

Analysis of blood donor deferral characteristics in a tertiary care hospital in a Blood Bank – A review

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Abstract

Introduction: The deferral of blood donors leads to loss of precious whole blood donors (WBD) and blood units available for transfusion purpose. Knowledge of donor deferral (DD) can guide the recruitment strategy for WBD. **Objective:** To find the incidence and causes of deferral in Indian WBD and apply relevant findings to modify recruitment strategy for WBD. **Discussion:** Data for WBD presenting for donation in a blood centre and outdoor camps from January 2008 to December 2011 were analysed retrospectively. National guidelines were used for selection and deferral of WBD. 7563 WBD were deferred out of 103337 presenting for donation during the study period. Incidence of deferral was 7.31 %. Most common reasons for deferral were low Hb(Haemoglobin) (49.91 %), High blood pressure (9.52 %), underweight (17.29 %) , History of jaundice/hepatitis (4.89 %) and history of antibiotic/medication use (3.10%). Majority of them (87.55%) were being deferred for temporary reasons. Permanent Deferral accounted for 12.45 % with uncontrolled hypertension being the most common cause (76.51 %) in this category. Most of these deferred donors (63.22 %) were between 18-30 years of age. **Conclusion:** It is important to determine the rate and causes of WBD deferral to guide the recruitment and retention efforts at local, regional, and national level.

Key words: Anaemia, Donor deferral, Hypertension, Whole Blood Donor

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Introduction: To make blood transfusion safe for the patients many safety measures are undertaken by the blood transfusion services, among which, the most important is selection of WBD. To protect WBD and recipients, stringent donor screening criteria are necessary.^[1] Individuals disqualified from donating blood are

known as deferred donors, they are either temporarily or permanently.^[2] Blood donor deferral is a painful and sad experience for the WBD as well as the blood centre screening the donor. These deferrals often leaves the donor with negative feelings about themselves and the blood donation process.^[3] Additionally these donors are

less likely to return for blood donation in future. ^[4] Nonetheless, criteria for these deferrals and their implementation strongly influence the quality of blood supply in a population. Thus, every blood centre has to balance the fulcrum between acceptable quality and desired quantity.

Most of the blood banks focus at recruiting new donors while ignoring the retention and re-entry of those recruited but deferred due to various causes. This can be achieved by analysing the reason of these deferrals amongst WBD, addressing the issue and ameliorating the cause if possible.

The criteria for prospective blood donor selection and deferral in India, are provided by the Drugs and Cosmetic Act 1940 (NACO guidelines), supplemented by the Technical Manual (Directorate General of Health Services, MOH and FW, Govt. of India).^[5,6] The present study was undertaken to analyse the deferral incidence and pattern among WBD in an Indian Blood Centre with an objective to review the Centre's policy for recruitment and retention of WBD.

Discussion: Data were analysed retrospectively for whole blood donations over a period from January 2008 to December 2011 at Blood Bank, Civil Hospital, Ahmedabad, Gujarat, India. Data

was retrieved from Blood Bank Data Management System (BDMS), software. 1, 03,337 potential donors were screened, out of which 95774(92.68) were deemed eligible for donation. Of them, there were 93876 males and 1898 female donors. Out of 95774, 43198 were voluntary donors and 52576 were replacement donors. Donors presenting at indoor as well as outdoor locations were included in the study. Each donor was screened by a medical officer based on detailed medical history and brief physical examination with regard to haemoglobin estimation, blood pressure, temperature, and pulse regularity and rate. Standard Operating Procedures based on national guidelines were used for donor selection and deferral. The minimal haemoglobin (Hb) cut off for donor selection was set at 12.5 gm% for both male and female. Hb was measured by using CuSO_4 method and doubtful values were confirmed by Hemocue method.

Donors with systolic blood pressure between 100 and 160 mm of Hg and diastolic blood pressure between 60 and 90 mm of Hg were accepted for blood donation.

Detailed information on the donor deferral including the cause of deferral was recorded in deferral register. Deferral

reasons were analysed amongst replacement-Voluntary, male-female, temporary-permanent and various age group categories. Donors were categorized into five conventional age groups for the sake of convenience and analysis.

The causes of deferrals in the temporary and permanent subsets are shown in Table

Table 1 Causes of temporary and permanent deferrals with their relative proportion

Causes	No. of deferred donors	% from Temporary deferral	% from Total deferral
Temporary deferrals			
Hb <12.5gm%	3775	57	49.91
Weight(Wt) <45kg	1308	19.75	17.29
Jaundice/hepatitis	370	05.58	04.89
Alcohol	44	0.66	0.58
Tuberculosis	12	0.18	0.16
Previous donation	108	1.63	1.42
Malaria	85	1.28	1.12
Surgery	47	0.71	0.62
Medication	235	3.55	3.10
Typhoid	14	0.21	0.18
Vaccination	21	0.32	0.27
Tattoo	66	0.99	0.87
Open wound	26	0.39	0.34
Menstruation	23	0.34	0.30
Skin rash at phlebotomy site	16	0.24	0.21
Allergy	69	1.04	0.91
Acute infection	54	0.81	0.71
Chronic infection	16	0.24	0.21
Age<18 years	18	0.27	0.23
Dental extraction	15	0.22	0.19
Miscellaneous	310	4.68	4.09
Total	6622		
Permanent deferrals	Number of deferred donors	% from permanent deferral	% from Total deferral
Hypertension	720	76.51%	9.52%
Age >60 years	3	0.31%	0.03%
Epilepsy	08	0.85	0.10
Diabetes	45	4.78	0.59
High risk behavior	62	6.59	0.81
Heart disease	58	6.16%	0.76
History of Hepatitis B/C	21	2.23%	0.27
History of HIV or sign &symptom of HIV	12	1.27%	0.16%
Endocrine disorder	12	1.27%	0.16%
Total	941		

The five leading causes of deferral for both sexes are shown in Table 2.

Table 2 Five leading causes of deferral in Male and Female Donors

Male			Female		
Causes	Number of Donors	% from Total deferral	Causes	Number of Donors	% from Total deferral
Low Hb	3310	43.76%	Low Hb	465	6.15%
Weight	1082	14.30%	Weight	226	2.99%
Jaundice	299	3.95	Jaundice	71	0.94
Medication	211	2.79%	Medication	24	0.31%
Previous donation	108	1.43%	Menstruation	23	0.30%
Total	5010		Total	809	

Demographic profile of various age groups along with anaemic donors is given in Table3. Most of these deferred donors 4191(62.69%) were age 18-30 years old.

Table 3 Demographic profile of various Age groups of Donors

Anaemic Male Deferred Donors - 3310			Total Male Deferred Donors - 6685		Anaemic Female Deferred Donors -465			Total Female Deferred Donors - 878	
Age	Number	%	Number	%	Age	Number	%	Number	%
<18			18	0.27%	<18			05	0.57%
18-30	1714	53.48%	4191	62.69%	18-30	345	74.19%	591	67.31%
31-40	1249	36.69%	1924	28.78%	31-40	088	18.92%	232	26.42%
41-50	0335	10.09%	509	7.61%	41-50	028	06.02%	49	5.58%
51-60	0012	00.31%	40	0.59%	51-60	004	00.86%	06	0.68%
>60			03	0.04%	>60			01	0.11%

While losses resulting from consequences of rigorous screening for Transfusion Transmitted infections have been the focus of our attention for more than a decade, reasons for donor deferral have not received as much attention. In this study, we have analysed donor deferral patterns in an attempt to provide insight into the reasons for donor deferral in a country. Among all deferred donors majority were males (88.39 %), women accounted for only (11.61%) of the donors. 7.32 % of the donors were deferred for multiple reasons in our study. Arslan (2007) ^[2] Zou *et al*, 2008).^[7] Lawson-Ayayi *et al* (1999) ^[8] Lim *et al* (1993) ^[11] Custer *et al* (2004) ^[4] reported a donor deferral rate of 14.6% in Turkish donors, 12.8% in a study of American Red Cross blood services, 10.8% in a European study, 14.4% and 13.6% respectively.

This similarity among studies shows the rate of deferral may not change whether donors are regular volunteers, as reported in other studies or replacement donors.

The most common cause for deferral was low haemoglobin (49.91 %) similar to that reported in Turkish donors by Arslan (2007) ^[2] (20.7%), Bahadur and colleague (2009) ^[5] (32.9%) and Custer *et al* (2004) ^[4] (60% of temporary deferrals) and

Halperin *et al* (1998) ^[9] (46%). The second most common cause of deferral was low weight, which accounted for 17.29 % of total deferrals.

Past studies have segregated deferred donors on the basis of duration of deferral (temporary or permanent) ^[5] and deferral due to pathological or non-pathological causes^[6]. In our study we segregated donor deferral on the basis of medical interview or physical examination. Our objective was to formulate definite strategy based on point of exit of prospective blood donor in order to increase the efficiency of the donor screening process. Haemoglobin and low weight combined accounted for 67.20 % of total deferral similar to the findings by Chaudhary *et al* (2008) ^[6]

Most of these deferred donors (63.22 %) were between age 18-30 years. This highlights the fact that a sizeable proportion of youth in this part of the world are malnourished.

Females constituted 1.98% (1898) of fit donors and 11.60% (878) of the deferred subset. A staggering 52.96 % (465) of unfit females were anaemic. Some male donors were either anaemic (49.51%, 3310) or underweight (16.18%, 1082). Since both these conditions are easily curable, a large number of temporarily

deferred donors can be recruited back into the donor pool if managed properly.

In our study 12.44 % of donors were deferred for permanent reasons. Custer *et al*(2004)^[4] reported a permanent deferral rate of 10.6% and Arslan (2007)^[2] reported a rate of 10%. Our data is in concordance with previously reported literature. The most common cause of permanent deferral was uncontrolled hypertension (9.52%) similar to a study by De Lorenze Oliveria *et al* (2009).^[10]

Our study shows that although donor rejection rates are similar in different populations analysis of rejection patterns may help medical personnel to be more focused in donor screening. This will not only help in improving donor and recipient safety but also in maintaining a healthy donor pool in the long run, provided the potential donors are appropriately counselled and managed to improve the efficiency of the donor program. Temporary donor deferrals need to be actively and aggressively managed so that there is a regular participation of donors in future.

Conclusion: Criteria for whole blood donor selection and deferral in India are based partially on scientific facts ""borrowed"" from developed countries and partially on tradition. However,

sufficient "in-house" data and its scientific validation are still required to test the applicability of these criteria in our WBD. Deferred donors can be considered somewhere in-between the chain of "an unsensitized donor---first time donor---regular donor". They are better than uninitiated prospective donors but a little "behind" the regular repeat donors. Also, they are aware of the donation process and have at least once shown the willingness to donate. Some salient results of our study are Incidence of deferral (7.31 %), among them common reasons for deferral were low Hb (49.91 %), Hypertension (9.52 %), underweight (17.29 %), history of jaundice/hepatitis (4.89%) and history of antibiotic/medication use (3.10%). Majority of them (87.55%) were being deferred for temporary reasons while permanent deferral accounted for 12.45 % with hypertension being the most common cause (76.51 %) in this category. Most of these deferred donors (63.22 %) were between ages 18-30 years.

The findings of donor deferral will help in determining the incidence and reasons which may be worked upon, so that they can be recruited later. Deferral criteria can be revalidated and modified according to regional prevalent donor demographics.

Effective measures thus need to be initiated to address the issue of lost donors in terms of "how much" and "why." It is high time to take stock of the present and future precious blood units lost due to these deferrals. Existing channels of data collection for blood donations in the country can be restructured to mark the beginning in this direction.

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