

BLOOD PRE-DONATION DEFERRALS – A TEACHING HOSPITAL EXPERIENCE

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Abstract. Blood donor selection contributes to the safety of both the donor and the recipient. The objective of this study was to identify the number and causes of blood pre-donation deferrals at the Hospital Universiti Sains Malaysia (HUSM). A retrospective study was carried out to retrieve data regarding deferred blood donors at the HUSM in the year 2006. A total of 4,138 blood donors donated blood at the Transfusion Medicine Unit, of whom 231 were deferred or rejected as donors. The percentage of deferred donors was 5.6%. The main reason for deferral was a low hemoglobin (40.7%), with females constituting the majority of those deferred. This was followed by high blood pressure (29.4%) and male donors were predominant in this group. Medical illness caused 15.6% of donor deferrals. The majority of deferred donors were regular donors (64.1%). We recommend setting new hemoglobin criteria for donor deferral according to the reference range obtained for the particular population. Most of the other deferrals were preventable by proper health care education and awareness.

INTRODUCTION

The Hospital Universiti Sains Malaysia (HUSM) is a teaching and referral hospital located on the east coast of Malaysia. The Transfusion Medicine Unit at the Hospital Universiti Sains Malaysia depends on voluntary blood donors. Careful donor selection contributes vitally to the safety of both the blood donor and recipient. Donor selection is based on a medical history and limited physical examination to ensure the safety of both the donor and the recipient. A number of donors are deferred or rejected each year due to different reasons (Mollison *et al*, 1993; Richard, 1993). Pre-donation screening includes

three major components, these are registration, counseling and physical examination. Counseling and physical examination are done by trained medical personnel. Registration of blood donors includes demographic data in addition to a self deferral questionnaire. During counseling a set of criteria for donor selection is followed (Table 1). After counseling, a physical examination is carried out which includes general appearance, body weight, pulse rate, blood pressure, and hemoglobin levels. Abnormalities, such as skin rashes, needle marks; pallor, and jaundice are looked for. All donors have to give consent before donation according to national guidelines (Yasmin *et al*, 2005). The objectives of this study were to identify the number and causes for deferral of blood donors at the Hospital Universiti Sains Malaysia (HUSM) with an ultimate aim to create awareness among the transfusion medicine personnel about the causes of deferral and the preventive measures to be taken.

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Table 1
Guidelines for donor deferral at the HUSM.

General criteria:	18-60 years old, normal pulse, blood pressure and temperature. Minimum body weight of 45 kg. Blood donation interval of 3 months.
Temporary deferral:	Pain, cough, headache, nausea, dizziness, extreme nervousness, fasting, lack of sleep, sore throat or unspecific fever causes deferral until recovery. Tooth extraction—deferral for 24 hours. Antibiotic, aspirin intake—deferral for 1 week. Hepatitis vaccine—defer for 2 weeks. Measles, mumps, yellow fever, rubella, oral polio vaccination—deferral for 4 weeks. Measles, chicken pox, dental surgery—deferral for 3 months.
Deferral for 6-12 months:	Surgical procedure, history of blood transfusion, history of skin piercing, tattooing or acupuncture. Any major illness, hepatitis immunoglobulin or rabies vaccine. Abortion, pregnancy/post delivery. History of malaria: deferral for 2 years.
Permanent deferral:	Unexplained weight loss, malignancy, abnormal bleeding tendency, heart, lung or liver diseases, endocrine disorders, epilepsy, mental retardation, treatment with human growth hormone, infection with HBV, HCV, HIV, syphilis, high risk group: multiple sex partners, homosexuals, bisexuals, prostitutes, exposure to prostitutes, sexual relationship with HIV infected person, intravenous drug users.

MATERIALS AND METHODS

A retrospective study was carried out at the Transfusion Medicine Unit of the HUSM using the data of blood donors for the year 2006. A total of 4,138 donors presented to the Transfusion Medicine Unit to donate blood. Data was collected by reviewing the deferred donor records. The data was then analyzed to find out the number and causes for deferral.

RESULTS

Of 4,138 blood donors, 231 (5.6%) were deferred for various reasons (Table 2). A low hemoglobin among donors was the commonest cause of deferral (40.7%) followed by high blood pressure (29.4%). Medical illness, low blood pressure, low body weight, high hemo-

Table 2
Distribution of new and regular donors among pre-donation deferrals ($n = 231$).

Deferred donors	Number
New	83 (35.9%)
Regular	148 (64.1%)
Total	231 (100%)

globin and short interval since last donation were among the other causes of deferral (Table 3). Of the 231 deferred cases, 64.1% were regular donors (Table 3). Among female donors low hemoglobin was the commonest cause of deferral (69%) while high blood pressure was the commonest cause in males (45.0%) (Table 3).

Table 3
Causes of deferral among donors.

Cases of deferred donors <i>n</i> =231	Male <i>n</i> =131	Female <i>n</i> =100
Low hemoglobin 94 (40.7%)	25 (19.1%)	69 (69.0%)
High blood pressure 68 (29.4%)	59 (45.0%)	9 (9.0%)
Medical illness 36 (15.6%)	28 (21.4%)	8 (8.0%)
Other causes 12 (5.2%)	5 (3.8%)	7 (7.0%)
Low blood pressure 8 (3.5%)	4 (3.1%)	4 (4.0%)
High hemoglobin 4 (1.7%)	4 (3.1%)	-
Short duration of interval between donations 4 (1.7%)	4 (3.1%)	-
Total 231 (100%)	131	100

DISCUSSION

The percentage of donors deferrals at our center was 5.6%. The acceptable donor deferral rate ranges should be 5-10%. The main cause of donor deferrals was low hemoglobin (40.7%). Out of those deferred due to low hemoglobin, 69% were females. This can be explained by the fact that this group of the population is more prone to depleted iron stores and consequently low hemoglobin levels. Female donors should be given advice on proper diet and iron supplements. Cancado *et al* (2001) concluded in their study that blood donation is one of the major causes of iron deficiency among blood donors especially in female donors. The current institutional guideline for donor deferral includes a hemoglobin less than 13.5 g/dl in males and 12.5 g/dl in females. However, the recent data for the ranges among healthy Malaysians found lower values for hemoglobin compared to the Euro-

pean population. This suggests we need to review the criteria for donor deferrals based on low hemoglobin (unpublished data). The majority of deferred male donors had a high blood pressure (45.0%). This can be explained by the fact the male population has factors predisposing to high blood pressure (Kojima *et al*, 1992; Higashino *et al*, 2007). The data show that regular blood donors are at risk for low hemoglobin and consequently deferral from donation. Earlier studies showed that regular blood donors are at risk for developing depletion of iron stores (Finch *et al*, 1977; Simon *et al*, 1981; Mittal *et al*, 2006; Norashikin *et al*, 2006). One unit of blood donation results in depletion of 236 mg of iron (Cancado *et al*, 2001). Simon *et al* (1981) concluded that lifetime donations were not a predictor of decreased iron stores but frequency of donations were. Similar findings were observed by Norashikin *et al*, (2006) who found that 11% of regular donors had depleted iron

stores, but this was not the case in those who donated blood less than 5 times within 2 years. This requires putting more emphasis on the awareness of this complication among regular donors and the importance of iron supplementation and compliance with treatment.

In conclusion, we recommend the setting of new hemoglobin criteria for donor deferral according to the reference range obtained for a particular population. Public awareness regarding healthy life style and regular medical checkups is also recommended to minimize the deferral rate. Regular donors should be encouraged to ensure regular post-donation iron intake to prevent depletion of iron stores.

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