The impact of a national coordinated intervention on the control of carbapenem-resistant Enterobacteriaceae in post-acute hospitals in Israel

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Background: Emerging data implicate long-term care facilities as reservoirs of carbapenem-resistant Enterobacteriaceae (CRE). In 2008, high carriage rates were identified in post-acute care hospitals (PACH) in Israel. Subsequently, the National Center for Infection Control (NCIC) initiated a multifaceted intervention in PACH, as part of a national program involving all healthcare facilities in the country.

Material/methods: Setting: 15 PACH with a total of 3550 beds. Wards were classified as skilled nursing care, chronic mechanically ventilated, sub-acute and rehabilitation. A comprehensive intervention was initiated in 2008, focusing both on general infection control practices and an intensive CRE prevention program. An infection control score was used to measure infection control practices and policies. The CRE intervention program included population-tailored contact precautions and admission rectal screening for CRE carriage. Mandatory reports were sent weekly to the national coordinator and included data on new acquisitions and transfers from or to other healthcare facilities. Early identification of local outbreaks lead to intensified control measures managed by the NCIC. CRE
carriage rates were evaluated among known carriers and non-carriers in repeat cross-sectional prevalence surveys conducted in 2008, 2010, 2011, 2012 and 2015. Rectal swabs were obtained from all patients hospitalized in a representative sample wards in each facility.

**Results:** During the study period, the infection control score increased from 6.9 in 2009 to 15.3 in 2015. A total of 6785 patients were screened in the 5 surveys. Total CRE prevalence decreased from 16.9% (194/1148) in 2008 to 3.3% (49/1504) in 2015. Among patients with no prior CRE history, an overall decrease was observed from 12.3% in 2008 to 0.84% in 2015 (P<0.001), with a decrease shown in all ward types (Figure 1).

**Conclusions:** A national coordinated intervention has resulted in a profound decrease in CRE acquisitions among patients hospitalized in PACH. The success of this intervention has been an integral component of the successful containment of CRE throughout the Israeli healthcare system.
Figure 1 CRE prevalence among patients with no prior CRE history- per type of ward