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Paper Poster Session

Lessons from surveillance of resistance in Gram-negatives

Antimicrobial resistance trends in *Escherichia coli* and *Klebsiella pneumoniae* urinary isolates from Switzerland over a 5-year period (2009-2014)

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Background: Most urinary tract infections (UTI) are treated empirically without knowledge of individual susceptibility results. Therefore, comprehensive resistance surveillance data on a national level are important to guide empiric antibiotic regimens.

Methods: We analyzed data for routinely collected *Escherichia coli* and *Klebsiella pneumoniae* urinary samples from the community and hospital setting. The data were collected by ANRESIS, a laboratory-based antimicrobial resistance surveillance system, and included data from 12 laboratories homogeneously distributed across Switzerland. Isolates were considered resistant as reported by laboratories providing the data. Our analyses focused on resistance to antibiotics commonly prescribed for UTI (cotrimoxazole, fluoroquinolones, nitrofurantoin, fosfomycin and third or fourth generation cephalosporins as a surrogate of ESBL) for the period 2009-2014. Only the first isolate per patient per year was included.

Results: In total, 155,847 urinary isolates were included in the analysis, of which 137,355 (88.1%) were *E. coli* isolates. Resistance trends are shown in the Table. Over the study period, the prevalence of quinolone resistance increased from 14.3 to 19.0% for *E. coli* and from 4.0 to 13.1% for *K. pneumoniae*. For *E. coli* the increase was more pronounced among inpatient isolates (on average +1.0% per year versus +0.25% for community isolates), while for *K. pneumoniae* trends in both settings were similar (+2.0% versus +1.7%). A higher average yearly increase was described in isolates obtained from males (+1.4% for *E. coli* and +2.4% for *K. pneumoniae*). Cotrimoxazole resistance rates remained stable over time for in- and outpatients (24.2 vs. 24.4% for *E. coli* and 11.1 vs. 12.5% for *K. pneumoniae*, respectively). Resistance to third and fourth generation cephalosporins remained low but has been increasing over the study period (from 3.3 to 5.2% for *E. coli* and from 4.6 to 6.0% for *K. pneumoniae* in 2014 with yearly increases <0.5%). For fosfomycin, resistance rates for *E. coli* were below 1.5% over the whole study period with yearly increases <1% for in- and outpatients. For nitrofurantoin the prevalence of resistant isolates was below 5% and decreased over the study period (-0.4% for *E. coli*). *K. pneumoniae* showed high resistance rates to both drugs (61.2% for nitrofurantoin and 24.5% for fosfomycin in 2014) with an increase of +2.2% between 2009 and 2014 for fosfomycin.

Conclusions: Swiss surveillance data confirm that nitrofurantoin and fosfomycin remain good options for the empiric treatment of uncomplicated lower UTI. Resistance to third/fourth generation cephalosporins remains low but has been increasing.

