

The new American Thoracic Society/Infectious Disease Society of North America guidelines for the management of hospital-acquired, ventilator-associated and healthcare-associated pneumonia: a current view and new complementary information

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Abbreviations

ATS	American Thoracic Society
CPIS	clinical pulmonary infection score
HAP	hospital-acquired pneumonia
IDSA	Infectious Disease Society of North America
MRSA	methicillin-resistant <i>Staphylococcus aureus</i>
VAP	ventilator-associated pneumonia

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The most important manuscript on the field of respiratory infections in ICU in 2005 was the American Thoracic Society (ATS)/Infectious Disease Society of North America (IDSA) guidelines for the management of hospital-acquired pneumonia (HAP), ventilator-associated pneumonia (VAP) and healthcare-associated pneumonia [1]. The main principles of these guidelines are to avoid untreated or inadequately treated patients, recognize the variability of bacteriology between hospitals and units, avoid the overuse of antibiotics by focusing on accurate diagnosis, tailoring therapy to the results of lower respiratory tract cultures and shortening therapy to the minimal effective period and finally, apply prevention strategies aimed at modifiable risk factors. Notably, these guidelines are also addressed to patients with healthcare-associated pneumonia that were considered as community-acquired pneumonia patients until very recently. Apart from the simplification of antibiotic recommendations compared with the former guidelines, one of the main merits is to propose algorithms of diagnosis linked to decisions on empirical antibiotic treatment. In my opinion the implementation of these guidelines will take some time until physicians become accustomed to linking diagnosis with treatment.

Obviously the impact of the implementation of these guidelines on outcome is not yet known. We know, however, that adherence and implementation of guidelines

for respiratory infections is followed by better outcomes both in HAP and community-acquired pneumonia. In one study on HAP, Soo Hoo and colleagues [2] found a decrease in the 2-week mortality after the implementation of the 2001 ATS guidelines [3]. Clinical research on guideline adherence and its impact on mortality are encouraged to reinforce the importance of the recommendations and their utility in clinical practice.

As mentioned above one of the main targets of the HAP guidelines [1] is to avoid the overuse of antibiotics. One of the studies published this year [4] fits very well with this concept. This study confirmed the safety of withdrawing antibiotics in cases of negative cultures from bronchoalveolar lavage (BAL) samples in patients with suspected VAP. To follow this policy it is imperative to obtain respiratory secretions for culture before administering or changing antibiotic treatments as mentioned in the guidelines.

Lack of response to empirical antibiotic treatment is a frequent clinical problem in HAP and in VAP [1]. In one study Ioanas and colleagues [5] found an incidence of lack of response of 62%. Methicillin-resistant *Staphylococcus aureus* (MRSA) was one of the main causes of non-response and this was associated with higher blood and tumour necrosis factor- α levels on day 1. Overall non-response and mortality were associated with higher levels of inflammatory response (IL-6 in blood) indicating that non-response can be detected very early in the evolution of HAP and VAP by inflammatory markers. Since non-responder patients carry a very high mortality, this is a target population for interventional studies.

The attributable mortality of VAP by MRSA has been questioned. In a multicenter study [6], however, VAP caused by MRSA was undoubtedly followed by a high morbidity and high crude mortality. Probably, one of the explanations for this finding is the lack of good, effective antibiotics against this microorganism. The new HAP guidelines [1] recommend the use of vancomycin or linezolid to treat MRSA infection. Linezolid is specifically recommended in cases of renal failure. Several

recently published studies derived from post-hoc analyses found linezolid to be superior to vancomycin in the treatment of VAP caused by MRSA. Kollef and colleagues [7] confirmed this finding in a new study. Using multivariate analyses both clinical cure (odds ratio 20) and mortality (odds ratio 4.6) were significantly better with linezolid than with vancomycin. All these evidence seriously question the treatment of MRSA pneumonia with vancomycin instead of linezolid.

Clinical suspicion of VAP is still a controversial issue although the new guidelines [1] have shed some light on this issue. Luyt and colleagues [8] retrospectively evaluated the diagnostic value of the clinical pulmonary infection score (CPIS). The results were not very encouraging and confirm my opinion that the calculation of CPIS on day 1 does not provide any significant benefits to the use of clinical parameters for the suspicion of VAP. In addition, different authors have proposed different ways to calculate the CPIS thereby further increasing the confusion regarding this score. This score is probably more useful as a prognostic tool and in the detection of non-responding patients during evolution at day 3.

Sampling methods for VAP have been a matter of discussion for one decade. Another study [9] comparing different sampling methods of respiratory secretions in suspected VAP confirmed that blind protected methods are as accurate as bronchoscopic methods. Specifically, the diagnostic yield of blind protected specimen brush and BAL via fiberoptic bronchoscopy. This type of sampling is very useful for units in which bronchoscopy is not available 24 h a day. The new ATS/IDSA guidelines recommend blind procedures at the same level of invasive techniques.

Prevention of VAP and identification of potentially modifiable risk factors are important goals to be achieved and the different methods with level I evidence should be considered performance indicators as mentioned in the ATS/IDSA guidelines. Shorr and colleagues [10] explored the potential link between red blood transfusion and VAP and found a significant correlation between the number of units transfused and the risk of VAP. One of the explanations for this finding is the increased inflammatory response triggered by leukocytes included in the transfused units. Regulatory authorities in some countries have implemented the policy of depleting leukocytes from red blood cell transfusion.

Aspiration of secretions through the endotracheal tube or tracheostomy is a matter of concern as a potential risk of exogenous transmission of infections. For that reason closed systems have been developed. These closed systems are more expensive than traditional methods of respiratory secretions. A randomized trial [11] comparing closed versus open systems demonstrated no advantage of the former system in preventing VAP indicating that there is no reason for giving up the conventional procedures to aspirate respiratory secretions in intubated patients. This is an important negative study that clarifies the controversy on the different systems to aspirate secretions in intubated or tracheostomized patients.

In summary the ATS/IDSA guidelines published in 2005 [1] include a series of recommendations based on the evidence of modifiable risk factors, diagnosis and treatment. This is the most complete document on nosocomial pneumonia to date. New information which appeared in 2005 confirms or complements these recommendations.

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