P0548
Poster Session II
Surveillance of healthcare-associated infections

EMERGING SUPERBUGS: IMPACT OF ACTIVE VS PASSIVE SURVEILLANCE IN DETECTION OF CARBAPENEM RESISTANT ORGANISMS – A SINGLE CENTRE EXPERIENCE

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Carbapenem resistant organisms (CRO) are emerging as significant healthcare-associated pathogens worldwide. The incidence of colonisation is most likely under-reported because of lack of active surveillance, unlike MRSA. The mortality due to CRO infections is almost certainly surpassing those due to MRSA & *C. difficile*.

Objective: We describe the impact of active versus passive surveillance for the detection of CRO colonisation, infection rates, risk factors and the role of infection control (IC) interventions.

Methods: Active surveillance for CRO was started in May 2013 on an 85-bedded specialist unit with three wards and an ICU, admitting high risk patients with acute liver failure, chronic liver disease, post-liver transplant recipients and hepatobiliary malignancy. Rectal swabs or stool samples were collected at admission, weekly thereafter and at discharge. This is compared to detection of CRO in clinical specimens in the rest of an 1100-bedded tertiary care teaching hospital comprising other specialist units, where routine screening is not performed (passive surveillance).

Results: Between May to November 2013 during active surveillance 17 isolates of CRO were detected. The carbapenem resistance mechanisms were due to carbapenemases, extended-spectrum beta-lactamases (ESBL –CTX-M) with porin modification of their cell wall, rendering them impermeable to antibiotics or due to AmpC. (Table)

Table: CRO detected during active and passive surveillance

	Active surveillance (n=17)	Passive surveillance (n=9)
Carabpenemase producing Organisms	*K. pneumoniae* (4 NDM, 4 KPC, 1 OXA-48), 1 *E. coli* (NDM)	*2 Pseudomonas aeruginosa* + 1 *K. oxytoca* (VIM-4), 1 *Acinetobacter baumanii* (OXA-23), 1 *K. pneumoniae (KPC)*
CTX-M +Porin mutation	*6 K. pneumoniae*	None
AMP-C	1 *Enterobacter aerogenes*	1 *K. pneumoniae, 3 Enterobacter aerogenes*

During active surveillance, three outbreaks due to NDM, KPC & CTX-M + porin mutations were detected. Early infection control interventions were put in place which prevented further spread and targeted early appropriate antibiotic therapy for immunosuppressed patients. Most patients in this group were colonised, and two patients were infected. Seven patients died and CRO contributed to mortality in only one patient. The index case for NDM was from abroad (Vietnam) whilst the index case for KPC was from a hospital in North West England.

In the passive group all isolates were from clinical specimens. Two patients died in this group. Further point prevalence screening in these areas did not detect any positive cases.

Conclusion: Passive data collections and point prevalence detected only a fraction of the CRO colonised population. Active surveillance was directly associated with monitoring and controlling the three outbreaks and infection due to CRO. Although implementing and maintaining an active surveillance system is controversial, requiring personnel and financial resources, it is crucial to consider active surveillance in high-risk patient populations so as to reduce the risk of silent dissemination within hospital settings. In addition, further studies of CRO are warranted within the community.