Background: In critically ill patients with pneumonia, accurate identification of microorganism allows appropriate antibiotic treatment. This study aimed to evaluate the utility of a commercial multiplex PCR-based kit (Unyvero, UV, Curetis, Holzgerlingen, Germany) in detecting 21 clinically important pathogens and 19 resistance marker in patients with severe pneumonia.

Material/methods: At a German tertiary care center, 99 respiratory samples from intensive care unit patients with pneumonia (24 of them with acute respiratory distress syndrome) were analyzed by UV and culture. For UV samples were processed within 4 hours according to the manufacturer’s instructions. The time for analysis and the impact of this assay on the management of therapeutic adjustment was also assessed.

Results: Results of UV and culture were concordant for 80 (81%) samples: 20 (20%) positive; 60 (61%) negative. The remaining results were discordant: 20 (20%) samples: UV+/culture- in 13 (13%) cases and UV-/culture+ 7 (7%) cases. In six samples, multiplex-PCR detected more than one pathogen. UV identified a number of eleven bacteria (mostly gram-negative rods) more than culture. Sensitivity of UV compared to culture was 74%, specificity 82%, positive predictive value 61% and negative predictive value 90%. Time-to-result was 5.8 hours (median) for the multiplex PCR and 41.5 h for standard-of-care. In 29 patients the antibiotic therapy was changed within 24 h after UV result.

Conclusions: The PCR-based UV test is a valuable addition to the traditional culture method for rapid etiologic diagnosis of pneumonias.