



POINT OF VIEW

Intensive Care Unit without walls: Seeking patient safety by improving the efficiency of the system



F. Gordo^{a,b,*}, A. Abella^a

^a Intensive Care Medicine, Hospital Universitario del Henares, Coslada, Madrid, Spain

^b Francisco de Vitoria University, Madrid, Spain

KEYWORDS

Intensive Care Unit;
Intensive Care
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Rapid response
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Health service
administration;
Hospital mortality;
Patient safety;
Early warning score;
Monitoring;
Vital signs

Abstract The term “ICU without walls” refers to innovative management in Intensive Care, based on two key elements: (1) collaboration of all medical and nursing staff involved in patient care during hospitalization and (2) technological support for severity early detection protocols by identifying patients at risk of deterioration throughout the hospital, based on the assessment of vital signs and/or laboratory test values, with the clear aim of improving critical patient safety in the hospitalization process.

At present, it can be affirmed that there is important work to be done in the detection of severity and early intervention in patients at risk of organ dysfunction. Such work must be adapted to the circumstances of each center and should include training in the detection of severity, multidisciplinary work in the complete patient clinical process, and the use of technological systems allowing intervention on the basis of monitored laboratory and physiological parameters, with effective and efficient use of the information generated. Not only must information be generated, but also efficient management of such information must also be achieved.

It is necessary to improve our activity through innovation in management procedures that facilitate the work of the intensivist, in collaboration with other specialists, throughout the hospital environment. Innovation is furthermore required in the efficient management of the information generated in hospitals, through intelligent and directed usage of the new available technology.

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PALABRAS CLAVE

Unidad de cuidados
intensivos;
Medicina intensiva;
Tecnología;
Equipos de respuesta
rápida;
Administración de
servicios sanitarios;

Unidad de cuidados intensivos sin paredes: buscando la seguridad del paciente mediante la mejora de la eficiencia del sistema

Resumen El término «UCI sin paredes» se refiere a una innovadora estrategia de tratamiento en cuidados intensivos que se basa en 2 elementos fundamentales: (1) colaboración de todo el personal médico y de enfermería implicado en la atención del paciente durante la hospitalización, y (2) apoyo tecnológico para protocolos de detección temprana de la gravedad identificando a los pacientes en situación de riesgo de deterioro en el hospital a partir de la evaluación de las constantes vitales y/o los resultados de las pruebas analíticas, con el claro objetivo de mejorar la seguridad de los pacientes críticos durante el proceso de hospitalización.

* Corresponding author.

E-mail address: fgordo5@gmail.com (F. Gordo).

Mortalidad hospitalaria;
Seguridad de los pacientes;
Puntuación de alerta temprana;
Monitorización;
Constantes vitales

En la actualidad puede decirse que todavía queda un importante trabajo por hacer en cuanto a la detección de la gravedad y la detección precoz en pacientes en situación de riesgo de disfunción orgánica. Este trabajo deberá adaptarse a las circunstancias de cada centro e incluir formación para la detección de la gravedad, el trabajo multidisciplinario en el conjunto del proceso clínico del paciente y el uso de sistemas tecnológicos que permitan la intervención a partir de la monitorización de parámetros fisiológicos y analíticos, con un uso eficiente y eficaz de la información generada. No solo debe generarse información sino que también es necesario que esta se gestione de manera eficaz.

Es necesario mejorar nuestra actividad mediante la innovación en los procedimientos de gestión que facilitan la labor del intensivista, en colaboración con otros especialistas, en el entorno hospitalario. Además, se requiere innovación para gestionar de forma eficiente la información generada en los hospitales a partir del uso inteligente y eficiente de las nuevas tecnologías disponibles.

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The term “Intensive Care Unit (ICU) without walls” refers to innovative management of Intensive Care, based on two key elements: (1) collaboration of all medical and nursing staff involved in patient care during hospitalization and (2) technological support for severity early detection protocols by identifying patients at risk of deterioration in conventional hospitalization wards. This concept emerges from the conviction that we should try to improve patient safety throughout the hospitalization process (from hospital admission to discharge – not only while the patient is admitted to the ICU), striving to improve the efficiency of the system through rational use of the available resources. The crucial point is collaboration among the different hospital Departments involved in critical and potentially critical patient care (i.e., Intensive Care Medicine, Clinical Departments and Surgical Departments), and the nursing units involved in the management of patients in conventional hospitalization wards.¹

Problem: why has the model of ICU without walls emerged?

The objective of Intensive Care Medicine, as defined by the international societies of Intensive Care Medicine in the Santander 2012 statement,² is to provide critically ill patients with medical care tailored to their needs, of high quality and as safe as possible. Intensive Care Medicine is one of the main elements in modern healthcare systems – Intensive Care Units (ICUs) being in increasing demand, and with an important healthcare cost impact. It is believed that in the United States more than half of the population will be admitted to an ICU at some point in life, and that a significant percentage will die in these Units, consuming between 0.5% and 1% of the country’s Gross Domestic Product.^{3,4} More than 5 million patients are admitted annually to ICUs in the United States. The 5 primary ICU admission diagnoses are, in decreasing order: respiratory insufficiency/failure, postoperative management, ischemic heart disorders, sepsis, and heart failure. However, the availability of ICU beds varies greatly across different countries and healthcare systems.⁵

The management of some critical processes entails major economic and sanitary resource consumption. As an example, in our country (Spain), the annual incidence of severe

sepsis is 14.1 cases/10,000 inhabitants, with an overall mortality rate of 33% and a mean hospital stay of 28.9 days. The annual cost of such management (Community of Madrid, Spain) is 70 million €, which represents a significant impact in terms of healthcare resource consumption.⁶ In 2005, critical care services in the United States were estimated to cost \$81.7 billion, or 0.66% of the gross domestic product.^{3,4}

ICU patients are in a critical condition, i.e., with potentially life-threatening organ dysfunctions or disorders. They require continuous monitoring and often need organ functional support measures. Although these patients conform a heterogeneous population, all of them share the need for a higher level of acute care than most hospitalized subjects. Frequently, patients in the ICU require cardiovascular or ventilatory support, invasive monitoring and intensive observation by nursing and medical staff members, with a greater reliance upon technology to keep critically ill patients alive (e.g., mechanical ventilation, hemodialysis, plasmapheresis, extracorporeal membrane oxygenation, etc.). Despite the widespread belief that the mortality rate is inherently high in our specialty, the percentage of patients who survive to discharge from the ICU is 90% in overall terms.⁷

Scarcity of available ICU beds sometimes leads to rejection of ICU admission⁸ or to delays in admission to these Units, and that early discharge in turn can lead to a later need for patient re-admission.⁹ Both circumstances are clearly correlated to an increased patient risk and a poorer prognosis (increased length of stay and mortality in both the ICU and in Hospital), and imply greater associated costs arising from the need to use more complex support techniques, an increased need for vital support, and a longer length of stay in the ICU and in Hospital.^{3,10,11} As an example, Cardoso et al.¹¹ have reported that each hour of delay in admission of a patient to the ICU is associated with a 1.5% increase in the risk of death in the ICU and a 1% increase in Hospital mortality. Likewise, Sakr et al.¹² have found mortality among critically ill patients to be clearly related to the initial evolution of organ failure and the SOFA score at the time of admission to the ICU. If readmission to the ICU proves necessary, there is a four-fold increase in mortality risk, and the length of Hospital stay is moreover doubled.^{13,14} Furthermore, information is still lacking on the influence of the

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