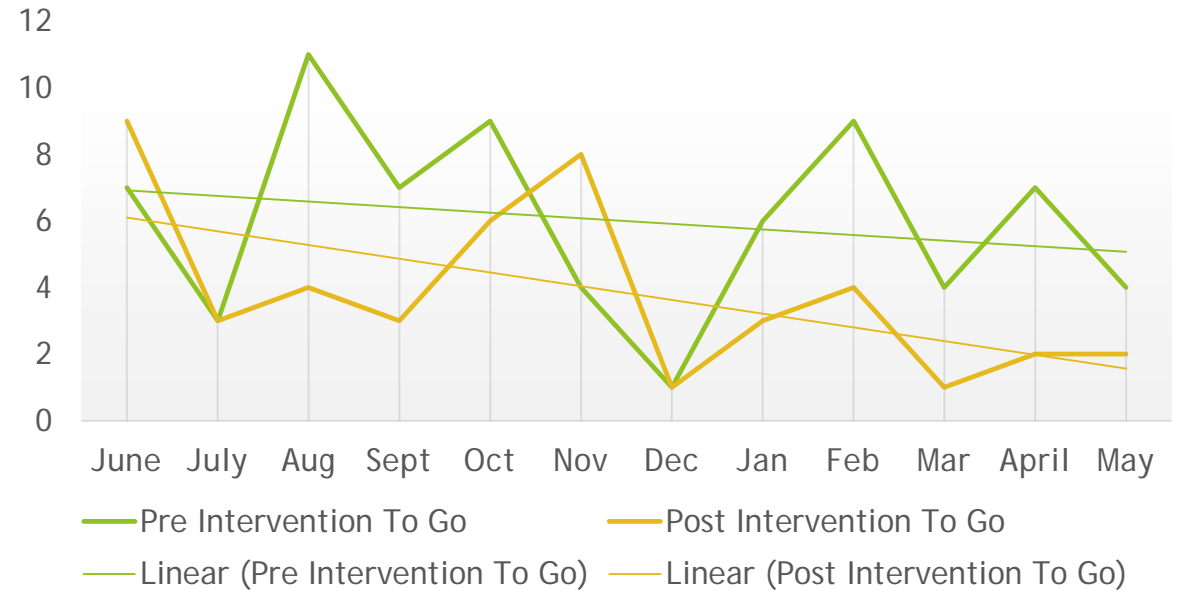
- ▶ Icare panels pulled monthly for patients prescribed outpatient vancomycin IV prescriptions
- ▶ Compared to the same panel with addition of home discharge condition

Results

Number of Patients with Vanc Orders 2020-2022



Number of Patients with To Go Vanc Orders 2020-2022



Strengths

- ▶ Plays to pharmacy's strengths
- ▶ Once up and running, low maintenance
- ▶ Data mining is simple

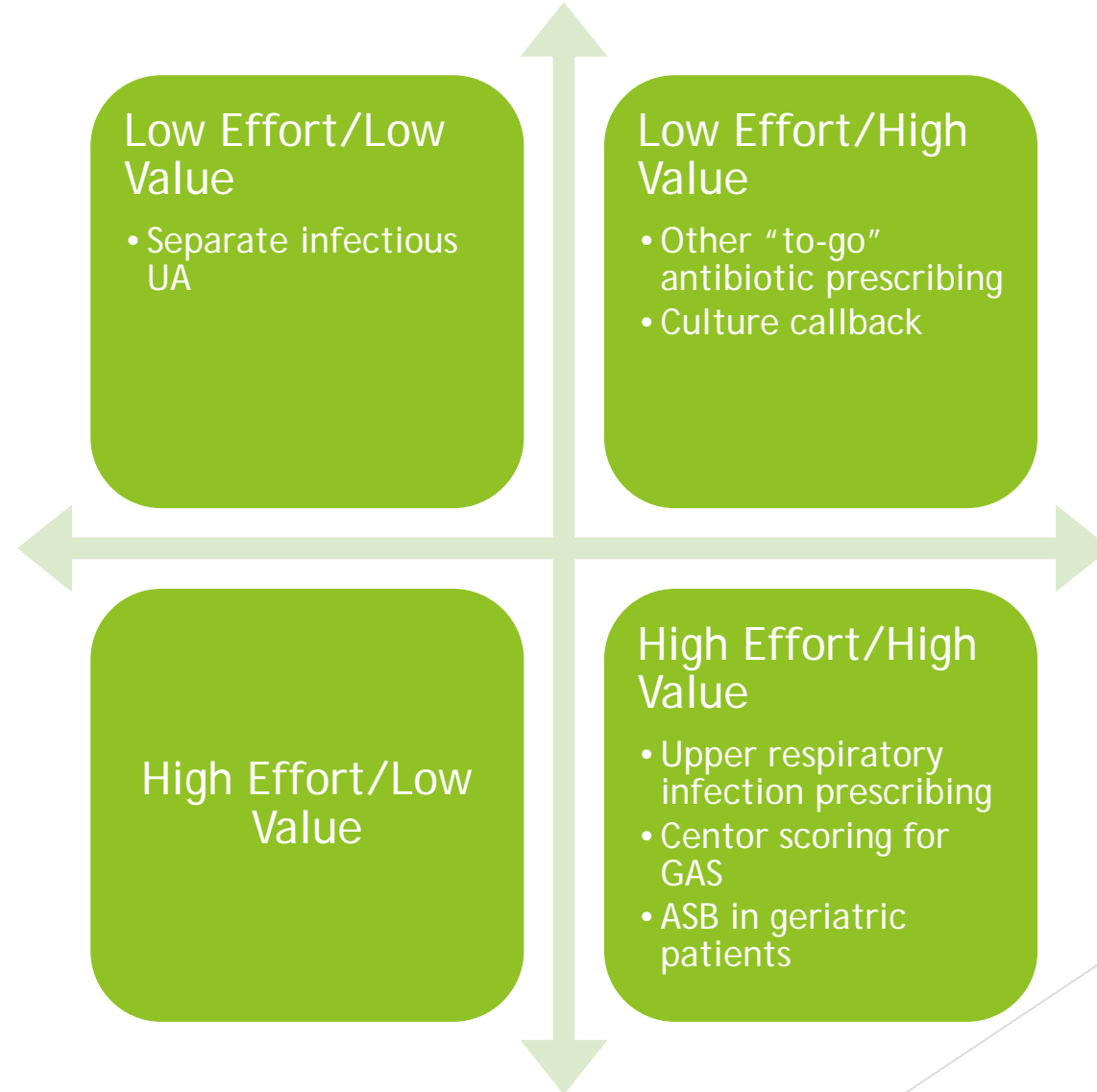
Limitations

- ▶ Data over COVID-19 pandemic
- ▶ Patients discharged to home could have left AMA or had beds unavailable
- ▶ Possibly could have included prescriptions from primary care (very unlikely)

Lessons Learned

- ▶ Find your high-volume problem prescribing
 - ▶ National data suggests this likely will be in urgent care or the ED
- ▶ Start with easy wins
 - ▶ Focus on areas in which pharmacists are the experts
 - ▶ Drug/bug, PK, MOA, etc...
 - ▶ Eases your pharmacists into having challenging conversations
 - ▶ Helps build the reputation of the ASP

Looking Forward



Summary

- ▶ Urgent care and ED often have many opportunities for improvement in antimicrobial prescribing
- ▶ The emergency department has unique barriers to stewardship that must be considered when designing quality improvement projects
- ▶ Outside of certain cases of pyelonephritis, to-go IV antibiotic prescribing is generally inappropriate
- ▶ Working to reduce to-go IV antibiotic prescribing can be a small, but impactful quality improvement project
- ▶ Focus limited resources on low effort, high impact projects first

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