

## Challenges of collection of blood in a tertiary care blood bank in pandemic situation (our experience)

Chitta Ranjan Prasad<sup>1</sup>, Bikash Ranjan Panda<sup>2\*</sup>, Yespal Sharma<sup>3</sup>

<sup>1</sup>Associate Professor, Department. of transfusion Medicine, VSSIMSAR Burla, Odisha, India

<sup>2</sup>Assistant Professor, Department. of Pathology, VSSIMSAR Burla, Odisha, India

<sup>3</sup>Senior Residence, Department. of Pathology, VSSIMSAR Burla, Odisha, India

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### Abstract

In the recent corona pandemic situation all types of health sectors have been badly affected including blood banking especially in collection of blood units for the patients due to various reasons. In the present article, we have tried to share our experience, strategy & steps taken during this period to face & tackle these challenges.

**Key word:** COVID-19, Blood Banking, Convalescent Plasma, Blood Shortage.

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### Background

The COVID-19 pandemic which is still active worldwide is creating major hurdles in all types of health care provisions in all most all health centres including blood bank. It is an airborne viral infection caused by a RNA virus named as Severe Acute Respiratory Syndrome corona virus-2 (SARS-COV-2)[1,2]. During this period the demand for blood / blood component has been reduced due to various reasons like less elective surgery, less traffic accidents for lockdown /shutdown. On the contrary the demand also has increased in particular situations like emergency surgery, dialy-sis, critical haemoglobinopathy patients, for sick COVID patients & for convalescent plasma therapy.

### Introduction

Human to human transmission of COVID-19 occurs through droplet infection(6 feet) or skin contact. In spite of stringent universal regulatory guidelines new cases are being diagnosed every day in many countries & adversely affected health care workers. As it is a highly contagious viral disease, new policies & guidelines are being laid out from time to time. In this article we have tried to enumerate the challenges we faced in arranging blood/ blood products for the patients safety.

Clinical manifestations of COVID-19: Common symptoms of COVID-19 infection classically appear within 2-14 days of exposure. In some cases, acute respiratory failure and thromboembolism are found. In the population more than 90% of the infected individuals manifest some type of symptoms leading to challenges for the safety of potential blood donors[3-5,14,15]. In one study Gum & colleagues have reported that apart from transmission through respiratory droplet, it can also be transmitted through saliva, urine & stool.

COVID-19 Diagnosis:Till now 7 types of corona virus strains have been identified that can be pathogenic to human being. Ideally every blood donor should be screened for COVID-19 which is not feasible at least new. Some studies have found SARS-COV-2 RNA in the blood which is a marker of severe illness. In addition to the bilateral peripheral ground glass shadow in CT,X-Ray,lymphopenia, neutro-

philia & elevated serum ALAT, LDH, Aspartate aminotransferase, CRP ,D-Dimer & Ferritin are also found to be associated with severe infection[19-24].

### Management:

Convalescent plasma:It is presumed that humoral immunity -has got certain role in preventing viral infection & in preventing re infection after primary infection/vaccination.In COVID-19 also convalescent plasma collected through Apheresis or by mechanical plasmapheresis can be utilised. But it has its other side effects also. In some cases they have found nosocomial bacterial infection after allogenic plasma transfusion along with organ failure, haemolysis,TRALI& thrombosis.As an alternate option some prefer to use hyper immunoglobulin G(IgG).[34-37].Patients with mild symptoms are usually managed by home quarantine for a period of 11 days. In more severe cases, hospitalisation with fluid & Oxygen support, anticoagulant,antibiotics,NSAIDS&some antiviral are recommended. In very severe cases, ICU care with intubation & corticosteroids are advised[6-9,24].Early detection and isolation of potentially infectious patients with following COVID-19 guidelines are the measures to protect the donors.In COVID-19 patients admitted in the ICU, some may develop Anaemia/Thrombo-cytopenia, who many need blood transfusion /platelet/plasma transfusion. In one study they have found thrombotic complications in severely infected COVID-19 patients. These group of patients may require plasma /cryoprecipitate transfusion. As COVID-19 is prevalent with older age group with comorbid conditions, requirement of blood /blood products may be possibility in this group [16-18,35].Ours is a Govt. Medical College with an average blood / components collection of about 30000/- year catering to the need of almost all the local Govt. & private hospitals/ Nursing home of this area.

Blood Management Strategies: Plasma is very often misused & its side effects are more observed in non bleeding patients.Similarly prophylactic use of platelet shows increased rate of thrombosis and mortality. However, since March last week, when the lockdown /Shutdown was declared, our collection from March up to December 2020 was 16358. The less collection was due to various reasons like:

1. COVID infection in the blood bank staff resulting in shortage of manpower: In spite of utmost care, some of the blood bank staff have contacted the infection either from the general public / from the voluntary blood donation camps resulting in their isolation /quarantine / hospitalisation.

### \*Correspondence

**Dr.Bikash Ranjan Panda**

Assistant Professor, Department. of Pathology, VSSIMSAR Burla, Odisha, India.

E-mail: [drchitta.in@gmail.com](mailto:drchitta.in@gmail.com)

2. Govt. restriction on outdoor VBD camps & limitation of the no. Of donors: In the beginning, the state Govt. and the regulatory authority have imposed ban on conducting expected number of outdoor VBD camps & also has limited to maximum 25-30 number of blood donors/camp.
3. Non- willingness of blood bank staff for conducting VBD camps: Due to a panic situation in the beginning many paramedical blood bank staff hesitated to accompany outdoor VBD camps.
4. Although during pandemic situation in many sectors the employees were advised to adopt work at home strategy, but this is not practicable in blood banking & transfusion centres.
5. All donors were instructed to report to the blood centre if at all they develop any corona related sign/symptom within few days of blood donation.

We have attempted-to highlight the steps and strategy adopted at our level to meet the demand & challenges thereof for providing blood / blood products to the needy patients during this pandemic period, so that in future if at all any such situation arises , then we will be in a position to handle the crisis period. Here it is worth mentioning that the-scientists have predicated about more such type of epidemic / pandemic in future.

1. In the beginning all the blood bank staff were counselled for the possible dangers of corona infection and also they were practically demonstrated how to protect themselves like maintaining social distancing, frequent hand washing & use of sanitizer. They were also advised to use PPE kits as per norms during collection of blood both in the blood bank as well as in the outdoor VBD camps. Although the staff especially the staff sisters felt suffocated and difficulty in performing venipuncture with PPE kits & gloves, they were advised to put on this intermittently if not for all times[10-13]
2. As the situation gradually -improved & people became conscious, the camp organizers were contacted & advised to organize outdoor /indoor VBD camps with small -group of donors limited to 25-30 in number. In the campsite, as per Govt. guideline, social distancing & hand washing with-sanitizers was given utmost priority. The camp organizers were advised not to gather in one place to take photographs with donors. All the donors & other persons in the camps site including the blood bank staff were ensured to put a face mask.
3. An emergency Transfusion Committee Meeting was held and a SOP was prepared to meet the challenges in collecting the blood taking into all possible safety measures. So in this context a request letter was sent to all clinical departments to use blood products judiciously & to avoid elective surgery.
4. As a protocol for each donor, a separate disposable plastic bed sheet cover was used & the blood collection site was frequently sanitised with sodium hypochlorite solution.
5. In a meeting with the authority of the institute it was decided to do corona antigen test for all blood donors and only antigen negative donors were selected. For this purpose, a testing point was arranged in the blood bank premises.
6. In a meeting with the authority of the institute it was decided to do corona antigen test for all the blood donors before collection of blood & only antigen negative donors were selected.
7. During counselling of the donors as per instruction from the Regulatory authority history of corona related symptom & travel history during last one month was asked to each donor to rule out any possible infected donor.
8. In the beginning it was found that some of our staff attending VBD camps got infected with COVID. So it was decided to reduce the working manpower of the blood bank to 50%, So that each employee will come on alternate day, so that in case

of any eventuality, the blood bank will not be shutdown as has happened in some other blood banks.

9. As per BMW management protocol all the PPE kits & other syringe, cotton, etc were disposed separately in an earmarked bucket & disinfected with 10% sodium hypochlorite solution.
  10. In was advised to the clinical departments to send samples of any suspected COVID patient with double disposable containers one outer & one inner, So that while opening the samples for testing the outer one can be discarded.
  11. Though till now it is not clear whether COVID-19 can be transmitted through blood, for safety purpose, all the blood / blood products were quarantined for a period of 14 days before issue to any patient.
  12. A group of regular donors were counselled to be always prepared to donate at the interval of every 3-4 months, So that we can avoid the suspicious donors.
  13. It was observed that during use of the new blood collection van, Social distancing was not feasible inside the vehicle due to space constraint, so as for as practicable the said vehicle was not allowed to accompany the team for outdoor VBD camps.
  14. The most difficulty we faced was to meet the requirement of packed cell for the sickle cell & thalasemia patients, who were taking this from the blood bank as & when they required. For this at regular interval depending upon an expected requirement, blood components were prepared
  15. The contact number of the leading VBD camp organisers we kept in a record, so that at the time of any emergency, any particular donor can be called to the blood bank for donation. They were also advised to come in -group in personal vehicle to the blood bank for donation. In this context at the time of lockdown, in consultation with the district administration special permit /pass was arranged for the donors & organisers.
  16. When the Govt. of Odisha took the decision of convalescent plasma extraction for moderately sick hospitalised corona patients, a separate plasma bank was established with dedicated team, so that CCP could be collected from the willing recovered corona patients after screening with all corona guidelines.(19,20,26).
  17. Any blood donor with suspicious corona related symptoms was deferred for 1 month to donate blood.
  18. As the situation improved, from November onwards the number of outdoor VBD camps was also increased.
  19. In our centre we have provided facility for thermal screening of all donors both in house & also in outdoor VBD camps. All the blood bank staff & donors were ensured to put on face masks. While arranging beds / couches for donors adequate spacing was ensured.(27,28).
  20. Convalescent plasma which was collected if belonged to some uncommon group. , then it was divided into two units, So that such two patients could be benefited.
  21. Splitting platelet units into 2doses was also considered to minimise platelets shortage.
  22. Inside the laboratory also depending upon the space available, work station of different employees was segregated to maintain social distancing.
- Some special strategy was also adopted like:
23. Using group "O"- RBC for women of child bearing age & female children. All other groups received group "O" +RBC.
  24. As for as practicable platelets units were divided into 2 doses,, so that two patients could be benefited.
  25. The nearby blood centres were contacted to transfer surplus blood units from one centre to other needy centres.
  26. To delay supply of essential reagents & testing chemicals, during pandemic situation, the stock was kept in hand for at least 3 months, so that transfusion would not be blocked due to shortage of reagents.

27. As far as possible close monitoring was done to avoid wastage of blood /blood products.
28. All the donors were instructed to report to the blood centre if at all they developed any corona related signs/ symptoms within few days of blood donation.

**Blood Donation Policies:**At the beginning of the COVID-19 outbreak, In the USA, the American Red Cross implemented some guideline in Feb 2020 deferring all donors with recent travel history to China, Hung Kong, Macau, Iran, and Italy & South Korea for 28 days; all the donors with COVID-19 infection diagnosed / suspected were also deferred for 28 days. In April 2020 FDA released new guidelines to meet the shortage .For deferral in many diseases; the deferral policy was reduced from 12 months to 3 months. Some permanently deferred donors were allowed to donate. They gave some relaxation like non-discard of blood collected for donors with errors in vital signs & reduced the donation intervals[25,33].

•To date there is no FDA guideline to screen blood donors or test blood components for COVID-19

Patient blood management (PBM) is the policy now a day's adopted worldwide to meet the blood demand with limited resources economically. Blood less medicine programme is also being adopted in many countries with therapeutic supplements in place of blood like Desmopressin, antifibrinolytics, Vitk K, IV iron, prothrombin complex concentrates. During COVID-19 pandemic situation, blood transfusion was done judiciously & the clinicians were sensitised to avoid unnecessary transfusion. Also procedures like blood sparing strategy during surgery such as implementation of normovolumic or hemodilution measure or usage of cell salvage was adopted. In the hospital transfusion committee an emergency blood management plan was chalked out.[29-32]

#### Conclusion

Any Pandemic situation always poses a great challenge in almost all spheres of health care providers, especially in Bloodbanking. But planned and meticulous strategy should be adopted always to face the challenges in these situations

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