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Paper Poster Session
Surveillance of carbapenemases: they will not stop!

Carbapenemase-producing Enterobacteriaceae in Belgian hospitals: surveillance data 2012 - 2014

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Background: Carbapenemase-producing Enterobacteriaceae (CPE) are emerging worldwide. In August 2011, the national reference center (NRC) alerted the Belgian health authorities following a rapid increase of CPE strains that were voluntarily addressed to the NRC by hospital laboratories for confirmation of carbapenemase production.

Material/methods: In January 2012, the WIV-ISP and the NRC set up a centralized prospective case-based surveillance of CPE. All non-duplicate carbapenem-non-susceptible Enterobacteriaceae isolates confirmed as CPE by the NRC were included in the surveillance.

Results: Between January 2012 and December 2014, 50% of the referred isolates were confirmed to be CPE. During 36 months of follow-up a total of 107 laboratories declared ≥ 1 confirmed CPE case. A total of 1.487 CPE-positive patients were reported: 703 clinical and 784 carriage (screening) cases. On average, 248 new cases were reported per semester (range: 197 - 343). Among all clinical CPE-cases (n=703), *K. pneumoniae* (69.1%), *E. coli* (9.1%) and *E. cloacae* (7.5%) were the most frequently involved species. OXA-48 (75%), KPC (16.2%), VIM (5.1%) and NDM (3.1%) were the predominant carbapenemases found. The carbapenemase types detected in clinical cases strongly differed by region: in the Flemish region, 94.5% of the cases belonged to OXA-48 type, while in the Walloon region, this carbapenemase type represented only 38.6%. The most prevalent type among cases retrieved from the Walloon region was KPC (49.4%). In the Brussels-Capital region, the carbapenemase types were even more diversified: OXA-48: 64.4%, KPC: 17.8% and NDM: 9.8%. International travel with healthcare contacts in foreign countries was largely underreported (missing data: 34%) and established for only 119 CPE cases (Africa [50], Asia [12], Middle East [2], Europe [49], country/region unknown [6]). Fifty-six percent of all documented CPE cases had recent (previous year) contacts with Belgian health care. The annual number of clusters increased over the study periods. 30 hospitals reported ≥ 1 CPE clusters. Epidemic-cases were mostly associated with OXA-48 (n=20 hospitals), KPC (n=9) or NDM (n=3).

Conclusions: The rapid diffusion of CPE in Belgian hospitals is alarming and mostly involves *K. pneumoniae* (OXA-48 or KPC). While OXA-48-CPE was the most prevalent carbapenemase associated with CPE, NDM and KPC-CPE rapidly emerged in Belgian hospitals and were at the source of numerous difficult-to-control regional outbreaks with intra- and inter-hospital transmission through patient transfer. The contribution of travel-related CPE is clearly underestimated.