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Commentary

Current strategies to detect, manage and control carbapenemase-producing Enterobacteriaceae in NHS acute hospital trusts in the UK: time for a rethink?

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Since 2013, there has been national guidance on controlling carbapenemase-producing Enterobacteriaceae (CPE) in acute National Health Service (NHS) hospital trusts in the UK [1]. However, much has changed in five years, and getting to grips with preventing the spread of CPE has posed many challenges for individual organizations. In this issue, two papers evaluate the toolkit for early detection, management and control of CPE, and, in particular, the role of serial screening to detect CPE carriage.

National guidance is just that and should be interpreted to meet local requirements. Specialist services offered, staffing resources and isolation capacity differ widely between hospitals, and therefore one CPE plan will not be suitable for every institution. Regional risk assessments to evaluate local patient demographics are vital. The prevalence of CPE carriage varies greatly depending on rates of travel and hospital contact (particularly abroad), amongst other factors. However, Coope *et al*. reported that of the 92% of surveyed hospital trusts in the UK with a written CPE plan, 32% were using the toolkit as provided [2]. A further 65% of hospital trusts were using it to inform local plans. Therefore, awareness of the national CPE toolkit does not appear to be a problem, but hospitals are struggling to implement CPE plans locally.

Mookerjee *et al*. found that, locally, only 2.3% of admitted patients were screened for CPE at the timepoints specified in the national toolkit [3]. Screening for asymptomatic carriage of CPE and isolating high-risk patients poses significant financial and organizational challenges, particularly during periods of high bed pressure. They advocate cessation of serial screening, questioning the scientific value and evidence base of this methodology. However, just one index case of CPE carriage can lead to transmission events and outbreaks that are resource consuming to manage, causing considerable disruption to services [4,5].

The findings of these papers lead us to ask; is the national CPE guidance deliverable in the current healthcare climate in the UK? Since 2013, further guidance, based on newer evidence, has been published, but this fails to address the issue of serial screening due to lack of an evidence-based consensus on the optimal timing and frequency of active screening [6,7]. We now have objective evidence that NHS hospital trusts are failing to comply with implementation and maintenance of serial admission CPE screening and isolation (as outlined in the national toolkit). Furthermore, most hospitals do not find the toolkit practical, and these studies will raise questions about the usefulness of national guidance [2,3].

Developing a CPE checklist/pathway that is fit for purpose locally, and embedding this into admission processes has proved difficult. Currently, only through the use of 'check and challenge' methodologies can infection prevention and control teams gain assurance that a strategy is robust. Ensuring that frontline staff have the time and training to perform CPE risk

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assessments, document these and take specimens is difficult given the constraints of an overstretched healthcare system. Providing regular training to enable staff to identify high-risk patients and secure adequate quality specimens is difficult given the high turnover of frontline staff. We are frequently asking staff to be vigilant against a myriad of risks (e.g. measles, MERS CoV, influenza); therefore, it is difficult to maintain a constant level of awareness for CPE risk factors. In addition, the epidemiology of CPE is dynamic; countries and hospitals with reported high prevalence of CPE are constantly changing, rendering guidelines out of date within months of publication. These are just the pre-analytical issues. We have not even considered concerns regarding the analytical phase, such as suboptimal test sensitivity and slow turnaround times. Taking three rectal swabs, 48 h apart, whilst patients move between wards is reliant upon clear documentation, thorough handover and a hospital information system that is able to report specimen receipt whilst a sample is being processed.

Given the emergence of evidence questioning the deliverability of current national guidance, is it time we changed our approach to CPE detection, management and control? Further evidence examining the timing and frequency of CPE screening is required. Laboratory developments such as automation and molecular techniques are advancing to address issues around sensitivity and turnaround time. In the meantime, is it time to review national guidelines and encourage local interpretation of these to strive for practical, sustainable local solutions?

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