

## Risk Factors for Healthcare-associated Vancomycin-resistant *Enterococcus Faecium* Infections in Intensive Care Units—Taiwan, 2015

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Mr. Chien-Hua Chu, Dr. Li-Jung Chien, Dr. Shu-Hui Tseng, Mr. Chia-Hsin Yang, Mr. Tung-Wei Lin

**Background:** Vancomycin-resistant *Enterococcus faecium* (VRE *faecium*) is one of most common multidrug-resistant organisms in healthcare-associated infections (HAIs). Taiwan CDC has launched Taiwan Nosocomial Infections Surveillance System (TNISS) in 2007 and > 80% medical centers and regional hospitals used a standard definition to voluntarily report HAIs to TNISS. In 2015, nosocomial VRE *faecium* infection in intensive care units (ICUs) was increasing. We conducted a case-control study to identify risk factors.

**Methods:** We defined cases as reported ICU patients with VRE *faecium* HAI and controls as ICU patients with vancomycin-sensitive *Enterococcus faecium* (VSE *faecium*) HAI. We calculated incidence density of VRE *faecium* HAI during 2010–2015, and compared trend with chi-square test. We reviewed TNISS data in 2015 and analyzed information on demographics, ICU types, infection sites and catheters used. We used univariate and multivariate logistic regressions to estimate odds ratios (ORs) of associated factors.

**Results:** Incidence density of VRE *faecium* HAI in ICUs significantly increased from 0.01±0.024/1000 patient-days in 2010 to 0.23±0.006/1000 patient-days in 2015 ( $P < 0.001$ ). In 2015, we identified 387 cases and 279 controls. Of cases, 205 were male, and median age was 66.7 years (range, 57–80). The most common infection site of cases were classified as urinary tract infection ( $n = 190$ ) and bloodstream infection ( $n = 159$ ). Staying in ICUs  $\geq 2$  weeks before HAIs (OR 1.53, 95% CI 1.11–2.11), staying in general ICUs (OR 1.81, 95% CI 1.16–2.45) and use of any catheters (OR 1.67, 95% CI 1.14–2.45) was independently associated with VRE *faecium* HAI.

**Conclusion:** We identified multiple factors associated with VRE *faecium* infections. We recommend physicians could consider active surveillance of VRE *faecium* if patients' stay in ICUs  $\geq 2$  weeks and enhance compliance with catheter care bundles, especially for patients admitted in general ICUs.

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