

O009

2-hour Oral Session

Advancing hospital antibiotic stewardship

Worrying trends in antibiotic use in French hospitals, 2008-2013

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Objectives: In order to improve rational use of antibiotics and control antimicrobial resistance, hospitals have been urged to implement antibiotic stewardship programmes comprising restricted use of "high risk" antibiotics, that is antibiotics known to promote resistance (i.e. fluoroquinolones) and antibiotics considered as last-line agents (i.e. carbapenems). To assess the impact of these measures, we analysed the consumption of selected antibiotics from 2008 to 2013 in French hospitals.

Methods: Retrospective surveys were performed each year on antibiotic use, including antibiotics for systemic use (WHO J01 class), rifampicin (J04AB02) and oral imidazole derivatives (P01AB). Voluntarily participating hospitals involved in the ATB-RAISIN network provided dispensing data for inpatients, retrieved from pharmacy records. Administrative data were: hospital type, number of patient-days (PD). Consumption was expressed in number of defined daily doses (DDD, WHO ATC/DDD system) per 1000 PD.

Results: In the 518 hospitals that participated each year, overall antibiotic use (pooled mean) increased by 7.8%, with a trend towards stabilisation since 2011. A dramatic increase occurred in some "high risk" antibiotics: from 4 to 8 DDD/1000 PD (+101%) for piperacillin-tazobactam, from 14 to 23 (+59%) for ceftriaxone; from 3.7 to 5.4 (+47%) for carbapenems, from 4.1 to 5.6 (+14%) for vancomycin. Linezolid and daptomycin use also increased from 0.02 to 0.91 DDD/ 1000 PD and from 0.6 to 1.4 respectively, resulting in a 31% increase in antibiotics targeting methicillin-resistant *Staphylococcus aureus* (i.e. glycopeptides + linezolid + daptomycin). By contrast, fluoroquinolone use decreased by 14%. Over the period, the percentage of "high risk" antibiotics among total use remained stable. Differences were observed according to hospital type. Public general hospitals and local hospitals had the most important increase in antibiotic use (>10%). Use of piperacillin-tazobactam increased in all type of hospitals and carbapenem use in all but rehabilitation centres. Vancomycin use decreased in teaching hospitals and rehabilitation centres but not in other types of hospitals.

Conclusion: Despite the national action plan, no reduction in hospital antibiotic use was achieved in France. On the contrary, consumption of some "high risk" agents increased, as reported in Denmark, Ireland, and in the Netherlands. The decrease in fluoroquinolone use could result from awareness raised on their prudent use to prevent *C. difficile* infections and emergence of resistance. If the increase in carbapenems and piperacillin-tazobactam may be related to changes in Enterobacteriaceae resistance rates, the trend in vancomycin use is not consistent with MRSA epidemiology. The continuous increase in public general hospitals needs further exploration, to determine to which extent this trend could be linked with prescribing practices or with changes in patient case-mix or in activity, such as reduced length of stay. Antibiotic stewardship programmes could better address the increasing use of "high risk" antibiotics.