



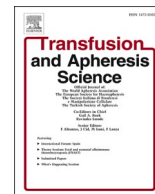
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Letter to the Editor

The effect of the COVID-19 pandemic on the adequacy of blood supply: Specialists in transfusion medicine need to establish models of preparedness

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Dear Editors,

On 11 March 2020, coronavirus disease 2019 (COVID-19) was declared a pandemic by the World Health Organization. The disease, caused by an emerging pathogen, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) continues to spread rapidly at a global scale with severe impacts on public health and economy. Among the major challenges faced by the National Health Systems is the maintenance of blood availability.

At this time point, national blood centers are fighting to maintain blood adequacy through concerted actions which include the public's awareness of the situation, the encouragement of healthy individuals to donate blood and the planning of outdoors blood donations. However, as the pandemic continues to evolve the question that logically arises is whether current efforts are enough to address the crisis in the field of transfusion.

The management of transfusion services in disasters like the pandemic is of critical importance for any blood bank [1]. A study by Zimrin and Hess (2007) on the effect of a modern pandemic influenza on blood supply in the United States (US) predicted that transfusion services are likely to face significant losses of blood donors, personnel, supplies and reagents [2]. On the other hand, there may be some mitigation owing to the reduced demand for blood products which results from the restriction in hospital admissions [3] and the postponing of scheduled, non-urgent surgeries.

Simulation models for the blood supply system in threats like the pandemics have been developed in the US as reported by two independent studies [4,5]. Both reports highlighted the importance of strategic planning towards the apt timing and duration of recruitment efforts [4] and the minimization of blood donation disruptions [5]. A European simulation study conducted in Germany, has reported that the estimation of the expected blood deficit during a severe pandemic largely depends on the detailed information regarding the fraction of transfusions that can't be postponed [6]. The use of computer simulation tools for increasing the efficiency in the blood supply chain was previously reported by a Finnish group [7]. The authors concluded that different scenarios should be adapted in particular settings considering the variability of transfusion services policies both at the transnational

and national level.

Today's progress in the field of bioinformatics and computer science enables us to develop complex models that are capable of integrating numerous variables. The COVID-19 pandemic will eventually resolve but contagious diseases will continue to perturb human populations [8]. Thus, future modelling should incorporate past and existing knowledge on human epidemics along with patterns of blood donation and transfusion in different countries and regions. In addition, new models should include variables related to the consumables and reagents management policy as well as social distancing rules. Last but not least, blood transfusion organizations should focus on designing crisis management training programs for scientists working on the field.

Declaration of Competing Interest

The author declares no conflict of interest regarding the content of this Letter to the Editor.

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