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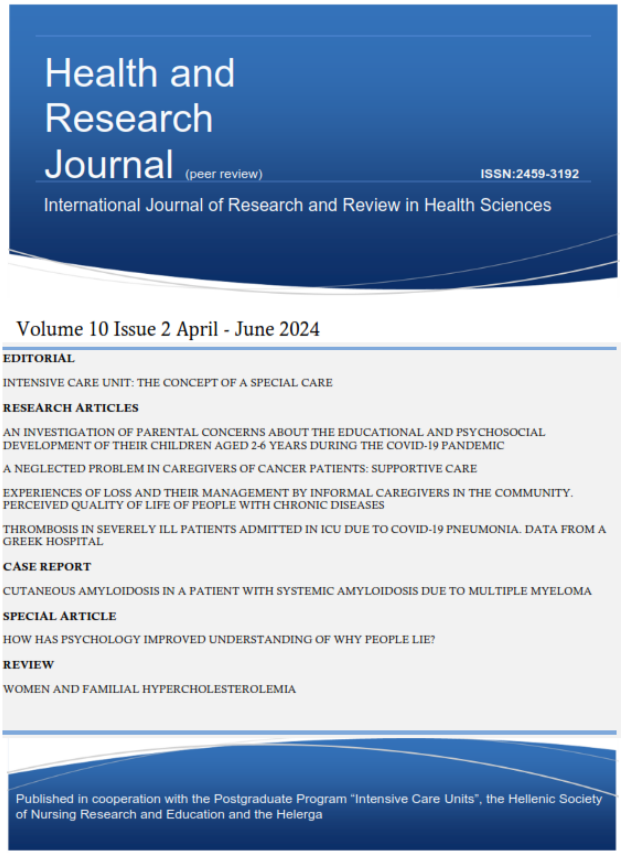

Intensive Care Unit: The concept of a special care

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EDITORIAL ARTICLE

INTENSIVE CARE UNIT: THE CONCEPT OF A SPECIAL CARE

Intensive Care (IC), also known as Critical Care (CC), is a multidisciplinary and inter-professional specialty dedicated to the comprehensive management of patients having, or at risk of developing acute, life-threatening organ dysfunction. IC uses an array of technologies that provide support of failing organ systems, particularly the lungs, cardiovascular system, and kidneys, and it is delivered by a skilled inter-professional team that includes physicians, nurses, respiratory therapists, physiotherapists, pharmacists, microbiologists, social workers, ethicists, spiritual care, and many others, who share common expertise in the management of acute organ system insufficiency.

An Intensive Care Unit (ICU) is an organized system for the provision of care to critically ill patients that provides intensive and specialized medical and nursing care, an enhanced capacity for monitoring, and multiple modalities of physiologic organ support to sustain life during a period of life-threatening organ system insufficiency. An ICU is based in a defined geographic area of a hospital.

The definition of an ICU bed varies and is heavily shaped by public health priorities and regulatory requirements, as well as by economic factors, including resource availability and approaches to hospital and physician reimbursement.

A Level One ICU is capable of providing oxygen, noninvasive monitoring, and more intensive nursing care than on a ward, while a Level Two ICU can provide invasive monitoring and basic life support for a short period of time. A Level Three ICU provides a full spectrum of monitoring and life support technologies, serves as a regional resource for the care of critically ill patients, and may play an active role in developing the specialty of IC through research and education.

The factors that make clinical care intensive and that delineate the provision of that care as separate from routine clinical care can be classified into five domains: a) *The Physical Space*, large enough to comfortably accommodate the desired number of ICU beds. Each bed needs access from all sides to allow patient assessment and treatment and effective and reliable implementation of infection control measures. A central nursing station should reproduce data from individual patient monitors. b) *Support and monitoring technology*, for the continuous monitoring of patient physiologic status, depended both on available resources and on the nature of the patient population served. Monitoring may be non-invasive (transcutaneous oxygen saturation, non-invasive monitoring of heart rate and blood pressure, or continuous ECG or EEG monitoring) or invasive (hemodynamic monitoring, monitoring of intracranial pressure). Data should be continuously displayed so that they are readily accessible to all involved in caring for the patient, and recorded so that clinicians can monitor trends and respond appropriately. c) *Human Resources*, with specially qualified, interdisciplinary, and inter-professional clinical team providing care. The members of the medical and nursing teams will have advanced specialty qualifications in IC medicine and experience in the care of the critically ill. The team members may include nurse practitioners, respiratory therapists who manage the mechanical ventilator, physiotherapists who support mobility and rehabilitation, a nutritionist skilled in the enteral and parenteral feeding needs, a pharmacist with particular expertise in drug-drug interactions and optimal dosing in the critically ill patient, microbiologists to assist with the diagnosis and management of infection, a so-

cial worker and spiritual care personnel as well as, who can support the needs of both patient and family during a time of crisis. Continuous nursing care is also essential, provided at a nurse to patient optimal and higher ratio, dictated by the availability of other support personnel including nursing assistants and respiratory therapists, appropriating to current needs of the particular patient. d) *Critical Care Services Provided*, the ICU plays a wide role in the larger health care system, providing the capacity to care for acutely unstable patients or supporting the patient using the most advanced facilities that the hospital can provide. Furthermore, it may serve as a referral center or it may provide specialty services not available in other ICUs in a larger community. Conversely, high dependency units, stepdown or step-up units, and intermediate care units can provide support and monitoring to patients who do not need the full spectrum of ICU supportive care and finally e) *Research, Education, and Quality Improvement,* a functional ICU has an inherent obligation to continuously improve patient care based on an ongoing evaluation of the shortcomings of the care it provides and in parallel to develop the domains of research and education contributing in continuous quality improvement.

As is obvious that IC is expensive and the number of beds is limited. In the other hand, demand for ICU resources often exceeds supply and shortages of ICU beds and staff are likely to persist. ICU triage (basic questions addressed to intensivists regarding the admission process decision by the Task Force of the World Federation of Societies of Intensive and Critical Care Medicine) aims to ensure optimal and equitable use of CC resources and it necessarily involves weighing the benefits of ICU admission against the risks involved. Even though triage algorithms and protocols can be useful, intensivists should make the final decision about ICU admission, basing their decisions on input from multidisciplinary teams.

It is known that there are disparities in health care delivery around the world. In pre-covid-19 era, each year approximately 164,000 patients were admitted to ICUs in England, Wales and Northern Ireland and of these, 79% survive to leave hospital. As well, for every 100,000 people in the country, the average of ICU beds in the European Union, in the after Covid-19 era, is 15.9 ICU beds (max 43.2 ICU beds in Czech Republic and min 7.1 ICU beds in Sweden), however Uganda has 0.1 ICU beds. In 2016 had reported that an estimated 8.6 million premature deaths occurred in low-income and middle-income countries, where the limited data available indicate that there are between 0.1 and 2.5 ICU beds per 100 000 people.

The majority of deaths are occurring ring in low-income countries, in which CC remains rudimentary. Emergency and CC in low-income countries has been identified as one of the weakest parts of health systems and the problems begin as a patient comes to the hospital. In the other hand critically ill children need rapid identification, prioritization and urgent treatment and where hospital systems don't provide this the result can be disastrous. Fifty percent of deaths of children in hospital occur within 24 h of admission. Hence, CC defined as all aspects of care for patients with sudden, serious, reversible disease, is not disease or age specific and includes triage and emergency medicine, hospital systems, quality of care and Intensive Care Units. Fortunately, Emergency Triage and Treatment guidelines have been developed to improve the initial hospital care for both adults and children.

In a study that analyze the quality of life of critically ill patients before their intensive care admission, although it receives less attention than analysis of mortality rate in the assessment of outcomes and observed length of ICU stay in critically ill patients, showed that QOL (using a questionnaire that explores the baseline QOL situation during the 2 months before its

administration) is related to severity of illness and age, and older patients and those with more serious conditions have a worse QOL, but the worsening of QOL does not imply an important increase in resource utilization.

In context of complications of care in the ICU, infections including ventilator-associated pneumonia, catheter-associated bloodstream infections and urinary tract infections, venous thromboembolism, delirium, myopathies and neuropathies related to critical illness and stress ulcers consist complication that should rise necessary prevention strategies. Moreover, ICU survivors are thought to have a higher risk of post-traumatic stress disorder, anxiety and depression.

Decreasing the length of mechanical ventilation reduces the length of ICU stay, preventing infection and the development of delirium as well. The early physical and occupational therapy in mechanically ventilated, in critically ill patients should be also considered. Pharmacologic venous thromboembolism prophylaxis in all ICU patients, unless contraindicated, should be administrated. Furthermore, placing central venous catheters in the subclavian vein when possible, as this site has a lower infection rate. Other preventative measures include full barrier precautions during central venous catheter placement, daily inspection of central lines and consideration for removal as soon as there are no longer indicated, in order to avoid infections. In addition, pharmacologic prophylaxis for the stress ulcers should be given. A tight glucose control (hypoglycemia should be avoided) could decrease critical illness polyneuropathy and critical illness myopathy, two forms of disorders in critically ill surgical patients. Finally, palliative care consultation may decrease length of stay and reduce the use of non-beneficial resources.

Having a family member in the ICU creates considerable stress in the family. They could not always understand the critical patients' condition and realize the long-term consequences of a prolonged stay in the ICU. Therefore, effective and proactive regularly communication in a respectful manner can be helpful.

Finally, open communication between all members of the multidisciplinary team in the ICU including nurses, social workers, clinical pharmacists, physio and respiratory therapists is essential to improve quality of care and to reduce or to avoid complication.

The ICU cares for adults as well as for children in the best way possible concentrating expertise since nurses and doctors are high trained in CC. As much as the ICU consists a unit that could potentially involve with all hospital patients, improving emergency and CC could lead to a significant reduction in morbidity and mortality saving in parallel feasible resources and healthcare expenses.

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