Special series on blood transfusion during the COVID-19 pandemic

The coronavirus disease-19 (COVID-19) pandemic was reported to threaten the blood system activities and reduce blood supply, especially during the early stages (1-5). In a large international survey including 24 low- and middle-income countries (LMICs), 70.6% of respondents indicated a decrease in blood donations during the pandemic (6). Contributing factors include operational disruptions, social distancing measures, and additional restrictive donor eligibility criteria to mitigate the potential risk of infection transmission. Similar experiences were described in past viral pandemics (7-9). Challenges in maintaining blood supply for transfusion care of patients on chronic blood support such as sickle cell disease, and thalassemia was reported in some countries (3,10,11). This impact, however was not universally experienced, and blood supply was reported to match the reduced demand and utilization of some transfusion services in high-income countries (12,13).

Blood services must establish means to mitigate the blood supply challenges during future viral threats based on the experience during this pandemic (14). This is particularly true for centers that handle patients with chronic transfusion needs such as patients with hemoglobinopathies (3) and in countries with fragmented blood systems. In addition, LMICs and countries suffering from humanitarian emergencies and conflicts are expected to face more challenges given the limited resources and access to regular and safe blood transfusions (10). There is a need to develop measures to manage blood supply shortages while ensuring the safety of the recipients, donors, and staff. In addition, there is a need to make the general population aware of the need for blood donors and the safety precautions for donor attendance. This requires clear and consistent messaging to the public to address and overcome donor anxiety. These approaches should be tailored to local settings, considering the variation in socioeconomic status and the healthcare systems. Moreover, centers that experienced increased blood wastage due to decreased utilization should adopt measures to minimize wastage while maintaining patient care. It is also essential to identify ways of encouraging the public to donate with the return of routine services, as blood donors may feel reluctant to donate, whereas the need for blood may increase with the return of surgeries.

The series begins with a description of the experience at the Korean Red Cross Blood Services during the pandemic (15). The negative impact on blood collection was worse than what was experienced in other outbreaks. Different measures were implemented, including efforts to educate the public, maintain donors' safety and gain their confidence in safe blood donation. In addition, malaria testing was quickly implemented to allow the modification of malaria-related donor deferral criteria. Uniquely, the authors described the center's collaboration with the Korean Disease Control and Prevention Agency (KDCA) to detect donor infections early post-donation and apply traceback and recall procedures as appropriate. The second paper describes the experience of a blood transfusion service and the impact on a referral hospital in Malawi (16). Donor fear and difficulty in conducting drives due to the ban on public gatherings was described. The authors interviewed 16 staff working at the blood transfusion service and the hospital, who gave insight on the challenges faced and the mitigating strategies used during the pandemic.

The third paper describes the impact of the pandemic on the transfusion care of patients with hemoglobin disorders in India (17). The decrease in blood supply in a system that is largely supported by replacement donation, and with vast diversity of resources and supply chain of testing reagents compromised the blood inventory in different hospitals. The authors described mitigating strategies used to increase the blood supply and manage patients with hemoglobin disorders, such as revised transfusion thresholds, offering near-home transfusion, and adopting teleconsultation to minimize hospital visits. The series concludes with an experience from a large academic hospital in Canada that applies patient blood management (PBM) principles and restrictive transfusion strategies (18). The authors first described the effect of the pandemic on the Canadian blood supply, the impact of that on an academic hospital in Toronto, and how the local blood system was adopted to increase blood supply and rationale it's use. Measures included modifying the blood donor criteria used at the Canadian blood services, adapting PBM principles, and virtual pre-operative assessments in the hospitals. An overview of the three pillars of PBM and how the reduction in unnecessary transfusions is essential when blood is scarce was provided. Finally, the authors summarized the literature on PBM application, including its use during the COVID-19 pandemic.

The series provide a glimpse of experiences from different countries in blood supply shortages and measures undertaken to overcome them to meet transfusion demands. Recognition of the governments and ministries of health of the fundamental

need to maintain this critical healthcare service and develop stringent emergency and disaster plans to face any blood supply challenges is essential.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, *Annals of Blood* for the series "Blood Transfusion During the COVID-19 Pandemic". The article did not undergo external peer review.

Conflicts of Interest: The author has completed the ICMJE uniform disclosure form (available at https://aob.amegroups.com/article/view/10.21037/aob-2023-01/coif). The series "Blood Transfusion During the COVID-19 Pandemic" was commissioned by the editorial office without any funding or sponsorship. AZAR served as the unpaid Guest Editor of the series. The author has no other conflicts of interest to declare.

Ethical Statement: The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

References

1. Wang Y, Han W, Pan L, et al. Impact of COVID-19 on blood centres in Zhejiang province China. Vox Sang 2020;115:502-6.
2. Franchini M, Farrugia A, Velati C, et al. The impact of the SARS-CoV-2 outbreak on the safety and availability of blood transfusions in Italy. Vox Sang 2020;115:603-5.
3. Al-Riyami AZ, Abdella YE, Badawi MA, et al. The impact of COVID-19 pandemic on blood supplies and transfusion services in Eastern Mediterranean Region. Transfus Clin Biol 2021;28:16-24.
4. Loua A, Kasilo OMJ, Nikiema JB, et al. Impact of the COVID-19 pandemic on blood supply and demand in the WHO African Region. Vox Sang 2021;116:774-784.
5. Prokopchuk-Gauk O, Petraszko T, Nahirniak S, et al. Blood shortages planning in Canada: The National Emergency Blood Management Committee experience during the first 6 months of the COVID-19 pandemic. Transfusion 2021;61:3258-66.
6. Al-Riyami AZ, Burnouf T, Wood EM, et al. International Society of Blood Transfusion survey of experiences of blood banks and transfusion services during the COVID-19 pandemic. Vox Sang 2022;117:822-30.
7. Shan H, Zhang P. Viral attacks on the blood supply: the impact of severe acute respiratory syndrome in Beijing. Transfusion 2004;44:467-9.
8. Teo D. Blood supply management during an influenza pandemic. ISBT Science Series 2009;4:293-8.
9. Tsubokura M, Nakada H, Matsumura T, et al. The impact of H1N1 influenza A virus pandemic on the blood donations in Hyogo Prefecture, Japan. Transfusion 2010;50:1803-5.
10. Al-Riyami AZ, Daar S. Blood supply challenges and transfusion care of patients with hemoglobinopathies during COVID19 pandemic. Ann Blood 2020;5:31.
11. Arshad Ali S, Azim D, Hassan HM, et al. The impact of COVID-19 on transfusion-dependent thalassemia patients of Karachi, Pakistan: A single-center experience. Transfus Clin Biol 2021;28:60-7.

12. Yazer MH, Jackson B, Pagano M, et al. Vox Sanguinis International Forum on Hospital Transfusion Services' Response to COVID-19: Responses. Vox Sang 2020;115:e1-17.
13. Kracalik I, Mowla S, Katz L, et al. Impact of the early coronavirus disease 2019 pandemic on blood utilization in the United States: A time-series analysis of data reported to the National Healthcare Safety Network Hemovigilance Module. Transfusion 2021;61 Suppl 2:S36-43.
14. World Health Organization. Maintaining a safe and adequate blood supply and collecting convalescent plasma in the context of the COVID-19 pandemic. Available online: https://www.who.int/publications/i/item/WHO-2019-nCoV-BloodSupply-2021-1
15. Kwon SY, Cho NS, Jang JS, et al. Impact of the COVID-19 pandemic on blood services operations: Korean experience. Ann Blood 2023. In press.
16. Njolomole SE, M'baya B, Mandere G, et al. Strategies to meet blood demand for transfusions during the COVID-19 pandemic: lessons learnt from a large central hospital in Malawi. Ann Blood 2023. In press.
17. Arora S, Radhakrishnan N, Patidar GK, et al. Impact of COVID-19 on transfusion care of patients with hemoglobin disorders in India. Ann Blood 2023. In press.
18. Khandelwal A, Vandermeulen H, Tordon B, et al. Applying principles of patient blood management during COVID-19 pandemic: a literature review. Ann Blood 2023. In press.

Arwa Z. Al-Riyami

Arwa Z. Al-Riyami, MD, FRCPC
Department of Hematology, Sultan Qaboos University Hospital, Sultan Qaboos University, Muscat, Oman.
(*Email: arwa@squ.edu.om*)

Keywords: COVID-19; blood supply; transfusion

Received: 04 January 2023; Accepted: 20 January 2023; Published online: 03 February 2023.
doi: 10.21037/aob-2023-01
View this article at: https://dx.doi.org/10.21037/aob-2023-01

doi: 10.21037/aob-2023-01
Cite this article as: Al-Riyami AZ. Special series on blood transfusion during the COVID-19 pandemic. Ann Blood 2023;8:21.

