In the great majority of the cases, the therapy suggested by the surveillance cultures was appropriate for the actual pathogen of VAP and required fewer antimicrobial-days than would be necessary in a guideline-based approach. The guideline approach relies on deescalation, and, thus, between 2 and 4 antimicrobial-days would be added, compared with using therapy-guided ETA surveillance cultures. Finally, in those cases in which the therapy based on ETA surveillance cultures was totally or partially inappropriate, the initial prescription would be replaced by a new antimicrobial therapy for 10 days, adding 10 to 20 antimicrobial-days to the one, two, or three antimicrobials administered inappropriately during the first 2 days (2, 4, or 6 antimicrobial-days); in this instance, the sum of antimicrobial-days could be greater, the same, or even less than the number of antimicrobials received if the therapy had been guided by the ATS/IDSA guidelines.

As a consequence of these considerations, the number of antimicrobial-days could be significantly higher with the therapy guided by the ATS/IDSA guidelines than with surveillance cultures, without putting patients at risk of a poor outcome. Even though the instances of inappropriate therapy could be significantly higher using the ETA-guided therapy, some of the difference could be related to the empirical use of dual antipseudomonal therapy when guidelines are followed, even though outcome studies do not support a proven benefit of dual therapy beyond assuring appropriate coverage, which could have already been achieved with a single agent, using surveillance cultures.2 Thus, there are plausible explanations for our findings that could lead to less antimicrobial use and not add to patient risk of adverse outcome.

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REFERENCES


Aerosolized Colistin Cost-effectiveness

To the Editor:

We read with great interest the article by Tumbarello et al1 in a recent issue of CHEST (December 2013). The authors demonstrated that in critically ill patients with ventilator-associated pneumonia (VAP) caused by, previous susceptible gram-negative bacteria, aerosolized (AS) plus IV (AS + IV) colistin (as compared with IV colistin alone) can significantly improve clinical cure rates (69.2% vs 54.8%, P = .03) and reduce the need for mechanical ventilation (MV) after VAP onset (5 days vs 12 days, P = .001). Also, patients in the AS + IV group had 2 fewer ICU days after VAP onset (median, 12 days vs 14 days), 1.5 fewer days total ICU stay (median, 24.5 days vs 26 days), and 3 days shorter duration of colistin treatment (median 7 days vs 10 days) compared with the IV group.

However, nothing is recommended regarding the possible cost benefits as a result of these findings. For example, in Greece, IV colistin formulations (each vial contains 75 mg of colistin mesilate sodium, equal to 1 million International Units) cost €53.92 per vial; AS colistin formulations cost €2.93 per vial. Considering that the usual dose for IV therapy is 3 million International Units tid, and 1 million International Units tid for AS colistin as in the article by Tumbarello et al1 we found that for a 10-day course of IV colistin monotherapy, the costs are €532.8, whereas for a 7-day combination of AS + IV therapy, the costs are €435.18. Thus, 7-day AS + IV therapy is less expensive as compared with 10-day IV monotherapy by €97.61 per patient. Also, median total variable daily ICU costs in our ICU are €573.18; the costs for intubated patients are €562.3 and €386.3 for intubated patients (data not published). Thus, a considerable cost benefit may occur as a result of fewer days under MV and shorter length of ICU stay.

Taking all factors into account, the use of AS + IV colistin therapy may be a cost-effective strategy in patients with VAP in terms of shorter duration of therapy, fewer days under MV, and shorter ICU stay in addition to significantly better clinical outcomes. These observations are of significant interest in terms of cost-effectiveness of AS + IV colistin therapy for the management of gram-negative bacteria VAP, which should be further investigated in large, multicenter, randomized controlled trials.

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Response

To the Editor:

We thank Drs Myrianthefs and Baltopoulos for the data reported in their letter. They used the results of our recently published study in CHEST\(^1\) to evaluate the different economic outcomes of patients in the ICU with ventilator-associated pneumonia (VAP) treated with IV colistin monotherapy or aerosolized plus IV (AS + IV) colistin therapy in a Greek hospital. They found that 7-day AS + IV colistin therapy is less expensive than 10-day IV colistin monotherapy. They also found that a considerable cost benefit may occur as a result of fewer days under mechanical ventilation (MV) and shorter length of ICU stay. Of course, we agree that the use of AS + IV colistin monotherapy may occur as a result of fewer days under mechanical ventilation (MV) and shorter length of ICU stay. Of course, we agree with them that the use of AS + IV colistin therapy can be a cost-effective strategy in patients with VAP, shortening the duration of therapy, MV, and ICU stay and achieving better clinical outcomes.

Because our study was retrospective, a proper cost assessment was not completely reliable, especially in the absence of parameters whose prospective collection would have been important (ie, those related to nurse workload). Consequently, we preferred to not speculate on the cost-benefit analysis. As the total length of hospitalization is the main cost driver, in our institution a considerable cost benefit would also be expected as a result of fewer days under MV and shorter ICU length of stay. In conclusion, the shorter duration of therapy, MV, and ICU stay and achieving better clinical outcomes may also have a considerable cost benefit.

We appreciate Drs Balistreri, Mancino, and Antonelli for their comments and references. We believe that we have reported our data and analysis thoroughly and transparently and have discussed the limitations of our retrospective study. We believe that our data strongly support the conclusion that 7-day AS + IV colistin therapy is more cost-effective than 10-day IV colistin therapy in the treatment of VAP.

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References