analyzed in this study were captured utilizing a group-based AHHMS installed in a number of North American hospitals. Emergency departments, overflow units, and units with <1 year of data were excluded from the study. The final analysis included data from 58 inpatient units in 10 hospitals. Alcohol-based hand rub and soap dispenses HH events (HHEs) and room entries and exits (HH opportunities (HHOs) were used to calculate unit-level compliance rates. Statistical analysis was performed on the annual number of dispenses and opportunities using a mixed effects Poisson regression with random effects for facility, unit, and year, and fixed effects for unit type. Interactions were not included in the model based on interaction plots and significance tests. Poisson assumptions were verified with Pearson residual plots. **Results:** Over the study period, 222.7 million HHOs and 99 million HHEs were captured in the data set. There were an average of 18.7 beds per unit. The average number of HHOs per unit per day was 3,528, and the average number of HHEs per unit per day was 1,572. The overall median compliance rate was 35.2 (95% CI, 31.5%–39.3%). Unit-to-unit comparisons revealed some significant differences: compliance rates for medical-surgical units were 12.6% higher than for intensive care units ($P < .0001$). **Conclusions:** This is the largest HH data set ever reported. The results illustrate the magnitude of HHOs captured (3,528 per unit per day) by an AHHMS compared to that possible through direct observation. It has been previously suggested that direct observation samples between 0.5% to 1.7% of all HHOs. In healthcare, it is unprecedented for a patient safety activity that occurs as frequently as HH to not be accurately monitored and reported, especially with HH compliance as low as it is in this multiyear, multicenter study. Furthermore, hospitals relying on direct observation alone are likely insufficiently allocating and deploying valuable resources for improvement efforts based on the scant information obtained. AHHMSs have the potential to introduce a new era in HH improvement.

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Disclosures: Lori D. Moore and James W. Arbogast report salary from GOJO.
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Presentation Type:
Poster Presentation

Impact of Training Consultant Pharmacists on Antimicrobial Stewardship Programs in Long-Term Care Facilities

Muhammad Salman Ashraf, University of Nebraska Medical Center; Philip Chung, Nebraska Medicine, Nebraska Antimicrobial Stewardship Assessment and Promotion Program; Alex Neukirch, Community Pharmacy; Scott Bergman, University of Nebraska

Table 1: Antibiotic Starts/1000 Resident Days and Days of Therapy/1000 Resident Days in 2017 and 2018

Facility Code	AS/1000 RD (2017)	AS/1000 RD (2018)	% Change	DOT/1000 RD (2017)	DOT/1000 RD (2018)	% Change
1	4.03	5.62	39.34	34.86	55.52	59.26
2	5.01	5.27	5.19	112.01	80.29	-28.32
3	9.92	11.31	14.04	186.64	111.04	-40.51
4	9.90	7.08	-28.48	125.13	73.22	-41.48
5	8.54	9.96	16.63	174.43	150.00	-14.01
6	9.04	6.36	-29.65	87.26	53.67	-38.49
7	16.57	17.39	4.95	206.66	226.13	9.42
8	20.33	19.82	-2.51	261.09	219.84	-15.80
10	10.82	9.30	-14.05	137.75	111.95	-18.73
11	6.77	4.22	-37.67	112.43	41.39	-63.19
12	8.38	9.02	7.64	108.59	102.64	-5.48
13	18.02	9.44	-47.61	252.09	99.35	-60.59
14	13.08	10.72	-18.05	159.21	125.86	-20.95
15	13.24	11.66	-11.93	164.73	128.59	-21.94
16	4.23	4.22	-0.24	85.80	78.93	-8.01
17	7.84	7.59	-3.21	210.55	141.70	-32.70
21	6.65	8.07	21.35	145.92	139.50	-4.40
23	10.21	8.73	-14.47	145.43	110.29	-24.16
24	7.77	5.93	-23.67	90.08	65.56	-27.22
25	6.02	4.55	-24.48	55.76	39.72	-28.77
26	8.96	8.41	-6.14	117.73	74.67	-36.57
27	3.84	3.15	-18.07	52.85	32.06	-39.33
28	9.00	8.83	-1.89	117.12	125.29	6.98
29	11.28	7.88	-30.14	167.35	96.85	-42.13
30	7.01	8.67	23.68	78.46	98.33	25.33
31	16.68	16.62	-0.38	230.04	149.87	-34.85
32	19.00	16.91	-11.00	255.23	221.99	-13.02

AS = Antibiotic starts; DOT = Days of therapy; RD = Resident days

Table. 1.

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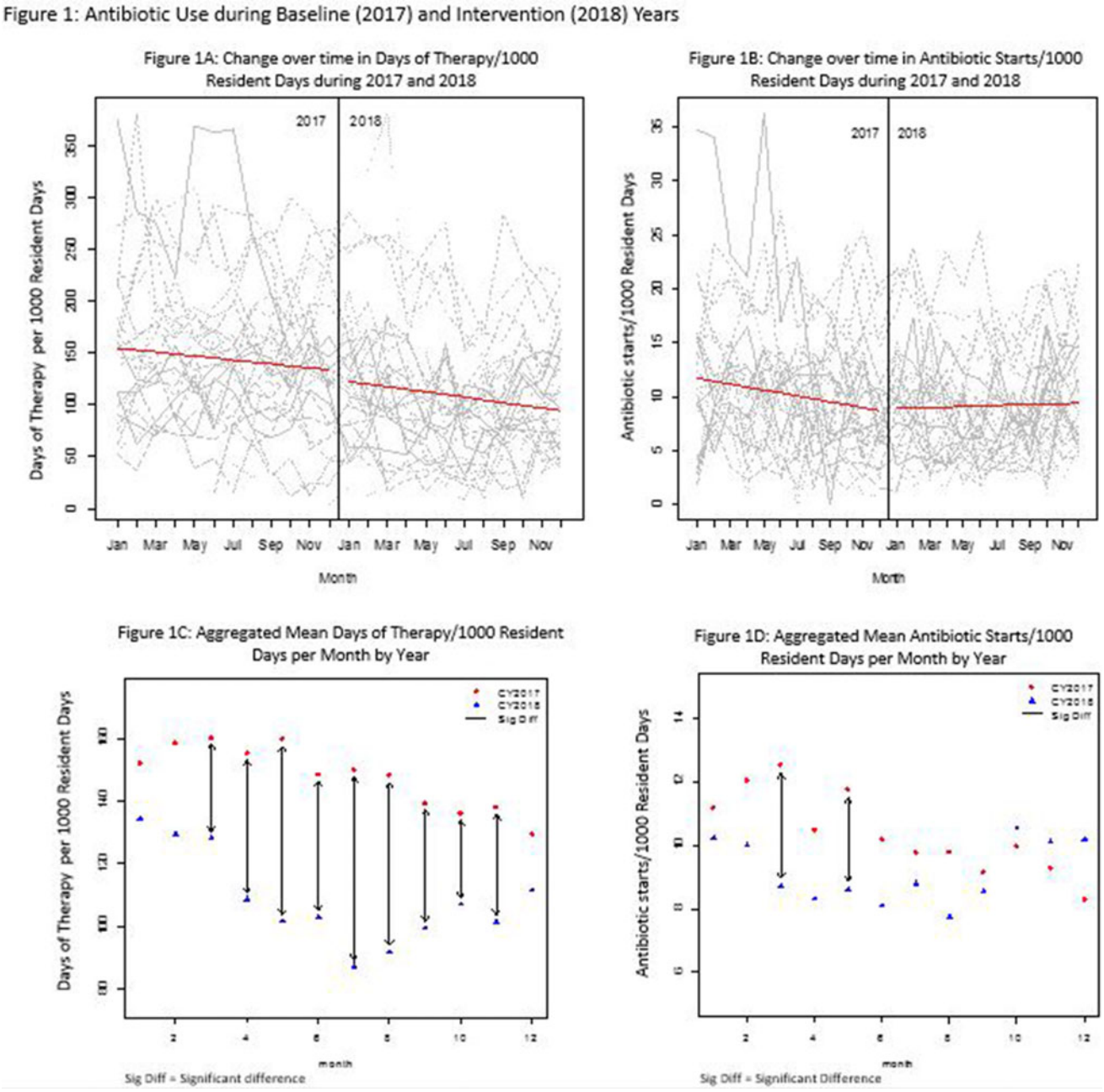

Fig. 1.

Medical Center; R. Jennifer Cavalieri, University of Nebraska Medical Center; Rebecca Ortmeier, Community Pharmacy; Mark Rupp, University of Nebraska Medical Center; Christopher Wichman, University of Nebraska Medical Center; Trevor Craig Van Schooneveld, University of Nebraska Medical Center

Background: The CDC recommends that consultant pharmacists support antimicrobial stewardship programs (ASPs) in long-term care facilities (LTCFs). We studied CDC-recommended ASP core elements implementation and antibiotic use in LTCFs before and after training consultant pharmacists. **Methods:** Between August 2017 and October 2017, consultant pharmacists from a regional long-term care pharmacy attended 5 didactic sessions preparing them to assist LTCFs in implementation of CDC-recommended ASP core elements. Training also included creating a process for evaluating appropriateness of all systemic antibiotics and providing prescriber feedback during their monthly mandatory drug-regimen reviews. Once monthly "meet-the-expert" sessions were held with consultant pharmacists throughout the project (November 2017 to December 2018). LTCF enrollment began in November 2017 and >90% of facilities joined by January 2018. After enrollment, consultant pharmacists initiated ASP interventions including antibiotic reviews and feedback using standard templates. They also held regular meetings with infection preventionists to discuss Core Elements

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implementation and provided various ASP resources to LTCFs (eg, antibiotic policy template, guidance documents and standard assessment and communication tools). Data collection included ASP Core Elements, antibiotic starts, days of therapy (DOT), and resident days (RD). The McNemar test, the Wilcoxon signed-rank test, generalized estimating equation model, and the classic repeated measures approach were used to compare the presence of all 7 core elements and antibiotic use during the baseline (2017) and intervention (2018) year. **Results:** In total, 9 trained consultant pharmacists assisted 32 LTCFs with ASP implementation. When evaluating 27 LTCFs that provided complete data, a significant increase in presence of all 7 Core Elements after the intervention was noted compared to baseline (67% vs 0; median Core Elements, 7 vs 2; range, 6–7 vs 1–6; $P < .001$). Median monthly antibiotic starts per 1,000 RD and DOT per 1,000 RD decreased in 2018 compared to 2017: 8.93 versus 9.91 ($P < .01$) and 106.47 versus 141.59 ($P < .001$), respectively. However, variations in antibiotic use were detected among facilities (Table 1). When comparing trends, antibiotic starts and DOT were already trending downward during 2017 (Fig. 1A and 1B). On average, antibiotic starts decreased by 0.27 per 1,000 RD ($P < .001$) and DOT by 1.92 per 1,000 RD ($P < .001$) each month during 2017. Although antibiotic starts remained mostly stable in 2018, DOT continued to decline further (average monthly decline, 2.60 per 1,000 RD; $P < .001$). When analyzing aggregated mean, antibiotic use across all sites per month by year, DOT were consistently lower throughout 2018 and antibiotic starts were lower for the first 9 months (Fig. 1C and 1D). **Conclusions:** Consultant pharmacists can play an important role in strengthening ASPs and in decreasing antibiotic use in LTCFs. Educational programs should be developed nationally to train long-term care consultant pharmacists in ASP implementation.

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Presentation Type:
Poster Presentation

Large-Scale Analysis of Hand Hygiene Frequency Across Healthcare Facilities Varying in Key Hospital Characteristics

Jessica Albright, Ecolab Inc; Bruce White, Ecolab, Inc; Pete Carlson, Ecolab Inc; Cheryl Littau, Ecolab Inc

Background: Hand hygiene by healthcare personnel is a critical infection prevention intervention. Direct observation, the most widely utilized method to observe hand hygiene practices, often provides an incomplete picture due to small sample size and altered behavior in the presence of observers. A growing number of healthcare facilities are employing electronic hand hygiene monitoring systems to capture overall compliance rates. These electronic systems can provide a wealth of data on hand hygiene practices within and across healthcare facilities. **Objective:** We used high-accuracy electronic monitoring data to perform a detailed analysis of hand hygiene practices across numerous facilities that varied in key hospital characteristics. **Methods:** In total, 11 tertiary-care facilities were equipped with an electronic hand hygiene monitoring system. Hospitals varied in size, region, area classification (urban vs rural), acuity level, and teaching status. The electronic monitoring system was composed of uniquely assigned employee badges and electronically monitored dispensers. Every recorded dispensing event was time stamped and associated with a specific healthcare worker, the location of the dispenser, and the specific product being dispensed (ie, alcohol-based hand rub [ABHR] or hand soap). The total number of dispensing events for each product type and the total number of hours worked were calculated for each healthcare worker and were used to determine hand hygiene frequency. Hospital attributes, such as size and area classification, were obtained from publicly available sources including but not limited to facility-owned websites and CMS data. **Results:** More than 15.7 million hand hygiene events, performed by nearly 11,000 healthcare workers, were captured by the electronic monitoring system and were included in the analysis. Overall, median hand hygiene frequency was 4.1 events per hour and ranged from 2.0 events per hour to 5.6 events per hour, depending on the facility. ABHR use (median, 3.6 events per hour) was more frequent than handwashing (median, 0.4 events per hour). Hospitals included in the analysis ranged from small (<20 beds) rural facilities to large (>600 beds) academic hospitals and provided a variety of services from general medical-surgical treatment to intensive care. Interfacility differences in observed hand hygiene frequency were analyzed. **Conclusions:** The current analysis reinforces and builds upon previous work that examined a smaller subset of 5 hospitals located in a single geographic region. Combined, these datasets represent >20 million hand hygiene events among ~15,000 healthcare workers from 16 unique healthcare facilities. This analysis provides detailed information about hand hygiene practices across a diverse set of healthcare facilities.

Funding: Ecolab, Inc, provided support for this study.

Disclosures: Jessica Carol Albright and Cheryl A Littau report salary from Ecolab.

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Presentation Type:
Poster Presentation

One Health: Farmworker Perceptions of Antibiotic Resistance and Personal Protective Practices on Wisconsin Dairy Farms

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Background: Antimicrobials are used on dairy farms for preventing disease and treating common infections such as mastitis. **Objective:** We aimed to understand farmworker practices that potentially contribute to transmission of antimicrobial resistance bacteria and their genes (ARG) among