

## **Multi-drug resistant bacterial infection in Jordan: current state and future directions**

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**Background:** Multi-drug resistance bacterial infections are usually associated with high morbidity and mortality. Some bacterial strains have developed resistance to last resort antibiotics or even to every known antibiotic. Antibiotics resistance is increasing at an alarming rate specially in the last decade. Recent report of WHO stating that antibiotics resistance is one of the most serious public health issues of our time. The Mediterranean region is considered as hyperendemic for multi-drug resistant hospital-associated pathogens. High resistance rate were documented for *Staphylococcus aureus*, *Escherichia coli*, *Streptococcus pneumoniae*, *Pseudomonas aeruginosa* and *Acinetobacter*.

**Methods:** We have conducted multiple nationwide studies on multiple resistant organisms in Jordan as follows: 622 samples of *Acinetobacter* 2010-2016, 300 samples from medical students for *Staphylococcus aureus* nasal colonization 2014-2017, 300 samples from patients with gram positive nasal colonization 2014-2017, and 300 samples of *Escherichia coli*, 2016-. All samples were screened for antibiotics resistance, associated risk factors, and resistance genes. Novel extracts and new antibiotics regimens and combination are currently under evaluation for treatment of Multi-drug resistance bacterial infections.

**Results:** Jordan has high rate of multi-drug resistance bacterial infections specially *Acinetobacter*, *Staphylococcus aureus* and *Escherichia coli*. Incidence is relatively stable over the last 5 years. Elderly, critically ill, males and infected wounds are significant risk factors. Multiple genes and plasmids are responsible for mediating drug resistance. Resistance to last resort antibiotics have been documented for few but critical cases.

**Conclusions:** Continued surveillance and monitoring of Multi-drug resistance bacterial infections is important. Applying strategies to combat resistance are urgently required. Novel treatment for such infections would be very helpful.