Evaluation of Response to Donor Notification of Reactive Transfusion Transmitted Infections (TTIs) Result

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Abstracts: Background**:**Although blood transfusion is a life saving therapy, it is associated with various ill effects, which can cause increased morbidity and mortality in recipients. Testing of all donated blood for transfusion transmitted infections (TTIs) such as HIV I & II, hepatitis B, hepatitis C and syphilis is one of the strategies recommended by WHO to ensure safe blood. However, if the donor is already having an infection, transmissible by blood, the transfusion will be rather hazardous for the recipient. The national blood policy of India 2002 advocates the disclosure of results of transfusion transmitted infections (TTIs) to blood donors. Aim**:**To assess the attitude of the transfusion transmitted infections (TTIs) reactive blood donor in response to the post-donation calls from blood bank. Material and methods**:** A total of 20865 blood donors came to the department of IHBT in period of one year from 1St November 2009 to 31St October 2010.All donated blood was screened against HIV I & II , Hepatitis B, hepatitis C and syphilis and malaria. On screening the units, it was found that 391 donation units (1.874 %) were positive for one of the TTIs, namely HIV I & II, HBsAg, HCV or syphilis. As follow-up, these donors were recalled at blood bank by a phone call. Results**:** out of 391 reactive donors only 236 responded to call (average response rate was 60.36%). Conclusion**:** The study suggest that authorities should frame some guidelines and rules that can increase the response rate among reactive donors and make them assessable because it enables their future investigation and treatment and the prevention of diseases transmission to the community.[Patel P et al NJIRM 2012; 3(2) : 20-25]

Key words: Blood donors, Transfusion transmitted infections (TTIs), National blood policy (NBP),Response rate.

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Introduction: Blood donation is a moral responsibility of all healthy member of society. Wake and cutting have postulated that the demand for blood and its components is likely to increase in the future.[1] War, domestic fights and accident victims frequently require blood transfusion as an immediate lifesaving measurement. India is a developing country where because of urbanization and with growing automobile industry, the cases of vehicular accidents requiring blood transfusion are increasing exponentially. Some major operative procedures, anaemic debilitated patients and children with genetic diseases like thalassemia major require transfusion as an additional supplement. However, if the donor is already having an infection, transmissible by blood, the transfusion will be rather hazardous for the recipient.HIV I & II, HBsAg, HCV, syphilis and malaria are the five major infections transmitted through blood. It is clear that with development of improved screening test for the blood against TTIs, the risk of acquiring infection by the recipient is considerably reduced. But if the donors are not treated against the infection, they can pose a substantial risk to the community, as these infections can also be transmitted in the community by many means other than transfusion like, sexual intercourse, sharing needle for intravenous drug injection, contact with open wounds etc. Testing of all donated blood for transfusion transmitted infections (TTIs) such as HIV I & II, Hepatitis B, hepatitis C and syphilis is one of the strategies recommended who to ensure safe blood.[2] NACO recommended 3rd or 4th generation ELISA HIV I & II test kits which are 100% sensitive should be preferred for use at blood banks for screening donated blood.[3]

As per guidelines of the ministry of health and family welfare(government of India) under the drug and cosmetic act ,1945 amended from time to time, all the blood donations are to be screened against

the five major infections such as HIV I & II , HBsAg, HCV, syphilis and malaria.[4,5]

But just screening the collected blood is not the solution. These reactive donors are carriers of the infection and potential danger to the society. So they should be investigated and treated to prevent further transmission of TTIs to community. In 2002, the government of India adopted the national blood policy (NBP), also known as the "action plan for blood safety", to ensure an adequate and safe blood supply to its blood banks. The policy claims to bring about a paradigm shift in the disclosure of the donor's serostatus[5,6,7], which was not permissible previously. A blood bank is the point of contact between the policy and the donor. This is where policy is converted into practice. All reactive blood donors are notified of the test results and prompted to take further treatment. They are to be recalled at blood bank, to convey them the message of suffering from particular infection/disease that needs other tests for diagnosis and treatment of the infection for the safeguard of the donor himself and also the society.

The study is carried out to assess the attitude of the reactive blood donor in response to the post-donation calls from blood bank and to furnish suggestions that might have positive effect on the response rate of the TTIs positive donors.

Material and Methods: The present prospective study of was carried out at IHBT department, B.J. Medical college, Civil Hospital, Ahmedabad with prior permission of ethical committee. The period of the study was one year ranging from 1st November 2009 to 31st October 2010.The blood collection in the department of IHBT is by both voluntary and replacement donors. Total 22148 persons had registered for blood donation during the period of one year from 1st November 2009 to 31st October 2010. The donors were first required to fill up a registration form which carried all the information about medical history and personal details. After registration, predonationcounselling was done which included explaining the procedure of blood donation, post-donation care, the outcome of the donation, TTIs tests, high risk behavior and confidential unit exclusion (CUE). They were also counselled about high risk behaviour to make sure that the donor is not engaged in any such type of activities. The donors were then screened by a medical officer and hemoglobin estimation was performed. This screening procedure was very helpful to exclude the professional donors.

A total 22148 donors registered in the study period, out of which 20865 (94.21 %) persons were considered fit for blood donation. On completion of blood donation, the units were screened for the five commonest TTIs namely HIV I & II, HBsAg, HCV syphilis and malaria. All the sample were tested using 3rd generation ELISA test kit for HIV I & II , HBsAg and HCV infection, rapid plasma reagin (RPR) test for syphilis and slide test for malaria parasite(MP).

The sample which showed reactive results were traced back to donor .All TTIs reactive donors were called telephonically to blood bank clinic for follow up. Once they came to blood bank, they were sent to ICTC (for HIV I & II infection), STD clinic (for syphilis) or the medicine department (HBsAg, HCV, MP infection) for further management of the infections. The response rate was noted among the reactive donors. If the donor does not respond with one time phone call for 10 days then another attempt was made. And if the donor does not respond even on second call after another 10 days he/she was considered as non-respondent.

Reactive donor register was kept confidential. The data of the responders and non-responders so obtained were recorded on specially formed proforma, tabulated, analyzed and compared with the similar studies by other authors.

Result: It can be seen from table no. 1 that a total of 22,148 persons had registered for blood donation as replacement basis or voluntary basis at the department of IHBT or at the organized blood donation camps.20,865 donors (94.21 %) were declared "medically fit" and blood donations were accepted. On screening these units of blood against the five most common TTISs, 391 units (1.874 %) were found infected with one of the TTISs.
Table -2 shows prevalence of different TTIs out of 20,865 blood donations accepted during the one year period under study. It included 59 cases of HIV

I & II (0.28 %), 176 cases of HBsAg (0.84 %), 28 cases of HCV (0.13 %) and 128 cases of syphilis (0.61 %).

Table – 1:Table showing the total registered donors, accepted donors and reactive donors

	Number	Percentage
Total registered blood donors	22,148	100 %
Accepted donors	20,865	94.21 %
Reactive donors	391	1.874 %

Table – 2: Prevalence of HIV I & II, HBsAg, HCV, syphilis in accepted blood donations

Reactive donor	HIV I & II	HBsAg	HCV	Syphilis
Accepted donations (20865)	59	176	28	128
Prevalence (%)	0.28	0.84	0.13	0.61

Table – 3 shows that out of 20,865 donors 20,506 (98.28 %) were male and only 359 (1.72 %) were female. This has effect on reactive donors that out of 391 reactors, 388 (99.23 %) were male and only 3 (0.77 %) were female. There is high prevalence of TTIs among male in the community. These donors were of either sex between the ages of 18 to 60 years. In addition to the cultural taboo and the monthly period, and low hemoglobin being the basic reason for lower donors of female gender as also for the detection of very few female reactive donors for TTIs.

Table – 3: Sex wise classification of donors & reactive donors

Sex	Donors	Reactive donors
Male	20506	388
Female	359	003
Total	20,865	391

As described in table – 4, 21 to 35 years age-group was the most commonly affected groups (221 cases forming 56.53 % of total). However, in the remaining age-groups also the numbers of reactive donors are worthsome to be considered as 62 cases (15.86 %) from 35-40 years and 44 cases (11.25 %) from 41-45 years age groups. The reducing reactive donors at the extremes of the age-groups under study are because of less number of donors in these age-groups.

Table – 4:Age-group and sex wise distribution among reactive donors

Age-group (in years)	Male	Female	Total
18-20	24	00	24 (6.14 %)
21-25	71	00	71 (18.16 %)
26-30	73	01	74 (18.92%)
31-35	75	01	76 (19.44 %)
35-40	62	00	62 (15.86 %)
41-45	43	01	44 (11.25 %)
46-50	25	00	25 (6.39 %)
51-55	11	00	11 (2.81 %)
56-60	04	00	04 (1.02 %)
Total	388	03	391 (100 %)

The detailed description of the TTIs among reactive donors is described in table – 5. It can be seen that 176 donors (45.01 %) were positive with HBsAg, 128 (32.74 %) with syphilis, 59 (15.09 %) with HIV I & II and 28 (7.16 %) with HCV. These reactive donors are more or less proportionately distributed in all the age-groups under study. However, the donors are either on replacement or voluntary basis and they do not represent the cross section of the society. So the prevalence of these infections in the community has no relevance with the proportion of the reactive donors among blood donors in different communities.

Table – 5:Distribution of TTIs among reactive donors

Age groups	HIV I & II	HBsAg	HCV	syphilis
18-20	00	15	00	09
21-25	14	29	06	14
26-30	15	36	02	25
31-35	09	37	10	21
36-40	13	22	05	24
41-45	07	19	05	14
46-50	01	13	00	11
51-55	00	04	00	07
56-60	00	01	00	03
Total	59 (15.09%)	176 (45.01%)	27 (7.16%)	126 (32.74%)

It is important to note that none of the donor was found positive for malaria parasite on slide test. India is a tropical country with Ahmedabad city situated near line of tropics, where incidence and prevalence of malaria infection in the community is highly remarkable. Infection with malaria causes fever and acute weakness. So, possibly the persons positive with malaria would have opted to wait till cure for blood donation or rejected during initial screening by blood bank clinician by obtaining medical history.

Table – 6: Comparison study of reactive donors

TTIs	Number of reactive donors	
	Present study	Roshan et al
HIV I & II	15 (15.09 %)	87 (14.8 %)
HBsAg	176 (45.01 %)	209 (35.5 %)
HCV	28 (7.16 %)	208 (35.3 %)
Syphilis	128 (32.74 %)	85 (14.4 %)
Total	391 (100 %)	589 (100 %)

Table – 7: Responders among TTISs reactive donors

TTIs	Male		Female		Total	
	No. Of donors	Responders	No. Of donors	Responders	No. Of donors	Responders
HIV I & II	59	31	00	N.a.	59	31 (52.54 %)
HBsAg	176	113	00	N.a.	176	113 (64.20 %)
HCV	27	11	01	00	28	11 (39.29 %)
Syphilis	126	79	02	02	128	81 (60.28 %)
Total	388	234	03	02	391	236 (60.36 %)

Discussion: Despite of pre-donation counseling by professional counsellor, screening and examination by blood bank clinician, 391 donors (1.874 %) were found positive for one of the TTIs. This may be attributed to the socioeconomic and sociocultural background of the donors. Sharma et al[8] found that many donors did not know about the window period and felt that it was fine to donate blood even if they engaged in high risk behaviour since the blood they donated would be tested for the infectious agents anyway and would be discarded if found positive for that.

The reactive donors are potential risk to the community in terms of their infectivity. In view of the low response rate among reactive blood donors it is important to consider the policy of the pre-donation donor screening, which takes only half an hour by sensitive rapid tests. So, the reactive total donor can be identified on the spot subsequent treatment can be started at the earliest that will provide a safeguard to the society.

Roshan et al[9] have described test-seekers using blood donation as a means of free testing. He found that these potential test-seekers were aware that a notification from the blood bank clinic would most likely due to a reactive screening test. In developing country like India an additional category of professional donors (donating blood for monetary benefits) is also worth to be considered. The donors are aware of the fact that the testing is not only free but also confidential, will not affect their ordinary pursuits of day to day life because of rigid cultural taboo of the society. The reactive donors in studies by roshan et al at Malaysia were 589, as classified and compared in table 6.

On confirming the donor as positive for TTIs on screening test, he/she was called to blood bank clinic by making a phone call. If the donor did not respond with one time phone call for 10 days then another attempt was made. And if the donor did not respond even on second call after another 10 days he/she was considered as non respondent. Table – 7 shows the most important part of the study i.e. response rate among TTIs reactive donors. In present study, the average response rate among TTISs reactive donors was 60.36 % (236 out of 391).

Disease wise classification shows that the response rate was 52.54 % (31 out of 59) among HIV I & II positive, 64.20 % (113out of 176) among HBsAg positive, 39.29 % (11 out of 28) among HCV positive and 63.28 % (81 out of 128) among positive for syphilis. Roshan et al (Malaysia) found response rate of 70.7 % for HCV, 58.9 % for HBsAg, 54 % for HIV I & II and 32.9 % for syphilis with an average response rate of 63.5 %.

The response rate in studies by Tynell[10] at Sweden was 88 %. In his studies, prospective blood donors were provided with necessary information and a relevant history was obtained to rule out any medical problems. They screened the blood sample for infectious agents before actually donating the blood. Whereas in our setting (India) like also in Malaysia, the screening tests are performed once the actual donation is made.

Studies by Nilsson & sojka[11] has also shown higher response rate among TTIs reactive donors as compared to ours. Lower response rates (21-67%) are also reported in some studies like by Moyer et al[12], Sanchez et al[13] and Kleinman et al.[14]

The identification of the donor with some regulatory system at the time of donation can be of utmost help in such cases. Till the unique identification number (UIN) is in force, other systems like details on driving license, voter's card, ration card etc. can help to search the non-responders after-wards.

Notification of the abnormal (positive) screening test is critical. Asymptomatic donors are informed about a possible infectious agent being present in their body. The process of notification, methods of disclosure of results should be standardized and public health authorities should work in close relation with blood bank. It should be made mandatory for all blood banks to follow up the reactive donors as this donors poses greater risks to community being asymptomatic. This may reduce the chances of transferring infectious agents to the healthy members in the community.

Public awareness programmes for blood donation should be combined with awareness for transfusion transmitted infections and the availability and ease of their treatment, like banners, sign-board, and conferences might pull the high risk people of the community to the hospitals to take treatment. Educational material, IEC material, posters regarding high risk activity and TTIs should be placed in the donor screening room so it may result in self-deferral of donor belonging from high risk groups.
Perceptions regarding positive screening test would be different among different donors. This may be attributed to not only the socio-economic status and socio-cultural beliefs but also the educational background and emotional stability of the donor. Whatever is the reason but one thing is clear that lower response rate has a definite impact on the transmission of infection and the prevalence of infection in the community.

Conclusion:A total of 391 out of 20,865 (1.874 %) of the blood donations were found infected with one of the TTIs. They were 59 units (15.09 %) of HIV I & II, 176 units (45.01 %) of HBsAg, 28 units (7.16 %) of HCV and 128 (32.74 %) of syphilis. Out of 20,865 blood donations, absolute prevalence rate of HIV I & II was 0.28 %, HBsAg 0.84 %, HCV 0.13 % and syphilis 0.61 % in the present study, which is slightly higher than the previously reported data. Effectiveness of pre-donation counselling and screening of donors is also at questionable because of such a high percentage of reactive donation units.The present study shows an average response rate of 60.36 % among reactive donors on screening the blood for TTIs. The response rate is detailed as 52.54 % for HIV I & II, 64.20 % for HBsAg, 39.29 % for HCV and 63.28 % for syphilis.

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