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The impact of a carbapenem-resistant Enterobacteriaceae clearance protocol and contact-precaution discontinuation on prevalence and risk of acquisitions in post-acute care hospitals

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Background: Due to the risk of persistent carriage among carbapenem-resistant Enterobacteriaceae (CRE) carriers, most long-term care facilities (LTCF) implement contact precautions for the whole duration of hospitalization. In 2008, a survey conducted in post-acute care hospitals (PACH) revealed that CRE was not detected among 50% of known carriers who were screened after 3 months from initial positive culture. Based on these results, the Israeli national CRE prevention strategy incorporated a clearance protocol for CRE carriers hospitalized in LTCF. Contact precautions are discontinued if repeated rectal cultures and PCR specimens are negative. The purpose of the study was to assess the impact of the clearance policy implemented in PACH on the burden of CRE isolation and the risk of CRE acquisition among non-carriers.

Material/methods: Follow up cross-sectional prevalence surveys were conducted in all PACH in Israel during 2011, 2012 and 2015. Rectal swabs were obtained from all patients hospitalized in a representative sample of high-risk wards (chronic ventilated and skilled nursing care) in each facility. CRE carriage was evaluated among known carriers and non-carriers.

Results: The proportion of patients with a history of CRE carriage was 27.7% (668/2483). Fifty percent (341/688) of carriers completed the clearance protocol (CCCP) and contact precautions were discontinued. Of these, 13.7% (47/341) were found to be CRE positive compared with 40.1% (139/347) of the carriers who had remained on contact precautions. The risk of carriage among CCCP was 26% during the first year after initial positive culture compared with 9.8% among patients who were screened after at least one year. Among those without history of carriage, CRE prevalence decreased from 15.5% (86/545) in 2011 to 0.98% (6/611) in 2015. The presence of CCCP on the ward was not associated with increased risk for CRE carriage among those without history of carriage.

Conclusions: Implementing a CRE clearance protocol led to a sizable reduction in the burden of isolated patients in PACH. Moreover, despite removing contact precautions from approximately 50% of carriers, the risk of CRE acquisition was significantly reduced. CCCP should be assessed periodically to detect relapse/recurrence.