

(RR, 0.79; 95% CI, 0.67–0.95 per 10%) were protective of lower ESBL-Ec incidence. After accounting for multiple demographic factors, the residual, structured, random-effects model indicated that hot spots were still detected in more remote communities but also in several city regions. **Conclusions:** The change in distribution of ESBL-Ec across Queensland suggests the presence of area-level specific risk factors that enhance spread in the community. Risk factors for spread appear different between remote and city settings, and future research should be tailored to understand the respective area-level risk factors. Factors such as local temperature, antibiotic consumption, and access to services should be validated. Future public health measures to reduce transmission should be focused on the identified hot spots.

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Subject Category: Multidrug-Resistant (MDR) Organisms

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The impact of COVID-19 on the incidence of carbapenem-resistant Enterobacterales (CRE) in Singapore: An interrupted time-series analysis

Chong Hui Clara Ong, National Centre for Infectious Diseases, Singapore; Thoon Koh Cheng, Paediatrics Infectious Diseases Service, K K Women's and Children's Hospital, Singapore; Surinder Kaur M S Pada, Medicine, Infectious Diseases, Ng Teng Fong General Hospital, Singapore; Deepak Rama Narayana, Laboratory Medicine, Khoo Teck Puat Hospital, Singapore; Say Tat Ooi, General Medicine, Khoo Teck Puat Hospital, Singapore; Nares Smitasin, Medicine, National University Hospital, Singapore; Kok Choon Raymond Fong, Infectious Diseases, Changi General Hospital, Singapore; Tse Hsien Koh, Microbiology, Singapore General Hospital, Singapore; Pei Zhi Benjamin Cherng, Infectious Diseases, Singapore General Hospital, Singapore; Raymond Lin, National Public Health Laboratory, National Centre for Infectious Diseases, Singapore; De Partha Pratim, Laboratory Medicine, Tan Tock Seng Hospital, Singapore; Hsu Li Yang, Saw Swee Hock School of Public Health, National University of Singapore, Singapore; Jeanette Teo, CSS Laboratory Medicine, National University Hospital, Singapore; Oon Tek Ng, Infectious Diseases, Tan Tock Seng Hospital, Singapore; Indumathi Venkatachalam, Infection Prevention & Epidemiology and Infectious Diseases, Singapore General Hospital, Singapore; Kalisvar Marimuthu, Infectious Diseases, Tan Tock Seng Hospital, Singapore

Objectives: Over the past 2 years, many infection prevention and control (IPC) resources have been diverted to manage the COVID-19 pandemic. Its impact on the incidence of antimicrobial-resistant organisms has not been adequately studied. We investigated the impact of the pandemic on the incidence of carbapenem-resistant Enterobacterales (CRE) in Singapore. **Methods:** We extracted data on unique CRE isolates (clinical and/or surveillance cultures) and patient days for 6 public hospitals in Singapore from the carbapenemase-producing Enterobacteriaceae (CaPES) study group database, and we calculated the monthly incidence of CRE (per 10,000 patient days). Interrupted time-series (ITS) analysis was conducted with the pre-COVID-19 period defined as before February 2020, and the COVID-19 period defined as after February 2020. Statistical analyses were performed using Stata version 15 software. **Results:** From January 2017 to March 2021, 6,770 CRE isolates and 9,126,704 patient days were documented. The trend in CRE monthly incidence increased significantly during the pre-COVID-19 period (0.060; 95% CI, 0.033–0.094; $P < .001$) but decreased during the COVID-19 period (−0.183; 95% CI, −0.390 to 0.023; $P = .080$) without stepwise change in the incidence (−1.496; 95% CI, −3.477 to 0.485; $P = .135$). The trend in monthly incidence rate of CRE clinical cultures increased significantly during the pre-COVID-19 period (0.046; 95% CI, 0.028–0.064; $P < .001$) and decreased significantly during COVID-19 period (−0.148; 95% CI, −0.249 to −0.048; $P = .048$) with no stepwise change in the incidence (−0.063; 95% CI, −0.803 to 0.677; $P = .864$). The trend in monthly incidence rate of CRE surveillance cultures decreased during the pre-COVID-19 period (−0.020; 95% CI, −0.062

to 0.022; $P = .341$) and the COVID-19 period (−0.067; 95% CI, −0.291 to 0.158; $P = .552$) without stepwise change in the incidence (−1.327; 95% CI, −3.535 to 0.881; $P = .233$). **Conclusions:** The rate of CRE in clinical cultures decreased during COVID-19 but not the rate in surveillance cultures. Further studies are warranted to study the impact of COVID-19 on CREs.

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The attributable mortality and excess length of stay associated with third-generation cephalosporin-resistant Enterobacterales bloodstream infections—A prospective cohort study in Suva, Fiji

Michael Loftus, Monash University, Melbourne, Australia; Tracey Young-Sharma, Colonial War Memorial Hospital, Suva, Fiji; Allen Cheng, Monash University, Melbourne, Australia; Adam Jenney, Monash University, Melbourne, Australia; Sue Lee, Monash University, Melbourne, Australia; Ravi Naidu, Colonial War Memorial Hospital, Suva, Fiji; Anton Peleg, Monash University, Melbourne, Australia; Andrew Stewardson, Monash University, Melbourne, Australia

Objectives: Although antimicrobial resistance (AMR) disproportionately affects low- and middle-income countries (LMICs), primary clinical data on AMR burden from LMICs are lacking, particularly from the Pacific Islands. We adapted recent World Health Organization methodology to measure the impact of third-generation cephalosporin (3GC) resistance on mortality and excess length of hospital stay among inpatients with Enterobacterales bloodstream infection (BSI) in Fiji. **Methods:** We conducted a prospective cohort study of inpatients with Enterobacterales BSIs at Colonial War Memorial Hospital in Suva. We collected demographic, clinical, and microbiological data, and we stored bacterial isolates for confirmatory testing and molecular genomics in Melbourne, Australia. We employed cause-specific Cox proportional hazards models to estimate the effect of 3GC-resistance on hazard of in-hospital mortality and discharge alive (competing outcomes), and we used multistate modelling to estimate the excess length of hospital stay associated with 3GCR. **Results:** From July 2020 to February 2021, we identified 162 consecutive Enterobacterales BSIs, and 66 (40.7%) were 3GC resistant. The crude mortality rates for patients with 3GC-susceptible and 3GC-resistant BSIs were 16.7% (16 of 96) and 30.3% (20 of 66), respectively. Also, 3GC resistance was not associated with either in-hospital mortality (aHR, 1.67; 95% CI, 0.80–3.49) or discharge alive (aHR, 0.75; 95% CI, 0.50–1.12). However, patient comorbidities and acuity of illness were associated with in-hospital mortality. Furthermore, 3GC-resistance was associated with an increased length of stay of 2.6 days (95% CI, 2.5–2.8). Overall, 3GC-resistance was more common among patients with hospital-associated than community-acquired infection, but genomics did not identify clonal transmission. **Conclusions:** Among patients with Enterobacterales BSIs, mortality was relatively high, and 3GC resistance was common. Also, 3GC resistance was associated with increased hospital length of stay but not with in-hospital mortality after adjusting for potential confounders. Accurate estimates of the burden of AMR are important, especially from LMICs. Such knowledge can inform policy decisions, guide allocation of limited resources, and assist the evaluation of future interventions to address AMR.

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Implementing infection prevention bundle significantly reduced multi-drug-resistant organisms infection and healthcare-associated infections in intensive care unit at a national hospital in Vietnam