Methods. We tested 52 KPC-E isolates from various hospitals in Connecticut and the Centers for Disease Control and Prevention (CDC) Antibiotic Resistance (AR) Bank. All specimens were verified as KPC-producing strains by detection of the $bla_{K\text{-}PC}$ gene through polymerase chain reaction. Protein extraction using the standard extraction method was performed on sub-cultured isolates. Each isolate was tested three times on MALDI-TOF MS with the incorporated bio-subtype KPC module. An organism confidence or log score value of 2 or higher was considered valid.

Results. Among 52 tested KPC-*K. pneumoniae* isolates, 44 (85%) were from various hospitals in Connecticut, eight (15%) came from the AR Bank. Only 15 (25.1%) of the isolates were detected as KPC-producing using the MALDI-TOF KPC module. Further investigation by peak analysis confirmed all 15 isolates detected positive demonstrated a peak at 11.09 m/z. The 11.09 m/z peak was not found in the 37 specimens that were not detected.

Conclusion. The results from our study suggest low sensitivity using this software and contradicts results seen in previous European studies. The Tna4401a isoform is often seen in KPC-2 strains, which may be less prevalent in our sample of isolates, explaining the poor sensitivity of MALDI-TOF. Further study is needed to explore this finding and potential opportunities for MALDI-TOF for rapid identification of KPC-KP.

Disclosures. **All authors:** No reported disclosures.

537. Impact of Active Surveillance Testing (AST) on Rates of Hospital-acquired Carbapenem-Resistant *Enterobacteriaceae* (CRE)

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Background. Active surveillance testing (AST) for Carbapenem-resistant *Enterobacteriaceae* (CRE) to identify and isolate asymptomatic carriers has been recommended to help prevent patient to patient transmission. Optimal screening population, frequency, and testing method remain a subject of debate.

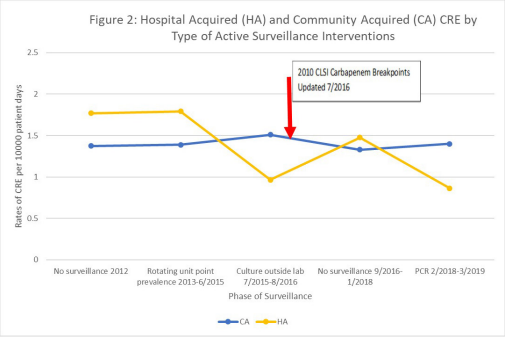
Methods. Beginning in 2012, all clinical cultures yielding a CRE isolate in an 898-bed teaching hospital were reviewed to determine whether the isolate was hospital-acquired (HA). HA CRE rates per 10,000 patient-days were calculated. From 1/2013 to 6/2015, in-house, culture-based point prevalence surveys were performed on rectal swabs from rotating units using the CDC recommended method. 7/2015 through 8/2016, culture-based AST was outsourced to a reference laboratory and AST was expanded to include high-risk patients on admission with weekly sweeps on high-risk units. Of note, revised CLSI breakpoints were implemented by our laboratory in 7/2016, which resulted in an increase in CRE detections. Surveillance was suspended from September 2016 to January 2018 when we resumed AST utilizing in-house PCR for KPC, NDM, OXA48, IMP and VIM mechanisms. Rates of HA CRE were compared between surveillance periods. Cohorting of patients in select units, focus on hand hygiene and isolation, antibiotic stewardship, and CHG bathing were ongoing throughout all time periods.

Results. 510 rectal swabs in 424 patients were positive for CRE. Additional clinical cultures yielding CRE were absent in 83% of those patients, so would otherwise have gone undetected. Of those patients with both positive AST and clinical culture, 70% had a positive AST result prior to their clinical culture (range 0–997 days, average 94 days, median 14.5 days prior to clinical culture). Compared with preceding periods with no surveillance, on admission and weekly CRE AST, whether utilizing culture based or PCR based screening, was associated with significantly lower rates of HA CRE. (See Table 1). Rates of HA CRE during the initial point prevalence AST period were unchanged compared with periods with no surveillance. Community-onset CRE did not significantly change in any of the time periods monitored (Figure 2).

Conclusion. On admission and weekly AST was associated with a significant decrease in HA CRE in a large teaching hospital.

Table 1: Risk ratio comparing time periods with on admission/weekly CRE AST vs no or limited surveillance

	Risk Ratio	95% Confidence Interval	p value
Rotating unit AST vs no surveillance 2012	1.01	0.73, 1.4	0.95
Outside culture on admission/weekly screening vs no surveillance 2012	**0.53**	**0.33, 0.83**	**0.005**
PCR AST on admission/weekly vs no surveillance 2017	**0.61**	**0.39, 0.93**	**0.02**



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538. Extended-Spectrum β-Lactamase (ESBL): Producing Enterobacteriaceae Surveillance Pilot, New Mexico, 2017

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Background. Extended-spectrum β-lactamase – producing (ESBL) Enterobacteriaceae pose a serious antibiotic resistance threat, yet gaps remain in our understanding of their epidemiology. New Mexico was one of five Emerging Infection Program (EIP) sites to participate in a surveillance pilot from October 1 to December 31, 2017.

Methods. A case was defined as a resident of Bernalillo County, NM with *E. coli*, *Klebsiella pneumoniae*, or *Klebsiella oxytoca* cultured from urine or normally sterile body sites resistant to at least one extended-spectrum cephalosporin and nonresistant to all carbapenem antibiotics tested. EIP staff assessed prior healthcare exposures, risk factors, and outcomes through medical record review.

Results. NM EIP identified 309 incident cases among 288 individuals; 263 medical records were reviewed. Cases ranged in age from 3–95 years, with a median age of 63 years. Most isolates were *E. coli* (n = 270, 87.4%); 35 (11.3%) were *K. pneumoniae* and 4 (1.3%) were *K. oxytoca*. The majority of isolates were cultured from urine (297, 96.1%). Blood cultures comprised 11 cases (3.6%). The majority of ESBL cultures were collected in an outpatient setting; 15% were collected from hospital inpatients and fewer than 5% from residents of a long-term care facility (LTCF) or long-term acute care hospital (LTACH). However, 21% of those collected in an outpatient setting, primarily the ED, were hospitalized within 30 days.

Over 60% of the cases had at least one relevant risk factor documented in their medical record. One-third had documented antimicrobial use in the prior month, 39% had been hospitalized in the year prior, and 19% had a urinary catheter in place in the 2 days prior to culture collection. Interestingly, while only 2% had documentation of international travel in the two months prior to culture, 18% had either documented international travel outside of that timeframe, or required the use of language interpretation, possibly indicating extensive time living internationally in the past.

Conclusion. Among residents of Bernalillo County, NM, ESBL isolates were predominantly *E. coli*, cultured from urine in outpatient settings. Over half had documentation of recognized risk factors, including prior hospitalizations, recent antibiotic use, or presence of indwelling devices.

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539. Canaries in a Coal Mine?: Early Identification of Regional Spread of Novel Multidrug-resistant Organisms (MDROs) Using Sentinel Surveillance in Skilled Nursing Facilities Caring For Ventilated Patients (vSNFs)

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Background. Regional containment of novel or targeted MDROs depends on detecting their presence as soon as possible following their introduction. Prior modeling studies suggest that after importation to a region, novel MDROs appear relatively quickly in certain high-risk post-acute long-term care facilities via patient movement. Sentinel surveillance in such facilities might facilitate early detection of emergent MDROs, thereby enhancing the effectiveness of containment efforts.

Methods. We simulated the introduction and spread of carbapenem-resistant Enterobacteriaceae (CRE) in a region using an adaptation of a previously described susceptible-infectious-susceptible model (Clin Infect Dis. 2019 March 28 doi: 10.1093/cid/ciz248). The model includes the patient sharing network among healthcare facilities in an exemplar US state, using claims data and the Minimum Data Set from the Centers for Medicare & Medicaid Services for 2015. Disease progression, transmission and testing rates were estimated for CRE using data from the literature. Each simulated outbreak was initiated with a single importation to a Dartmouth Atlas of Health Care hospital referral region. The predicted timing of first CRE detection using two different data sources was compared: (1) real-time monitoring of clinical microbiology test results, or (2) results from quarterly point prevalence colonization surveys (PPSs). For each data source, the timing of earliest detection was compared according to availability of data from: (a) all healthcare facilities statewide, (b) only long-term acute care hospitals, (c) only vSNFs, or (d) only the largest acute care hospitals in the state (n = 23).

Results. Compared with real-time monitoring of clinical microbiology testing results from all facilities statewide, quarterly PPSs at all facilities detected CRE 446 days (median; range 312–608 days) earlier, while PPSs at only vSNFs (representing 4.4% of inpatient beds statewide) detected CRE 385 days (range 194–553 days) earlier (figures).

Conclusion. Regular point prevalence surveys in vSNFs may detect new MDROs in a region approximately one year sooner than real-time monitoring of clinical microbiology results, and may be an efficient strategy for early regional detection and subsequent containment.