“Seek and you shall find.” Finding environmental source of carbapenemase-producing Enterobacteriaceae in acute hospital wards
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1. Introduction
- CPE (carbapenemase-producing Enterobacteriaceae) continues to be an emerging threat to safety of in-patients in the acute healthcare settings.
- It has been noted that the environment plays a role in the dissemination of CPEs.
- An ongoing CPE screening programme in the cardiac and medical wards has been set up as per CPE toolkit to determine the extent of the problem of CPE acquisition during the in-patient stay.

2. Methods
- As part of CPE outbreak investigation, the Infection Prevention & Control team obtained more than a hundred environmental swabs during an outbreak of Klebsiella pneumoniae bla-IMP two cardiac inpatient wards, 1 critical care unit and 1 medical ward from March 2016 until May 2016. The swabs were obtained using an ordinary swab and subjected to laboratory test “meropenem gram-negative resistant” using Brilliance CRE plate.
- The items swabbed in the patient environment were plug holes within hand hygiene sinks, soap dispensers, patient tables, call bells, chairs, monitoring equipment, patient bedside lockers, mattresses and bed frames.

3. Results
- From the initial swabbing, we identified a CPE, K. pneumoniae bla-IMP from a hand hygiene sink in the kitchen of the cardiac ward and in a patient bay hand hygiene sink in the medical ward from more than a hundred of patient environment swabs. Multi-drug resistant (MDR) K. pneumoniae and other gram-negative organisms were identified from other sinks. There were no MDR gram-negative organisms identified from patient monitoring equipment, soap dispensers, bed frames and mattresses.
- Several months later K. pneumoniae bla-IMP was identified again in a plug hole within the hand hygiene sink in the same medical ward but not in the cardiac ward.

4. Discussion
- Months later, swabbing was continued in the wards affected, however it was the hand hygiene sink plug hole that was swabbed consistently and not all the other items in the wards affected during the CPE outbreak.
- As the test used was specifically for meropenem-resistant gram-negative bacteria, other important organisms were not captured.
- Five infection prevention and control (IPC) nurses, one clinical support worker and a total of nine hours of work were the resources used in the initial environmental swabbing exercise. The activity has time and cost implications to the IPC service. Is there is a need to consider other alternative methods to link the environment to the CPE outbreak?

References
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