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Journal of Clinical Haematology Commentary

Impact of Early COVID-19 Advice and Guidelines on the Blood Supply in Low- and Middle-Income Countries

Cees Th. Smit Sibinga[1*], Nabajyoti Choudhury[2], Ankit Mathur[3]

[1]IQM Consulting, Zuidhorn, University of Groningen, Groningen, Netherlands

[2]Health City Hospital, Guwahati, Assam, India

[3]Rotary Bangalore ttk Blood Bank Bangalore, Karnataka, India

[*]Correspondence should be addressed to Cees Th. Smit Sibinga; c.sibinga@planet.nl

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In March 2020, the Asian Association of Transfusion Medicine (AATM) took the initiative to support and guide the 20 member and 5 associate-member countries in their efforts to continue their blood supply with minimal interruption or shortages during the pandemic. Within two weeks, they published a guideline [1] and an instructive Aide Mémoire [2], which were also communicated with the major international blood transfusion organizations, WHO and the EU. This was echoed by a rapid appearance of national and international guidance documents.

Additionally, AATM executed a focused survey among the member and associate-member countries. The outcomes were published as a baseline documentation of the situation in March 2020 [3]. That survey resulted in a high response (92%) from largely Medium- and High-HDI countries (18/23) from four WHO Regions - Western Pacific (n = 2), South-East Asia (n = 6), Eastern Mediterranean (n = 7) and Europe (Balkan, Russia, Kyrgyzstan, Turkey; n = 8).

Surprisingly, there have only been two similar multi-country studies published since the AATM survey, one covering 19 of the 21 member states (90.5%) of the WHO Eastern Mediterranean Region [4] and one from the WHO African Region [5] covering 37 of the 47 member states (78.7%). Additionally, there have been published some country reports e.g., Bhutan, China, Greece, Hong Kong, India, Italy, Korea, Singapore and a limited number of more general reviews with a main emphasis on the blood supply situation in the advanced world. The July 2020 Lancet Haematology publication [6] provides an excellent review of the effects of the pandemic on supply and use of blood for transfusion along 5 identified themes:

1. Features of SARS-CoV-2 infection that affect patients' needs for transfusion;
2. What donor and donation factors need to be considered to maintain an adequate supply of blood during the COVID-19 pandemic?
3. Modifications to production, specifications and storage of blood;
4. Prioritization of blood use for patients in hospitals in the event of predicted shortage;
5. Use of convalescent plasma and immunoglobulins.

This review ends with a general recommendation to handle the challenges through early planning to review mitigation, in particular blood stock building and extension of shelf life.

Challenges reported

The major challenges reported were the impact of the COVID-19 pandemic on blood and plasma donor mobilization and the blood supply rapidly emptying stocks in blood establishments and hospitals causing shortages, where most of these countries already were suffering from shortages due to their state of development and poor economics. Emergency preparedness plans showed major shortcomings in the majority of these countries.

A prevalent challenge was the rapidly developed shortage in blood supply of whole blood and red cells due to less

potential donors attending blood collection sessions, travel restrictions and interrupted mobile blood sessions or camps. Most mobile team sessions and camps closed down, staff observed the national lockdown and preferred to stay home. In those countries which lack a stable and reliable donor panel, the existing weak public trust and confidence in the blood supply suffered from a strengthening effect of the mistrust indicating the need for focused public awareness campaigns emphasising the urgence of the need for blood donation during such crisis.

The 2021 African Region report [5] on the impact of the pandemic on blood supply and demand in 37 of the 47 invited countries illustrates no essential differences in challenges compared to the AATM and EMR reports [3,4]. The data obtained were benchmarked against the pre-COVID-19 year 2019 as the reference. Most of the participating and responding countries reported declines in blood donations ranging from 0.07 to 44.1%, in blood drives ranging from 12.1 to even 100%, in distributions to hospitals ranging from 0.5 and 46.6% and in demands from hospitals ranging from 0.3 to 67.1%. However, there were a few countries where increases in the indicators were reported. Most of the problems were due to travel restrictions and increased infection fear of the public and potential donors, which are dominantly family/ replacement.

The 2021 report on the impact of the pandemic on blood supplies and transfusion services in the WHO Eastern Mediterranean Region [4] is interesting because it includes 6 AATM member countries – Iran, Morocco, Oman, Pakistan, Palestine and Saudi Arabia. With the exception of Morocco, all reported an ongoing decrease in blood supply varying between 10 and 60%, but also a decreased demand from hospitals in most of these countries varying between <10 and 50%, where Oman reported that the demand remained the same.

Responses

Key approaches to secure ongoing service to the communities reported by the participating AATM countries were –

- education of staff to boost motivation, confidence and prevent infection of the human resource;
- focused public awareness campaigns as a social community appeal with the intention to convince potential donors to keep coming to donate and support the nation's blood availability during the crisis.

Within the blood supply organizations education focused on creating awareness and understanding of the infection threat, and what actions should be taken to ensure safety and reliability of the blood supply as well as safety of personnel, donors and community trust and support.

Supported by WHO, countries responded changing the awareness approach of the public and registered donors, implementing a more personal approach through social media and even house visits to make personal appointments for medical selection and blood donation. Some countries (e.g., Albania, Kyrgyzstan, Russian Federation and Saudi Arabia) started to offer free transportation of blood donors to the blood establishment and back to home. This is also reported from several countries in the African Region [5].

Unavoidable, as a result of the pandemic early 2020, hospitals were rapidly overwhelmed with seriously ill COVID-19-infected patients who needed intensive care and occupied a large proportion of the available healthcare workforce and capacity.

Call up of potential donors had to be restricted to small numbers and spread more widely over the day to avoid crowding, while observing PPE principles and distancing. Mobile sessions or camps had to be reduced dramatically and organized in a corona virus infection proof manner. Universities, offices and institutes closed down because of the general lockdown corona spread prevention thus forcing blood drives in such locations to be cancelled. As a consequence, staff had to work longer hours to accommodate the donors attending the donor centres and secure a maximum benefit of the willingness of potentials donors to sustain support.

However, the fact that in a number of the member countries regular voluntary and non-remunerated blood donation is still in its infancy and the blood supply is depending largely on family/replacement and one-time-only donations, contributes noticeably to the increased shortages. Although in most situation hospitals were still supplied adequately, elective surgical interventions have been reduced or postponed while patient blood management showed further developing [7,8]; improved and evidence-based indication setting and ordering, and implementing more restrictive transfusion protocols.

Clinical observations show that generally COVID-19 transfusion requirements are low, even in patients who are critically ill [6]. However, the demand for regular diseases such as thalassaemia [9], cancer treatment and bleeding disorders evidently continued. Due to the national lockdowns traffic accidents and physical labour with a recognized risk for trauma and accidents diminished.

There are no robust data on the numbers of pre-symptomatic or asymptomatic donors who have subsequently seroconverted, or on the potential infectivity of blood with SARS-CoV-2 RNA, although the risk of transfusion transmission is likely to be low [10-12]. So far there have been a number of publications indicating that some donors do carry SARS-CoV-2 RNA, but transmission

of infectious virus particles has not been observed. Recommendations for transfusion should conform to general messages of restrictive use of blood which also serves limitation of existing shortages.

The AATM survey [3] indicated that already 4 countries (Bhutan, Bosnia & Herzegovina, Iran and the Maldives) had instituted a triage upon arrival of donors to prevent initial symptomatic potential donors to enter the blood centre and mitigate the potential risk of transmission. Today triage has become a routine procedure protecting the blood donors and personnel from infection in the blood establishment and contributing to securing the health conditions.

The reported threat of serious problems of a continued supply of consumables, e.g., blood bags, disinfectant, test kits and sample tubes has caused problems in a number of countries, in particular those that were already burdened with political economic sanctions. However, in most cases the deliveries of consumables geared up after a short interruption, albeit not always to the satisfaction of the responsible authorities. However, in the African Region a prominent challenge reported was in the disturbance of consumables supplies. The risk of consumables stock-out situations which existed already in 11/37 (29.7%) countries increased to 22/37 (59.5%) countries over the study period. No country in this Region reported any specific government budget support related to the pandemic and dedicated to strengthen the blood supply system, a serious indicator of weak stewardship and governance.

What are the key elements to be addressed?

The 7 key guidance elements addressed and advocated by WHO [13].

- Mitigating the potential risk of transmission through transfusion of blood or blood components (entrance triage, quarantine, donor feedback and reporting, haemovigilance);
- Mitigating the risk of exposure to SARS-CoV-2 of personnel and potential donors (information, PPE and discipline, biosafety);
- Mitigating the impact of a reduced availability of safe blood donors (adjusted donor management and selection, re-entry criteria);
- Ensuring uninterrupted supplies of critical consumables and equipment, as well as equipment maintenance;
- Managing the demand for blood and blood products and optimizing patient blood management (thalassaemia, bleeding disorders, cancer treatment);
- Communication (horizontal and vertical, external and internal);
- Convalescent plasma collection (recovered COVID-19 patient, motivation and selection criteria, antibody testing).

It seems that the pandemic is acting as a blessing in disguise stimulating more conscious and alert awareness and developments of transfusion medicine that so far were not really attended with much political and professional interest and commitment. However, blood establishments and transfusion services show a remarkable resilience and inventiveness to overcome the challenges.

Blessing in disguise?

The pandemic-caused landslide in professional awareness, attitudes, behaviour and culture in fact is of major importance. Shortcomings and gaps are clearly and bluntly exposed, triggering action at all levels all over the globe.

The effect on regional and global programs focused on equity such as the Sustainable Development Goals [14], Universal Health Coverage [15] and the implementation of Essential Medicines [16,17], *in vitro* Diagnostics [18] and Medical Devices [19], besides the WHO Eastern Mediterranean Strategic framework for blood safety and availability 2016–2025 [20] and WHO Action framework to advance universal access to safe, effective and quality-assured blood products 2020-2023 [21] and the 2021 WHO Global patient safety action plan 2021-2030 [22] uncovers the so far latent and disinterested behaviours of political and professional leadership in healthcare and blood transfusion, devoid of the necessary stewardship particularly noticeable in low- and middle-income countries.

Will COVID-19 be the Phoenix arising from the ash as the champion to turn the tide more progressively and effectively to the benefit of safety, availability and rationality of blood transfusion?

Limitations

This Commentary is just a reflection on the dynamics of responses to global challenges in the blood supply caused by the pandemic, a snapshot in the time.

Hence, day-by-day more evidence is produced on the impact on the blood supply thanks to early guidance and advice from WHO, professional associations and extending literature.

Conflicts of Interest

The authors have no conflicting interests.

Author Contribution Statement

CSS drafted the article, supervised and reviewed; NC reviewed and edited; AM reviewed and edited.

References

1. AATM recommendations (guidelines) to prevent COVID-19 infection through the blood supply. Accessible (pdf) at https://aatmweb.org/wp-content/uploads/2020/03/AATM_Guidelines_COVID-19_BTS.pdf

2. AATM Aide Mémoire COVID-19. Global Journal of Transfusion Medicine 2020;5(1):7-8

3. Choudhury N, Mathur A, Smit Sibinga CT, On behalf of AATM. COVID-19 Pandemic–blood supply challenges and approaches in AATM member countries. ISBT Science Series. 2020 Nov;15(4):353-61.

4. Al-Riyami AZ, Abdella YE, Badawi MA, Panchatcharam SM, Ghaleb Y, Maghsudlu M, et al. The impact of COVID-19 pandemic on blood supplies and transfusion services in Eastern Mediterranean Region. Transfusion Clinique et Biologique. 2021 Feb 1;28(1):16-24.

5. Loua A, Kasilo OM, Nikiema JB, Sougou AS, Kniazkov S, Annan EA. Impact of the COVID-19 pandemic on blood supply and demand in the WHO African Region. Vox Sanguinis. 2021 Feb 2.

6. Stanworth SJ, New HV, Apelseth TO, Brunskill S, Cardigan R, Doree C, et al. The Lancet Haematol 2021; Doi: 10.1016/52352-3026(20)30186-1

7. Shander A, Goobie SM, Warner MA, Aapro M, Bisbe E, Perez-Calatayud AA, et al. Essential role of patient blood management in a pandemic: a call for action. Anesthesia and Analgesia. 2020 Apr 20.

8. SABM position: Patient Blood Management during the COVID-19 Pandemic. 2020; Accessible (pdf) at https://sabm.org/publications/

9. Al-Riyami AZ, Daar S. Blood supply challenges and transfusion care of patients with hemoglobinopathies during COVID19 pandemic. Annals of Blood 2020; 5:31-34

10. Le Chang LZ, Gong H, Wang L, Wang L. Severe acute respiratory syndrome coronavirus 2 RNA detected in blood donations. Emerging Infectious Diseases. 2020 Jul;26(7):1631.

11. Kwon SY, Kim EJ, Jung YS, Jang JS, Cho NS. Post-donation COVID-19 identification in blood donors. Vox Sanguinis. 2020 Nov;115(8):601-2.

12. Gandhi M, Yokoe DS, Havlir DV. Asymptomatic transmission, the Achilles' heel of current strategies to control Covid-19. The New England Journal of Medicine 2020;382: 2158–160.

13. WHO Maintaining a safe and adequate blood supply during the pandemic outbreak of coronavirus disease (COVID-19). Interim guidance 10 March 2020. WHO Geneva, CH. Available from: https://www.who.int/publications-detail/maintaining-a-safe-and-adequate-blood-supply-during-the-pandemic-outbreak-of-coronavirus-disease-(covid19).

14. Sustainable Development Goals. New York: United Nations; 2015. Available (pdf) from: https://sustainabledevelopment.un.org/?menu=1300

15. WHO Universal Health Coverage, accessible (pdf)at http://www.who.int/universal_health_coverage/en/

16. WHO Model List of Essential Medicines, 21st edition Geneva, CH. 2013. Accessible (pdf) at http://apps.who.int/iris/bitstream/handle/10665/325771/WHO-MVP-EMP-IAU-2019.06-eng.pdf

17. WHO Expert Committee on Biological Standardization. Sixty-seventh report. Guideline for the management of blood and blood components as essential medicines. WHO Technical Report Series 1004. Geneva, CH. Annex 3. 2017, Accessible (pdf) at http://www.who.int/biologicals/WHO_TRS_1004_web.pdf

18. WHO Model List on Essential in-vitro Diagnostics, 1st edition, Geneva, CH. 2018. Accessible (pdf) at http://www.who.int/medical_devices/diagnostics/WHO_EDL_2018.pdf

19. WHO Medical Devices, accessible (pdf) at https://www.who.int/medical_devices/priority/3_6.pdf?ua=1

20. WHO EMRO regional strategic framework for blood safety and availability 2016-2025. Accessible (pdf) at http://applications.emro.who.int/dsaf/EMROPub_2017_EN_19608.pdf?ua=1

21. WHO Action framework to advance universal access to safe, effective and quality-assured blood products 2020-2023. Accessible (pdf) at https://www.who.int/news-room/detail/19-02-2020-who-action-framework-to-advance-universal-access-to-safe-effective-and-quality-assured-blood-products-2020--2023

22. WHO Global patient safety action plan 2021-2030 Towards Eliminating Avoidable Harm in Health Care. WHO, Geneva. 2021 Available at https://www.who.int/docs/default-source/patient-safety/global-patient-safety-action-plan-2021-2030_third-draft_january-2021_web.pdf?sfvrsn=948f15d5_17.