Antibiotic Stewardship in Management of Respiratory Infection in Long Term Care

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Bibliography


“ISDA Guidelines for Developing an Institutional Program to Enhance Antimicrobial Stewardship” Delitt, et. al. CID 2007:44 (Jan 15)


“Clinical Uncertainties in the Approach to Long Term Care Residents With Possible Urinary Tract Infection”  Nace, et.al. JAMDA 15 (2014) 133-139

“The Role of DONs in Cultivating Nurse Empowerment” Annals of Long Term Care Vol 24, April 2015

Module 1 “Improving Communications and Decisions about Antibiotics” www.cdc.gov/longtermcare/pdfs/module1.pdf

Learning Objectives

1. Basic antibiotic stewardship principles

2. Methods of implementation of antibiotic stewardship functions in the long term care setting

3. To conceptualize implementation of an antibiotic stewardship program and a Quality Assurance and Performance Improvement (QAPI) project to decrease inappropriate antibiotic use in your skilled nursing facility
As simply as possibly stated, antibiotic stewardship in LTC is:

- Deciding on best practice criteria for antibiotic use in bacterial infection within your institution
- Creating a system for gathering data
- Determining whether antibiotic use for that infection is within the institutional criteria
- Ensuring right drug, right indication, right dose, right length of time
- Providing feedback to the prescribing providers and staff so they can improve their practice behavior
- Measuring outcomes.

“Antibiotic Resistance Threats in the United States-2013” 9/16/13 CDC

- Four Core Actions to Fight Antibiotic resistance
  1. Preventing infections/resistance spread
  2. Tracking resistance patterns
  3. Improving use of antibiotics (Stewardship)
  4. Developing new antibiotics and tests
The Post-Antibiotic Era

• “The rate of un-necessary antibiotics is the surrogate marker of the avoidable impact on the development of antibiotic resistance”

IDSA/SHEA “Guidelines for Developing Institutional Programs to Enhance Antimicrobial Stewardship 2007

“Antibiotic Stewardship”

Combines a comprehensive infection control program with antimicrobial management to limit the emergence and transmission of antibiotic resistant micro-organisms.”

or

(We’re going to save our antibiotics for times when we really, really need ’em.)
Because most clinical decisions made by physicians treating nursing home resident are made without the benefit of a face-to-face evaluation between physician and patient, it is imperative that nursing home antibiotic stewardship programs focus on the nurse/physician communication interaction regarding the resident change of condition report. Physicians will practice better antibiotic stewardship when the communicating nurse is educated in stewardship concepts, utilizes her education, experience and critical thinking to prepare accurate and timely communications reporting on the changing condition of her resident. The nurse is not telling the physician how to practice better, but rather, the nurse is giving the physician better information to help him practice better.

The cultivation of stewardship skills and techniques in a nursing staff teaches valuable assets that lead to overall improvement in nursing care to elderly residents in nursing homes. For instance, stewardship principles learned in a UTI Stewardship Project are transferrable to managing Respiratory Infection, Skin and Soft Tissue infection and management of psychoactive medication. The exercise of professional critical thinking by the nursing staff is empowering to these professionals. It lets Nurses be Nurses. It will improve their sense of participation and value, and improve personal job satisfaction. These professional realizations improve job satisfaction and reduce burn-out and job turnover.
Surveillance Criteria for UTI no catheter

1. At least one of the following
   - Acute urinary infection
   - Fever or leukocytosis with
   - CVA, pain
   - Hematuria
   - Urgency
   - Frequency
   - Without bacterial colonization
   - (two of the above)

2. At least one of the following:
   - 100,000 cfu on voided specimen
   - 1000 cfu on catheterized

Track antibiotic use for uti PMNH 2006-2014

- Determine appropriateness of UA/UC order
- McGeer’s Criteria
- Was antibiotic appropriate?
- Physician feedback-active intervention
- NURSING SERVICE-PASSIVE INTERVENTION

So what?
### Annual Antibiotic Utilization PMNH

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<tr>
<th>Year</th>
<th>Antibiotic</th>
<th>Abs/Edays</th>
<th>Abs/patient</th>
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<tr>
<td>2013</td>
<td>352</td>
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### 2013 Antibiotics at PMNH

- UPI: 147
- RESP: 157
- OTHER: 157
- UTI: 52

### Most common infections treated with antibiotics in urinary system

- UTI: 52
- RESP: 157
- OTHER: 157
- UPI: 147
Better Management of Resp Infx with Antibiotic Stewardship

- Surveillance criteria for Respiratory Infection
- Staff education: In-service ed, lung sounds, resp sxs in resident change of condition, laminated postings
- Provider communication scripts
- Custom respiratory system evaluation/assessment page in nurse notes
- Tell everybody!

McGeer's Criteria for Respiratory illness

1. Common Cold or pharyngitis(at least 2)
   - runny nose or sneezing
   - nasal congestion
   - sore throat or hoarseness
   - dry cough
   - swollen or tender glands in neck
McGeer’s Criteria Respiratory illness, cont.

II. Influenza like illness (both 1 & 2)
   1. fever
   2. at least three of ILI criteria
      - chills
      - new headache or eye pain
      - body aches
      - malaise or loss of appetite
      - new or increased dry cough

McGeer’s Criteria Respiratory illness, cont.

III. Pneumonia (all 3)
   1. X-ray with pneumonia or infiltrate
   2. Clinical criteria (at least 1)
      - Resp rate >25
      - new or increased cough
      - new or increased sputum
      - O2 Sat <90% or 3% below base
      - new or changed lung exam*
      - pleuritic pain
   3. Constitutional criteria (at least 1)
      - fever
      - leukocytosis
      - change in MS acute, fluctuating, inattention, and disorganized thinking
      - 3 point increase in ADL score bed mobility, transfer, locomotion, dressing, toileting, personal hygiene, eating

McGeer’s Resp Illness, cont.

IV. Lower respiratory infection (all 3 present)
   1. Clinical criteria (at least 1)
      - Resp rate >25
      - new or increased cough
      - new or increased sputum
      - O2 Sat <90% or 3% below base
      - new or changed lung exam*
      - pleuritic pain
   2. Constitutional criteria (at least 1)
      - fever
      - leukocytosis
      - change in MS acute, fluctuating, inattention, and disorganized thinking
      - 3 point increase in ADL score bed mobility, transfer, locomotion, dressing, toileting, personal hygiene, eating
   3. Negative or no CXR
Counting stuff------Metrics

• Respiratory Tract Infection-McGeer’s
• Antibiotic Use Event-Order written with one day of therapy
• Antibiotic Use Indication-Doctor’s order
• Inappropriate Antibiotic Use for RTI-McGeers I or II
• Appropriate Antibiotic Use for RTI-McGeer III or IV
• Antibiotic Utilization Rates-Antibiotic event/Kdays or /Ures

Nursing Staff Education

• In-service education on simple Stewardship principles and facility best practice diagnostic (surveillance) criteria for RTI.
• Mandatory skills improvement modules on respiratory evaluation/assessment, lung sounds, physician communication Scripts regarding change of condition due to RTI
• Expect nurse to consider best practice dx criteria and scripts during formulation of her physician communication.
• Nurse documentation of evaluation/assessment on customized EMR respiratory evaluation nurse note page

Script

Provider:  Doctor’s Name
Date:  09/16/15, 10:00am
Resident:  Fred Issick

This message is to inform you of a change in condition.

Clinical Nursing Assessment as follows:

Date of onset:  09/16/15
Vitals:  Temp 101.0, Apical Pulse 110 and irregular, Resp 32 and shallow, BP 140/72, O2 sat on RA 86%
Allergies:  Amoxicillin
Change in condition:  Resident is febrile as of 9:30am. He has a new onset of productive cough with yellow, thick sputum which is blood tinged. Lung sounds normal except for rhonchi in lower left base bilaterally. Heart rate irregular. Activity tolerance decreased. Bowel sounds present in all four quads. Urine in unremarkable. Appetite has fluctuated over past 24 hrs 30-60%
Placed resident in droplet precautions.

This is to inform you of a change in condition. According to our facility best practice guideline based policy on Respiratory Tract Infection, this has symptoms indicative of a lower respiratory tract infection.

Please Advice
K. Haeger RN
This message is to inform you of a change in condition. Clinical Nursing Assessment as follows:

Date of onset: 09/16/15
Vitals: Temp 102.6 (o), Apical Pulse 68, Resp 28, B/P 112/72, O2 sat on RA 91%

Allergies: Sulfa

Change in condition: Resident is febrile as of 9:00am. No respiratory distress noted. She does have a new dry cough and sore throat. She is complaining of a headache and general body aches. Lungs clear. Bowel sounds present in all four quads. Urine in unremarkable. Appetite has been 100% over past 24 hours.

Acetaminophen 650 mg p.o. was administered at 9:20am for fever and pain. Placed in droplet precautions this morning.

This is to inform you of a change in condition. According to our facility best practice, evidence based policy on respiratory tract infection, this resident has symptoms indicative of influenza like illness. Would you like respiratory swab panel obtained? At this point resident is exhibiting symptoms of what appears to be a viral infection. Please advise.

K. Haegel RN

Provider Feedback/Nurse Feedback

• Medical Director letter to physicians introducing Antibiotic Stewardship GAPI project to lower resident antibiotic exposure by decreasing inappropriate antibiotic use for RTI.
• Daily physician feedback during nurse/physician communication using scripts
• Nurse feedback during daily nursing routine by IP and DON
• Yearly physician antibiotic use Report Card

Antibiotic Use/RTI Surveillance

• As soon as possible after antibiotic order is received, IP or DON determine appropriateness of antibiotic use based on nurse note in respiratory system page of EMR
• If documentation is insufficient, nurse who wrote note is called for further documentation and asked to complete chart with “late entry” note.
• If IP and DON are unable to make a determination of antibiotic use appropriateness, the case and chart are referred to medical director for determination.
PMNH Antibiotic Report Card
for Treatment of Respiratory Infection 2014

<table>
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<tr>
<th>Provider</th>
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<th>Appropriate</th>
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<td>PMNH</td>
<td>72</td>
<td>67</td>
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*Resident's clinical symptoms met McGeer's Surveillance Criteria for diagnosis of Viral Respiratory Infection

So what?

Annual Antibiotic Utilization PMNH

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<thead>
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<th>Ads/patient</th>
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Antibiotic for Resp Infect- PMNH

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<td>2015 (Jan-Sept)</td>
<td>51</td>
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Facility Benefits

• Improved rate of inappropriate antibiotic in RTI
• Improved rate of inappropriate antibiotic in UTI
• Less chance adverse drug reaction to antibiotic
• Less MDRO pressure
• Improved nursing staff awareness of the spectrum RTI which facilitates RTI outbreak recognition and management
• Improved nurse/physician trust
• More effective nurse/physician collaborative

What’s next?

• We will continue FINDING PNEUMO
• Collect data on antibiotic Rx for resident referred to local ED, “ghost doctor”. Add local ED appropriately appropriated antibiotic rates to UTI and RTI antibiotic report cards and distribute to ED medical director
The Role of the Consulting Pharmacist—Can You Help Us With Our Antibiotic Stewardship Program?

Problem

Assessed problem: Too many antibiotics for respiratory conditions.
Did an antibiotic REALLY need to be given??
“Only you can control your future.”

Dr. Seuss

Antibiotic Stewardship Program

Components

1. Staff and Family Education
2. Nursing Assessment Skills
3. Staff Critical Thinking / Judgment
4. Medical Record Documentation
5. Infection Surveillance

1. Education

How did we start?

- Made decision to make infection control and antibiotic stewardship a daily ongoing process and an everyday culture in our facility
- Infection control team held meeting with medical director to plan our team approach to problem
• Held all staff meetings to enhance awareness of situation
• Encouraged line staff to be the main players in the program
• Encouraged participation from all staff in all departments

Empowered our nursing staff to participate from the start of the project so they understand the objectives

Team approach to create an everyday culture
Support nurses if a mistake is made
Collaborate with all staff on all their ideas
Embrace the culture

Every day, all day

Infection prevention is an ongoing daily process

Gathered Resources

1. Distilled McGeer’s Criteria for our purpose
2. Considered “Change of Condition” communication tools-SBAR, EMR Respiratory evaluation template
3. Prepared for improved quality of attending physician rounds
4. Wrote example scripts to MD for notification of change in condition
5. Composed Medical Director letters to attending MD’s introducing the “Finding Pneumo” project
6. Modified EMR Nurse Respiratory Evaluation screen update for documentation

Medical director held meetings with nurses to discuss goals, reviewed assessment skills and introduced project to make staff aware of problem and the planned solutions
Held small group meetings with C.N.A. staff to make them aware of problem and educate them on respiratory conditions

• Educated residents and families

• Learned to include this topic in care conferences with residents/decision makers/significant others

Communication between resident/family, physicians/providers, and nursing staff is of the utmost importance

• Everyone on one page

• Stewardship principles in management of changing conditions are known to everyone

• Even today this continues to be an ongoing process

2. Nurse Assessment Skills

• Nurses’ in-service meeting to discuss assessment expectations

• Basic review of respiratory system and skills of auscultation of lung sounds- You Tube

• Emphasis on SBAR/example scripts template as examples of comprehensive assessment to be completed prior to contacting provider for notification of change in condition
Nurse Respiratory Assessment

- Vital signs
- Oxygen saturation
- Lungs sounds—anterior and posterior auscultation—are descriptive
- Sputum production
- Breathing pattern—description of respiration, rate, rhythm and depth
  (shallow, normal or deep)
- Respiratory effort (Work of Breathing WOB): mild, moderate, severe,
  inspiratory: expiratory ratio, shortness of breath
- Use of accessory muscles
- Activity tolerance

Other Data To Consider For Comprehensive Assessment

1. Labs/Blood sugars
2. Medication changes
3. Intake & Output/Appetite
4. Activity tolerance

Nurse Assessment Barriers We Encountered

- Need for review of respiratory system and physical findings
- Nurse embarrassment
- Lack of confidence regarding lung sounds
- Non-comprehensive nurse assessments
- Incomplete histories for change in condition
3. Critical Thinking and Judgment

Critical Thinking as Defined by the National Council for Excellence in Critical Thinking, 1987

“Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.”

Make sure to utilize all MD orders that are already written

ie: prn nebulizer treatment or cough syrup prior to notifying provider of change in condition

So that you can include the effectiveness of medications and treatments

• Formulate message to provider
• Plan agenda
• Use SBAR/scripts when communicating with provider
• Repeat verbal orders back to provider
Script

Provider: Doctor’s Name
Date: 09/16/15, 10:00am
Resident: Fred Issick

This message is to inform you of a change in condition.

Clinical Nursing Assessment as follows:

Date of onset: 09/16/15
Vitals: Temp 101.1°F, Apical Pulse 110 and irregular, Resp 22 and shallow, B/P 140/72, O2 sat on RA 98%
Allergies: Amoxicillin

Change in condition: Resident is febrile as of 9:30am. He has a new onset of productive cough with yellow, thick, sputum which is blood tinged. Lying sounds abnormal to base of right upper lobe. Heart rate irregular. Activity tolerance decreased from baseline.

Baseline sounds present in all four quads. Urine in unremarkable. Appetite has fluctuated over past 24 hrs 30-60%.

Acetaminophen 650 mg p.o. was administered at 9:20am for fever and pain.

This is to inform you of a change in condition. Res has symptoms indicative of a lower respiratory tract infection.

Please Advise .

K. Haegerl RN

4. Documentation

- Take credit in the EMR for the comprehensive assessment that you performed
- Include education, risks, benefits, notifications and informed consent when appropriate
- Include your thought process regarding change in condition. This will “show the whole picture”
- State justification if antibiotic ordered
5. Respiratory Illness Surveillance
Park Manor Nursing Home

- System for data management
- Internal messaging in EMR to pertinent staff - IP, DON
- Back-up staff for infection preventionist
- Computerized lab results (scanned from reference lab reports)
- Line list for staff and residents
- “Rainbow spreadsheet” surveillance- done on an ongoing everyday basis (Excel) to track and trend

Surveillance & Success

- Staff encouragement and feedback- good and bad
- Becoming comfortable in our new role as infection preventionists
- Working as a cohesive team

Cost of antibiotic stewardship  PMNH  2014

- Infection preventionist - 5 hrs per week
- DON - 5 hrs per week
- Computer data entry – 2 hrs per week
- Staff in-service meetings - 4 hrs 2014
- Daily education, reinforcement and critique to sustain and continue developing program PRICELESS
Outcomes of Antibiotic Stewardship

• Decrease the overuse, misuse, and abuse of antibiotics
• De-escalate antibiotics when possible
• Give the most appropriate antimicrobial with the correct dose and duration.
• Minimize the development of antibiotic resistance and adverse drug reactions
• Consider these efforts an organized QAPI project