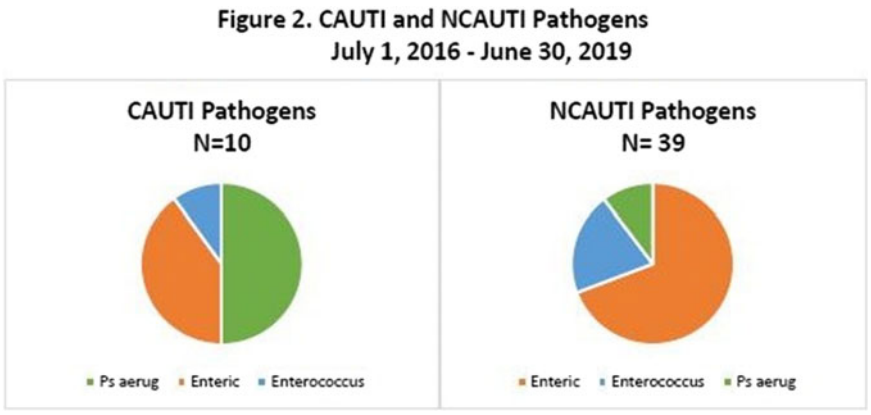

Fig. 2.

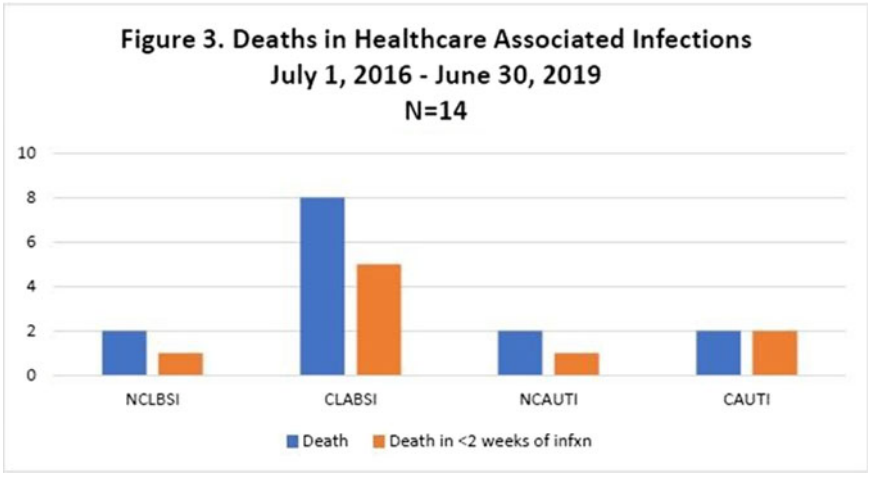

Fig. 1.

HABSIs and HAUTIs may be less subjective and may avert the shifting of categories seen with increased use of midline catheters. In addition, non–device-associated infections are potential causes of morbidity and mortality.

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Presentation Type:
Top Rated Posters

Pilot Program for Aztreonam-Avibactam Susceptibility Testing of Metallo-Beta-Lactamase-Producing Enterobacteriaceae

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Background: Carbapenemase-producing Enterobacteriaceae (CPE) are a major public health concern because they typically display multidrug resistance and they cause hard-to-treat infections. Organisms harboring metallo-β-lactamases (MBLs) pose a critical challenge in clinical practice because they confer resistance to nearly all β-lactams, including recently approved β-lactam combination agents. A promising new β-lactam-β-lactamase inhibitor combination for treating infections caused by MBL-producing CPE is aztreonam–avibactam. Although clinical trials using aztreonam–avibactam are ongoing, clinicians can administer this combination using 2 US Food and Drug Administration (FDA)–approved drugs: aztreonam and ceftazidime–avibactam. In 2019, the Centers for Disease Control and Prevention (CDC) initiated a pilot program in the Antibiotic Resistance Laboratory Network (AR Lab Network) to address the lack of commercially available antimicrobial susceptibility tests (ASTs) for aztreonam-avibactam by performing broth microdilution (BMD) for this drug combination. We describe the isolates submitted for aztreonam-avibactam AST during the AR Lab Network pilot in 2019.
Methods: The AR Lab Network regional laboratories adopted the HP D300e Digital Dispenser to create customized BMD panels for aztreonam–avibactam ASTs. To qualify for aztreonam–avibactam AST, isolates had to be an Enterobacteriaceae displaying non-susceptibility to all tested β-lactams (including either ceftazidime-avibactam or meropenem-vaborbactam) or confirmed to harbor at least 1 MBL gene (*bla*VIM, *bla*NDM, or *bla*IMP). Regional

laboratories confirmed carbapenemase gene(s) using a molecular method. If an MBL gene was confirmed, aztreonam-–avibactam minimum inhibitory concentrations (MICs) were reported back to submitters within 3 working days of receipt. Findings were reported to CDC using a REDCap database. **Results**: From March through August 2019, aztreonam–avibactam AST was requested for 32 clinical isolates across 16 states. These isolates included 15 *Escherichia coli*, 12 *Klebsiella pneumoniae*, 4 *Enterobacter cloacae* complex, and 1 *Proteus mirabilis*. Molecular detection identified 27 *bla*NDM-positive isolates, 2 *bla*OXA-48-like-positive isolates, and 3 *bla*OXA-48/*bla*NDM-positive isolates. Aztreonam-avibactam results were reported for 30 isolates; 5 displayed elevated aztreonam-avibactam MICs of 8/4 μg/mL (n = 4) or 16/4 μg/mL (n = 1). Results for 2 isolates were not reported because the isolates were MBL negative. Aztreonam-avibactam MICs ranged from 0.06/4 μg/mL to 16/4 μg/mL. The MIC50/MIC90 were 0.5/4 μg/mL and 8/4 μg/mL. **Conclusions:** In the absence of effective FDA-approved treatments and lack of available AST for novel antibiotic combinations, CDC's provision of AST for aztreonam-avibactam among MBL-producing CPE, offered through the AR Lab Network, helps fill a critical gap to inform patient treatment decisions. To date, our in vitro data suggest that aztreonam–avibactam could be a promising drug combination for use against infections caused by MBL-producing Enterobacteriaceae.

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Presentation Type:
Top Rated Posters

Population Standardized Infection Ratio (pSIR): A More Meaningful Reflection of Performance With Reduction in Device Use

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Background: Interventions to reduce unnecessary device use may select a higher-risk population, leading to a paradoxical increase in SIR for some high-performing facilities. The standardized utilization ratio (SUR) adjusts for device use for different units and facilities. We evaluated the performance of a population SIR (pSIR) metric compared to device SIR (dSIR) in the situations of increased, decreased, and no change in SUR for a large system. **Methods:** We evaluated hospitals that had a reduction, increase, and no substantial change (±5% relative change) in their SUR in FY2019 (July 2018–June 2019) compared to baseline FY2017 (July 2016–June 2017). The dSIR (defined as Σ observed events divided by Σ predicted events based on actual device days) and pSIR (defined as Σ observed events divided by Σ predicted events based on predicted device days). We calculated the cumulative attributable difference (CAD) for catheter-associated urinary tract infections (CAUTIs) for the same facilities based on dSIR and pSIR. **Results:** Overall, the system SUR dropped from 0.92 in 2017 to 0.85 in 2019 (7.3% decrease). Of the 48 hospitals included, 25 (52%) exhibited a drop, 13 (27%) exhibited an increase, and 10 (21%) had no change in SUR during 2019. For hospitals in which SUR decreased, the dSIR decreased by 15.9% from 0.88 to 0.74, and the pSIR decreased by 32.3% from 0.85 to 0.58 (Table 1). In 2019, the CAD for CAUTI to a target SIR of 1 was 133 for the dSIR compared to 181 for the pSIR, and 36% more events were avoided. **Conclusions:** The traditional SIR (dSIR) underestimated improvements in infection rates compared to the pSIR because it failed to account for reduced device utilization associated with infection prevention interventions. The pSIR accounts for overall risk of infection associated with device exposure in a population and better reflects the efficacy of prevention efforts compared to dSIR. The pSIR should be considered in situations in which interventions have led to substantial reductions in device use.

Table 1. The Effect on dSIR, and pSIR in the Setting of Changes in SUR Over the 2 Periods

Change In		SUR			dSIR			Observed Events		pSIR		
SUR	#Hosp	FY17	FY19	% Change	FY17	FY19	% Change	FY17	FY19	FY17	FY19	% Change
Decrease	25	0.971	0.781	-19.5%	0.879	0.739	-15.9%	251	161	0.853	0.577	-32.3%
Increase	13	0.820	0.911	11.1%	0.902	0.712	-21.1%	131	104	0.740	0.649	-12.3%
No change	10	0.955	0.955	0.0%	0.789	0.627	-20.5%	66	58	0.753	0.599	-20.5%
System	48	0.920	0.852	-7.3%	0.871	0.708	-18.7%	448	323	0.801	0.603	-24.7%

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Presentation Type:
Top Rated Posters

Postdischarge Decolonization of Patients Harboring MRSA USA300 Strains: Secondary Analysis of the CLEAR Trial

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Susan Huang, University of California Irvine School of Medicine

Background: The Changing Lives by Eradicating Antibiotic Resistance (CLEAR) Trial was a trial of 2,121 recently discharged methicillin-resistant *Staphylococcus aureus* (MRSA) carriers randomized to MRSA education plus a 5-day decolonization regimen repeated twice monthly for the 6 months following discharge versus MRSA education alone. Decolonization resulted in a 30% reduction in MRSA infection and a 17% reduction in all-cause infection (Huang SS et al, *NEJM*, 2019) in the year following discharge. We pursued an evaluation of USA300 carriers to determine whether the decolonization benefit differed for this strain type. **Methods:** A secondary analysis of the CLEAR randomized controlled trial (RCT) was performed, limiting the cohort to participants known to harbor USA300 at or within 30 days of enrollment and who attended all follow-up visits in the year following discharge. Within this subset, we conducted a time-to-event analysis using unadjusted and adjusted Cox proportional-hazard models. Variables in adjusted analyses included demographic data,