

In search of the ideal Intensive Care Unit model

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INTRODUCTION

Although Intensive Care Units (ICUs) have a relatively short history, they have made tremendous progress during their lifetime and, furthermore, they had a dramatic affect on every aspect of medicine. Starting from the polio epidemic in mid 50s when medical and dental students applied respiratory support by hand, we are now at the point where ICU is often seen as a network of systems. According to some researchers, ICU can be seen as an example of high reliability organization (HRO) in healthcare. High reliability organization apply systems engineering to ensure the technology, work process, and culture are all carefully integrated and orchestrated to deliver high levels of safety. They are used usually in areas that require near error-free performance, such as commercial aviation and nuclear power are the solution [1].

Different models of ICU

The “traditional” ICU model is that of a dedicated hospital location, specially staffed and equipped to provide observation, care and treatment to patients with actual or potential life-threatening illnesses, injuries or complications, from which recovery is possible. The ICU provides special expertise and facilities for the support of vital functions and utilizes the skills of staff trained and experienced in the management of these problems.

Yet, the ever growing database of medical knowledge, the technological progress along with the growing need

for intensive and more personalized medical care is continuously posing new challenges. Over the decades, several ICU models have been implemented and several classifications of ICU have been developed. The most widely accepted is based on the level of care provided (ACCM guidelines 2003) and separates ICUs in three levels (I–III) [2]. The co-existence of different levels in the hospital functional system is often. Intermediate care units, high dependency units and their specialty based forms (coronary care unit, post anesthesia care unit, etc.) are considered to work as a step-down or step-up care level, a bridge between ward and ICU. Critical care outreach teams, rapid response teams and hospitalists came to condense this network of different levels and types of care units.

Another classification is pathology or specialty based. Combined medical surgical ICU (or general ICU) remains the most common type, but solely medical (internal), surgical, pediatric, neonatal, cardiovascular, burn, trauma, neurological/neurosurgical, psychiatric, transplant ICUs are also met. Moreover, some researchers raise the need for dedicated dermatological or obstetrical ICU.

Apart from that, several management models have also been implemented. The role of “intensivists” (specialists in critical care medicine) in managing ICU patients has shown a beneficial impact on patient outcomes in a number of studies. Hence; the closed ICU model, in which patients admitted to the ICU (only after evaluation by the intensivists) are transferred to the care of the latter assigned to the ICU on a full-time basis is the most popular. On the other hand, in an open ICU model, patients are admitted under the care of an internist, surgeon or other primary attending of record, while intensivists are providing expertise via elective consultation. There is also the “golden” mean co-management model, in which both the primary attending of record and the intensivists are collaborating [3, 4].

Finally, we should also keep in mind several facts:

Intensive care is an expensive resource with up to 0.5–1% of gross domestic product and 20% of hospital budgets allocated to intensive care in Western countries. Its high cost means that economic climate affects ICU

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organization as the best “value for money” model is the target.

Staffing is another issue. The optimal level of staffing depends on the type and size of the ICU. Scientific evidence suggests that quality of care in hospital ICUs is strongly influenced by whether intensivists are providing care and the staff organization in the ICU [5]. But, as shortage of intensivists becomes more and more obvious, implementation of The Leapfrog Group safety recommendation becomes problematic. In fact, Leapfrog Group’s 2013 hospital survey results indicate that only 42% of the responding hospitals fully meet The Leapfrog Group’s IPS Standards [6].

Along with those, the demand for larger engagement of the patient and the family in the medical care experience is creating various new visiting policies and decision making strategies.

Is there an ideal model?

Even though there is a lot of evidence about ICU organization, no model can be considered ideal. Every model represents an attempt to assure high performance with the possible lower percentage of error under certain limits (geographical, economical, staffing, cultural, etc.). Today’s models’ greatest drawback is that they are static. They are evolving in lower speeds than medical guidelines, technology, knowledge, culture, ethics, local needs and population do. The future ICU should be ready to identify the needs and to change its organizations in accordance with the “environment” in which they are built. Moreover, they need to be a step ahead in forecasting the future needs [7].

CONCLUSION

Thus, the ideal ICU model is a dynamic, continuously evolving, “living” model. Yet, this concept is easily said rather than applied, as it poses new challenges for all those who are involved in the care of the critically ill. Therefore, further research is needed to investigate the relationships between existing and conceptual models of care and direct patient outcomes.

Keywords: Intensive Care Units (ICU), High reliability organization (HRO), ICU model, General ICU, Ideal model

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Conflict of Interest

Authors declare no conflict of interest.

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