Notes from the Field

Verona Integron-Encoded Metallo-Beta-Lactamase–Producing Carbapenem-Resistant Enterobacteriaceae in a Neonatal and Adult Intensive Care Unit — Kentucky, 2015

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During August 4–September 1, 2015, eight cases of Verona integron-encoded metallo-beta-lactamase (VIM)–producing Carbapenem-resistant Enterobacteriaceae (CRE) colonization were identified in six patients, using weekly active surveillance perirectal cultures in a Kentucky tertiary care hospital. No cases of clinical infection or complications attributable to colonization were reported. Four of the eight isolates were identified as *Enterobacter cloacae*; other organisms included *Raoultella* species (one), *Escherichia coli* (one), and *Klebsiella pneumoniae* (two). Six isolates were reported in a neonatal intensive care unit (ICU), and two isolates in an adult trauma and surgical ICU. Patient ages at isolate culture date ranged from 21 days to 68 years. Fifty percent of the patients were male. Previously, only one VIM-producing CRE-colonized patient (an adult, in 2013) had been reported by the same hospital. The six cases are the largest occurrence of VIM-producing CRE colonization reported in the United States and the only recognized cluster of VIM-producing CRE colonization in the United States reported to include a neonatal population. Despite environmental sampling over the same period, surveying patients for exposure to health care outside the United States, surveying health care providers for risk factors, and surveillance culturing of health care provider nares and axillae, a source of VIM-producing CRE has not been identified for this cluster. Prevention measures throughout the ICUs have been enhanced in response to this cluster, as detailed in CDC's 2015 CRE toolkit update (*1*).

CRE are defined as any Enterobacteriaceae species resistant to any carbapenem or possessing a documented carbapenemase (*2*). Outbreaks of VIM-producing CRE have been described previously, including outbreaks in pediatric and neonatal populations in Spain (*3*) and Hungary (*4*). However, both of these outbreaks involved a single CRE species (*E. cloacae*). The first VIM to be identified in the United States was in an adult patient with *K. pneumoniae* in 2006 (*5*).

Clinical infections with CRE have been reported, with mortality rates of up to 50% (*6*). Enterobacteriaceae species are a common cause of infection in both health care–associated and community-associated infections, and the potential exists for carbapenem-resistant strains to add to this burden of infections. VIM-producing CRE are a substantial threat to public health, with more complicated patient outcomes, including higher relapse rate and a prolonged duration of antimicrobial therapy (*7*). The carbapenemases can be transferred easily from organism to organism through plasmid exchange, facilitating spread of resistance (*2*).

Risk factors for CRE acquisition in the United States primarily include exposure to health care settings and antimicrobial agents (*2*). Travel to countries with higher prevalence also is a risk factor for acquisition, particularly of novel carbapenemases like VIM (*8*). Transmission is believed to be person-to-person, either via contaminated hands of health care providers or through shared equipment. Control measures focus on optimizing infection control practices. Health care facilities should follow prevention strategies outlined in CDC's 2015 CRE toolkit update (*1*).

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