Practical Approaches to Outpatient Antimicrobial Stewardship

Louisiana Department of Health – Antimicrobial Stewardship Summit

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Disclosures/Conflicts of Interest

• None
Objectives

• Explain why antimicrobial stewardship is important particularly in the outpatient setting

• Identify opportunities and barriers for improving outpatient prescribing and use

• Evaluate the evidence regarding outpatient antimicrobial stewardship interventions and initiatives

• Develop an outpatient antimicrobial stewardship intervention or initiative for your patient population
Why Antimicrobial Stewardship?
Think different
Antimicrobial Stewardship

Patient Safety Issue

Patient Efficacy Issue
Antimicrobial Stewardship – What?

Changing prescribing to
improve patient outcomes &
decrease resistance
Antimicrobial Stewardship – How?

*Changing prescribing...*

**Persuasion**

- Pharmaceutical Representative (aka Drug Rep)
  - Provide expert presentation & provide informational handouts
  - Provide medication samples & food
- Car Salesperson
  - Tell you how many cupholders, how big the engine is, and how safe the vehicle is
  - Let you sit in the car & go for a test drive
Antimicrobial Stewardship – How?

**Changing prescribing...**

- Car Salesperson
  - Tell you how many cupholders, how big the engine is, and how safe the vehicle is
  - Let you sit in the car & go for a test drive

- Pharmaceutical Representative (aka Drug Rep)
  - Coordinate expert presentation & provide informational handouts
  - Provide medication samples & food

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Knowledge

Behavior
Antimicrobial Stewardship

Inpatient  ➔  Outpatient

CHALLENGE
Outpatient Antimicrobial Stewardship

• Public and private organizations support research & QI

• Successful inpatient hospital and nursing home programs

• Value-based care supports quality improvement

• Antimicrobial stewardship improves quality of care
Outpatient Antimicrobial Stewardship

• Majority of the antibiotic use occurs in outpatient setting
• 30% Unnecessary, 50% Inappropriate
• 20% adverse reaction ED visits due to antimicrobials
• Acute Upper Respiratory Infections (ARIs, URIs)
• Other pertinent diagnoses:
  • UTIs versus ASB
  • SSTIs
  • Pneumonia
Proposed New Requirements for Antimicrobial Stewardship

Ambulatory Health Care Accreditation Program

Antimicrobial stewardship is identified as an organizational priority.
Joint Commission – *Proposed* Elements of Performance

1. Identifies individual(s) responsible for developing, implementing, and monitoring activities
2. Sets at least one antimicrobial stewardship goal
3. Uses approved protocols and evidence-based practice guidelines
4. Provides clinical staff and LIPs educational resources
5. Educates patient and/or care providers when care relates to ASP goals
6. Collects, analyzes, and reports data pertaining to ASP goals to leadership

CDC Core Elements – Outpatient Stewardship Programs

- **Commitment**
  
  Demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety.

- **Action for policy and practice**
  
  Implement at least one policy or practice to improve antibiotic prescribing, assess whether it is working, and modify as needed.

- **Tracking and reporting**
  
  Monitor antibiotic prescribing practices and offer regular feedback to clinicians, or have clinicians assess their own antibiotic prescribing practices themselves.

- **Education and expertise**
  
  Provide educational resources to clinicians and patients on antibiotic prescribing, and ensure access to needed expertise on optimizing antibiotic prescribing.
Checkpoint

• Antimicrobial Stewardship changes prescribing practices...
  • To improve patient safety & patient efficacy outcomes
• Knowledge & Behavioral change modalities
• Most antimicrobial use = Outpatient Setting
  • 30-50% unnecessarily could be improved
• Diagnoses to target (i.e., low hanging fruit)
  • ARIs & UTIs
Education and expertise...Staff

• Incorporating stewardship education into current annual compliance education bundles

• Support at least 1 antimicrobial stewardship webinar/presentation/etc.

• Independent online learning modules
Education...Patients

• Provider/Nurse in person education
  • Trigger Points
    • Patient presents desiring an antibiotic particularly for a viral infection (i.e., common cold, acute bronchitis, etc.)
    • Patient is prescribed an antibiotic

• After Visit Summary

• Retail/Community pharmacy patient education
  • E.g., required 1-2min counseling session discussing 2-3 major points
Tracking and reporting...

• How do you identify opportunities for improvement?
  • Baseline data/observations
• Describe Patient Population
• Overall Antibiotic Prescribing
  • Select Diagnoses vs All Antibiotic Prescribing
• Antibiotic Selection
• Antibiotic Dose, Duration
Action for policy and practice...

• What to do to improve prescribing?

• Knowledge
  • Diagnosis-based
    • Available diagnostic testing
    • Risk factor stratification
    • Understanding diagnostic criteria
  • Treatment-based
    • Antibiotic use, selection, dose, duration
    • Symptomatic therapy
Action for policy and practice...

• What to do to improve prescribing?

• Behavioral
  • Aggregated vs Individual Provider Feedback
  • Unblinded versus Blinded Data
  • Comparisons: National Benchmark, Top X% of Practice, Mean
  • Patient Population Selection
    • Included Diagnoses
    • Excluded Comorbidities

• Accountable Justification – Documenting antimicrobial prescribing rationale at order entry
  • Could include on prescription for pharmacist (i.e., indication)
Opportunities & Challenges
Opportunities & Challenges

Infrastructure

Are you part of a larger health system or an independent practice?

Pharmacist, Physician, Nurse, Microbiology Lab, etc.?

Generalist or Specialist?

Primary Care, Urgent Care, ED?
Opportunities & Challenges

What personnel resources do you have available? Nursing, Providers, Pharmacists, etc.?

What data resources or tools do you have available?
Opportunities & Challenges

Patient Populations

Who do you prescribe antibiotics to?

What primary diagnoses require antibiotic treatment in your population?

How do you follow-up with patients?

Homogenous vs Heterogeneous population?
Opportunities & Challenges

• Patient Population
  • Relatively homogenous dependent on setting
    • Severity of Illness – Primary Care, Specialist Care
    • Diagnostic Distribution – Urgent Care
    • “Exceptions to the Rule” may be less prevalent/more predictable
  • Severity of illness/patient acuity lower
    • Time to antibiotic administration less important
    • Allows time for diagnostic work-up
  • Patient may be more able to provide extensive history
    • May not be in acute distress
    • Patient’s family/caregivers may be present
Opportunities & Challenges

• Resources
  • Antimicrobial Stewardship Expertise
    • Specialized infectious diseases knowledge not necessarily required
    • Diagnoses/treatments less varied and guidelines may pertain to larger percentage of population
  • Stewardship activities
    • A single stewardship intervention may target a higher proportion of antibiotic prescribing
  • Data tracking & monitoring
    • Less data points to worry about (# prescriptions < # administrations)
    • IV antibiotics not generally used...only need to worry oral antibiotics prescribed
Opportunities & Challenges

• Patient Population
  • May be very different from inpatient population
    • May not be able to repurpose inpatient interventions for the outpatient setting
  • Patient follow-up may be an issue
    • Urgent care vs primary care
    • Discuss with providers regarding out to handle patient hand-offs
• Patient’s demand may adversely affect stewardship
  • Often perceived demand exceeds actual demand
  • Assess whether the patient is demanding an antibiotic or a diagnosis and treatment
Opportunities & **Challenges**

**Resources**

- **Antimicrobial Stewardship Expertise**
  - What roles do you have in your outpatient clinic? Do you have people with antimicrobial stewardship expertise?
  - Consultants to acquire the expertise, hire someone who has the expertise, or train someone to gain the expertise ($$$)

- **Stewardship activities?**
  - Nursing & non-ID physicians may have larger leadership role here
Opportunities & **Challenges**

- **Resources**
  - Data tracking & monitoring
    - No standard metric for tracking use
    - Without data analysis support, may rely on cumbersome patient chart review to audit prescribing practices
    - Assumption – Patient Adherence
  - Pharmacists – not present generally in this clinic setting
    - Health System with outpatient/retail pharmacies may be able to leverage these pharmacists to perform some antimicrobial stewardship activities
  - EHR – depends on the platform and functionality
    - Can clinical decision support be built?
    - If so, who is going to build operationally and clinically?
Acute Upper Respiratory Infection – Evidence Example

Design, Implementation, & Evaluation
Variation in Outpatient Antibiotic Prescribing for Acute Respiratory Infections in the Veteran Population
A Cross-sectional Study
Barbara Ellen Jones, MD, MSc; Brian Sauer, PhD; Makoto M. Jones, MD, MSc; Jose Campo, MD; Kavitha Damal, PhD, CCRC; Tao He, MS; Jian Ying, PhD, MStat; Tom Greene, PhD; Matthew Bidwell Goetz, MD; Melinda M. Neuhauser, PharmD, MPH; Lauri A. Hicks, DO; and Matthew H. Samore, MD

• 2005-2012 – 2,481,520 patient visits for ARIs
  • Patients with other infections excluded (93,203)
  • Complicated patients (e.g., diabetes, COPD, Cancer) excluded (1,276,539)
  • ARI in past 30 days excluded (67,255)

• Population Included – 1,044,523
Primary Findings

- Macrolide prescribing increased (36.8% to 47.0%, p<0.001)
- Penicillin prescribing decreased (36.0% to 32.1%, p<0.001)
- Rhinosinusitis antibiotic prescribing – 86%
- Bronchitis antibiotic prescribing – 85%
- “The 10% of providers who prescribed the most antibiotics did so during at least 95% of their ARI visits, and the 10% who prescribed the least did so during 40% or fewer of their ARI visits”
• Conclusions
  • Overall antibiotic prescribing is increasing
  • Second/Third-line antibiotics are being prescribed with greater frequency
  • Either diagnostic or treatment issues with Acute Bronchitis
  • The provider is one of the largest predictors of antibiotic prescribing

• Limitations
  • Granularity -> Symptoms, Criteria, Laboratory Diagnostics, etc.
Veteran’s Affairs National Medication Utilization Evaluation Evaluation (Quality Improvement Project)

Evaluated uncomplicated patients with ARIs from October 1, 2015 – March 30, 2016 (6 months)

Outpatient clinics associated with 28 Veterans Affairs facilities

Retrospective, manual chart review evaluation

**Primary Objective**: assess congruence of ARI documentation supporting diagnosis and treatment with national guideline recommendations
Evaluation of uncomplicated acute respiratory tract infection management in veterans: A national utilization review

- 4,305/5,740 patients included
  - Acute Pharyngitis (n=558), acute sinusitis (n=715), acute bronchitis (n=1,155), upper respiratory traction infections-not otherwise specified (URI-NOS, common cold) (n=1,475)

- Overall antibiotic prescribing rate = 68%
  - Indications where antibiotics may be warranted: Pharyngitis (69%), sinusitis (89%)
  - Indications where antibiotic NOT warranted: Bronchitis (86%), URI-NOS (37%)
  - Mixed Diagnoses (86%)
Overall appropriate antibiotic management
  • Appropriately Initiating, Withholding, Selection = 39%
  • Sinusitis = 32%
  • Pharyngitis = 35%
  • Bronchitis = 14%
  • URI-NOS = 63%

• Few differences in outcomes between patient groups
• Conclusions
  • Prime area to target for stewardship
  • Low-hanging fruit related to patient outcomes as well
    • Low risk group
  • Largest opportunity for improvement Acute Bronchitis
  • Need both diagnosis & treatment clinical decision support
  • Confirms pertussis is rare in an older, predominantly male, adult population
  • Greater need to complete documentation
What can we DO about this?
Effect of Behavioral Interventions on Inappropriate Antibiotic Prescribing Among Primary Care Practices
A Randomized Clinical Trial

• Cluster randomized clinical trial – 47 primary care practices
• Behavioral Interventions
  • Suggested Alternatives
  • Accountable Justification
  • Peer Comparison
• Practices randomized to 0, 1, 2, or 3 interventions
• Evaluated antibiotic prescribing rates for common cold, influenza, & bronchitis
Effect of Behavioral Interventions on Inappropriate Antibiotic Prescribing Among Primary Care Practices: A Randomized Clinical Trial

• Baseline Period – 18 months – 14,753 visits
• Intervention Period – 18 months – 16,959 visits
• Antibiotic Prescribing Decreased
  • Control – 24.1% -> 13.1%
  • Suggested Alternatives – 22.1% -> 6.1% (p=0.66)
  • Accountable Justification – 23.2% -> 5.2% (p<0.001)
  • Peer Comparison – 19.9% -> 3.7% (p<0.001)
Effect of Behavioral Interventions on Inappropriate Antibiotic Prescribing Among Primary Care Practices: A Randomized Clinical Trial

Figure 2. Adjusted Rates of Antibiotic Prescribing at Primary Care Office Visits for Antibiotic-Inappropriate Acute Respiratory Tract Infections Over Time

A Accountable justification
B Peer comparison
C Suggested alternatives

Prescribing rates for each intervention are marginal predictions from hierarchical regression models of intervention effects, adjusted for concurrent exposure to other interventions and clinician and practice random effects. Error bars indicate 95% CIs. Model coefficients are available in eTable 3 in Supplement 2.
What happens if the intervention stops?
Letters

RESEARCH LETTER

Effects of Behavioral Interventions on Inappropriate Antibiotic Prescribing in Primary Care 12 Months After Stopping Interventions
Local Ochsner Experience
Participants: ambulatory primary care providers in large regional health system

- Test group: 30 primary care providers in one geographic region
- Control group (system): 162 primary care providers located in 4 other geographic regions
- Physicians and advanced practice providers
- Each region 20-40 PCPs in regular contact with other intra-regional PCPs
- Non-randomized, controlled interventional trial over one year followed by an open intervention in the second year
Reducing inappropriate outpatient antibiotic prescribing: normative comparison using unblinded provider reports

**Participants:** ambulatory primary care providers in large regional health system

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• Each region 20-40 PCPs in regular contact with other intra-regional PCPs
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5 Communication Strategies

1. **Give specific diagnosis**
   - “viral bronchitis” do not say “this is just a virus”

2. **Recommend symptomatic relief**
   - CDC prescription pad

3. **Share normal findings as you go through exam**

4. **Discuss side effects of antibiotic use**
   - Allergic reactions, C. diff, resistance

5. **Give expectations and an action plan**
   - “your cough may persist” and “if you get are getting worse we can re-evaluate”
Reducing inappropriate outpatient antibiotic prescribing: normative comparison using unblinded provider reports
Normative Comparison

- Published percentile ranking of each physician in local practice
- Emailed to each physician every 2 weeks
- Email contains all physicians data unblinded for full transparency and comparison

**The antibiotic order rate denominator is the total number of patients seen by you where an Acute Respiratory Infection diagnosis was used as the primary encounter diagnosis, and the numerator is the total number of those patients that received an antibiotic order during that visit.**

*URI diagnosis code (ICD10) + antibiotic = inappropriate

- Both pulled from EPIC, automatic email generated
Rate of Inappropriate Antibiotic Prescribing: Baseline vs 1-year Follow Up

Baseline inappropriate rate

Intervention: Patient education, provider education, unblinded provider reports
Summary – Develop your program

• Identify stewardship champion(s)
  • Can be more than one person, but helpful if you define roles and responsibilities

• Obtain explicit leadership support
  • Signed policy, financial support for position/program, signed letter of commitment

• Set up a committee to help support ASP
  • This could be just the champions depending on size of clinic
  • Could incorporate into currently staff meeting – standing agenda item
  • Meet regularly (i.e., quarterly, monthly)
Summary – Develop your intervention

• Identify your patient population
  • Diagnosis, where are you or your providers prescribing antibiotics?
  • Examples
    • Outpatient Surgery Center – Pre-op prophylactic antibiotics

• Identify what resources you have
  • EHR, personnel, data, students, residents, learners, etc.

• Consider both knowledge and behavioral interventions
  • Work well if paired together
Summary – Evaluate your intervention

• Identify ways to access data
  • Manual chart review, prospective data collection, EHR reports, external databases, etc.

• Identify metrics
  • Antibiotic prescribing (e.g., % prescription rate), return-to-clinic rate, antibiotic selection for indication, guideline concordance, etc.

• Identify comparison
  • Pre-, Post-intervention (over time)
  • Provider-to-Provider Comparison

• Consider how you report your results and assess need to modification
References


References


Evaluation Question – #1

Why is antimicrobial stewardship particularly important in the outpatient setting?

A. Most antimicrobial prescribing occurs in the outpatient setting

B. 30-50% of outpatient antibiotic use is either unnecessary or inappropriate

C. Improving antimicrobial use improves patient outcomes

D. All of the above
Evaluation Question – #2

Which of the following are areas to consider when identifying opportunities and challenges in developing antimicrobial stewardship in your own practice?

A. Patient Population, Resources, & Infrastructure
B. Regulatory Requirements & Billing Practices
C. Pharmaceutical Representatives, Latest Clinical Research, & New Drug Development
Evaluation Question - #3

In the data that was presented, which specific intervention did **NOT** lead to a significant improvement in antibiotic prescribing?

A. Peer Comparison
B. Suggested Alternatives
C. Accountable Justification
D. None of the above—all had significant improvements
Homework

Develop an outpatient antimicrobial stewardship intervention in your setting

• Target knowledge deficits & behavior change
• Choose measurable goals and endpoints
• Identify opportunities to educate patients and staff
• Ultimate goal – Long lasting cultural change