Learning Objectives

1. Define and elaborate on the core elements of antimicrobial stewardship for nursing homes which were identified by the Centers for Disease Control and Prevention (CDC).
2. Identify current resources available for pharmacists and other healthcare providers who are interested in developing antimicrobial stewardship programs (ASPs) at long-term care facilities.
3. Design specific antimicrobial stewardship interventions for long-term care facilities within your community.

Outlines

Introduction — Core Elements
Resources — LTC interventions and cases
Discussion

Facts

- Up to 70% of nursing home patients receive one or more courses of systemic antibiotics in a year
- Beta-lactams
- Cephalosporins
- Penicillins
- Fluoroquinolones
- Sulfonamides
- Most commonly administered orally but in severe cases parenteral agents are utilized
40 to 75% of all antibiotics prescribed in nursing homes are unnecessary, inappropriate, or suboptimal:
- Viral infection
- Colonization
- Contamination
- Hospice (controversial)

Antimicrobial Stewardship Definition

A practice that ensures the optimal selection, dose, and duration of antimicrobial therapy that leads to the best clinical outcome for the treatment or prevention of infection while producing the fewest toxic effects and the lowest risk for subsequent resistance.

White House 2014

- President Obama signed an Executive Order directing key Federal departments and agencies to take action to combat the rise in antibiotic resistant bacteria.
- The executive order had many different facets but most important to us is that it mandated improvement of antimicrobial stewardship at all levels of patient care:
  - Hospitals
  - Ambulatory/out-patient settings
  - Nursing homes/LTC facilities

Antimicrobial Stewardship Definition for Long-term Care Facilities

Antibiotic stewardship refers to a set of commitments and activities designed to "optimize the treatment of infections while reducing the adverse events associated with antibiotic use."
This new medication management standard has eight so-called Elements of Performance. One of these requires accredited healthcare organizations to have an "antimicrobial stewardship program".

"We need antibiotics to combat life-threatening bacterial infections, and overuse of these drugs promotes resistance and reduces their effectiveness."

Core Elements of Antimicrobial Stewardship in Long-term Care Facilities

The checklist is a companion to the Core Elements of Antibiotic Stewardship in Nursing Homes.

Use this checklist:
- Baseline assessment of policies and practices which are in place.
- Review progress in expanding stewardship activities on a regular basis (e.g. annually).

(1) Leadership Commitment

Nursing Home commitment to improve antimicrobial use.

Written statement in support of improving antibiotic use.
- Statement should be shared with staff, residents, and family.
- Should include stewardship in the position descriptions of:
  - Medical Director
  - Clinical Nurse leads
  - Consultant Pharmacists

Core Elements of Antimicrobial Stewardship in Long-term Care Facilities

Adapts the core elements from hospitals into practical ways to initiate or expand antimicrobial stewardship activities in nursing homes.

Implementation of the core elements may vary based on facility staffing and resources. Most nursing homes are encouraged to work in a stepwise fashion implementing one or two activities to start and gradually adding new strategies from each element over time.
(1) Leadership Commitment

- Create a culture promoting antimicrobial stewardship through:
  - Messaging
  - Education
  - Celebrating improvement

(2) Accountability

- Individuals accountable for antimicrobial stewardship, supported by the facility leadership:
  - Medical Director
  - Director of Nursing
  - Consultant Pharmacists
     - Through quality assurance activities
     - Medication utilization evaluations
     - Reporting antibiotic use data

(3) Drug Expertise

- Infectious diseases physicians
- Consultant pharmacists
  - Specialized training in antimicrobial stewardship (helpful but not required)

(4) Action

- Through policy and procedure changes to improve antibiotic use
  1. Prioritize interventions based on needs of the facility and share outcomes
  2. Establish best practices
  3. Develop facility specific treatment recommendations
  4. Broad interventions to improve antibiotic use

(5) Tracking (see Appendix A)

- Process Measures for tracking Antimicrobial Stewardship:
  1. Completeness of clinical assessment documentation at the time of the antibiotic prescription
  2. Completeness of the antibiotic prescribing documentation
  3. Antibiotic selection is consistent with the recommended agents for a specific infection
  4. Measurement of antibiotic use
     - Point prevalence of antibiotic use
     - Antibiotic cost data in the facility

(6) Reporting (see Appendix B)

- Antibiotic use outcomes:
  1. Clostridium difficile infections and antibiotic resistance
  2. Adverse drug events/drug-drug interactions
  3. Costs:
     - Direct
     - Indirect

* Not considered a primary goal or measureable outcome, but often referred to by administration
Antimicrobial stewardship education to:
- Residents and family
- Caregivers
- Healthcare workers

Mechanism of disseminating the antibiotic information:
- Flyers
- Pocket guides
- Newsletters
- Electronic communications
- Academic interactive detailing – face to face

Mike’s Summary
- The seven CDC Core Elements have been incorporated into the eight Elements of Performance by the Joint Commission and will be surveyed beginning January 1, 2017 (already started).
- Nursing homes are encouraged to work in a step wise fashion implementing one or two activities to start and gradually adding new strategies from each element over time.

Objective
Identify current resources available for pharmacists and other health-care providers who are interested in developing antimicrobial stewardship services at long-term care facilities.

LTC Stewardship Resources
1. CDC Resources
2. 2017 Joint Commission Activity Guide
3. Association of Medical Microbiology and Infectious Diseases (AMMI) Canada
4. Minnesota Antimicrobial Stewardship Program Toolkit for LTCF
5. Agency for Healthcare Research and Quality (AHRQ) LTC Resources
6. Antimicrobial Stewardship Certificate Programs

CDC Core Elements
The Light that Guides
1. Leadership
2. Commitment
3. Accountability
4. Drug Expertise
5. Action
6. Tracking
7. Reporting
8. Education

https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html
Appendix A

- Policy and practice actions to improve antibiotic use
  - Documentation of dose, duration, and indication
  - Perform antibiotic “time outs”
  - Review of microbiology culture results
  - Reduce antibiotic use in asymptomatic bacteriuria (ASB)

https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html

Appendix B

- Measures of antibiotic prescribing, use, and outcomes
  - Point prevalence surveys of antibiotic use
  - Number of residents on antibiotic/total residents in the facility X 100
  - Rate of new antibiotic starts initiated in nursing home (per 1,000 resident-days)
  - Antibiotic days of therapy (DOT)
  - C. difficile rates and antibiotic resistance
  - Antimicrobial-associated adverse events

https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html

ASP Gap Analysis in the LTCF

- Located at the end of the Core Elements
  - Add 2 more columns:
    1. Needs Assessment
    2. Priority

https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html

Additional CDC Resources

- CDC helps check 2 boxes required by TJC:
  - Patient and Family Education
  - Healthcare Provider Education

Education

For Residents and Families

Questions to Ask your Healthcare Provider Before Asking for an Antibiotic
1. Could my infection be caused by something other than bacteria (e.g., a virus or something that is not an infection)?
2. What signs or symptoms should I look for that could mean I might need an antibiotic?
3. Can I be monitored to see if my symptoms improve with other remedies, without using antibiotics?

Questions to Ask your Healthcare Provider When you are Prescribed an Antibiotic
1. What infection is the antibiotic treating and how do you know I have that infection?
2. What side effects might occur from this antibiotic?
3. Could any of my other medications interact with this antibiotic?
4. How well will I be monitored to know whether my illness is responding to the antibiotic?

https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html
Healthcare Provider Education

Core Elements of Antibiotic Stewardship for Nursing Homes
Nimalie Stone, MD, MS
September 21, 2015

The Joint Commission (TJC) Survey Activity Guide

LTCFs now defined as “Nursing Care Centers”

TJC Survey Activity Guide

What is TJC Looking for?
1. List of patients to be discharged who are prescribed antimicrobials (if available)
2. Documents demonstrating leadership support for the organization's antimicrobial stewardship program
3. Document describing how the organization is using the CDC's Core Elements of Antibiotic Stewardship for Nursing Homes
4. Organization-approved antimicrobial stewardship protocols (e.g., policies, procedures, or order sets)
5. Antimicrobial stewardship data
6. Antimicrobial stewardship reports documenting improvement. If the data supports that antimicrobial stewardship improvements are not necessary make sure the surveyor is informed.

Hey Everyone!
Check out the March MSHP Monitor!

Antimicrobial Stewardship and the Joint Commission: What to Expect
Derek Vander Horst, PharmD, BCPS
PGY2 Infectious Diseases Pharmacy Resident
Munson Medical Center

Association of Medical Microbiology & Infectious Diseases (AMMI) Canada

Friends to the North
Canadian equivalent to IDSA
Mission Statement
We advance the prevention, diagnosis, and treatment of infections.

AMMI Canada Resources

Create the Business Case for ASP in the LTC
Business Case for ASPs (Word Doc)
Business Case for ASPs (Spreadsheet)

Includes highlighted placeholders for you to customize to your facility's information

https://www.jointcommission.org/assets/1/18/2017_Organization_SAG.pdf
https://www.jointcommission.org/assets/1/18/2017_Organization_SAG.pdf
https://www.jointcommission.org/assets/1/18/2017_Organization_SAG.pdf
https://www.ammi.ca/
https://www.ammi.ca/?ID=126
Asymptomatic Bacteriuria

For Immediate Release: November 14, 2016

Symptom-Free Pee: Let it Be

Corrting the use of antibiotics to treat asymptomatic bacteriuria

November 14, 2016.Ottawa: Conrad’s infectious disease specialists are sounding the alarm over the unnecessary use of antibiotics to treat asymptomatic bacteriuria. Asymptomatic bacteriuria is a condition in which bacteria are present in the urine of a patient who does not exhibit symptoms, usually as a result of a urinary tract infection (UTI). Other people, especially those with diabetes, are particularly prone to this condition.

Additional Resources Found on a Google® Search

Minnesota Antimicrobial Stewardship Program Toolkit

for Long-term Care Facilities

http://www.health.state.mn.us/divs/idepc/dtopics/antibioticresistance/asp/ltc/

LTCF Capacity to Implement an ASP

Guidance for Promoting Antimicrobial Stewardship in Long-term Care Facilities

LTCF Stewardship Toolkit

13 Appendices Total

Just to name a few:

- Action Steps and Strategies for Implementing ASP in the LTC Setting
- Gap Analysis Tool
- Nursing Provider and Antibiotic Use Attitudes and Beliefs Surveys
- Antimicrobial Use Assessment for LTCF
- Nursing Process Evaluation Tool – Resident Change in Condition

http://www.health.state.mn.us/divs/idepc/dtopics/antibioticresistance/asp/ltc/
Education Modules

- PowerPoint Presentations
  - Antibiotic Use & Antibiotic Resistance
  - C. diff Infection Prevention
  - UTI and Asymptomatic Bacteriuria
  - Antimicrobial Stewardship

- Flyers, Table Tents, and Quizzes
  - Antibiotic Use & Antibiotic Resistance
  - Preventing C. diff Infection
  - UTIs in LTC Residents
  - Get the Catheters Out!
  - Hand Hygiene

http://www.health.state.mn.us/divs/idepc/dtopics/antibioticresistance/asp/lc/

Appendix D

Antibiotic Use Attitudes and Beliefs: Nursing Survey

1. How often do you believe antibiotics are over-prescribed?
   - 1. Never
   - 2. Rarely
   - 3. Sometimes
   - 4. Often
   - 5. Always

2. How often do you believe antibiotics are prescribed inappropriately?
   - 1. Never
   - 2. Rarely
   - 3. Sometimes
   - 4. Often
   - 5. Always

3. Do you believe antibiotics are the first-line treatment for common colds?
   - 1. Yes
   - 2. No

4. Do you believe antibiotics are the first-line treatment for bronchitis?
   - 1. Yes
   - 2. No

5. Do you believe antibiotics are the first-line treatment for sinusitis?
   - 1. Yes
   - 2. No

6. Do you believe antibiotics are the first-line treatment for strep throat?
   - 1. Yes
   - 2. No

7. Do you believe antibiotics are the first-line treatment for ear infections?
   - 1. Yes
   - 2. No

8. Do you believe antibiotics are the first-line treatment for urinary tract infections?
   - 1. Yes
   - 2. No

http://www.health.state.mn.us/divs/idepc/dtopics/antibioticresistance/asp/lc/

Appendix E: Antimicrobial Use Assessment

AHRQ LTC Resources

Resources

- AHRQ’s Safety Program for Nursing Homes: On-Time Prevention
- Case Studies
- End of Life Care
- Home and Community-Based Services
- Falls and Injuries
- Long-Term Care Facilities
- AHRQ’s Multiple Chronic Conditions Research Network
- Pressure Ulcers
- Quality of Life
- Nursing Home Antimicrobial Stewardship Guide

Agency for Healthcare Research and Quality


AHRQ LTC Resources

Nursing Home Antimicrobial Stewardship Guide

Overview of the Guide
The Nursing Home Antimicrobial Stewardship Guide provides tools to help nursing homes optimize their use of antibiotics.

Browse Antimicrobial Stewardship Toolkits
Toolkits on four topic areas are available:

1. Implement, Monitor, and Sustain a Program
2. Two toolkits help nursing homes start and maintain antimicrobial stewardship programs.

Choose the Right Antibiotic
Determine Whether to Treat

https://www.ahrq.gov/nhguide/index.html

UTI Nurse Assessment

S = Situation
B = Background
A = Assessment
R = Request

Antimicrobial Stewardship Certificate Programs

- Acute Care Antimicrobial Stewardship Training Programs
  - Society of Infectious Diseases Pharmacists (SIDP)
  - Making a Difference in ID (MAD-ID)
    - Basic & Advanced Courses
- What about LTC stewardship specifically?
  - SIDP, MAD-ID, and ASHP are working on it

Summary of the Resources

1. CDC Resources
2. 2017 Joint Commission Activity Guide
3. Association of Medical Microbiology and Infectious Diseases (AMMI) Canada
4. Minnesota Antimicrobial Stewardship Program Toolkit for LTCFs
5. AHRQ LTC Toolkit
6. Antimicrobial Stewardship Certificate Programs

LTC ASP Implementation

- You’ve got the knowledge and tools, but does all of this work in real life?

LTC ASP Implementation

- Broad categories of ASP interventions:
  - Disease state specific
    - Urinary tract infections
    - Lower respiratory tract infections
  - Antimicrobial specific
    - Fluoroquinolone criteria for use
  - Education interventions
    - Nurses
    - Providers
    - Both!
  - De-escalation interventions
Disease State ASP Interventions

- UTIs are the most common indication for prescribing antibiotics in nursing homes
  - Excessive culturing of the urine leads to inappropriate treatment of asymptomatic bacteriuria
- UTI Specific ASP Interventions:
  - Provider education
  - Creation of institution specific clinical guidelines
  - Infection prevention interventions
  - Audit & feedback to prescribing team


Three year period for analysis:
- July 2010 – June 2011: Baseline data collection
- July 2011 – June 2012: Staff education & clinical algorithm provided
- July 2012 – June 2013: Maintenance phase data collection


Urine Cultures per 1000 Patient Days

<table>
<thead>
<tr>
<th></th>
<th>Intervention Site</th>
<th>Control Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>41.2</td>
<td>23.3</td>
</tr>
<tr>
<td>Intervention</td>
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<td>12</td>
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<tr>
<td>Maintenance</td>
<td>46.6</td>
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</tr>
</tbody>
</table>


Asymptomatic Bacteriuria (ASB) Treated per 1000 Patient Days

<table>
<thead>
<tr>
<th></th>
<th>Intervention Site</th>
<th>Control Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
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<td>0.6</td>
</tr>
<tr>
<td>Intervention</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Maintenance</td>
<td>0.4</td>
<td>0.5</td>
</tr>
</tbody>
</table>

### Disease State ASP Interventions

**Table 1: Overview of Targeted Infection Prevention (ASP) Program Interventions**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention Group</th>
<th>Control Group (Good Care)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ventilator</td>
<td>Improved barrier</td>
<td>Improved barrier</td>
</tr>
<tr>
<td>Central line</td>
<td>Improved barrier</td>
<td>Improved barrier</td>
</tr>
<tr>
<td>Non-ventilator</td>
<td>Improved barrier</td>
<td>Improved barrier</td>
</tr>
<tr>
<td>Interventions</td>
<td>Improved barrier</td>
<td>Improved barrier</td>
</tr>
<tr>
<td>Surveillance</td>
<td>Improved barrier</td>
<td>Improved barrier</td>
</tr>
<tr>
<td>Bundling interventions</td>
<td>Improved barrier</td>
<td>Improved barrier</td>
</tr>
<tr>
<td>Infections</td>
<td>Improved barrier</td>
<td>Improved barrier</td>
</tr>
<tr>
<td>Education</td>
<td>Improved barrier</td>
<td>Improved barrier</td>
</tr>
</tbody>
</table>

### Clinically Defined Device-Associated Infections

**Graph 1: Number of Cases**

- **First New CAUTI**
- **All New CAUTI**
- **Feeding Tube-Associated SSTI**
- **Feeding Tube-Associated PNA**

### Knowledge is Power

- **Randomized 46 nursing homes into two groups**
  - **Formal education vs Control**

**Journal of Antimicrobial Chemotherapy**

- **Can a multifaceted educational intervention targeting both nurses and physicians change the prescribing of antibiotics to nursing home residents? A cluster randomized controlled trial**
  - Pettersson E, Åkerblom P, Sigurd Wäppling L, and Gertel Stenberg J

**Results**

- **Quinolone use for lower UTIs in women**
- **Nitrofurantoin use for lower UTIs in women**
- **Antibiotic prescriptions for all infections**
- **Physician “wait and watch” prescribing for all infections**

**Prescriptions for All Infections**

- **Before-Intervention**
- **After-Intervention**
- **Before-Control**
- **After-Control**

**Knowledge is Power**

- **Major education interventions:**
  - Two 1.5 hour voluntary educational sessions
  - Discussed guidelines, antibiotic use, etc.
  - Education was both verbal and written
  - Prescriber feedback throughout study period
  - Local antibiogram data provided

**References**


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**Notes and Presentations:**

- 2/7/2017
ID Specialist Consultation in LTCs

- Formal Infectious Diseases (ID) consult service made available to VA Medical Center affiliated 160 bed LTAC facility
- 18 month period was measured and compared to baseline
- Outcomes:
  - Days of therapy per 1000 patient days

Results showed significant decline in broad-spectrum antimicrobial agents

Days of Therapy/1000 Days of Care

Legend:
Triangle: Hospital
Squares: LTC

Clostridium difficile Testing

Legend:
Triangle: Hospital tests
Squares: LTC tests

General decline in positive C. difficile tests
Starting an LTC ASP can be a daunting process

- Common Questions:
  - Where do we start?
  - Who should be involved?
  - What should we be doing?

Our roadmap:
- What are our goals?
  - Comply with CDC Core Elements and the Joint Commission
- Who should be involved?
  - Providers, Pharmacy, Nursing, Consult microbiology and infectious diseases
- What do we need?
  - Formal policies
    - Antimicrobial stewardship specific
    - Antimicrobial specific criteria for use
    - Culture specific criteria for use
  - Education
    - Clinical guidelines
    - Nursing and physician infectious diseases education
  - Metrics
    - Antibiotic use
    - Cost
    - Clostridium difficile rates
    - Antibiogram data

MMC LTC Interventions:
- Visited individual LTC facilities to set up members responsible for the ASP
- Drafted generalizable LTC ASP policy to be utilized by all MMC affiliated LTCs
- Created a pre-recorded 15 minute lecture to educate staff on antimicrobial resistance and stewardship
- Established streamline method for tracking antimicrobial use
In Summary…

- Antimicrobial stewardship is necessary to combat the ever-growing threat of antimicrobial resistance.
- Many resources are available to aid clinicians in the creation of antimicrobial stewardship programs within their LTC facilities.

Questions

THE LONG AND THE SHORT OF IT: DEVELOPMENT OF ANTIMICROBIAL STEWARDSHIP PROGRAMS IN LONG-TERM CARE FACILITIES

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Michigan Pharmacist Association Annual Convention
February 24th 2017