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ORIGINAL

Non-invasive ventilation in emergency departments in public hospitals in Catalonia. The VENUR-CAT study[☆]

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KEYWORDS

Non-invasive ventilation;
Critical care;
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Abstract

Objectives: To know the implementation and characteristics of non-invasive ventilation (NIV) in the Emergency Departments (EDs) of public hospitals in Catalonia (Spain) and analyze possible differences based on the typology, degree of activity and the availability of an Intensive Care Unit (ICU) in the hospital.

Design: A non-interventional, descriptive study was carried out, using a structured questionnaire divided into 3 sections: 1) professional experience and training; 2) devices used; and 3) clinical scenarios and the use of NIV.

Setting: Persons responsible for public EDs in Catalonia.

Results: Fifty-two of the 54 public EDs in Catalonia responded (96.3%). Fifty-one perform NIV, which is mainly initiated by emergency care physicians (78.5%); 66.7% maintain the patient in the ED until discharge; and in 43.1% of the cases the length of stay is >24 h. Of the EDs, 39.2% have their own protocol, 35.3% of which are established by consensus with other departments (more frequently in non-county hospitals [$p = 0.012$], and centers with an ICU [$p = 0.014$]), while 25.5% have no protocol, and 43.1% register the activity. Training represents the greatest difficulty for the implementation of NIV, but 19.6% do not provide specific training. When support is needed, the main physician of reference is the intensivist (35.3%) (more frequently in non-county hospitals [$p = 0.012$], and centers with an ICU [$p = 0.002$]).

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PALABRAS CLAVE

Ventilación no invasiva;
Cuidados intensivos;
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Conclusions: In most EDs in Catalonia, NIV is performed by emergency care physicians. Areas needing improvement include drainage of patients once NIV has been started, the promotion of protocols, registry of activity, and training of the healthcare professionals.

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Ventilación no invasiva en los servicios de urgencias hospitalarios públicos de Cataluña. Estudio VENUR-CAT

Resumen

Objetivos: Conocer la implantación y características de la ventilación no invasiva (VNI) en los servicios de urgencias hospitalarios (SUH) públicos de Cataluña. Analizar si hay diferencias en función de la tipología, del grado de actividad y de la existencia de una unidad de cuidados intensivos (UCI) en el hospital.

Diseño: Estudio descriptivo, sin intervención, realizado mediante una encuesta estructurada en 3 bloques: 1) profesionales y formación; 2) aparataje utilizado y 3) escenarios clínicos y uso de la VNI.

Ámbito: Responsables de los SUH públicos de Cataluña.

Resultados: Contestaron 52 de 54 SUH públicos (96,3%): 51 realizan VNI, iniciada mayoritariamente por el médico de urgencias (78,5%). El 66,7% mantiene al paciente en urgencias hasta su retirada y en el 43,1% la estancia suele superar las 24 h. El 39,2% de los SUH tienen un protocolo propio, el 35,3% consensuado con otros servicios (más en hospitales no comarcales, $p=0,012$, y con UCI, $p=0,014$) y el 25,5% no tiene. El 43,1% registran la actividad. El aprendizaje constituye la mayor dificultad para la implantación, pero el 19,6% no contempla la formación reglada regular. En caso de necesitar soporte, el principal médico de referencia es el especialista de Medicina Intensiva (35,3%, más en hospitales no comarcales, $p=0,012$, y con UCI, $p=0,002$).

Conclusiones: La VNI la realizan en la mayoría de los SUH los médicos de urgencias. Las áreas de mejora detectadas incluyen el drenaje de pacientes una vez iniciada la VNI, la potenciación de protocolos, el registro de actividad y la formación de los profesionales.

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Introduction

Noninvasive ventilation (NIV) is essential in the management of acute respiratory failure.¹ Evidence of the efficacy of NIV in different scenarios was first obtained in the 1990s from clinical trials and subsequently from meta-analyses, mostly conducted in Intensive Care Units (ICUs).²⁻⁶ The scenarios with the strongest scientific evidence and highest grade of recommendation in this regard are the exacerbation of chronic obstructive pulmonary disease (ECOPD)⁷ and acute heart failure (AHF).⁸

The use of NIV has subsequently spread to other care Units, and particularly to hospital Emergency Departments (EDs).^{9,10} A recent study has shown the most common scenario for the use of NIV in the ED to be AHF (38.0%), followed by ECOPD (34.2%).¹¹ In Spain few studies offer information on the implementation of NIV and its characteristics in the ED. A study published in 2008 found NIV to be applied in 45.7% of the EDs,¹² without specifying its implementation in the different Spanish Autonomous Communities, since the EDs in each Community were not detailed, and healthcare organization in Spain implies the possibility of differences among Communities. On the other hand, since 2008 the use of NIV has increased and has even reached the pre-hospital emergency care setting.^{13,14} In this context, the VENUR-CAT

(Noninvasive ventilation in Emergency Departments in Catalonia [VENTilación no invasiva en URgencias en Cataluña]) study was designed with the purpose of knowing the implementation and characteristics of NIV in the EDs of public hospitals in Catalonia (Spain), the training of their professionals, and of analyzing possible differences based on the type of hospital, the degree of activity in the ED, and the availability of an ICU in the hospital.

Method

The VENUR-CAT study involved a non-interventional descriptive design based on a survey. The latter was developed by the research team during three successive meetings, giving rise to a 22-item questionnaire on NIV, divided into three blocks: one referred to the professionals and training; another addressing the equipment and devices used; and a third block referred to the clinical scenarios and utilization of NIV. The study sample comprised the persons in charge of the public EDs in Catalonia, which totaled 54 at the time of the study.¹⁵ The survey was sent by e-mail using the *docs.google.com* platform a total of 5 times between September and December 2016. Confidentiality of the individual data of the centers was maintained, and the participants were not asked to supply personal data of the

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