



Screening of Donated Blood for Transfusion Transmitted Infection by Serology and Evaluation of Response Rate to Notification and counseling of Reactive Donors

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ABSTRACT

Background: In medical history blood transfusion remains an important health issue. It's safe and adequate supply is challenge which begins with healthy donors and notification and proper counseling of reactive donors. This prevents secondary transmission of transfusion transmitted infections (TTIs). Material and Methods: Total 42,111 blood donors were screened for TTIs by serology from January 2013 to September 2015. Each reactive donor was retested and notified by telephonic call and response was noted. Results: During the study period 824(1.96%) donors were found to be reactive [HIV(0.10%), HBV(0.96%), HCV(0.76%), Syphilis(0.71%)]. Out of which 434(52.66%) reactive donors were responded to the telephonic call and attended at referral specialties. The response rate was highest for HIV reactive donors 37 out of 42(88.0%). Conclusion: These results suggest insufficient health care knowledge and poor understanding of TTIs and its screening tests. This proves importance of proper counseling and notification of test result.

KEYWORDS : Blood donor notification and counseling, Reactive donor, Transfusion transmitted infections (TTIs), Response rate.

Introduction

From the longtime of history, blood transfusions are used for various medical conditions to replace lost components of blood. The source of blood is either autologous or allogenic. The later one is used far more commonly which starts with blood donation generating concept of transfusion transmitted diseases(TTIs) and reactions.

Through continuous improvement in donor recruitment and screening with advancement of serological testing it is now possible to shorten the window period. Still it is not possible to completely close exposure to seroconversion(window period) stating nonzero risk of disease transmission still exists in all its seriousness[1]. As a part of Indian practice after filling of donor health questionnaire and brief medical examination, donors are sent for predonation counseling. During this donors are explained about outcome and post donation care. After blood donation, samples are collected for screening for anti-HIV-1/2, anti-HCV, and HBsAg, RPR for syphilis, and slide/card test for malaria. In addition to ELISA, NAT is being increasingly used to further improve blood safety although it's not mandated by national authorities.

The Indian Government has adopted the National Blood Policy "An action plan for blood safety" to ensure safe blood supply in 2002. The policy advocates notification to all reactive blood donors. For this blood bank are required to obtain written consent from donors at time of donation for screening blood for TTIs and whether they wish to be informed about their abnormal tests results [2]. If any donor is tested positive for TTIs than before informing donor either using two assays of differing principles or in duplicate with the same assay test is again repeated to avoid notification of false-positive results. Donors who report back to the blood bank are referred to Integrated Counseling and Testing Centers(ICTC) for HIV and gastroenterology and STD clinic for HBV/HCV and syphilis, respectively, for counseling, confirmatory testing and management.

After listening to test positivity donor may be distressed as they do not expect to hear this. Most of the time donors are coming in motivated state to help others and unfortunately this may leave donor with a negative feeling towards blood donation or diminish own self-worth.

Thus donor notification requires good skill of staff involved to inform the status of donor and they should always be ready for these kinds

of challenges and motivate the donors for future donation. This study is undertaken to see the response of donor about his or her reactive results and also to assess the prevalence of seropositivity.

Material and Methods

We evaluated 42,111 Blood donations at Blood Bank of Sir Takhtasinhji Hospital, Bhavnagar between January 2013 and September 2015. All donors were screened using 4th generation ELISA test for HIV, 3rd generation ELISA test for HBV, HCV, and Syphilis. For all positive results pilot samples and samples drawn from the blood bag were retested again in rapid and duplicate methods. The analytical sensitivity and specificity of ELISA for HIV is 100% and 99.71% respectively, for HBV and Syphilis is 100% and 100% respectively, for HCV is 100% and 99.75% respectively.

For positive serology test result, blood unit and pilot sample were discarded by autoclaving at high temperature according to hospital SOPs. Reactive donor was notified of his/her status by telephone. Follow up calls were made for 3 to 4 times at interval of 2-3 days if donor did not respond to first call. Donors who did not respond to any call was tagged as non responders. Donors who responded to call and came for reporting at blood bank were counseled properly and referred to ICTC who were positive for HIV 1/2, to the medicine specialty (physician) who was positive for HBsAg/HCV and to the dermatologist who were positive for syphilis. The response rate was evaluated at the time of notification and at various follow-up visits mentioned above.

Results

After complete evaluation of 42,111 donors, 824(1.96%) donors were found to be reactive for different markers [HIV(42), HBV(405), HCV(76) and Syphilis(301)]. Prevalence of seropositivity was HIV(0.10%), HBV(0.96%), HCV(0.76%), Syphilis(0.71%). Out of all reactive donors 630(76.46%) were voluntary and 194(23.54%) were replacement, 798(96.84%) were males and 26(3.15%) were females, 219(26.58%) were first time donors and 605(73.42%) were repeaters (Table-3). Among the 824 reactive donors, 434(52.66%) responded positively to the notification calls and attended counseling either at the blood bank or with the physician or at ICTC, they were told to consult. The response rate was highest for HIV reactive donors 37 out of 42(88.0%) & for HBV 200/405(49.4%), HCV 44/76(57.9%), Syphilis 153/301(50.8%)(Table-2). Total 390(47.33%) donors [HIV(5), HBV(205), HCV(32) and Syphilis(148)] were failed to report for the repeat counseling at blood bank and treatment purposes.

Table 1: Demographic details of donations.

| Donor demographics (42,111) | | |
|-----------------------------|--------|------|
| | Number | % |
| Gender | | |
| Male | 40,098 | 95.2 |
| Female | 2,013 | 4.8 |
| Age group | | |
| 18–25 | 13,702 | 32.5 |
| 26–40 | 24,353 | 57.8 |
| 41–65 | 4,056 | 9.7 |
| Donation Site | | |
| Camp | 30,143 | 71.5 |
| Blood Bank | 11,968 | 28.5 |
| Donation type | | |
| Voluntary | 32,621 | 77.5 |
| Replacement | 9,490 | 22.5 |
| Donor repeatability | | |
| First time donors | 10,302 | 24.5 |
| Repeat donor | 31,809 | 75.5 |

Table 2: Response rate of notified Donors.

| Marker | Reactive donors % | | Voluntary donors + Replacement donors | | |
|----------|-------------------|------|---------------------------------------|----------|-------|
| | | | Notified | Response | % |
| HBV | 405 | 0.96 | 405 | 200 | 49.4 |
| HCV | 76 | 0.76 | 76 | 44 | 57.9 |
| HIV | 420 | 0.10 | 42 | 37 | 88.0 |
| Syphilis | 301 | 0.71 | 301 | 153 | 50.8 |
| Total | 824 | 1.96 | 824 | 434 | 52.66 |

Table 3: Details of Reactive Donors

| | Reactive Donors(824) | |
|----------------------------|----------------------|-------|
| | Number | % |
| Gender | | |
| Male | 798 | 96.84 |
| Female | 26 | 3.15 |
| Donation type | | |
| Voluntary | 630 | 76.46 |
| Replacement | 194 | 23.54 |
| Donor repeatability | | |
| First time donors | 219 | 26.58 |
| Repeat donor | 605 | 73.42 |
| Response rate | | |
| Responders | 434 | 52.66 |
| Non responders | 390 | 47.33 |

Discussion

Various critical disease conditions, routine and emergency surgical operations and many life threatening conditions require blood trans-

fusion which may spread TTIs to the patients. According to studies conducted in India, prevalence of transmission of infections through transfusions is significantly higher as compared to developed nations. Some of the reasons include concealment of relevant medical history by prospective donors, specificity and sensitivity of screening tests for infections may be poor, non-implementation of National Transfusion Policy, repeat donor system is non- existent, collection of donor blood during window period [3].

The notification and post donation counseling is very important which has its psychological and social impact. Each donor reacts in a different manner, some faint, get angry, deny, start weeping, very calm apparently followed by nervous breakdown and various other emotional disturbances. The goals of the notification process are to ensure that donors receive their test results and understand their deferral status with ineligibility for future donation and finally referral for medical care[4].

We have studied total 42,111 blood donors during period of January 2013 to September 2015(voluntary(32,621) and replacement(9,490)). Maximum donors(24353) were in age group 26-40 years(Table-1). We tried to contact all 824(1.96%) reactive donors about their TTI status by telephonic call by our two counsellors. Among them 434(52.66%) reactive donors responded to notification. So response rate of donor in our study is somewhat higher than some other study. Total 390(47.33%) reactive donors were lost to follow up at this very first stage. These may be due to not enough time for reporting, residing at far place, donor was already suffering from disease, poor health care knowledge or social stigma.

In the study performed by Moyer 1992, approximately 500,000 donors were tested by the American Red Cross Blood Services, Atlanta Region, between January 1987 and July 1989. 145 were permanently deferred for HBsAg-positive test results. Of these, only 54(37%) could be contacted and interviewed. A disconnected telephone was the most frequent reason for inability to contact the remaining 91(65.52%) donors[5]. Study conducted in Rockville, MD, USA, survey was conducted of blood donors with an abnormal infectious disease screening result. The survey had a 42% response rate, 10% of the donors did not recall being notified of their results and only 27% contacted the blood bank for further information[6].

Donor notification and counseling protect the health of the donor, prevent secondary transmission of infectious diseases to sexual partners, reduces risk of vertical transmission and provide feedback about the effectiveness of donor selection procedures such as pre donation education and medical history [7]. One obvious consequence is eventual decrease in incidence of TTIs. Donors are strictly advised not to donate blood in the future. TTIs can exist as asymptomatic diseases in healthy blood donor population and can be a serious threat to the safety of the collected blood donations; therefore, donors must be screened for high-risk behavior. Prevalence of TTIs also helps in assessment of the epidemiology of these infections in the community. The donor benefits immensely from the counseling process and early diagnosis helps to manage and start treatment, if necessary and preventive interventions for self and family can be initiated also[4].

Counsellors and interviewers should be well trained, polite and competent to give proper education about risk of TTIs and the window period to the donor. The written material given to the donor should be clear in layman language and comprehensible and most important is donor’s privacy and confidentiality should be maintained at every step.

In conclusion, it is very clear that the response rate of donors after notification about the reactive status of their donations is low. These results suggest poor health care knowledge and social stigma associated with TTIs among the population and a poor understanding of the TTIs and its screening tests. Blood donors need to be educated and motivated about the various TTIs, screening tests to confirm results suggestive of an infection and about treatment if the infection is indeed confirmed.

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