EDITORIAL

Evidence supports the superiority of closed ICUs for patients and families: Yes

Jean-Louis Vincent*

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“Too many cooks...”

Most intensive care units (ICUs) around the world, with the general exception of the USA, now operate according to a “closed” model, i.e., patients are admitted under the full responsibility of a trained intensivist, as opposed to the “open” format in which patients are admitted under the care of another attending physician and intensivists are just available for consultation [1]. In a worldwide study of 1265 ICUs in 75 countries in 2007, 83 % of the units were closed: North America had the lowest proportion of closed ICUs (63 %) and Western Europe the highest (89 %) [1]. Of 111 ICUs across nine Canadian provinces, 94 (85 %) reported a closed format model of care in 2015 [2]. In Asia, Arabi et al. [3] reported that 216 of 335 (65 %) ICUs surveyed in 2013 were closed format and in the UK, all ICUs analyzed as part of the ICNARC project in 2010/2011 reported that their unit model was closed [4]. Similar to the situation in the UK, in Australia and New Zealand the vast majority of ICUs are run in closed format [5].

There is good evidence that closed ICUs are associated with better outcomes and better quality of care, both in general [6–10] and in subspecialty [11] units. Several studies have reported a positive impact on outcomes when the ICU model was changed from open to closed [6–8]. In one example, a before-after cohort study, Parikh et al. [7] reported that the change from an open to a closed format was associated with shorter ICU stay and improved quality measures, including less ventilator-associated pneumonia and central vein access device infection. ICU costs were also reduced [7]. Kahn et al.

also reported improved quality of care in closed (high-intensity) compared to open (low-intensity) ICUs, as shown by increased use of evidence-based quality indicators including sedation interruption and intensive insulin treatment [9]. In an early meta-analysis of 26 such studies comparing closed and open ICU models, Pronovost et al. [10] reported that a closed model (or high-intensity intensivist staffing) was associated with lower mortality and shorter length of stay than an open format (low-intensity intensivist staffing). More recently, Wilcox et al. similarly reported that high-intensity intensivist staffing was associated with reduced ICU and hospital mortality and shorter stay in a meta-analysis of 52 studies [12].

Clearly, therefore, closed-format ICUs have a beneficial impact on patient outcomes. However, they also have positive effects on other aspects, including staff and family satisfaction. These concepts are difficult to define and quantify, and the published data on this issue are relatively sparse. Nevertheless, good communication with adequate provision of coherent information is known to be a key factor in family satisfaction with intensive care [13]. Having a single physician in charge of patient management (closed format) will ensure that communication about treatments and prognoses is consistent; having several specialists involved in patient management can result in mixed and confusing messages. In an early study by Carson et al. [6], nurses working in closed ICUs were more likely to feel confident in the clinical judgment of the attending physician than those in open ICUs. Paul Olson et al. reported that surgeons working in a unit where an ICU physician was primarily responsible for all patients were significantly less likely to report conflicts with their intensivist colleagues than surgeons working on a unit where the operative surgeon was primarily responsible for his/her patients [14]. Such conflicts are likely to impact negatively on communication with patients and families. Evaluation of prognosis may

*Correspondence: jlvincen@intensive.org
Department of Intensive Care, Erasme Hospital, Université Libre de Bruxelles, Route de Lennik 808, 1070 Brussels, Belgium

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also vary among physicians, and relatives may choose to believe the most optimistic report, creating tension if the patient's condition then deteriorates. In a recent study comparing relatives' satisfaction with the "courtesy, respect, compassion" shown by members of staff, the percentage of families that reported complete satisfaction was higher in a closed medical ICU than in an open neuro-ICU [15]. The authors suggested that this may have been related to the difference in format, although clearly their data were unable to demonstrate causality.

There is good evidence that intensivist-led patient management is associated with better patient outcomes than are achieved in units without intensivist cover. Moreover, an ICU team led by an experienced intensivist in a closed-format unit provides quality care more efficiently than in an open unit where no one, including the patient and relatives, is quite sure who has final responsibility for patient management. This model ensures that patients and their families receive optimal appropriate, coordinated management and consistent good communication, a key marker of satisfaction; and surely our patients deserve the very best.

Compliance with ethical standards

Conflicts of interest

I have no conflicts of interest to declare related to this manuscript.

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