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P2813 Evaluation of rapid polymyxin NP, *Pseudomonas* and *Acinetobacter* tests for rapid determination of colistin susceptibility in *Escherichia coli*, *Klebsiella pneumoniae*, *P. aeruginosa* and *A. baumannii*

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Background: We recently evaluated several broth microdilution (BMD)-based products and gradient tests for antimicrobial susceptibility testing of colistin (Clin Microbiol Infect 2018;24:865-870). In this study, by using a subset of the same challenge strains, we evaluated three products; Rapid Polymyxin NP (RPNP), RP *Pseudomonas* (RPP), and RP *Acinetobacter* (RPA) (ELITechGroup, Microbiology, France) designed to rapidly detect (3 h for RPNP, 4 h for RPP and RPA) polymyxin resistance from colonies grown on agar plates. The tests are based on colorimetric detection of bacterial metabolism by testing at a critical colistin concentration.

Materials/methods: The reference colistin MICs were determined on frozen BMD panels (Thermo Fisher Scientific, USA). A random subset of challenge strains from our previous study with colistin MICs in the range of 0.5-16 mg/L, with a high proportion of isolates close to the clinical breakpoint (2 mg/L), was included in this study: *Escherichia coli* (n=15) and *Klebsiella pneumoniae* (n=12) for RPNP, *Pseudomonas aeruginosa* (n=16) for RPP and *Acinetobacter baumannii* (n=16) for RPA. All tests were performed and results interpreted according to the manufacturer's instructions. All results were interpreted independently by five readers.

Results: The categorical agreement vs. reference BMD was between 71.3%-82.5% (Table 1). Among colistin resistant isolates, very major errors (false susceptibility) were observed for 5/7 *P. aeruginosa* and 1/6 *A. baumannii* isolates. Major errors (false resistance) were most common with RPNP test in which 5/13 susceptible isolates were classified as resistant by all five readers. The sensitivity ranged from 45.7% to 100% and specificity from 61.5% to 91.1%.

Conclusions: Categorical agreement vs. reference BMD was found above 70% for all three tests which indicates a role for these rapid tests in the clinical settings. RPNP can be used as a screening test with its remarkable sensitivity, yet the positive results require confirmation with an alternative method. For RPP and RPA, neither sensitivity nor specificity was satisfactory. However, the challenge strains used in this evaluation were difficult with many close to the clinical breakpoint between S and R, which may have resulted in the less than satisfactory performance of the tests.

Table 1. Performance summary of Rapid Polymyxin "NP", "*Pseudomonas*" and "*Acinetobacter*" tested against a panel of challenge strains

	RP NP	RP *Pseudomonas*	RP *Acinetobacter*
No. of isolates tested	27	16	16
Categorical agreement	81.5%	71.3%	82.5%
Very major errors	0%	54.6%	16.7%
Major errors	38.5%	8.9%	18.0%
Sensitivity	100%	45.7%	83.3%
Specificity	61.5%	91.1%	82.0%

Note: The percentages in the table were calculated taking into account all results from five readers (i.e. there are five results for each isolate tested).

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