

Andrew Rhodes
Rui P. Moreno
Jean-Daniel Chiche

ICU structures and organization: putting together all the pieces of a very complex puzzle

Received: 20 July 2011
Accepted: 20 July 2011
Published online: 15 September 2011
© Copyright jointly held by Springer and ESICM 2011

This editorial refers to the article available at:
doi:[10.1007/s00134-011-2300-7](https://doi.org/10.1007/s00134-011-2300-7).

A. Rhodes
Department of Intensive Care Medicine,
St George's Healthcare NHS Trust and St Georges
University of London, London SW17 0QT, UK
e-mail: andyr@sgul.ac.uk
Tel.: +44-208-7255699

R. P. Moreno
Unidade de Cuidados Intensivos Polivalente,
Hospital de St. António dos Capuchos,
Centro Hospitalar de Lisboa Central,
E.P.E, Lisbon, Portugal
e-mail: r.moreno@mail.telepac.pt
Tel.: +351-3-153784

J.-D. Chiche (✉)
Réanimation Médicale, Hôpital Cochin,
AP-HP, Paris, France
e-mail: jean-daniel.chiche@cch.aphp.fr
Tel.: +33-1-58412739

J.-D. Chiche
Université Paris Descartes, Paris, France

J.-D. Chiche
Inserm U1016, Institut Cochin, Paris, France

J.-D. Chiche
CNRS UMR-8104, Paris, France

J.-D. Chiche
27 rue du Faubourg Saint-Jacques,
75679 Paris Cedex 14, France

During the first decade of this century, many industrialized countries have witnessed significant changes in the dimensions that delineate the context in which healthcare professionals practice. These are times when we need to look back and re-examine whether the system of care that has developed still meets the needs of the population it intends to serve. This is especially true for our young yet mature specialty of intensive care, which relies on highly organized and dedicated teams to treat the most vulnerable patients in a challenging environment.

It has been 25 years since Knaus taught us that efficient and effective intensive care teams are those that prioritize the organization and distribution of skilled professionals over and above individuals, magic bullets or technology [1]. This may now be more true than ever, as we recognize that quality and safety require an appropriate environment for the skilled and trained specialists to work as teams and deliver optimal care for patients 24 h a day, 7 days a week. The structures that underpin these 'teams' caring for the sickest of all patients are vital for the teams to be able to function in an optimal manner. These structures include the concepts of what an intensive care unit (ICU) actually looks like, how it should be built, to what standards and from what materials it should be constructed as well as how the ICU teams should be formed, trained and managed. Many of these issues are contentious and often hotly debated, even within regions of an individual country, with major variations presented in all the published studies [2, 3]. All of these points are important to understand, however, as both short- and long-term outcomes are unlikely ever to be optimal if sub-optimal structures prevent appropriate care processes taking place [4].

The European Society of Intensive Care Medicine (ESICM) was one of the first intensive care organizations

to start the debate about the minimal structural requirements for the practice of our speciality. Back in 1990, a Task Force of the ESICM first debated these issues in a book, “Management of Intensive Care—Guidelines for better use of resources” [5]. Later on, another ESICM Task Force published the first European recommendations on minimal requirements for intensive care departments “Guidelines for the utilisation of intensive care units” [6]. This was soon followed up by a more comprehensive document in 1997 [7]. Although incomplete and debatable, these documents contributed to setting up the minimal standards for the structural and organizational characteristics of European ICUs, and they have been widely used by a generation of intensivists as a blueprint to build (or re-build) and organize their ICUs.

It is quite clear that the speciality that we practice in has evolved over time, and therefore the minimal requirements as described in 1997 are now in need of being updated. In 2009 the ESICM, together with over 50 other critical care societies, signed the Declaration of Vienna [8]. This document mandated these societies to improve both the quality of care and safety for all critically ill patients. Part of this process has entailed exploring these minimal standards as previously described and updating the 1997 document. The updated version is now published in this issue of the Journal [9]. This version tackles a variety of issues that sit alongside the structural requirements. What is an ICU? What are its objectives? What are the functional and activity criteria by which it should be judged? These are all questions that are addressed in this document, which includes some potentially controversial recommendations. Some of these may not even be applicable at the moment to all healthcare systems, but they may indicate a path to better, safer intensive care delivered by more satisfied caregivers. Recommendations on staffing levels exemplify this point very well. The numbers of nursing personnel available per patient (or per patient’s level of care) vary widely even within Europe.

Some countries insist on a one nurse to one patient model; others either cannot afford this luxury or do not believe the need is established. Whichever the reason, the strong and clear guidance provided by this document will help ICU directors come to their own decision and will be able to be used to support their requests to their own set of administrators and managers. Others’ recommendations are more consensual. The emphasis on the structures of the units and their personnel as compared to the importance of necessary technology is a reflection of our changed perceptions. It is clear that technology rarely has the impact on outcome that was once thought, apart from in the most extreme of situations [10]. Technology may, however, enable us to design ICUs that will better take into account the myriad of other determinants that interact on team performance and the ability of ICU structures to accommodate patients’ and families’ needs [11].

Finally, many other factors that have been demonstrated to be influential in the performance of the ICU, such as communication, culture, team working, the existence of multi-professional meetings and clinical rounds [12], are missing or are incompletely addressed. We recognize that we may not yet know enough to make precise recommendations on many of these issues and that these factors are heavily culture-dependent. We sincerely hope that this document will get old quickly, and objective data, rather than mainly expert opinions, will inform us how to set up the most appropriate ICU structures to meet the needs of our patients. We need to accept the fact that sometimes the available evidence is not all that we would wish for and pragmatism is necessary in order to direct our decisions. This document represents beyond any doubt a step forward to all that seek guidance in the actual recommendations for structural requirements for the adequate practice of our speciality. The authors should be congratulated for helping to describe these minimal standards and to take the debate forward.

References

1. Knaus WA, Draper EA, Wagner DP, Zimmerman JE (1986) An evaluation of outcome from intensive care in major medical centers. *Ann Intern Med* 104:410–418
2. Wunsch H, Angus DC, Harrison DA, Collange O, Fowler R, Hoste EAJ, de Keizer NF, Kersten A, L-ZW T, Sandiumenge A, Rowan KM (2008) Variation in critical care services across North America and Western Europe. *Crit Care Med* 36:2787–2793
3. Adhikari NKJ, Fowler RA, Bhagwanjee S, Rubinfeld GD (2010) Critical care and the global burden of critical illness in adults. *Lancet* 375:1339–1346
4. Donabedian A (1988) The quality of care. How can it be assessed? *J Am Med Assoc* 260:1743–1748
5. Reis Miranda D, Langreh D (1990) National and regional organisation. In: Reis Miranda D, Williams A, Loirat P (eds) *Management of intensive care—guidelines for better use of resources*. Kluwer Academic Publishers, pp. 83–102
6. Vincent J-L, Artigas A, Bihari D, Carrington da Costa RBED, Ferdinande P, Iapichino G, Lamy M, Loirat P, Miranda D, Munoz-Sanchez M, Papadatos J, Remhart K, Suter P, Takala J, Thijs LG, Vesconi S, Willatts S (1994) Guidelines for the utilisation of intensive care units. *Intensive Care Med* 20:163–164
7. Ferdinande P, Members of the Task Force of the European Society of Intensive Care Medicine (1997) Recommendations on minimal requirements for Intensive Care Departments. *Intensive Care Med* 23:226–232

-
8. Moreno RP, Rhodes A, Donchin Y (2009) Patient safety in intensive care medicine: the Declaration of Vienna. *Intensive Care Med* 35:1667–1672
 9. Valentin A, Ferdinande P (2011) Recommendations on basic requirements for Intensive Care Units: structural and organisational aspects. *Intensive Care Medicine* (in press)
 10. Bastos PG, Knaus WA, Zimmerman JE, Magalhães A Jr, Wagner DP, The Brazil APACHE III Study Group (1996) The importance of technology for achieving superior outcomes from intensive care. *Intensive Care Medicine* 22:664–669
 11. Shortell SM, Zimmerman JE, Rousseau DM, Gillies RR, Wagner DP, Draper EA, Knaus WA, Duffy J (1994) The performance of intensive care units: does good management make a difference? *Med Care* 32:508–525
 12. Rothen HU, Stricker K, Einfalt J, Bauer P, Metnitz PGH, Moreno RP, Takala J (2007) Variability in outcome and resource use in intensive care units. *Intensive Care Med* 33:1329–1336