Introduction:
Biofire® Filmarray® multiplex PCR pneumonia panel (BFPCR) can shorten microbial detection time.

Methods:
Six months comparison of time to microbial diagnosis and treatment changes in pneumonia cases, between in-house bronchoalveolar lavage (BAL) stains and cultures and BFPCR done by remote laboratories [Dr. Dangs Lab, New Delhi (Lab 1) and SRL Mumbai (Lab 2)].

Results:
Thirty-four BAL samples obtained from 32 patients were sent for stains, culture and BFPCR. The mean time to results was less for BFPCR (12.9±14.5 hrs) (3.3±1.1 hrs for Lab 1 and 30.8±9.6 hrs for Lab 2) in comparison to culture (48±5 hrs) (p<0.01). Lab 1 time was less than reporting time of stains (4.0±1.8 hrs; p=0.04). BFPCR was positive in 31(91.2%) samples and reported higher (p<0.01) yield of microbes (77 vs 25) and bacterial resistances (61 vs. 10) than cultures (figure 1). It was positive for single or multiple microbes in 9(26.5%) and 22 (64.7%) samples respectively. Single or multiple resistance genes were detected in 5(25%) and 20(80%) samples respectively. BFPCR was positive only for bacteria in 13(38.2%), virus in 2(5.9%) and for both in 16(47.1%) cases. Influenza A was found in 10(29.4%) cases. The most common organisms in community and hospital acquired pneumonia were Streptococcus pneumoniae (4/12) and A. baumannii (10/22) respectively. Bacterial cultures were concordant with BFPCR in 11/11 (100%) of positive cases. Decisions to change antibiotics could be taken earlier based on BFPCR (p< 0.001) than if were based solely on cultures – both in culture positive (9.7±14.3 vs 50.0±6.0 hrs) and negative cases (14.7±14.9 vs 48.0±4.3 hrs) where antibiotics would have remained unchanged. Based on BFPCR antibiotics were escalated in 17(50%) patients and teicoplanin (11/19) was most often stopped.

Conclusion:
BAL BFPCR were obtained significantly earlier, identified more organisms and bacterial resistance than culture reports and lead to more frequent and earlier antibiotic changes.

Image :
Frequency of organisms and bacterial resistances in culture and Biofire