

P1531

Paper Poster Session

Lessons from surveillance of resistance in Gram-negatives

Trends in susceptibility and multi-drug resistance among *K. pneumoniae* from intra-abdominal infections in Western Europe 2009-2014

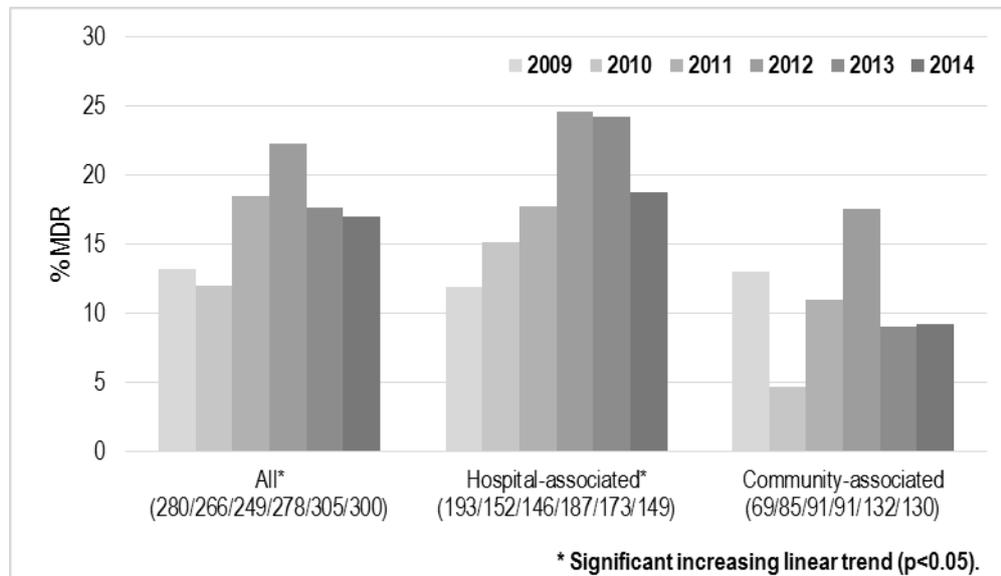
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Background: Increases in multi-drug resistance (MDR) often associated with extended-spectrum β -lactamases (ESBLs) and carbapenemases have limited in many regions the therapeutic options for intra-abdominal infections (IAI). This report uses data from the Study for Monitoring Antimicrobial Resistance Trends (SMART) to examine resistance patterns in *Klebsiella pneumoniae* from IAI collected in Western Europe from 2009 to 2014.

Material/methods: 34 hospitals in France (6 sites), Germany (5), Italy (4), Portugal (3), Spain (12), and the United Kingdom (UK, 4) collected up to 100 consecutive gram-negative IAI isolates each year. Susceptibility was determined for 1,678 *K. pneumoniae* using CLSI broth microdilution guidelines and EUCAST interpretive breakpoints. MDR was defined as resistance seen in ≥ 3 drug classes (aminoglycosides, β -lactam/ β -lactamase-inhibitor combinations, cepheems, penems, and quinolones). An IAI was defined as hospital- or community-associated if cultured ≥ 48 hours or < 48 hours post-admission, respectively. Linear trends in susceptibility and MDR rates were assessed with the Cochran-Armitage test.

Results: *K. pneumoniae* MDR rates are shown below (n per year listed in axis labels).



A sensitivity analysis using only the 21 sites that submitted isolates in all 6 years showed a similar pattern with % MDR peaking in 2012. Correspondingly, susceptibility trends for individual agents generally showed lowest activity in 2012. Of the tested agents, only susceptibility for cefepime (85.0, 85.7, 79.1, 74.1, 79.7, 80.7% in each year 2009-2014) and ceftriaxone (83.6, 85.7, 79.9, 74.8, 79.7, 79.7%) showed a statistically significant linear decreasing trend, but these agents also demonstrated

signs of trend reversal in the last two years. Of the tested agents, only ertapenem, imipenem, and amikacin maintained susceptibility >90% against *K. pneumoniae* across all years.

MDR rates in 2013/2014 were 30.2% (19 of 63) in France, 12.1% (13/107) in Germany, 46.6% (41/88) in Italy, 14.5% (10/69) in Portugal, 8.9% (21/235) in Spain, 2.3% (1/43) in UK. The most commonly found β -lactamases in molecularly characterized MDR isolates were CTX-M-15 and KPC-2/KPC-3.

Conclusions:

- Although statistical analysis of *K. pneumoniae* MDR rates in Western Europe from 2009 to 2014 showed a significant linear trend, the increase appeared to be reversing in recent years, including among isolates from hospital-associated IAI, which had shown an especially sharp increase from 2009-2012.
- MDR rates varied widely between countries with highest rates in France and Italy and lowest in Spain and UK.
- Monitoring of MDR rates must continue in Western Europe to confirm that the reversal of the increasing trend in MDR rates continues. National and preferably local resistance patterns should be taken into account when making empiric treatment decisions for IAI patients.