Research Paper Medical Science

Analysis of Predonation Deferral Causes in A Tertiary Care Hospital

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ABSTRACT

Aim: Donor deferral burdens the transfusion services to meet the actual requirement of blood in an already existing high demand supply ratio.

The present study is conducted to analyze the donor deferral ratio, the various reasons for predonation deferral and the various strategies employed to reduce the temporary donor deferral rate thereby increasing the donor pool.

Methods: A 2 years retrospective analysis for whole blood donation was done in blood bank of tertiary care hospital during the period April 2014 to April 2016.

Result: Total 2639 donors were screened, out of which 325 (12.3 %) were not eligible for donation. Males constituted 143 cases(6.4%) and females 182(43.8%). 325 (12.3%) of the donors were deferred out of which 280(86.15%) constituted temporary deferrals and 45(13.85%) permanent deferrals. The major causes of temporary deferrals were low Hb, alcoholism and medications. The main causes for permanent deferral were hypertension and diabetes.

Conclusion:Donor deferral rate was 325(12.3%) in our study out of which majority was due to temporary deferral. Analysis of donor deferral patterns, making appropriate recommendations in existing policies and proper training of the blood bank staff in soft skills helps to decrease temporary donor deferrals thereby increasing the donor pool.

KEYWORDS

Introduction:

The primary responsibility of a BTS (Blood transfusion service) is to provide safe, sufficient and timely supply of blood and blood products.

So to fulfill this responsibility all the donors undergo stringent donor screening to ensure that the blood drawn is safe for transfusion.[1] Donors who do not meet the selection criteria are not suitable to donate blood either temporarily or permanently. They are labeled as 'deferred' donors.[1]

The criteria for prospective blood donor selection and deferral in India are provided by the Drugs and Cosmetics Act 1940 supplemented by Transfusion Medicine Technical Manual (Directorate General of Health Services, Ministry of Health and Family Welfare , Govt. of India).[2]

Donor deferral burdens the transfusion services to meet the actual requirements in an already existing high demand supply ratio.

Analysis of rejection patterns will help medical personnel to be more focused on donor screening so that donors deferred due to temporary reasons can be recruited back in donor registry after managing them properly.

The present study is conducted to analyze the donor deferral rates, the various medical reasons for predonation deferral and the various strategies employed in our setup to reduce the temporary deferral rate thereby increasing the donor pool without compromising on the quality of blood and safety to the recipient.

Materials and methods:

Retrospective analysis of data for whole blood donation over a period from April 2014 to April 2016 was done in blood bank of a tertiary care hospital. Donors who reported to the blood bank as well as those who came forward for donation at outdoor camps were included in the study.

A donor questionnaire (Figure 1) was used to collect the data. Donor demographic data is saved in the hospital's computer system. Each and every donor was educated on the basis of medical history, physical examination, hemoglobin estimation, weight, age, blood pressure, pulse rate, temperature etc.

RESULTS:

A retrospective analysis was done in our blood bank centre from April 2014 to April 2016.2639 donors were screened out of which 325 (12.3%) were deferred due to various causes.

Table 1 shows their demographic profile.

Among them 143 (6.4%) were males and 182 (43.8%) were females. This indicates that significantly more female donors were deferred compared to male donors.

The deferred cases were categorized into temporary deferrals and permanent deferrals.

The distribution, deferral rates and causes in temporary and permanent subsets are shown in Tables 2, 3, 4.

The main causes of temporary deferral were in rank order low hemoglobin, alcohol intake, low BP, medications, lack of sleep, previous history of malaria, typhoid , tuberculosis, recent blood donation, low weight, under age, recent surgery, recent vaccination, menstruation, tattoo piercing, breast feeding and dog bite.

The main causes of permanent deferral were in rank order Hypertension, Diabetes mellitus, HIV, Hepatitis B, chronic case of asthma on oral steroids and a known case of epilepsy.

The main cause of deferral in males was Hypertension and that in females was low hemoglobin. (Table 5)

Discussion:

Blood donor deferral criteria are designed to protect both the blood donor and recipient. Some deferrals protect the donors from the risk of blood donation, some like those related to infectious diseases protect the recipient and some deferrals protect both.[3]

The present study in our blood bank centre addresses the various reasons for donor deferral, the recommendation made

and strategies decided wherever possible to increase the donor pool.

In the current study 325 out of total 2639 registered blood donors are deferred for various reasons. (Table 1)

Majority of the deferrals are temporary comprising 86.2% of total deferrals; permanent deferrals constitute 13.8%. (Table 4)

Similar deferral rates were found in several studies. Unnikrishnan et al 5.20%, Sundar et al 6%, Rabeya et al 5.6%, Zou et al 12.8%, Asslam et al 14.6%.[1]

Although there is similarity in deferral rate, the causes of deferral vary between different regions because of the different donor selection criteria.[1]

Males constituted 93.5 % of donors and females 6.5%. So percentage of female donors was less due to misconceptions of blood donation in females. This highlights the importance of counseling in female donors about the advantages of blood donation. (Table 1)

The main reason for temporary deferral in our study was low hemoglobin constituting 48.6% of the total deferred. Hemoglobin screening is done to protect the donor from donation induced iron deficiency. CuSo4 specific gravity method was used in our setup and the cut off value taken in our study was 12.5gm/dl. All the deferred anemia cases were further investigated to know the cause of anemia. Iron supplementation was given to cases of iron deficiency anemia.[2] The donors were then properly motivated to come back at a later instance after the successful treatment of anemia.

The second most common cause of temporary deferral was history of alcohol intake. These cases were counseled about the ill effects of alcohol intake and they were encouraged to return bank to donate without consuming alcohol.

The third main cause was low blood pressure. This in most instances was due to anxiety of the donor.

The fourth reason was medications. These included a wide range of drugs like analgesics, antibiotics and antihistaminics. Fear of drug reaction to the recipient is the cause of this deferral.

The other causes of temporary deferral were low weight, recent history of diseases like malaria, typhoid and tuberculosis, recent blood donation, under age, recent surgery, recent vaccination, menstruation, breast feeding, dog bite and tattoo piercing.[4] (Table 2)

Not more than 10.5ml of whole blood per kg body weight should be collected at a donation as this may precipitate vasovagal reaction.[3, 4] Hence it is important to set weight limits for blood donation.

The age limit criteria in our set up is 18 to 60 years. Risk of vasovagal reaction is more in lower age group[4] and burden of life style disease is more in older age group[2]. In our set up to increase the donor pool it was sugggested to accept cases above 60 years provided the general condition is good without previous history of any chronic disease, especially if he belongs to a rare blood group.[3] Cases with recent history of surgery were deferred as they carry a risk of infection and may have depleted iron stores.[4] As malaria is readily transmitted by blood transfusion all cases are deferred for a period of 6 months after completion of the treatment.[4]

Cases of typhoid are deferred to avoid post transfusion sepsis resulting from donor bacteremia.[4]

Cases of tuberculosis are deferred as the organism is blood borne and there is a risk of transfusion transmission although there is no published report of this issue.[4]

Majority of the deferrals in our study are temporary. These cases can be recruited back to the donor pool by proper management. Cases like anemia are easily curable; cases like alcoholism, medication etc can be counseled and motivated for donation at a later date.

Prior knowledge about the common causes of temporary deferrals like age limits, alcoholism, medications etc helps the donors to prescreen themselves and avoid unnecessary deferrals. Deferrals on medications can be avoided by providing a detailed list of medicines in the donor questionnaire.

The most common cause of permanent deferral was hypertension comprising of 10.8% of total deferral. All these cases were permanently deferred as there are significant changes in their ECG reports. As per the Technical Manual (Director of General Health services, Ministry of Health and Family Welfare, Government of India), donors with systolic BP between 100 and 180 hg can be accepted for donation.[2] But in our setup patients with systolic BP >140 mm Hg were deferred to percent cerebral catastrophic event which precipitates on rapid removal of blood in hypertensive.[2]

The second most common reason for permanent deferral was Diabetes mellitus. All the cases were on insulin therapy. Cases of suspected DM were screened using a portable blood sugar monitor. This screening ensured that these cases are neither deferred nor selected inadvertly.

The other causes of permanent deferral were 2 cases of tissue transmissible disease (1HIV, 1HBsAg), 1 case of asthma and 1 case of epilepsy. (Table 3)

Conclusion:

Analysis of donor deferral pattern is required in every blood bank as this helps to provide insight into the various causes for deferral in that centre and to make appropriate changes in the deferral policies to reduce percentage of deferrals and thereby increase the donor pool.

The present study helped us to analyze the various causes of deferral in our centre and prompted us to make possible changes wherever required.

It also prompted us to conduct timely workshops for blood bank technicians to educate them regarding precise deferral criteria and also to train them with soft skills required for proper counseling.

Further studies are also being conducted in our centre after making the modification in our existing policies to estimate the impact of these changes on the donor pool.

To conclude analysis of deferral patterns, making appropriate recommendations in existing policies and proper training of blood bank staff, all these help to decrease the deferral rate and increase the donor pool in any blood bank centre.

Table1: Demographic distribution of donors

	No. of registered	No. of deferred	% of deferrals of total registration
Male	2223	143	6.4
Female	416	182	43.8
Total	2639	325	12.3

Table2: Showing causes of temporary deferrals and their proportions

	Male	Female	Total	% of temporary deferral	% of total deferral
Hemoglobin	19	138	157	56.0	48.6
Alcohol	27	0	27	9.6	8.4

Low BP	8	14	22	7.9	6.8
Medication	12	8	20	7.1	6.2
Lack of sleep	15	2	17	6.0	5.3
Malaria	4	1	5	1.7	1.5
Typhoid	3	2	5	1.7	1.5
Recent donor	4	0	4	1.4	1.2
Low weight	1	3	4	1.4	1.2
Under age	2	1	3	1.1	0.9
Recent surgery	2	1	3	1.1	0.9
Recent vaccination	2	1	3	1.1	0.9
Menstruation	-	2	2	0.7	0.6
Tatoo	2	0	2	0.7	0.6
Tuberculosis	2	0	2	0.7	0.6
Breast feeding	-	1	1	0.3	0.3
Dog bite	1	0	1	0.3	0.3
	104	176	280	100	86.2

Table3: Showing causes of permanent deferrals and their proportions

	Male	Female	Total	% permanent deferrals	% of total deferrals
Hypertension	31	4	35	77.8	10.8
Uncontrolled Diabetes	4	0	4	8.9	1.2
Antithyroid treatment	0	2	2	4.5	0.6
HIV positive	1	0	1	2.2	0.3
Hbsag positive	1	0	1	2.2	0.3
Asthma(on steroids)	1	0	1	2.2	0.3
Epilepsy	1	0	1	2.2	0.3
	39	6	45	100	13.8

Table 4: distribution of temporary and permanent deferrals

	No. of deferrals	% of deferrals
Temporary	280	86.2
Permanent	45	13.8
Total	325	100%

Table 5: leading causes of deferrals in males and females

Deferred Males: 143		Deferred Females:180	
Causes	No	Causes	No
Hypertension	31	Hemoglobin	138
Alcohol	27	Low BP	14
Hemoglobin	19	Medication	8
Lack of sleep	15	Hypertension	4
Medication	12	Low weight	3

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