



CHALLENGES, CHANGES AND MITIGATIVE ACTIONS OF BLOOD TRANSFUSION SERVICES IN COVID-19 PANDEMIC AT TERTIARY CARE HOSPITAL

Pathology

Dr Jitendra H. Vachhani*

M.D. (Pathology), Professor & Head Department of Immunohaematology and Blood Transfusion, Shri M.P.Shah Govt. Medical College, Jamnagar, Gujarat, India.

*Corresponding Author

Dr. Vikram C. Rojasara

M.B.B.S., 3rd year Resident Doctor Department of Immunohaematology and Blood Transfusion, Shri M.P.Shah Govt. Medical College, Jamnagar, Gujarat, India.

ABSTRACT

Context: Maintaining blood supply is essential since blood transfusions are lifesaving in many conditions. **Aims and objectives:** This study aimed to measure donor attendance and blood demand in order to help find efficient ways of managing demand and blood supply during the COVID-19 pandemic. **Materials and Methods:** Data from donor attendance, mobile blood drives and blood inventory records were retrospectively obtained for the period between April 2018 to October 2018, April 2019 to October 2019, April 2020 to October 2020 to assess the impact of COVID-19 on donor attendance and the management of blood supply and demand in tertiary care hospital. Data were analyzed. Categorical variables were described using frequencies and percentages. **Results:** After imported cases of COVID-19 were reported in INDIA, donor attendance and blood supply at blood bank-based collections showed a drop of 19.21% and blood demand during the same period was reduced by 18.26%. **Conclusions:** The COVID-19 pandemic had a negative impact on donor attendance and blood supply and adversely affected blood transfusion services. Close monitoring of blood needs and blood supply and appropriate response is essential for avoiding sudden blood shortage. An evidence-based emergency blood management plan and flexible regulatory policy should be ready to deal with any disaster and to respond quickly in the case of blood shortage.

KEYWORDS

COVID-19 Pandemic, Blood Donor, Mobile Blood Donation Camp.

INTRODUCTION:

Blood transfusion services (BTS) are an integral part of any healthcare services. Patients suffering from thalassemia major, sickle cell disease, chronic kidney disease patient on dialysis require blood transfusions on regular basis. In December 2019, an unknown viral infection was discovered in Wuhan city, China. In late December, the World Health Organization (WHO) identified the pathogen causing this pneumonia as a new strain of coronavirus; this novel coronavirus was named by the International Committee on Taxonomy of Viruses as 'severe acute respiratory syndrome coronavirus 2' (SARS-CoV-2), and its associated disease was named by the WHO as 'coronavirus disease 2019' (COVID-19). On 31 January 2020, the WHO announced the outbreak of COVID-19 as a Public Health Emergency of International Concern; it has since become a pandemic.[1]

In the view of increasing COVID-19 cases in India on 24th March 2020, the government of India under prime minister ordered a nationwide lockdown for 21 days, limiting movement of the entire 1.3 billion population of India as a preventive measure against the COVID-19 pandemic in India. Since then lockdown continues in various phases till 31st May, 2020. And then unlock started in various phases with necessary restriction and precaution till 31st October, 2020 and unlock phase 6.0 from November, 2020.

Due to lockdown and day by day increasing cases of COVID-19 have had huge impact on blood transfusion services. The situation further worsened as even though some donors were committed to blood donation, they were reluctant to go to the blood bank in view of the fear of exposure to coronavirus in the hospitals. In that situation its very difficult to manage blood and blood components for patients with urgent requirement of blood. But due to support of camp organizers, NGOs and public and dedicated work of blood bank team we are able to manage crisis of blood.

Aims and objectives:

1. To identify challenges faced by blood transfusion services at tertiary care hospital.
2. To take mitigative actions to provide blood to patients at right time.
3. To look for changes in transfusion practices and demand of blood and blood components in various department of hospital before and during COVID-19 pandemic.

Materials and Methods:

Type of study: Retrospective study after getting approval by

Institutional Ethics Committee meeting held on Dated: 22/12/2020.

Study Design: Blood donor attendance, Blood supply, and blood demand before and during the COVID-19 pandemic were estimated and assessed to aid proper management of blood supplies to avoid blood shortage during this pandemic.

Period of study: April 2018 to October 2018
April 2019 to October 2019
April 2020 to October 2020

Data collection: Data were retrospectively obtained from donor attendance records; mobile blood donation drives and blood inventory records. The data included the number of donated units of blood, sources of donated blood, and the number of blood units released for transfusion.

Inclusion Criteria:

1. In house blood donation and blood donation in mobile van and in blood donation drives.
2. Blood demand from various department of hospital.
3. Other challenges

Exclusion Criteria:

1. Blood demand from the department (ENT, Ophthalmology, Skin) those who are using blood less frequently.
2. Blood demand from private hospitals.

Major challenges to Blood Transfusion Service (BTS):

- Blood Donation
- Blood demand and Blood Inventory Management
- Staff safety and Staff Management
- Consumable and Equipment Management
- Other patient services
- Academics
- Convalescent Plasma Therapy

RESULT AND DISCUSSION:

Blood Donation:

After imported cases of COVID-19 were reported in INDIA, donor attendance and blood supply at blood bank-based collections showed a drop of 19.21% and blood demand during the same period was reduced by 18.26%.

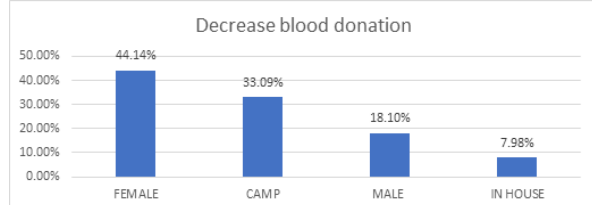
During the period of Lockdown there is significant decrease in blood

donor due to various reasons such as,

- (1) Difficulty to reach blood center in lockdown situation
- (2) Fear in donors of infection or exposure in hospital or blood Centre.
- (3) Lack of blood donation camps
- (4) Asymptomatic Donors
- (5) False history by blood donors

Table-1 Decrease in blood donation in COVID-19 Pandemic as compared to same duration of 2018 and 2019.

Year	Total	In house Blood donation			Blood donation in Camp+ Mobile van		
		Total	Male	Female	Total	Male	Female
2018	14662	8508	8455	53	6154	5711	443
2019	14272	7490	7421	69	6782	6212	570
2020	11689	7361	7289	72	4328	4083	245



Graph-1: Decrease in blood donation in COVID-19 Pandemic as compared to same duration of 2018 and 2019.

Significant reduction observed among Female donors(44.14%) followed by Blood donation in camp(33.09%) and Blood donation by Male donors(18.10%) and In house blood donation(7.98%) was less affected.

Following Measures taken to face these challenges of Decrease of blood donation:

All donors are screened by questionnaire and temperature at the entry point of the blood centre, are advised to wear mask and sanitize their hands and keep a safe inter-individual distance (around 1 meter). Blood donation in mobile Blood donation van also started with all safety measures for staff and donor both.

All blood centre staff including doctors, paramedics and technicians are advised to stay updated by WHO, and Ministry of health and family welfare, India websites and government notices regarding COVID.19.

Healthy donor recruitment:

The NBTC [2] released a statement regarding the exclusion of at-risk donors to COVID.19 to maintain safety and advised to include it in the donor questionnaire. This recommendation specifies that (1) an individual should be deferred from blood donation for 28 days after the date of departure from a country with COVID.19 in the community and areas as notified by the Ministry of Health; (2) an individual should be deferred from donating blood for 28 days with the last possible close contact exposure to a person who is suspected/confirmed case of COVID.19 including those under quarantine; and (3) an individual should be deferred from donating blood for 28 days till there complete recovery from disease including virologic and radiological clearance.

Regular repeat voluntary blood donors are usually safer and more faithful than first-time donors, so blood centres contact them to donate during a crisis. Social media platforms like WhatsApp, simple jargon-free language IEC materials are used to connect all the potential donors. To reduce mass gathering, an appointment system is established, and donors are given a specific time for blood donation.

Blood donors are encouraged for self-deferral in case of doubt of symptoms or history of contact with infected persons with the help of an interview and by IEC materials.

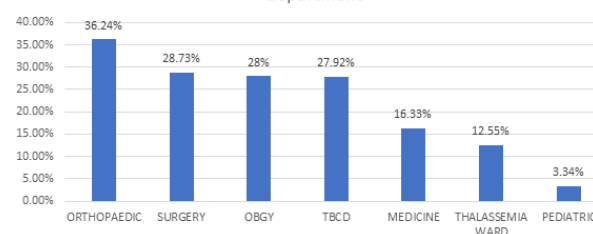
Blood demand and Blood Inventory Management:

Blood demand also decrease during COVID-19 pandemic due to less number of patients admitted in hospital and avoiding non-emergency surgeries in surgical department.

Clinicians are made aware of the scarcity of blood during a pandemic and are sensitized regarding patient blood management (PBM) policies like restrictive transfusion and use of transfusion alternatives,

that is albumin, IVIG, factor VIII, iron and erythropoietin. To prevent the transfusion transmissibility of the virus, pathogen-reduced blood products can be used more.

Decrease Demand Of Blood & Blood Components in varies department



Graph-2: Decreased demand of blood and blood components as compared to same duration of 2018 and 2019

Drastic decrease in demand of blood and blood Components observed in Orthopedic (36.24%) department followed by Surgery(28.73%) and OBGY(28%) due to post pending of planned surgeries. However, blood demand in Paediatric (3.34%) and Thalassemia (12.55%) ward not affected that much.

Staff safety and Staff Management:

During Covid-19 Staff were also afraid of getting infected and put their family at risk for infection, so, it's a responsibility of Blood transfusion center to keep the staff safe from infection. Staff shortage due to quarantine and infected staff, difficulty to reach to blood centre.

To Reduce exposure of staff restricted entry of unauthorized personnel and Staff rotation roster was implemented to decrease exposure. Education of staff to take precaution like frequent hand washing and wearing N95 mask.

Consumable and Equipment Management:

Due to decreased workload and indoor patients consumable items are in excess. The consumables with short expiry are shared with other blood centers who have the same facilities and have a shortage of consumables due to the lockdown. The suppliers are also instructed to replace the unutilized expired consumables with new ones and are advised to be ready with more consumables for an expected rise in workload at the end of pandemic.

Other patient services:

During the time of lockdown and rising cases of Covid-19, necessary therapeutic services were continued with precautions and safety measures, like Therapeutic plasma exchange, Therapeutic phlebotomy etc.

Academics:

In the situation of pandemic due to guidelines of government, seminar and CME are not possible and that will lead to great loss for students, but digital online platform play a major role in the form of Webinar and E-learning.

Convalescent Plasma Therapy:

To this date, there is no specific treatment, which has proven beneficial against COVID.19 infection. In COVID.19, convalescent plasma (CCP) has been used for patients with mild or moderate conditions due to this SARS-CoV.2 infection. CCP is the plasma component from the blood of a recovered COVID.19 patient. Considering that, a recovered patient will possess infection-fighting antibodies to SARS-CoV.2, which might offer benefit to COVID.19 patients to whom it is transfused [3].

CCP donation started at our institute on 6th, July, 2020 and till date more than 300 patients received CCP therapy.

CONCLUSION:

The COVID-19 pandemic had a negative impact on donor attendance and blood supply and adversely affected blood transfusion services. Close monitoring of blood needs and blood supply and appropriate response is essential for avoiding sudden blood shortage. An evidence-based emergency blood management plan and flexible policy should be ready to deal with any disaster and to respond quickly in the case of blood shortage. Mass media plays an essential role to make it possible

with a combined effort from clinicians' side.

Financial support and sponsorship: po Nil

Conflicts of interest: Nil

REFERENCES:

- (1) Yashaswi Dhiman, Gopal K. Patidar, Satyam Arora Covid.19 pandemic. response to challenges by blood transfusion services in India: a review report volume-15, issue-4, November-2020
- (2) National Guidance to Blood Transfusion Services in India in light of Covid.19 Pandemic [Internet]. 2020. Available from
- (3) Tanne JH: Covid.19: FDA approves use of convalescent plasma to treat critically ill patients. *BMJ* 2020; 368: m1256