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## New advances in nosocomial infections control



Nosocomial infections are acquired during hospital stays. They are a cause of death and it is estimated that in Catalan centres they can cause a 7 to 10-day prolongation of hospital stays, with additional costs of over 2,000 euros per patient. It is estimated that half of all ICU patients receive an antibiotic during their stay. The minimisation of these infections is therefore a major challenge today. A study made with a large number of patients in Europe by researchers at the Vall d'Hebron University Hospital has achieved a reduction in 6 days of hospital stays of ICU patients.

Hospital-acquired pneumonia (HAP) is the second most important nosocomial infection in hospital inpatients. Pneumonia caused by mechanical ventilation (Ventilator-Associated Pneumonia – VAP), is the leading nosocomial pneumonia in the Intensive Care Unit (ICU). Studies have shown that more than half of patients admitted in the ICU will receive at least one antibiotic during their stay and the main reason for this antibiotic prescription pattern is the presence of this type of pneumonia.

It is proven that delaying the administration of the appropriate antibiotic usually leads to worse outcomes. However, when or how to treat a patient with suspicion of an infection remains very controversial and little is known about real prescription patterns and, especially, the particular factors that determine antibiotic choice in daily clinical practice. Some factors that have been suggested to influence the clinicians' antibiotic choice include: previous hospitalizations, previous antibiotic exposure and underlying diseases, but this can be questioned.

In this study – developed by investigators from the Corporate Research Programme on Pneumonia-Sepsis from Biomedical Research Network Centre for Respiratory Diseases (CIBERES) –, several hospitals in different European countries were included in order to assess the determinants of empirical antibiotic choice, prescription patterns and outcomes in patients with HAP/VAP.

Investigators tried to figure out, through questionnaires, discussions and patient health outcome, whether other factors rather than prior antibiotic exposure and duration of stay in the ICU would influence the prescription decision. Moreover, they aimed to describe patterns of empirical antibiotic treatment in pneumonia, to compare type of admission background in terms of clinical management, to record differences between countries and institutions and to describe the outcomes of patients with pneumonia in a large number of patients from different European ICUs.

The investigators discovered that empirical choice strongly influenced by factors other than prior antibiotic exposure and that duration of stay on ICU would influence the prescription decision. However, the more important factor of decision was the patient's admission background and the second most important was a baseline prevalence of *acinetobacter baumannii*, an emerging hospital pathogen that is causing great concern amongst clinicians. Furthermore, this large multicentre study evidences the broad variability in antibiotic prescription across Europe, being the Carbapenems the most prescribed antibiotic class for HAP/VAP.

This was the first study so far that one involved a big number of patients, for European hospitals and it is the first one to include patients' admission background as a variable. Our findings suggest that the baseline prevalence of *A. baumannii*>10% in pneumonia episodes, severity of sickness and admission category are major determinants of antibiotic choice at the bedside.

These new observations are important and should be considered in further updates of guidelines for the treatment of hospital-acquired pneumonia. It is of added value when discussing adequate use of healthcare resources, by confirming the importance of adequate initial therapy – evidenced by the reduction of ICU stay by 6 days.

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## References

"Determinants of prescription and choice of empirical therapy for hospital-acquired and ventilator-associated pneumonia". Rello et al. Eur Resp Journal 36:6, 1332-1339 (2011)

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