

P1073 Variations in the Occurrence of ESBL, CRE and MDR Phenotypes Among Enterobacteriaceae Isolates: Results from 20 Years of the SENTRY Antimicrobial Surveillance Program

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Background: *Enterobacteriaceae* isolates displaying extended-spectrum cephalosporin, carbapenem (CRE), or multidrug resistance (MDR) have been reported in increasing rates, limiting therapeutic options to treat infections these organisms cause. We evaluated trends of various *Enterobacteriaceae* resistance phenotypes during 20 years (1997 to 2016) of the SENTRY Program.

Materials/methods: A total of 178,825 isolates collected in 199 hospitals from 42 countries worldwide were susceptibility tested by reference broth microdilution. Trends in percentages over time were analysed using linear regression. Results were reported as the percent difference between the first (1997–2000) and the last (2013–2016) time period.

Results: *Enterobacteriaceae* with extended-spectrum beta-lactamases (ESBL) and CRE rates significantly increased ($p < 0.05$; chi-square test) from 10.3% to 24.0% and 0.6% to 2.9%, respectively. Similar trends were noted for most regions and infection sources (Table). *Klebsiella pneumoniae* (KPN) mainly drove the CRE increase. MDR rates significantly increased from 7.3% to 15.3%, but similar trends were not observed in all regions or infection sources. Significant increases were noted for MDR KPN and *Escherichia coli* (EC). Significant increases in polymyxin-resistant KPN (2.0% to 5.5% overall) and aminoglycoside-resistant EC (7.0% to 18.0%) and KPN (18.1% to 26.9%) over time were observed overall in North America and Latin America (data not shown).

Conclusions: Significant increases in ESBL, CRE, MDR, and other resistant phenotypes among virtually all geographic regions and infection sources were noted in the 20 years of surveillance, highlighting the impact of antimicrobial resistance and the important of its continuous monitoring.

Phenotype	% increase (*nonsignificant; $p > 0.05$)								
	Global	Europe	North America	Latin America	Asia-Pacific	Bloodstream	Skin/soft tissue	Urinary tract	Pneumonia in hospitalised patients
ESBL	13.7	16.2	10.9	22.4	17.6*	13.8	15.6	10.6	12.4
ESBL EC	15.3	15.9	12.5	26.9	22.7*	15.9	18.8*	11.0	13.0*
ESBL KPN	14.4	19.5*	12.3	11.0*	10.2*	11.9	20.8	13.0	16.3
CRE	2.3	2.8	1.5	5.5	1.9	2.5	1.8	1.2*	3.3
CR KPN	10.9	14.6	6.6	17.3	5.7	11.4	11.4	8.1	11.5
MDR <i>Enterobacteriaceae</i>	8.0	10.0	7.0	14.3	7.9*	9.4	8.3*	5.9	6.3*
MDR EC	9.2	10.1	7.9	18.4	11.7*	10.5	12.3	5.5	8.9*
MDR KPN	16.4	23.3	11.4	20.8	8.5*	15.7	19.2	14.3	17.3