

**P1037**

**Poster Session IV**

**Molecular epidemiology of MDR Enterobacteriaceae**

**REPORT OF THE NATIONAL REFERENCE LABORATORY FOR MULTIDRUG-RESISTANT GRAMNEGATIVE BACTERIA ON CARBAPENEMASES IN GERMANY IN 2013**

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**Objectives**

Multidrug-resistance in *Enterobacteriaceae*, *Pseudomonas aeruginosa* and *Acinetobacter baumannii* is of utmost therapeutic importance since hardly any innovative antimicrobial drugs against gramnegative bacteria will be introduced into clinical practice within the next years. Among all resistance mechanisms the worldwide spread of carbapenemases is the most worrisome development. However, the correct identification of carbapenemases is challenging for the microbiological laboratory.

**Methods**

The National Reference Laboratory for Multidrug-Resistant Gramnegative Bacteria offers the free service of carbapenemase detection in bacterial isolates with elevated carbapenem MICs. All isolates are tested by a wide array of phenotypic and molecular methods. A bioassay based on cell-free extracts allows the detection of still unknown  $\beta$ -lactamases.

**Results**

A total of 3156 isolates were investigated for carbapenemases in the National Reference Laboratory in the first eleven months of 2013. Carbapenemases were found in 653 *Enterobacteriaceae* strains (38.8%), 199 *P. aeruginosa* (21%) and 385 *A. baumannii* (93.9%). The most frequent carbapenemase in *Enterobacteriaceae* was OXA-48 (40.3%), KPC-2 (15.9%), VIM-1 (15.5%), NDM-1 (13.3%) and KPC-3 (8.6%). In *P. aeruginosa* VIM-2 was the most frequent carbapenemase (78.4%). OXA-23 was the most frequent carbapenemase in *A. baumannii* (72.5%) followed by OXA-72 (12.7%) and OXA-58 (10.4%).

**Conclusions**

Almost all carbapenemases found worldwide also arrived in Germany. However, the molecular epidemiology in Germany with a predominance of OXA-48 differs significantly from observations made in other countries like Greece, Israel or the USA. Compared to data from the previous the frequency of NDM-1 producing *Enterobacteriaceae* increased considerably. An ongoing surveillance of resistance determinants is necessary, especially for infection control and diagnostics.