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Identification of Antimicrobial Stewardship Targets in the Outpatient Setting

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Background

- Improper use of antimicrobial agents has been associated with increased morbidity, costs and the emergence of resistant bacteria
- The Joint Commission National Action Plan has set a target to decrease inappropriate antimicrobial use by 50% by the year 2020 in the outpatient setting; however, stewardship programs in the outpatient setting are largely uncharted
- Identifying targets for outpatient stewardship may help guide future directions of establishing effective outpatient stewardship programs and decrease overall antibiotic misuse

Objectives & Methods

- Quality improvement study to prospectively antibiotic stewardship targets within the outpatient setting
- Prospective identification of patients prescribed oral antibiotics followed by a retrospective chart review. All interventions described in the study have either been made or would have been made if no constraints existed
- Study period: June 1, 2017 to September 20, 2017
- Methods: Stewardship pharmacist received alerts when an oral antibiotic prescribed. Baseline characteristics, comorbidities, severity of illness, and risk factors were compared using a bivariate model. Logistic regression is used to identify significant risk factors for inappropriate prescribing

Outcomes

Primary Outcome: Appropriateness of drug choice, duration, dose, and antibiotic necessity based on guideline criteria

Secondary Outcomes:

- Identification of targets for antimicrobial stewardship interventions
- Logistic regression to identify predictors of appropriate prescribing
- Track potential outpatient stewardship pharmacist interventions

Inclusion Criteria

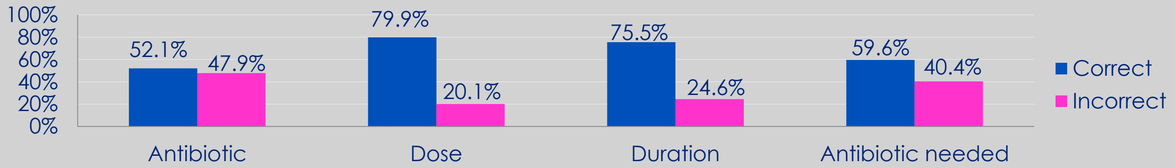
- Prescribed oral antibiotics from the VA Healthcare system as an outpatient
- Prescriptions for: Amoxicillin, amoxicillin/clavulanate, azithromycin, cefdinir, cefpodoxime, cephalexin, ciprofloxacin, clindamycin, levofloxacin, moxifloxacin, or trimethoprim/sulfamethoxazole

Exclusion Criteria

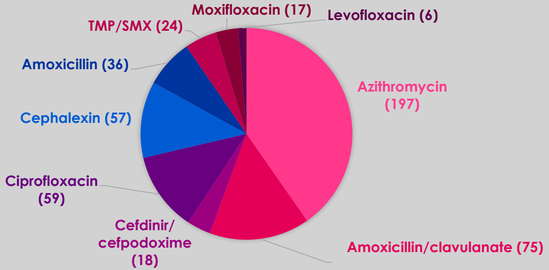
- Diagnosis made by a provider outside the VA Healthcare System
- Oral antibiotics prescribed upon discharge from an inpatient stay, for prophylaxis, post-operative treatment, or if insufficient information was documented in the chart to assess appropriateness

Results

Outpatient Stewardship Targets



Improperly Prescribed Antimicrobials



Multivariable Logistic Regression

Factors Associated with Appropriate Prescribing

Variable	Odds Ratio	95% Confidence Interval
Antibiotic	2.9	2.2 – 3.8
Duration	2.9	1.5 – 2.7
Emergency Room	2.0	1.5 – 2.7

Discussion

- Of the 1,063 patients, 40% of antibiotic prescriptions were not indicated
- The most common indications resulting in unnecessary antibiotics included urinary tract infections (21%), bronchitis (20%), skin structure infections (17%), and sinusitis (10%).
  - Prescribing patterns associated with urinary tract infections indicate that the correct drug is chosen in 54.9% of the cases, the dose was correct in 70.5%, the duration was correct in 52.9%, and the antibiotic was truly needed in 54.4% of cases.
- Azithromycin was the most commonly prescribed unnecessary antibiotic (37%), followed by ciprofloxacin (16%), amoxicillin/clavulanate (13%) and cephalexin (12%).
  - Focusing on 4 drugs; amoxicillin/clavulanate, azithromycin, ciprofloxacin and cephalexin accounted for 80% of unnecessary drug use.
- The correct drug was chosen in 52%, the proper dose in 81% and the correct duration in 75% of patients.
- In multivariable logistic regression, when the antibiotic was indicated, patients were 2.9 times more likely to receive the correct drug, 2 times more likely to receive the correct duration and be seen in the emergency room.
- ICD-10 codes were found to be unrelated to an infection in 58.8% of cases. The most common ICD-10 code utilized within our data was counseling, Z71.9.

ICD-10 Codes

Limitations

- Summer-fall months; Expect more respiratory infections in winter
- Not all interventions were able to be made in real-time
- Potential for missing information in documentation of cases
- Not comprehensive of all antibiotics

Conclusions & Future Direction

- The most common error in outpatient antibiotic prescribing is choice of oral agent followed prescribing an antibiotic when it is not indicated
- The most commonly misprescribed drugs during summer months include azithromycin, amoxicillin/clavulanate, ciprofloxacin, and cephalexin
- ICD-10 codes are an unreliable method to identify outpatient stewardship areas.
- The best method to identify targets for intervention is prospective dentification

Disclosures

- The authors of this presentation have no conflicts of interest 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.
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- The contents of this poster represent the work of the authors and are not intended to represent the views of the Department of Veterans Affairs or of the United States Government.