

The Impact of the Pandemic on Critical Care in Resource-limited Countries

The world has come to its knees by COVID-19 during the last two years, and the end of the catastrophe is yet unknown. This disaster, although deeply tragic with more than six million casualties, has made different medical disciplines to reconsider outdated, time-consuming methods for reacting to a new problem in medicine. We have never been under such pressure to respond immediately to a destructive and fatal minatory. However, some branches of the health care system such as preventive medicine, emergency medicine, pulmonary disease, infectious disease, anesthesiology, pharmaceutical sciences, and in particular, the critical care, were on the front lines of this onrush.

Critical care was uniquely involved, as it had almost no time to prepare to combat a huge surge of critically ill patients from the beginning. A wide range of dangers confronted critical care community, ranging from the shortage of preliminary personal protection equipment to the impact of witnessing patients die from severe respiratory failure due to the shortage of available ventilator machines. These issues were frequently faced both in rich and resource-limited settings. As a result, during the pandemic, a significant portion of our precious and scanty human resources in critical care units suffered severe psychological and physical injuries.

Now, following a ruinous surge of Omicron variant, we have the opportunity to catch a breath and look backward to see what we perceived, and how we can be prepared for the next pandemic. Few well-conducted reviews have focused on the critical care professionals' lessons learned during this pandemic.^{1,2} Common concepts for better preparedness include converting available beds to intensive care units(ICUs) promptly, recruiting eligible medical and paramedical staff, and re-educating them, as well as efficient supply of consumables, medical equipment, and medications.

There are always distinctive lessons for practitioners in resource-limited settings, especially when we consider the broad definition of "resource" in such countries. The Four S model is a theoretical framework for responding to an emergency crisis that includes space (i.e., bed capacity), staff (i.e., personnel), stuff (i.e., equipment required), and system (i.e., leadership and administration).³ Although all domains were in shortage in this pandemic, particularly during the initial of outbreaks, which "S" is more "limited" in low to middle-income countries?

Critical care medicine as a distinct specialty, while well established in some developing countries, is still in its infancy in others.⁴ The same insufficiency exists for critical care nursing and respiratory therapy fields of proficiency as well. This pandemic provided once-in-a-lifetime opportunity for critical care to attract attention and get appreciation from the community, colleagues, and governments alike. The governments in developing countries, specifically, started to better recognize the role of well-designed ICUs with established models of leadership and organizational frameworks in the management of patients with extreme severity of illness. It was also a good time for the administrators to compare different types of multi-disciplinary ICU care models and their impact on major healthcare outcomes.

During an emergency, space, staff, and stuff, although a major challenge, could be more or less recruited in a reasonable time frame; however, the "system" deficiencies could not be addressed in such a terrible state. Effective ICU triage system, operative ICU admission and discharge policies, safe ICU design, multidisciplinary teamwork mentality, established end-of-life care policies, commitment to the evidence-based medicine, effective nosocomial infection prevention protocols, and live antibiotic stewardship programs are among the system requirements that could not be provided urgently in a pandemic.

In our experience, chronic shortcomings in the basic design of critical care systems in resource-limited settings may lead to inefficient use of already limited ICU beds, prolonged ICU stay due to preventable nosocomial infections, misuse of mega doses of vitamins, sedatives, and muscle relaxants, inappropriate and futile care of end-stage patients against family wishes, ineffective and unsafe cardiopulmonary resuscitation,⁵ and epidemics of fungal infections because of overuse of steroids.⁶

Educating the community about critical care goals and end-of-life care decision-making principles, incorporating updated and evidence-based protocols in daily ICU care, using technology and research in accordance with local feasibility and cost, and governmental support for the critical care development are all required for a better prospect in future disasters.

Conflict of Interest: None declared.

Farid Zand, MD 

Editor-in-Chief, Iranian Journal of Medical Sciences, Shiraz University of Medical Sciences, Shiraz, Iran;

Anesthesiology and Critical Care Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Email: zandf@sums.ac.ir

Please cite this article as: Zand F. The Impact of the Pandemic on Critical Care in Resource-limited Countries. *Iran J Med Sci.* 2022;47(3):171-172. doi: 10.30476/ijms.2022.48329.

References

- 1 Arabi YM, Azoulay E, Al-Dorzi HM, Phua J, Salluh J, Binnie A, et al. How the COVID-19 pandemic will change the future of critical care. *Intensive Care Med.* 2021;47:282-91. doi: 10.1007/s00134-021-06352-y. PubMed PMID: 33616696; PubMed Central PMCID: PMC7898492.
- 2 Vranas KC, Golden SE, Mathews KS, Schutz A, Valley TS, Duggal A, et al. The Influence of the COVID-19 Pandemic on ICU Organization, Care Processes, and Frontline Clinician Experiences: A Qualitative Study. *Chest.* 2021;160:1714-28. doi: 10.1016/j.chest.2021.05.041. PubMed PMID: 34062115; PubMed Central PMCID: PMC78164514.
- 3 Anesi GL, Lynch Y, Evans L. A Conceptual and Adaptable Approach to Hospital Preparedness for Acute Surge Events Due to Emerging Infectious Diseases. *Crit Care Explor.* 2020;2:e0110. doi: 10.1097/CCE.000000000000110. PubMed PMID: 32426752; PubMed Central PMCID: PMC7188427.
- 4 Phua J, Lim CM, Faruq MO, Nafees KMK, Du B, Gomersall CD, et al. The story of critical care in Asia: a narrative review. *J Intensive Care.* 2021;9:60. doi: 10.1186/s40560-021-00574-4. PubMed PMID: 34620252; PubMed Central PMCID: PMC78496144.
- 5 Sabetian G, Zand F. Do-Not-Resuscitate Order: A Lacuna in Critical Care in Iran. *Archives of Anesthesiology and Critical Care.* 2015;1:59-62.
- 6 SeyedAlinaghi S, Karimi A, Barzegary A, Pashaei Z, Afsahi AM, Alilou S, et al. Mucormycosis infection in patients with COVID-19: A systematic review. *Health Sci Rep.* 2022;5:e529. doi: 10.1002/hsr2.529. PubMed PMID: 35252593; PubMed Central PMCID: PMC8885749.