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Concordance between a new molecular real-time approach and traditional culture in suspected VAP patients

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Introduction Early microbiological documentation may reduce attributable mortality and excessive use of broad-spectrum antibiotics in ventilator-associated pneumonia (VAP). Using bronchoalveolar lavage (BAL) and endotracheal aspirates (ETA), we studied a new molecular biology-based approach to detect and quantify bacteria in less than 3 hours. This prospective multicenter trial aimed at comparing the microbiological results obtained using this molecular protocol (easyMAG® system) and semiquantitative culture in suspected VAP.
Methods ETA and BAL samples were consecutively collected during 10 months in adult patients in four ICUs of France. The molecular method includes a preprocessing liquefaction for ETA before DNA extraction. DNAs were extracted using the easyMAG® system. Real-time PCR (qPCR) was run using the ABI7500FastDx PCR instrument. The results presented here concern: *Staphylococcus aureus*, *Pseudomonas aeruginosa* and Enterobacteriaceae. Quantification was performed using qPCR standard curves, by converting the cycle threshold to CFU/ml.
Results A total of 125 suspected VAP were included from 122 patients. In total, 125 BAL and 107 ETA were collected. Sex ratio (M/F) was 76%, and CPIS ≥6 was calculated in 74.6% of the suspected VAP patients. Mean ventilation duration before sampling was 6 days. Seventy-eight percent and 65% of the BAL and ETA culture were positive respectively. Correlations between molecular method and culture on BAL and ETA are reported in Table 1.

Table 1 (abstract P107). Concordance between qPCR and culture on BAL/ETA in VAP patients

	Positive culture	qPCR	Agreement (%)	Sensitivity (%)	Specificity (%)
S. aureus (BAL/ETA)	28/20	31/25	96.7/89.7	96.6/76.9	96.8/93.8
P. aeruginosa (BAL/ETA)	23/20	20/23	97.6/93.5	100/100	97.1/92.4
Enterobacteriaceae (BAL/ETA)	27/7	36/18	90.3/85.0	90.0/58.3	90.4/88.4

Conclusion Sensitivity and specificity of the new molecular approach for these main bacteria found in VAP could enable targeted first-line antibiotic therapy. In the future, the development of this approach will aim at obtaining a bedside diagnostic in only a few hours.

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Use of Cepheid Xpert Carba-R® for rapid detection of carbapenemase-producing bacteria in critically ill, abdominal surgical patients: first report of an observational study

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Introduction Xpert Carba-R® (Cepheid®, USA) is a PCR-based assay for rapid (<1 hour) detection of bacteria carrying carbapenem-resistance genes (KPC, NDM, VIM, OXA-48, IMP-1). The aim of the study is to compare PCR with microbiological cultures in critically ill, abdominal surgical patients.
Methods We performed an observational study at University Hospital 'P. Giaccone' Palermo. We enrolled abdominal surgical patients admitted to the ICU with suspected abdominal sepsis or developing sepsis during the ICU stay. We obtained two rectal swab specimens and two drainage samples to perform PCR assay and classic culture tests. We used Cohen's *K* to test concordance of results. We considered concordant those results of positive detection of carbapenemase-producing bacteria by both methods (even if a polymicrobial growth was observed by cultures) or negative results by both methods. Concordance was studied for rectal swab and drainage specimens. Antibiotic susceptibility testing was performed through a semiquantitative method.
Results Eight complete samples sets were collected from seven patients. Seven rectal swab specimens were negative for both PCR and cultures. In one patient a positive culture from carbapenem-resistant *P. aeruginosa* was detected from the rectal swab resulting negative to PCR. In one patient a positive culture from carbapenem-resistant *A. baumanii* was detected by drainage culture resulting negative to PCR. In two cases a positive result was observed from both PCR and cultures of rectal swab and drainage specimens. Vim and KPC genes were detected in one case and *A. baumanii* and *K. pneumoniae* with carbapenem resistance were isolated from cultures. A KPC gene was detected by PCR in the other case, and *K. pneumoniae* with carbapenem resistance was isolated from cultures. In all other cases a negative result was observed by both PCR and cultures. Cohen's *K* of 0.71 (95% CI = 0.21 to 1) was observed for rectal swab and drainage specimens.
Conclusion We need more data to evaluate the performance of PCR for rapid detection of carbapenemase-producing bacteria from rectal swabs and drainage of critically ill surgical patients even though its concordance with cultures seems to be good.

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Use of an electronic medical record system to improve antimicrobial stewardship

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Introduction Antimicrobial resistance constitutes a growing global threat, driven in part by inappropriate antimicrobial prescribing [1]. Most hospitals implement antibiotic policies to promote antimicrobial stewardship. This audit examined the Royal Cornwall Hospital Trust (RCHT) Critical Care Department's compliance with the current standard defined in our local antimicrobial policy. This states that all antimicrobial prescriptions are to have an indication and review date recorded [2]. Sequential strategies to improve compliance were introduced prior to re-auditing the effects.
Methods The RCHT Critical Care Department utilizes the Phillips Care Vue electronic patient record. Data from this system were interrogated at three stages to assess our compliance with the trust's antimicrobial policy. The first data interrogation was performed prior to any intervention, and reflected baseline antimicrobial prescribing habits. The second data interrogation was performed during a period of active antibiotic stewardship promotion. The third data interrogation was performed following the addition of a care bundle to the prescribing module of Care Vue. This daily tick-box prompt reminded clinicians to check that all antimicrobial prescriptions had an indication and review date recorded. The records of all of the patients admitted to the critical care department during the periods of data interrogations were assessed for antimicrobial indication and review date transcription.
Results From the first data interrogation, antimicrobial prescriptions had an indication and review date transcription in 57% and 60% of cases respectively. Following the awareness campaign, the indication and review date transcription rate increased to 78% and 85% respectively. A daily electronic prompt was then added to our care bundle list. The final data interrogation, performed after this intervention, demonstrated that the transcription rates for both the indication and the review date had increased to 96%.
Conclusion We have demonstrated that the use of a daily prompt within an electronic patient record can greatly improve compliance in recording the indication and review date for all antimicrobials. These data support the widespread implementation of an electronic prescribing system where daily reminders are integrated in an effort to improve compliance with antimicrobial stewardship.

.02), successful vasopressor withdrawal ($P = 0.02$), P/F ratio ($P = 0.02$) and $ScVO_2$ on day 7 ($P = 0.03$). Regarding IL-1α, IL-1β, TNFα and troponin I there was no statistical significant difference between groups I and II but IL-6, IL-10 and CRP showed statistically significant difference on admission PV and CS. Pro- BNP shows statistically significant difference in all CS samples between septic and nonseptic groups. Regarding echo upon comparing the survivors versus nonsurvivors, E'd/t on day 0 shows a statistically significant difference between both groups. SAPS II and seventh-day