Antibiotic Prophylaxis for Ventilator-Associated Pneumonia

More Is Less or Less Is More?

To the Editor:

The increasing prevalence of antibiotic resistance is of global concern. With few antibiotic agents in development,1 there is an increasing need for antibiotic stewardship. This is relevant in the ICU where patients receive a large burden of antibiotics and are at risk for infection from antibiotic-resistant pathogens. There is a need to improve antibiotic stewardship in patients with suspected ventilator-associated pneumonia (VAP). Because infection is confirmed by positive culture results in about 30% of patients, the implication is that patients commonly receive antibiotics for noninfective respiratory compromise.

The report by Vallés et al2 in a recent issue of CHEST (May 2013) adds complexity to the difficulties facing clinicians who balance antibiotic stewardship with the best outcome for the patient. This study reported a fall in VAP associated with prophylactic use of a single dose of antibiotics administered at the time of intubation in comatose patients. Data from the United States over the same period reported declining VAP rates in all patient groups.3 The apparent fall in VAP rates has led to debate about whether this represents the success of prevention strategies or changes in the quality of surveillance and reporting. These results need to be validated in a randomized controlled trial before being implemented in routine practice.

Vallés et al2 acknowledged that the main risk of implementing widespread prophylactic antibiotics in the ICU is the emergence of antibiotic-resistant pathogens. Although the choice of antibiotic in this study covers the organisms commonly colonizing sites of potential inoculum before admission to the hospital, this cannot be assumed for all patient groups. The oropharynx of elderly patients admitted from inpatient wards or long-term-care facilities often is colonized by gram-negative bacilli and could be at risk for becoming colonized with resistant pathogens following antibiotic exposure. Vallés et al2 did not find an increase in resistant pathogens in the late-onset VAP group; but they did not perform surveillance cultures. Given that this was a small, single-center study, it does not provide sufficient evidence to exclude the possibility that the intervention may promote antibiotic resistance. The apparent reduction in early VAP in comatose patients, although an interesting finding, may be a benefit for a patient group for whom the consequences of VAP are less severe.4 Although these benefits are of potential value, they require confirmation in late VAP for which the clinical consequences are more severe. Ultimately, the aim remains to find better ways of preventing VAP that do not rely on the use of antibiotics.

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REFERENCES


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Response

To the Editor:

We thank Dr Hellyer and colleagues for their comments regarding our article on prophylactic use of a single dose of antibiotic administered at the time of intubation in comatose patients. We agree that the excess of antibiotic use is associated with a higher risk of acquisition of multiple drug-resistant pathogens. Therefore, in our article, the goal of a prophylactic strategy is focused on a very particular population of comatose patients who are intubated in emergency situations. This group of patients presents a high incidence of early ventilator-associated pneumonia (VAP) (50%-60%), and, based on the American Thoracic Society/Infectious Diseases Society of America recommendations, it is suggested that prophylactic antibiotic use might be administered within the first 24 h. In our study, to rapidly decrease the bacterial burden during intubation, we decided to focus the period of administration of antibiotic within the first 4 h after intubation.

The association of developing resistances to antibiotics has been recognized with the use of prolonged treatments. Furthermore, significant differences in antibiotic resistances have been documented when surgical patients received antibiotic prophylaxis for > 48 h. Interestingly, this was the main difference with previous studies that administered more than one single dose of antibiotic.

We have to acknowledge that with the use of our strategy, the outcome was not different between patients who received prophylaxis and those who did not. However, it is important to highlight the reduction in antibiotic pressure. Dead bugs do not mutate, and, therefore, avoiding early-onset VAP episodes will help avoid prescribing antibiotic therapy with ceftriaxone, quinolone, ampicillin/sulbactam, or ertapenem for 5 to 7 days based on the current American Thoracic Society/Infectious Diseases Society of America guidelines recommendation.

We agree that we should be restrictive with the use of broad-spectrum antibiotics in ICU settings to reduce the acquisition of multiple drug-resistant pathogens. Therefore, we strongly believe that with the use of a single antibiotic dose, the incidence of early VAP decreased and consequently the antibiotic consumption in the ICU decreased (from 60% in control subjects to 30% in the prophylaxis group). Rational antibiotic prescription is conceived to optimize antimicrobial therapy, to assure cost-effective therapy while containing bacterial resistance. Although our strategy needs to be further evaluated in a randomized clinical trial, antibiotic stewardship can be easily implemented with a single dose.

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Thoracic Ultrasound Guidance for Access to Pleural, Peritoneal, and Pericardial Space

To the Editor:

A great contribution to patients’ care and safety of procedures is provided by ultrasonic guidance in several interventions. Better visualization of the needle insertion site for thoracentesis, pericardiocentesis, and paracentesis is possible with ultrasound, reducing the risk of complications and their associated costs. This subject is very well presented in the recent report in CHEST (February 2013) by Mercaldi and Lanes, which demonstrates that ultrasound guidance is associated with decreased risk of pneumothorax with thoracentesis and of bleeding complications with paracentesis, allowing a measurable lowering in hospitalization costs. Their contribution is particularly valuable since, seemingly, echo guidance is not sufficiently in use worldwide.