P0334
Poster Session I
Rapid antimicrobial susceptibility testing

ANTIBIOTIC SUSCEPTIBILITY IN STREPTOCOCCUS PNEUMONIAE CAN BE PREDICTED AFTER 8H INCUBATION

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Objectives

The increasing antimicrobial resistance prompts the need for rapid susceptibility reports. The 'Eurostar Rapid Disk project' has validated early reading (6-8h) of Disk diffusion for non-fastidious bacteria and *Haemophilus influenzae influenzae* using EUCAST clinical breakpoints. This study evaluated early reading of disk diffusion in *Streptococcus pneumoniae* (PNC).

Methods

Disk diffusion was performed on 55 well defined isolates of PNC on Mueller-Hinton Fastidious agar (MH-F, Mueller-Hinton agar supplemented with 5% defibrinated horse blood and 20 mg/L β-NAD) with an inoculum of 0.4-0.6 McF. MH-F plates were incubated in 35°C with 4-6% CO2 in air for 8 h. All isolates were also tested using EUCAST methodology with standard incubation, all of the isolates had previously been tested using broth micro dilution (BMD). Seven antibiotics were tested using disk contents and SIR-breakpoints as suggested by the EUCAST. Zone measurements were independently performed by two experienced technicians. Zone/zone correlation and categorical agreement was evaluated for each antibiotic. Errors in relation to SIR-category (Based on BMD) were assigned minor Errors (mE), major Errors (ME) or very major Errors (VME).

Results

53 out of 55 isolates were possible to read after 8 h incubation for all antibiotics except for clindamycin where 52/55 were possible to interpret. The oxacillin result was fully consistent with 18h disk diffusion and correctly categorized 51/55 isolates as susceptible or non-susceptible to benzylpenicillin. The norfloxacin disk predicted ciprofloxacin susceptibility and resistance in 54/55 isolates (1 mE). For the other combinations 7mE (for trimethoprim-sulfamethoxazole n=4 and erythromycin n=3) and 2 ME (one for each of tetracycline and trimethoprim-sulfamethoxazole). There were 6 VMEs (clindamycin). All isolates were correctly assigned to susceptible category for rifampicin.

Conclusion

This study shows the feasibility of predicting susceptibility to penicillins and 5 more antibiotics in PNC using EUCAST breakpoints already after 8h incubation. Zones close to the breakpoint should be verified with standardised AST. The errors observed for clindamycin showed large differences in zone-diameters and an adjustment of the breakpoint could thus not resolve the problem. So far we discourage from interpreting clindamycin after 8h. This study highlights the importance of evaluating each antibiotic/bacteria combination for early reading before applying it in routine clinical microbiology.