Since the past decade, carbapenem-resistant Enterobacteriaceae isolates, particularly *Klebsiella pneumoniae* carbapenemase (KPC)-producing *K. pneumoniae* and New Delhi metallo-β-lactamase-1 (NDM-1)-producing Enterobacteriaceae, have emerged in health care settings of many countries.\(^1,2\) Apart from NDM, which is endemic in the Indian subcontinent, KPC was first reported among *K. pneumoniae* in the United States in 2001\(^3\) and has also been proven to possess great potential for intra- and interhospital dissemination worldwide. The first clinical KPC-producing *K. pneumoniae* isolate in Taiwan was obtained in 2010 from a patient with bacteremia who had just returned from Zhejiang Province, the epicenter of the KPC-2 endemic in China.\(^4\) For most clinical laboratories, however, it is difficult to judge the existence of carbapenemases in Enterobacteriaceae through minimum inhibitory concentration (MIC) levels against carbapenem agents alone.

In 2009, by means of the modified Hodge test, no ertapenem-nonsusceptible (NS; MIC > 0.25 μg/mL) Enterobacteriaceae isolates of class A carbapenemase production were detected in intensive care units in Taiwan.\(^5\) However, using the MIC breakpoints recommended by the Clinical and Laboratory Standards Institute (CLSI) in 2011, we found alarmingly high rates of nonsusceptibility of *Enterobacter cloacae* and *K. pneumoniae* to ertapenem (40.5% and 24.5%, respectively).\(^5\) Subsequently, using the polymerase chain reaction method and electrophoresis analysis, two nationwide surveys in Taiwan investigated the 2011 prevalence rates of Enterobacteriaceae carriers of carbapenemases (class A, class B)\(^6\) and elucidated the main resistance mechanisms of carbapenem-NS Enterobacteriaceae isolates collected in 2010 and 2012,\(^7\) respectively. The first survey, undertaken by Lee et al,\(^6\) revealed that 5.2% (16 isolates) of ertapenem-NS (MIC > 0.5 μg/mL, by CLSI 2012 standards) Enterobacteriaceae isolates harbored genes encoding KPC-2 carbapenemase. Additionally, a similar pulsotype and the same sequence type (ST) 11 (n = 16) were found among all KPC-2-producing *K. pneumoniae* isolates in hospitals located in northern Taiwan. The second survey, conducted by Chiu et al,\(^7\) revealed that the prevalence rate of resistant isolates (imipenem or meropenem MIC >1.0 μg/mL, by CLSI 2012 standards) harboring various carbapenemase genes (primarily *bla*KPC-2) was significantly higher in 2012 than in 2010 (22.3% (55 isolates) vs. 6.0% (6 isolates) for overall
Data on ertapenem-NS (MIC > 0.5 μg/mL) Enterobacteriaceae in Taiwan showed that resistance increased from 2010 through 20126,7 in Taiwan. Furthermore, the international spread of multi-drug resistant organisms: think globally and act locally. J Microbiol Immunol Infect 2013;46:104–8.

Currently, there is no specific infection control strategy for carbapenem-NS Enterobacteriaceae. We think that therapy comprising multiple antibiotics as well as contact isolation are appropriate measures for dealing with infections caused by pandrug-resistant KPC-producing Enterobacteriaceae isolates in clinical settings. Periodic targeted surveillance and development of new effective antimicrobial drugs are urgently needed.

Conflicts of interest

All authors report no conflicts of interest relevant to this article.

References


