Background. Carbapenem-resistant Enterobacteriaceae (CRE) is an increasing problem worldwide, but particularly problematic in low- and middle-income countries (LMIC) due to limitations of resources for surveillance of CRE and infection prevention and control (IPC).

Methods. A point prevalence survey (PPS) with screening for colonization with CRE was conducted on 2233 patients admitted to neonatal, pediatric and adult care at 12 Vietnamese hospitals located in northern, central and southern Vietnam during 2017 and 2018. CRE colonization was determined by culturing of fecal specimens on selective agar for CRE. Risk factors for CRE colonization were evaluated. A CRE admission and discharge screening sub-study was conducted among one of the most vulnerable patient groups; infants treated at an 80-bed Neonatal ICU from March throughout June 2017 to assess CRE acquisition, hospital-acquired infection (HAI) and treatment outcome.

Results. A total of 1165 (52%) patients were colonized with CRE, most commonly Klebsiella pneumoniae (n = 805), Escherichia coli (n = 682) and Enterobacter spp. (n = 61). Duration of hospital stay, HAI, intubation, peripheral venous catheter and treatment with a carbapenem were independent risk factors for CRE colonization. The PPS showed that the prevalence of CRE colonization increased on average 4.2% per day and mean CRE colonization rates increased from 13% on the day of admission to 89% at day 15 of hospital stay. At the NICU CRE colonization increased from 32% at admission to 87% at discharge, mortality was significantly associated (OR 5.5, P < 0.01) with CRE colonisation and HAI on admission.

Conclusion. These data indicate that there is an epidemic spread of CRE in Vietnamese hospitals with rapid transmission to hospitalized patients. CRE colonization places a major burden on the healthcare system due to the increased risk of HAI caused by CRE and associated increased mortality. This study shows that large-scale epidemiological surveillance of CRE using affordable methods is possible in low- and middle-income countries.

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