

## The Impact of BioFire FilmArray pneumonia panel results on mechanical-ventilated pneumonia patients

Hou-Tai Chang<sup>1,2</sup>, Zhia-Hao Zhang<sup>1</sup>

<sup>1</sup>Department of Critical care medicine, Far Eastern Memorial Hospital, New Taipei City, Taiwan;

<sup>2</sup>Department of Industrial Engineering and Management, Yuan Ze University, Taoyuan, Taiwan

### Objectives

To evaluate the impact of Biofire Filmarray Pneumonia Plus panel (FA-PP) result on pneumonia patients who received mechanical ventilation in medical ICU.

### Methods

1. Retrospective cohort study
2. From July 1, 2021 to Oct 31, 2022, clinical data
3. Study objects: pneumonia patients with MV in MICU

### Results-

Patients characteristic	Result (n%)
Age, mean y (SD)	66.9 (14.1)
Sex	
Male, no. (%)	95 (69.9)
Female, no. (%)	41 (30.1)
Smoker, no. (%)	53 (39)
APACH II score, mean (SD)	30.6 (8.5)
Comorbidities	
Malignancy	38 (27.9)
Lung cancer, no. (%)	7 (5.1)
Chronic obstructive pulmonary disease, no. (%)	16(11.8)
Diabetes mellitus, no. (%)	59 (43.4)
Congestive heart failure, no. (%)	22 (16.2)
End stage renal disease, no. (%)	15 (11)
Liver cirrhosis, no. (%)	12 (8.8)
Type of pneumonia	
Community acquired pneumonia, no. (%)	58 (42.6)
Health-care associated pneumonia, no. (%)	15 (11.0)
Hospital acquired pneumonia, no. (%)	50 (36.8)
Ventilator associated pneumonia, no. (%)	13 (9.6)
Interval time between MICU admission and FA-PP days, mean d (SD)	1.98(4.8)
Outcome parameter	
Duration of intubation, mean d (SD)	20.7 (14.4)
ICU length of stay, mean d (SD)	18.25 (12.7)
Hospital length of stay, mean d (SD)	35 (26.8)
Mortality	
Overall	71 (52.2%)
14-d mortality	29 (21.3%)
28-d mortality	52(38.2%)

Table 2. bacteria and antimicrobial resistance of FA-PP and culture based results

Bacterium and antimicrobial resistance	FA-PP	Culture based result
Bacterium		
<i>Acinetobacter (calcoaceticus-baumannii) complex</i>	23	5
<i>Enterobacter cloacae</i>	11	1
<i>Escherichia coli</i>	15	3
<i>Haemophilus influenzae</i>	7	2
<i>Klebsiella oxytoca</i>	1	1
<i>Klebsiella aerogenes</i>	2	0
<i>Klebsiella pneumonia group</i>	33	11
<i>Moraxella catarrhalis</i>	3	0
<i>Pseudomonas aeruginosa</i>	23	6
<i>Serratia marcescens</i>	4	2
<i>Staphylococcus aureus</i>	25	11(MRSA:7)
<i>Streptococcus agalactiae</i>	4	0
<i>Streptococcus pneumonia</i>	1	0
<i>Stenotrophomonas maltophilia</i>	0	6
Total	152	42

Antimicrobial resistance		
Mec A/mec C and MREJ	11	0
CTX-M <sup>*</sup>	14	0
KPC	3	0
IMP	6	0
NDM	3	0
Oxa-48	1	0
VIM	2	0
Total	40	0

### Discussion and conclusion

In the present study, in evaluation of impact of FA-PP on pneumonia patients with mechanical ventilation, FA-PP is more sensitive than conventional sputum culture result, especially in those who are risk for antimicrobial resistance. Early application of FA-PP result may decreased inappropriate antibiotics and guidance of precise antibiotics. Larger sample to confirm the association is indicated.