

**P0761**

**Paper Poster Session**

**The complexity of antibacterial resistance mechanisms**

## **Emergence of plasmid-mediated MCR-1 protein leading to colistin resistance in South Africa**

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**Background:** Increasing antibiotic resistance in gram-negative bacteria has recently lead to an increasing use of colistin. Due to this selective pressure, emergence of colistin resistant Enterobacteriaceae is expected. Gene modifications involved in the PmrAB and PhoPQ two-component regulatory system, as well as inactivation of the *mgrB* gene, are known to be sources of colistin resistance in *Klebsiella pneumoniae*. In addition, a very recently described plasmid-mediated mechanism has been described, corresponding to the production of the MCR-1 protein.

### **Material/methods:**

Colistin susceptibility testing was determined by using broth microdilution according to CLSI, , and by using the Rapid Polymyxin NP test that is based on a rapid culture in presence of a defined concentration of colistin and a defined culture medium. Search of the *mcr-1* gene was performed by PCR.

Results were interpreted according to EUCAST and were compared to results obtained with the BMD method (gold standard). *Escherichia coli* ATCC 25922 and a *M. morgannii* strain naturally resistant to colistin were included in all experiments as control strains.

**Results:** This study was carried out on a total of 10 non-duplicate clinical *Escherichia coli* isolates recoverd in a South African hospital. They were all showing an MIC of colistin at 8 or 16 µg/ml. Eight out of the ten isolates were found to produce the MCR-1 protein. The corresponding gene was located onto a ca. 30-kb plasmid that was untypeable. No other resistance marker was identified on that plasmid.

**Conclusions:** This study revealed the emergence of the MCR-1 protein responsible for colistin resistance in a series of colistin resistant *E. coli* isolates.