Antimicrobial Stewardship in Long-term Care

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Objectives

- Describe the need for antimicrobial stewardship (AS) in long-term care
- Define AS in long-term care
- Provide resources to strengthen AS in long-term care
Antibiotic Use in Long-term Care

• Most frequently prescribed Medication in Nursing Homes
  – 70% of residents receive in NH receive one or more courses in a year\textsuperscript{1,2}

• 40-75% of antibiotics may be inappropriate/unnecessary\textsuperscript{3,4}

• Potential harm:
  – \textit{C. diff}
  – Adverse drug events/interactions
  – MDRO infections
Common Conditions Prescribed Antibiotics in LTC

• Urinary Tract Infection
• Skin and Soft Tissue Infection
• Respiratory Infection
AMS Program required by CMS

• 42 CFR § 483.80 Infection control
  – (a) Infection prevention and control program. The facility must establish an infection prevention and control program (IPCP) that must include, at a minimum, the following elements:
    1. A system for preventing, identifying, reporting, investigating, and controlling infections and communicable diseases for all residents, staff, volunteers, visitors, and other individuals providing services...
    2. Written standards, policies, and procedures for the program...
    3. An antibiotic stewardship program that includes antibiotic use protocols and a system to monitor antibiotic use
    4. A system for recording events identified under the facility’s IPCP and the corrective actions taken by the facility.
7 Core Elements of Antibiotic Stewardship in Nursing Homes
Leadership & Accountability

• Core Element 1: Leadership
  – Demonstrate support and commitment to safe and appropriate antibiotic use in your facility
    • Create mission/leadership statement to display commitment appropriate prescribing to staff, residents, and families

• Core Element 2: Accountability
  – Identify physician, nursing and pharmacy leads responsible for promoting and overseeing antibiotic stewardship activities in your facility.
Drug Expertise

• Core Element 3: **Drug Expertise**
  – Establish access to individuals with experience or training in AS for your facility
    • Consultant pharmacists
    • Referring hospital antimicrobial stewardship team
    • Local AS/ID consultants
Action

• Core Element 4: Action
  – Implement at least one policy or practice to improve antibiotic use
    • Documentation
      – Dose, Duration, Indication
    • Specific infection criteria
      – Loeb Criteria
      – Use SBAR tool
    • Proper communication
      – During patient transfers
      – Any change in patient condition
    • Antibiotic review/"antibiotic time-out"
Tracking and Reporting

• Core Element 5: Tracking
  – Monitor at least one process measure of antibiotic use and at least one outcome from antibiotic use in your facility
  – Process Measures
    • Number of times proper documentation given for antibiotic starts
    • Number of times SBAR form used
  – Antibiotic Use Measures
    • Number of antibiotic starts
    • Antibiotic Days of Therapy (DOT)
  – Outcome Measures
    • C.diff
    • Antibiotic resistance
    • Adverse Reactions

• Core Element 6: Reporting
  – Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff, and other relevant staff
Education

• Core Element 7: Education
  – Provide resources to clinicians, nursing staff, residents, and families about antibiotic resistance and opportunities for improving antibiotic use
  • Handouts and Posters for residents and families
    – CDC
    – AHRQ
Getting Started

– CDC
  • Core Elements of Antimicrobial Stewardship for Nursing Homes
  • Infection Preventionist Training module
– AHRQ Nursing Home Antimicrobial Stewardship Guide
– Nebraska ASAP
– Minnesota Department of Health
Getting Started

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CDC’s Core Elements

- Core Element Checklist
- Policy and Practice Actions
- Measures of Antibiotic Prescribing
- Data Sources, Elements and Measures
Getting Started

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  • Core Elements of Antimicrobial Stewardship for Nursing Homes
  • Infection Preventionist Training module

– AHRQ Nursing Home Antimicrobial Stewardship Guide

– Nebraska ASAP

– Minnesota Department of Health
CDC Infection Prevention Training

- Free CDC Training
  - 23 modules
- Core activities of IPC programs
  - antimicrobial stewardship
Getting Started

– CDC
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AHRQ Nursing Home Antimicrobial Stewardship Guide

Nursing Home Infection Control Guidelines for C. Difficile

When to Perform Toxin Assay on Stool:
- Resident symptomatic with diarrhea (>3 loose/watery stools a day).
- Especially consider in residents who received antibiotics in previous 60 days and have one or more of the following: fever, elevated WBC, fecal leukocytes, abdominal pain/tenderness.
- Do not perform toxin assay on formed stool.
- Do not culture stool; only perform toxin assay.
- After treatment, do not retest for cure (toxin may stay positive even when resident is improved).

When to Treat:
- Symptomatic resident with toxin-positive stool.

How to Isolate Culture-positive Residents:
- Limit time outside of room for C. difficile positive resident while symptomatic; limit time especially if resident is unable to contain stool.
- Use gloves for contact with resident or resident’s environment while on therapy.
- Perform hand hygiene with soap and water (alcohol does not kill C. difficile spores).
- Consider daily use of diluted hypochlorites (household bleach diluted 1:10 with water) to disinfect resident’s environment.

When to Decolonize a Resident:
- Do not attempt; no proven successful regimen exists.

12 Common Nursing Home Situations in Which Systemic Antibiotics are Generally Not Indicated

1. Positive urine culture in an asymptomatic resident.
2. Urine culture ordered solely because of change in urine appearance.
3. Nonspecific symptoms or signs not referable to the urinary tract, such as falls or mental status change (with or without a positive urine culture).
4. Upper respiratory infection (common cold).
5. Bronchitis or asthma in a resident who does not have COPD.
6. “Influenza” on chest x-ray in the absence of clinically significant symptoms.
7. Suspected or proven influenza in the absence of a secondary infection (but DO treat influenza with antivirals).
8. Respiratory symptoms in a resident with advanced dementia, on palliative care, or at the end of life.
9. Skin wound without cellulitis, sepsis, or osteomyelitis (regardless of culture result).
10. Small (<5cm) localized abscesses without significant surrounding cellulitis (drainage is required of all abscesses).
11. Decubitus ulcer in a resident at the end of life.
12. Acute vomiting and/or diarrhea in the absence of a positive culture for shigella or salmonella, or a positive toxin assay for Clostridium difficile.


Tool 1. Sample Policy

[NAME OF NURSING HOME]

Protocol for Three Common Infections

[DATE]

Between 25 percent and 75 percent of antibiotic prescriptions in nursing homes do not meet clinical guidelines for prescribing. Unnecessary antibiotics can result in side effects and drug-resistant bacteria. Unnecessary prescribing practice by prescribing clinicians and overuse of newer, broad-spectrum antibiotics when either no antibiotic or a narrow-spectrum drug would suffice are large contributors to this problem. The Minimum Criteria for Common Infections toolkit (“Minimum Criteria toolkit”) aims to reduce unnecessary prescribing for the three infections where antibiotics are most frequently prescribed in nursing homes: (1) urinary tract infections (UTIs), (2) lower respiratory tract infections, and (3) skin and soft tissue infections.

To improve appropriate antibiotic use for the residents at [NAME OF NURSING HOME], the minimum criteria for three common infections will be implemented on [DATE].

The minimum criteria are shown below: [NAME OF NURSING HOME] will be using [INDICATE WHICH TOOL(S) THE NURSING HOME WILL USE, I.E., THE FAXES, THE LETTER, THE WEB APP, OR THE TRAINING].

AHRQ Pub, No. 14-0011-3-EF
May 2014

Illinois Department of Public Health
Prescribing Tool for UTI, SSTI, and RTI

<table>
<thead>
<tr>
<th>CHOOSE POTENTIAL INFECTION (CHOOSE ONE):</th>
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<tbody>
<tr>
<td>Urinary Tract Infection</td>
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<tr>
<td>Skin and Soft Tissue Infection</td>
</tr>
<tr>
<td>Lower Respiratory Tract Infection</td>
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</table>

**Does the resident have new or increasing purulent drainage at a wound, skin, or soft-tissue site?**

- Yes
- No

**Notes:**
1. For residents who regularly run a lower temperature, use a temperature of 2°F (1°C) above the baseline as a definition of a fever.
2. Herpes zoster is a virus and therefore does not require antibiotics but appropriate antivirals.
3. Deeper infections such as abscesses may present with similar signs/symptoms.
4. Underlying osteomyelitis should be considered when managing a resident with an infected diabetic or decubitus ulcer.
5. Thromboembolic disease should be considered when a resident presents with an erythematous or swollen leg.
6. These criteria do not apply to residents with burns.
7. Gout can at times be mistaken for cellulitis or vice versa.

**Does the resident have at least TWO of the following? Check all that apply.**

- ☐ Fever (temperature > 100°F [37.9°C] or two repeated temperatures of 99°F [37°C])
- ☐ Redness
- ☐ Tenderness
- ☐ Warmth
- ☑ Swelling that is new or increasing at the affected site
- ☐ None of the above

**Minimum criteria for initiating antibiotics are NOT MET**

Consider initiating the following:

- For discomfort or prior to cleaning/dressing changes, use acetaminophen or other pain relievers as needed.
- Assess vital signs, including temp (suggest frequency and duration), and/or
- Notify physician/nurse practitioner/physician assistant if symptoms worsen or if unresolved in (suggest duration).
Getting Started

– CDC
  • Core Elements of Antimicrobial Stewardship for Nursing Homes
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– Nebraska ASAP
– Minnesota Department of Health
Nebraska ASAP

Sample leadership support statement template

Sample ASP Committee Meeting Minutes
Getting Started

– CDC
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– Nebraska ASAP

– Minnesota Department of Health
**Interpretive Guidelines for CMS Requirements of Participation, Effective November 28, 2017**


**Guidance: Antibiotic Stewardship**

As part of their infection prevention and control programs, Long-Term Care Facilities (LTCFs) promote the appropriate use of antibiotics to improve resident outcomes and reduce antibiotic resistance. The guidelines for antibiotic stewardship are designed to help facilities reduce antibiotic use and improve outcomes for residents.

**Minimum Criteria for Initiation of Antibiotics in Long-Term Care Residents**

- **Suspected Lower Respiratory Tract Infection**
  - Chest X-ray suggests pneumonia and at least one of the following:
    - Respiratory rate ≥25
    - Productive cough
    - Fever (≥38°C [≥100.4°F] or ≥100°F [≥37.8°C]) increase above baseline temperature
  - OR
  - Other signs of pneumonia

- **Suspected Urinary Tract Infection**
  - New or increasing purulent drainage at a wound, skin, or soft-tissue site
  - Fever (≥38°C [≥100.4°F] or ≥100°F [≥37.8°C]) increase above baseline temperature

- **Suspected Skin and Soft-tissue Infection**
  - New or increasing swelling
Sample AMS Policy

• Should include all 7 core elements
  – Leadership Statement
    • Identify AMS champions
  – Accountability
    • Clearly define AMS team member roles and responsibilities
  – Expertise
    • Identify who the AMS team should look to for guidance on appropriate antibiotic use
Sample AMS Policy

- Action
  - Define record keeping expectations
    - Dose, duration, route of administration, indication must be included in all medical records
  - Define infection assessment criteria
    - Set clear guidelines on when to test for infection
    - Loeb criteria
    - Require use of SBAR tool
  - Antibiotic “time-out”
    - Set an expectation for resident reassessment after 72 hours
Sample AMS Policy

- Tracking
  - Define how the actions taken by the AMS team will be evaluated
  - Measure process measures, antibiotic starts, days of therapy, outcomes etc.

- Reporting
  - Explain how the results of the AMS program will be shared with relevant parties

- Education
  - Outline training that will be provided to all new staff members and annually
  - Provide educational resources to be provided to residents/families as needed
Situation, Background, Assessment, Recommendation
### Situation
I am concerned about a suspected UTI for the above resident.

### Background
- **Indwelling Catheter:** Yes/No
- **UTI in last 6 months:** Yes/No
- **Organism:**
- **Treatment:**
  - Active diagnosis: bladder, kidney, genitourinary condition; diabetes; receiving dialysis, anticoagulants:

### Medication allergies:

### Assessment
- **Vital signs:** BP __/__/ HR __/__ Resp. rate __ Temp __/__ O2 Sat __

#### Resident WITH indwelling catheter
- **Criteria:** are met to initiate antibiotics if one of the following are selected:
  - No
  - **Yes**
    - Fever of 100°F (38°C), or 2°F above baseline, or repeated temperatures of 99°F (37°C)
    - New back or flank pain
    - Rigors / shaking / chills
    - New onset delirium (new dramatic change in mental status)
    - Hypotension (significant change in baseline BP or SBP <90)
    - Acute suprapubic pain
    - Acute pain, swelling or tenderness of the scrotal area

#### Resident WITHOUT indwelling catheter
- **Criteria:** are met to initiate antibiotics if one of the following situations are met:
  - No
  - **Yes**
    - Any one of the following two:
      - Acute dysuria alone (pain or burning while urinating)
      - Acute pain, swelling or tenderness of the scrotal area
    - Single temp of 100°F (38°C), or 2°F above baseline, or repeated temperatures of 99°F (37°C)
    - At least one of the following new or worsening symptoms:
      - Urgency
      - Suprapubic pain
      - Frequency
      - Gross hematuria
      - Back or flank pain
      - Urinary incontinence

### Recommendation
- Protocol criteria met. Resident may require UA and urine culture or an antibiotic.
- Protocol criteria are NOT met. Resident DOES NOT need immediate antibiotic but may need additional observation.

#### Nurse’s Signature:
- **Date/Time:**
- **Notification of Family/POA Name:**
- **Date/Time:**
- **Faxed or Called to:**
- **By:**
- **Date/Time:**

### Physician Orders/Response
- **Physician Signature:**
- **Date/Time:**

- **Urine culture** (if indicated)
- Encourage 4oz of cranberry juice or another liquid (_____) for ______ times/day, until symptoms resolve
- Record fluid intake & output until symptoms resolve (output can also be measured from urinal or by weighing diapers, etc.)
- Assess vital signs, including temp; every ______ hours for ______ hours
- Monitor and notify PCP if symptoms worsen or unresolved in ______ hours
- Drug: ______
  - **Dose:** ______
  - **Route:** ______
  - **Frequency:** ______
  - **Duration:** ______
  - **Indication:** ______
- Physician Order/Progress Notes

Please fax back to: [ ] or [ ] Telephone Order

File Under Physician Order/Progress Notes

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**IDPH**
Illinois Department of Public Health

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**UTI**
**SBAR**
Asymptomatic Bacteriuria

• Presence of bacteria in urine with no symptoms of infection
• Common among residents in nursing homes\(^2\)
  – 25%-50% of women
  – 15%-40% of men
• Treatment not necessary or recommended
• Use of Loeb Criteria to prevent unnecessary antibiotic use
  – SBAR Tool
UTI
SBAR
<table>
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<tr>
<th>S</th>
<th>Situation</th>
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<th>B</th>
<th>Background</th>
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<tbody>
<tr>
<td>Indwelling catheter □Yes □No</td>
<td>If yes, □ Urethral □ Suprapubic</td>
</tr>
<tr>
<td>Incontinence □Yes □No</td>
<td>If yes, is this new or worsening □Yes □No</td>
</tr>
<tr>
<td>UTI in last 6 months □Yes □No</td>
<td>If yes, Date: __________________ Organism: __________ Treatment: __________</td>
</tr>
<tr>
<td>Active diagnosis (especially bladder, kidney, genitourinary conditions; diabetes; receiving dialysis, anticoagulants):</td>
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<tr>
<td>Advance directives for limiting treatment (especially antibiotic use):</td>
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<td>Medication allergies:</td>
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<th>Assessment</th>
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<td>Vital signs: BP____ / ____ HR____ Resp. rate____ Temp.____ O₂ Sats.____</td>
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</tbody>
</table>

**Resident WITH indwelling catheter**
- The criteria are met to initiate antibiotics if one of the following are selected:
  - No □ Yes □
    - □ Fever of 100°F (38°C), or 2°F (1.1°C) above baseline, or repeated temperatures of 99°F (37°C)
    - □ New back or flank pain
    - □ Rigors / shaking / chills
    - □ New onset delirium (new dramatic change in mental status)
    - □ Hypotension (significant change in baseline BP or SBP <90)
    - □ Acute suprapubic pain
    - □ Acute pain, swelling or tenderness of the scrotal area

**Resident WITHOUT indwelling catheter**
- Criteria are met to initiate antibiotics if one of the three situations are met:
  - □ Any one of the following two:
    - □ Acute dysuria alone (pain or burning while urinating)
    - □ Acute pain, swelling or tenderness of the scrotal area
    - OR
  - □ Single temp of 100°F (38°C), or 2°F (1.1°C) above baseline, or repeated temperatures of 99°F (37°C) and at least one of the following new or worsening symptoms:
    - □ Urgency
    - □ Suprapubic pain □ Frequency
    - □ Gross hematuria □ Back or flank pain □ Urinary incontinence
    - OR
  - □ No fever, but two or more of the following new or worsening symptoms:
    - □ Urgency
    - □ Suprapubic pain □ Frequency
    - □ Gross hematuria □ Urinary incontinence
Diagnostic Stewardship

- When to collect urine culture

### Decision Tree for Urine Culture

- Fever of \( >37.9^\circ C \) (100°F) or \( >1.5^\circ C \) (2.4°F) increase above baseline on at least two occasions over last 12 hours?
  - Yes
  - 2 or more symptoms or signs of non-urinary tract infection*
    - Yes: Do not order urine culture
    - No: Order urine culture for one or more of the following:
      - Dysuria
      - Urinary catheter
      - Urgency
      - Flank pain
      - Shaking chills
      - Urinary incontinence
      - Frequency
      - Gross haematuria
      - Suprapubic pain
  - No
    - Urinary catheter?
      - Yes: Order urine culture for one or more of the following:
        - New costovertebral tenderness
        - Rigors
        - New onset of delirium
      - No
        - Order urine culture for new onset burning urination or for two or more of the following:
          - Urgency
          - Flank pain
          - Shaking chills
          - Urinary incontinence
          - Frequency
          - Gross haematuria
          - Suprapubic pain

* Respiratory symptoms include increased shortness of breath, increased cough, increased sputum production, new pleuritic chest pain.
Gastrointestinal symptoms include nausea or vomiting, new abdominal pain, new onset of diarrhoea.
Skin and soft tissue symptoms include new redness, warmth, swelling, purulent drainage.
When to collect stool sample for *C. difficile* testing

- Resident experiencing new onset of diarrhea
  - Has the resident had ≥3 unformed stools in a 24 hour period?
    - Yes: Contact provider, order lab test for CDI. Do not start empiric treatment before collecting sample
    - No: Do not test asymptomatic residents for CDI
  - Consider creating a standing order for nursing staff to initiate CDI testing
  - Collect and submit fresh stool sample
    - Collect specimen in clean, watertight container
    - Refrigerate (2-8°C; 36-46°F) until testing can be done
  - Only unformed stools should be collected
Role of Nurses in AS

• Assessment
• Diagnostic Stewardship
• Proper culturing technique
• Communication
  – Situation, Background, Assessment, Recommendation
• Education
Illinois Summit on Antimicrobial Stewardship 2020

• July 24th - Normal IL
• APIC Infection Control Conference July 23rd - Normal IL
• To be added to the email list, notify DPH.DPSQ@Illinois.gov
References


THANK YOU

PRESENTER’S CONTACT INFO
IDPH WEBSITE
Useful Resources

• CDC Core Elements for Nursing Homes: https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html
• CDC Infection Preventionist Training: https://www.train.org/illinois/course/1081350/
• Nebraska ASAP: https://asap.nebraskamed.com/long-term-care/
• Minnesota Department of Health: https://www.health.state.mn.us/diseases/antibioticresistance/hcp/asp/ltc/index.html