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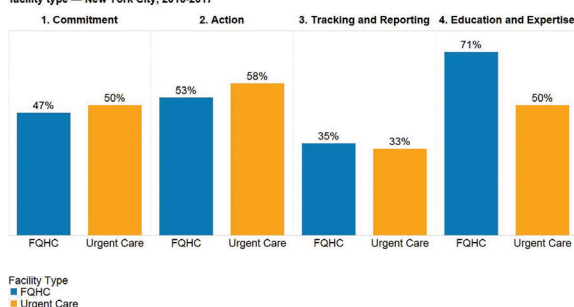
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Figure: Percent of respondents implementing the Core Elements of Outpatient Antibiotic Stewardship by facility type — New York City, 2016–2017



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### 1835. Evaluating Regional Nursing Home Antibigrams to Advance Stewardship at 233 Skilled Nursing Facilities in Georgia, USA

Jacob Pack, AS<sup>1</sup>; Ziduo Zheng, MSc<sup>2</sup>; Sam Sefton, MPH<sup>3</sup>; Renee Moore, BS<sup>4</sup>; Steve Price, ABS<sup>1</sup>; Mayfield Camp Jr., MS, M(ASCP)<sup>1</sup> and Scott Fridkin, MD<sup>5</sup>; <sup>1</sup>Clinical Laboratory Services, Inc., Winder, Georgia, <sup>2</sup>Biostatistics and Bioinformatics, Emory University Rollins School of Public Health, Atlanta, Georgia, <sup>3</sup>Emory University, Atlanta, Georgia, <sup>4</sup>Rollins School of Public Health, Emory University, Atlanta, Georgia, <sup>5</sup>Medicine, Emory University School of Medicine, Atlanta, Georgia

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**Background.** US skilled nursing facilities (SNFs) must have antibiotic stewardship programs to receive Medicare; this requires access to summary susceptibility data (antibiograms). Most SNFs test too few clinical samples to generate antibiograms by CLSI standards. We evaluated approaches to combining data across SNFs.

**Methods.** Unsuppressed susceptibility testing results from pathogens recovered from urine specimens submitted in 2015–2016 to a regional referral laboratory servicing SNFs in GA were accessed. Study facilities were limited to GA SNFs (via linkage to CMS nursing home compare). No. and % testing susceptible (no. T, % S) of *K. pneumoniae*, *E. coli*, and *P. mirabilis* to cefazolin, levofloxacin, nitrofurantoin, TMP/Sulfa, and ceftriaxone were pooled overall, by geographic area, year, and other facility characteristics. *P. aeruginosa* testing to cefazidime, imipenem, and piperacillin/tazobactam (P/T) were also evaluated. Differences in %S between stratum were considered clinically important if difference were >10 percentage points.

**Results.** Of 345 providers, 233 were confirmed as GA SNFs and were categorized by geography as Central (87 SNFs), eight metro-Atlanta counties (Atlanta Area, 56 SNFs), North (46 SNFs), or Southern (44 SNFs). No. T did not vary by year, but varied slightly by region: range for *E. coli* was 275–1,010, *K. pneumoniae* was 101–409, *P. mirabilis* 133–439, and *P. aeruginosa* 35–160. No. T was lowest in North and highest in Atlanta Area. Overall %S was poor to levofloxacin, better for TMP/Sulfa and cefazolin (table). %S did not vary by year. Regional differences were minor: of 17 drug-bug combinations, only five have clinically important differences, three of which were among *P. aeruginosa* when testing was limited to 67 isolates in outlier region. Only the South had clinically worse susceptibility of *K. pneumoniae* to nitrofurantoin (36% vs. 47%).

**Conclusion.** Overall, SNFs in Georgia had remarkably similar susceptibility patterns when grouped by geography among common urinary pathogens, except when <75 isolates were tested. Antibiogram data can be combined across facilities in a region to provide SNFs with a reasonable antibiogram for stewardship. Further study is ongoing to assess benefits of bedside or length of stay based antibiograms.

Table. No. Tested (T), Susceptible (S), and percent S, Georgia Skilled Nursing Facilities (n=233)

Antibiotic	<i>K. pneumoniae</i>			<i>E. coli</i>			<i>P. mirabilis</i>			<i>P. aeruginosa</i>		
	No. T	S	% S	No. T	S	% S	No. T	S	% S	No. T	S	% S
Cefazolin	894	650	73	2320	1568	68	1003	829	83			
Ceftazidime								329	259	79		
Ceftriaxone	894	668	75	2320	1735	75	1003	892	89			
Levofloxacin	894	705	79	2320	887	38	1003	331	33	329	148	45
Nitrofurantoin	892	387	43	2318	2086	90						
P/T										329	294	89
Trimeth/Sulfa	894	667	75	2320	1340	58	1003	469	47			

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### 1836. Characteristics of Nursing Homes Associated With Self-reported Implementation of Centers for Disease Control and Prevention (CDC) Core Elements of Antibiotic Stewardship

Nicola D. Thompson, PhD<sup>1</sup>; Cedric Brown, MS<sup>1</sup>; Taniece Eure, MPH<sup>1</sup>; Austin Penna, MPH<sup>2</sup>; Grant Barney, BS<sup>3</sup>; Devra Barter, MS<sup>4</sup>; Nicolai Buhr, MPH<sup>4</sup>; Paula Clogher, MPH<sup>5</sup>; Ghinwa Dumyati, MD, FSHEA<sup>6</sup>; Erin Epton, MD<sup>7</sup>; Linda Frank, RN<sup>8</sup>; Deborah Godine, RN<sup>9</sup>; Lourdes Irizarry, MD<sup>9</sup>; Helen Johnston, MPH<sup>3</sup>; Marion A. Kainer, MBBS, MPH<sup>10</sup>; Ruth Lynfield, MD, FIDSA<sup>11</sup>; J.P. Mahoehney, MPH<sup>12</sup>; Meghan Maloney, MPH<sup>13</sup>; Susan Morabit, MSN, RN, PHCNS-BC, CIC<sup>14</sup>; Joelle Nadle, MPH<sup>8</sup>; Rebecca Pierce, PhD, MS, BSN<sup>15</sup>; Susan M. Ray, MD, FIDSA<sup>16</sup>; Sarah Shrum, MPH<sup>17</sup>; Marla Sievers, MD<sup>9</sup>;

Lucy E. Wilson, MD, ScM<sup>18</sup>; Nimalie D. Stone, MD, MS<sup>1</sup> and Shelley S. Magill, MD, PhD<sup>1</sup>; <sup>1</sup>Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia, <sup>2</sup>NY Emerging Infections Program, Center for Community Health, University of Rochester Medical Center, Rochester, New York, <sup>3</sup>Colorado Department of Public Health and Environment, Denver, Colorado, <sup>4</sup>Office of Infectious Disease Epidemiology and Outbreak Response, Maryland Department of Health and Mental Hygiene, Baltimore, Maryland, <sup>5</sup>Yale, New Haven, Connecticut, <sup>6</sup>NY Emerging Infections Program, Center for Community Health and Prevention, University of Rochester Medical Center, Rochester, New York, <sup>7</sup>Healthcare-Associated Infections Program, California Department of Public Health, Richmond, California, <sup>8</sup>California Emerging Infections Program, Oakland, California, <sup>9</sup>New Mexico EIP/Department of Health, Santa Fe, New Mexico, <sup>10</sup>Communicable and Environmental Diseases and Emergency Preparedness, Tennessee Department of Public Health, Nashville, Tennessee, <sup>11</sup>State Epidemiologist and Medical Director for Infectious Diseases, Epidemiology and Community Health, Minnesota Department of Health, St. Paul, Minnesota, <sup>12</sup>Minnesota EIP/Department of Health, Minneapolis, Minnesota, <sup>13</sup>Connecticut Department of Public Health, Hartford, Connecticut, <sup>14</sup>Georgia Emerging Infections Program, Decatur, Georgia, <sup>15</sup>Acute and Communicable Disease Prevention, Oregon Health Authority, Portland, Oregon, <sup>16</sup>Division of Infectious Diseases, Emory University School of Medicine, Atlanta, Georgia, <sup>17</sup>New Mexico Department of Health, Santa Fe, New Mexico, <sup>18</sup>Maryland Department of Health, Baltimore, Maryland

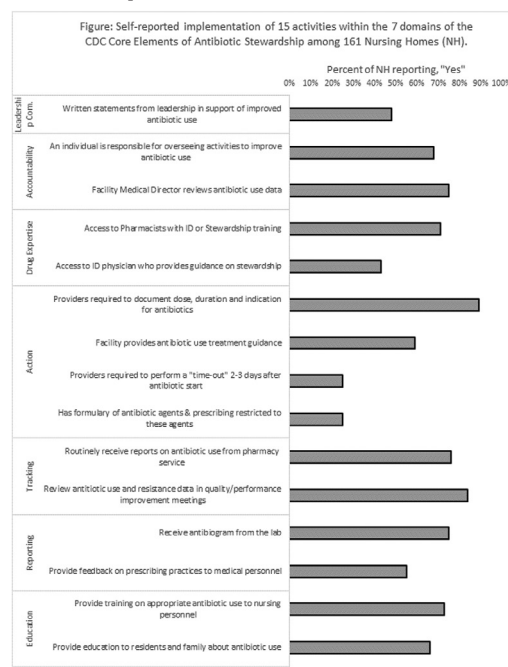
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**Background.** CDC released the Core Elements of Antibiotic Stewardship (Core Elements) for Nursing Homes (NHs) in 2015. In 2017, CDC's Emerging Infections Program (EIP) evaluated uptake of the Core Elements in a cohort of NHs.

**Methods.** NHs from California, Colorado, Connecticut, Georgia, Maryland, Minnesota, New Mexico, New York, Oregon, and Tennessee were randomly selected to participate in a CDC EIP antimicrobial use prevalence survey; participation was voluntary. A NH leader (typically Director of Nursing or Infection Preventionist) completed a CDC questionnaire to self-report facility implementation of 15 individual activities within the 7 domains of the Core Elements. The number and percentage of facilities reporting "Yes" to each activity and a facility stewardship score (range 0–15, 1 point per activity) were calculated. Associations between the stewardship score and facility-level factors, obtained from the questionnaire and publically available Centers for Medicare and Medicaid Services (CMS) NH quality data, were identified using Analysis of Variance (Proc GLM) in SAS 9.4; a  $P < 0.05$  was considered significant.

**Results.** In 161 NHs (mean certified beds 118, 92% dual certified, 68% for-profit), the % of NHs reporting implementation of the 15 activities (figure) ranged from 25% (has a formulary of antibiotic agents, providers required to perform an antibiotic "time-out") to 88% (providers required to document dose, duration and indication). The median facility stewardship score was 9 (interquartile range 7–12). A higher stewardship score was significantly associated with having: an infection preventionist who completed a certified training course (Yes vs. No,  $P = 0.029$ ), higher number of attending physicians per 100 NH beds (upper quartile vs. lower three quartiles,  $P = 0.029$ ), and higher CMS quality measure score (scale of 1 to 5 points,  $P = 0.025$ ).

**Conclusion.** These data, collected approximately 2 years after release of the Core Elements, show NHs have begun to implement many policies or practices consistent with CDC antibiotic stewardship guidance. However, improved understanding of the uptake and barriers associated with implementation of the Core Elements can inform development of stewardship initiatives, identify NHs in need of stewardship interventions, and accelerate adoption.



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### 1837. Comparison of Antibiotic Use in Post-Acute and Long-Term Care Facilities Based on Proportion of Short Stay Residents Using a Long-Term Care Pharmacy Database

Philip Chung, PharmD, MS, BCPS<sup>1</sup>; Scott Bergman, PharmD, FIDSA, FCCP, BCPS<sup>2</sup>; Alex Neukirch, BS<sup>3</sup>; Hanan Tahir Lodhi, MBBS<sup>4</sup>; Mark E. Rupp, MD<sup>4</sup>; Trevor Vanschooneveld, MD<sup>1</sup> and Muhammad Salman Ashraf, MBBS<sup>1</sup>; <sup>1</sup>Nebraska Antimicrobial Stewardship Assessment and Promotion Program, Nebraska Medicine, Omaha, Nebraska, <sup>2</sup>Department of Pharmaceutical Care, Nebraska Medicine, Omaha, Nebraska, <sup>3</sup>College of Pharmacy, University of Nebraska Medical Center, Omaha, Nebraska, <sup>4</sup>Division of Infectious Diseases, University of Nebraska Medical Center, Omaha, Nebraska

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**Background.** CMS requires participating long-term care facilities (LTCF) to have an antibiotic stewardship program (ASP). Common barriers encountered by LTCF include lack of antibiotic use (AU) data and inability to benchmark use. We initiated a project that utilized a long-term care pharmacy (LTCPh) database to obtain and compare AU data across enrolled LTCF.

**Methods.** We partnered with a regional LTCPh that dispenses and reviews medications for 40 LTCF, of which 32 agreed to participate. Prescriptions filled by the pharmacy were used to calculate antibiotic (AB) starts and days of therapy (DOT). Start and end dates were used to calculate DOT, if available. For those without an end date (<10%), duration was obtained by manual review of administration records. Bed-size and proportion of short-stay (Medicare-A) beds were estimated for each LTCF based on a cross-sectional evaluation of billing records at the LTCPh. Baseline resident-days (RD) during 2017 were obtained from each LTCF. The influence of short-stay residents on AB start rates and DOT was evaluated by grouping LTCF in three cohorts based on estimated proportion of short-stay residents.

**Results.** Data from 29 (90.6%) LTCF were included in the final analysis; 3 were excluded due to lack of RD data. Median bed-size was 57 (range 17–253). Overall, 13.9% of LTCF residents were in the short-stay category. Fifteen LTCF were estimated to have 5% to 20% of RD attributable to short-stay residents, six had <5% while eight had >20%. Antibiotic starts/1000 RD varied from 3.84 to 19.38 and DOT/1000 RD from 34.86 to 252.09, and showed strong correlation (Figure 1). The proportion of short-stay beds correlates better with AB starts/1,000 RD than DOT/1,000 RD (Figure 2). LTCF cohort with >20% short-stay residents had higher mean AB starts/1000 RD compared with LTCF with 5%-20% and <5% short-stay residents (13.08, 9.78, 7.45, respectively;  $P < 0.05$  by one-way ANOVA). However, a similar trend was not noted for DOT/1000 RD (179.30, 128.29, 128.12, respectively;  $P = 0.12$ ).

**Conclusion.** LTCPh can play an important role in supporting ASP in LTCF by providing AU data for benchmarking. Antibiotic use in LTCF is highly variable and may be influenced by the proportion of beds dedicated to short-stay residents amongst other factors.

Figure 1. Correlation Between Antibiotic Starts and Days of Therapy (DOT)

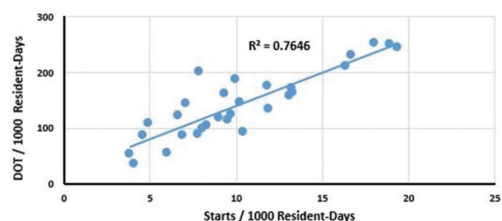
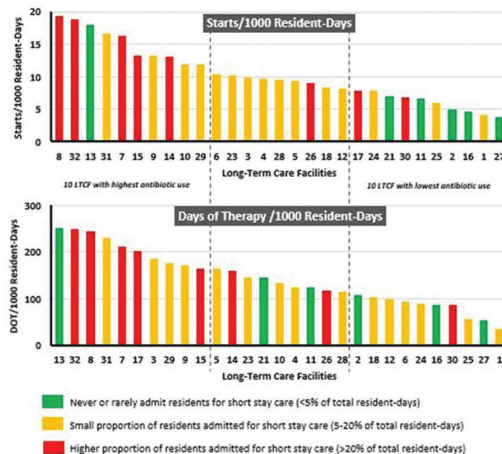


Figure 2. Distribution of Antibiotic Starts and Days of Therapy (DOT) Among Enrolled Facilities



**Disclosures.** S. Bergman, Merck: Grant Investigator, Grant recipient. T. Vanschooneveld, Merck: Grant Investigator, Grant recipient. M. S. Ashraf, Merck & Co. Inc.: Grant Investigator, Research grant.

### 1838. Digging Deeper: A Closer Look at Core Elements of Antibiotic Stewardship for Long-Term Care Facilities

Hanan Tahir Lodhi, MBBS<sup>1</sup>; Scott Bergman, PharmD, FIDSA, FCCP, BCPS<sup>2</sup>; Philip Chung, PharmD, MS, BCPS<sup>3</sup>; Mark E. Rupp, MD<sup>4</sup>; Trevor Vanschooneveld, MD<sup>1</sup> and Muhammad Salman Ashraf, MBBS<sup>1</sup>; <sup>1</sup>Division of Infectious Diseases, University of Nebraska Medical Center, Omaha, Nebraska, <sup>2</sup>Department of Pharmaceutical Care, Nebraska Medicine, Omaha, Nebraska, <sup>3</sup>Nebraska Antimicrobial Stewardship Assessment and Promotion Program, Nebraska Medicine, Omaha, Nebraska, <sup>4</sup>Internal Medicine, Division of Infectious Diseases, University of Nebraska Medical Center, Omaha, Nebraska

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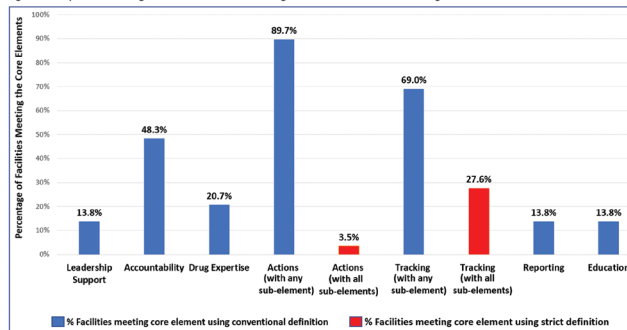
**Background.** The CDC encourages all long-term care facilities (LTCF) to develop antibiotic stewardship programs (ASP) consisting of seven core elements (CE). These CE include leadership commitment, accountability, drug expertise, action, tracking, reporting and education. However, action include three essential sub-elements (SE): policy development, practice implementation and pharmacist involvement. Similarly, tracking has two major SE; antibiotic use and outcome measures. Typically, a multi-component CE is considered met if any of the SE is present. We evaluated application of a strict definition that requires all major SE to be present for the action and tracking CE to be considered met.

**Methods.** A group of consultant pharmacists (CP) was trained to evaluate and lead ASP in their LTCF. Baseline ASP evaluation was conducted by CP in 29 LTCF using the CDC CE checklist between November 2017 and January 2018. CE credits were assigned to LTCF ASP using conventional (any SE) and strict definitions (all SE required). Results were compared among LTCF ASP using both definitions.

**Results.** None of the LTCF has all seven CE regardless of the definition. A median of two CE (range 1–6) were present based on conventional definition (CD) and 1 (range 0–5) using the strict definition (SD). Less than a quarter of LTCF ( $n = 6$ , 20.6%) met five or more CE with the CD and only one (3.5%) using the SD. Interestingly, when utilizing the CD, all (100%) LTCF met at least one CE as compared with only 16 (55.1%) when using the SD. The action CE is most frequently met when using CD and least frequently met when using SD (Figure 1). CP reviewing a proportion of antibiotic orders as a part of their monthly drug regimen review was the most common action and was met by 89.7% of LTCF. Only 2 (6.9%) LTCF had stewardship policies and 4 (13.8%) had implemented at least one stewardship practice. Similarly, 20 (69.0%) LTCF had tracking based on the CD with a majority (55.2%) tracking outcome measures and some (41.4%) tracking antibiotic use. However, only a quarter (27.6%) of LTCF were tracking both outcomes and antibiotic use.

**Conclusion.** Many LTCF have some components of action and tracking CE in place but are missing important SE. Data on CE should be collected in a manner that makes it easier to identify these deficiencies during LTCF ASP evaluation.

Figure 1. Proportion of Long-Term Care Facilities Meeting Individual Core Elements Using Conventional and Strict Definitions



**Disclosures.** T. Vanschooneveld, Merck: Grant Investigator, Grant recipient. M. S. Ashraf, Merck & Co. Inc.: Grant Investigator, Research grant.

### 1839. Expanding Antimicrobial Stewardship into the Community: Development of Patient and Provider Education Resources to Improve Antibiotic Awareness

Erin Gentry, PharmD, BCPS<sup>1</sup>; Chloe Sweeney, RN, BSN, CPHQ<sup>2</sup>; Sonya Pion, MA<sup>3</sup>; Melanie Spencer, PhD, MBA<sup>4</sup>; Elizabeth Handy, BSN, MBA<sup>2</sup>; Marion Davis, PhD<sup>4</sup>; Traci Yates, PhD<sup>4</sup> and Lisa Davidson, MD<sup>1</sup>; <sup>1</sup>Antimicrobial Support Network, Atrium Health, Charlotte, North Carolina, <sup>2</sup>Quality, Atrium Health, Charlotte, North Carolina, <sup>3</sup>Corporate Communications, Marketing and Outreach, Atrium Health, Charlotte, North Carolina, <sup>4</sup>Center for Outcomes Research and Evaluation, Atrium Health, Charlotte, North Carolina

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**Background.** Antibiotic stewardship programs are vital in the ambulatory setting to address the public health threat of antibiotic resistance. In 2016, the Centers