Antimicrobial Stewardship in Skilled Nursing Facilities

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Disclosures

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- I have served as a consultant for Allergan, Actavis, Cubist, Forest, Iterum, Medicines Company, Melinta, Sanofi US, Sanofi Pasteur INC, Science 37, Theravance, and Thermo Scientific

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- Ellie Goldstein, MD
LTC Antibiotic cost estimates:

$38-$137 million per year in US

Antibiotics and CDI

Risk of CDI compared to resident on 1 antibiotic

<table>
<thead>
<tr>
<th>Number of ATBs</th>
<th>2 ATBs</th>
<th>3-4 ATBs</th>
<th>5+ ATBs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk</td>
<td>2.5 times higher</td>
<td>3.3 times higher</td>
<td>9.6 times higher</td>
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</tbody>
</table>

Risk of CDI compared to resident on ATBs for <4 days

<table>
<thead>
<tr>
<th>Days of Antibiotic</th>
<th>4-7 days</th>
<th>8-18 days</th>
<th>&gt;18 days</th>
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</thead>
<tbody>
<tr>
<td>Risk</td>
<td>1.4 times higher</td>
<td>3 times higher</td>
<td>7.8 times higher</td>
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</table>

Increasing US Mortality due to C difficile
California Antimicrobial Stewardship Legislation for Skilled Nursing Facilities

California Senate Bill 361
January 1, 2017
Each skilled nursing facility shall adopt and implement an antimicrobial stewardship policy consistent with guidelines.

CDPH HAI Advisory Committee Antimicrobial Subcommittee is developing the core elements required to comply with this legislation.
Antimicrobial Stewardship

“Antimicrobial stewardship is defined as a formalized program that provides advice, consent, and institutional guidance on appropriate selection, dosing, route and duration of antimicrobial usage.”
The Core Elements of Antibiotic Stewardship for Nursing Homes

APPENDIX A

National Center for Emerging and Zoonotic Infectious Diseases Division of Healthcare Quality Promotion
**CDC Core Elements of Nursing Home ASP**

**Leadership Commitment:**
Demonstrate support and commitment to safe and appropriate antibiotic use

**Accountability:**
Identify physician, nursing and pharmacy leads responsible for promoting and overseeing stewardship activities

**Drug Expertise:**
Establish access to consultant pharmacists or others with stewardship experience or training

**Action:**
Implement *at least one* policy or practice to improve antibiotic use

**Tracking:**
Monitor *at least one* process measure of antibiotic use, and *at least one* outcome from antibiotic use.

**Reporting:**
Provide regular feedback on antibiotic use and resistance to doctors, nurses and relevant staff

**Education:**
Educate clinicians, nursing staff, residents and families
Starting Stewardship in Nursing Homes

• Support: Medical Director, Administrator and Director of Nursing

• Create an ASP committee
  • Medical Director, DON, IP, Infectious Disease Physician, Infectious Disease Trained Pharmacist, Laboratory

• ASP needs to Meet Regularly
Starting Stewardship in Nursing Homes

• Create and approve a policy

• Evaluate data sources and decide on metrics

• Begin educating nursing staff on goals & practices

• Include/educate physicians – adopt guidelines/set expectations

• Educate residents and family – set expectations

Obtaining Antimicrobial Expertise

- Partnering with an infectious disease physician
- Local on-site at meetings are best; however…

- Telepresence
  - Data analysis
  - Recommendations
  - Interventions
  - Education
  - Survey
Realistic Implementation Timeline

• 0-3 Months
  • Create committee, secure antimicrobial expertise
  • Policy and Procedure, Letters of Support, Education
  • Data and report availability gap analysis
    • Antibiotic usage (DOT) and costs, Antibiogram
    • Outcomes (readmissions, Cdiff infections other HAIs)
Realistic Implementation Timeline

• 4-6 Months
  • Data analysis → opportunities for improvement
  • Define a high value, achievable intervention

• 7-9 Months
  • Review specific data related to first intervention
  • Make adjustments to first intervention
  • Feedback results of first intervention to employees, patients, families and medical staff
Antimicrobial Stewardship

“Our Adventures Into Antimicrobial Stewardship”
“Start with an Easy Intervention with a Guaranteed Win!”

-Phil Robinson, M.D.

Antimicrobial Stewardship
Hoag Hospital
Newport, CA
Antimicrobial Stewardship

- Vancomycin 250 mg po Qday x 7 Days for Cdiff
Antimicrobial Stewardship

- Vancomycin 250 mg po Qday x 7 Days for Cdiff

“I was reducing the dose because her renal function is pretty poor.”
Antimicrobial Stewardship

• Appropriate Treatment

• Appropriate Drug Selection

• Appropriate Duration

Primary Role: Improve Effectiveness, Safety

Secondary Role: Reduce Needless Costs
Most common infections treated with antibiotics in nursing homes

- Urinary Tract Infection 32%
- Respiratory Tract Infection 33%
- Skin and Soft Tissue Infection 12%
- Other 10%
- Undocumented 13%

Implementation of an ASP targeting residents with UTI in 3 community LTCFs: A quasi-experimental study using time-series analysis

Tribal Warfare!!!!
Inadequate antimicrobial therapy associated with higher mortality

Prospective study (n=2000: 655 with infections)
25% of patients received inadequate treatment

Relationship between survival and time to effective antimicrobial treatment among patients with septic shock

Retrospective multi-center study (n=2731)

“Pick Your Battles Wisely”
Antimicrobial Stewardship

- Appropriate Treatment

- Appropriate Drug Selection

- Appropriate Duration

Primary Role: Improve Effectiveness, Safety

Secondary Role: Reduce Needless Costs
Los Angeles County DPH Regional Antibiogram

- Cross-sectional, voluntary, survey of Facility Antibiograms
- Susceptibility Results from 2013 were aggregated
- Results presented as weighted average
Response Rate

Seventy facilities (70%) submitted an antibiogram

Acute Care Hospitals response rate was 67% (61/91)
75% ACH patient days (n=3,770,438)
74% beds (n=18,316)

LTACH response rate was 100%
All LTAC patient days (n=199,795)
All beds (n=772).
GN Resistance

• Fluroquinolone Resistance was HIGH
  
  *E. coli* was 32% (n=72,103 isolates) for ACH and 83% (594) for LTAC

  *Pseudomonas aurugenosa* was 35% (n=16,198 isolates) for ACH and 70% (n=1,646) for LTAC
Antibiotic Drug Selection

• Fluroquinolones seem to be the favorite antibiotic.¹

• FQ resistance at our facility is HIGH!!²
  57% in Acute Care Patients
  78% in Custodial Care Patients

• FQ are associated with CDAD.

¹ Copy of IV Drugs 2qrt-2016.xls
² Diagnostic Laboratories 5/1/15 to 4/20/16
Antimicrobial Stewardship

- Appropriate Treatment
- Appropriate Drug Selection
- Appropriate Duration

Primary Role: Improve Effectiveness, Safety

Secondary Role: Reduce Needless Costs
Antibiotic Drug Selection

- 14 Days seems to be the favorite duration.\(^1\)

- Minimal dataset

\(^1\) Limited Manual Review of previous Antibiotic Orders
Appropriate ABX Duration

- Ventilator-associated pneumonia: 7-8 days
- Most community-acquired pneumonia: 5 days
- Cystitis: 3-5 days
- Pyelonephritis: 7-10 days
- Cellulitis: 5-7 days

Guideline Targets for Therapy

Hayashi Y, Paterson DL. Clin Infect Dis 2011; 52:1232
Antimicrobial Stewardship

- Appropriate Dosing
- Appropriate Drug Selection
- Appropriate Duration

**Primary Role: Improve Effectiveness, Safety**

**Secondary Role: Reduce Needless Costs**
Antimicrobial Stewardship

“Needless Costs!!!”

Could be as much as $6,000 per quarter.¹

¹ We are still working with the pharmacy to get adequate charge numbers.
Thank you for your attention…

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The PROTECT Trial Outcomes

Primary Outcomes

• Infectious admissions
  (% of discharges to a hospital due to infection)

Additional Outcomes

• All-cause admissions (% of discharges to a hospital)
• Antibiotic usage
• MDRO prevalence (MRSA, VRE, ESBL, CRE)
• Emergence of resistance (strain collection)
<table>
<thead>
<tr>
<th>Facility Name</th>
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<tbody>
<tr>
<td>Pacific Villa, Inc. (Prev. The Palmcrest Grand Care Center, Inc)</td>
</tr>
<tr>
<td>Bixby Knolls Towers</td>
</tr>
<tr>
<td>Del Amo Gardens Convalescent</td>
</tr>
<tr>
<td>Heritage Rehabilitation Center</td>
</tr>
<tr>
<td>Intercommunity Care Center</td>
</tr>
<tr>
<td>Sunnyside Nursing Center</td>
</tr>
<tr>
<td>Las Flores Convalescent Hospital</td>
</tr>
<tr>
<td>Windsor Gardens Of Hawthorne</td>
</tr>
<tr>
<td>Vista Cove Care Center At Long Beach (Prev. Hillcrest Care Center)</td>
</tr>
<tr>
<td>Windsor Convalescent of North Long Beach</td>
</tr>
<tr>
<td>Windsor Gardens Convalescent Center of Long Beach</td>
</tr>
<tr>
<td>Greenfield Care Center of South Gate</td>
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<td>Pacific Care Nursing Center</td>
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<td>Santa Fe Convalescent Hospital</td>
</tr>
<tr>
<td>Torrance Care Center West</td>
</tr>
<tr>
<td>Torrance Care Center East</td>
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