

**P2820 Evaluation of MS-MIC testing and the direct-on-target microdroplet growth assay for drug resistance detection by MALDI-TOF mass spectrometry**Mengjiao Li<sup>1</sup>, Qifei Song<sup>1</sup>, Zhongqiu Dai<sup>1</sup>, Li Xiong<sup>1</sup>, Zhixing Chen<sup>1</sup>, Mei Kang<sup>1</sup>, Xie Yi<sup>1</sup><sup>1</sup> west china hospital of sichuan university , chengdu, China

**Background:** Multidrug-resistant bacteria is becoming a global crisis and requires urgent actions to curb its spread. Rapid antimicrobial susceptibility test results play a vital role in reducing transmission of drug resistant bacteria.

**Materials/methods:** A collection of 132 *Acinetobacter baumannii* complex isolates were tested for drug resistance against tigecycline, cefoperazone/sulbactam and meropenem. Tigecycline was tested in a range of doubling concentrations from 0.06 to 64 µg/mL and cefoperazone/sulbactam was tested from 0.25/0.12 to 256/128 µg/mL for MS-MIC testing. A volume of 200 µL bacterial suspension with or without antibiotics was incubated for 4h, then the bacteria were centrifuged and lysed by formic acid and acetonitrile for detection. The lowest concentration of antibiotic that no bacteria growth (identification score < 1.7) was detected by MALDI-TOF MS was defined as MS-MIC value. Additionally, susceptible-breakpoint concentration of each antibiotic and a total volume of 8 µL was applied for direct-on-target microdroplet growth assay (DOT-MGA). After incubation, the broth was separated just as previously described and the microorganism was detected by MALDI-TOF MS.

**Results:** For tigecycline, the agreement of reference method derived MIC and MS-based MIC (MS-MIC) was 62.12%, and categorical agreement for non-susceptibility and susceptibility achieved 90.15% at resistant-breakpoint concentration (8 µg/mL) and 93.18% at susceptible-breakpoint concentration (2 µg/mL). In the method of DOT-MGA, 84.61% sensitivity and 74.67% specificity were obtained at 2 µg/mL. For cefoperazone/sulbactam, the agreement of MIC values between two methods was only 39.25% and 20% respectively. However, a great percentage of strains (68% of susceptible strains and 40.19% of resistant strains) showed a higher MS-MIC values than reference method derived MIC values. And 74.76% sensitivity and 96% specificity were achieved in DOT-MGA at susceptible-breakpoint concentration (16/8 µg/mL). For meropenem, 94.84% sensitivity and 91.43% specificity were observed at 2 µg/mL in DOT-MGA.

**Conclusions:** The performance of the two methods for rapid drug resistance depends on antibiotics types. Further studies will require more data on different antibiotics to evaluate the applicability of the two methods.

