

Evaluation of Carbapenem-Resistant Enterobacteriaceae Surveillance System in Taiwan, 2014–2017

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Background

Carbapenem-resistant *Enterobacteriaceae* (CRE) is highly transmissible in hospitals, especially CRE carrying *Klebsiella pneumoniae* carbapenemase (KPC) or New Delhi metallo-beta-lactamase (NDM) gene. During 2014–2017, mandatory reporting to Taiwan's Nosocomial Infection Surveillance System found the number of CRE infections stable, but the number voluntarily reported to the National Notifiable Disease Surveillance System (NNDSS) dropped. We evaluated the performance of NNDSS for CRE surveillance.

Methods

We analyzed data collected in NNDSS during 2014–2017, reviewed outbreaks reported in 2015, and interviewed hospital staff about CRE reporting by convenience sampling. Physicians voluntarily report CRE infections and send isolates to Taiwan Centers for Disease Control for resistance gene detection along with patient information. Hospital-acquired infection was defined as infection occurring >48 hours after admission. Cases were illnesses in patients infected by CRE carrying KPC/NDM gene. Once identified, medical staff should complete a case report form for each case. When ≥ 2 cases were identified from the same unit within one month public health authorities would convene outbreak investigation. Outbreak duration was defined as time elapsed from the first to the last isolate.

Results

Of the 3,731 CRE-infected patients reported, 2,470 (66%) were hospital-acquired; 762 (20%) isolates carried the KPC gene; 26 (0.7%) carried the NDM gene. Among the 7 outbreaks identified, the outbreaks lasted 128–487 days (median: 236) with 3–77 cases (median: 9) involved. Interview of staff from 16 hospitals found that it took 45 minutes to complete follow-up CRE questionnaires. Furthermore, physicians were unwilling to report CRE cases to NNDSS because many hospitals had their own CRE gene surveillance, they disliked public health intervention, and it took too long to complete CRE case report forms.

Conclusions

Voluntary CRE reporting identified hospital-acquired outbreaks which lasted months. To effectively intervene hospital-acquired CRE outbreaks, TCDC should collaborate with hospitals to simplify the reporting process.