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A multifaceted approach to intensive care unit capacity

The COVID-19 crisis has highlighted the importance of intensive care units (ICUs) but also caveats, including limited space and staffing. Structuring the future critical care system on an international scale is crucial.

The number of critical care beds available varies widely between countries. In Europe, there is an average of 11·5 hospital beds per 100 000 inhabitants dedicated to critical care, compared with 28 beds per 100 000 in 2010 in the USA.[1] Although a negative correlation between number of ICU beds and mortality has been reported,[2] such a relationship might be explained by differences in demographics and severity of illness.[3] Gaudart and colleagues[4] reported no regional correlation between number of ICU beds and mortality in patients with COVID-19 in France. Improving the quality of critical care requires more focus on ICU care organisation, rather than simply increasing the number of ICU beds.

First, the versatility of physicians (eg, anaesthesiologists, cardiologists, and surgeons) trained in critical care and able to practice in ICU is a major asset. For example, during the first COVID-19 wave in France, 7148 patients who required ICU-level care were hospitalised, which greatly exceeded the usual capacity of 5432 ICU beds. The ability to increase capacity for high-level care was made possible largely through a 65% increase in medical critical care manpower, which included physicians and residents in anaesthesiology with complete training in intensive care. This versatility also applies to nurses. As such, intensive care training is a crucial aspect of medical and nursing training and should be a component of continuing education across all specialties, rather than limited to physicians in a specific few specialties.

Second, the COVID-19 pandemic has taught us to take advantage of many hospital sites outside the conventional ICU environment, to develop spaces similar to ICUs—so-called ephemeral ICUs—in case there is overflow from permanent ICUs. Rapid conversion and use of these spaces allowed for the expansion of ICU capacity by 50–95% within a few weeks in 2020.[5] Interestingly, although these spaces were not originally designed to support critical care, Taccone and colleagues[6] found no correlation between mortality and the ratio of newly created ICU beds to the total number of ICU beds. A clear strategy for converting and mobilising emergency ICU spaces should now be required in high-volume hospitals.

Third, efforts to identify severe cases before they become life-threatening are urgently needed. Improved monitoring and implementation of artificial intelligence devices to facilitate early detection of patients at risk of severe disease, systems to call for help, and rapid response teams need to be integrated in hospital and patient workflows to streamline ICU admissions.[7]

Fourth, the pandemic has triggered initiatives to improve ICU triage efforts and ethical considerations that have a major emotional impact on the population. Resource-driven triage decisions are uncommon in North America, but are more frequent in Europe. These policies warrant further research and could be standardised for all ICUs. Guidelines reinforce the importance of establishing realistic goals for the care of critically ill patients by focusing on patient-reported outcome measures (PROMs) and instituting end-of-life care when indicated.

Finally, standardisation of these ICU policies should be considered on an international scale: more homogeneity in critical care system organisation, drug procurement policies, and medical education could enable proper resource and workforce distribution to ensure improved management of future international health-care crises.

Although it might seem intuitive to define ICU capacity purely by number of beds, it is crucial to consider it in terms of ICU admission streamlining, staffing, and flexibility of other hospital spaces.

We declare no competing interests.

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