



ORIGINAL

Characteristics and outcomes of patients admitted to Spanish ICU: A prospective observational study from the ENVIN-HELICS registry (2006–2011)



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Received 6 April 2015; accepted 13 July 2015

Available online 9 October 2015

KEYWORDS

Case-mix;
Critically ill patients;
ENVIN-HELICS
registry;
Intensive care units;
Mortality;
Severity;
Nosocomial infection;
Epidemiological
registry

Abstract

Objective: To describe the case-mix of patients admitted to intensive care units (ICUs) in Spain during the period 2006–2011 and to assess changes in ICU mortality according to severity level.

Design: Secondary analysis of data obtained from the ENVN-HELICS registry. Observational prospective study.

Setting: Spanish ICU.

Patients: Patients admitted for over 24 h.

Interventions: None.

Variables: Data for each of the participating hospitals and ICUs were recorded, as well as data that allowed to knowing the case-mix and the individual outcome of each patient. The study period was divided into two intervals, from 2006 to 2008 (period 1) and from 2009 to 2011 (period 2). Multilevel and multivariate models were used for the analysis of mortality and were performed in each stratum of severity level.

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¹ Members of the ENVIN-HELICS Study Group at <http://hws.vhebron.net/envin-helics/>. Participating ICUs and hospitals are listed in the appendix.

Results: The study population included 142,859 patients admitted to 188 adult ICUs. There was an increase in the mean age of the patients and in the percentage of patients >79 years (11.2% vs. 12.7%, $P < 0.001$). Also, the mean APACHE II score increased from 14.35 ± 8.29 to 14.72 ± 8.43 ($P < 0.001$). The crude overall intra-UCI mortality remained unchanged (11.4%) but adjusted mortality rate in patients with APACHE II score between 11 and 25 decreased modestly in recent years (12.3% vs. 11.6%, odds ratio = 0.931, 95% CI 0.883–0.982; $P = 0.008$).

Conclusion: This study provides observational longitudinal data on case-mix of patients admitted to Spanish ICUs. A slight reduction in ICU mortality rate was observed among patients with intermediate severity level.

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PALABRAS CLAVE

Case-mix;
Pacientes críticos;
Registro
ENVIN-HELICS;
Unidad de cuidados
intensivos;
Mortalidad;
Gravedad;
Infección nosocomial;
Registro
epidemiológico

Características y evolución de los pacientes ingresados en UCI españolas: un estudio observacional prospectivo del registro ENVIN-HELICS (2006-2011)

Resumen

Objetivo: Describir el case-mix de los pacientes admitidos en las unidades de cuidados intensivos (UCI) españolas durante el periodo 2006-2011 y evaluar los cambios en la mortalidad en UCI según el nivel de gravedad.

Diseño: Estudio prospectivo y observacional. Análisis secundario procedente del registro ENVIN-HELICS.

Ámbito: ICU españolas.

Pacientes: Pacientes ingresados más de 24 h.

Intervención: Ninguna.

Variables: Se registraron los datos de cada UCI participante, así como aquellos que permiten conocer el case-mix y el estado al alta de cada paciente. El periodo de estudio se dividió en 2 intervalos, de 2006 a 2008 (periodo 1) y de 2009 a 2011 (periodo 2). Para el análisis de la mortalidad y en cada estrato de nivel de gravedad se realizó un estudio multivariante y multinivel.

Resultados: La población estudiada incluye 142.859 pacientes ingresados en 188 UCI de adultos. Se apreció un incremento en la media de edad de los pacientes, así como en el porcentaje de los que eran mayores de 79 años (11,2 vs. 12,7%; $p < 0,001$). La media de APACHE II se incrementó de $14,35 \pm 8,29$ a $14,72 \pm 8,43$ ($p < 0,001$). La mortalidad bruta no varió (11,4%), pero la mortalidad ajustada en pacientes con APACHE II entre 11 y 25 disminuyó modestamente en los últimos años (12,3 vs. 11,6%, odds ratio = 0,931, IC 95% 0,883-0,982; $p = 0,008$).

Conclusiones: Este estudio proporciona datos observacionales del case-mix de los pacientes ingresados en las UCI de España. Se observa una ligera reducción de la mortalidad en los pacientes con un grado intermedio en la escala de gravedad.

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Background

Knowledge of the general characteristics of patients (case-mix) admitted to Intensive Care Units (ICUs) and assessment of case-mix changes over time allow a more adequate provision of resources, the comparison of crude data among the different units and the design of hospital policies tailored to each ICU setting. This knowledge can be obtained from specific studies for certain diseases.¹⁻⁴ These studies, however, do not give information about general characteristics of ICU patients not affected by these disorders.

Best case-mix descriptions of unselected critically ill patients are obtained from databases aimed to develop prognostic scales or from scales designed to measure workloads.⁵⁻⁹ Also, a number of multicentre studies with

pooled data from the participating countries have been reported.¹⁰⁻¹⁵ Most of these studies referred to patients admitted to the ICU more than decade ago. Some more recent non-European studies¹⁶ or focused on specific aspects, such as sepsis^{17,18} have reported a decrease in mortality during the last years. The use of administrative databases¹⁹ does not allow the assessment of particular aspects that may influence upon the selection of resources ascribed to a particular unit. Data can also be obtained from prospective registries of different diseases in which all patients admitted to the ICU at risk to develop these diseases are included. Since 1994, an ongoing registry of ICU-acquired infections in critically ill patients has been developed in Spain. The ENVIN-HELICS registry²⁰ (National Surveillance Study of Nosocomial Infection in the

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