Antimicrobial Stewardship in the Long-Term Care and Outpatient Settings

Carlos Reyes-Sacin, MD, AAHIVS
• Speaker and consultant in HIV medicine for Gilead and Jansen Pharmaceuticals
Objectives

• At the end of the presentation, the audience will be able to:
  – Understand the reasons for resistant infections in the long-term care (LTC) and outpatient settings, and how this contributes to global antimicrobial resistance
  – Describe the challenges of performing antimicrobial stewardship in these settings
  – Identify strategies to implement antimicrobial stewardship in these settings
Introduction

• Historically, antimicrobial stewardship efforts have been concentrated primarily in the inpatient settings

• However, it has become increasingly recognized that inappropriate antimicrobial prescribing often occurs at long-term care facilities (LTCFs)
  – Antimicrobial resistance can be higher in this setting than in the inpatient setting
Recent efforts have also focused on appropriate prescribing in the outpatient setting.

Inappropriate prescribing in the outpatient setting can lead to increased resistance, which may in turn cause patients to require hospitalization with resistant microorganisms.

The Centers for Disease Control and Prevention (CDC) has provided guidance for antimicrobial stewardship efforts in both the LTC and outpatient settings.
Barriers in the LTCF

- ~4 million patients live in or will be admitted to a LTCF each year
- Antibiotics are the most common medication prescribed in these facilities
  - 7 out of 10 patients will receive at least one course of antibiotics
- 40-75% of antibiotic prescriptions are either unnecessary or written incorrectly
Barriers in the LTCF

• Many antibiotics in the LTCF are prescribed for colonization as opposed to true infections
  – Urinary tract
  – Respiratory tract

• Antimicrobial selection may be more difficult than other settings
  – Most patients are older and have many concomitant disease states
    • Greater variety of infectious causes, and possibly more resistant microorganisms
Barriers in the LTCF

• Lack of ID providers
  – Most LTCFs do not routinely have ID support
  – Providers are generally family medicine, internal medicine, or mid-level providers

• Lack of ID pharmacist specialists

• Time and effort
  – Other things seen as more of a priority
Barriers in the LTCF

• Lack of laboratory data
  – Cultures may not be ordered as frequently in the LTC setting as in the acute care setting
  – Many laboratory tests may not be available on site and must be sent out
    • Can delay results

• Practitioners may not have access to more specialized resources
  – ID physicians and pharmacists
Resistant Infections in the LTCF

- Many patients come from the acute care setting, where they may have acquired a multi-drug resistant organism (MDRO)
- Patients may have multiple treatment courses for repeated infections
  - UTIs
  - Pneumonias
  - SSTIs
Resistant Infections in the LTCF

- Overuse of unnecessary broad-spectrum antimicrobials
  - Fluoroquinolones
  - Extended-spectrum cephalosporins
  - Extended-spectrum penicillins

- Patient population
  - Older adults
  - Weaker immune systems
  - Multiple comorbidities
Regulatory Requirements

- The Joint Commission (TJC)
  - Medication Management Standard on Antimicrobial Stewardship (MM.09.01.01)
  - Applies to acute care hospitals, critical access hospitals, and nursing care centers
  - Became effective January 1st, 2017
Regulatory Requirements

• TJC
  – Site must have an antimicrobial stewardship program in place based on current scientific literature
  – Must educate practitioners and patients/family members on antimicrobials
  – Pharmacist must be included as a team member
Regulatory Requirements

• TJC
  – The stewardship program must include the CDC Core Elements of Antibiotic Stewardship Programs
  – Utilizes policies and procedures approved by the organization
  – Data on antimicrobial prescribing and resistance should be collected and analyzed
Regulatory Requirements

• Centers for Medicare & Medicaid Services (CMS)
  – Conditions of Participation (CoP) related to antimicrobial stewardship in LTCFs was finalized in September 2016
  – Utilized through a 2-phased approach
    • Phase I – Implementation of infection prevention programs by 11/28/2016
    • Phase II – Implementation of an antimicrobial stewardship program by 11/28/2017
• 3rd Phase
  – Infection Preventionist must be identified for each LTCF, who will oversee the infection prevention program
  – Must have specialized training in infection prevention and control
  – Must be implemented by November 28, 2019
• CMS
  – Infection control and prevention program must include the following:
    • System for preventing, identifying, reporting, investigating, and controlling infectious diseases
    • Program standards, policies, and procedures available in writing
    • Antimicrobial protocols and a method for monitoring antimicrobial use must be included in the program
    • Procedure for recording incidents and the subsequent corrective actions
Regulatory Requirements

• CMS
  – Wide variety in LTCF in terms of number of patients treated, access to providers, patient level of severity, etc.
  – Thus, specific ways in which the program will be implemented will vary from facility to facility
• CDC Core Elements of Antibiotic Stewardship for Nursing Homes
  – 7 Core Elements of a successful program
    • Leadership commitment
    • Accountability
    • Drug expertise
    • Action
    • Tracking
    • Reporting
    • Education
• CDC Core Elements
  – Multidisciplinary team should have a single leader and pharmacy personnel, but should ideally include:
    • Clinicians
      – Infectious diseases physicians and pharmacists, others
    • Infection prevention and epidemiologists
    • Quality improvement personnel
    • Laboratory personnel
    • IT personnel
    • Nurses
Stewardship Guidance

• CDC Core Elements
  – Document dose, duration, and indication of antimicrobials
  – Develop treatment protocols specific to the institution
  – Antimicrobial Timeouts
    • Useful for reassessing need for therapy
  – Prior authorizations
  – Dose optimization
• **CDC Core Elements**
  - Provide targeted interventions for specific infections
    - Urinary tract infections
    - Skin and soft tissue infections
    - MRSA infections
    - *Clostridium difficile* associated diarrhea
    - Community-acquired pneumonia
    - Invasive infections
The CDC encourages LTCFs to work in a step-wise fashion to implement stewardship programs. Begin with implementing 1 or 2 activities, and gradually add others over time. Any actions taken are thought to improve patient care.
Outpatient Setting

• Outpatient antimicrobial stewardship
  – “Coordinated efforts to promote appropriate prescribing of antibiotics for non-hospitalized patients in clinics, offices, and emergency rooms”

• In 2014, 266.1 million courses of antimicrobials were dispensed in community pharmacies
  – ~5 prescriptions written for every 6 people in the US
Outpatient Stewardship

• At least 30% of antimicrobial therapy in the outpatient setting is unnecessary
  – Viral, respiratory infections
• 50% of use is inappropriate
  – Incorrect drug, dose, or duration of therapy
• Most prescriptions written in the winter months
• Majority of prescriptions written by primary care physicians, followed by physician assistants and nurse practitioners
Community Antibiotic Prescriptions per 1,000 Population by State - 2015

Each year 269.4 million antibiotic prescriptions are written in the United States; enough to give 4 out of every 5 people one prescription.

Data source: QuintilesIMS Xponent, 2015
• Consequences of inappropriate antimicrobial prescribing in the outpatient setting:
  – Increase in overall antimicrobial resistance
  – Increase in rates of community-associated *Clostridium difficile* infection
    • Clindamycin, fluoroquinolones, extended-spectrum cephalosporins
  – Increase in extended-spectrum beta-lactamase production (ESBL)
• Barriers to antimicrobial stewardship in the outpatient setting:
  – Lack of education among prescribers
    • Many prescribers do not have sufficient knowledge of antimicrobials
    • Prescribers may also not have adequate access to helpful resources
      – Other healthcare professionals, tertiary resources
  – Patient expectations
    • Patients may expect an antibiotic to be prescribed, even for infections that are most likely viral
The CDC also provides Core Elements for providing antimicrobial stewardship in the outpatient setting

- Similar to what is provided for LTCFs

Core Elements

- Commitment
- Action
- Tracking and reporting
- Education and Expertise
Clinician Checklist for Core Elements of Outpatient Antibiotic Stewardship

CDC recommends that outpatient clinicians take steps to implement antibiotic stewardship activities. Use this checklist as a baseline assessment of policies and practices that are in place. Then use the checklist to review progress in expanding stewardship activities on a regular basis (e.g., annually).

**COMMITMENT**

1. Can you demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety related to antibiotics? □ Yes □ No
   - If yes, indicate which of the following are in place (select all that apply)
     - Write and display public commitments in support of antibiotic stewardship.

**ACTION**

2. Have you implemented at least one practice to improve antibiotic prescribing? □ Yes □ No
   - If yes, indicate which practices you use (Select all that apply)
     - Use evidence-based diagnostic criteria and treatment recommendations.
     - Use delayed prescribing practices or watchful waiting, when appropriate.

**TRACKING AND REPORTING**

3. Do you measure at least one aspect of antibiotic prescribing? □ Yes □ No
   - If yes, indicate which of the following are being tracked (Select all that apply)
     - Self-evaluate antibiotic prescribing practices.
     - Participate in continuous medical education and quality improvement activities to track and improve antibiotic prescribing.

**EDUCATION AND EXPERTISE**

4. Do you provide education to patients and seek out continuing education on antibiotic prescribing? □ Yes □ No
   - If yes, indicate how you provide antibiotic stewardship education (Select all that apply)
     - Use effective communication strategies to educate patients about when antibiotics are and are not needed.
     - Educate about the potential harms of antibiotic treatment.
     - Provide patient education materials.
• Health Effectiveness and Data Information Set (HEDIS)
  – Performance measurement tool widely used across US healthcare plans
    • >90% of healthcare plans
  – Allows for comparison of the performance of healthcare plans
  – Performance measures are written by the National Committee on Quality Assurance and the CDC
Outpatient Setting

- HEDIS Measures in Adults
  - Avoid antibiotic treatment in patients with acute bronchitis
  - Measured as the percent of adults diagnosed with acute bronchitis who were not prescribed an antibiotic
    - Goal is 100%
  - Mean performance in 2012 was 23% (range: 7-72%) across all health plans
Outpatient Setting

• How can community pharmacists play a role in antimicrobial stewardship?
  – Educating patients about correctly taking antibiotics, ADRs, and antimicrobial resistance
    • Pharmacists are usually the last provider to see the patient prior to taking an antibiotic
  – Counsel patients on symptom relief measures for infections of likely viral etiology
  – Promote vaccination
Antimicrobial Stewardship

• The perfect recipe for a bug to develop resistance to an antibiotic is to give a low concentration of the antibiotic over a prolonged period of time
  – In general, use upper end of dosing range
  – Do not prolong therapy longer than needed, but MUST counsel patients to finish their course of antibiotics!

• Try to use the most narrow-spectrum agent possible as quickly as possible
Case 1

- J.S. is a 22-year-old female who presents to the community pharmacy after being evaluated by her PCP for a large, pus-filled boil on her back.
- Allergies: Sulfonamides (rash)
- PMH: Depression
- Meds: Fluoxetine
- PE: BP 118/76; HR 70; RR 18; Temp 101
Case 1

- She is prescribed Bactrim DS, 1 tablet PO BID for 14 days
Case 1

- Are there any non-pharmacological therapies that should be recommended at this time?
- Does this patient require an antimicrobial agent at this time?
- If so, do you agree with the initial choice of antimicrobial therapy?
Case 2

• N.P. is an 85 year old AAF, 10 year resident of your LTCF. The nursing staff grow concerned because she is experiencing increased confusion from baseline

• Allergies: Penicillin (rash)

• PMH: Dementia, dyslipidemia, COPD, CHF

• Meds: Numerous

• PE: BP 132/76, P 80, RR 22, T 99.6°F
Case 2

- A variety of tests were ordered, with the urinalysis showing multiple abnormalities
- A urine culture is ordered and sent to the lab
- The attending physician orders nitrofurantoin 100 mg PO BID for 5 days
- Do you agree with this choice of therapy for the patient?
**Urine culture results:**

<table>
<thead>
<tr>
<th><strong>Klebsiella pneumoniae</strong></th>
<th><strong>SUSC</strong></th>
<th><strong>INTP</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amikacin</td>
<td>&lt;=2</td>
<td>S</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>&gt;=8</td>
<td>R</td>
</tr>
<tr>
<td>Cefazolin</td>
<td>&lt;=4</td>
<td>S</td>
</tr>
<tr>
<td>Cefepime</td>
<td>&lt;=1</td>
<td>S</td>
</tr>
<tr>
<td>Ceftazidime</td>
<td>&lt;=1</td>
<td>S</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>&lt;=1</td>
<td>S</td>
</tr>
<tr>
<td>Levofloxacin</td>
<td>&lt;=2</td>
<td>S</td>
</tr>
<tr>
<td>Imipenem</td>
<td>&lt;=2</td>
<td>S</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>&lt;=2</td>
<td>S</td>
</tr>
<tr>
<td>Tobramycin</td>
<td>&lt;=2</td>
<td>S</td>
</tr>
<tr>
<td>Nitrofurantoin</td>
<td>&gt;=256</td>
<td>R</td>
</tr>
<tr>
<td>Piperacillin/tazobactam</td>
<td>&lt;=4</td>
<td>S</td>
</tr>
<tr>
<td>Trimethoprim/sulfamethoxazole</td>
<td>&lt;=20</td>
<td>S</td>
</tr>
</tbody>
</table>
Which of the following is the best recommendation for this patient?

A) Continue the current therapy

B) Change to cephalexin

C) Change to Bactrim

D) Change to IM ceftriaxone
Case 3

• J.R. is 40-year-old male who presents to his PCP today with complaints of a dry cough x 3 days, rhinorrhea, and sore throat
• Allergies: NKDA
• PMH: Hypertension
• Meds: Lisinopril
• PE: BP 140/86, P 74, RR 22, T 97.5°F
Case 3

• Chest x-ray: negative
• Rapid strep: negative
• The attending physician orders cefdinir 300 mg PO BID for 7 days, plus azithromycin 500 mg PO on day 1, 250 mg PO on days 2-5
Case 3

- What is the best recommendation for J.R. at this time?
  A) Continue the current therapy
  B) Change to levofloxacin
  C) Change to Bactrim
  D) Discontinue antibiotics
Case 3

• What If.........
  – The patient were a 70-year-old male with a PMH of a stroke, HTN, and diabetes, who had been recently admitted to a LTCF, but presented with the same symptoms as above?
  – Would this change your therapy decision making and if so, how?
Antimicrobial Stewardship

• Additional Resources:
  • www.idsociety.org
    – IDSA clinical practice guidelines
    – Antimicrobial Stewardship guidelines
  • www.cdc.org
  • www.cms.org


QUESTIONS???