

**P2815 Development of a rapid test to detect fosfomycin resistance in *Escherichia coli***Patrice Nordmann\*<sup>1</sup>, Laurent Poirel<sup>1</sup>, Linda Mueller<sup>1</sup><sup>1</sup> University of Fribourg, Fribourg, Switzerland

**Background:** Raising of multidrug-resistant (MDR) bacteria induced a renewed interest for old antibiotics, such as fosfomycin. *Escherichia coli* is responsible for more than 75% of UTI and fosfomycin is often being used as an empiric treatment. Fosfomycin resistance in *E. coli* may result from reduced permeability, amino acid substitutions in the active site of the MurA target involved in peptidoglycan biosynthesis, and production of the transferable fosfomycin-inactivating enzymes (*fos* genes). Fosfomycin resistance in *E. coli* is on the rise due to an increased clinical use, and consequently an increased selective pressure. In order to rapidly identify fosfomycin-resistant *E. coli* isolates, we aimed to develop a rapid and cost-effective test that might be used worldwide.

**Materials/methods:** Fosfomycin-resistant *E. coli* isolates were collected from worldwide origins. MICs of fosfomycin were performed by the agar dilution method. Resistant isolates were further investigated by PCR and sequencing for acquired resistance genes *fosA1-6*. All isolates were then evaluated with the newly-developed Rapid Fosfomycin/*Escherichia coli* NP test. This test is based on glucose metabolization and therefore detection of bacterial growth in the presence of fosfomycin. Each isolate was inoculated in a solution made of 2.5% of MHB-CA powder, 0.005% of phenol red indicator, 1% of D(+)-glucose, and a final fosfomycin concentration of 40 µg/ml. Bacterial growth was inspected after 1h30 incubation at 37°C and visually detected by an orange-to-yellow color change of the pH indicator red phenol.

**Results:** A total of 100 *E. coli* isolates were tested to evaluate the performance of the Rapid Fosfomycin/*E. coli* NP test. The 78 fosfomycin-susceptible isolates (MICs of fosfomycin 1–32 µg/ml) gave negative results with the Rapid Fosfomycin/*E. coli* NP test, except for a single isolate (showing an MIC at 1 µg/ml) which gave a positive result (major error). All the fosfomycin-resistant isolates (n=22, MICs of fosfomycin ranging from 64 to >512 µg/mL), independently of their mechanism of resistance, gave a positive result.

**Conclusions:** We developed a new and inexpensive test, which is user friendly, sensitive (100%), specific (98.7%) and which allow the detection of fosfomycin-resistant *E. coli* isolates in 1h30 min.

