O378
2-hour Oral Session
New insights in the control of multi-resistant Gram-negatives

Screening for CPE: sensitivity of serial admission screens

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Background: The threat posed by carbapenemase-producing Enterobacteriaceae (CPE) in the UK prompted Public Health England (PHE), in 2013, to issue recommendations on risk factor based screening for all admissions to acute hospitals. PHE recommend that patients 'at-risk' are screened on three separate occasions, each separated by 48 hours. We present detailed analysis of CPE admission screening data, 5 months after commencing risk factor based screening of all admissions to an NHS organisation with several London hospitals.

Material/methods: Overseas resident patients or those with overnight admission to any hospital in the past 12 months received three consecutive rectal swabs, the 1st at <24 hours, 2nd between 25-72 hours and 3rd between 73-120 hours. CPE identified locally by culture on chromogenic media (Colorex™ mSuperCARBA™, E&O Laboratories, UK), EUCAST antimicrobial disc susceptibility analysis, and carbapenemase gene detection by PCR (Xpert® Carba-R, Cepheid Inc, USA) were sent to the PHE AMRHAI reference unit for confirmation. We analysed the carriage rate of all Gram-negative bacteria, all Enterobacteriaceae, resistant Enterobacteriaceae (resistant to ertapenem, meropenem, temocillin or tazocin), and CPE at the 1st, 2nd and 3rd screen. Proportions were compared using Fisher's exact tests.

Results: Since commencing risk-factor based CPE screening of all admissions, 15,551 CPE rectal screens have been taken from a total of 7,673 patients (Jun – Nov 15). The table shows the carriage rate of the organism groups by 1st, 2nd and 3rd screen. The carriage rate of all Gram-negative bacteria (growing on antibiotic-containing selective agar), all Enterobacteriaceae, resistant Enterobacteriaceae, and CPE was not significantly different at Screen 3 vs. Screen 1. The carriage rate of CPE was 22 (0.5%) of 3932 patients at Screen 1, compared with 3 (0.2%) of 1227 patients at Screen 3 ($p<0.166$).

Conclusions: The logistics associated with collecting and the timing of three admission screens is challenging and our data suggest it does not improve the yield of CPE. Trends in carriage of other Gram-negative bacteria did not increase over the three screens either. Therefore, we recommend reverting to a single admission screen for detecting CPE and other resistant Gram-negative bacteria, which would reduce the operational impact of CPE screening. The rate of CPE carriage at the time of hospital admission was very low (0.5%) may question the economic value of widespread CPE admission screening.

Table 1: Carriage rate of Gram-negative bacteria at the 1st, 2nd and 3rd admission screen.

	Screen 1 (within 24 hour)		Screen 2 (25-72 hours)		Screen 3 (73-120 hours)	
	n	%	n	%	n	%
Number of patients	3932	-	1652	-	1227	-
Gram-negative bacteria	161	4.1	38	2.3	45	3.7
Enterobacteriaceae	108	2.7	29	1.8	41	3.3
Resistant Enterobacteriaceae	80	2.0	21	1.3	24	2.0
CPE	22	0.5	2	0.1	3	0.2