Results. The study included 216 cases (72 in each group). Numerous predictors were significantly associated with CRE, as per bivariable analyses, but the only independent significant predictors were: (1) recent (3 months) exposure to fluoroquinolones (aOR=2.94, P = 0.04), (2) intensive care unit stay in current hospitalization prior to culture (aOR=3.56, P = 0.003), and (3) a rapidly fatal McCabe score (aOR=0.471, P = 0.01). Patients with CREn suffered from significant delays in instituting appropriate antimicrobials (P = 0.03), and for those who survived the hospitalization, were more frequently discharged to a long-term care facility after being admitted to the index hospitalization from home (aOR=3.3, P = 0.02).

Conclusion. A case–case–control–matched investigation of CRE epidemiology revealed a unique modifiable predictor, i.e., recent fluoroquinolone exposure, which could target a future stewardship intervention. The case–case–control–matched design allowed for the control of numerous confounders previously reported to be associated with CREn but may represent a risk factor for Enterobacter infection in general. As with other CRE, CREn carriers suffer from significant delays in initiation of appropriate antimicrobials and from worse outcomes.

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49.7 Changing Molecular Epidemiology of CRE from 2016–2018, Increase in the Unknown

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Background. Historically, endemic Klebsiella pneumoniae carbapenemase (KPC) has accounted for the majority of carbapenem-resistant Enterobacteriaceae (CRE) in Los Angeles County (LAC). The LAC Department of Public Health (DPh) initiated enhanced CRE surveillance in 2016 to determine CRE prevalence and track emerging non-KPC resistance mechanisms (IMP, NDM, OXA, and VIM) among CRE to describe characteristics and identify local epidemiology for novel multi-drug-resistant organism (N-MDRO) infection and colonization.

Methods. CRE isolates were voluntarily submitted by local clinical laboratories for mechanism detection by LAC Public Health Laboratory via MALDI-TOF and implicated organism (N-MDRO) infection and colonization. LACDPH interviewed healthcare providers for mechanism detection by LAC Public Health Laboratory via MALDI-TOF and implicated organism (N-MDRO) infection and colonization.

Results. CRE Surveillance isolates were voluntarily submitted by 31 labs representing 34% (34/96) LAC hospitals and 1 large regional lab serving 60% of skilled nursing facilities from January 2016 to December 2018. LACDPH tested 1348 CRE isolates during the study period, 1168 (81%) were carbapenemase producing (CP). The proportion of CP CRE and KPC CRE declined over the study period (Table 1). NDM was the most common non-KPC (n = 30) followed by OXA (n = 28). The proportion of CRE with genotypic marker increased over the course of the study. Case characteristics were obtained from 41 non-KPC CP CRE cases; median age was 66 years (range: 6-94 years); 12 (29%) expired. Among the 41 cases, 20 (49%) had a central line; 11 (27%) had surgery; 14 (34%) had antibiotics in the 6 months prior to culture date. Of the 41 cases, 11 (27%) had international healthcare exposure within 12 months with an invasive procedure and/or antibiotics.

Conclusion. Surveillance in a large urban setting suggests the molecular epidemiology of CRE is changing, with declining prevalence of KPC, increasing metallo-β-lactamase CP, and large proportion of isolates without resistance markers detected. Given the worrisome trends in non-KPC CRE, more systematic surveillance is warranted, potentially using more robust molecular epidemiology.

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49.8 High Burden of CRE Colonization and Its Association with Infection Among Patients transferred to a Tertiary Care Hospital in India

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Background. Infections with carbapenem-resistant organisms (CRO) are increasing worldwide and are associated with high mortality. Patients transferred from outside hospitals have been reported to be at increased risk of CRO colonization and infection. The rate of subsequent CRO infection in patients colonized with CRO is unclear and high CRO burden setting.

Methods. Medanta Hospital in Gurgaon, India instituted CRO colonization screening for patients transferred from outside hospitals for infection control purposes. From April 2018 to May 2018, patients transferred from other hospitals to the intensive care unit at Medanta were subjected to CRO colonization screening using Xpert Carba R (Cepheid) performed on the day of transfer. Subsequent recovery of CRO in cultures of blood, bronchoalveolar lavage fluid, urine in specimens with pyuria obtained from patients without urinary catheters, pus, and tissue were considered to be indicative of CRO infection. The association of CRO colonization with subsequent CRO infection was assessed with a Fisher exact test.

Results. Among 457 patients screened, 205 patients (45%) were found to be colonized with CRO at admission. Genes for New Delhi Metallo-β-lactamase (NDM) were detected in 184 (40%) patients, OXA-48 in 97 (21%) patients, VIM in 18 (4%) patients, KPC in 5 (1%) patients, and IMP in 5 (1%) patients; >1 carbapenemase gene was detected in 95 (21%) patients. CRO infections were observed in 25 (5%) patients including 12 with bacteremia, 7 with pneumonia, 4 with urinary tract infection, and 2 with soft-tissue infection. Among patients with CRO colonization, 17 (8%) patients developed CRO infection during the course of hospitalization; among patients who underwent admission CRO colonization, subsequent CRO infection was found in 8 (3%) patients. CRO admission colonization was associated with subsequent clinical CRO infection with CRO (odds ratio = 2.8, P = 0.02)

Conclusion. CRO colonization was found in almost half of patients transferred from outside hospitals to a large tertiary care hospital in India and was associated with subsequent CRO infection. Further work is necessary to understand the role of CRO colonization screening in infection control and antimicrobial stewardship in a setting with high CRO burden.

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49.9 Carbapenem-resistant Entero-bacteriaceae (CRE)-associated Infections and Prolonged Colonization among Hospitalized Patients Colonized by CRE

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Background. This study aims to determine rates of subsequent carbapenem-resistant Enterobacteriaceae (CRE)-associated infections and prolonged colonization among patients colonized by CRE and to identify risk factors of such conditions.

Methods. This study was conducted among a cohort of hospitalized adult patients identified by CRE at study sites from June 1, 2015 to December 31, 2018. The patients had been prospectively identified by the Infection Control (IC) Division of a Thai tertiary-care hospital. According to the hospital’s IC protocol, patients with CRE colonization/infections were isolated and underwent CRE cultured at the colonized/infections were isolated and underwent CRE cultured at the colonized institution. Subsequent CRO (odds ratio = 2.8, P = 0.02)

Results. Of the 125 patients identified, 25 were excluded due to death, being transferred, or discharged within 48 hours of CRE colonization detected. The final...