Antibiotic Stewardship
Updates and Resources for
California Skilled Nursing Facilities

2018 U.S. Antibiotic Awareness Week
Educational Kick-Off Event
Los Angeles, California
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Center for Health Care Quality
California Department of Public Health
Objectives

• Explain the California requirements for antimicrobial stewardship policies in skilled nursing facilities (SNF).
• Describe the antimicrobial stewardship resources for California skilled nursing facilities, including a new CDPH toolkit.
• Define the key roles that nursing and infection prevention staff play in implementing antibiotic stewardship.
California Antimicrobial Stewardship Legislation for Skilled Nursing Facilities

- California Senate Bill 361 – By January 1, 2017
  - Each skilled nursing facility shall adopt and implement an antimicrobial stewardship policy consistent with guidelines
Regulatory Mandates for Antibiotic Stewardship in SNF

• CMS Conditions of Participation for SNF:
  – “An antibiotic stewardship program that includes antibiotic use protocols and a system to monitor antibiotic use.”
Antibiotics Frequently Prescribed in Nursing Homes

- Antibiotics comprise ~40% of all prescriptions in nursing homes.

- Over the course of one year, 50-70% of nursing home residents receive one or more courses of antibiotics.

- Up to 75% of antibiotic use in nursing homes may be inappropriate.

Daneman et al. JAMA Int Med 2013
Benoit et al. JAGS 2008
Nicolle et al. ICHE 2000
Antibiotic Use Can Harm Residents

• Risk of side effects and adverse events

• Major risk factor for *Clostridium difficile* infections

• Driver of antibiotic resistance
C. difficile: A Major Cause of Morbidity and Mortality in Nursing Home Residents

- 112,800 cases of nursing-home onset C. difficile infections in United States in 2012
- 76% received antibiotics during prior 12 weeks
- 57% were discharged from a hospital during the 4 weeks prior to specimen collection
- 28% hospitalized within 7 days
- 8% died within 30 days

Hunter, et al. OFID 2015
Multidrug Resistant Organisms (MDRO) Common Among Nursing Home Residents

- Methicillin Resistant *Staphylococcus aureus* (MRSA) 30-50%
- Vancomycin Resistant *Enterococcus* (VRE) 5-10%
- Resistant *Pseudomonas*
- Resistant *Acinetobacter*
- Extended Spectrum Beta Lactamase (ESBL) 20%
- Carbapenem Resistant Enterobacteriaceae (CRE) sporadic

MDRO Colonization Among Southern CA Nursing Home Residents

Table 1. MDRO Colonization in Residents of 28 Nursing Homes

<table>
<thead>
<tr>
<th>Body Site</th>
<th># Swabbed</th>
<th>Any MDRO</th>
<th>MRSA</th>
<th>VRE</th>
<th>ESBL</th>
<th>CRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nares</td>
<td>1,397</td>
<td>29%</td>
<td>29%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Axilla/Groin</td>
<td>1,400</td>
<td>39%</td>
<td>24%</td>
<td>7%</td>
<td>16%</td>
<td>1%</td>
</tr>
<tr>
<td>All Body Sites</td>
<td>2,797</td>
<td>49%</td>
<td>37%</td>
<td>7%</td>
<td>16%</td>
<td>1%</td>
</tr>
</tbody>
</table>

McKinnell et al. OFID 2017
Core Actions to Address Antimicrobial Resistance (AR)

• **Improve antimicrobial prescribing** through antimicrobial stewardship

• **Prevent infections and transmission** of antimicrobial resistant pathogens within and across healthcare facilities

• **Track antimicrobial use and resistance** trends
Antibiotic Prescribing Challenges in Nursing Homes

- Comorbidities, indwelling devices – risk of infection and MDRO
- Bacterial colonization is common; cultures are frequently positive in absence of infection
- Chronic symptoms, cognitive impairment can hinder reliable assessments
- Most antibiotic prescriptions made over phone based on assessments made by someone else
- Influence of resident and family on decisions to obtain diagnostic tests and start antibiotics

Nicolle, Antimicrob Resist and Infect Contr 2014  Richards et al. JAMDA 2005
Antibiotics Used Incorrectly in a Variety of Ways

- Given when not needed
  - Illness caused by a virus
  - Positive cultures reflect colonization, not infection
- The wrong antibiotic selected
  - Drug doesn’t match the susceptibility of the bug
  - Broad spectrum agents used to treat very susceptible bacteria
- Administered at the wrong dose, or used without appropriate monitoring
  - Side effects, drug interactions
- Continued when no longer necessary

http://www.cdc.gov/getsmart/healthcare/
What is Antibiotic Stewardship?

- Coordinated activities to promote and measure appropriate antibiotic use
  - **Diagnosis** – Does the patient have an infection for which an antibiotic is needed?
  - **Antibiotic selection** – Is the antibiotic the correct one?
  - **Dosing** – Is the antibiotic dose and monitoring appropriate?
  - **Duration** – How long is sufficient, but not longer than necessary?
Benefits of Antibiotic Stewardship

- Appropriate antimicrobial use
  - Improved patient outcomes – increased cure rates, reduced treatment failures
  - Reductions in CDI and antimicrobial resistance
  - Decreased or controlled costs
Antibiotic Stewardship Core Elements

- Antibiotic stewardship interventions are most effective when coordinated within infrastructure of a multidisciplinary antibiotic stewardship program.
California Antimicrobial Stewardship Program Initiative

The California Antimicrobial Stewardship Program Initiative of the CDPH Healthcare-Associated Infections (HAI) Program provides guidance and support for California healthcare facilities to implement antimicrobial stewardship programs (ASPs). ASPs promote and measure appropriate antimicrobial use by optimizing selection, dosing, route and duration of therapy. ASPs improve patient outcomes while minimizing adverse events associated with antimicrobial use, including toxicity, Clostridium difficile infections and the emergence of antimicrobial resistant organisms.

California was the first state to enact antimicrobial stewardship legislation.

- **California Senate Bill 739 (PDF):** Hospitals are required to develop a process for monitoring the judicious use of antibiotics, the results of which are monitored by quality improvement committee(s).
- **California Senate Bill 1311:** Hospitals are further required adopt and implement an antimicrobial stewardship policy in accordance with guidelines established by federal government and professional organizations, and to establish a physician-supervised multidisciplinary antimicrobial stewardship committee with at least one physician or pharmacist who has undergone specific training related to stewardship.
- **California Senate Bill 361:** Skilled nursing facilities are required to adopt and implement an antibiotic stewardship policy by January 1, 2017.

HAI Program Resources for Antimicrobial Stewardship in Hospitals

- **CDPH Spotlight on ASPs Project**
  The Spotlight on ASPs project offers California hospital the opportunity to highlight and publically share their progress with ASP implementation on the HAI Program website. Spotlighted hospitals provide the contact information of their ASP leaders to facilitate mentoring and regional collaboration with other facilities.

HAI Program Resources for Antimicrobial Stewardship in Skilled Nursing Facilities

- **CDPH Skilled Nursing Facilities (SNF) ASP Toolkit**
  The CDPH SNF ASP Toolkit provides practical examples of local program implementation.

- **Antibiotic Stewardship in Nursing Homes Webinar Series - 2016**
  This six-part Antibiotic Stewardship in Nursing Homes webinar series provides information on key concepts and principles to improve antibiotic use in nursing homes.
Skilled Nursing Facility Antibiotic Stewardship Program Implementation Toolkit

The CDPH skilled nursing facility (SNF) antibiotic stewardship program (ASP) toolkit compiles resources for California SNF to implement ASP. The toolkit can be used by SNF medical directors, administrators, directors of nursing or staff development, infection preventionists, pharmacy consultants, and any other staff seeking guidance, resources, and practical examples for developing ASP practices.

ASP optimize the treatment of infections and reduce unnecessary antibiotic use. Improving antibiotic use can reduce adverse events including *Clostridium difficile* infections, prevent emergence of resistance, and lead to better outcomes for SNF residents.

In California, all SNF are required by law to implement an antibiotic stewardship policy consistent with guidelines developed by the Centers for Disease Control and Prevention (CDC), the Centers for Medicare and Medicaid Services, the Society for Healthcare Epidemiology of America, or similar recognized professional organizations. This toolkit is aligned with the CDC “Core Elements of Antibiotic Stewardship for Nursing Homes (PDF)”. The toolkit includes suggestions for implementing the core elements as well as webinar recordings, examples and tools shared by SNF.

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**Element 1. Leadership Commitment**

SNF leadership commitment support helps ensure adequate funding and staffing of the ASP, and facilitates buy-in among clinicians.

**Suggestions:**

- Create a written statement in support of ASP, including demonstration of adequate funding and staffing resources to support the program
- Establish antibiotic stewardship as a Performance Improvement Program under the facility Quality Assurance-Performance Improvement (QAPI) initiative as recommended by the Centers for Medicare & Medicaid Services (CMS) and the Centers for Disease Control and Prevention (CDC)
- Routinely review ASP activities during the facility quality improvement committee meetings
  - [Webinar recording: Leadership Support for Nursing Home Antimicrobial Stewardship](link opens in YouTube)
  - [Example 1.1: Statement of Leadership Support (PDF)](link opens in PDF), Sharp Coronado Hospital and Villa Long Term Care
Antibiotic Stewardship Programs – Everyone Has a Role

- Administrator
- Medical Director
- Physicians, PAs, NPs
- Pharmacist
- Director of Nursing
- Infection Preventionist
- Nursing Staff
- Laboratory
Leadership Support for Antibiotic Stewardship

- Facility leadership support is critical
  - Create a “culture of stewardship”
  - Set and communicate expectations about antibiotic use
  - Include stewardship-related duties in position descriptions

- Written statement of support from leadership significantly associated with having a comprehensive hospital antibiotic stewardship program

Medical Director Roles in Antibiotic Stewardship

• Clinical leader in the facility
  • Set and communicate expectations about antibiotic prescribing practices for all clinical providers
  • Review data on antibiotic use, adherence to antibiotic prescribing policies/protocols
  • Provide feedback to prescribing clinicians and ensure best practices are followed
Pharmacy Roles in Antibiotic Stewardship

• Consultant Pharmacist
  • Incorporate assessment of adherence to antibiotic prescribing protocols in medication regimen reviews
  • Track antibiotic use measures
  • Develop reports for review at quality assurance/infection control committee meetings

• Dispensing Pharmacist
  • Implement reviews of antibiotic appropriateness at time of dispensing
Nursing Roles in Antibiotic Stewardship

• Director of Nursing
  • Set practice standards and oversee training of front-line nursing staff for assessing, monitoring and communicating changes in a resident’s condition
  • Nursing staff are central communicators and coordinators of care; important source of information and education for patients and families

• Infection Preventionist
  • Data on *C. difficile* infections, antibiotic resistance patterns, adherence to criteria during evaluation and management of treated infections

Olans RN et al. CID 2016
Laboratory Support for Antibiotic Stewardship

- Provide summary reports of antibiotic susceptibility patterns from organisms isolated in cultures from residents in the facility (i.e., the antibiogram)

- Alert facility if certain antibiotic-resistant organisms are identified

- Provide education for staff on diagnostic tests
CDC’s Core Elements of Antibiotic Stewardship in Nursing Homes

- Take **Action** through policy and practice change to improve antibiotic use.
CDC Recommended Actions to Improve Antibiotic Use in Nursing Homes

- Identify clinical situations and practices which might be driving inappropriate courses of antibiotics
- Examine processes for assessing, documenting and communicating suspected infection
  - Develop assessment & communication protocols for nursing staff to use when relaying pertinent information to clinicians when infection is suspected
- Assess how laboratory tests are used
  - Implement algorithms to guide appropriate use of microbiology and diagnostic testing
Element 4. Action

SNF should implement at least one intervention to improve antibiotic use. New policies and procedures should be introduced in a step-wise fashion so staff become familiar with, and not overwhelmed by, new changes in practice. Prioritize interventions based on the prescribing and resistance patterns or most prevalent antibiotic adverse events (e.g., *Clostridium difficile* infections) at the facility.

Suggestions:

- Develop reports summarizing the antibiotic susceptibility patterns observed at the facility (e.g., facility antibiogram)
- Partner with ASP physician or pharmacy consultant to use the antibiogram to reevaluate the antibiotic formulary and develop facility-specific treatment recommendations for common infection syndromes
- Develop a facility-specific algorithm and communication tool for assessing residents suspected of having an infection
- Develop facility-specific algorithms for appropriate diagnostic testing (e.g., obtaining cultures) for specific infections
- Require prescribers to document a dose, duration, and indication for all antibiotic prescriptions
- Implement an antibiotic review process or “antibiotic time out” at 48-72 hours after initiation of antibiotics to reevaluate treatment based on clinical response and culture results
- Implement a process for communicating or ensuring receipt of antibiotic use information when residents are transferred to and from other healthcare facilities

- Webinar recording: Antimicrobial Stewardship Actions and Interventions in the Nursing Home Setting (link opens in YouTube)
- Example 4.1: Antibiogram (PDF), Palomar Health
- Example 4.2: Antibiogram (PDF), Sharp Coronado Hospital and Villa Long Term Care
- Example 4.3: Antibiogram Analysis (PDF), Eden Medical Center / Sutter Health
- Example 4.4: Antibiotic Initiation Guidelines (PDF), Sharp Coronado Hospital and Villa Long Term Care
- Example 4.5: Antibiotic Interventions (PDF), O’Connor Hospital
- Example 4.6: Antibiotic Time Out (PDF), O’Connor Hospital
- Example 4.7: Drug Interaction Progress Note (PDF), O’Connor Hospital
- Example 4.8: Fever/Suspected Infection Treatment (PDF), Sharp Coronado Hospital
- Example 4.9: Infection Assessment (PDF), Palomar Health Long Term Care
- Example 4.10: Pharmacy Communication Sheet for Vancomycin (PDF), O’Connor Hospital
- Example 4.11: Pharmacy Communication Sheet for Nominator Spectrum (PDF), O’Connor Hospital
- Example 4.12: Pharmacy Communication Sheet for Resistant Organism (PDF), O’Connor Hospital
Where to Start: Targeted Approaches to Antibiotic Stewardship Actions

- **Specific antibiotic(s)**, e.g., expensive, toxic, broad-spectrum or new agents

- **Specific infection(s)**, e.g. *C. difficile*

- **Syndrome(s)**, e.g. suspected urinary tract infection (UTI)/asymptomatic bacteriuria
Identifying Antibiotic Use Patterns and Potential Stewardship Targets

• Pharmacist medication regimen reviews, tracking new antibiotic starts
  • Identify most common clinical scenarios or conditions
  • Identify most common antibiotics prescribed
  • Adherence to criteria, antibiotic prescribing protocols

• Compare prescribing patterns with antibiotic susceptibility trends for bacteria encountered in the facility (i.e., the antibiogram)

• Share these data with nursing home staff!
10 most Common Situations Where Antibiotics are Used and Rarely Necessary

**UTI**

1. Positive urine culture in asymptomatic patient
2. U/A and culture for cloudy or malodorous urine
3. Non specific symptoms or signs not referable to the urinary tract
4. Upper respiratory infections
5. Bronchitis without COPD
6. Suspected or proven influenza with no secondary infection
7. Respiratory symptoms in a terminal patient with dementia

**Skin Wounds**

8. Skin wound without cellulitis, sepsis or osteomyelitis
9. Small localized abscess without significant cellulitis
10. Decubitus ulcer in a terminal patient

http://www.annalsoflongtermcare.com/article/ten-clinical-situations-long-term-care-which-antibiotics-are-often-prescribed
Potential Antibiotic Stewardship Targets in Nursing Homes

• Three antibiotic classes accounted for nearly 60% of antibiotic courses:
  • Fluoroquinolones (e.g., ciprofloxacin, levofloxacin) - 38%
  • First-generation cephalosporins (e.g., cephalexin) - 11%
  • Macrolides (e.g., azithromycin) - 10%

• The most common conditions for which antibiotics were prescribed:
  • Respiratory tract infections - 33%
  • Urinary tract infections - 32%

Benoit et al. JAGS 2008
What Antibiotic Stewardship Actions Have Been Effective in Nursing Homes?

- Programs focusing on specific aspects of treatment of urinary infection reported to be effective
  - Limiting treatment of asymptomatic bacteriuria or prophylaxis of urinary infection

- Diagnosis and treatment algorithms for urinary infection
  - Pocket cards and posters
  - Small-group interactive sessions using case scenarios
  - Follow-up educational sessions with case-based feedback of inappropriate practices

Nicolle, Antimicrob Resist and Infect Contr 2014
Bacterial Colonization of Urine Extremely Common Among Nursing Home Residents

• Among nursing home residents, 15%–30% of men and 25%–50% of women have positive urine cultures
  • In residents with urinary catheters, ~100% have positive urine cultures

• Asymptomatic bacteriuria has not been shown to be associated with adverse outcomes in nursing home residents

• Asymptomatic bacteriuria in elderly nursing home residents should not be treated with antibiotics

Nicolle LE CID 2000
Resident Symptoms Critical to Decision-making

- Symptoms must be new or acutely worse

- Consider alternative non-infectious causes of signs and symptoms (e.g., dehydration, medications)

- Infection should not be determined on basis of single piece of evidence
  - Always consider clinical presentation together with microbiologic or radiologic information

Stone N, et al. ICHE 2012
Importance of Nursing Assessments and Communication of Resident Symptoms

- 67% of antibiotic prescriptions made over phone based on assessments made by someone else

Richards et al. JAMDA 2005

- Based on their assessments and reporting of resident symptoms, front-line nursing staff play a critical role in whether antibiotics are initiated!
HEALTHCARE-ASSOCIATED INFECTIONS PROGRAM

- Patient symptoms grouped by 4 basic categories of infection
- Communicate assessment findings using “SBAR” format
- Include subjective assessment of resident’s condition, in addition to vitals and symptoms

Example shared courtesy of Bridget Olson, Sharp Coronado Hospital

<table>
<thead>
<tr>
<th>Suspected Respiratory Infection</th>
<th>Patient Status/symptoms</th>
<th>Suspected UTI</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of COPD or CHF (circle one)</td>
<td>Catheter (type:___<strong><strong><strong>, date changed</strong></strong></strong>)</td>
<td>Acute dysuria</td>
</tr>
<tr>
<td>Ventilator/trach/blowby (circle one)</td>
<td>Acute pain/swelling of testes/epididymis or prostate</td>
<td>Acute costovertebral angle tenderness or pain</td>
</tr>
<tr>
<td>Riqors (shaking chills)</td>
<td>Gross hematuria</td>
<td>New or worsening urinary urgency, frequency or suprapubic pain or incontinence</td>
</tr>
<tr>
<td>Cough, new or increased</td>
<td>Acute change in mental status or functional decline</td>
<td>Rib sponsoring (shaking chills)</td>
</tr>
<tr>
<td>Purulent sputum production, new or increased</td>
<td>Fever of Unknown Origin</td>
<td>Acute change in mental status or functional decline</td>
</tr>
<tr>
<td>New infiltrates on chest xray (dated: ____)</td>
<td></td>
<td>Purulent discharge from around catheter</td>
</tr>
<tr>
<td>RR &gt; 25 bpm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleuritic chest pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O2 sat &lt;94% or decreased &gt;3% from baseline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute change in mental status or functional decline</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SBAR for MD call: (If 2200-0630, as per on-call Pharmacist recommendation)

Situation: Report imminent patient status: abnormal vitals, pain, physical symptoms, fever or acute mental status or vital sign changes, CBC, CMP, & chest xray results.

Background: Give patient history, status: diagnosis, presence of catheter, wounds, etc.

Assessment: Report if McGeer Criteria met & if patient qualifies for initiation of antibiotics per on-call RPh

Recommendation: Initiate cultures/empirc antibiotic therapy per Cerner powerplan/as recommended by RPh

Fax this page to Pharmacy when completed, Call Pharmacist to review.

RN completing assessment: ___________________________ Date: ______________ Form Updated 7/2015
Suspected UTI
- Catheter (type: _____________ date changed _____)
- Acute dysuria
- Acute pain/swelling of testes/epididymis or prostate
- Gross hematuria
- Acute costovertbral angle tenderness or pain
- New or worsening urinary urgency, frequency or suprapubic pain or incontinence
- Rigors (shaking chills)
- Acute change in mental status or functional decline
- Purulent discharge from around catheter
Strategies to Ensure Appropriate Laboratory Testing

• Ensure good quality specimen collection
  • Poor specimen collection and handling can lead to contamination, false positive and/or misleading results
• If a culture is positive, ensure resident is assessed (or reassessed) for symptoms before starting treatment
• When antibiotic treatment is indicated, ensure appropriate cultures are obtained **before** starting antibiotics
Importance of Educating and Communicating with Residents and Families

- Residents and families often influence decisions to obtain diagnostic tests and start antibiotics

- Nursing and other front-line staff are the “central communicators”
  - Educate residents and families about appropriate antibiotic use
  - Communicate protocols when infections are suspected
Nursing as the Hub of Communication for Antimicrobial Use Stakeholders

- Physicians
- Administration
- Infectious Disease Consultants
- Pharmacy
- Case Management
- Microbiology
- Infection Prevention
- Patients/Residents and Families
Resources for Educating Healthcare Consumers

Antibiotics for urinary tract infections in older people

When you need them—and when you don’t

Antibiotics are medicines that can kill bacteria. Doctors often use antibiotics to treat urinary tract infections (UTIs). The main symptoms of UTIs are:

- A burning feeling when you urinate.
- A strong urge to urinate often.

However, many older people get UTI treatment even though they do not have these symptoms. This can do more harm than good. Here’s why:

Antibiotics usually don’t help when there are

http://consumerhealthchoices.org/campaigns/choosing-wisely/
Antimicrobial Stewardship Across Transitions of Care

• Establish **consistency of practice and messaging** about antimicrobial use across diverse care settings

• Ensure communication of **antimicrobial indication and anticipated duration** when patients transfer between facilities
  – Avoid duplicative or unnecessarily prolonged courses of antimicrobial therapy, which increase CDI risk

• Ensure communication and documentation of **patient symptoms** upon transfer
  – Ensure appropriate diagnostic testing and infection control measures implemented promptly
Interfacility Transfer Communication Tool

- Document antimicrobials patient is receiving, including
  - Antimicrobial name, dose, frequency
  - What infection is being treated
  - Start and anticipated stop dates
Summary

- Antimicrobial stewardship programs are necessary, and required, in skilled nursing facilities
- Infection prevention and nursing staff have critical roles to play in SNF antimicrobial stewardship programs
- Public health provides many resources and tools to support SNF ASP
Questions?

For more information or consultation, contact HAIProgram@cdph.ca.gov or (510) 412-6060.