Figure 2. Patient movement between facilities
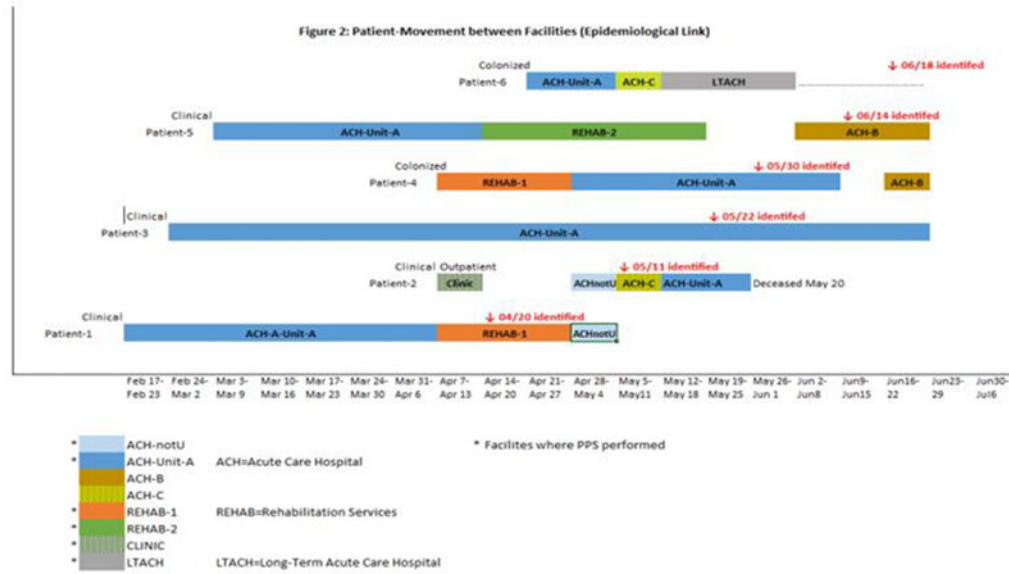

Fig. 2.
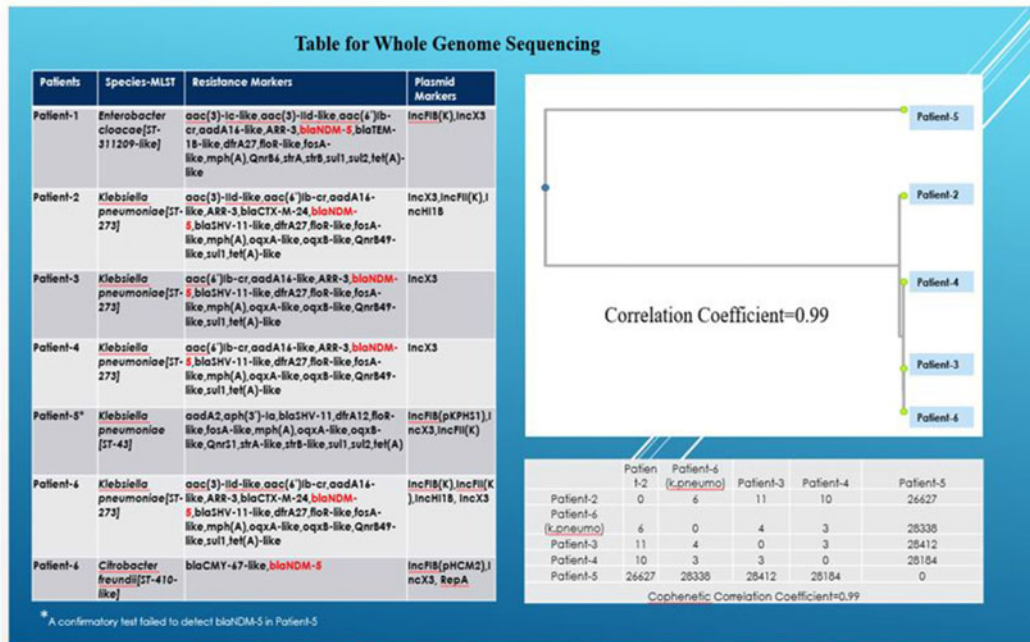
Table: Whole Genome Sequencing Results

Fig. 3.

infection control practices and extensive colonization screening to identify asymptomatic case-patients. Multiple species with NDM-5 were identified, highlighting the potential role of genotype-based surveillance.

Presentation Type:
Poster Presentation
Antibiotic Overuse at Discharge in Hospitalized Patients with Bacteriuria or Treated for Pneumonia: A Multihospital Study

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Background: Nearly half of hospitalized patients with bacteriuria or treated for pneumonia receive unnecessary antibiotics (noninfectious or nonbacterial syndrome such as asymptomatic bacteriuria), excess duration (antibiotics prescribed for longer than necessary), or avoidable fluoroquinolones (safer alternative available) at hospital discharge.[1–3] However, whether antibiotic overuse at discharge varies between hospitals or is associated with patient outcomes remains unknown. **Methods:** From July 2017 to

Figure 1. Antibiotic Overuse at Discharge in Patients with Bacteriuria vs. Patients Treated for Pneumonia, N=16,855 patients, 44 hospitals
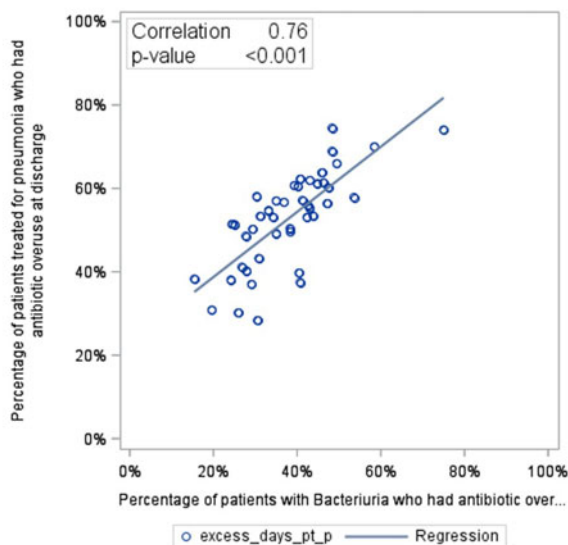
Fig. 1

Figure 2: Association of Antibiotic Overuse at Discharge with 30-Day Adverse Outcomes

Outcomes	Antibiotic Overuse (n = 7662), n (%)†	No Antibiotic Overuse (n = 9419), n (%)	Unadjusted OR per Day of Antibiotic Overuse (95% CI)§	Unadjusted P Value	Adjusted OR per Day of Antibiotic Overuse (95% CI)	Adjusted P Value
Mortality	149 (1.9)	384 (4.1)	0.87 (0.84–0.91)	<.0001	0.97 (0.86–1.10)	0.62
Readmission	926 (12.1)	1526 (16.2)	0.95 (0.93–0.98)	<.0001	0.98 (0.94–1.02)	0.37
Emergency department visit	888 (11.6)	1184 (12.6)	0.99 (0.97–1.01)	0.40	0.98 (0.95–1.02)	0.37
Antibiotic-associated adverse event	268 (3.5)	298 (3.2)	1.01 (0.99–1.03)	0.24	1.02 (0.99–1.04)	0.21
Clostridioides difficile infection	30 (0.4)	60 (0.6)	0.93 (0.84–1.04)	0.22	0.98 (0.86–1.12)	0.80
Provider-documented	131 (1.7)	181 (1.9)	0.98 (0.94–1.03)	0.38	0.98 (0.94–1.03)	0.42
Patient-reported§§	134/3875 (3.5)	83/4290 (1.9)	1.05 (1.02–1.08)	0.0003	1.05 (1.02–1.07)	<0.001
Composite adverse outcome	1843 (24.1)	2687 (28.5)	0.97 (0.96–0.99)	0.0002	0.98 (0.95–1.01)	0.18

OR = odds ratio.

Outcomes, collected via the medical record and a follow-up telephone call at 30 days, and their associations with days of antibiotic overuse at discharge are shown. Outcomes were adjusted for hospital clustering, were inverse probability of treatment weighted, and were adjusted for known predictors of the outcome of interest. For mortality, readmission, emergency department visit, and "composite adverse outcome," we controlled for diagnosis, age, gender, sepsis on admission, nursing home utilization prior to hospitalization, Charlson comorbidity index, Medicaid insurance, race, and length of stay. For *Clostridioides difficile* infection, we controlled for age, antibiotic use prior to admission, obesity, inflammatory bowel disease, receipt of chemotherapy, presence of gastric-tube, proton-pump inhibitor use, and length of stay. For antibiotic-associated adverse-drug events (patient, physician reported) we controlled for age, Charlson comorbidity index, and gender. For overall antibiotic-associated adverse-drug events we controlled for age, history of antibiotic use, obesity, inflammatory bowel disease, receipt of chemotherapy, gastric-tube, proton-pump inhibitor use, length of stay, Charlson comorbidity index, and gender.

§§ Proportions shown are among patients who were able to be reached by telephone. Of those who were eligible for a telephone call, 57% (8165/14,315) of patients were reached (56% [4290/7688] with no antibiotic overuse at discharge vs. 58% [3875/6627] with antibiotic overuse at discharge; P = 0.001). Patients were considered to have had an antibiotic-associated adverse event if they answered "yes" to the question "Have you had any side effects from your prescribed antibiotic?" during their 30-day post-discharge call.

December 2018, trained abstractors at 46 Michigan hospitals collected detailed data on a sample of adult, non–intensive care, hospitalized patients with bacteriuria (positive urine culture with or without symptoms) or treated for community-acquired pneumonia (CAP; includes those with the disease formerly known as healthcare-associated pneumonia [HCAP]). Antibiotic prescriptions at discharge were assessed for antibiotic overuse using a previously described, guideline-based hierarchical algorithm.[3] Here, we report the proportion of patients discharged with antibiotic overuse by the hospital. We also assessed hospital-level correlation (using Pearson's correlation coefficient) between antibiotic overuse at discharge for patients with bacteriuria and patients treated for CAP. Finally, we assessed the association of antibiotic overuse at discharge with patient outcomes (mortality, readmission, emergency department visit, and antibiotic-associated adverse events) at 30 days using logit generalized estimating equations adjusted for patient characteristics and probability of treatment. **Results:** Of 17,081 patients (7,207 with bacteriuria; 9,874 treated for pneumonia), nearly half (42.2%) had antibiotic overuse at discharge (36.3% bacteriuria and 51.1% pneumonia). The percentage of patients discharged with antibiotic overuse varied 5-fold among hospitals from 14.7% (95% CI, 8.0%–25.3%) to 74.3% (95% CI, 64.2%–83.8%). Hospital rates of antibiotic overuse at discharge were strongly correlated between bacteriuria and CAP (Pearson's correlation coefficient, 0.76; $P \leq .001$) (Fig. 1). In adjusted analyses, antibiotic overuse at discharge was not associated with death, readmission, emergency department visit, or *Clostridioides difficile* infection. However, each day of overuse was associated with a 5% increase in the odds of patient-reported antibiotic-associated adverse events after discharge (Fig. 2). **Conclusions:** Antibiotic overuse at discharge was common, varied widely between hospitals, and was associated with patient harm. Furthermore, antibiotic overuse at discharge was strongly correlated between 2 disparate diseases, suggesting that prescribing culture or discharge processes—rather than disease-specific factors—contribute to overprescribing at discharge. Thus, discharge stewardship may be needed to target multiple diseases.

Presentation Type:
Poster Presentation
Antimicrobial Bacteria and Viruses Detected Through Systematic Sampling in the Childcare Environment

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Background: Approximately two-thirds of children aged <5 years receive out-of-home child care. Childcare attendees have an increased risk of infections compared to children not in childcare settings, possibly due to their close contact in a shared environment. As multidrug-resistant organisms (MDROs) increasingly move from healthcare-associated to community settings, childcare can provide a venue for further transmission of these pathogens. Our objective was to evaluate the bioburden of pathogens present on fomites in childcare centers and how surface contamination changes over time. **Methods:** The study was conducted in the single-room play area of an Ypsilanti, Michigan, childcare center caring for children aged 3–5 years. Polyester swabs were used to collect surface samples from 16 locations in the room, including (1) laminate, wood and plastic tabletops and furniture; (2) a stainless steel sink and adjacent plastic trash bin; and (3) wood, metal and plastic toys. A water sample was also collected at a 17th site. Samples were collected twice weekly for 5 of 6 weeks, followed by 1 additional collection (September–October 2019). Tryptic soy agar was used for standard plate counts and selective media were used to identify methicillin-resistant *Staphylococcus aureus* (MRSA), Vvancomycin-resistant *Enterococcus* (VRE), and extended-spectrum β-lactamase (ESBL)–producing *Enterobacteriaceae*. Singleplex RT-PCR was used to detect norovirus and adenovirus. **Results:** Among 175 samples collected on 11 days, MRSA and ESBL-producing *Enterobacteriaceae* were detected from 10.3% (18 of 175) and 8.0% (14 of 175), respectively, of environmental specimens. No specimens were positive for VRE or norovirus. Adenovirus was detected in 20 of 175 specimens (11.4%). Median bioburden by site ranged from 85 CFU/mL to 2,510 CFU/mL. The highest median bioburden was observed at the sink (2,510 CFU/mL), followed by the plastic building block table (1,620 CFU/mL), the small wood blocks (1,565 CFU/mL) and water from a water play area and an adjacent tabletop (1,260 and 1,100 CFU/mL respectively). The highest single day bioburden was 273,000 CFU/mL at the sink. **Conclusion:** The presence of MDROs on childcare center fomites raised concern for exposure to these pathogens among vulnerable populations. More study is needed to determine the degree to which these contaminated fomites drive transmission between children. We found the highest bioburdens on sites where children played or washed with water, identifying potential targets for more frequent cleaning.

Presentation Type:
Poster Presentation
Are Patients Preferentially Receiving Oral Vancomycin for *Clostridioides difficile* Infection in 2018? A Population Perspective

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Background: Historically, metronidazole was first-line therapy for *Clostridioides difficile* infection (CDI). In February 2018, the Infectious Diseases Society of America (IDSA) and Society for