

Session: P053 Hospital antibiotic prescription measurements and surveys

Category: 2b. Severe sepsis, bacteraemia & endocarditis

24 April 2017, 12:30 - 13:30

P1164

The 2015 global point-prevalence survey of antimicrobial consumption and resistance (Global-PPS) in 335 hospitals worldwide: usefulness of survey data in the evaluation and management of sepsis

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Background:

The Global-PPS monitored antimicrobial prescribing and resistance rates worldwide (www.global-pps.com). Sepsis is a life-threatening condition requiring appropriate antibiotic treatment. We aimed to determine antibiotic treatment regimens, use of biomarkers, resistance rates and antibiotic quality indicators for the management of sepsis worldwide. bioMérieux provided unrestricted funding support for the survey.

Material/methods:

Data were collected in 2015 from 335 hospitals (H) in 53 countries (C), including Europe (24C;214H); Africa (5C;12H), Asia (16C;57H), South-America (3C;19H), North-America (3C;24H), and Oceania (2C;9H) using a standardized and validated method. Data included treated patients admitted to adult wards (denominator); receiving systemic antibiotics (ATC code J01) for sepsis on the day of the survey (numerator). Biomarker data included CRP and PCT.

Results:

Out of 29,937 treated adults, 2.8% were diagnosed for sepsis, which varied between continents (range: 0.8% in Oceania to 4.6% in West-Central Asia) and countries (range: 0% in Bulgaria and Ghana to 10.0% in Saudi Arabia). Out of all adults treated for sepsis, 50.8% had an hospital acquired (HA) sepsis (range: 21.2% in Africa to 66.9% in South-East Asia) while 49.2% a community acquired sepsis. Intervention related HA-sepsis accounted for 23.6% (range: 9.1% in North-Europe to 46.8% in South-Europe).

Overall targeted treatment for sepsis was 34.0% (range: 19.5% in West-Central Asia to 57.9% in South-Europe) of which 4.2% targeted an ESBL-producing Enterobacteriaceae (highest in West-Central Asia; 8.0%). Rates of carbapenem-resistant non fermenter gram-negative bacilli and MRSA was 1.8% and 3% (highest in South-Europe: 6.0% and 8.3% respectively).

Biomarkers were used in the decision to prescribe 50.9% of antibiotics (range: 2.2% in Africa to 68.9% in North-Europe). CRP was most used (89.2%).

There were 54 different antibiotics prescribed, involving very different combination therapies worldwide. Top 3 included piperacillin/enzyme inhibitor (17.8%; range 2.2% in Africa to 44.5% in North-Europe); vancomycin (12.5%; range 2.2% in North-Europe to 23.2% in South-America) and meropenem (12.1%; range 6.5% in Africa to 18.4% in South-East Asia). Ceftriaxone was mainly prescribed in Africa (41.3%).

The reason for treatment was recorded in 87.2% of antibiotic prescriptions (range 69.3% in West-Central Asia to 97.5% in North-America). A stop/review date was less often recorded (38.7%; range: 11.9% in West-Central Asia to 60.2% in South-East Asia). There were no local guidelines available in 22.0% of antibiotic prescriptions (range 1.5% in North-Europe to 47.5% in West-Central Asia). Overall guideline compliance was 82.7% (range 45.0% in Africa to 92.2% in North-America).

Conclusions:

These data provide important insights into the management of sepsis in adults worldwide such as high broad-spectrum prescribing and lack of review dates in >60% of cases. This tool helps identifying targets for quality improvement of antibiotic prescribing, the development of local guidelines, education and practice changes, and for measuring the impact of interventions through repeated PPS.