

Whole blood donor deferral causes in a tertiary care teaching hospital blood bank from South India

Abstract

Introduction: Suspension of eligibility of an individual to donate blood or blood components due to various causes is called deferral. This is intended to take care that removal of blood does not harm the donor and that the potential risk to the recipient due to disease conditions in donor must be kept to minimum. This cross sectional study was designed to delineate the causes for deferrals amongst whole blood donors.

Methodology: This was a 1 year descriptive study done in a tertiary care teaching hospital Blood Bank in South India. The various causes for deferral of the donor from donation were collected from the donor deferral register which was recorded using the regular questionnaire based interview in the registration card followed by thorough medical history elicitation and examination. The statistical analysis was performed using SPSS version 10.

Results: Amongst 30711 donors who attended the blood bank for donation, deferral rate was 9.74%. Out of which there were 2487(83.11%) temporary and 505(16.89%) permanent deferrals. The most common cause for deferral was anemia in females whereas among males it was alcohol consumption in the past 12hours.

Conclusion: The deferral rate in this study is comparable to the deferral rates in other centers. The data will be very essential and helpful in testing the applicability of donor selection criteria locally in different geographical settings.

Keywords: deferrals, donor anemia, whole blood, hepatitis, hypotension, bradycardia

Volume 5 Issue 2 - 2017

Abhishekh Basavarajgowda

Department of Transfusion medicine, Jawaharlal Institute of Postgraduate Medical Education and Research, India

Correspondence: Abhishekh Basavarajgowda, Department of Transfusion medicine, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Room No 185, Superspeciality Block, Dhanavantrinagar, Pondicherry, India, Tel 9008255888, Email drabhighowda@gmail.com

Received: June 24, 2017 | **Published:** September 06, 2017

Introduction

The safety of any blood transfusion begins with the proper selection of donors. The physician must take care that removal of blood does not harm the donor and that the potential risk to the recipient due to disease conditions in donor must be kept to minimum. All blood donors should be in enough good health to be able to tolerate a short period of hypotension and bradycardia that occurs due to removal of blood. Donor should also be free of known recurrent diseases so that a coincidental exacerbation of disease cannot be attributed to blood donation. Suspension of eligibility of an individual to donate blood or blood components resulting from self administered questionnaire, interview responses or medical evaluation is called deferral. This could be temporary wherein the donor is deferred for a specific period of time or permanent wherein the donor is deferred from donation indefinitely. Analysis of donor deferral is beneficial in helping us in refining our donor screening methods and criteria.¹ It helps in providing efficient blood transfusion services as well as throws light on health status of the catering population. This was a cross sectional study designed to delineate the causes for deferrals amongst whole blood donors at a single tertiary care referral hospital blood centre in southern India.

Methodology

This was a Descriptive cross sectional study performed at Department of Transfusion Medicine of Medical College Hospital in southern India which is the major referral centre and tertiary

care centre. The study was performed from 1st January 2009 to 31st December 2009. The various causes for deferral of the donor from donation were collected from the donor deferral register which was recorded using the regular questionnaire based interview in the registration card followed by thorough medical history elicitation and examination. Privacy and Confidentiality of the study subjects were maintained during all stages of the study. Statistical univariate analysis was done by estimating frequencies and proportions with 95% confidence interval for the variables.

Results

A total of 30711 attended the blood bank for donation during the study period. Amongst them 2992 were deferred from donation with a deferral rate of 9.74%. There were 2487(83.11%) temporary and 505(16.89%) permanent deferrals. The causes were classified as those which were noted and deferred during history taking (Table 1), those which were found during examination (Table 2) and the deferrals during donation (Table 3). The most common cause based on history was alcohol consumption in the past 24hours and most common cause based on donor qualifying examination/tests was anemia. The most common cause for deferral was anemia in females whereas among males it was alcohol consumption in the past 24hours. The next common causes were hypertension, low body weight, taking medications for various ailments, not feeling well, respiratory problems, infections and wounds, skin disorders. Uncommon causes included h/o jaundice, undergone minor surgeries, diabetes, systemic diseases, ear piercing.

Table 1 Deferrals during history taking

Deferral reason	No of deferrals	Percentage of total donor presentations	AABB data
Not healthy and well	107		
Lack of sleep*	58	220	0.71
Fasting**	63		
Infection or antibiotics	71		
Wounds	138	288	0.94
H/o chicken pox in past 1year	79		
Medications	292		
Vaccines	24	316	1.03
Alcohol intake***	502		1.64
Past donation within 4 months	45		0.15
Malaria	5		0.02
Heart and lung diseases	3		0.01
Blood or bleeding disorders	3		0.01
Cancer	1		<0.01

*Had a sleep of less than 6 hrs on the previous day of donation

**>4hrs elapsed after the last meal

***Alcohol intake within past 24 hrs

Table 2 Deferrals due to present medical conditions

Deferral reason	Number of deferrals	Percentage	AABB Data
Asthma & allergic disorders	98	0.32	
Mental illnesses	3	0.01	
Physically handicapped	15	0.05	
Jaundice	24	0.08	
Diabetes and other metabolic diseases	40	0.13	
Neurological disorders	9	0.03	
Skin disorders	201	0.66	
Total	390	1.27	0.06

Table 3 Deferrals during physical examination

Deferral reason	No of deferrals	Percentage of total donor presentations	AABB data
Anemia/Pallor	370	1.21	8.53
Hypotension	22	<0.01	
Hypertension	364	1.19	0.6
Underweight	197	0.64	
TOTAL	893	2.91	9.9

Discussion

In this study the overall deferral rate was 9.74%. The rate of deferral differs from region to region and sometimes in the same region from one center to center.² The lowest reported rate of rejection was by Talonu³ (4%) in Papua New Guinea³ and higher rate (8-15%)

was reported by Chaudhary et al.¹ Lim et al.,⁴ Blumberg et al.⁵ and Ranveet et al.⁶ Causes of deferral were many and can be broadly classified into temporary and permanent. More number of deferral was in temporary constituting 83.11% and permanent 16.89%. Custer et al.⁷ report 68.5% temporary and 31.5% permanent deferral.⁷ In our study permanent deferral constituted only 16.89% which may be due to more number of younger donors. Most blood donor deferrals are temporary and short-term. The most common causes for temporary and short-term deferral (STTD) were alcohol consumption, low hemoglobin level and low body weight. Deferrals due to alcohol consumption are not surprisingly high considering the fact that Kerala has the highest per capita alcohol consumption in the country with 8.5 liters per person. In a study by Halperin et al.⁸ the three most common STTD are low hemoglobin level, colds and/or sore throats, and elevated temperature, whereas that by Ranveet et al.⁶ underweight, under-age, and low hemoglobin levels.⁶ Hence, studies on donor deferral indicate that in each region there are unique sets of reasons. The effect of short-term, temporary deferral STTD on blood donor returns and subsequent blood donation is an important issue. STTD have a very negative impact on blood donor return rates and subsequent donations.⁸

In Canada, 2% of all blood donors do not meet minimum hemoglobin standard,⁹ whereas in developing countries the number is more, as pointed more than 7%. Deferrals in our study are described under headings of deferrals during history taking, during physical examination, those due to physiological problems (Table 4), deferrals due to risk factors for HIV and hepatitis (Table 5) and those due to technical problems (Table 6). Those due to present medical conditions were slightly higher compared to AABB data. This may be due to unawareness of the facts to the donors as to what conditions constituted a deferral for blood donation. Few donors (.05%) were deferred as our institutional policies do not allow people to donate after 60 years. In other countries there are many healthy voluntary

blood donors above 60 years of age who successfully donate blood. In our study the unsuccessful phlebotomy was only 0.31%. Whereas Farrales et al.¹⁰ reported a higher rate of 0.5% and Custer et al.⁷ reported mis-collection leading to 3.8% of 1001,141 collections. The deferral for young people would be different from the reasons for older ones. Since the proportion of donors in the younger group is far more than the older ones so would be the reasons for deferral.

Table 4 Deferrals for physiological problems

Deferral reason	No of deferrals	Percentage of total donor presentations
Menstruation	43	0.14
Pregnancy/Nursing mother	61	0.2
Over aged	16	0.05
Under aged	49	0.16

Table 5 Deferrals due to risk factor for HIV and hepatitis

Deferral reason	No of deferrals	Percentage of total donor presentations	AABB data
Recent surgery	51	0.17	
Received transfusion	5	0.02	
Ear piercing	42	0.1	
H/o hepatitis	28	0.09	0.02
High risk group	31	0.1	0.02
Total	157	0.51	0.54

Table 6 Deferrals due to technical problems

Deferral reason	No of deferrals	Percentage of total donor presentations
Failed phlebotomy	52	0.19%
Under collection	34	0.12%

Anemia is frequent in Indian blood donors, and it is a major public health problem. The causes are, iron deficiency, nutritional causes, and diseases caused by parasites (malaria, helminthiasis).¹¹ One reason why anemia/low Hb is less documented as a cause of deferral in our study is because the donor Hb is checked after the medical history and examination hence many case of coexistent low Hb would be deferred and registered under other causes. Under permanent deferral, chronic medical conditions comprising asthma and related allergic conditions were the most common cause of deferral. Two Indian studies report that history of jaundice was the most common cause of deferral in Lucknow¹ and Chandigarh.⁶ A large number of deferrals due to pulse irregularities or history suggestive of potential cardiovascular problems were reported by Blumberg et al.,⁵ whereas in our study less than 1% of donors had these types of medical problems. Deferrals due to HIV/hepatitis risk were almost similar to the AABB data with respect to percentage of total donations.

Having a tattoo has been associated with serological evidence of hepatitis B and C viruses, as well as HIV infection and syphilis, all these are known to be transmissible by blood transfusion. These associations are of higher magnitude for individuals having two or more tattoos unprofessionally applied and are common among drug addicts and prisoners.¹² In our region tattooing is not common and

constituted less than 1% of deferral. Donor self-deferral is valid for reducing the risk of HIV transmission through blood transfusions and its implementation should be encouraged, when recruiting blood donors.¹³ In our study, self-deferral could not be practiced because of various reasons. FDA recommended new travel deferrals in May 2002 to prevent potential transmission of variant CJD (vCJD).¹⁴ We did not have donors who had traveled to UK and Europe. Domen et al.,¹⁵ indicate that shared donor deferral registries may be valuable at the local or regional level to prevent deferred blood donors from donating at other blood collection facilities.¹⁵ In our region blood centers are not well connected and hence shared deferral registry could not be maintained.

Tomasulo et al.,¹⁶ have shown that less restrictive criteria can be used for donor selection without compromising donor safety and they point out that criteria for donor deferral which are intended to exclude donors likely to suffer a “donor reaction” are based partially on untested hypothesis and tradition.¹⁶ In USA blood center approximately 83% of blood donors successfully donate, but 13% are rejected because of donor suitability issue. One percent is rejected for the positive TTI test, which is often nonspecific or false positive and 2% to 4% of the phlebotomies are not successful.¹⁷ Previous research has shown that temporary deferral reduces future return rate. In 1987, Piliavin¹⁸ reported on the consequences of temporary deferrals on donor return.¹⁸ Compared to first time donors not receiving a temporary deferral, first time donors receiving a temporary deferral were 25 percent less likely to return for donation within 6months, and compared to repeat donors not receiving a temporary deferral, repeat donors receiving a temporary deferral were 15 percent less likely to return for donation within 6months.

Conclusion

It is therefore likely that many young donors deferred temporarily at initial screening may be lost permanently from the donor pool. Due to the decentralized management of donor pools we do not know if these deferred donors have continued donating at another blood bank. 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 blood donors. 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.

Acknowledgements

None.

Conflict of interest

The author declares no conflict of interest.

References

1. Chaudhary RK, Gupta D, Gupta RK. Analysis of donor-deferral pattern in a voluntary blood donor population. *Transfus Med.* 1995;5(3):209–212.
2. Galea G, Gillon J, Urbaniak SJ, et al. Study on medical donor deferrals at sessions. *Transfus Med.* 1996;6(1):37–43.
3. Talonu T. Causes of volunteer blood donor rejection in Papua New Guinea. *P N G Med J.* 1983;26(3-4):195–197.

4. Lim JC, Tien SL, Ong YW. Main causes of pre-donation deferral of prospective blood donors in the Singapore blood transfusion service. *Ann Acad Med Singapore*. 1993;22(3):326–331.
5. Blumberg N, Shah I, Hoagland J, et al. Evaluation of individuals deferred from blood donation for medical reasons. *Vox Sang*. 1982;42(1):1–7.
6. Ranveet K, Sabita B, Neelam M. A Reappraisal of underlying causes in donor deferral. *Ann Natl Acad Med Sci*. 2002;38:93–99.
7. Custer B, Johnson ES, Sullivan SD, et al. Quantifying losses to the donated blood supply due to donor deferral and miscollection. *Transfusion*. 2004;44(10):1417–1426.
8. Halperin D, Baetens J, Newman B. The effect of short-term, temporary deferral on future blood donations. *Transfusion*. 1998;38(2):181–183.
9. Ali AM, Goldsmith CH, McAvoy AT, et al. A prospective study evaluating the lowering of hemoglobin standards for blood donors. *Transfusion*. 1989;29(3):268–272.
10. Farrales FB, Stevenson AR, Bayer WL. Causes of disqualification in a volunteer blood donor population. *Transfusion*. 1997;17(6):598–601.
11. Sundar P, Sangeetha SK, Seema DM, et al. pre-donation deferral of blood donors in south Indian setup: an analysis. *Asian J Transfus Sci*. 2010;4(2):112–115.
12. Nishioka Sde A, Gyorkos TW, MacLean JD. Tattoos and transfusion-transmitted disease risk: Implications for the screening of blood donors in Brazil. *Braz J Infect Dis*. 2002;6(4):172–180.
13. Urwijitaroon Y, Barusrux S, Romphruk A, et al. Reducing the risk of HIV transmission through blood transfusion by donor self-deferral. *Southeast Asian J Trop Med Public Health*. 1996;27(3):452–456.
14. Murphy EL, David Connor J, McEvoy P, et al. Estimating blood donor loss due to the variant CJD travel deferral. *Transfusion*. 2004;44(5):645–650.
15. Domen RE, Grewal ID, Hirschler NV, et al. An evaluation of the need for shared blood donor deferral registries. *Int J Qual Health Care*. 1997;9(1):35–41.
16. Tomasulo PA, Anderson AJ, Paluso MB, et al. A study of criteria for blood donor deferral. *Transfusion*. 1980;20(5):511–518.
17. Newman BH. Whole-blood donation: Blood donor suitability and adverse events. *Curr Hematol Rep*. 2004;3(6):437–443.
18. Piliavin JA. Temporary deferral and donor return. *Transfusion*. 1989;27(2):199–200.