Thank You for Joining!

Session 2
Antimicrobial Stewardship: Strategies for Implementation

Webinar Will Begin Shortly.

Call-In Number: (888) 895-6448
Access Code: 1228904
Antimicrobial Stewardship: Strategies for Implementation

Shira Doron, MD    Kirthana Beaulac, PharmD
Polling Question

With respect to antimicrobial stewardship, I feel that my facility:

A. Has a program in place
B. Has a feasible plan to implement a program
C. Has little if any program or plan
Objectives

• Review the landscape of antimicrobial use and resistance in long term care and the regulatory requirements surrounding stewardship
• Define the elements of a successful stewardship program
• Outline the role of each member of the care team in carrying out the goals of stewardship
• Describe examples of stewardship interventions that have been successful at other Long Term Care Facilities
## Antibiotic Prevalence in Long Term Care

<table>
<thead>
<tr>
<th>Type of Infection</th>
<th>Range of Published Rates per 1,000 Resident-Care Days*</th>
<th>Estimated Range for Total Annual Number of Cases in US†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower respiratory tract infection</td>
<td>0.3-4.7</td>
<td>0.16-2.57 million</td>
</tr>
<tr>
<td>Symptomatic urinary tract infection</td>
<td>0.19-2.2</td>
<td>0.10-1.20 million</td>
</tr>
<tr>
<td>Skin and soft-tissue infection†</td>
<td>0.1-2.1</td>
<td>0.05-1.15 million</td>
</tr>
<tr>
<td>Acute gastroenteritis</td>
<td>0.1-2.5</td>
<td>0.05-1.37 million</td>
</tr>
<tr>
<td>Bacteremia</td>
<td>0.2-0.36</td>
<td>0.11-0.20 million</td>
</tr>
<tr>
<td>All infections</td>
<td>1.8-13.5</td>
<td>0.98-7.38 million</td>
</tr>
</tbody>
</table>

* From 12 studies cited in reference 1.
† Based on the assumption that 1.5 million Americans reside in long-term-care facilities 365 days per year (547,000,000 resident-care–days in United States).
‡ Including cellulitis, abscesses, infected pressure ulcers, etc.

Antibiotic Appropriateness

- 50-75% of Long Term Care (LTC) Residents in the US get at least 1 antibiotic prescription each year
- It has been estimated 25-75% of all systemic antibiotic prescriptions and 60% of topical antibiotic prescriptions in LTC are inappropriate or unnecessary

Why are we doing so poorly?

- **Workflow Related**
  - Diagnosis and management of infection is often done in the absence of a physician, NP, or PA
    - Physicians have limited time to evaluate multiple patients without readily available night/weekend access
  - Most LTCFs lack institutional prescribing guidelines, access to contemporary references, or prescribing oversight
  - Access to ID specialists or specialized diagnostics

- **Culture Related**
  - Patient who seems frail - no room for error
  - Family who is demanding
  - Institutional fear of litigation
### Table 3. Factors Associated with Acquisition of Multidrug-Resistant Gram-Negative Bacteria among Case Patients and Control Patients Matched According to Duration of Follow-up

<table>
<thead>
<tr>
<th>Variable</th>
<th>Case patients (n = 29)</th>
<th>Control patients (n = 29)</th>
<th>Unadjusted OR (95% CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, &gt;85 years</td>
<td>24 (83)</td>
<td>22 (76)</td>
<td>1.7 (0.4–6.97)</td>
<td>.48</td>
</tr>
<tr>
<td>Female sex</td>
<td>24 (83)</td>
<td>27 (93)</td>
<td>0.4 (0.08–2.06)</td>
<td>.27</td>
</tr>
<tr>
<td>White race</td>
<td>28 (97)</td>
<td>27 (93)</td>
<td>2 (0.42–5.31)</td>
<td>.53</td>
</tr>
<tr>
<td>ADL score, ≥1</td>
<td>14 (48)</td>
<td>12 (41)</td>
<td>1.5 (0.08–2.06)</td>
<td>.27</td>
</tr>
<tr>
<td>GDS score, ≥6</td>
<td>19 (66)</td>
<td>19 (66)</td>
<td>1 (0.29–3.45)</td>
<td>&gt;.99</td>
</tr>
<tr>
<td>Presence of pressure sore</td>
<td>4 (14)</td>
<td>2 (7)</td>
<td>3.1 (0.51–19.5)</td>
<td>.22</td>
</tr>
<tr>
<td>Fecal incontinence</td>
<td>25 (86)</td>
<td>20 (69)</td>
<td>3.5 (0.72–16.85)</td>
<td>.12</td>
</tr>
<tr>
<td>Urinary incontinence</td>
<td>28 (97)</td>
<td>22 (76)</td>
<td>7 (0.86–56.9)</td>
<td>.07</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>8 (28)</td>
<td>6 (21)</td>
<td>1.7 (0.39–6.97)</td>
<td>.48</td>
</tr>
<tr>
<td>Charlson comorbidity index score, ≥2</td>
<td>14 (48)</td>
<td>14 (48)</td>
<td>1 (0.29–3.45)</td>
<td>&gt;.99</td>
</tr>
<tr>
<td>Interval hospitalization</td>
<td>2 (7)</td>
<td>1 (3)</td>
<td>2.0 (0.2–22.1)</td>
<td>.50</td>
</tr>
<tr>
<td>Interval antibiotic exposurea</td>
<td>13 (45)</td>
<td>9 (31)</td>
<td>5.5 (1.2–24.8)</td>
<td>.03</td>
</tr>
</tbody>
</table>

**NOTE.** Data are no. (%) of residents, unless otherwise indicated. ADL, activities of daily living; CI, confidence interval; GDS, global deterioration scale; OR, odds ratio.

*a* Interval antibiotic and hospital exposure were assessed during the interval between baseline and follow-up culture sampling.

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OFallon E; Kandel R; Schreiber R; DAgata EM. Infection Control & Hospital Epidemiology. 31(11):1148-53, 2010 Nov. DOI: 10.1086/656590
The Core Elements of Antibiotic Stewardship for Nursing Homes
Leadership commitment
Demonstrate support and commitment to safe and appropriate antibiotic use in your facility

Accountability
Identify physician, nursing, and pharmacy leaders responsible for promoting and overseeing antibiotic stewardship activities in your facility

Drug expertise
Establish access to consultant pharmacists or other individuals with experience or training in antibiotic stewardship for your facility

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 in your facility

Reporting
Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff, and other relevant staff

Education
Provide resources to clinicians, nursing staff, residents, and families about antibiotic resistance and opportunities for improving antibiotic use
What are the ingredients for a successful program?

- Culture change
- Provider education
- Use of appropriate metrics/benchmarking
- Use of the microbiology laboratory
- Use of technology and informatics
Culture change

• Be cognizant of physicians’ reluctance to give up autonomy
• Create a multidisciplinary team ("champions")
• Provide a helpful ("teaching") service
• Use concepts of behavior change theory
• Solicit feedback often
Evaluation of Programmatic Changes to the ASP Program with House Officer Feedback

- House officer survey on Tufts Medical Center ASP
- 2008 Survey
- Programmatic intervention
  - Enhanced training on ASP procedures at orientation
  - Changes to the antimicrobial order form
  - “ASP question of the week”
- 2010 Survey

Antimicrobial Stewardship Program (ASP) Impact on Patient Care 2008 and 2010

Have you ever had an interaction with ASP in which they...

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reminded you of a patient allergy?</td>
<td>30 (31%)</td>
<td>66 (69%)</td>
</tr>
<tr>
<td>Reminded you to adjust for renal function?</td>
<td>75 (78%)</td>
<td>21 (22%)</td>
</tr>
<tr>
<td>Prevented a medication error?</td>
<td>37 (38%)</td>
<td>60 (62%)</td>
</tr>
</tbody>
</table>

Differences between 2008 and 2010

<table>
<thead>
<tr>
<th>Question</th>
<th>2008</th>
<th>2010</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>How important is ASP in the fight against antimicrobial resistance? (very)</td>
<td>75%</td>
<td>76%</td>
<td>0.857</td>
</tr>
<tr>
<td>How important is ASP in the containment of healthcare costs? (very/somewhat)</td>
<td>86%</td>
<td>91%</td>
<td>0.435</td>
</tr>
<tr>
<td>How important is ASP in the prevention of medication errors? (very/somewhat)</td>
<td>96%</td>
<td>85%</td>
<td>0.060</td>
</tr>
<tr>
<td>Were ASP procedures presented during orientation? (yes)</td>
<td>60%</td>
<td>67%</td>
<td>0.501</td>
</tr>
<tr>
<td>Are you ever confused about ASP procedures? (always/sometimes)</td>
<td>59%</td>
<td>39%</td>
<td>0.048</td>
</tr>
<tr>
<td>How was your overall experience with ASP calls? (very good/good)</td>
<td>96%</td>
<td>98%</td>
<td>0.620</td>
</tr>
<tr>
<td>How was your education experience with ASP? (very good/good)</td>
<td>84%</td>
<td>98%</td>
<td>0.022</td>
</tr>
</tbody>
</table>

Provider Education

• Every interaction is an opportunity for education
• Keep in mind- medical school education is lacking in concepts of stewardship
• Focus on:
  • Colonization versus infection
  • Community-acquired versus hospital-acquired
  • De-escalation (“but s/he is getting better on that”)
  • Early discontinuation
  • “That’s what s/he was transferred here on”
• Consider surveying clinicians to gauge their knowledge
Carbapenem-resistant Enterobacteriaceae knowledge scores

Proportion of Healthcare Practitioners with Knowledge Score >50%, by Years of Experience

- All years (n=419): 53.5%
- <3 (n=129): 64.3%
- 3-10 (n=106): 56.6%
- >10 (n=184): 44.02%

Use of appropriate metrics

- Cost
- DDD = Defined daily dose
- DOT = Days of Therapy
- LOT = Length of therapy
- Proportion receiving antimicrobial therapy
- Resistance
- CDI
Use of the microbiology lab

• Rapid diagnostics

• Development of antibiograms
  • Unit-specific
  • Disease-specific
  • Combination

• Reporting
  • Dose-dependent susceptibility
  • Disease-specific breakpoints
  • Suppression of susceptibility results
## Antibiogram

<table>
<thead>
<tr>
<th>ORGANISM</th>
<th>Percent Susceptible</th>
<th>Penicillins &amp; Related Antibiotics</th>
<th>1st generation</th>
<th>3rd generation</th>
<th>4th generation</th>
<th>Aminoglycosides</th>
<th>Quinolone</th>
<th>UTI Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AMPICILLIN</td>
<td>AMPICILLIN/SULBACTAM</td>
<td>PIPERACILLIN/TAZOBACTAM</td>
<td>MEROPENEM</td>
<td>ERTAPENEM</td>
<td>CEFZOLIN</td>
<td>CEFOTAXIM</td>
</tr>
<tr>
<td>Acinetobacter baumannii (19)</td>
<td></td>
<td>NA</td>
<td>84</td>
<td>68</td>
<td>84</td>
<td>NA</td>
<td>ND</td>
<td>68</td>
</tr>
<tr>
<td>Enterobacter aerogenes (16)</td>
<td></td>
<td>ND</td>
<td>ND</td>
<td>81</td>
<td>100</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Enterobacter cloacae (45)</td>
<td></td>
<td>ND</td>
<td>ND</td>
<td>64</td>
<td>100</td>
<td>91</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>E. coli (470)</td>
<td></td>
<td>43</td>
<td>55</td>
<td>93</td>
<td>99</td>
<td>99</td>
<td>73</td>
<td>84</td>
</tr>
<tr>
<td>Klebsiella oxytoca (39)</td>
<td></td>
<td>0</td>
<td>61</td>
<td>89</td>
<td>100</td>
<td>100</td>
<td>38</td>
<td>97</td>
</tr>
<tr>
<td>Klebsiella pneumoniae (212)</td>
<td></td>
<td>0</td>
<td>71</td>
<td>86</td>
<td>96</td>
<td>95</td>
<td>83</td>
<td>86</td>
</tr>
<tr>
<td>Proteus mirabilis (59)</td>
<td></td>
<td>42</td>
<td>86</td>
<td>100</td>
<td>98</td>
<td>98</td>
<td>44</td>
<td>93</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa (236)</td>
<td></td>
<td>NA</td>
<td>NA</td>
<td>82</td>
<td>69</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa (37)</td>
<td></td>
<td>NA</td>
<td>NA</td>
<td>95</td>
<td>92</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>(Cystic Fibrosis sputumKirby-Bauer method)Doripenem %S = 94%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serratia marcescens (54)</td>
<td></td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>98</td>
<td>98</td>
<td>0</td>
<td>29</td>
</tr>
<tr>
<td>S. maltophilia (53)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Emergency Department Urines (adult and pediatric)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. coli (301)</td>
<td></td>
<td>54</td>
<td>61</td>
<td>95</td>
<td>100</td>
<td>100</td>
<td>79</td>
<td>91</td>
</tr>
<tr>
<td><strong>GMA Outpatient Urines</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. coli (411)</td>
<td></td>
<td>57</td>
<td>62</td>
<td></td>
<td></td>
<td></td>
<td>82</td>
<td></td>
</tr>
</tbody>
</table>
Use of technology and informatics

• Electronic health records
• Clinical Data Support Systems (CDSSs)
• Apps
• Electronic resources
• Listservs
What Can You Do?

Only you can prevent Antibiotic Resistance.
Long term care facility administrators can:

• Establish multidisciplinary teams to address antibiotic stewardship and optimal drug use
• Have protocols that outline the appropriate circumstances for use of antibiotics
• Review antibiotic culture data for trends suggesting a worsening resistance problem
• Have protocols ensuring that cultures are checked and antibiotics adjusted according to culture results
• Establish programs for periodic review of antibiotic utilization

*Centers for Disease Control*
Long term facility providers should:

• Obtain cultures whenever possible when starting antibiotics, and check results, adjusting antibiotics appropriately to the narrowest spectrum agent possible

• Avoid the use of antibiotics for colonization, contamination, or viral infections, and keep the duration as short as possible

• Take care to effectively communicate with the transferring facility re pending lab results and plan for antibiotics and follow-up

*Centers for Disease Control
Long term care facility nurses can:

• Be familiar with current protocols for testing and treatment of presumed bacterial infections
• Educate families and residents that many respiratory infections are caused by viruses and do not require antibiotics
• Educate families and residents about the appropriate indications for testing for and treating suspected UTIs
• Identify advanced directives for limited treatment
• Follow up with referring facility regarding pending lab results
Long term care facility prescribers can:

• Encourage use of screening tools and protocols to decrease the use of unnecessary antibiotics.
• Educate fellow clinicians, staff and family members on appropriate use of antibiotics
• Implement measures to reduce the need for treating with antibiotics (avoidance of indwelling urinary catheters, maximizing immunization levels, decubitus ulcer prevention, etc.)
Long term care pharmacists can

- Review antibiotic utilization and, where possible, appropriateness; identify opportunities for improved prescribing and discuss at QI meetings.
- Educate physicians and nursing staff about targeted antibiotic use, using a narrow spectrum antibiotic based on culture results.
- Prepare updated and easily accessible protocols
- Apply pharmacokinetic principles to vancomycin dosing and monitoring
  - avoid administration of divalent cations (Fe, Mg, Ca, Zn) within 6 hours before or 2 hours after fluoroquinolones
- Ensure prescriptions are compatible with allergy history
- Encourage use of oral route for highly orally bioavailable drugs
What facilities can do together

- Develop communication tools to share critical information between acute and long term facilities when patients are transferred
  - Culture results
  - Pending results
  - Treatments initiated (what, when, indication, stop date)
  - Precautions
  - Immunizations
  - History of *C. difficile*
- Ensure contact information is provided for follow up on patient history and pending test results
- Establish cross-facility teams to address infection prevention and antibiotic stewardship.
Polling Questions

Of the strategies just discussed, the one that seems most feasible at my institution is:

A. Change prescribing culture
B. Roll out provider education
C. Develop treatment algorithms and protocols
D. Implement patient/family education programs
E. Use of technology and informatics
F. Implement a plan to look back at cultures and antibiotic prescribing
G. Create or improve communication infrastructure between facilities
Polling Questions

Of the strategies just discussed, the one that seems most challenging at my institution is:

A. Change prescribing culture
B. Roll out provider education
C. Develop treatment algorithms and protocols
D. Implement patient/family education programs
E. Use of technology and informatics
F. Implement a plan to look back at cultures and antibiotic prescribing
G. Create
Turning Theory into Action
Low Hanging Fruit

• IV to PO conversion
  • Several antibiotics have good bioavailability
    ○ Fluoroquinolones, linezolid, metronidazole, clindamycin, SMX/TMP, fluconazole
  • Decreased length of stay, cost of care, and risk for line-related infections

• Dose Optimization
  • Patient Characteristics: age, renal function, weight
  • Causative Organism
  • Site of Infection
  • Extended infusions
Impact of implementation of a novel antimicrobial stewardship tool on antibiotic use in nursing homes: a prospective cluster randomized control pilot study

Elizabeth Fleet¹, G. Gopal Rao¹*, Bharat Patel², Barry Cookson³, Andre Charlett⁴, Clive Bowman⁵ and Peter Davey⁶

¹Centre for Ethnicity and Infection and Microbiology Department, North West London Hospitals NHS Trust, Watford Road, Harrow HA1 3UJ, UK; ²Public Health England, Public Health Laboratory London, Division of Infection, Barts Health NHS Trust, Whitechapel, London E1 2ES, UK; ³Division of Infection and Immunity, University College London, Gower Street, London WC1E 6BT, UK; ⁴Public Health England Colindale, 61 Colindale Avenue, London NW9 5HT, UK; ⁵School of Health Sciences, City University London, Northampton Square, London EC1V 0HB, UK; ⁶Population Health Sciences Division, Medical Research Institute, University of Dundee, Mackenzie Building, Kirsty Semple Way, Dundee DD2 4BF, UK
Resident antimicrobial management plan (RAMP)

- 30 nursing homes with 1832 beds.
- Two-part tool: initiation of treatment and review of treatment
- 1628 residents pre-intervention and 1610 post-intervention
RAMP tool

• Good practice points at initiation of antibiotics
  • Clinical signs and symptoms present
  • Resident examined by a physician
  • Diagnosis/site of infection documented
  • Clinical specimens sent
  • Antibiotic appropriate for indication, allergies and comorbidities
  • Antibiotic initiated promptly
RAMP tool

• Good practice points on review of antibiotic treatment
  • Documentation of review after 48-72 hours
  • Stop date or planned review date documented
  • Resident re-examined by physician
  • Results of cultures noted
  • Outcome of treatment assessed
Total antibiotic consumption

- **Intervention group:**
  - Pre-intervention: 70 DDD/1000 patient days
  - Post-intervention: 60 DDD/1000 patient days
  - Significant decrease, p=0.02

- **Control group:**
  - Pre-intervention: 50 DDD/1000 patient days
  - Post-intervention: 55 DDD/1000 patient days
  - Significant increase, p=0.04
Effective Antimicrobial Stewardship in a Long-Term Care Facility through an Infectious Disease Consultation Service: Keeping a LID on Antibiotic Use

Robin L. P. Jump, MD, PhD; Danielle M. Olds, RN, PhD; Nasim Seifi, MS; Georgios Kypriotakis, MS; Lucy A. Jury, RN, CNP; Emily P. Peron, PharmD; Amy A. Hirsch, PharmD; Paul E. Drawz, MD; Brook Watts, MD; Robert A. Bonomo, MD; Curtis J. Donskey, MD
LID Service

- ID service for a 4-ward, 160-bed LTCF at urban VA
- LID team= ID physician and NP, examined residents once a week and were available for remote consult the rest of the week via electronic medical record and telephone
  - The LID service saw an average of 7 patients and fielded 5-10 phone calls each week
  - Nearly 1/3 of the consults required only 1 visit; the remaining patients required an average of 3.6 visits (range 2 – 20).
Effective antimicrobial stewardship in a long-term care facility through an infectious disease consultation service: keeping a LID on antibiotic use.

Jump RL; Olds DM; Seifi N; Kypriotakis G; Jury LA; Peron EP; Hirsch AA; Drawz PE; Watts B; Bonomo RA; Donskey CJ

DOI: 10.1086/668429

FIGURE 1. Observed rates of antibiotic use before and after initiation of the long-term care facility (LTCF) infectious diseases consultation service (LID), shown as filled and open symbols, respectively, in the LTCF (A) and the hospital (B). The corresponding lines and their slopes (indicated on the graph) represent the estimated rates of change in antimicrobial use for total antimicrobials (squares), oral agents (diamonds), and intravenous agents (circles), determined using segmented regression analysis of an interrupted time series. An asterisk indicates P<.05.
Effective antimicrobial stewardship in a long-term care facility through an infectious disease consultation service: keeping a LID on antibiotic use.

Jump RL; Olds DM; Seifi N; Kypriotakis G; Jury LA; Peron EP; Hirsch AA; Drawz PE; Watts B; Bonomo RA; Donskey CJ

DOI: 10.1086/668429

**FIGURE 2**

**FIGURE 3.** Observed rates of positive Clostridium difficile tests at the long-term care facility (LTCF; squares) and the hospital (triangles) before (filled symbols) and after (open symbols) initiation of the LTCF infectious diseases consultation service (LID). The corresponding lines and their slopes (noted on graph) represent the estimated rates of change for positive C. difficile tests at the LTCF (solid lines) and the hospital (dashed lines), determined using segmented regression analysis of an interrupted time series. An asterisk indicates \( P \leq 0.05 \).
New England Sinai Hospital: a successful ASP at a LTACH
The program

- Worked with leadership, ID consultant, IP, Pharmacy director
- End date and indication required by pharmacy for all antimicrobials
- List of the “great eight” antimicrobials
- Tufts MC ID physician or ID PharmD, off-site, M-F
- Log on and generate report: patients on antimicrobials at least 7 days
- Review electronic medical records
- Recommendations made by email
- Clinical pathways
Analysis

- From April 2011 through March 2014
- 885 recommendations on 734 patients
- AS staff spent approximately 1-2 hours per week reviewing cases and providing recommendations remotely
- Residents:
  - mean age of 68 years (SD +34)
  - median length of stay of 56 days
Type of Infection

- Colitis
- Bacteremia
- UTI
- Osteo
- Cellulitis
- Wound infections
- Other

<table>
<thead>
<tr>
<th>Type of Infection</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colitis</td>
<td>20.9%</td>
</tr>
<tr>
<td>Bacteremia</td>
<td>15.4%</td>
</tr>
<tr>
<td>UTI</td>
<td>11.6%</td>
</tr>
<tr>
<td>Osteo</td>
<td>8.5%</td>
</tr>
<tr>
<td>Cellulitis</td>
<td>3.2%</td>
</tr>
<tr>
<td>Wound infections</td>
<td>5.1%</td>
</tr>
<tr>
<td>Other</td>
<td>15.1%</td>
</tr>
</tbody>
</table>
Recommendations

- Agree with management: 45%
- Not agree: 55%

Recs not agree

- Recs not followed: 52.15%
- Recs followed: 47.85%
Types of Recommendations

- Stop: 21.6%
- More info: 16.1%
- ID Cons: 10.5%
- Change Ab: 6.9%
- De Escalate: 5.5%
- Shorten tx: 1.5%
- Prolong tx: 1.1%
- Increase dosage: 0.9%
Recommendation acceptance by month
Following the intervention there was a significant decrease in monthly HA-CDI rates that was maintained throughout the post intervention period.

**IRR 0.57; 95% CI 0.35-0.92; p=0.02**
General Themes

• Antimicrobial Stewardship does require resources
  • Consider contracting for help if needed
• The cost of the additional resource input is consistently offset by the cost savings of using less antibiotics with additional benefits
  • Lower rates of *C. difficile*
  • Resistance mitigation
  • Improved patient safety
• Small interventions can have a big impact
Session 3

Please join us on 4/25 for our next webinar on Approach to the Patient with Suspected UTI

Thank you!
Polling Question

I feel that the strategies discussed in today’s webinar are largely:

A. Feasible in my facility
B. Not feasible in my facility
C. Already being used in my facility
Contact your Nursing Home CDI/NHSN Initiative State Contacts

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The NE QIN-QIO Outpatient Antibiotic Stewardship Collaborative

• No-cost opportunity for antibiotic stewardship support in **physician offices** and other outpatient settings
  – Continues through at least July 2019 but limited time to sign up

• Includes:
  – **Resources** and **tools** for patients and providers
  – **Webinars** and direct assistance as desired
  – Opportunities to **connect** with peers and highlight **best practices**
Interested in the NE QIN-QIO Antibiotic Stewardship Collaborative? Contact us...

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Connect with the New England QIN-QIO on Social Media!
Evaluation

https://www.surveymonkey.com/r/3R29K3R