Antibiotic Stewardship and Quality in Skilled Nursing Facilities

2017 Annual Conference
Richmond Virginia
Background

AMDA-AGS joint session

• 2015 Update on Common Infections in PA-LTC (Nace, Jump, Sellers)
• 2016 Impact of Infections on Transitions of Care (Sellers, Losben, Crnich, Trice)
• 2017 Infection Control and Antibiotic Stewardship as part of Facility’s Quality Assurance Performance Improvement Program
Speakers

• Verna Reynolds Sellers, MD, MPH, AGSF, CMD
  • Centra Lynchburg, Virginia
Speaker Disclosures

Dr. Sellers has disclosed that she has no financial relationship(s).
Overall Learning Objectives

By the end of the session, participants will be able to:

• Identify the key components of antibiotic stewardship program in skilled nursing facilities (SNF)

• Focus on strategies to decrease infection related hospital readmission

• Discuss treatment options for infections in SNF and choose appropriate antibiotic therapy when indicated.

• Review the impact of infections on skilled nursing facility readmission measures
Centra - A regional not for profit integrated health system serving communities in central Virginia

<table>
<thead>
<tr>
<th>Acute Care</th>
<th>Post Acute Care</th>
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<tbody>
<tr>
<td>• 5 acute care facilities</td>
<td>• Long Term Acute Care Hsptl</td>
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<tr>
<td>• 850 licensed beds</td>
<td>• Palliative Care &amp; Inpatient Hospice</td>
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<tr>
<td>• 225,000 annual ED visits</td>
<td>• Free Standing Skilled Nursing Facilities</td>
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<td>• 350 employed providers</td>
<td>• Home Health &amp; Hospice Services</td>
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<td>• 550 medical staff</td>
<td>• P.A.C.E.</td>
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<td>• 7,500 employees</td>
<td>• Assisted Living Facilities</td>
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<td>• Level 2 trauma center</td>
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<td>• Health plan</td>
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</table>
Prevalence of Antimicrobial Use (AU)

• 12/2013-5/2014 1 day point prevalence survey, 9 NH in 4 Emerging Infection Program (EIP) sites

• AU prevalence was 11.1% (95% confidence interval, 9.4-12.9%)
  • Short stayers 21%
  • Invasive medical device 24%

• 32% for UTIs

• 38% Key prescribing information was not documented

• Dose, route, duration, indication (rationale and treatment site)

Burden & Consequences of Infections in SNFs

- 1.6 – 3.8 million infections in U.S. NHs
- 26-50% of transfers to the hospital
  - 150,000 – 300,000 hospitalizations
- Billions of dollars in healthcare costs
- 100,000 – 400,000 deaths annually

Strausbaugh et al. *Infect Control Hosp Epidemiol* 2000; 21(10): 674-9
Crnich et al. *Infect Control Hosp Epidemiol* 2012; 33(11): 1172-4
Infection-Related Hospitalizations

Long-Term Stay

• 25% if residents hospitalized
• 30-50% of admissions potentially avoidable
• Nearly 80% of admissions for at least one infection-related ambulatory care sensitive (ACS) condition

Post-Hospitalization

• ~15% of hospitalized patients readmitted within 30 days
• ~30% of readmissions for an infection-related condition
• Infection-related readmissions 2-fold higher if discharged to a NH

Office of the Assist Secretary for Planning and Evaluation, HHS. 2011
Harmful Effects of Antibiotics: Community Level

- NH residents prescribed antibiotics are more likely to be colonized with antibiotic-resistant bacteria which can be spread to other.

- The high rate of transfers between NH and hospitals creates opportunities for the regional spread of resistant bacteria.

- **FIGURE:** a recent study in Chicago demonstrated that NHs (green circles) played an important role in the spread (shaded areas) of a highly antibiotic-resistant bacteria* between city hospitals (orange circles).

  *carbapenem-resistant Klebsiella pneumonia*, a bacteria that commonly causes urinary tract infections.

Telephone Survey of Infection Control and Antibiotic Stewardship Practices in LTC facilities in Maryland

- Antibiotic Stewardship programs exist in LTC
- Facilities are collecting data on prescribing antibiotics
- Few LTC facilities have antibiotic approval and prescribing training

Yang, Mia; Karen Vleck; Michelle Bellantoni, Geeta Sood. JAMDA 17 (2016) 491-494
Audience response

• How are infections and antimicrobial use (AU) tracked in your facilities?
• Discuss with your neighbor (5 minutes)
• Share with the larger group (10 minutes)
CDC: Core Elements of Antibiotic Stewardship

- Leadership
- Accountability
- Drug Expertise
- Action
- Tracking and Reporting: Antibiotic Use and Outcomes
- Education
Leadership commitment

- Formal statement from the facility
- Job descriptions
- Support training and education
- Time
Accountability
Expertise

Stewardship Team

Antimicrobial Control

- Infection Control
- Microbiology
- Pulmonary/Intensivist
- Nursing
- OR Personnel
- Surgical Infection Experts/Surgeons
- Clinical Pharmacists
- Administration
- Infectious Diseases Specialists
Action

Policies

Facility specific treatment

Interventions
Tracking and reporting
# Key Quality Indicator Report

## Censor Growth

<table>
<thead>
<tr>
<th>Variable</th>
<th>Target</th>
<th>Aug'16</th>
<th>YTD</th>
<th>Percent PN Vax Feb'16 to Aug'16</th>
<th>Percent w/o decline of 3+ pts at 3mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Referrals to GN &amp; OTC</td>
<td>993</td>
<td>654</td>
<td>66%</td>
<td>96%</td>
<td>100%</td>
</tr>
<tr>
<td>No. of SNF Days (Med. Respite + Res.)</td>
<td>116</td>
<td>116</td>
<td>100%</td>
<td>97%</td>
<td>100%</td>
</tr>
<tr>
<td>Deaths</td>
<td>3</td>
<td>3</td>
<td>100%</td>
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## No. of SNF Days

| No. SNF Days | 116 | 116 | 100% | 97% | 100% |

## No. of Hospitalizations

| No. of Hospital Days | TBD | TBD | TBD | TBD | TBD |

## No. of Hartford’s SNFs with≥ 4 beds

| No. Hartford’s SNFs | TBD | TBD | TBD | TBD | TBD |

## No. of Hartford’s SNFs with≥ 4 beds

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## Infections per 1000 participant days

| Infections per 1000 participant days | ≤43 | ≤43 | ≤43 | ≤43 | ≤43 |

## Number of Unusual Incidents

| No. of Unusual Incidents | 118 | 118 | 100% | 97% | 100% |

## Functional Status (Tinetti Scales)

<table>
<thead>
<tr>
<th>Functional Status (Tinetti Scales)</th>
<th>≥7.5% change at 90 days</th>
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<th>≥7.5% change at 30 days</th>
<th>≥7.5% change at 60 days</th>
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</thead>
<tbody>
<tr>
<td>Parkinson's Disease</td>
<td>≤50%</td>
<td>≤50%</td>
<td>≤50%</td>
<td>≤50%</td>
<td>≤50%</td>
</tr>
<tr>
<td>Depression</td>
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<td>≤5%</td>
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## Nutritional Status

| Percentage of patients weight >10% change at 30 days | 0% | 0% | 0% | 0% | 0% |
| Percentage of patients weight <10% change at 180 days | 0% | 0% | 0% | 0% | 0% |
| Percentage of patients weight >10% change at 180 days | 0% | 0% | 0% | 0% | 0% |

## Referral Process

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## Nutritional Status

<p>| Percentage of patients weight &gt;10% change at 30 days | 0% | 0% | 0% | 0% | 0% |
| Percentage of patients weight &lt;10% change at 180 days | 0% | 0% | 0% | 0% | 0% |
| Percentage of patients weight &gt;10% change at 180 days | 0% | 0% | 0% | 0% | 0% |</p>
<table>
<thead>
<tr>
<th>Infection Control</th>
<th>Target</th>
<th>Dec'14</th>
<th>YTD</th>
<th>Infection Rate Jan’12 to Dec’14</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI</td>
<td>≤2</td>
<td>3</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Infections per 1000 participant days</td>
<td>0.34</td>
<td>0.62</td>
<td>0.21</td>
<td></td>
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</table>
Education
How does your program compare?

**CDC**
- Leadership
- Accountability
- Expertise
- Action
- Tracking and reporting
- Education

**My Facility**
Barriers to ABS in SNF

• Lack of on site microbiology laboratory
• Lack of expertise: nurses, providers, pharmacist
  • Lack of education
  • Staff turnover
• Lack of knowledge: residents, families and staff*
• Lack of IT support: communication, tracking and reporting

## Regulatory Considerations for Antimicrobial Stewardship

<table>
<thead>
<tr>
<th>Federal Tag</th>
<th>Application to Antimicrobial Stewardship</th>
</tr>
</thead>
<tbody>
<tr>
<td>441: Infection Control</td>
<td>Assess antimicrobial medication use and clinical issues (e.g. resistance patterns) during ongoing quality assurance meetings</td>
</tr>
<tr>
<td>329: Unnecessary Drug</td>
<td>Optimize medication use and monitor to appropriately minimize exposure and prevent adverse drug events related to antimicrobial medications</td>
</tr>
<tr>
<td>332/333 Medication Error</td>
<td>Reduce preventable error, such as timing of antibiotic drugs with other medications</td>
</tr>
<tr>
<td>428 Drug Regimen Review</td>
<td>Outline role of pharmacist in scheduled reviews of medication use in high-risk residents and observe patterns of use of antimicrobial medications</td>
</tr>
</tbody>
</table>
Elements of Reconciliation for Antimicrobials

- Indication for use, microbiology
- Culture and sensitivity results, if any
- Dose
- Age, weight, sex, race of patient
- Serum Creatinine, CrCl
- Allergies
- Known adverse effects
Elements of Reconciliation for Antimicrobials

- Start date in hospital
- Total # doses received in the hospital
- Total intended days of therapy (DOT)
- Days of therapy remaining
- Date and time last dose administered in the hospital
Clinical Decisions

- Start a medication - dropped in hospital
- Change a dose - consideration of geriatric metabolism; kidney function, weight, lab work
- Change a time of administration - culture change program, rehab schedule
- Switch to another drug - formulary issue, previous adverse reaction
- Stop a medication - unnecessary, no indication
Common Infections in PA-LTC

• Urinary Tract (45%)
• Respiratory (41%)
• Skin and soft tissue (25%)
• Diarrheal*

Diagnosis of pneumonia (all 3 criteria)

1. Interpretation of a chest radiograph

2. At least 1 of the following
   a. New or increased cough
   b. New or increased purulent sputum or
   c. O2 sat RA <94% or
   d. New or changed lung exam
   e. Pleuritic chest pain
   f. Respirations >25 breath per minute

3. At least 1 of the constitutional criteria
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
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 bedwetting.

• Comfort when a loved one is near death.

This report is for you to share when talking with your health care provider. It is not intended for medical advice or treatment. Use of this report is at your own risk.

© 2010 Consumer Reports Development Corporation with the American Geriatrics Society and the American Urological Association. To learn more about the sources used in this report and terms & conditions of use, visit ConsumerHealthChoices.org/aboutus/
Sample Template (Data Collection/Sampling 100%)

<table>
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</table>
So What can we learn from the indicators? How do we turn data into information we can use?

<table>
<thead>
<tr>
<th>Indication</th>
<th>#</th>
<th>%</th>
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<tbody>
<tr>
<td>Indication documented</td>
<td></td>
<td></td>
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<tr>
<td>Indication aligned with documentation in the chart</td>
<td></td>
<td></td>
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<tr>
<td>Indication aligned with microbiology/imaging results</td>
<td></td>
<td></td>
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<tr>
<td>Indication aligned with facility guidelines/protocols</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indication aligned with minimum criteria for starting antimicrobials</td>
<td></td>
<td></td>
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<tr>
<td>Indication aligned with CDC definitions for healthcare facility acquired infections</td>
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</table>
Fishbone Diagram: Cause and Effect

48% of AU not Meeting Surveillance definition
Fishbone Diagram: Cause and Effect

- Symptoms
- Source of information
- Evaluation
- Documentation

48% of AU not Meeting Surveillance definition
Fishbone Diagram: Cause and Effect

48% of AU not Meeting Surveillance definition

Symptoms
- Vague

Source of information
- Patient belief
- Nurse knowledge

Evaluation
- Central line
- Catheter use
- Lack of information

Documentation

Patient belief
- Lack of information
- Catheter use
- Central line
Effective QAPI Programs

Assess current performance.

Establish a baseline for improvement efforts.

Ensure that improvement gains are held.

Assess improvement efforts.

Predict future performance.

Focus on Process
Measures of Antimicrobial Use

- Track point prevalence of Antimicrobial use
  - Snap-shot of Antimicrobial burden and captures patient and indications for Antimicrobial use

- Antimicrobial Starts
  - Calculate the rate of Antimicrobial starts to assess the effect of Antimicrobial stewardship

- Antimicrobial Days of Therapy (DOT)
  - Calculating an Antimicrobial Utilization ratio monitors changes in Antimicrobial use over time
Antimicrobial Outcomes Measures

- Track C. *difficile* and Antimicrobial resistance using the CDC web system
- Track adverse drug events related to Antimicrobials
- Track the cost related to Antimicrobial use.

- Track rates of resistant Gram + and Gram – bacteria
- Adverse drug events can be as high as 40%
- Monitors the impact of stewardship on the financial costs of Antimicrobial use.
• Infection prevention in SNF
  • Preventing endemic infections
  • Management and prevention of outbreaks

• Implementing antibiotic stewardship in SNF
  • Reduce unnecessary treatment
  • Improve the quality and safety of necessary treatment
Foundations of Infection Prevention in SNF

• Focus on blocking and tackling
  • Hand hygiene
  • Limit use of invasive medical devices
  • Aggressively manage and prevent development of wounds
  • Gown and glove use for high-intensity cares with high-risk residents

• Outbreak prevention, recognition, and management
Making Hand Hygiene a Part of the SNF Culture

• Assemble taskforce; policy not enough

• Engagement of frontline staff is key
  • Champions
  • Identify/overcome barriers

• Engage leadership
  • They must own HH performance

• Engage residents
  • Staff reminders
  • Resident/family during group activities

• Audit/feedback necessary
  • The more unbiased data collection, the better (volunteers?)
  • The more real-time the better
  • Incorporate into visual campaigns

http://www.shea-online.org/Assets/files/IHI_Hand_Hygiene.pdf
Prevalence of Invasive Device Infections in VA CLCs

- Urethral Catheter
- Suprapubic Catheter
- Gastrostomy Tube
- Nasogastric Tube
- Central Venous Catheter
- Hemodialysis Catheter
- Tracheostomy Tube

Proportion of Residents (%)

Device Type

2005

2007

Crnich & Drinka *Infect Dis Clin N Am* 2012; 26(1): 143-64
Rates of MDRO Transmission – By HCW Body Site

- From 954 interactions with 113 residents with MRSA colonization, 24% of gloves and 14% of gowns were contaminated with MRSA. (p<0.01)

Roghmann et al. *Infect Control Hosp Epidemiol* 2015; 36(9): 1050-57
Rates of MDRO Transmission – By Care Activity

Roghmann et al. Infect Control Hosp Epidemiol 2015; 36(9): 1050-57
Putting it Together

A targeted infection prevention (TIP) intervention in nursing home residents with indwelling devices

Mody et al. JAMA Intern Med 2015; 175(5): 714-23
Outbreak Prevention & Management

I think I need antibiotics for my co...

It's a virus!

www.veryfunnypics.au
Spectrum of Outbreaks in NHs

Utsumi et al. *Age Aging* 2010; 39(3): 299-305
Burden of RTIs in NHs

• RTIs most common cause of outbreaks in NHs
  • 46% of all outbreaks due to RTIs
  • 9% of residents days associated with RTI outbreak
  • 160,000 – 2.6 million lower RTIs in NHs every year

• Major cause of morbidity and mortality
  • 200,000 hospitalizations and ~36,000 deaths due to influenza
  • Pneumonia leading cause of death and hospitalization in NHs

• Major cost to facilities and payers
  • Influenza: $1435 in NH, ~$9,000 if hospitalized
  • Pneumonia: $580 in NH, ~$11,000 if hospitalized

• Likely a major driver of inappropriate antimicrobial use

Long-Term Care Facility Acute Gastroenteritis Outbreaks By Season
Norovirus in NHs: Resident Outcomes

- 1257 NHs in 3 states (2009 & 2010)
- 308 NHs reported 407 norovirus outbreaks (72% lab confirmed)
- Median duration of outbreak = 13 days (range, 1 – 108); median affected residents = 26 (range, 4 – 352)

Trivedi et al. JAMA 2012; 308(16): 1668-75
Outbreaks in NHs: Other Consequences

• Employee fear
• Employee illness
• Increased costs
• Public relations impact
Outbreak Management is Core IC/IP Task

• Teach staff to recognize an outbreak
  • At employment, annually (URI and GE)
  • Reinforce periodically (during rounds) when there is increased community activity or one unit has already experienced an outbreak
  • Integrate detection into multi-disciplinary rounding structure

• Empower staff to initiate transmission-based precautions

• Reinforce behaviors to reduce transmission:
  • Reinforce importance of hand hygiene
  • Reinforce importance of standard precautions
  • Minimize staff movements across facility
  • Enhance surveillance in other units

• Initiate furlough plan for symptomatic staff

• Disease-specific management/prevention strategies
Problem #1: Failure to Recognize
Empower Front-Line Staff to Initiate Transmission-Based Precautions
Outbreak Management is Core IC/IP Task

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  • Minimize staff movements across facility
  • Enhance surveillance in other units

• Initiate furlough plan for symptomatic staff

• Disease-specific management/prevention strategies
### Importance of Employee Furlough

<table>
<thead>
<tr>
<th></th>
<th>Crude</th>
<th>Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RR</td>
<td>95% CI</td>
</tr>
<tr>
<td>No. of beds</td>
<td>1.004</td>
<td>1.001 – 1.006</td>
</tr>
<tr>
<td>Staffing pattern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single unit</td>
<td>1.85</td>
<td>0.59 – 5.79</td>
</tr>
<tr>
<td>Multiple units w/ shared staff</td>
<td>1.62</td>
<td>0.81 – 3.25</td>
</tr>
<tr>
<td>Paid employee sick leave</td>
<td>0.56</td>
<td>0.25 – 1.26</td>
</tr>
</tbody>
</table>

Outbreak Management is Core IC/IP Task

- Teach staff to recognize an outbreak
  - At employment, annually (URI and GE)
  - Reinforce periodically (during rounds) when there is increased community activity or one unit has already experienced an outbreak
  - Integrate detection into multi-disciplinary rounding structure

- Empower staff to initiate transmission-based precautions

- Reinforce behaviors to reduce transmission:
  - Reinforce importance of hand hygiene
  - Reinforce importance of standard precautions
  - Minimize staff movements across facility
  - Enhance surveillance in other units

- Initiate furlough plan for symptomatic staff

- Disease-specific management/prevention strategies
Respiratory Tract Infection Prevention

• NHs should have a standardized surveillance system for monitoring RTIs*
  • Regular ICP review (ideally weekly)
  • Regular ICC review (ideally monthly during influenza/cold season)

• Monitor for the following**: 
  • Common cold/pharyngitis
  • Influenza-like illness (ILI)
  • Pneumonia
  • Bronchitis/tracheobronchitis

• Every NH should have a RTI/influenza outbreak control policy/plan*

Initiation of Prophylaxis

• Threshold varies
  • 3 ILI within three days
  • 1-2 culture-confirmed ILI within 5 days

• Choice of agents
  • Amantidine/Rimantidine
  • Oseltamivir/Zanamivir

• Prophylaxis should continue until no ILI for 5-7 days
Important Points to Consider

• What oseltamivir dose to provide to residents?

• Who is responsible for ordering the prophylactic medications for residents?

• Should employees receive prophylaxis? If yes, who provides the medication?

• How do facilities deal with shortages during high rates of regional consumption?
Influenza Prevention

• Educate staff about risks of influenza
• Surveillance system for influenza-like illnesses
• Strict droplet precautions
• Empower nurses to modify activities
• Use of antiviral prophylaxis
• Vaccinate residents (annual order forms)
• Encourage staff vaccination (offer for free if feasible)
Gastrointestinal Outbreaks
Control Methods: General

- Have a plan (designed like influenza/RTI plan)
- Hand hygiene for staff, residents, and visitors on a regular basis
- Dedicate equipment, meticulous disinfection of shared equipment (dilute bleach)
- All employees should be familiar with the signs and symptoms of norovirus (early detection)
- ICP should have a surveillance system
  - Among residents
  - Among staff when infections among residents recognized

Control Methods: 1st Tier

• Restrict patients to room for 48-72 hours after illness
  • Contact precautions
  • Do not share equipment between rooms
  • Disinfect surfaces in room with hypochlorite (1:50)

• Initiate enhanced surveillance on wards with an outbreak

• Sick visitors should not be allowed to visit

• Furlough ill employees

Control Methods: 2nd Tier

• Cohort staff and limit unit cross-pollination

• Prohibition of all visitors and new admissions

• Symptom screen employees and furlough immediately if screen positive

• Expanded environmental disinfection
  • Disinfect all high-touch areas in common and work areas with hypochlorite (1:50) every shift
  • Clean bathrooms every shift
  • Clean resident rooms every 24 hours

Control Methods: 3rd Tier

• Unit Closure

• Facility Closure

Implementing Antibiotic Stewardship in SNF
Key Steps Towards Better Antibiotic Stewardship in SNF

① Prevent infection

② Reduce antibiotic prescribing for non-bacterial infections

③ Improve prescribing for bacterial infections
Conditions Most Commonly Associated with Unnecessary Prescribing

• Asymptomatic bacteriuria
• Acute bronchitis
• Pharyngitis
• AECB in patients with mild-moderate COPD (Gold stage I, II)
• Acute rhinosinusitis
• Venous stasis dermatitis
Treatment of UTI

- **Always** get culture before starting therapy

- **Empiric therapy**
  - Base on regional/institutional susceptibility patterns
  - Review individual’s recent antibiotic use and culture results
  - NFT = narrow-spectrum beta-lactams =/> TMP/SMX > fluoroquinolones
  - Fosfomycin with MDR/XDR

- **Follow-up on culture results and de-escalate to narrowest spectrum possible**

- **Avoid prolonged courses of antibiotics**
  - Females: 3-5d if no catheter, 7d if catheter or if NFT/BL used
  - Males: 7d regardless of catheter
  - Consider alternative diagnosis if symptoms not improving in 24-48 hours

NFT = nitrofurantoin; BL = beta-lactam antibiotic
Management Issues for LRTI

• Bronchitis
  • Don’t treat
  • Consider respiratory viral outbreak (even if influenza test negative)

• AECB
  • Gold Stage I-II: Inhalers + anti-inflammatory therapy
  • Admitted or Gold III-IV: Inhalers + anti-inflammatory agents + antibiotics
  • Don’t forget doxycycline, don’t use macrolide monotherapy

• Pneumonia
  • First-line: high-dose Amox (1gm TID; high dose Amox/clav [2gm/125mg BID] also acceptable) + macrolide OR doxy
  • Consider doxy monotherapy in mild cases
  • Macrolide monotherapy not recommended
  • Rx for 5-7 days
SSTI Management Approach

• Intact skin (i.e., cellulitis)
  • Non-purulent $\rightarrow$ target streptococci (dicloxacillin or cephalexin)
  • Purulent $\rightarrow$ target MRSA
  • Be patient $\rightarrow$ it often takes 72 hours for redness to recede
  • Expect some post-cellulitis capillaritis (no fever, no WBC/CRP, plus dependent rubor)

• Non-intact skin
  • Get cultures before treatment (Curettage or Levine technique)
  • NPV of cultures for MRSA and PSAE is high $\rightarrow$ target streptococci, MSSA, and Enterobacteriaceae if cultures are negative for these pathogens
Recurrent Cellulitis

• Control edema
  • Edema lowering therapy (PT referral)
  • Compression stockings
  • Scheduled elevation
  • Compressive dressings with skin breakdown or dermatitis flare

• Maintain skin hydration

• Treat tinea pedis and onychomycosis

• Prophylactic penicillin
Penicillin to Prevent Recurrent Leg Cellulitis

Table 3. Factors Predictive of Prophylaxis Failure.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Odds Ratio (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of previous cellulitis episodes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥3</td>
<td>3.23 (1.82–5.73)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>&lt;3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Edema</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preexisting edema</td>
<td>1.83 (0.97–3.47)</td>
<td>0.06</td>
</tr>
<tr>
<td>No evidence of edema</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥33</td>
<td>2.05 (1.16–3.64)</td>
<td>0.01</td>
</tr>
<tr>
<td>&lt;33</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### Nursing Home Residents FY 2011

**Table 1: Primary Diagnoses on Claims of All Hospitalized Medicare Nursing Home Residents in FY 2011**

<table>
<thead>
<tr>
<th>CCS Primary Diagnosis Category</th>
<th>Percentage of Hospitalizations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fifteen Most Frequent CCS Categories</strong></td>
<td></td>
</tr>
<tr>
<td>Septicemia</td>
<td>13.4%</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>7.0%</td>
</tr>
<tr>
<td>Congestive heart failure, nonhypertensive</td>
<td>5.8%</td>
</tr>
<tr>
<td>Urinary tract infections</td>
<td>5.3%</td>
</tr>
<tr>
<td>Aspiration pneumonitis, food/vomitus</td>
<td>4.0%</td>
</tr>
<tr>
<td>Acute renal failure</td>
<td>3.9%</td>
</tr>
<tr>
<td>Complication of device, implant, or graft</td>
<td>3.3%</td>
</tr>
<tr>
<td>Respiratory failure, insufficiency, or arrest</td>
<td>2.7%</td>
</tr>
<tr>
<td>Gastrointestinal hemorrhage</td>
<td>2.4%</td>
</tr>
<tr>
<td>Complications of surgical procedures or medical care</td>
<td>2.4%</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease (COPD) and bronchiectasis</td>
<td>2.4%</td>
</tr>
<tr>
<td>Delirium, dementia, and amnestic and other cognitive disorders</td>
<td>2.2%</td>
</tr>
<tr>
<td>Acute cerebrovascular disease</td>
<td>2.1%</td>
</tr>
<tr>
<td>Fluid and electrolyte disorders</td>
<td>2.0%</td>
</tr>
<tr>
<td>Fracture of neck of femur (hip)</td>
<td>2.0%</td>
</tr>
<tr>
<td><strong>Remaining 221 CCS Categories on Nursing Home Claims</strong></td>
<td>39.1%</td>
</tr>
<tr>
<td><strong>All CCS Diagnosis Categories on Nursing Home Claims</strong></td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: OIG analysis of data on FY 2011 hospitalizations of nursing home residents.
Table 2: Medicare Costs Associated With Medicare Nursing Home Resident Hospitalizations in FY 2011 by Sum of Reimbursement

<table>
<thead>
<tr>
<th>CCS Primary Diagnosis Category</th>
<th>Sum of All Hospital Reimbursements</th>
<th>Percentage of All Hospital Reimbursements</th>
<th>Average Reimbursement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fifteen Most Costly CCS Categories</td>
<td>$9,268,066,011</td>
<td>65.2%</td>
<td>$11,554</td>
</tr>
<tr>
<td>Septicemia</td>
<td>$2,963,329,522</td>
<td>20.8%</td>
<td>$17,430</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>$844,817,051</td>
<td>5.9%</td>
<td>$9,464</td>
</tr>
<tr>
<td>Congestive heart failure, nonhypertensive</td>
<td>$643,386,174</td>
<td>4.5%</td>
<td>$8,731</td>
</tr>
<tr>
<td>Respiratory failure, insufficiency, or arrest</td>
<td>$637,201,272</td>
<td>4.5%</td>
<td>$18,438</td>
</tr>
<tr>
<td>Complication of device, implant, or graft</td>
<td>$619,241,745</td>
<td>4.3%</td>
<td>$14,629</td>
</tr>
<tr>
<td>Aspiration pneumonitis, food/vomit</td>
<td>$618,310,799</td>
<td>4.3%</td>
<td>$12,223</td>
</tr>
<tr>
<td>Complications of surgical procedures or medical care</td>
<td>$449,236,625</td>
<td>3.2%</td>
<td>$14,731</td>
</tr>
<tr>
<td>Acute renal failure</td>
<td>$425,965,874</td>
<td>3.0%</td>
<td>$8,679</td>
</tr>
<tr>
<td>Urinary tract infections</td>
<td>$422,251,024</td>
<td>3.0%</td>
<td>$6,296</td>
</tr>
<tr>
<td>Delirium, dementia, and anemic and other cognitive disorders</td>
<td>$321,003,626</td>
<td>2.3%</td>
<td>$11,151</td>
</tr>
<tr>
<td>Fracture of neck of femur (hip)</td>
<td>$311,417,099</td>
<td>2.2%</td>
<td>$12,578</td>
</tr>
<tr>
<td>Acute cerebrovascular disease</td>
<td>$285,667,898</td>
<td>2.0%</td>
<td>$10,847</td>
</tr>
<tr>
<td>Gastrointestinal hemorrhage</td>
<td>$264,867,028</td>
<td>1.9%</td>
<td>$8,544</td>
</tr>
<tr>
<td>COPD and bronchiectasis</td>
<td>$236,845,320</td>
<td>1.7%</td>
<td>$7,727</td>
</tr>
<tr>
<td>Acute myocardial infarction</td>
<td>$222,524,954</td>
<td>1.6%</td>
<td>$11,475</td>
</tr>
<tr>
<td>Remaining 221 CCS Categories</td>
<td>$4,991,830,494</td>
<td>34.4%</td>
<td>$11,188</td>
</tr>
<tr>
<td>All CCS Diagnosis Categories on Nursing Home Claims</td>
<td>$14,259,896,509</td>
<td>100%</td>
<td>$11,211</td>
</tr>
</tbody>
</table>

Source: OIG analysis of data on FY 2011 hospitalizations of nursing home residents.
SNF Re-hospitalization

• 23.5% SNF admissions are re-hospitalized within 30 days
• Significant geographic variation
• Significant facility type variation
• $10,000 average Medicare payment/ re-hospitalization
• 78% deemed potentially "avoidable”

SNF  Top 5 Potentially Avoidable Rehospitalizations Diagnoses

• Congestive Heart Failure
• Respiratory Infection
• Urinary Tract Infection
• Sepsis
• Electrolyte Imbalance

- MedPAC 2006
Medicare Spending

Figure 4

Actual and Projected Net Medicare Spending, 2010-2024

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual Net Outlays</th>
<th>Projected Net Outlays</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$446</td>
<td>$527</td>
</tr>
<tr>
<td>2011</td>
<td>$480</td>
<td>$560</td>
</tr>
<tr>
<td>2012</td>
<td>$466</td>
<td>$562</td>
</tr>
<tr>
<td>2013</td>
<td>$492</td>
<td>$574</td>
</tr>
<tr>
<td>2014</td>
<td>$505</td>
<td>$642</td>
</tr>
<tr>
<td>2015</td>
<td>$527</td>
<td>$688</td>
</tr>
<tr>
<td>2016</td>
<td>$560</td>
<td>$738</td>
</tr>
<tr>
<td>2017</td>
<td>$562</td>
<td>$833</td>
</tr>
<tr>
<td>2018</td>
<td>$574</td>
<td>$852</td>
</tr>
<tr>
<td>2019</td>
<td>$642</td>
<td>$866</td>
</tr>
<tr>
<td>2020</td>
<td>$688</td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td>$738</td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>$833</td>
<td></td>
</tr>
<tr>
<td>2023</td>
<td>$852</td>
<td></td>
</tr>
<tr>
<td>2024</td>
<td>$866</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: All amounts are for federal fiscal years; amounts are in billions and consist of Medicare spending minus income from premiums and other offsetting receipts.

SOURCE: Congressional Budget Office, Updated Budget Projections: 2015 to 2025 (March 2015); The 2015 Long-Term Budget Outlook (June 2015).
Shift to Value Based Payment

1982 • Hospital Prospective Payment

1998 • Skilled Nursing Facility Prospective Payment

2013 • Hospital Value Based Purchasing

2019 • Skilled Nursing Facility Value Based Purchasing
Value-Based Models Across Healthcare System

• Part A
  • Hospital Value-Based Purchasing
  • Skilled Nursing Facility Value-Based Purchasing

• Part B
  • Quality Payment Program
    Merit-based Incentive Payment
    Advanced Alternative Payment Models
Value-Based Models Across Healthcare System

Alternative Payment Models over 30 models for 2017 including:
• Bundled Payment Care Initiative
• Next Generation ACO Model
• Comprehensive Care for Joint Replacement Model
• Medicare Shared Savings Program (MSSP) 3 Tracks
• Initiative to Reduce Avoidable Hospitalizations Among Nursing Home Residents Phase 2
Average Annual Hospitalization rate – 25%

Table 5: Percentages of Nursing Homes by Annual Hospitalization Rate in FY 2011

<table>
<thead>
<tr>
<th>Annual Hospitalization Rate</th>
<th>Percentage of Homes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above 50 percent</td>
<td>0.6%</td>
</tr>
<tr>
<td>40 percent to 49.9 percent</td>
<td>6.2%</td>
</tr>
<tr>
<td>30 percent to 39.9 percent</td>
<td>22.1%</td>
</tr>
<tr>
<td>20 percent to 29.9 percent</td>
<td>39.9%</td>
</tr>
<tr>
<td>10 percent to 19.9 percent</td>
<td>26.9%</td>
</tr>
<tr>
<td>Less than 9.9 percent</td>
<td>4.3%</td>
</tr>
<tr>
<td>All Homes</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Source: OIG analysis of data on FY 2011 hospitalizations of nursing home residents.

Figure 2: Geographic Distribution of Average Annual Hospitalization Rate in FY 2011

Source: OIG analysis of data on FY 2011 hospitalizations of nursing home residents.
CMMI and MMCO*: Initiative to Reduce Avoidable Hospitalizations
Among NF Residents 2012
146 Nursing Homes in 7 States

Reduce avoidable hospital admissions and re-admissions
Improve resident health outcomes and hospital/nursing facility transitions
Reduce health care spending without restricting access to care or provider choice

*CMMI Centers for Medicare and Medicaid Innovation MCCO Medicare-Medicaid Coordination Office
Initiative to Reduce Avoidable Hospitalizations Among NF Residents: Key Strategies

• Enhanced recognition and management of acute condition changes
• Use of INTERACT tools
• Direct clinical support (RN and APN)
• Rehospitalization Root Cause Analysis
• Staff Education
## Chart 5-1. SNFs slightly improved on some measures but not others from 2011 to 2014

<table>
<thead>
<tr>
<th>Measure</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharged to the community</td>
<td>33.1%</td>
<td>35.6%</td>
<td>37.5%</td>
<td>37.6%</td>
</tr>
<tr>
<td>Potentially avoidable readmissions during SNF stay</td>
<td>12.4</td>
<td>11.5</td>
<td>11.2</td>
<td>10.9</td>
</tr>
<tr>
<td>Potentially avoidable readmissions during 30 days after discharge from SNF</td>
<td>5.9</td>
<td>5.7</td>
<td>5.5</td>
<td>5.6</td>
</tr>
<tr>
<td>Rate of improvement in one or more mobility ADLs</td>
<td>43.6</td>
<td>43.5</td>
<td>43.7</td>
<td>43.5</td>
</tr>
<tr>
<td>Rate of no decline in mobility</td>
<td>87.3</td>
<td>87.2</td>
<td>87.2</td>
<td>87.1</td>
</tr>
</tbody>
</table>

Source: MedPAC Data Book June 2016
Protecting Access to Medicare Act of 2014 (PAMA)

• October 2016 – CMS will provide SNFs with feedback on readmission rates
• October 2017 – rates will be reported in the Nursing Home Compare website
• October 1, 2018 – application of measure and associated penalties will start for Medicare fee-for-service beneficiaries
Protecting Access to Medicare Act of 2014 (PAMA)

• Part of the 2014 law that addressed the Medicare Sustainable Growth Rate formula – “doc fix”

• SNF’s will share the responsibility with hospitals for 30-day readmissions

• Provisions for hospital readmission penalties for skilled nursing facilities starting 2018
  • Section 215 – SNF 2% reduction reimbursement CMS
  • Recoup the portion demonstrating an acceptable risk-adjusted readmission ratio and nationally benchmarked rate
SNF Value-Based Payments (Readmissions)

• Measure: Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM (NQF #2510)
  • Estimates risk-standardized rate of all-cause, unplanned, hospital readmissions for SNF Medicare Beneficiaries within 30 days of their prior proximal short-stay acute hospital discharge
• Data submission: Claims based data
• Effective 1, 2018 – Payments begin 2019
• All SNFs will see 2% withhold. Top 60% will “earn back” 50-70%. Bottom 40% will get no payment.
Summary

• Infections and inappropriate use of AM have negative impact on quality of care in SNF
• Inappropriate use of antibiotics increase cost and affect entire community
• Antibiotic stewardship program in skilled nursing facilities (SNF) reduce inappropriate use of antibiotics
• Appropriate use of antibiotics reduce risk of admissions and readmissions to the hospital
Thank You