



## EDITORIAL

### The quality and safety of intensive care medicine in Spain. More than just words

### La calidad y la seguridad de la medicina intensiva en España. Algo más que palabras

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Intensive care medicine aims to offer critical patients quality medical care adjusted to their needs, and in the safest way possible. This specialized field of medical care constitutes one of the main elements of all modern healthcare systems, representing a resource that is increasingly in demand, and which implies important sanitary costs. In the United States, it has been estimated that over one-half of the population will be admitted to an Intensive Care Unit (ICU) at some point in life, and that an important percentage will die in such Units, consuming between 0.5-1% of the Gross Domestic Product of the country.<sup>1</sup> In recent years, hospitals with a tendency to significantly reduce the number of available beds have increased their activities in Intensive Care. Such activity has become consolidated not only in the classical Units but has moreover also spread to other areas with clearly preventive aims – such as medical emergency teams or post-critical patient control.<sup>2</sup>

The quality of care has gradually become a central element in healthcare. In this context, in recent years, patient safety has gained importance as one of the key dimensions of quality. This importance is even more manifest in the case of intensive care medicine, not only due to the

social and economical impact involved, but also because some of the dimensions of quality are particularly relevant in critical patients: the fact that these are more vulnerable patients, limited accessibility, equity in the distribution of resources, scant scientific evidence, and limited efficiency.

Healthcare quality can be defined as “the degree to which the services offered to an individual and to the population increase the probability of obtaining health results that are both desirable and coherent with current professional knowledge”. In more simple terms, the evaluation of quality reflects the discordance between the results that should be obtained and those that are actually obtained. Quality healthcare is care that is safe, adequate, efficient, accessible, abides with the principles of fairness, and is focused on the patient.<sup>3</sup> Although the ultimate aim of Medicine is to cover the medical needs of the patient, it also must address the expectations of the family and related persons, the professionals, the institutions, and society in general.

For a little over 30 years, intensive care medicine in Spain has been a specialty that has made it possible to improve critical patient care. Over these years there have been important changes in the management of these patients, with the introduction of scientific and technological advances particularly in monitorization and in the support of organ dysfunction. This undoubtedly has improved the effectiveness of current Medicine, though at the cost of making it also less safe and more hazardous.<sup>4</sup> In the words of Chantler, “Medicine has evolved from being simple,

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scantly effective and relatively safe to being complex, effective, but also potentially hazardous". Intensive care medicine is the maximum representative of this situation. The challenge in the coming years must be to harmonize the effectiveness of intensive care medicine with the rest of the quality dimensions, and in the case of conflict between safety and any of these dimensions, the former must receive priority concern in order to comply with the Hippocratic principle whereby "the first thing is not to harm". We have learned that in some cases more aggressive intensive treatments can harm more than benefit the patient, and the minimalistic principle of "less is more" would be applicable in intensive care medicine to concepts such as sedation, tidal volume in acute respiratory distress syndrome, blood product transfusions or strict blood glucose control.<sup>5</sup>

In the Departments of Intensive Care Medicine, the seriousness of the critical patient, the communication barriers, the large number of activities per patient and day, the performance of invasive diagnostic and therapeutic procedures, the volume and complexity of the information used, the transfers and need for teamwork, among other aspects, define these Departments as risk units for the appearance of adverse events. Such events represent a risk not only for the patients, but moreover also imply an added economical cost, adversely affect the institutions and professionals, and erode patient confidence in the healthcare system.<sup>6</sup>

During all these years, the concern of the professionals that treat critical patients for improving quality and for evaluating the results obtained has been evident. In some cases such concern has given rise to local<sup>7</sup> or individual initiatives, while in other cases the initiatives have developed under the auspices of a scientific society, the Spanish Society of Intensive and Critical Care Medicine and Coronary Units (*Sociedad Española de Medicina Intensiva, Crítica y Unidades Coronarias, SEMICYUC*), which has aimed to position the specialty as a reference model for other countries. In this context, the SEMICYUC, through its steering committees and on a multidisciplinary basis through its different work groups, has led the development of quality and patient safety policies—with the conduction of specific activities in the fields of research and training. The founding statutes of the SEMICYUC define as a central concern the improvement of population health, cooperating in the prevention of those critical disorders with the greatest impact upon public health. Its ethical code in turn recognizes the importance of bioethical principles in the practice of the specialty, promoting quality care in all settings and making specific reference to aspects related to the limits of medical care and resource management.<sup>8</sup> Spanish intensive care medicine, aware of the importance of observing patient rights, particularly the respect for autonomy in the taking of decisions and end of life patient care, has published recommendations relating to informed consent,<sup>9</sup> the limitation of life support therapy,<sup>10</sup> previous instructions or anticipative wills,<sup>11</sup> the adaptation of care in terminal stages of life,<sup>12</sup> confidentiality,<sup>13</sup> or ethical conflicts in cardiopulmonary resuscitation.<sup>14</sup>

The accreditation and standardization of structures and processes is a key instrument for improving quality. In 1997, the Spanish National Health Institute (INSALUD) developed a

guide in collaboration with the SEMIUC (now known as the SEMICYUC), for the coordination, evaluation and management of Departments of Intensive Care Medicine.<sup>15</sup> Recently, the SEMICYUC has collaborated with the Spanish Ministry of Health in the elaboration of the report: "Standards and recommendations for Intensive Care Units". The aim of this report is to establish the criteria for the organization and management of ICUs, contributing to improve the safety and quality conditions of their activities—including efficiency, design and equipment issues.<sup>16</sup>

Until recently, the healthcare systems had paid limited attention to quality. In many cases, reliable information allowing the evaluation of a given process is lacking, and where such information does exist, the managing authorities and medical professionals do not always have access to it. This makes it difficult to effectively monitor quality and safety, to answer the question "How often do patients receive adequate care?", or determine whether certain quality improvement initiatives are effective or not. Monitoring systems make it possible to measure and evaluate relevant aspects of medical care on a regular and protocolized basis, using quality indicators that conform the basis of a control system. Quality indicators are measurement instruments that indicate the presence of a phenomenon or event and its intensity, and must be reliable, objective, acceptable, relevant and based on evidence. The purpose of monitorization is to identify problems or situations offering opportunities for improvement, or deviations from standard practice. The indicators act as alarm signals alerting us to such situations. The SEMICYUC has used this methodology, developing quality indicators and monitoring some of them on a prospective basis.<sup>17,18</sup> We soon hope to have an updated version of these indicators, with the purpose of adjusting them to the available scientific evidence. Preliminary data of this review reflect the need for the indicators to be dynamic, taking into account that the quality of the scientific evidence is even more controversial in intensive care medicine than in other specialties.<sup>19</sup> The idea is to establish an electronic support to facilitate monitorization of the indicators. Likewise, the possibility has been considered of incorporating some of them to the management information systems that are gradually being implemented in the Units. These indicators have been cited by other scientific societies,<sup>20,21</sup> and have been published on the website of the European Society of Intensive Care Medicine (ESICM). At present, the SEMICYUC is collaborating in the Safety Task Force with the purpose of establishing consensus-based indicators allowing (together with other instruments) the evaluation of quality and safety in European ICUs. More specifically, in the critical cardiological care setting, the Analysis of Delays in Diagnosing Acute Myocardial Infarction Group has developed a map of 27 indicators for measuring healthcare quality in patients with acute coronary syndrome—including indicators of technical processes, drugs and outcome indicators.<sup>22</sup>

Registry systems are a powerful instrument for evaluating the characteristics of a given population, of the healthcare provided, and of its effectiveness. The usefulness of such registries has been widely demonstrated in areas of great importance such as healthcare planning, analysis of the utilization of healthcare technologies, the evolution of medical service quality, and clinical and epidemiological

research.<sup>23</sup> In intensive care medicine there are important antecedents reflecting how these registry systems are able to provide valid and precise information for analyzing epidemiological findings referred to certain patient populations. On the other hand, these systems constitute a tool for quality improvement by making it possible to evaluate and compare the quality of the processes both in a given institution over time and among different hospitals. Thus, registries such as the Spanish National Study on the Vigilance of Nosocomial Infections in Departments of Intensive Care Medicine (ENVIN)<sup>24</sup> and the ARIAM (with a long trajectory) have been integrated as part of the activity of many ICUs in this country. Another more recent initiative, the influenza A registry of the SEMICYUC, has generated current information on an emerging disease with unknown clinical repercussions, and has made it possible to adapt the resources to the needs in each given moment.<sup>25</sup> In the year 2010, a SEMICYUC registries platform has been created that will afford information on the quality of different healthcare processes, ensuring compliance with the ethical and legal requirements of a registry system. At present, the ARIAM and RECCMI (Spanish Heart Surgery Registry) have already been incorporated, and the aim is to gradually incorporate other registries such as those relating to brain death, cardiac arrest or therapeutic hypothermia in cardiac arrest.<sup>26</sup>

In the context of the multiple institutional patient safety initiatives in recent years, the Declaration of Vienna, led by the ESICM and including also the SEMICYUC and other scientific societies, underscores the commitment of the professionals in Intensive Care to improve the quality and safety of the medical care provided.<sup>27</sup> In this line, the SEMICYUC has aimed to develop strategic lines for reducing risk in medical care. The Critical Patients Safety and Risk Project (SYREC), led by the Management, Organization and Planning Group, is an example of this initiative. Its main objectives are to promote safety awareness, train intensivists in this discipline, promote the reporting of incidents, and investigate the epidemiology of adverse events—all with the purpose of favoring improved safety among critical patients. The study on incidents and adverse effects in intensive care medicine,<sup>28</sup> financed by the Quality Agency of the MSPSI through a collaboration agreement, is the most ambitious study carried out to date in our setting, and offers a diagnosis of the situation found in most of the ICUs in Spain—effectively answering the question: “How much damage do we cause our patients?” Adverse events are common in our Units, and many of them are avoidable. These results offer us real and specific information that should contribute to improve healthcare practice. The Critical Patient Safety Training Plan of the SYREC project aims to offer safety training for professionals in Intensive Care, based on a teaching system that contemplates different levels of qualification (diploma, monitor and instructor), and to create an operative structure encompassing the entire national territory—guaranteeing achievement of the safety aims in critical patients. To date, and financed by the Quality Agency of the MSPSI, two advanced courses and a basic course have been imparted, allowing the training of over one hundred professionals in this field. Clinical research in patient safety and training of the implicated professionals are undoubtedly the key to improving safety in our Units.

In the light of the results of a recently published first survey, safety awareness in our Units is still seen to be insufficient, though there are strong points that can favor the implementation of initiatives to enhance secure information transmission and the analysis of safety problems.<sup>29</sup>

One of the main problems of current medicine is the imbalance between what high quality scientific evidence establishes as advisable, and its actual application in clinical practice. In the United States, a now classical study showed patients to receive only 50% of the indicated medical care.<sup>30</sup> It seems that we are more concerned and motivated to extract new evidence than to subsequently put it to use in daily clinical practice. In effect, only 14% of all new scientific discoveries find their way into systematic clinical practice, and this moreover takes an average of 17 years.<sup>31</sup> Through different methodologies, the transfer of knowledge aims to reduce such errors of omission, offering professionals tools for clinically applying the available scientific evidence.<sup>32</sup> An example of this is the Edusepsis study, led by the SEMICYUC, and which through an educational and teamwork program has been able to introduce the guidelines of the “Surviving sepsis” campaign—improving not only adherence to the recommended measures but also the mortality rate among such patients.<sup>33</sup>

Infection associated to medical care is one of the main problems related to patient safety. The nosocomial infection vigilance systems can be regarded as an example of how adverse events should be monitored. The use of consensus-based definitions, the systematic collection of information, and the exploitation and diffusion of data are key elements in the management of these incidents. The Bacteremia Zero (BZ) project, developed by the MSPSI in collaboration with the SEMICYUC, is another initiative for safety improvement that has afforded excellent results—with the collaboration of many Spanish ICUs—and where interdisciplinary work has produced its benefits. The project has combined a package of specific measures for preventing vascular catheter-related bacteremia (CRB) with the application and development of a set of integral safety measures. The results reflect a reduction of over 50% in these infections, with acceptable adherence to and application of the tools included in the safety package. In recent months, the SEMICYUC has also launched the Pneumonia Zero project, which based on methods and structures similar to those found in the BZ project aims to reduce the incidence of ventilator-associated pneumonia (VAP). The idea is to apply a package of recommendations (obligatory and optional) for preventing VAP (reducing the national rate to under 8 episodes per 1000 days of mechanical ventilation), and reinforce the development of safety instruments in the critical patient setting.

Professional competence is one of the basic requirements for ensuring the quality of healthcare in any area of medical practice. Spanish intensive care medicine has a specific training program allowing acquisition of the skills needed for correct critical patient management.<sup>34</sup> On the other hand, the SEMICYUC has participated in the Competency-based Training in Intensive Care Medicine in Europe (CoBaTriCe) project, led by the ESICM, which aims to harmonize training in intensive care medicine, guaranteeing a common standard of clinical competence.<sup>35</sup> Clinical

simulation as a learning and competences evaluation tool has been incorporated in recent years, and appears to be effective in improving patient safety. Recently, the SEMICYUC, in conjunction with the IAVANTE Foundation, has carried out a structured objective clinical evaluation in intensive care medicine to assess the competences contained in the specific map of the medical specialty.<sup>36</sup>

These are some examples of how quality and safety in patient care form part of the inherent values of a scientific Society, and which has recently received recognition of its work in the form of a Quality Excellence Prize in the Scientific Societies category. This award, granted by the Avedis Donabedian Foundation, is the result of the work of many Spanish professionals in intensive care medicine, who through their daily efforts strive to reach excellence in their professional activity – with the support of a scientific Society committed to this same goal.

Although much work has been done and much has been achieved, the spirit of improvement must be maintained – targeting effort particularly to less developed areas such as teamwork, improved communication, the participation of the patient, or responsibility awareness.<sup>37</sup> Surely motivation in this sense will not be lacking on the part of both the critical care professionals and the SEMICYUC.

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