

Randomised trials of molecular testing for pneumonia

We read with interest the trial published in *The Lancet Microbe* by Abinash Virk and colleagues.¹ The authors sought to assess the clinical effect of rapid molecular testing for pneumonia using the BioFire FilmArray pneumonia panel (bioMérieux). Their primary outcome was the median time to first antibiotic modification (escalation or de-escalation). The study was reported as the first and largest to investigate the real-world effect of molecular testing for pneumonia. However, three published, randomised antimicrobial stewardship trials have compared multiplex PCR platforms to standard-of-care diagnostics, and reported significantly positive primary outcomes with regard to antibiotic stewardship.

We used the FilmArray Pneumonia plus Panel² on lower respiratory tract samples from patients in critical care with community-acquired pneumonia, hospital-acquired pneumonia, and ventilator-associated pneumonia. Molecular testing led to 80% of the affected patients receiving microbiologically directed antimicrobials (as compared with the 29% who underwent conventional diagnostics), on average 43·8 h earlier. As a secondary outcome, we also reported a significant increase in antibiotic de-escalation (42% vs 8%; $p<0\cdot0001$), which occurred on average 41·4 h earlier than that with the standard-of-care.

Darie and colleagues³ used the Unyvero Hospitalized Pneumonia Cartridge (Curetis) on bronchoalveolar lavage samples and recruited patients with pneumonia suspected to be caused by Gram-negative bacteria. They showed a reduction in the duration of inappropriate antimicrobial treatment by 38·6 h in the group assessed by the Unyvero Hospitalized Pneumonia cartridge when compared with that observed with standard-of-care diagnostics (47·1 h [34·7–59·5] vs 85·7 h [78·8–95·6]; $p<0\cdot0001$).

Markussen and colleagues⁴ had a similar primary outcome to that observed in our trial when they compared the FilmArray Pneumonia plus Panel with conventional testing for cases of community-acquired pneumonia (pathogen-directed therapy). They also reported significant differences in the proportion of patients on pathogen-directed treatment (35·3% in molecular arm vs 13·4% with standard-of-care, corresponding to an odds ratio for the intervention arm of 3·53; $p<0\cdot001$).

To date, none of the published studies have reported significant differences in severe adverse events, mortality, or length of stay. Thus, the work by Virk and colleagues adds more insightful data to the available evidence.

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