

ORIGINAL ARTICLE

Treating patients across European Union borders

An international survey in light of the coronavirus disease-19 pandemic

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BACKGROUND In light of the coronavirus disease-2019 (COVID-19) pandemic, how resources are managed and the critically ill are allocated must be reviewed. Although ethical recommendations have been published, strategies for dealing with overcapacity of critical care resources have so far not been addressed.

OBJECTIVES Assess expert opinion for allocation preferences regarding the growing imbalance between supply and demand for medical resources.

DESIGN A 10-item questionnaire was developed and sent to the most prominent members of the European Society of Anaesthesiology and Intensive Care (ESAIC).

SETTING Survey via a web-based platform.

PATIENTS Respondents were members of the National Anaesthesiologists Societies Committee and Council Members of the ESAIC; 74 of 80 (92.5%), responded to the survey.

MEASUREMENTS AND MAIN RESULTS Responses were analysed thematically. The majority of respondents (83.8%), indicated that resources for COVID-19 were available at the time of the survey. Of the representatives of the ESAIC

governing bodies, 58.9% favoured an allocation of excess critical care capacity: 69% wished to make them available to supraregional patients, whereas 30.9% preferred to keep the resources available for the local population. Regarding the type of distribution of resources, 35.3% preferred to make critical care available, 32.4% favoured the allocation of medical equipment and 32.4% wished to support both options. The majority (59.5%) supported the implementation of a central European institution to manage such resource allocation.

CONCLUSION Experts in critical care support the allocation of resources from centres with overcapacity. The results indicate the need for centrally administered allocation mechanisms that are not based on ethically disputable triage systems. It seems, therefore, that there is wide acceptance and solidarity among the European anaesthesiological community that local medical and human pressure should be relieved during a pandemic by implementing national and international re-allocation strategies among healthcare providers and healthcare systems.

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Introduction

The victims of the unprecedented coronavirus disease-2019 (COVID-19) pandemic show the clinical manifestations of a severe acute respiratory distress syndrome (ARDS) and have high rates of ventilator-dependence¹ that put a heavy burden on local and national healthcare

systems. The high number of critically ill patients has forced the triage of a range of hospital resources from personal protective equipment to beds and intensive care personnel.² The practical allocation of critical care beds and resources is challenging for those on the front line of patient care, although there have been some recommendations for the allocation of limited resources.^{2,3}

* A list of the Board of Directors is provided in the Supplementary Appendix.

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The emergence of COVID-19 has dramatically increased the burden on healthcare systems and the need for dedicated critical care, beds, and mechanical ventilation. Across Europe, a highly heterogeneous distribution of critically ill patients with COVID-19 has been observed.⁴ As a result there have been inequalities regarding the availability of intensive care beds and equipment beneficial for patients with COVID-19. Already a reality in some countries, the COVID-19 pandemic has led to an 'absolute shortage' of resources.⁵ Most physicians in Europe have not previously faced the difficult resource constraints that the current pandemic imposes. Mass casualty events (MSE), such as the current COVID-19 pandemic, can generate many critically ill patients that can overwhelm healthcare systems.⁶ When there are limited medical resources, recommendations for the preparation and management of such MSEs have suggested the use of a triage system for the fair and adequate allocation of the available resources.^{7,8} However, these recommendations tend to be based on ethical triage systems^{9,10} and do not address mechanisms that might balance overcapacity and overload of some healthcare system with availability in others, as seen during the current pandemic.⁵

To assess the acceptance of allocation strategies for managing patients and limited resources for critical care that are not based on ethical triage, but on existing international capacity, we conducted a survey sent to the representative bodies [National Anaesthesiologists Societies Committee (NASC) and Council] of the European Society of Anaesthesiology and Intensive Care (ESAIC). This group of experienced national key opinion leaders, anaesthesiologists and intensivists, across European borders, were invited to respond by polling their attitudes and opinions on the use of limited critical care resources during the current crisis. The objective of this study was to provide expert opinions and guidance to facilitate the (ethical) burden currently facing our colleagues on the front line of this pandemic.

Methods

No ethical approval was required for this survey.

In order to establish management strategies that address the existing inequalities of limited critical care resources, a web-based questionnaire was prepared. Our sample consisted of all European anaesthesiology societies represented by the corresponding NASC member (president or past-president of the national society) and national council member of the (ESAIC). Respondents came from the following 42 countries represented in the European Society of Anaesthesiology and Intensive Care: Albania, Armenia, Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Czech Rep., Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Israel, Italy, Kosovo, Latvia, Lithuania, Malta, Montenegro, Netherlands, Norway, Poland, Portugal,

Rep. North Macedonia, Rep. of Moldova, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom and Ukraine.

The survey consisted of 10 questions related to the organisation of COVID-19-infected patients and different strategies regarding the management of the existing critical care resources (Supplement 1 for individual questions, <http://links.lww.com/EJA/A473>). Responses were analysed thematically.

Results

A total of 74 (92.5%) NASC and Council members of the ESAIC throughout Europe responded to our survey (Supplement 1, <http://links.lww.com/EJA/A473>). Of these, 83.8% specified working in a university hospital, 9.5% in acute care hospitals and 6.8% in other hospitals. Out of all respondents, 83.8% were involved in the treatment of COVID-19-infected patients and 58.1% represented the responsible department for their treatment. The specialists primarily in charge for COVID-19 were predominantly anaesthesiologists and critical care specialists (45.1%). Infectious disease specialists were responsible for the treatment of COVID-19-infected patients in 29% and internal medicine physicians in 16.1% of responses.

A total of 74% of respondents reported that intensive care beds were available for the treatment of patients with COVID-19 infection at the time of the survey. More than half (58.9%) of the representatives of the ESAIC were in favour of making excess critical care capacity available to others. Of those representatives, 69% supported making excess capacity available to supraregional patients potentially needing treatment of COVID-19 infection, whereas 30.9% preferred to keep the resources available for the local population, the treatment of non-COVID-19 patients requiring critical care treatment.

According to 35.3% of respondents, any overcapacity of critical care beds should be made available to supraregional and/or international patients. Concerning the allocation of medical equipment and/or resources, 32.4% answered that these should be made available to sites in need and 32.4% agreed with both options.

Concerning the allocation of overcapacity, 23.8% preferred a self-initiated contact between critical care physicians, whereas 59.5% favoured a centralised European (political and medical) and 16.6% a national allocation system.

Discussion

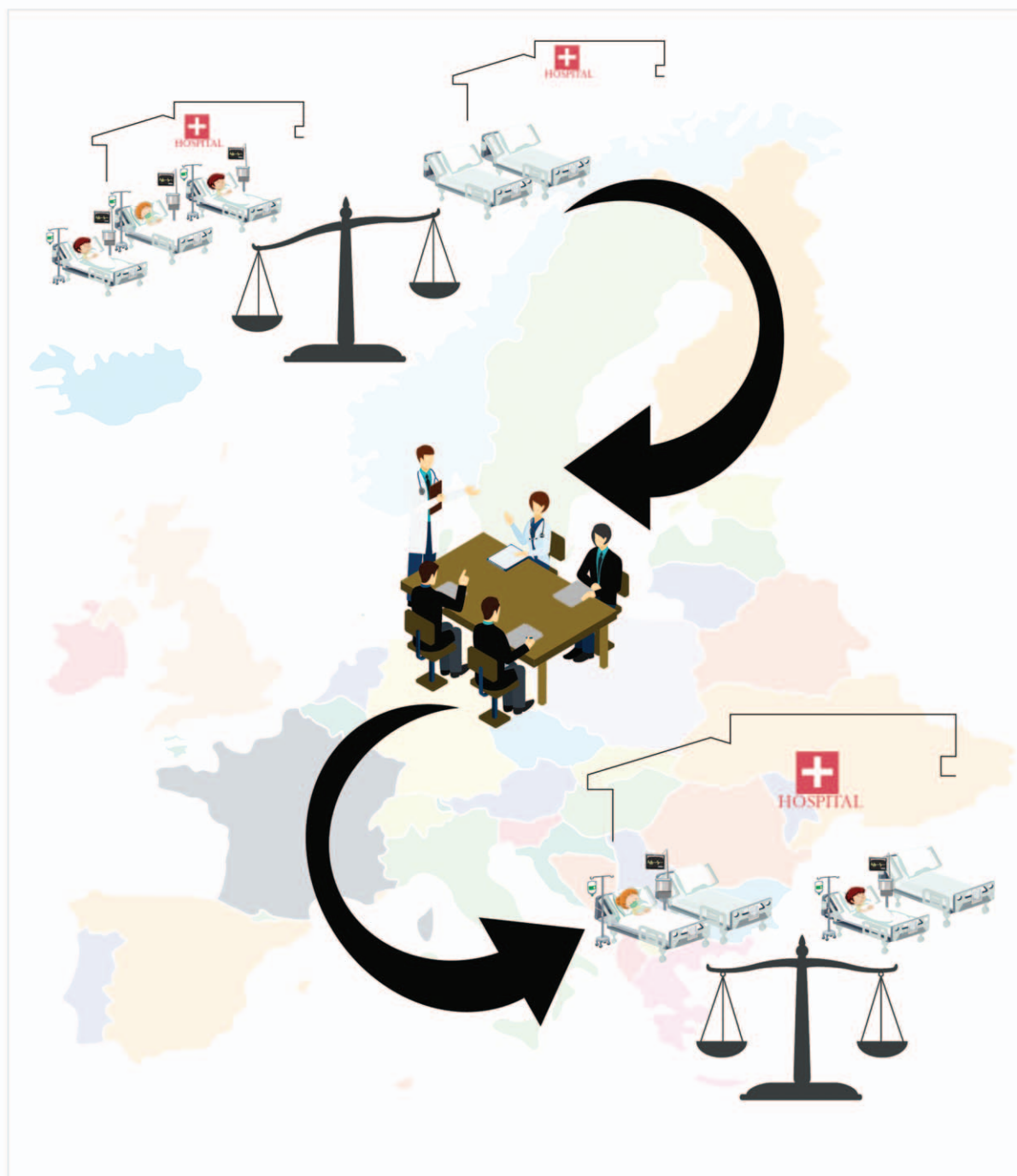
Strategies to manage critical care capacity during the COVID-19 pandemic may be politically charged and ethically controversial. They pose tremendous challenges for both healthcare providers and policy makers. As critical care bed numbers vary considerably between countries in Europe, an international platform that

provides a dialogue on free, available and restricted resources should facilitate the planning and use of critical care resources in the future.¹¹

We have demonstrated that the predominant opinion of the national NASC and council representatives of the

ESAIC is that there should be supra-regional provision of existing critical care supply resources. This finding reinforces the concept of an organised structure to monitor the range of supply resources at an international level and to develop allocation strategies to provide optimal care for critically ill patients (Fig. 1). Our results suggest that

Fig. 1 Proposal for a mechanism of a European institution to structure the allocation of critical care resources



A central committee of elected international European representatives and medical experts evaluates and discusses the available critical care resources to rebalance existing supply demand and surplus critical care capacities.

there may be differences in the way in which countries approach healthcare issues in MSE, such as during the current COVID-19 pandemic. As we are confident that participants have understood and dealt with the principles discussed, these differences are likely to be based on national conditions, which need to be recorded in detail and processed in a structured manner.

The main finding of an emerging readiness to share critical care resources underscores the importance of establishing systemic methodologies for further MSEs, such as a possible second wave of the COVID-19 pandemic. The aim, in such an event, should be to assess and ultimately restructure inequalities of critical care supply resources to address shortages in the availability of critical care beds (Fig. 1).

Although existing recommendations regarding the allocation of scarce resources primarily consider ethical aspects, a generally valid strategic instrument for the supraregional allocation of resources and patients is not yet available.

In this respect, a lesson can be drawn from the regional and national approach in Italy. By structuring staff units with supraregional administrative authority, specific algorithms with detailed protocols and specialised teams, it was possible to control the patient flow in Milan to deal with specific issues of bed resources and emergency department overcrowding.¹² However, the devastating experience in Italy demonstrates the limitations that can exist on a national level, despite the greatest efforts.¹³ This underlines the high sense of urgency perceived among physicians across Europe in establishing a structure for re-allocating patients and medical equipment, though any such re-allocation needs to be carefully considered in light of a potential surge of COVID-19 patients in the local population.

In summary, Europe needs a tool to match the supply and demand of ICU beds for COVID-19 patients of the local population, based on infection rates and length of stay. Where demand exceeds supply, patients should be re-allocated on a supraregional basis in close collaboration with the specialties responsible for treating patients with COVID-19 who are citizens of the European Union.^{14,15} With such a tool, health authorities and elected officials would be better prepared to shape and communicate the principles for optimised patient care and health service allocation. Previous pandemics have failed to provide pertinent evidence that could guide physicians and medical administrators in their management of the current crisis.

The ESAIC as the leading European professional organisation for anaesthesiology and intensive care medicine could learn from national and international experiences and make recommendations for structuring the

supraregional mechanisms required. Its considerable expertise could support regional and national organisations in their implementation.

In conclusion, a system should be established to balance the allocation of critical care patients from where demand exceeds supply to where there is overcapacity. In Europe, this would be appropriately organised by a suitable political and medical institution to be implemented in the event of future crises requiring medical treatment beyond locally available capacity.

Acknowledgements relating to this article

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