



## EDITORIAL

### Innovation in the management of intensive care units: This is the right time<sup>☆</sup>



### Innovación en la gestión de las unidades de cuidados intensivos: es el momento

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The intensive care unit (ICU) may be seen by other specialists and by hospital managers as that special place with a sign that says “No entry”; with a limited number of beds (often too few in fact); with great expenditure in drugs, technology and stays; and with high mortality among its patients (which by definition are at risk of imminent death). On the other hand, we may be largely unknown in terms of the assessment of our activity based on coding systems, since the only definitive discharges generated by the ICU are patient deaths, transfers and—exceptionally—discharge home from the ICU.

We need to consolidate the change that is being experienced in the activity of the ICUs in our country. This change implies integration with the rest of the hospital services in the care of patients who are so seriously ill that they require our attention, regardless of where they happen to be. It also implies integration of the rest of the hospital in the philosophy of promptness in detecting and caring for such patients, because doing so improves the outcomes in terms of morbidity-mortality and healthcare costs.<sup>1</sup> Super-specialization and technological developments also cause us to participate in providing support in highly complex

procedures which other services carry out in high risk patients. Furthermore, all this is done placing our patients who are independent and able to decide, and their families, at the center of our activity. Lastly, it is essential to know the details of our activity and outcomes, and to learn from them, submit them to the hospital management body, and establish strategies for continuous improvement. These characteristics define an “ICU without walls”, centered on the patients and their families, and with transparency in the information it generates.

In this issue of *MEDICINA INTENSIVA*, Sirvent et al.<sup>2</sup> explains how an apparently simple intervention is able to improve the efficiency of the Department of Intensive Care Medicine. Despite its simplicity, the intervention is relevant: it involves multidisciplinary coordination to plan critical patient care in the context of an entire hospital and its reference area. We are speaking of planning, of relations with other professionals, of anticipation and early intervention, improvement of health outcomes, efficiency in terms of costs and patient safety—reducing the need for critical patient transfer because of a lack of beds.

In effect, saturation of an ICU often means that we are unable to attend the needs of new patients. All of the solutions we commonly apply have a negative impact upon the quality of the care we offer. Delays in admission, admission to some alternative unit in the hospital, or transfer to an ICU in some other center all imply a poorer prognosis, with an increased risk of morbidity-mortality.<sup>3</sup> The option of suspending scheduled activity is only possible when the

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conflict or problem arises early on working days, and this consequently increases the risk of worsening on the part of patients who are on the waiting list. Lastly, we can choose non-scheduled discharge. This latter option has recently been studied in a hospital in our setting—the conclusion being that it is a common practice associated to increased patient risk.<sup>4</sup>

As a solution, Sirvent et al. suggests the use of proprietary resources in an efficient manner and in coordination with the other related means and services (emergency care, operating room, ward, acute patient care units of the hospital). Useful utilization of resources is achieved thanks to coordinated planning.

Lean techniques are increasingly applied in Medicine as quality improvement tools. They are fundamental upon the simplification of processes to make them more efficient, and personally implicate the employees in a continuous improvement process. The most extensive experience to date in this regard corresponds to the organization of emergency care services—though these techniques are currently also applied in many other areas of Medicine. Lean techniques have had such an impact over the last decade that reviews and analyses have been made of their outcomes and of the conditions that determine their success—applying the “scientific method” characteristic of Medicine.

Lean methodology is based on ensuring the value of the product offered (or service, in the case of health-care) from the client point of view—removing from the production process all those elements that contribute no value, such as waiting times or duplicated diagnostic tests, for example. Reorganization of the processes seeks to standardize practice, which in turn guarantees better results in terms of quality, and increases safety. The analysis and proposal for change must arise from observation in the actual workplace, not in the offices. The second role player, after the client, is the employee in person, who feels involved and gratified in the continuous improvement process, with a quest for excellence. Lastly, collaboration on the part of the managing bodies is required, affording a global view of the strategy and defining this quality improvement tool as a Lean “philosophy”.<sup>5-7</sup>

The need to manage the available resources has modified the operation of Departments of Intensive Care Medicine in recent times. Another way of planning, perhaps seemingly more abstract before becoming materialized, is the early detection of patients at risk, which allows decision-making regarding adequate clinical management. These are the so-called out-ICU activities, and involve collaboration of the intensivist with the rest of hospital specialties, with the aim of using different methods to detect patients at risk and treat them on an early basis. This intervention may imply greater therapeutic effort in the ward, early admission to the ICU or—no less importantly—the decision to limit therapeutic effort. To all this we must add the clear advantage of the fact that such decisions can be made with the participation of the physician who usually attends the patient, and even with the patient and family, before an emergency situation arises.<sup>1,8,9</sup>

The detection method differs according to the type of patient and the type of hospital.<sup>1,8,9</sup> In sum, the following options are available:

1. Alarm systems for concrete disease conditions, such as the Sepsis code or Stroke code, among others.
2. Alarm systems combining clinical and laboratory test variables, and which activate a rapid response team.
3. Prospective assessment of patients considered to be at risk, whether at discharge from the ICU in certain situations, or referred to patients in acute care areas such as the emergency service and its patient observation area.

In recent years, the electronic case history has allowed patient assessment on a large scale, which in sum is the ultimate aim. In this regard, there are different experiences in the detection of laboratory test parameters indicative of patient severity, combined or not with the electronic recording of clinical variables and even the registry of vital signs at a distance.<sup>9,10</sup>

The fact is that no major investments are needed in relation to the parameters to be measured and the way of obtaining them. Indeed, part of the success of these early detection and intervention programs is the implication and training of the medical personnel and nurses, since the latter are the professionals that spend most time with the patient. On the other hand, the initiative does not imply an added work burden. Finally, the work done really serves to obtain improved outcomes. Recording vital signs in the electronic case history, combined with laboratory test alterations and the presence of risk situations such as previous surgery or infection, may be sufficiently sensitive to identify patients at risk of worsening.<sup>10</sup>

All of these improvements in patient care must be assessed objectively in order to allow comparisons of the results and processes, and to measure their value, i.e., the relationship between the result obtained and the costs in global terms.

The results or outcomes include quality and safety of care, as well as satisfaction of the patients and their families. In turn, the costs comprise direct costs such as pharmacy expenditure or the use of apparatuses and devices, and indirect costs such as infrastructure or personnel. Other less tangible costs are pain and suffering of the patients and their families, or stress among the health professionals.

The Avedis Donabedian scheme proposes the measurement of quality in three domains, in what is known as the S-P-O model (structure-process-outcome). Structure refers to the ICU, materials, human resources, etc. Process in turn includes actions referred to the diagnosis, treatment and prevention of diseases. Lastly, outcome fundamentally refers to morbidity-mortality, hospital stay and quality of life, among other aspects.<sup>11</sup>

In 2001, the American Institute of Medicine proposed that healthcare systems should tend toward maximum quality in terms of safety, effectiveness, opportunity, efficiency and equality, and should focus on the patients and their families.<sup>11</sup>

The initiative of Sirvent et al. has been able to offer opportunity and equality to their patients, maintaining efficacy and safety, improving effectiveness, and undoubtedly has placed the patient at the center of their priorities.

They have introduced a change in the management of their ICU. And there is no doubt: this is the right time.

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## Conflicts of interest

The authors declare that they have no conflicts of interest.

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