ANTIBIOTIC STEWARDSHIP IN LONG TERM CARE

How consultant pharmacists can help their facilities
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Objectives
Pharmacists & Technicians

- Describe the evolution of antimicrobial stewardship (AMS).
- Discuss the core elements of AMS and what is needed to build a solid foundation.
- Review AMS best practices.
- Review case studies that illustrate and support the development of AMS programs.

Kelli Musick-Hocker does not have any potential conflicts of interest in relation to this presentation.
Why is antibiotic stewardship in Long Term Care important?

- 4.1 million people are admitted to or reside in a nursing home within one year *(1)*
- Up to 70% of nursing home residence receive an antibiotic within one year *(2,3)*
- Up to 75% of antibiotics are prescribed incorrectly *(2,3)*
- US Prevalence of Healthcare-Associated MRSA >50% *(CDC)*
- Major risk factor for MRSA is residing in a nursing home within the past year *(CDC)*

It is time to change how we approach the use of antibiotics in our facilities.
Dangers of Inappropriate Antibiotic Use

- Resistance
- Drug to Drug interactions (warfarin)
- Adverse events (nausea, renal toxicity, c-diff)
- Community (other residents, transfers etc)
- Cardio toxicity/QT prolongation (macrolides/quinolones)
- Anemia, leukopenia, thrombocytopenia
- Rash, Stevens-Johnson Syndrome
- Musculoskeletal toxicity (quinolones)

CDC September 2015 *The Core Elements of Antibiotic Stewardship for Nursing Homes*, a guide that outlines seven useful components for implementing successful ASPs in these settings (4)

CMS In an effort to bolster stewardship activities in these settings, the Centers for Medicare & Medicaid Services recently proposed a rule requiring all LTC facilities to implement an ASP that includes both antibiotic prescribing protocols and a system to monitor the use of these drugs (4)

LTC Select one or two stewardship activities to implement. Expand stewardship policies over time. (4)
Core Elements of Antibiotic Stewardship for Nursing Homes

- **Leadership** commitment Demonstrate support and commitment to safe and appropriate antibiotic use in your facility.
- **Accountability** Identify physician, nursing, and pharmacy leads responsible for promoting and overseeing antibiotic stewardship activities in your facility.
- **Drug expertise** Establish access to consultant pharmacists or other individuals with experience or training in antibiotic stewardship for your facility.
- **Action** Implement at least one policy or practice to improve antibiotic use.
- **Tracking** Monitor at least one process measure of antibiotic use and at least one outcome from antibiotic use in your facility.
- **Reporting** Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff, and other relevant staff.
- **Education** Provide resources to clinicians, nursing staff, residents, and families about antibiotic resistance and opportunities for improving antibiotic use.

Source: Reproduced from The Core Elements of Antibiotic Stewardship for Nursing Homes published by the Centers for Disease Control and Prevention
Most Common Infections Treated in LTC

- Respiratory Infections
- Urinary Tract Infections

Go After The Low Hanging Fruit
Pneumonia and Influenza

- Pneumonia and influenza – 8th leading cause of death in elderly – Primary cause of death due to infections in elderly (5)
Symptoms of Pneumonia

Typical Symptoms

- Fever and cough
- Study older adults with CXR-confirmed pneumonia • ~50% had temp >100.4 °F (38 °C)
- > 90% had respiratory symptoms –
- Tachypnea

Atypical

- Confusion
- Weakness
- Lethargy
- Failure to thrive
- Falls
- Chronic Diseases mask symptoms (CHF, COPD, DM) (6,7,8)
Diagnosis of Pneumonia

- **Gold Standard** –
  Chest X-ray – Looking for lower lobe consolidation and infiltrates in lungs

- **Sputum and Blood Cultures**

- **Factors which support diagnosis**
  Leukocytosis, respirations > 30, altered mental status, wheezes/crackles, heart rate >110 bpm (9) (10)
Pathogens of Pneumonia

**COMMON PATHOGENS**
- Streptococcus pneumoniae
- Staphylococcus aureus
  (Difference in hospital acquired MRSA versus community acquired MRSA)
- Klebsiella pneumoniae
- Haemophilus influenzae
- Moraxella catarrhalis
- Escherichia coli
- Atypicals – Mycoplasma pneumoniae
  Chlamyphila pneumoniae
- Respiratory viruses

**Aspiration Pneumonia**
- High-risk with stroke and dysphagia patients as well as reduced functional status
- Need to provide anaerobic coverage
- Bacteroides spp. and Prevotella spp.
- Fusobacterium spp. and Peptostreptococcus spp.

**Resistant pathogens and risk factors**
- *Pseudomonas aeruginosa* with recent hospitalizations, prior antibiotics and/or pulmonary comorbidities
- *Streptococcus pneumoniae* with prior antibiotics, alcoholism immune suppression and/or multiple comorbidities
Treatment of NHAP

- Respiratory Fluoroquinolone OR Beta-Lactam plus Macrolide
- Pseudomonas spp.?? Antipseudomonal beta-lactam plus ciprofloxacin/levofloxacin
  OR
  Antipseudomonal beta-lactam plus Aminoglycoside and azithromycin
  OR
  Antipseudomonal beta-lactam plus aminoglycoside plus ciprofloxacin/levofloxacin
- If CA-MRSA Add vancomycin or linezolid
- May also need to add clindamycin
- For more information and algorithm see JAMDA. 2016;17:173-78 or ASCP Antibiotic Stewardship webinar
Monitoring

- Renal function
- CBC’s
- Temperature
- Respiratory symptoms
- Vitals monitored more frequently
- Appropriate length of therapy
- Adverse Events and Drug Interactions (warfarin)
Urinary Tract Infections
2 treat or not 2 treat?

Asymptomatic Bacteriuria

Definition-Asymptomatic bacteriuria is defined as isolation of a specified quantitative count of bacteria in an appropriately collected urine specimen from an individual without symptoms or signs of urinary tract infection. The quantitative thresholds are different for voided clean catch specimens and catheterized specimens.

The presence of pyuria (≥10 leukocytes/mm³ of uncentrifuged urine) is not sufficient for diagnosis of bacteriuria. This was illustrated in a study of urine samples from asymptomatic elderly women; 60 percent of samples with pyuria had no bacteriuria. (15)
Figure 1: Criteria for Defining UTI Events in NHSN LTCF Component

**Resident without an indwelling catheter** (Meets criteria 1a OR 2a OR 3a):

- **SUTI – Criteria 1a**
  - Either of the following:
    1. Acute dysuria
    2. Acute pain, swelling or tenderness of the testes, epididymis or prostate

- **SUTI – Criteria 2a**
  - Either of the following:
    1. Fever $^a$
    2. Leukocytosis $^b$
  - **AND**
  - ONE or more of the following:
    - Costovertebral angle pain or tenderness
    - New or marked increase in suprapubic tenderness
    - Gross hematuria
    - New or marked increase in incontinence
    - New or marked increase in urgency
    - New or marked increase in frequency

- **SUTI – Criteria 3a**
  - TWO or more of the following:
    - Costovertebral angle pain or tenderness
    - New or marked increase in suprapubic tenderness
    - Gross hematuria
    - New or marked increase in incontinence
    - New or marked increase in urgency
    - New or marked increase in frequency

- **AND**

- Either of the following:
  - A voided urine culture with $\geq 10^5$ CFU/ml of no more than 2 species of microorganisms
  - Positive culture with $\geq 10^2$ CFU/ml of any microorganisms from straight in/out catheter specimen

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$a$ Fever: Single temperature $\geq 37.8^\circ\text{C}(>100^\circ\text{F}),$ or $> 37.2^\circ\text{C}(>99^\circ\text{F})$ on repeated occasions, or an increase of $>1.1^\circ\text{C}(>2^\circ\text{C})$ over baseline

$b$ Leukocytosis: $>14,000 \text{ cells/mm}^3,$ or Left shift ($> 6\% \text{ or } 1,500 \text{ bands/mm}^3$)
Resident with or without an indwelling catheter:

**ABUTI Criteria**

- Resident has no localizing urinary signs or symptoms (i.e., no urgency, frequency, acute dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness). If no catheter is in place, fever alone would not exclude ABUTI if other criteria are met.

**AND**

Any of the following:

1. A voided urine culture with \( \geq 10^5 \) CFU/ml of no more than 2 species of microorganisms
2. Positive culture with \( \geq 10^2 \) CFU/ml of any microorganisms from in/out catheter specimen
3. Positive culture with \( \geq 10^5 \) CFU/ml of any microorganisms from indwelling catheter specimen

**AND**

Positive blood culture with at least 1 matching organism in urine culture

**ABUTI**
Specific Symptoms

- Dysuria
- New or markedly increased onset of urinary frequency, urgency, & incontinence
- Flank Pain
- Suprapubic Pain
- Gross Hematuria
- Tenderness of the testes, epididymis & prostate that can lead to infection in males
Non Specific Symptoms

- Confusion
- Fever
- Decreased functionality
- Altered mental status in the absence of UTI symptoms
- Discomfort
- Unrestrained behavior
- Aggressiveness
- Restlessness
- Tiredness
- Feebleness
- Decreased eating
- Foul-smelling urine
Urinalysis

- Can be used to rule out a UTI
- Not diagnostic alone
The Answer is Clear

Non Specific Symptoms only + bacteriuria =

no antibiotic treatment

Consider other causes ie dehydration, dementia, hyper/hypoglycemia, medication side effects

Specific Symptoms + with urine culture of $10^5$ CFU/ml of no more than 2 species of microorganisms =

treat with antibiotics
Monitoring in Your Facility

- Use SBAR Template
- Situation
- Background
- Assessment
- Recommendation
Suspected UTI SBAR

[Nursing Home Name]  
[Street]  
[City, State, ZIP]  
Facility Phone/Fax

Resident Name  
Date of Birth

Physician/NP/PA  
Physician/NP/PA Phone/Fax

Nurse  
Date/Time

How was information provided to clinician?  
☐ Phone  ☐ Fax  ☐ In Person  ☐ Other

S – Situation (use this information to complete Section A&R)

☐ I am contacting you about a suspected UTI for above resident.

☐ Current Assessment (check all that apply):
  ☐ Increased urgency
  ☐ Increased frequency
  ☐ Hemaaturia
  ☐ Rigors (shaking, chills)
  ☐ Delirium (sudden onset of confusion, disorientation, dramatic change in mental status)

☐ Vital Signs: BP _______/_______  Pulse _______  Resp. rate _______  Temp. _______

☐ Resident Complaints (check all that apply):
  ☐ Dysuria (painful, burning, difficult urination)
  ☐ Suprapubic pain
  ☐ Costovertebral tenderness (flank pain/tenderness)

Recent Urinalysis Results (within the last 10 days) If Available:

UA results that were obtained on _______ (date) due to _______ (reason).
The results accompanying this communication ☐ are as follows:

B – Background

☐ Indwelling catheter:  ☐ NO  ☐ YES

☐ Incontinence:  ☐ NO  ☐ YES  If yes, is this new/worsening?  ☐ NO  ☐ YES

☐ Active diagnoses (especially, bladder, kidney/genitourinary conditions):
  Specify: ___________

☐ Advance directives for limiting treatment (especially antibiotics):  ☐ NO  ☐ YES
  Specify: ___________

☐ Medication allergies:  ☐ NO  ☐ YES
  Specify: ___________

The resident is on: Warfarin (Coumadin™)  ☐ NO  ☐ YES

The resident is diabetic:  ☐ NO  ☐ YES
A – Assessment (check boxes and determine recommendation)

Resident with indwelling catheter:
- ☐ fever of 100°F (38°C) or repeated temperatures of 99°F (37°C)
- ☐ new costovertebral tenderness
- ☐ rigors
- ☐ new delirium
- ☐ hypotension

Any one of the above present

Resident without indwelling catheter:
- ☐ Acute dysuria alone;
- □ OR
- □ Single temperature of 100°F (38°C), or repeated temperatures of 99°F (37°C) AND at least one new or worsening of the following:
  - ☐ urgency
  - ☐ suprapubic pain
  - ☐ frequency
  - ☐ gross hematuria
  - ☐ costovertebral angle tenderness
  - ☐ new/worsening urinary incontinence

R – Recommendation

☐ Protocol criteria ARE met.
According to our understanding of best practices and our facility protocols the resident may have a urinary tract infection and need a prescription for an antibiotic agent.

Staff: Please Check Box for Course of Action Recommended

☐ Protocol criteria are NOT met.
According to our understanding of best practices and our facility protocols, the information is insufficient to indicate an active urinary tract infection. The resident does NOT need an immediate prescription for an antibiotic, but may need additional observation.

*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.

Physician/NP/PA Orders

How were orders provided by clinician? ☐ Phone ☐ Fax ☐ In Person ☐ Other
☐ Ordered UA (with C&S if indicated)

Would you like to initiate any of the following?
- ☐ Encourage 4 ounces of cranberry juice TID.
- ☐ Record fluid intake
- ☐ Assess vital signs, including temp; every ______ hours for ________ hours
- ☐ Notify Physician/NP/PA if symptoms worsen or if unresolved in ________ hours
- ☐ Other: __________________________

Other: Specify: __________________________

Physician/NP/PA signature: __________________________ date/time: __________________________

Television order received by: __________________________ date/time: __________________________

Family/POA notified (name): __________________________ date/time: __________________________

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AHRQ Pub No. 14-0010-2-EF
Creating and Implementing an Antibiotic Stewardship Policy

- Meeting of the minds
  - ID Team meeting with key decision makers
    - DON, ADON, Administrator, Medical Director, Infection Control Nurse, Consultant Pharmacist
    - Discuss protocols expectations
    - Letter from Administrator and Medical Director to all prescribers regarding antibiotic stewardship protocols
Implementation

- Basic in-service to staff
- Use the CDC fact sheets
- Review SBARS for each new antibiotic initiation since last review
- Discuss in Quarterly QAPI
You gotta have friends....

- This is not a project to work on alone as a consultant
- This is an interdisciplinary team project
- An article in caring for the ages (sorry don’t have the reference) discussed the need for intense resources and follow up in order to make this work

- Pit falls include
  - base line urinalysis to rule out dementia
  - new prescribers ordering labs on all residents
  - staff turnover
Find Your Champion

Hope he/she sticks around awhile
Resources

- CDC Fact Sheets
- CDC Fact Sheets 1
- CDC Fact Sheets 2
- CDC Checklist
- CDC Fact Sheets 3
- CDC info graphic
Questions?

- I am here to learn, too. If you have implemented an antibiotic stewardship program please share your wisdom.
References

*incorrectly = prescribing the wrong drug, dose, duration or reason

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Evaluation Password:

antibiotic
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