

Original Article

Donor Notification and Response Rate in a Stand-alone Blood Center in Western India

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ABSTRACT

Background and Objectives: Counseling and notification of reactive blood donors play an important part in maintaining the chain of safe blood. The process of notification involves informing donors about the status of their reactivity against five major and mandatory transfusion-transmitted infections (TTIs). Such notification and timely follow-up till the donor reaches the referred place help in reducing the burden of TTI in society, thereby improving blood safety. The aim of this study is to highlight the importance of prompt donor notification, referral, and follow-up. **Materials and Methods:** This was a retrospective cross-sectional study carried out at a stand-alone blood center from January 2019 to October 2021. A total of 36,162 donations were screened for the five mandatory TTIs-HIV (I and II), hepatitis C virus (HCV), hepatitis B virus (HBV), syphilis, and malaria. All reactive results were retested with a duplicate tube sample and a bag sample to confirm the reactivity. Donors were notified regarding the serostatus by phone and called for reporting at our blood center, and referred to Integrated Testing & Counseling Centre (ICTC) or any other referral center. **Results:** A total of 212 (0.58%) out of 36162 donors were tested reactive during the study period. Out of them, 40.56% ($n = 86$) were hepatitis B virus reactive, 21.7% ($n = 46$) were HIV (I and II) reactive, 20.7% ($n = 44$) were HCV reactive, and remaining 17.1% ($n = 36$) were syphilis reactive. All the donors were informed. Out of them, 71.69% ($n = 152$) responded to the communication and 52.83% ($n = 112$) personally visited the blood center or respective ICTC for further evaluation. **Conclusion:** Even after laying strict criteria for predonation screening and counseling, few donors do conceal their high-risk behavior or even their serostatus and continue to donate blood, leading to the wastage of resources. Thorough follow-up of seroreactive donors helps in improving blood safety and also improves their quality of life by the commencement of timely treatment.

KEYWORDS: Counseling, notification, screening

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INTRODUCTION

Transfusion of blood and its products is lifesaving with the inherent risk involved. As per the recommendation of the WHO and Drugs and Cosmetics Act, India, five mandatory infectious markers such as HIV, hepatitis C virus (HCV), hepatitis B virus (HBV), syphilis, and malaria are tested before issuing blood.^[1,2] Screening of blood donors and testing them for transfusion-transmitted infections (TTIs) have to be extremely sensitive and specific.

Counseling blood donors and notifying them about the reactive results form an integral part of postdonation

counseling and it helps in the overall safety of blood. As per the National Blood Policy and Indian action plan for blood safety adopted by our blood center, every donor is counseled at the time of predonation regarding the testing of his blood for TTI. If the donor gives consent for being informed, they are further notified about their reactive status, and repeat testing either at the blood center or ICTC is arranged for them.^[3]

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Every blood centers keep a policy to discard even borderline reactive blood bags from the inventory to attain the safest transfusion status. However, such sensitive tests might not be carried out outside the clinical laboratory and those negative reports result in a sense of surprise and resentment from the donors. On the other hand, many such donors with strong reactive results do not respond at all to the blood center and thereby they are a risk to their family members and also the society. If such donors continue to donate, it leads to the wastage of resources for any blood center.^[4]

Counseling the donors before donation and assessing the risk is a crucial part of donor screening. Such predonation counseling may help in the deferral of certain donors, thereby saving resources. If the donors are correctly counseled about the disease, their quality of life may improve with the early start of the treatment.^[5]

Aims and objectives

The present study was carried out to find out and observe the responsiveness of donors, after the notification and to assess the role of prompt follow-up by counselor/social worker in improving the same.

MATERIALS AND METHODS

This is a retrospective cross-sectional 34-month study (from January 2019 to October 2021) done at a stand-alone blood center in Western India. All the blood donors turning up at the blood center or in a blood donation camp were given a common questionnaire which is as per the recommendation of national guidelines.^[6] They were told to fill out the consent form for allowing the blood center to inform them about the sero results and only those donors who gave consent regarding the same were informed about their reactive status. The sample was processed for five mandatory tests – anti-HIV, anti-HCV, HBV, syphilis, and malaria. HIV, HCV, and HBsAg were done in an automated chemiluminescence analyzer (Cobas e411 by Roche, Switzerland), syphilis by Rapid Plasma Reagin (RPR) method (Beacon diagnostics, India), and MP by Rapid Card (MAL CARD, J. Mitra, India) method.

When a sample is found reactive once, it is retested in duplicate using the bag and pilot sample (Ethylene Diamine Tetra Acetate (EDTA) tube). If any two of the abovementioned three samples are found reactive, the donor is informed regarding the same [Flowchart 1]. Even otherwise the blood bags collected from donors having reactivity even once in electrochemiluminescence assay were discarded.

Statistical analysis of data

All collected data were analyzed in a Microsoft Excel spreadsheet for Windows version 16, 2010. Flowchart 1 is the protocol followed at our blood center:

Ethical clearance/waver from IRB

This study has been done maintaining patient confidentiality as per the Declaration of Helsinki in line with institutional ethical guidelines. The Institute Research Advisory Committee has given approval for the present study (LBC/RAC/01/2022) and informed consent of all the donors is taken before donation.

After the final results, the counselor was informed to notify the donors. All such reactive donor forms are maintained separately in a file by the counselor. The notification process for donors is started by the counselor maintaining confidentiality at each and every step. We have a protocol of notifying the donor twice a day by phone call, for at least a week and if they do not respond, a letter is sent from the blood center and the same is updated in the file. The donors who pick up the call or replied to a letter were considered notified.

Once the donor reaches the blood center, he/she was designated as a responder, and the ones who, even after notification do not turn up for follow-up were considered nonresponders. After the arrival, demographic details of donors were cross-verified with the donor form available to the counselor. Then, after taking utmost care and confidentiality, the donor was informed about the reactive status.

If at all, the donor tested reactive for HIV, he was referred to a nearby ICTC accompanied by our counselor, and further follow-up was undertaken. For syphilis, the donor was taken to STI clinic, whereas for HCV and HBV donors were referred to a general physician or a gastroenterologist.

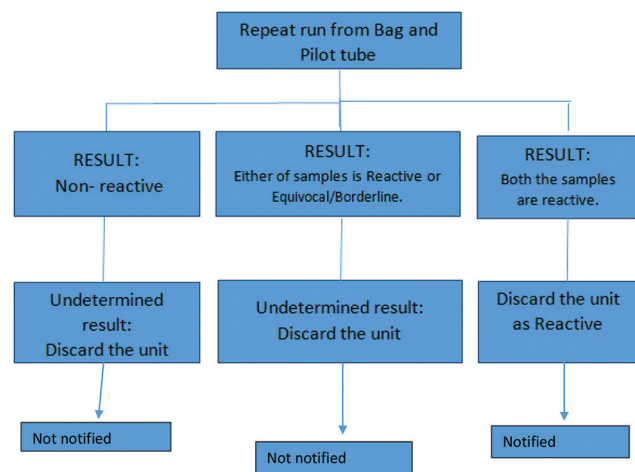
RESULTS

A total of 36162 donations took place during the study period, 35605 (98.4%) were male donors and 557 (1.6%) were female donors. Being a stand-alone blood center, we have 100% voluntary blood donation only.

A total of 212 (0.58%) donors were found reactive during the study with one or more infections. There was one female donor and the remaining 211 male donors. Gender-wise prevalence of TTI is shown in Figure 1.

Most of the reactive donors were of the younger age group between 18 and 30 years. The mean age was found to be 26 years. The remaining reactive donors were between 31 and 60 years. Only one was older than 60 years at 64 years.

As far as notification of the donors is concerned, all of them were notified by phone call or mail. One hundred



Flowchart 1: The protocol for reactive sample testing

and fifty-two responded to the calls giving an overall notification rate of 71.69%. They were informed of the results and were impressed to visit the blood center for further follow-up. However, out of 152, only 112 reported personally to the blood center. Out of those 112 donors, 46 donors were HIV reactive. They all reported and were followed up personally at the ICTC center by the counselor. Hence, the response rate of HIV was 100%, whereas 44 donors were notified for HCV reactive; out of them, 50% responded ($n = 22/44$), 86 were notified for HBV infection, 34.88% responded to the call ($n = 30/86$), and for syphilis – 36 donors were notified regarding STI, 38.8% ($n = 14/34$) responded to the notification making an overall response rate of 73.68% as far as follow-up at a blood center is concerned.

Table 1 depicts the response rate of donors in all infective categories of TTI.

Out of a total of 152 notified donors, 112 responded to the call/SMS.

Rest 40 donors, who did not respond after being notified were considered nonresponders. Flowchart 2 depicts the process being followed at our blood center for notification of seroreactive blood donors.

In the present study, 28.3% of reactive ($n = 60$) donors did not respond to the call, either due to unavailability ($n = 19$), the wrong mobile no entered ($n = 8$), or due to various miscellaneous reasons like only landline number given, wrong address given, out of network area, etc. ($n = 33$).

Table 1: Infection-wise response rate of donors (n=112)

Infectious markers	Total reactive	Response rate, % (n)
HIV	46	100 (46/46)
HBV	86	34.88 (30/86)
HCV	44	50 (22/44)
Syphilis	36	38.8 (14/36)
Malaria	0	0
Total	212	52.8 (112/212)

HBV: Hepatitis B virus, HCV: Hepatitis C virus

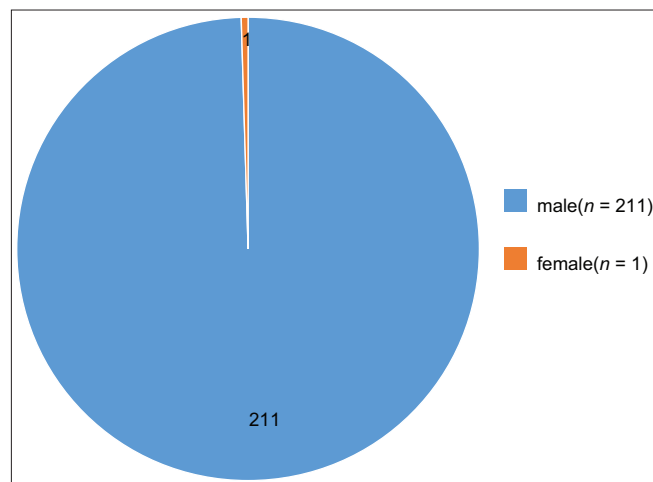


Figure 1: Gender-wise reactivity ratio

Out of 112 donors who were responsive, the infectious marker-wise distribution is shown in Figure 2.

DISCUSSION

Improvisation of techniques and more sensitive methods of screening are now part of modern blood banking. However, notification of reactive donors still remains an important and fruitful aspect in improving the safety of the blood supply chain and also improves the quality of life of donors and their families.

The overall reactivity rate for all five mandatory infectious markers was 0.58%. Such low infectivity rate can be attributed to 100% voluntary blood donation. Other studies showing comparable seroreactivity results are Bhasker and Aluri 1.07%,^[4] Patel *et al.* 1.41%,^[7] and Tiwari *et al.*^[8] having a rate of 0.91%, whereas few studies with high seroreactive results are Kumari *et al.*^[9] with 2.7% and Kotwal *et al.*^[10] with 3.02%.

The response rate and reactive rates of donors found in several recent studies are compared in Table 2.

The response rate of donors depends on the overall mentality and educational background of the population donating blood.^[13] The response rate was found to be excellent in the study carried out by Anita *et al.*^[5] who concluded that the higher rate was due to the improved mobile communication and excellent reception from the donor side regarding the sensitivity of the results.

In the present study, the response rate, especially for HIV was excellent due to a personal visit by our counselor to the respective ICTC along with the donor. Further follow-up by the counselor for around 1 month regarding the continuation of ART medications was also done. Such an approach was however not possible in Mishra *et al.*^[11] due to a lack of education and awareness in the donor population. When a moderate response to notification of seroreactivity is noticed, it is advisable to be more vigilant about predonation counseling. The response rate in another study carried out by Kaur *et al.*^[14] was found to be only 38.90% again due to a lack of education and awareness. However, it was 98.2% in a study done by Kotwal *et al.*^[10] due to a very vigilant method of notification.

In the present study, HBV reactive donors were more in nonresponders' category similar to the study by Mukherjee

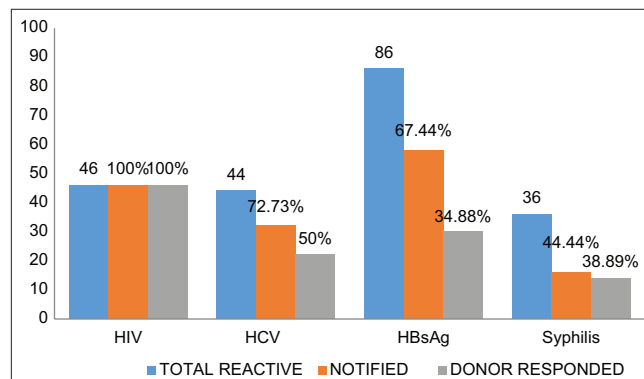
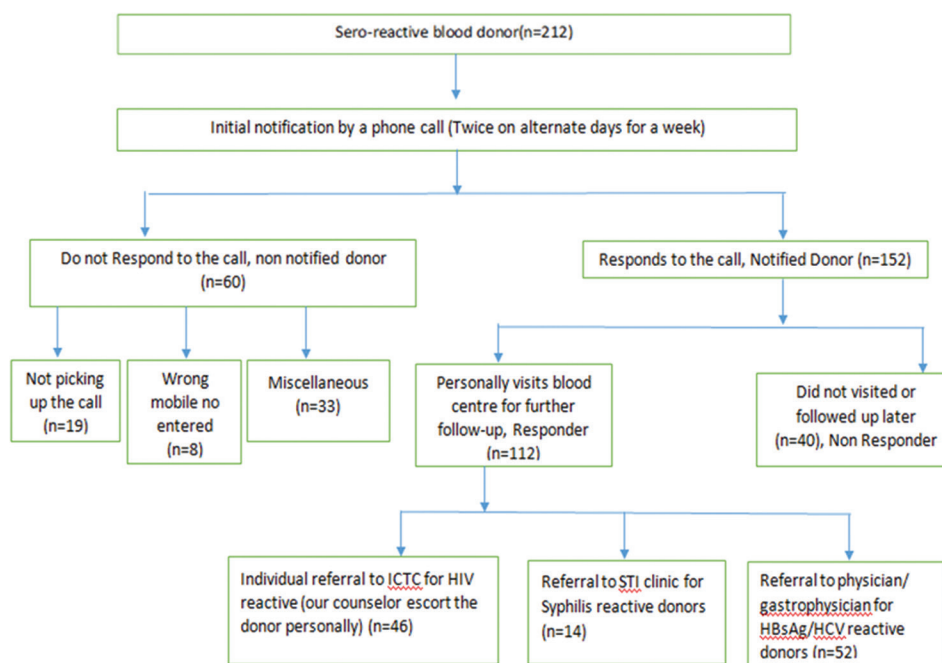


Figure 2: Notified and responders' data from the blood center



Flowchart 2: Protocol for notification of seroreactive blood donor

Table 2: Response rates of donors among various studies^[4,5,9,11,12]

Study	Duration of study	Total donors	Seroreactive donors (%)	Total notified donors (%)	Total donors responded (%)
Present study	2019-2021	36,162	212 (0.59)	152 (71.7)	112 (73.68)
Anita <i>et al.</i>	2015-2019	8172	156 (1.91)	134 (85.9)	125 (93.28)
Mishra <i>et al.</i>	2019-2020	9922	201 (2.02)	127 (63.18)	32 (25.19)
Divya <i>et al.</i>	2014-2020	14,350	126 (0.88)	108 (85.71)	62 (57.41)
Kumari <i>et al.</i>	2014-2015	4281	116 (2.71)	116 (100)	41 (35.34)
Bala Bhaskar <i>et al.</i>	2015-2018	17,025	183 (1.07)	107 (58.47)	49 (45.79)

et al.^[15] which can be attributed to the reluctant approach from the side of the donor to turn up at the blood bank for further processing and testing.

In the present study, total donors who were not reachable were 28.3% ($n = 60$) either due to wrong mobile no or wrong demographic details, whereas in a study conducted by Kaur *et al.*^[14] 10.5% of donors were not contacted due to similar reasons or switched off their mobile phones. In another study by Kotwal *et al.*,^[10] the donors who could not be contacted by the blood center was around 49.4% as compared to the present study with 28.3%.

CONCLUSION

Predonation counseling, donor notification, and postdonation counseling are an essential part of the blood center’s functions. There is a requirement to create more awareness among the donors to achieve the goal of “safe blood starts with me.”

Predonation counseling is a very important aspect of donor education and clarifies myths and misconceptions. The donor registration process should be clear and understandable along with identification proof for ease

in contacting donors. A total collaborative approach by regulatory bodies, blood center teams, camp organizers, and blood donors is the need of the hour to accomplish “safe blood transfusion.”

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Nil.

Conflicts of interest

There are no conflicts of interest.

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