

Session: EP135 Antibiotic stewardship interventions

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### Early antibiotic stewardship starts in the emergency department

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**Background:** Since Emergency Departments (EDs) are at the crossroads of inpatient and outpatient care, they represent a critical setting for initiating interventions which could reduce inappropriate antibiotic (ATB) prescribing. Due to the transfer of patients under ATB to other wards, antimicrobial stewardship interventions (ASP) in the ED could impact usage on afferent wards as well. However, the ED differs from inpatient care units primarily in the need for rapid patient turnaround. Clinical decisions are often based on preliminary laboratory results and microbiological tests are seldom rapidly available. Therefore in this setting ASP have been rarely implemented and a few evidence for effectiveness is available.

**Materials/methods:** Primary aims of this project were to reduce the ATB consumption (in particular carbapenems and piperacillin-tazobactam) in the ED of a 1541-bed university hospital. The second objective was to reduce the rate of *Clostridium difficile* infections (CDI) in the afferent wards. The

setting of the intervention was a non-surgical interdisciplinary ED, which has a capacity of 20 beds and 6 emergency rooms and 10400 admission/year. The study was designed as interrupted time series. An 8-week observational study was performed to define usage, indications and major problems in prescribing. The ASP included: online BSAC ATBS course for all ED fellows; local consented guidelines (LCG) for the most frequent indications tailored towards local epidemiology; weekly audit and feedback of therapy with the whole team of ED physicians and expert ID consultants; weekly newsletters reporting microbiological data, antibiotic usage, "LCG-non compliant" cases and an educational section with relevant ATB courses and articles. Antibiotic consumption was analyzed in daily defined doses (DDD) according to the WHO-ATC/DDD index.

**Results:** Between January and September 2016 a total of 7282 patients were admitted to the ED and 1523 (21%) started ATB (penicillins 29%, piperacillin-tazobactam, 20%; quinolones, 19%; cephalosporins, 14%; carbapenems, 4% and vancomycin, 2%). Sixty-six (1%) of patients were colonized with MDR pathogens at ED admission. The overall ATB use declined from 161 DDD per 100 patient (pt)-days in the pre-intervention to 132 DDD in the post intervention period (-18%,  $p < 0.0001$ ). The ATB showing the largest reduction were carbapenems, from 4.6 to 2.8 DDD/100 pt-days (-39%,  $p < 0.0001$ ), quinolones, from 22.9 to 20.6 DDD/100 pt-days (-10%,  $p < 0.05$ ) and piperacillin-tazobactam, from 12.3 to 10.9 DDD/100 pt-days (-11%,  $p = 0.08$ ). No significant modifications were observed in other antibiotic classes. Nosocomial CDI in the ED afferent wards showed a trend in reduction from 1.8/1000 to 1.5/1000 hospitalised pts.

**Conclusions:** ASP in ED can be feasible and effective. Our model using nonrestrictive methods can lead to antibiotic reduction in the ED and favorably impact CDI in the hospital afferent ward(s). Multicenter studies in different epidemiological settings are needed to define generalizability and cost effectiveness.