Antimicrobial Stewardship in Nursing Homes: A Primer

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Oct 16, 2016
Conflicts of Interest

• Dr. Nace does not have any current conflicts of interest to report.
Objectives

• Discuss the importance of antimicrobial stewardship programs in the PA/LTC environment

• Discuss current national initiatives addressing antimicrobial stewardship in PA/LTC settings

• Identify core antimicrobial stewardship practices applicable to the PA/LTC setting

• Review AMDA’s newly released pneumococcal vaccination guidance
Abbreviations

- PA/LTC – Post Acute / Long-Term Care
- NF – Nursing Facility
- AMS – Antimicrobial Stewardship
- ASP – Antimicrobial Stewardship Program
- ADE – Adverse Drug Event
- ABX – Antibiotic
- MDRO – Multidrug Resistant Organism
Case 1 – A Man with Many Stories

- Lenny is a 78 year old male with RA, mild dementia, BPH and Afib.
- You see him for a routine annual visit.
- He’s doing well with no complaints.
- 24 hours later, he has his annual urology visit.
- While there, a urine culture is obtained.
Case 1 – A Man with Many Stories

• The urine culture returns with 100,000 CFU of E coli. There are 25 WBC.

• The on-call physician is contacted who orders amoxicillin 250 mg TID for 7 days.

• Thoughts?
Case 1 – A Man with Many Stories

- 3 days into the course, he develops voluminous diarrhea and abdominal cramps.
- He tests positive for C diff and is started on flagyl for 14 days.
- He becomes anorexic and loses 10#.
- He become debilitated and requires PT
- He has a return of watery diarrhea on day 15 and is placed back on flagyl for 21 days.
Case 1 – A Man with Many Stories

- He’s miserable.
- Following the second course of flagyl, he reports soft stool to the nurse who contacts the on call physician for another round of flagyl.
- The on-call physician declines and requests observation.
- Thoughts?
Case 1 – A Man with Many Stories

• 6 months later, he is scheduled for a dental cleaning.

• His dentist prescribes clindamycin, avoiding amoxicillin.

• Thoughts?
Why is Suboptimal Antimicrobial Use a Problem?

- Leading cause of *antimicrobial resistance*
- Increased risk of adverse drug events (ADE)
- Increased risk of Clostridium difficile (C. diff) infection.
- Increases healthcare costs
- Linked to increased mortality
Klebsiella pneumoniae
Resistance by Age Group
(1999-2010)

3rd gen cephalosporins

(B) CRKP

Percentage of isolates resistant

Year

1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010

<18  18–40  41–65  >65


carbapenems
Klebsiella pneumoniae

Resistance by Care Site
(1999-2010)

3rd gen cephalosporins

carbapenems

MRSA Acquisition in ECFs

- Prospective cohort 2005-08
- 443 extended care residents in 2 health systems in Maryland
  - Acute/Skilled rehab
  - Residential care
- MRSA negative at baseline
- 2-3 twelve week cycles one year apart
- Cultures, PCR and molecular typing
- Patient level variables recorded

Results

- 8% (36) acquisition rate
  - 11% rehab
  - 6% residential

Residential Care RF Acquisition

<table>
<thead>
<tr>
<th>Variable</th>
<th>aHR</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedbound</td>
<td>4.3</td>
<td>1.5-12.2</td>
</tr>
<tr>
<td>Abx w/i 30 days</td>
<td>3.8</td>
<td>1.4-9.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Room Placement with MRSA+ Roommate</th>
<th>aHR</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>1.4</td>
<td>0.5-3.9</td>
</tr>
<tr>
<td>Rehab</td>
<td>0.5</td>
<td>0.1-2.2</td>
</tr>
</tbody>
</table>

MRSA Carriage over 6 Months in 3 VA Facilities

- 445 residents, 2006-2007
- Weekly swabs X 3, then monthly X 5
- Persistent, intermittent, non-carrier
- Acquisition – initial neg, no subsequent neg
- Patient level factors

Results

• Inception cohort = 44% +
• Admission cohort = 22% +
• No difference from home or ACF = 22% vs 25%
• Persistent = 20%
• Intermittent = 39%
• Non-carriers = 41%
• Most acquisition was not linked to having a roommate (PFGE typing)

### Carriage Risk

#### Table 3. Multivariable Analysis of Risk Factors Predictive of Methicillin-Resistant *Staphylococcus aureus* (MRSA) Carriage among Long-Term Care Facility Residents (n = 412)

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>RR (95% CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident in Augusta</td>
<td>1.17 (0.64–2.17)</td>
<td>.60</td>
</tr>
<tr>
<td>Resident in Tuscaloosa</td>
<td>1.36 (0.74–2.50)</td>
<td>.33</td>
</tr>
<tr>
<td>Antimicrobial use in prior 3 months</td>
<td>1.20 (0.70–2.06)</td>
<td>.50</td>
</tr>
<tr>
<td>Hospitalization in prior 12 months</td>
<td>0.95 (0.59–1.52)</td>
<td>.82</td>
</tr>
<tr>
<td>Previous MRSA in culture</td>
<td><strong>3.45 (2.03–5.94)</strong></td>
<td><strong>&lt;.001</strong></td>
</tr>
<tr>
<td>Presence of a wound</td>
<td>1.66 (0.99–2.76)</td>
<td>.05</td>
</tr>
<tr>
<td>Presence of any device during study</td>
<td>1.83 (1.05–3.17)</td>
<td>.03</td>
</tr>
<tr>
<td>Antimicrobial use during study</td>
<td>1.72 (1.03–2.86)</td>
<td>.04</td>
</tr>
<tr>
<td>Activities of daily living index</td>
<td>1.01 (0.96–1.06)</td>
<td>.71</td>
</tr>
</tbody>
</table>

**Note.** CI, confidence interval; RR, risk ratio. Boldface indicates results that met statistical significance of P ≤ .05.

* Resident in Atlanta is reference group.

The major risk factor for acquiring MRSA was abx exposure. Those acquiring MRSA had longer duration of abx exposure 22 vs 8 days in non-carriers. Flooroquinolone agents used with greater frequency 68% vs 27%.

LTCFs Play an Important Role in the Regional Dissemination of MDROs

Antimicrobial Resistance (AMR)

- Very real threat
- Major risk factor is abx use
- All classes of abx are implicated
- LTC residents clearly at risk of AMR
- AMR organisms are better at managing transitions of care than we are as providers!
Antibiotic Use Is a Leading Risk for Adverse Drug Events

Yes, This is True
Abx & Adverse Drug Events

Preventable ADRs

40-50% of all ADRs

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>New admission</td>
<td>2.8</td>
<td>(1.5 – 5.2)</td>
</tr>
<tr>
<td>No. of Scheduled Medications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5</td>
<td>1.0</td>
<td>(referent)</td>
</tr>
<tr>
<td>5-6</td>
<td>2.0</td>
<td>(1.2 – 3.2)</td>
</tr>
<tr>
<td>7-8</td>
<td>2.8</td>
<td>(1.7 – 4.7)</td>
</tr>
<tr>
<td>≥9</td>
<td>3.3</td>
<td>(1.9 – 5.6)</td>
</tr>
<tr>
<td>Current Medications</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Antibiotic</strong></td>
<td>4.0</td>
<td>(2.5 – 6.2)</td>
</tr>
<tr>
<td>Antipsychotic</td>
<td>3.2</td>
<td>(2.1 – 4.9)</td>
</tr>
<tr>
<td>Antidepressant</td>
<td>1.5</td>
<td>(1.1 – 2.3)</td>
</tr>
<tr>
<td>Supplements</td>
<td>0.4</td>
<td>(0.3 – 0.6)</td>
</tr>
</tbody>
</table>

Antibiotic Related Adverse events in the Nursing Facility

- Canadian administrative data - Jan 2010 to December 2011
- 50,953,000 resident-days
- Antibiotics used in 2,783,000 resident days
  - 55 antibiotic days per 1000 resident days
  - Equates to ~ 165 antibiotic days per month in a 100 bed facility
  - Range 20.4 - 192.9 antibiotic days/1000 r-d

Increased ADE Risk in Hi Abx Use Homes

- 24% increased risk of ADE in high use NFs
- Abx related ADE included -
  - C diff, diarrhea, gastroenteritis, MDROs, allergic reactions, general medical ADE
  - Focused on hospital or ED related ADE
- Impacted residents with & without abx exposure

<table>
<thead>
<tr>
<th></th>
<th>All Residents</th>
<th>Residents Who Received Abx</th>
<th>Residents Who Didn’t Receive Abx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Needed to Harm</td>
<td>53</td>
<td>71</td>
<td>83</td>
</tr>
</tbody>
</table>

C difficile

It All Comes Out in the End...
Total C. Diff Cases

Ohio

- **Total**
- **Initial**
- **Recurrent**

<table>
<thead>
<tr>
<th>No. Cases</th>
<th>Hospitals</th>
<th>Nursing Homes</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,376</td>
<td>7,953</td>
<td></td>
</tr>
</tbody>
</table>

Rise in C. diff Related Deaths

Pennsylvania 2000-2006

<table>
<thead>
<tr>
<th>Year</th>
<th>Total deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>112</td>
</tr>
<tr>
<td>2001</td>
<td>137</td>
</tr>
<tr>
<td>2002</td>
<td>210</td>
</tr>
<tr>
<td>2003</td>
<td>246</td>
</tr>
<tr>
<td>2004</td>
<td>369</td>
</tr>
<tr>
<td>2005</td>
<td>461</td>
</tr>
<tr>
<td>2006</td>
<td>528</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Initial deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>198</td>
</tr>
<tr>
<td>2001</td>
<td>241</td>
</tr>
<tr>
<td>2002</td>
<td>365</td>
</tr>
<tr>
<td>2003</td>
<td>451</td>
</tr>
<tr>
<td>2004</td>
<td>640</td>
</tr>
<tr>
<td>2005</td>
<td>782</td>
</tr>
<tr>
<td>2006</td>
<td>893</td>
</tr>
</tbody>
</table>


PA Patient Safety Authority
Need to Change Our Approach

“Learn You Must” - Yoda
No new class of antibiotics has been approved by the FDA since 1987

Variability of Antibiotic Use in 607 Ontario NF

Days of Antibiotic Use per 1000 Resident-days

Unpacking Inappropriate Antibiotic Use in NHs: A Systems Problem

Distribution of Abx Use: 73 NHs in 4 U.S. States (09/2001 – 02/2002)

- Degree of variation not explained by clinical factors

- Inter-facility > Intra-facility level variation

- Contextual effects seen with other agents prescribed in NHs (i.e., anti-psychotics)
  - Hughes et al. *Drugs Aging* 2007; 24(2): 81-93

*Benoit et al., J Am Geriatr Soc 2008; 56(11): 2039-4
Crnich et al., ID Week 2012*
Resident Level Factors
- Comorbidities
- Case Mix
- Family Behaviors

Facility Level Factors
- Surveillance Criteria
- Policies/Procedures
- Education

Variation in Antibiotic Use

Prescriber Level Factors
- Prescriber Preferences
- Acceptance of diagnostic criteria
Do Facilities Really Perform Antimicrobial Stewardship Activities?
Nebraska Survey of Antimicrobial Stewardship Practices

- Electronic survey
- 230 Nebraska NF
- 16% response rate (37)
  - 24% hospital affiliated

<table>
<thead>
<tr>
<th>Components</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal Program</td>
<td>60%</td>
</tr>
<tr>
<td>Single Responsible Individual</td>
<td>64%</td>
</tr>
<tr>
<td>Antibiogram Available</td>
<td>76%</td>
</tr>
<tr>
<td>Antibiotic Formulary</td>
<td>19%</td>
</tr>
<tr>
<td>Monitor Prescribers</td>
<td>11%</td>
</tr>
<tr>
<td>Monitor Antibiotic Costs</td>
<td>32%</td>
</tr>
<tr>
<td>Prescriber Education</td>
<td>8%</td>
</tr>
<tr>
<td>Education on Appropriate Use</td>
<td>57%</td>
</tr>
</tbody>
</table>

Wisconsin Survey of Antimicrobial Stewardship Practices

- Electronic survey
- 388 WI NF
- 44% response rate
  - 8% hospital affiliated

<table>
<thead>
<tr>
<th>Components</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal ASP</td>
<td>44%</td>
</tr>
<tr>
<td>No ASP</td>
<td>13%</td>
</tr>
<tr>
<td>NF Specific CPG</td>
<td>37%</td>
</tr>
<tr>
<td>Prescriber Utilization</td>
<td>23%</td>
</tr>
<tr>
<td>Antibiogram Use</td>
<td>9%</td>
</tr>
<tr>
<td>Antibiotic Formularies</td>
<td>7%</td>
</tr>
<tr>
<td>Antibiotic Starts</td>
<td>99%</td>
</tr>
<tr>
<td>Antibiotic Duration</td>
<td>44%</td>
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</tbody>
</table>

National Activities
REPORT TO THE PRESIDENT ON
COMBATING ANTIBIOTIC RESISTANCE

Executive Office of the President
President’s Council of Advisors on
Science and Technology
September 2014

NATIONAL ACTION
PLAN FOR COMBATING
ANTIBIOTIC-RESISTANT
BACTERIA

MARCH 2015

FEDERAL REGISTER

Vol. 80
No. 136
Thursday,
July 16, 2015

Part II

Department of Health and Human Services
Centers for Medicare & Medicaid Services
42 CFR Parts 405, 431, 447, 482, 484, 485, 488, and 489
[CMS-3260-F]
RIN 0938-AR61
Medicare and Medicaid Programs; Reform of Requirements for Long-Term Care Facilities
AGENCY: Centers for Medicare & Medicaid Services (CMS), HHS.
ACTION: Final rule.
SUMMARY: This final rule will revise the requirements that Long-Term Care facilities must

Final Rule
9/28/2016

The Core Elements of Antibiotic Stewardship for Nursing Homes
# Timeline of National Actions

<table>
<thead>
<tr>
<th>Date</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep 2014</td>
<td>PCAST report</td>
</tr>
<tr>
<td>Sep 2014</td>
<td>White House Executive Order</td>
</tr>
<tr>
<td>March 2015</td>
<td>White House National Action Plan</td>
</tr>
<tr>
<td>Spring 2015</td>
<td>CDC’s 7 Core Elements for NFs</td>
</tr>
<tr>
<td>July 2015</td>
<td>CMS Proposed Conditions of Participation (COP)</td>
</tr>
<tr>
<td>June 2016</td>
<td>CDC/AHRQ Research Gaps Meeting</td>
</tr>
<tr>
<td>Sep 2016</td>
<td>CMS Final Proposed Proposed COP</td>
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</tbody>
</table>
Federal NF Conditions of Participation (483.80)

- First update to the NF conditions of participation since 1990
  - There have been updates to surveyor guidance (F441-5), but not to the actual standards
- Facilities now required to have ASP as part of their infection control program
- Must have dedicated ICP
- Must be in compliance by November 28, 2017

# Checklist for Core Elements of Antibiotic Stewardship in Nursing Homes

The following checklist is a companion to the Core Elements of Antibiotic Stewardship in Nursing Homes. The CDC recommends that all nursing homes take steps to implement antibiotic stewardship activities. Before getting started, use this checklist as a baseline assessment of policies and practices which are in place. Then use the checklist to review progress in expanding stewardship activities on a regular basis (e.g., annually). Over time, implement activities for each element in a step-wise fashion.

## Leadership Support

<table>
<thead>
<tr>
<th>ESTABLISHED AT FACILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

1. Can your facility demonstrate leadership support for antibiotic stewardship through one or more of the following actions?

   - [ ] Written statement of leadership support to improve antibiotic use
   - [ ] Antibiotic stewardship duties included in medical director position description
   - [ ] Antibiotic stewardship duties included in director of nursing position description
   - [ ] Leadership monitors whether antibiotic stewardship policies are followed
   - [ ] Antibiotic use and resistance data is reviewed in quality assurance meetings

## Accountability

2. Has your facility identified a lead(s) for antibiotic stewardship activities?

   - [ ] Medical director
   - [ ] Director or assistant director of nursing services
   - [ ] Consultant pharmacist
   - [ ] Other: __________________________
### Drug Expertise

3. Does your facility have access to individual(s) with antibiotic stewardship expertise?
   - Yes
   - No

   If yes, indicate who is accountable for stewardship activities (select all that apply):
   - Consultant pharmacy has staff trained/is experienced in antibiotic stewardship
   - Partnering with stewardship team at referral hospital
   - External infectious disease/stewardship consultant
   - Other: ______________________________

### Actions to Improve Use

4. Does your facility have policies to improve antibiotic prescribing/use?
   - Yes
   - No

   If yes, indicate which policies are in place (select all that apply):
   - Requires prescribers to document a dose, duration, and indication for all antibiotic prescriptions
   - Developed facility-specific algorithm for assessing residents
   - Developed facility-specific algorithms for appropriate diagnostic testing (e.g., obtaining cultures) for specific infections
   - Developed facility-specific treatment recommendations for infections
   - Reviews antibiotic agents listed on the medication formulary
   - Other: ______________________________
5. Has your facility implemented practices to improve antibiotic use?
   If yes, indicate which practices are in place (select all that apply)
   □ Utilizes a standard assessment and communication tool for residents suspected of having an infection
   □ Implemented process for communicating or receiving antibiotic use information when residents are transferred to/from other healthcare facilities
   □ Developed reports summarizing the antibiotic susceptibility patterns (e.g., facility antibiogram)
   □ Implemented an antibiotic review process/“antibiotic time out”
   □ Implemented an infection specific intervention to improve antibiotic use
   Indicate for which condition(s): ____________________________

6. Does your consultant pharmacist support antibiotic stewardship activities?
   If yes, indicate activities performed by the consultant pharmacist (select all that apply)
   □ Reviews antibiotic courses for appropriateness of administration and/or indication
   □ Establishes standards for clinical/laboratory monitoring for adverse drug events from antibiotic use
   □ Reviews microbiology culture data to assess and guide antibiotic selection
7. Does your facility monitor one or more measures of antibiotic use?  
   - Adherence to clinical assessment documentation (signs/symptoms, vital signs, physical exam findings)  
   - Adherence to prescribing documentation (dose, duration, indication)  
   - Adherence to facility-specific treatment recommendations  
   - Performs point prevalence surveys of antibiotic use  
   - Monitors rates of new antibiotic starts/1,000 resident-days  
   - Monitors antibiotic days of therapy/1,000 resident-days  
   - Other: ________________________________

8. Does your facility monitor one or more outcomes of antibiotic use?  
   - Monitors rates of C. difficile infection  
   - Monitors rates of antibiotic-resistant organisms  
   - Monitors rates of adverse drug events due to antibiotics  
   - Other: ________________________________
**REPORTING INFORMATION TO STAFF ON IMPROVING ANTIBIOTIC USE AND RESISTANCE**

9. Does your facility provide facility-specific reports on antibiotic use and outcomes with clinical providers and nursing staff?  
   - [ ] Yes  
   - [ ] No  
   
   If yes, indicate which of the following are being tracked (select all that apply):  
   - [ ] Measures of antibiotic use at the facility  
   - [ ] Measures of outcomes related to antibiotic use (i.e., C. difficile rates)  
   - [ ] Report of facility antibiotic susceptibility patterns (within last 18 months)  
   - [ ] Personalized feedback on antibiotic prescribing practices (to clinical providers)  
   - [ ] Other: ___________________________

**EDUCATION**

10. Does your facility provide educational resources and materials about antibiotic resistance and opportunity for improving antibiotic use?  
   - [ ] Yes  
   - [ ] No  
   
   If yes, indicate which of the following are being tracked (select all that apply):  
   - [ ] Clinical providers (e.g., MDs, NPs, PAs, PharmDs)  
   - [ ] Nursing staff (e.g., RNs, LPNs, CNAs)  
   - [ ] Residents and families  
   - [ ] Other: ___________________________
## ASP – The Basics

<table>
<thead>
<tr>
<th>Structure</th>
<th>Process</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Leadership</td>
<td>• Process Metrics</td>
<td>• Outcome Metrics</td>
</tr>
<tr>
<td>• Education</td>
<td>• Interventions</td>
<td></td>
</tr>
<tr>
<td>• Policies</td>
<td>• Pre-Prescribing</td>
<td></td>
</tr>
<tr>
<td>• Prevention</td>
<td>• Post-Prescribing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Feedback</td>
<td></td>
</tr>
</tbody>
</table>
Leadership

• Ensure key personnel job descriptions address AMS duties
  – DON / ICP / MD / Pharmacist
• Incorporate into practitioner credentialing
• Incorporate into QAPI program
• Access to trained staff
  – SHEA / AMDA / CDC’s PA/LTC Infection Control Certificate Course
    • Thursday March 16, 2017, Phoenix, AZ (AMDA)
Education

• More effective if both prescribers & nursing facility staff targeted
  – Clinical vignettes

• Must be repeated regularly
  – Identify how to target new staff / practitioners

• Residents/Families
  – Proxy involvement drives abx use – OR 3.43 in care of residents with late stage dementia*

Educational Tools from AHRQ developed by AIR

http://nhguide.airprojects.org/LinkClick.aspx?fileticket=20OWN9-56jI%3d&tabid=107&portalid=0&mid=491
Tests & treatments for urinary tract infections (UTIs) in older people
When you need them—and when you don’t

UTIs are infections of the urinary tract. The main symptoms of UTIs are:
- A burning feeling when you urinate
- A strong urge to urinate often

Bacteria cause most UTIs. Doctors usually treat UTIs with antibiotics, which are strong medicines that kill bacteria.

Older adults are often tested for UTIs, especially in nursing homes. But if you don’t have symptoms, urine tests are not very useful. The tests can lead to unnecessary treatments that can even be harmful. This is especially true in older adults. Here’s why:

Urine tests usually don’t help if you don’t have UTI symptoms.

Older people often have bacteria in their urine, even if they have no urinary symptoms. This is true for nearly half of all nursing home residents.

Doctors will often order a urine test if an older adult has vague symptoms, such as increased confusion, irritability, or falling. The test will probably show some bacteria. This may lead the doctor to order an antibiotic.

But if the bacteria is in the urine and not causing a real infection, the antibiotic won’t help the vague symptoms. There are many other reasons why an older adult might be confused or irritable, or fall.

Antibiotics can cause serious problems. Antibiotics can cause side effects, especially in older adults. Side effects include fever, rash, nausea, vomiting, diarrhea, ruptured tendons, nerve damage, and kidney failure.

Using antibiotics can lead to vaginal yeast infections and other infections, including one that can cause severe diarrhea, a hospital stay, and even death in older people.

Also, older adults often take other medicines that can interact dangerously with antibiotics.

Avoid antibiotics when you can.

Unnecessary antibiotics don’t offer any benefits. You should not take antibiotics for bacteria in the urine if you don’t need to.

Antibiotics can kill “friendly” germs and help drug-resistant bacteria to grow. Resistant bacteria cause illnesses that are harder to cure and more costly to treat. To treat them, a doctor may have to try a few different antibiotics. This increases the risk of serious side effects.

Unnecessary tests and treatment can be a waste of money.

A urine culture can cost $80 or more. Antibiotic treatment for a UTI costs from $3 to over $300. And drug-resistant infections add costs for more doctor visits, expensive medicines, and nursing care.

When should you have a urine test?

You should get a urine test if you have new or worsening urinary symptoms like these:
- Pain when urinating
- Blood in the urine
- A strong urge to urinate often

You should also get a urine test if you have a fever or if a blood test suggests that you have an infection.

But before you get a urine test, your doctor should make sure you don’t have other symptoms, like a cough, that may be caused by something else.

If you don’t have UTI symptoms, you might still need a urine test if you are scheduled to have:
- Prostate surgery
- Kidney stones removed
- Bladder tumors removed

Advice from Consumer Reports

Tips to prevent UTIs in older people

If your family member is in a nursing home and has had a UTI, discuss the issues below with the care team.

Urination habits
To reduce the risk of infection, people should urinate often and completely.
- Take the person to the bathroom often and give them plenty of time to urinate.
- Provide water by the bedside and encourage the person to drink enough fluids.

Hygiene
Good hygiene is important to help keep infections away.
- After a bowel movement, women should wipe from front to back.
- Change diapers or other incontinence products often.

Some people depend completely on the nursing home staff for their care. Caregivers should wash their hands with soap or use a hand sanitizer when:
- They enter the person’s room.
- They start or finish a procedure, such as changing a wound dressing or diaper.
- They leave the room.

Urinary catheters
Usually, catheters should be removed as soon as possible. They increase the risk of getting a UTI. Only use them for:
- Urinary obstructions
- Severe incontinence
- Comfort when a loved one is near death.

Case 2 – Great Expectations

• Yolanda is a 78 year old female with dementia, dysphagia following a devastating stroke

• You have just seen her for a routine exam and your physical exam showed clear lungs and normal oxygenation.

• You call her daughter just to update her.

• The daughter notes her mother has had a cough & requests an antibiotic.
Your poll will show here

1. Install the app from pollev.com/app
2. Make sure you are in Slide Show mode

Still not working? Get help at pollev.com/app/help
or
Open poll in your web browser
Policies and Procedures

• Establish & Monitor Abx Order Policy
  – Diagnosis, dose, duration for all abx
• Discourage abx prophylaxis
• **Dental prophylaxis** policy
• Elimination / limitation of urine dipsticks
• Immunizations
  – Standing order programs
  – Healthcare worker influenza immunization
Policies and Procedures

- Infection definitions
- Structured observation
- Specimen collection
Infection Definitions

**Surveillance Criteria**

- McGeer/Stone 2012
- Benchmarking definitions
- Used to compare across facilities
- Might miss infections
  - Specific, not sensitive

**Minimum Abx Criteria**

- Loeb 2005 (update in progress)
- Lower threshold to start abx
  - More sensitive
  - Goals is to not miss true infections

*These are criteria to help gauge treatment appropriateness*
Both criteria 1 and 2 must be met.

1. At least 1 of the following signs and symptoms:
   a. Dysuria OR acute pain, swelling, tenderness of the testes, epididymis, or prostate
   b. Fever (**) or leukocytosis AND at least 1 of the following:
      i. CVAT*
      ii. Suprapubic pain
      iii. Gross hematuria
      iv. New or increased incontinence
      v. New or increased urgency
      vi. New or increased frequency
   c. If no fever or leukocytosis, then 2 or more of the following:
      i. Suprapubic pain
      ii. Gross hematuria
      iii. New or increased incontinence
      iv. New or increased urgency
      v. New or increased frequency

2. One of the following:
   a. $\geq 10^5$ CFU/mL of no more than 2 organisms in a voided urine
   b. $\geq 10^2$ CFU/mL of any number of organisms in an in/out catheter sample

2012 Stone (Updated McGeer)
Surveillance and Benchmarking
### 2005 Loeb Diagnostic Minimum Criteria for Ordering a Urine Culture

Fever >37.9 and 1 or more of the following, order a urine culture:
- Dysuria
- Urgency
- Flank pain
- Shaking chills
- Urinary incontinence
- Frequency
- Gross hematuria
- Suprapubic pain

OR, If no fever, order urine culture if new burning on urination, or 2 or more of the following:
- Urgency
- Flank pain
- Shaking chills,
- Urinary incontinence
- Frequency
- Gross hematuria
- Suprapubic pain

OR, If fever >37.9 but 2 or more symptoms of non-UTI infection, DO NOT ORDER A URINE

### 2005 Loeb Treatment Minimal Criteria for Initiating Antimicrobials

Positive urine culture (>10^5 CFU/mL) & dysuria,
OR
Positive urine culture (>10^5 CFU/mL) and 2 or more of the following:
- Fever
- Urgency
- Flank pain
- Urinary incontinence
- Shaking chills
- Frequency
- Gross hematuria
- Suprapubic pain
Web App – Minimum Criteria for Antibiotics Tool

http://nhguide.airprojects.org/tool3
Division of Geriatric Medicine

Sample Observation Order Set

Figure 1

Example of an Observation Order Set

☐ Obtain vital signs (BP, Pulse, Resp Rate, Temp, Pulse Ox) every _____ hours for _____ days.

☐ Record fluid intake each shift for ________ days.

☐ Notify physician if fluid intake is less than ________ cc daily.

☐ Offer resident _______ ounces of water/ juice every _______ hours.

☐ Notify physician, NP, or PA if condition worsens, or if no improvement in _______ hours.

☐ Obtain the following blood work _____________________________________________.

☐ Consult pharmacist to review medication regimen.

☐ Contact the physician, NP, PA with an update on the resident’s condition on _________.

Urinary Symptom Monitoring Tool

(This tool is undergoing revision to match Loeb Minimum criteria)

Example of UTI Monitor Tool
Asbury Heights, Mt Lebanon, PA

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>6:30 AM - 2:30PM</th>
<th>2:30PM - 10:30PM</th>
<th>10:30PM - 6:30AM</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEVER/CHILLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAIN: FLANK, SUPRAPUBIC, TENDERNESS OR ANY FEELINGS OF PRESSURE IN ABD AREA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROSS HEMATURIA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHANGE IN COLOR OF URINE (DESCRIBE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHANGE IN MENTAL STATUS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHANGE IN FUNCTIONAL STATUS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO FURTHER SYMPTOMS ON THIS SHIFT</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*NOTE MUST HAVE 2 OR MORE OF THE FOLLOWING SYMPTOMS. WHEN THESE ARE PRESENT, NOTIFY MD FOR ORDERS (NIGHT SHIFT REPORT TO DAYLIGHT TO OBTAIN ORDERS)

<table>
<thead>
<tr>
<th>MD NOTIFIED:</th>
<th>YES</th>
<th>NO</th>
<th>TIME:</th>
<th>DATE:</th>
<th>ORDER OBTAINED FOR ANTIBIOTIC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>WHAT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ANTI-BIOTIC?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Infection Prevention Activities

- Immunization programs
- Infection control precautions
- Hand hygiene
- Aspiration - chemical pneumonitis
- Device reduction
  - Urinary catheters
  - Intravenous lines
  - Feeding tubes
Measuring AMS – What Matters?
# AMS Process Measures

<table>
<thead>
<tr>
<th>Metric</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotic Starts (AS)</td>
<td>Number of abx courses started per month / 1000 resident-days</td>
</tr>
<tr>
<td>Days of Therapy (DOT)</td>
<td>Total antibiotic days per month / 1000 resident-days</td>
</tr>
<tr>
<td>Defined Daily Dose (DDD)</td>
<td>Total grams of each antibiotic summed / WHO assigned DDD</td>
</tr>
<tr>
<td>Number of Courses &gt; 7 Days</td>
<td>Number of abx courses started per month &gt;7 days in duration / 1000 resident-days</td>
</tr>
<tr>
<td>Cost / Antibiotic Day</td>
<td>Total antibiotic costs per month / total antibiotic days in a given month</td>
</tr>
<tr>
<td>Cost / Resident Day</td>
<td>Total antibiotic costs per month / 1000 resident-days</td>
</tr>
</tbody>
</table>
Example of Calculation

Antibiotic Starts for May

\[
\frac{\text{Total # of abx prescribed in May}}{\text{Total # of resident-days in May}} \times 1000
\]
Calculating Resident Days & Catheter (or Device) Days

<table>
<thead>
<tr>
<th>Date</th>
<th>Number of residents**</th>
<th>Number of residents with a urinary catheter***</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(^{st})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2(^{nd})</td>
<td></td>
<td></td>
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<tr>
<td>3(^{rd})</td>
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<td>4(^{th})</td>
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<td>5(^{th})</td>
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<td>6(^{th})</td>
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<td>7(^{th})</td>
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<td>8(^{th})</td>
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<td>9(^{th})</td>
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<td>10(^{th})</td>
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<td>11(^{th})</td>
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<td>12(^{th})</td>
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<td>20(^{th})</td>
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<td>21(^{st})</td>
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<tr>
<td>22(^{nd})</td>
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<tr>
<td>23(^{rd})</td>
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<td>24(^{th})</td>
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<td>25(^{th})</td>
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<td>26(^{th})</td>
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<td>27(^{th})</td>
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<td>28(^{th})</td>
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<td>29(^{th})</td>
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<tr>
<td>30(^{th})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31(^{st})</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Month total: resident days urinary catheter days

*Denominator = All denominator data (resident days and urinary catheter days) should be collected daily at the same time each day. If denominator data are available from electronic databases, these sources may be used as long as the counts are not substantially different (+/- 5%) from manually collected counts.

**Number of residents = Number of residents in the designated location for that day. These daily counts are added and entered in the last row, Month total. This will be your number of resident days for that month.

***Number of residents with a urinary catheter = Number of residents with an indwelling urinary catheter device in the designated location for that day. These daily counts are added and entered in the last row, Month total. This will be your number of urinary catheter days for that month.

- Adapted from the Centers for Disease Control and Prevention (CDC) / National Healthcare Safety Network (NHSN)

http://www.vdh.virginia.gov/epidemiology/surveillance/hai/uti.htm#Toolkit
Case 3 - Counting the Days

• You’re the medical director at Seminoles #23, a 10 bed NF in Florida that caters to down and out college football players.

• You are trying to calculate the number of antibiotic days for the month of Sept.

• You note that only 1 resident received antibiotics. The combination of cefuroxime and azithromycin was prescribed at the same time for a pneumonia
  – Cefuroxime days 1-7
  – Azithromycin days 1-5
Your poll will show here

1. Install the app from pollev.com/app
2. Make sure you are in Slide Show mode

Still not working? Get help at pollev.com/app/help
or
Open poll in your web browser
Case 4 – How Many Days Hath September?

• You’re the infection preventionist for Canaveral Coast, a 100 retirement home run by NASA.
• Your facility runs 100 percent occupancy each month.
Your poll will show here

1. Install the app from pollev.com/app
2. Make sure you are in Slide Show mode

Still not working? Get help at pollev.com/app/help
or
Open poll in your web browser
Relative Frequency of Use: By Metric

- **AS**
  - B-lac: 40%
  - FQ: 30%
  - Macl: 20%
  - Sulfa: 10%
  - Other: 5%

- **DDD**
  - B-lac: 60%
  - FQ: 30%
  - Macl: 10%

- **DOT**
  - B-lac: 60%
  - Sulfa: 30%

Crnich et al. *ID Week 2012*. San Diego, CA
Case 5 – How to Measure Up

- You’re the medical director of the 150 bed nursing home, *Pensacola Point*.
- You’re facility initiated a QAPI program aimed at reducing unnecessary treatment of asymptomatic bacteriuria.
- You’re asked how to measure outcomes related to this project.
Your poll will show here

1. Install the app from pollev.com/app
2. Make sure you are in Slide Show mode

Still not working? Get help at pollev.com/app/help or
Open poll in your web browser
<table>
<thead>
<tr>
<th>Metric</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antibiotic Starts (AS)</strong></td>
<td>Frequency of prescribing. Tracks efforts that aim to lower use of abx.</td>
<td>Doesn’t measure total abx burden.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Doesn’t measure length tx.</td>
</tr>
<tr>
<td><strong>Days of Therapy (DOT)</strong></td>
<td>Used by NHSN. Tracks efforts that aim to lower use of abx. Estimates total burden abx.</td>
<td>Doesn’t measure length tx.</td>
</tr>
<tr>
<td><strong>Number of Courses &gt; 7 Days</strong></td>
<td>Tracks efforts that aim to reduce excessive durations.</td>
<td>Doesn’t measure overall frequency of prescribing.</td>
</tr>
<tr>
<td><strong>Cost / Antibiotic Day</strong></td>
<td>Provides cost for use. Provides info about high cost abx.</td>
<td>Requires pharmacy costs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost data can change.</td>
</tr>
<tr>
<td><strong>Cost / Resident Day</strong></td>
<td>Provides overall cost.</td>
<td>Requires pharmacy costs. Skewed by outliers.</td>
</tr>
</tbody>
</table>
# AMS Outcome Metrics

<table>
<thead>
<tr>
<th>Measure</th>
<th>Definition</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>C difficile rate</td>
<td>Number of facility acquired cases of C diff per month / 1000 resident-days</td>
<td>This gives a measure of antibiotic complication.</td>
</tr>
<tr>
<td>Antibiogram</td>
<td>Profile of antibiotic susceptibilities based on culture results over a given time period. Lists susceptibility rates by organism.</td>
<td>Provides facility specific rates. Based on data over 12-24 mos due to low rate of cultures. Can be focused on most common bacteria. Misses hospital cultures.</td>
</tr>
<tr>
<td>Rates of MDROs</td>
<td>Rate of facility acquired MDROs</td>
<td></td>
</tr>
<tr>
<td>Unplanned Transfers</td>
<td>Number of transfers / 1000 resident days</td>
<td>Not specific for infections.</td>
</tr>
</tbody>
</table>
Interventions
Potential Antibiotic Prescribing Interventions

Pre-Prescribing Decisions

T1 • Are Abx Needed?
T2 • Which Abx?
T3 • What Dose?

Post-Prescribing Decisions

T4 • Can Abx be Stopped?
T5 • Can Spectrum be Narrowed?
T6 • Can Duration be Shortened?

Adapted from Crnich et al. Drugs Aging 2015;32:699-716.
Examples of Pre-Prescribing Interventions

- Structured communication using symptom checklists, standardized orders, etc
- Use of monitoring tools – when dx uncertain
  - Sip Before You Dip
- Empiric treatment guideline
- Feedback – Physician Report Card

Most published interventions address this step
Communication
Suspected UTI SBAR

Complete this form before contacting the resident’s physician.

Nursing Home Name ___________________________ Date/Time ___________________________

Resident Name ___________________________ Date of Birth ___________________________

Physician/NP/PA ___________________________ Phone ___________________________

Fax ___________________________ Facility Phone ___________________________

Nurse ___________________________ Submitted by: □ Phone □ Fax □ In Person □ Other

Situation

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

Vital Signs BP ________/_______ HR _________ Resp. rate _________ Temp. _________

Background

Active diagnoses or other symptoms (especially, bladder, kidney/genitourinary conditions)

Specify _________

□ No □ Yes The resident has an indwelling catheter

□ No □ Yes Patient is on dialysis

□ No □ Yes The resident is incontinent. If yes, new/worsening? □ No □ Yes

□ No □ Yes Advance directives for limiting treatment related to antibiotics and/or hospitalizations

Specify _________

□ No □ Yes Medication Allergies

Specify _________

□ No □ Yes The resident is on Warfarin (Coumadin®)

Assessment Input (check all boxes that apply)

Resident WITH indwelling catheter

The criteria are met to initiate antibiotics if one of the below are selected

No Yes

□ Fever of 100°F (38°C) or repeated temperatures of 99°F (37°C)*

□ New back or flank pain

□ Acute pain

□ Rigors/shaking chills

□ New dramatic change in mental status

□ Hypotension (significant change from baseline BP or a systolic BP <90)

□ 1. Acute dysuria alone

OR

□ 2. Single temperature of 100°F (38°C) and at least one new or worsening of the following:

- Urgency

- Suprapubic pain

- Frequency

- Gross hematuria

- Back or flank pain

- Urinary incontinence

OR

□ 3. No fever, but two or more of the following symptoms:

- Urgency

- Suprapubic pain

- Frequency

- Gross hematuria

Nurses: Please check box to indicate whether or not criteria are met

□ Nursing home protocol criteria are met. Resident may require UA with C&S or an antibiotic.†

□ Nursing home protocol criteria are NOT met. The resident does NOT need an immediate prescription for an antibiotic, but may need additional observation. ††

Request for Physician/NP/PA Orders

Orders were provided by clinician through □ Phone □ Fax □ In Person □ Other_________

□ Order UA

□ Urine culture

Encourage _______ ounces of liquid intake _______ times daily until urine is light yellow in color.

Record fluid intake.

Assess vital signs for _______ days, including temp, every _______ for _______ hours.

Notify Physician/NP/PA if symptoms worsen or if unresolved in _______ hours.

Initiate the following antibiotic

Antibiotic: _______ Dose: _______ Route: _______ Duration: _______

□ No □ Yes Pharmacist to adjust for renal function

Other _______

Physician/NP/PA signature ___________________________ Date/Time ___________________________

Telephone order received by ___________________________ Date/Time ___________________________

Family/POA notified (name) ___________________________ Date/Time ___________________________

* For residents that regularly run a lower temperature, use a temperature of 27°F (1°C) above the baseline as a definition of a fever.

† This is according to our understanding of best practices and our facility protocols. Minimum criteria for a UTI must meet 1 of 3 criteria listed in box.

†† This is according to our understanding of best practices and our facility protocols. The information is insufficient to indicate an active UTI infection.

---

http://nhguide.airprojects.org/LinkClick.aspx?fileticket=AZL8ONrqtYU%3d&tabid=107&portalid=0&mid=491
Sample Communication Form

http://nhguide.airprojects.org/LinkClick.aspx?fileticket=bcLSuDsRYsU%3d&tabid=107&portalid=0&mid=491
Patient presents with **signs and symptoms of UTI**
- pain on urination, new or worsening urinary frequency, lower abdominal pain/discomfort, gross hematuria, new or marked incontinence

Criteria met for treatment with antibiotics (i.e. symptomatic bacteriuria)
- assess for medication allergies
- assess for renal impairment; adjust dose if estimated CrCl < 50 mL/min

Note: Asymptomatic patients with bacteria in the urine do **not** have a UTI and are **not** candidates for treatment with antibiotics.

---

**Empiric Antibiotic Therapy**

**Without Pyelonephritis**
- TMP/SMZ*^ 160/800 mg Q12h PO x 7 days, or
- Nitrofurantoin* 100 mg Q12h PO x 7 days

**With Pyelonephritis**
- Ciprofloxacin* 500 mg Q12h PO or IV x 7 days or
- Levofloxacin* 750 mg Q24h PO or IV x 5 days, or
- TMP/SMZ*^ 160/800 mg Q12h PO x 14 days

**Are criteria for PO antibiotics met?**
1. IV antibiotic for ≥ 48 hours and able to tolerate oral;
2. No vomiting or diarrhea or NPO;
3. Clinical Improvement:
   - Temperature < 38°C, systolic BP > 90 mmHg, HR < 100;
   - and normal white blood cell count or a decrease of at least 2000 cells/µL over the last 24 hours

---

- Adjust antibiotic choice and/or dosing based on: renal function, culture and sensitivity information, and/or adverse drug effects.
- Discontinue antibiotics if cultures are negative.
- Agents with a narrower antimicrobial spectrum are preferred.
- Perform ongoing monitoring of signs/symptoms and response to therapy.

---

Where: IV=intravenous, Qxh=every x hours, PO=oral SC=subcutaneous, Scr=serum creatinine, TMP/SMZ=trimethoprim/ sulfamethoxazole, UTI=urinary tract infection
*UTI in older persons and males are considered complicated with or without pyelonephritis.
*IV use should be reserved for those who cannot tolerate PO therapy. ^Monitor serum glucose.
*Requires dosage adjustment in renal impairment. Antibiotics should be ordered with a duration—limited stop date to avoid overuse.

---

Examples of Post-Prescribing Interventions

• Antibiotic timeouts
  – Scheduled time 24-72 hours post prescription to review need / appropriateness

• Feedback – Physician Report Card
Feedback
September 21, 2016

Dear Physician,

As part of Asbury’s quality assurance and performance improvement efforts, we are providing you with this dashboard report. The report provides you with feedback on your performance related to quality metrics important in the care of nursing home residents.

The quality measures that are included in this report are:

1) **Physician Visit Compliance** – This measure reports the percentage of mandatory visits you have completed by the respective due dates.

**Rationale:** Under CMS regulations, each nursing facility resident must be seen at least once every 30 day period following admission for the first 90 days. After the first 90 days, each resident must be seen at a minimum once every 60 day period. The date for compliance is determined based upon the admission date. The visit dates do not change based upon whether the visit is completed by the physician completing the last visit. Failure to complete visits timely places the facility at risk for survey deficiencies, is a disservice to our residents, and is a violation of medical services policy.
4) **UTI Culture Rate** – This measure reports the number of urine cultures sent on your residents per 1000 resident days per your panel of patients.

**Rationale:** Up to 50% of nursing home residents have asymptomatic bacteriuria (ASB). Treatment of ASB does not improve any clinical outcome, but does increase the risk of adverse drug events, *C. difficile* infection, and greatly contributes to the growing threat of antimicrobial resistance. Clinicians should not treat residents for presumed UTI without symptoms localized to the urinary tract. The most important factor driving treatment of ASB is the ordering of a urine culture since 50% of cultures will be positive for bacteria (the prevalence of ASB).

**References:**


The Alliance for Quality Nursing Home Care: Rehospitalizations from Skilled Nursing Facilities http://www.aqnhc.org/pdfs/care-context-2010-01.pdf


Drinka PJ, Croich CJ, Nace DA. An antibiotic prescription induces resistance at the individual level more than the group level. J Am Med Dir Assoc 2015;16(9):707-708.
Sample Report Card and Results

UTI Culture Rate - August 2016

Rate /1000 resident days per physician panel

- A: 3.05
- B: 8.93
- C: 1.61
- D: 2.12
- E: 0
- F: 1
- G: 2
- H: 3
- I: 4
- J: 5
- K: 6
- L: 7
- M: 8

August 2016
Summary

• Antimicrobial resistance is a real and growing threat
• With no new classes of antibiotics coming to market in the next few years, reducing mis-use becomes critical
• Nursing homes are required to have ASP in place
• Many potential NF intervention targets exist
• NF are required to address pneumococcal vaccination which helps with AMS
Pneumococcal Vaccination in PA/LTC

- Pneumococcal pneumonia accounts for 20-60% of community acquired pneumonias (CAP)
  - Potentially preventable

- 65+ population remains at high risk

- Vaccination effective >>> even in frail LTC residents

- Pneumococcal vaccination rates still lag
Cumulative proportion of participants without pneumococcal pneumonia

- **Vaccine (n=399)**
- **Placebo (n=387)**

Hazard ratio 0.368 (95% CI 0.199 to 0.680)
P=0.0009

PPSV23 in Nursing Home Residents - BMJ 2010;340:c1004
Efficacy of 23-valent pneumococcal vaccine in preventing pneumonia and improving survival in nursing home residents: double blind, randomised and placebo controlled trial

BMJ 2010;340:c1004

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Vaccine Group (n=502)</th>
<th>Placebo Group (n=504)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumococcal PNA</td>
<td>0/14 (0%)</td>
<td>13/37 (35.1%)</td>
<td>0.0105</td>
</tr>
<tr>
<td>Non-Pneumococcal PNA</td>
<td>13/49 (26.5%)</td>
<td>13/67 (19.4%)</td>
<td>0.3632</td>
</tr>
<tr>
<td>All Cause PNA</td>
<td>13/63 (20.6)</td>
<td>26/104 (25%)</td>
<td>0.5181</td>
</tr>
</tbody>
</table>

*PCV7 serotypes: 1, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F, and 33F
*PCV13 serotype: 1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, and 23F

Active Bacterial Core surveillance data, 1998–2015, unpublished

http://www.cdc.gov/pneumococcal/surveillance.html
Pneumococcal Vaccination

• 2002 - Standing Orders Programs Approved by CMS
• 2005 – F334 Immunization Requirement
• 2009 – F441 Guidance > Vax Program Assessment
• 2012 – Public Reporting of Vaccination Measures
• 2014 – ACIP/CDC Recommends PCV13
• 2015 – ACIP/CDC Simplifies Intervals
Pneumococcal vaccine-naïve persons aged ≥ 65 years

Persons who previously received PPSV23 at age ≥ 65 years

Persons who previously received PPSV23 before age 65 years and who are now aged ≥ 65 years

Figure courtesy CDC - MMWR 2015
www.cdc.gov/mmwr/pdf/wk/mm6434.pdf
The Society strongly advocates that Post-Acute and Long-Term Care (PA/LTC) facilities and providers establish and maintain a pneumococcal vaccination program that provides residents with access to current Advisory Committee on Immunization Practices (ACIP) and Centers for Disease Control and Prevention (CDC) recommended pneumococcal vaccinations.

http://www.paltc.org/pneumococcal-vaccination-guidance-paltc-facilities
Such a program would include a requirement to assess PA/LTC residents for their pneumococcal vaccination status and to administer and document appropriate pneumococcal vaccinations in accordance with current ACIP and CDC guidance, unless the PA/LTC resident declines or has a medical contraindication or allergy.

http://www.paltc.org/pneumococcal-vaccination-guidance-paltc-facilities
In addition, The Society recommends PA/LTC facilities and providers demonstrate an ongoing commitment to Quality Assessment and Performance Improvement by evaluating and addressing their pneumococcal vaccination programs if vaccine acceptance rates fall below U.S. Department of Health and Human Services goals.

http://www.paltc.org/pneumococcal-vaccination-guidance-paltc-facilities
PNEUMOCOCCAL VACCINATION GUIDANCE FOR PA/LTC FACILITIES

There has been much interest generated by AMDA - The Society for Post-Acute and Long-Term Care members and stakeholders regarding pneumococcal guidance. The Society's Infection Advisory Committee (IAC), has produced several documents, including a policy statement on pneumococcal guidance advocating for post-acute and long-term care (PA/LTC) facilities and providers to establish and maintain a pneumococcal vaccination program that provides residents with access to current pneumococcal immunizations recommended by the Advisory Committee on Immunization Practices (ACIP) and Centers for Disease Control (CDC).

Tools and Resources:

- Society Policy Statement on Pneumococcal Vaccination
- Infection Advisory Committee FAQ - Pneumococcal Vaccination Coverage
- Pneumococcal Vaccination Guidance
- Resident Pneumococcal Vaccination Assessment Note

http://www.paltc.org/pneumococcal-vaccination-guidance-paltc-facilities
Case 6 – PPV – Dealing with Uncertainty

- Helen is a new resident admitted to your facility.
- She has advanced dementia.
- Her family is unsure if Helen ever had a pneumonia vaccine.
- You are unable to reach her PCP
Your poll will show here

1. Install the app from pollev.com/app
2. Make sure you are in Slide Show mode

Still not working? Get help at pollev.com/app/help
or
Open poll in your web browser
Case 7 – PPV – Before 2014

- Eleanor is a newly admitted NF resident
- She reports having a pneumonia shot at the age of 78 in 2012.
- She is unaware of which vaccine it was.
Your poll will show here

1. Install the app from pollev.com/app
2. Make sure you are in Slide Show mode

Still not working? Get help at pollev.com/app/help
or
Open poll in your web browser
Case 7 – PPV – What is Timely?

- You are the medical director of Procrastination Acres, a 135 bed facility for retired state politicians in Tallahassee.
- The administrator asks you how soon after admission should a person be vaccinated.
Your poll will show here

1. Install the app from pollev.com/app
2. Make sure you are in Slide Show mode

Still not working? Get help at pollev.com/app/help
or
Open poll in your web browser
References and Tools

• http://nhguide.airprojects.org/


Pneumococcal References

• General Pneumococcal Vaccination Web Page
  http://www.paltc.org/pneumococcal-vaccination-guidance-paltc-facilities

• Clinical Pneumococcal Vaccination Guidance
  http://www.paltc.org/publications/pneumococcal-vaccination-guidance

• Pneumococcal Coverage Guidance
  http://www.paltc.org/infections-advisory-committee-faq-pneumococcal-vaccination-coverage
Pneumococcal References

- Pneumococcal Assessment Note
  - http://www.paltc.org/sites/default/files/Pneumococcal%20Vaccination%20Guidance%20FAQs%2005%2013%20202016%2028003%29.pdf

- Society Policy Statement