Commentary

Simplified Acute Physiology Score III: a project for a new multidimensional tool for evaluating intensive care unit performance

Guillermo Vazquez[1], Salvador Benito[2] and Ricardo Rivera[3], from the Spanish Project for the Epidemiological Analysis of Critical Care Patients

[1]Departamento de Medicina y Urgencias, Hospital de la Santa Cruz y San Pablo, Barcelona, Spain
[2]Hospital de la Santa Cruz y San Pablo, Barcelona, Spain
[3]Hospital Virgen de las Nieves, Granada, Spain

Correspondence: G Vazquez, gvazquez@hsp.santpau.es

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Abstract

The Simplified Acute Physiology Score III Outcomes Research Group is developing an international multidimensional instrument for the global evaluation of intensive care unit performance. Among its specific objectives are the update of a severity of illness index (Simplified Acute Physiology Score) with a mortality prediction equation, with the hindsight of recent years, and the creation or application of novel instruments in the areas of infections and cost-effectiveness. Some important measurements such as the quality of life and the satisfaction of patients and professionals are not included. A further aim is the achievement of international validation.

Keywords cost-effectiveness, intensive care unit, outcomes research, quality of life, severity of illness index

Over the past 25 years, intensive care units (ICUs) have created a body of pathophysiologic knowledge that has enabled advances to be made in the treatment of patients. At the same time, a series of tools have been designed to evaluate, from multiple perspectives, the care outcomes obtained. Research has also been conducted in parallel on improvements in ICU management, especially the European Research in Intensive Care Units (EURICUS) Project [1].

In short, a set of central parameters or dimensions has been developed that determine the outcomes obtained. Standing out among these central dimensions are the patient case mix, the technical competence of the medical and nursing teams, the resources available, and the culture and organisational model. Outcomes can in turn be summarised under five different subheadings: mortality, quality of life of survivors, consumption of resources generated and associated costs, level of satisfaction of patients, relatives and health care professionals, and continuous quality improvement.

The Simplified Acute Physiology Score (SAPS) III Outcomes Research Group [2,3] is developing an ambitious observational study aimed at creating a multidimensional instrument for the global evaluation of ICU performance. Among its specific objectives are the update of SAPS in the light of the experience of recent years and the creation or application of novel instruments in the areas of infections and costs. A further aim is the achievement of international validation [4]

Aspects investigated

With respect to mortality, a third version of SAPS [3] is being prepared that will strengthen some features of the score. It will thus incorporate the reasons for admission, a larger number of comorbidities and patient location prior to ICU admission. The most novel feature, however, is that the SAPS will take account of the variability in clinical practice, so that it will gather the withdrawal or not of active therapeutic measures and the transfer to other hospitals [5]. Because

EURICUS = European Research in Intensive Care Units; ICU = intensive care unit; SAPS = Simplified Acute Physiology Score.

mortality is considered at 28, 60, and 90 days, the design would be improved if it were taken into account that, after ICU discharge, the mortality is affected by other influences that become progressively more important with the passage of time [6]. This aspect, which receives little attention in existing severity indexes, could improve our ability to predict immediate and late mortality.

On the basis of our experience with the APACHE III system [7], generic tools incorrectly classify and discriminate the mortality of patients with infections. The creation of a new index of severity and a mortality prediction equation would therefore seem appropriate, especially given the very high cost of new drugs. We need an instrument that allows us to assess their true effect on the mortality of these patients.

Regarding resource consumption and costs, a key proposal is to obtain data on the costs per patient [8]. However, although of great interest, it is highly possible that most ICUs will not be able to provide this information, which may be difficult for health care professionals to gather. This is because the decentralised management of economic resources has not been implemented by most ICUs and because clinicians, even many heads of service, have inadequate knowledge of budget management issues [1,8].

The EURICUS study reported that 51% of ICU costs are fixed and 49% are variable. Differences in costs among ICUs depend especially on the use of certain drugs and the nurse/bed ratio. It is possible that, with their current level of knowledge, physicians could make a greater contribution to the rationalisation of costs, by managing novel and very costly new therapies using the evidence-based medicine approach [9]. With respect to the nurse/bed ratio, an instrument such as the Therapeutic Intervention Scoring System, in any of its current versions [10], is needed to evaluate the adequate nursing workload. SAPS III does not gather any of these data, so there may be a loss of information that is important for the interpretation of results obtained in other areas of the study.

Quality of life is not included among the objectives of the SAPS III study. One of the advantages of its management as an outcome is that treatments can be selected that offer a substantial improvement in the quality of life of patients for the same mortality [11]. The best known example in critical medicine is the approval of thrombolytic treatment for ischemic stroke, based on an improvement of the quality of life and not of the mortality, which remains unchangeable [12].

Given the objective relationship that exists between other dimensions that are not analysed in the study (e.g. satisfaction [13] and culture [14], among others), it would be desirable to include these dimensions in a tool that attempts to offer an overall and multidimensional analysis of ICU performance [2].

The wide variability among countries or even within countries with regard to patient type, resources and professional profile means that tools designed for international application present defects that must be resolved at a local level [7].

The computer systems now in wide use by hospitals should allow the data for many of these instruments to be collected automatically as part of routine care. This implies a competitive advantage that SAPS III will incorporate in its design. Nevertheless, the maintenance and continuous improvement of these systems and the development of the appropriate software support requires novel solutions to be sought, so that this scale of effort is matched by adequate funding during the time required for the definitive incorporation of these instruments in the ICUs [15].

Competing interests

None declared.

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