Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
The authors declare that they have no competing interest.

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cation against COVID-19 [4]. Depending upon the type of vaccine administered against COVID-19, different countries have adopted different deferral periods [5-10] as enlisted in Table 1. Most of the countries offer no deferral period for the donors who have been administered an inactivated vaccine against COVID-19. However, as per the current protocol in India, both Covishield and Covaxin have a 2-dose regimen, in which the doses are administered 4 weeks apart. Therefore, anyone undergoing vaccination against COVID-19 is essentially deferred for 28 days after the last dose. Now, based on priorities for the high-risk groups of infection and transmission, such as elderly, healthcare workers, taskforce distribution phase plans, including the government commitment, we have an upcoming mass vaccination program to roll out in India. Hence, the deferral period of 28 days from the last dose could essentially result in a massive reduction in the number of eligible blood donors. This will further compromise the blood supply management, which has already been disrupted due to the COVID-19 pandemic itself [11].

Additionally, the primary route of transmission of COVID-19 is the respiratory route [12,13]. No case of transfusion-transmitted COVID-19 case has been reported thus far. In fact, in a reported case, a recipient was transfused platelet concentrate obtained from a confirmed case of COVID-19 donor and still, the recipient remained negative for the COVID-19 disease [14]. Therefore, in line with current scientific data, the risk of transfusion transmission of COVID-19 is only theoretical. Consequently, the 28-day deferral period adopted by NBTC in India is not only unjustified but also unacceptable. Therefore, we propose a thorough review and modifications of the same, bearing in mind, the discussion with the experts in order to frame an effective strategy, both for now as well as a measure of pandemic preparedness for future use [15].

Another area that warrants immediate attention is the effectiveness of these two vaccines against emerging new variants of nCoV such as, 501Y.V2 (South Africa) and B.1.1.7 (United Kingdom).

Research involving human participants and/or animals

Human participants.

Informed consent

As per our department policy an informed consent is obtained from all the donors prior to their whole blood donation in accordance to our standard operating protocol.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional ethics committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Table 1

| Name of the country | Donor deferral after live COVID-19 vaccine | Donor deferral after inactivated COVID-19 vaccine |
|---------------------|------------------------------------------|-------------------------------------------------
| USA [5]             | 14 days                                  | Nil                                             |
| UK [6]              | 28 days                                  | 7 days                                          |
| Canada [7]          | Nil                                      | Nil                                             |
| European Union [8]  | 28 days                                  | Nil                                             |
| Australia [9]       | 7 days                                   | 7 days                                          |
| Singapore [10]      | 28 days                                  | 3 days                                          |
| India [4]           | 28 days                                  | 28 days                                         |

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Authors’ contributions

Naveen Bansal contributed to the literature search, data compilation, manuscript preparation, editing and review, while Manish Raturi contributed to the conceptual design, literature search, manuscript preparation, editing, review as well as being the guarantor who takes the complete responsibility for the integrity of the work done as a whole right from it’s inception to the published article.

Disclosure of interest

The authors declare that they have no competing interest.

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Application of quality control circle to improve conformance rate of time limits of infusion

Dear Sir,

Temperature control before the completion of infusion is a hinge to avoid bacterial proliferation or loss of function in blood products. WHO has issued guidelines to control the temperature of the whole course and time limits of infusion [1]. In China, National Health Commission of the People's Republic of China has also published standards to standardize the temperature of storage and transportation, but has no relevant mandatory standards about the time limits of infusion. In 2010, our hospital decided to control the last link of the cold chain, and issued regulations about the time limits of infusion, which was in accordance with WHO guidelines. But the performance has never been monitored. As the world-wide spreading of COVID-19, our hospital's transfusion management committee decided to improve the safety in blood transfusion and started to monitor the time limits of infusion and use Conformity Rate (number of transfusion cases meeting the time limits of infusion/total number of transfusion cases × 100%) to local regulations as a quality indicator since January 2020. Because of the lack of supervision over a long term, the initial conformity rate was not satisfactory, and we decided to introduce quality control circle (QCC) to improve it.

Quality control circle (QCC), described by Deming and Juran in 1950s, has been widely and successfully used in medical and healthcare fields [2, 3]. QCC refers to a small group of people who share the same professional field, spontaneously form a team to identify, analyze and solve work-related problems to improve the quality of the work [4]. We have established a QCC group with members from administrative department, blood bank, clinical ward, nursing department and information department. The QCC program followed the plan-do-check-act (PDCA) process. An available standard operation procedure (SOP) was issued to standardize the whole course of transfusion, including the time limits of infusion. Data from the information system and personal digital assistant (PDA) were used to monitor the critical time points, including the time of issuing blood products, starting and completion of transfusion. The group met online monthly to analyze the reasons for the low conformity rate from the aspects of personnel, materials, method and environment. A feedback mechanism was also established, non-conforming cases were reviewed and discussed, and improvement measures were implemented. As shown in Fig. 1, the initial conformity rate was only 63.4% (1082/1706) in January 2020. After the QCC program was initiated, the conformity rate has rose sharply up to 75.8% (1229/1621) in February 2020, and kept increasing gradually. During the four rounds of QCC activities, we

Table 1

| Causes                                      | Countermeasures                                                                 |
|---------------------------------------------|---------------------------------------------------------------------------------|
| Issuing blood products for excessive number of patients in one ward at the same time | The upper limit of issuing blood products in one ward at the same time is 3 patients. If the limit is exceeded, LIS (Laboratory Information System) will remind blood bank staff to refuse issuing blood products |
| Issuing several packs of blood products for one patient at the same time            | The upper limit of blood products is 1 pack per patient at the same time (unless plasma exchange). If the limit is exceeded, LIS (Laboratory Information System) will remind blood bank staff to refuse issuing blood products |
| Patient status is not suitable for transfusion (fever/no intravenous access)      | Insert the computer checks for patient status into medical reminder system. Once the blood is request for transfusion, HIS (Hospital Information System) will remind doctors and nurses to check the patient status |
| Low quality of handover                                                             | Using nursing PDA and computer system reminders to avoid forgetting. Every link of handover chain will be reminded, if delayed over 10 minutes |

![Fig. 1. Conformity rate of time limits of infusion.](image-url)