SHORT COMMUNICATION

How to manage an intensive care unit in a safe and secure manner?

Isla Taylor

Taylor I. How to manage an intensive care unit in a safe and secure manner?. J Health Pol Manage. 2022;5(1): 9-10.

ABSTRACT: It can be used to analyse medical decision-making in relation to patient admission and discharge, and it can also be utilised as a learning-training tool. The discrete event simulation model developed matches real-world ICU admission and discharge processes, as well as patient health status, utilising real-world clinical data (instead of using a single value for the length of stay). ICU physicians and nurses from four hospitals have utilised and validated this versatile tool, which allows them to recreate ICUs with various features (number of beds, type of patients who come, congestion level, etc.). We demonstrate the heterogeneity among physicians in their decision-making regarding the issue of the last bed, which are dealt with in a broad sense: it is not simply about the last bed. It's not just about assigning the final available ICU bed; it's also about how the physician makes decisions about patient admission and discharge when the ICU fills up.

Key Words: *Intensive care unit; Management flight simulator; Length of Stay (LoS)*

INTRODUCTION

An Intensive Care Unit (ICU) is a specialised ward inside a hospital that specialises in intensive care. These wards are critical for patients who have a severe clinical state or who require extensive monitoring but are expected to recover. The development of procedures capable of sustaining various physiological systems of patients led to the creation of these units. However, while the aim of intensive care units is well defined, it is less obvious whether patients should benefit from this highly specialised treatment, particularly in resource-constrained situations [1]. In an attempt to clarify this issue, the European Society of Intensive Care Medicine Group on Quality Improvement (WGQI) developed in 2011. The characteristics of patients who might benefit from admission to an ICU: Patients who require monitoring and treatment because one or more vital functions are threatened by an acute (or acute-on-chronic) disease (e.g., sepsis, myocardial infarction, gastrointestinal haemorrhage) or the complications of surgical or other intensive treatment (e.g., percutaneous interventions) that result in life-threatening conditions. Patients who have already failed one of their vital functions, such as cardiovascular, respiratory, renal, metabolic, or cerebral function, but who have a reasonable chance of recovery. Patients with known end-stage drug resistant terminal conditions are generally not admitted. Palliative care may be required at times, involving intense care procedures. Patients who have died of a brain tumour or are on the verge of dying of a brain tumour and for whom organ donation is being considered may be admitted [2].

Despite these efforts to define the characteristics of patients who are likely to be admitted to an ICU (high severity, complex monitoring, and realistic expectations of recovery), admission criteria are rarely used in practise [3]. On the one hand, ICU admission criteria are frequently broad and subject to physician interpretation. On the other hand, concerns like the reasonable likelihood of recovery, prognosis, and quality of life at hospital discharge aren't well-defined concepts for all of the diseases that prompt ICU admission, so there's a lot of variation among doctors [4]. The medical literature's research on patient admission and discharge policies is motivated by the lack of a strict admission protocol and the subjective component in the decision-making process. Patients' admissions and discharges are subjected to triage processes when there is a lack of beds in the ICU, according to several studies. Changes in the management policy of an ICU when it is getting full, and clinicians aim to limit admissions or early discharge patients in better health. In general, a high-bed occupancy ICU increases the number of denied admission requests and the severity threshold for admitting a patient to the ICU; it also reduces patient Length of Stay (LoS). Often, the major goal is to get the patient out of the ICU [5]. Cancellations of scheduled surgeries and transfers of patients to another hospital are also implications of an excessively high bed occupancy rate. As a result, patient discharge is influenced not just by aspects linked to the patient's health, but also by factors such as the environment and specific organisational issues [6].

A comparative analysis of physician admission and discharge choices for ICU patients aids in the investigation of all of this. It can be challenging to do a retrospective statistical analysis of ICU administrative records [7]. Decisions are made in unique situations, and neither all circumstances influencing decision-making, nor the physician responsible for the decision, are recorded. Simulation approaches, on the other hand, allow for the replication of scenarios as well as the control of all aspects that influence the dynamics and decision-making in complex systems [8].

DISCUSSION

Virtual environments that accurately recreate the characteristics and dynamics of an ICU can be used to safely analyse patient admission and inpatient discharge choices. A Management Flight Simulator (MFS) that simulates a real ICU is provided in this article. The simulation of the patients' stay by changing their health state (rather than employing a single number for the LoS) and the replication of real discharge and admission processes are the major characteristics that set this simulator apart from others [9]. Both of these features are necessary for developing believable virtual scenarios that allow users to operate the ICU as they would in a real ICU, with the same information and surroundings. All admission/discharge decisions made by users are recorded in the simulator. Consumers' bed work practices can be described by analysing recorded data concerning cancelled procedures, early released inpatients, and delayed admissions, redirected patients, and so on. Differences between users can also be discovered and quantified, as well as the identification of instances in which users make the most different decisions [10]. These difficult scenarios are of major interest to doctors because they promote discussions about developing consensus norms for hospital triage choices, which can assist reduce variability in medical practise [11]. As a result, the built flight simulator serves two purposes: first, to define how physicians made decisions and to analyse physician variability in making such decisions; and second, to provide a teaching tool for ICU management.

It is critical in ICU administration, and by extension, in hospital management in general, to make optimal use of all resources. Furthermore, the bed occupancy rate is very variable and unpredictable, since it is affected by both planned and unplanned variables, such as surgery that needs patients to be admitted to the ICU during the postoperative period, as well as random causes such as patient admissions [12]. This means that, in some situations, management practises centred on high occupancy, in order to prevent squandering a costly resource, must deal with the issue of a patient in need of a bed. When a patient is stable enough, he or she should be transferred to a less-cared-for location, and the assessment should be entirely solely on

Editorial Office, Journal of Health Policy and Management, Singapore

Correspondence: Isla Taylor, Editorial Office, Journal of Health Policy and Management, Singapore, E-mail: editor.jhpm@scholarlymed.com

Received: 06-Jan-2022, Manuscript No. PULHPM-22-4152; Editor assigned: 08-Jan-2022, PreQC No. PULHPM-22-4152(PQ); Reviewed: 20-Jan-2022, QC No. PULHPM-22-4152 (Q); Revised: 22-Jan-2022, Manuscript No. PULHPM-22-4152(R); Published: 27-Jan-2022, DOI: 10.37532/pulhpm.22.5(1).9-10

clinical judgement. Clinicians are aware of the hazards of discharging a patient ahead of schedule in order to admit another when the ICU is full, but these decisions are based not only on the patient's health but also on organisational and collaboration concerns [13].

More study on all elements of critical care rationing is needed to solve current shortcomings, according to the SCCM guidelines for ICU admission, discharge, and triage. This paper contributes to this research by creating, for the first time, an ICU MFS that replicates the necessary operational processes for handling patient flow and interacts with the user by presenting the same patient clinical information and in the same way that ICU information technologies do in real ICUs [14]. The simulator, in particular, enables for the representation of data relevant to the ICU's uncertain, complicated, and dynamic properties, as well as their patients' admission and discharge processes. The goal of this simulator is to provide a decision-making tool that collects user-informed decisions to aid in decision-making [15]. Other more research shows that using MFS had a positive impact on participants' learning. We also suggest this ICU simulator as a learning tool from two perspectives based on this. On the one hand, medical and nursing students at universities might utilise this simulator to study how ICUs are run [16]. When students complete the simulation, they will participate in the ICU's decision-making process for the first time, but in a safe atmosphere where their decisions will not harm patients. Aside from that, pupils can compare their own results to what is expected of them [17].

CONCLUSION

The goal of our future study is to create a methodology that makes it easier to analyse the data collected by the simulator. The number of redirected emergency patients, cancelled procedures, reduced stays, and average length of shortened LoS are now the evaluation criteria, and we are focusing on these statistics to detect variations among users. These comparisons are conducted with the complete simulation's overall findings. The application also saves all of each user's decisions and when they were made, allowing for a dynamic comparison of ICU management. As a result of a normative analysis of the management, it is important to develop metrics to measure the dynamics of the management, as it is presented in obtaining different management policies (aggressive, equitable, and cautious). As a result of solving stochastic optimization problems as part of a normative analysis of decision-making this type of policy, or others like it, could be used to categorise physician behaviour. In summary, we want to use the simulator to gather data regarding ICU management so that we may test ideas about clinicians' decision-making, examine triage processes, and spot biases and patterns.

REFERENCES

1. Valentin A, Ferdinande P. Recommendations on basic requirements for intensive care units: structural and organizational aspects. Intensive Care Med. 2011;37(10):1575-1587.
2. Barnato AE, Kahn JM, Rubenfeld GD, et al. Prioritizing the organization and management of intensive care services in the United States: the PrOMIS Conference. Critical Care Med. 2007;35(4):1003-1006.
3. Anderson D, Price C, Golden B, et al. Examining the discharge practices of surgeons at a large medical center. Health Care Manage Sci. 2011;14(4):338-347.
4. Dobson G, Lee HH, Pinker E. A model of ICU bumping. Operations Research. 2010;58(6):1564-1576.
5. Walter KL, Siegler M, Hall JB. How decisions are made to admit patients to medical intensive care units: A survey of MICU directors at academic medical centers across the United States. Critical Care Med. 2008;36(2):414-420.
6. Lin F, Chaboyer W, Wallis M. A literature review of organisational, individual and teamwork factors contributing to the ICU discharge process. Aus Critical Care. 2009;22(1):29-43.
7. Gattinoni L, Radrizzani D, Simini B, et al. Volume of activity and occupancy rate in intensive care units. Association with mortality. Intensive Care Med. 2004;30(2):290-297.
8. Young MP, Gooder VJ, McBride K, et al. Inpatient transfers to the intensive care unit. J Gen Internal Med. 2003;18(2):77-83.
9. Lefrant JY, Garrigues B, Pribil C, et al. The daily cost of ICU patients: a micro-costing study in 23 French intensive care units. Anaesthesia Critic Care Pain Med. 2015;34(3):151-157.
10. Cardoso LT, Grion CM, Matsuo T, et al. Impact of delayed admission to intensive care units on mortality of critically ill patients: a cohort study. Critical Care. 2011;15(1):1-8.
11. Chalfin DB, Trzeciak S, Likourezos A, et al. Impact of delayed transfer of critically ill patients from the emergency department to the intensive care unit. Critical Care Med. 2007;35(6):1477-1483.
12. Kramer AA, Higgins TL, Zimmerman JE. Intensive care unit readmissions in US hospitals: patient characteristics, risk factors, and outcomes. Critical Care Med. 2012;40(1):3-10.
13. Marmor YN, Rohleder TR, Cook DJ, et al. Recovery bed planning in cardiovascular surgery: A simulation case study. Health Care Manage Sci. 2013;16(4):314-327.
14. Nates JL, Nunnally M, Kleinpell R, et al. ICU admission, discharge, and triage guidelines: A framework to enhance clinical operations, development of institutional policies, and further research. Critical Care Med. 2016;44(8):1553-1602.
15. Elsawah S, McLucas A, Mazanov J. An empirical investigation into the learning effects of management flight simulators: A mental models approach. Europ J Operational Res. 2017;259(1):262-272.
16. Grunewald M, Heckemann RA, Gebhard H, et al. COMPARE radiology: creating an interactive Web-based training program for radiology with multimedia authoring software. Academic Radiology. 2003;10(5):543-553.
17. Mallor F, Azcárate C, Barado J. Control problems and management policies in health systems: application to intensive care units. Flexible Services and Manuf J. 2016;28(2):62-89.