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Opportunities lost may be the greatest cost of CPE outbreaks

C.P. Dunne, B.L. Slevin, P. Treacy, N.H. O'Connell

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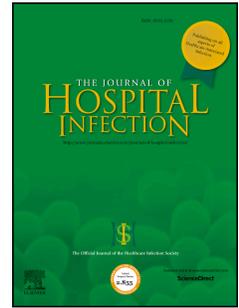
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**Letter to the Editor****Opportunities lost may be the greatest cost of CPE outbreaks****Sir,**

Carbapenemase Producing Enterobacteriaceae (CPE) outbreaks are reported internationally with increasing frequency, often associated with antimicrobial-resistant infections that are challenging to treat.<sup>1, 2</sup> It is unsurprising, therefore, that considerable efforts are being made to understand both the sources and epidemiology of these incidences.<sup>3-5</sup> Further focus has been placed on calculating the economic costs of these outbreaks. Notably, Bartsch and colleagues found that the financial burden of CPE in the USA was higher than that attributable to many chronic and acute diseases.<sup>6</sup> Otter et al. performed a comprehensive audit of costs arising from a 40 patient CPE-outbreak across five hospitals in the UK, reporting both actual and opportunity costs that accrued in 2015.<sup>7</sup>

Using an approach analogous to Otter's, we completed a retrospective review of accrued costs relating to a comparable 2015 CPE outbreak involving 27 patients in Limerick (Ireland). Although less comprehensive than the UK study, and focused somewhat more on patient experiences of CPE diagnosis,<sup>8</sup> the direct economic comparison on an almost like for like basis (similar patient numbers) was insightful. Across shared parameters, for example anti-infective costs, screening, contact precautions, ward monitors, and hydrogen peroxide vapour decontamination, the Irish costs amounted to €1,375,000, representing €85,000 more than the UK costs, despite 33% less Irish patient involvement. Forensic accounting may determine where the greatest disparities in cost are, although it is apparent that pricing of drugs, consumables and decontamination are reasonably similar.

Otter et al. described reduced capacity to perform elective surgical procedures and 840 bed-day closures as the largest contributors to loss of hospital income subsequent to their CPE outbreak, reflecting losses of €349,000 and €244,000, respectively.<sup>7</sup> In Limerick, 473 lost bed-days were recorded. Unlike UK hospitals, we are unable to attribute loss of income specifically. However, the impact of such reduced capacity is evident, with official Irish Government statistics reporting hospital in-patient and day-case waiting lists in excess of 80,000 in March 2018. With CPE

now endemic in many Irish hospitals<sup>2</sup>, it seems reasonable to predict ongoing budgetary requirements, dedicated isolation facilities, and loss of bed-days. It is the latter that concerns us most, as delayed access to hospitalisation increases time to treatment, and reduces those critical windows of opportunity in which elective or acute care can be most effective.

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Colum P Dunne <sup>a\*</sup>  
Barbara L Slevin <sup>b</sup>  
Patricia Treacy <sup>b</sup>  
Nuala H O'Connell <sup>a, b</sup>

<sup>a</sup> Graduate Entry Medical School and Centre for Interventions in Infection, Inflammation & Immunity (4i), University of Limerick, Limerick, Ireland

<sup>b</sup> University Hospital Hospital, Dooradoyle, Limerick, Ireland

\* Corresponding author