

*Full Length Research Paper*

# Adoption of criteria of blood donors selection for blood screening in hospitals of Islamabad

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Accepted 20 November, 2012

The study was conducted with the objective to determine the adoption of criteria of blood donor selection for blood screening in hospitals of Islamabad, Pakistan. The criteria of blood donor selection were supposed to be based on World Health Organization (WHO) standards and National Health care guidelines. It was observed that blood donors were mostly the relatives of patients. The age, weight, physical condition, temperature, history of addiction and alcohol effect at time of blood donation was in accordance with WHO blood donation criteria. However, pulse, hemoglobin, respiratory diseases and skin diseases were not determined in all the blood banks of hospitals in Islamabad and were in clear violation of WHO standards and National Health care guidelines, indicating that only few WHO standards and national healthcare guidelines were followed, but majority of them were missing or not followed appropriately. The study revealed that the criteria of blood donor selection were not fully followed in hospitals of Islamabad, and this needs to be rectified. Moreover, blood donors should be motivated to donate blood on voluntary basis. Similarly, the study may be conducted in other part of Pakistan as well.

**Key words:** Blood donor selection, World Health Organisation (WHO) standards, hospitals, Islamabad.

## INTRODUCTION

World Health Organization (2009) narrated that safe blood transfusion is basic human right, and provision of safe blood and blood component is a responsibility of National health care system. In the world, 230 million operations are carried out annually that require substantial quantity of safe blood for transfusion. In Pakistan, situation pertaining to safe blood transfusion is quite unsatisfactory as documented by Zaheer (2009). This is due to fragmented, rampant commercialized and poor quality, unorganized transfusion services that prevail in most parts of the country. The blood transfusion services are mostly hospital based, with 170 public and 450 private blood banks. There were no separate independent blood banks, but usually one or two rooms in a hospital were allocated and designed as blood bank. The blood bank falls under the administrative and financial control of a hospital in which it is located.

In Pakistan, 1.5 million bags of blood are transfused annually, with only 40% blood demand being met by public sector and the remaining 60% by private sector blood

banks. At present, the shortage of blood approximates to 40%. The safe blood transfusion is an integral part of modern health care system, as patients of Thalesemia, Haemophilia, Dialysis and Hepatitis need regular and constant blood transfusion throughout their whole life. This necessitates that blood donation may be a regular feature to cope with the requirement of patients outlined above.

The safe blood transfusion is a function of many variables, the most important one being the criteria of blood donor selection. The human blood is a valuable resource of immense significance, the cost of which may not be assessed on monetary basis. According to World Health Organization survey report, in developed countries, 100% blood is donated on voluntary basis (Jang, 2011) while in Pakistan, the situation pertaining to blood donation is not only quite different but contrasting, as well, as 70% blood donation by relatives, 20% by professional blood donors and only 10% on voluntary basis. This may be attributed to lack of awareness among

masses, no screening facility for general public and non existence of regular blood bank. The blood donated by professional is fatal for transfusion to patients, as it is a nursery rather rich source of hepatitis and other blood related diseases.

Some of the professional blood donors are addicted persons that use heroin and other narcotic drugs. Shamsi (1995) in Karachi conducted blood screening study of 135 professional blood donors and showed that 11% were subjected to hepatitis B virus (HBV) and 21% were suffering from hepatitis C virus (HCV). This indicated that every third person was responsible for the spread of HBV and HCV in the society. Hepatitis is spreading at an alarming rate in Pakistan.

Pakistan Medical Research Council (2009) inferred from investigations that prevalence of HBV and HCV in general population of country was 11.84 million during 2007 to 2008. According to WHO (2009) standards, for safe blood acquisition, donor age for both male and female must be 18 to 60 years, weight not less than 45 kg. The donor may be in sound health, free from any diseases not accustomed to permanent medication, not subjected to malaria attack during previous year and had not received blood at any time. The donor may not be a patient of infectious and blood related diseases. The syringe of blood collection may be disposable and incinerated after use.

According to Shamsi (2011), nature had inbuilt storage system of blood in human body equivalent to three excessive bottles over and above that of body requirements. This excessive blood is available for donation periodically without hampering the normal function of body. However, only one bottle may be taken, other excessive blood may cope with body need in case of road accidents that are common in Pakistan and other bleeding from the body. In case of excessive bleeding, blood transfusion from external source is vital otherwise, death may occur because of scarcity of blood. Many deaths in Pakistan only occur because of scarcity of blood.

A healthy person may donate one bag of blood after every three months, four times as year and a healthy woman may donate blood twice a year. The blood donation is a healthy phenomenon, as it controls cholesterol, fatness and inculcate disease resistance in human body. The quantity of old blood is replaced with equivalent, new, fresh, safe, healthy blood in a short span of time that impart new vigor to human body. WHO (2009) emphasized that to avoid collection of unsafe blood, the preliminary test may be performed before taking blood for screening, otherwise it may tantamount to wastage of resources.

If blood is proclaimed safe, then more blood may be taken in bag and stored at optimum temperature and conducive environments. In the well managed hospitals, life of three patients can be saved from a single bag of

blood. This is important that blood may not be taken from donors that do not fulfill the WHO blood donor criteria and are subject to HBV, HCV and human immunodeficiency virus (HIV) and other infectious diseases. The blood may also not be taken from addiction, narcotic use, specifically heroin addiction persons. They must not have taken alcohol at time of blood donation (Rehman, 2011; Gerizy, 2009; Hassan, 2011).

In donor selection, it may be kept in view that technicians had adequate knowledge of period of deferment in case of typhoid fever, malaria, hepatitis vaccination and breast feeding. The technicians may also be aware of permanent deferment in case of cancer, heart disease, gammaglobulin, weight loss, diabetes, Asthma, Tuberculosis, Epilepsy, Leprosy, Schizophrenia and endocrine diseases.

The transfusion of safe blood is vital to avoid spread of infectious diseases and ensure healthy life. The preceding discussion necessitated that voluntarily blood donors in Pakistan are to be motivated and to achieve this objective; the blood screening facility may be available to general public, which at present is only available to patients. Furthermore, proper counseling of donor may be taken up by blood banks. In order to determine whether WHO criteria of donor blood selection are followed, a study was conducted with the objective to assess the adoption of criteria of blood donor selection in hospital of Islamabad.

## MATERIALS AND METHODS

The study was conducted in Islamabad capital territory. The hospitals were selected by simple random method and out of 5 hospitals, 3 hospitals were selected at random. The three main hospitals were selected where more than 70% of the total patients visit. In the capital city, somehow the practices are better as compared to the rest of the country but still not according to the WHO standards. Hence, the current study was carried out to estimate the practices adopted for the selection of the blood donors. The blood bank of one or two rooms was located in the respective hospital. The blood facility in three blood banks was coded as blood bank facility I (BBF1), BBF2 and BBF3, respectively. This was done to accrue confidentiality of blood banks under study. The study design adopted was descriptive and cross sectional. The data collected was based on structured questionnaire. All concerned were informed about objective of the study.

The data pertaining to donor selection involve age, body weights, physical condition, interval between blood collection, temperature, pulse, hemoglobin value, respiratory disease, jail mate, history of drug addiction, alcohol effect at time of donation, consciousness, hepatitis vaccination, malaria incidence, typhoid fever, heart attack and other diseases. In BBF1, whole blood, and in BBF2 and BBF3, small portion for screening was collected. In BBF1 and BBF3, 450 ml blood was collected, while in BBF2, 500 ml blood was collected. First in First out (FIFO) policy was adopted in all three blood banks. The blood units donated during six months in three hospitals of Islamabad were 13,133, of which in BBF1, 2,616, in BBF2, 10,119 and in BBF3, 398 blood bags were donated.

The data collected was entered in Special Package for Social Sciences-17 (SPSS-17) for analysis. The results were tabulated

**Table 1.** Criteria of blood donor's selection for blood screening in Hospitals of Islamabad.

S/N	Criterion of blood donors selection	Blood bank facility		
		BBF1	BBF2	BBF3
1	Initial quantity	Whole blood was collected prior to screening	Small portion was collected prior to screening	Small portion was collected prior to screening
2	Physician examination of donor was conducted	Yes	Yes	Yes
3	Interval between blood collection	Three months	Three months	Three months
4	Quantity of blood collected	450	500	450
5	Age of blood donor (years)	18-60	18-60	18-60
6	Weight not less than (kg)	45	45	45
7	Temperature of donor	Checked	Checked	Checked
8	Pulse, hemoglobin, respiratory disease, skin disease	Not checked	Not checked	Not checked
9	History of addiction, alcohol effect at time of blood donation	Checked	Checked	Checked
10	Deferment period in rabies vaccination	Known	Not Known	Not Known
11	Deferment period in cholera, typhoid, tetanus, plague and gammaglobulin	Not Known	Not Known	Not Known
12	Deferment period in hepatitis vaccination	Known	Known	Known
13	Deferment in cancer, heart diseases, diabetes, weight loss, TB, liver diseases-permanent	Known	Known	Known
14	Deferment in asthma, epilepsy, leprosy-permanent	Known	Known	Known

BBF1 - Blood bank facility 1, BBF2 - blood bank facility 2, BBF3 - blood bank facility 3.

and presented as frequency/percentage. Based on data, inferences were drawn accordingly. It was ascertained whether WHO or National health care guidelines pertaining to blood donor selection were followed or otherwise, in hospitals of Islamabad. Conclusions were drawn and suggestions for future research made.

## RESULTS AND DISCUSSION

The data pertaining to criteria of blood selection for blood screening in hospitals of Islamabad is presented in Table 1 and frequency is given in Table 2. In all three blood banks of three hospitals of Islamabad, the total number of blood bag screened during six months were 13,133, out of which 2,616, 10, 119 and 398 blood bags were

that of blood bank facility 1, blood bank facility 2 and blood bank facility 3, respectively. All the blood donated in Islamabad capital territory was that of the relatives.

Figure 1 indicates the quantity of blood collected in the hospitals of Islamabad. The Quantity in different hospitals vary from 440-500.

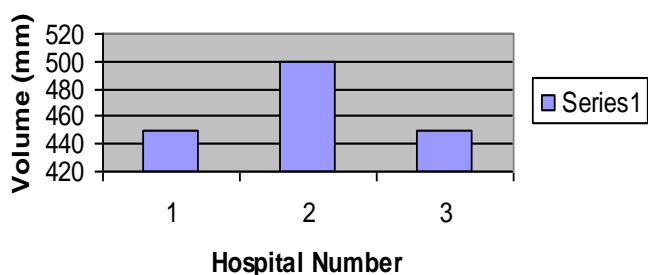
Figure 2 indicates the deferment period in hepatitis vaccination known. In majority of the hospitals the respondents have idea about the deferment period. Contrary in case of rabies hepatitis vaccination few of the hospitals have idea regarding deferment period as indicated in Figure 3. The Figure 4 indicates the information regarding initial quantity and majority of the hospitals have information regarding initial quantity.

The World Health Organization (2011) conducted a survey pertaining to blood donation and reported that in developed countries, almost 100% blood is donated voluntarily, while in Pakistan, 70% blood is donated by relatives, 20% by professional blood donors and 10% is donated on voluntarily basis. This is an alarming situation and calls for the attention of national health care system. The awareness of voluntarily blood donation may be propagated earnestly. Furthermore, the blood donated by relatives is mostly transfused to relative patients that may cause Acute graft versus host disease (A-GVHD) that is fatal and may result in mortality of up to 90%. Because of lack of know-ledge, relatives also emphasizes that the blood donated by them should be transfused

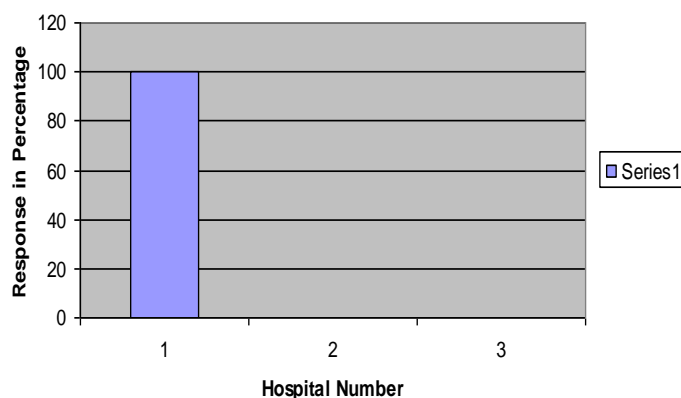
**Table 2.** Criteria of blood donors selection for blood screening in Hospitals of Islamabad.

S/No.	Criteria of blood donors selection	Frequency (%)			
		BBF1	BBF2	BBF3	Average
1	Physical of examination of blood donor	100	100	100	100
2	Interval of three months between blood collection	100	100	100	100
3	Age of blood donor (18-60 years)	100	100	100	100
4	Weight not <45 kg	100	100	100	100
5	Temperature checked	100	100	100	100
6	Pulse, hemoglobin, skin and respiratory diseases checked	0	0	0	0
7	History of addiction, alcohol effect checked	100	100	100	100
8	Deferment period in rabies vaccination-known	100	0	0	33.3
9	Deferment period in cholera, typhoid, tetanus, plague and gammaglobulin-Known	0	0	0	0
10	Deferment period in hepatitis vaccination-Known	100	100	0	66.7
11	Deferment in cancer, heart disease and diabetes-known	100	100	100	100
12	Deferment in weight loss-TB and liver disease-known	100	100	100	100
13	Deferment in asthma, epilepsy and leprosy-known	100	100	100	100
14	Initial quantity of blood taken-small	0	100	100	66.7

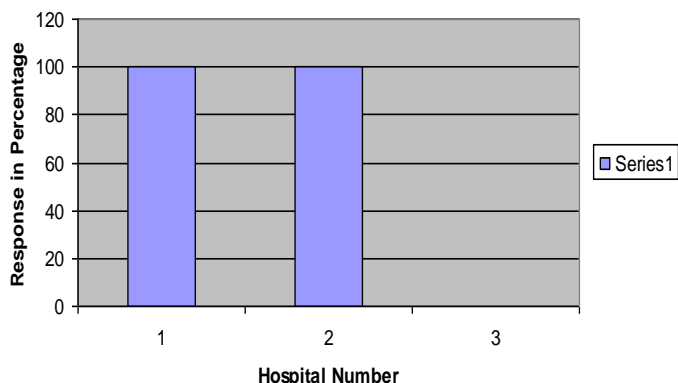
BBF1 - Blood bank facility 1, BBF2 - blood bank facility 2, BBF3 - blood bank facility 3.



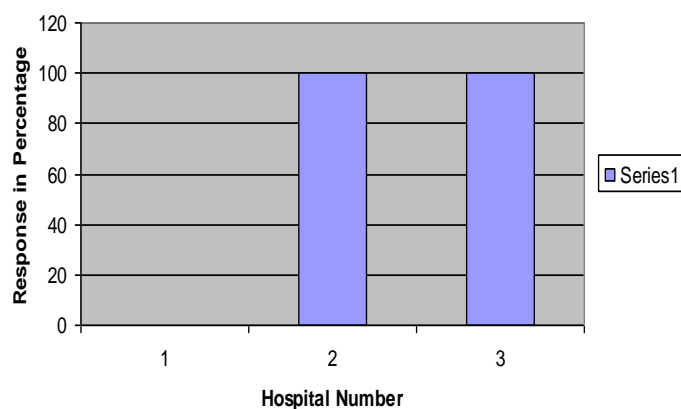
**Figure 1.** Quantity of blood collected in hospitals of Islamabad.



**Figure 3.** Deferment period in rabies hepatitis vaccination-known.



**Figure 2.** Deferment period in hepatitis vaccination-known.



**Figure 4.** Initial quantity of blood taken was small.

to their relatives only. Shamsi (2011) advocated that to avoid A-GVHD, blood donated by relatives may be replaced with blood of other donor persons. The most crucial state of affair is that in

Pakistan, substantial quantity of blood, 20%, is donated by professional blood donors; those subjected to addiction and narcotic use, mostly to heroin addiction. This group of blood donors act as carrier of HBV, HCV and other blood related diseases and transmit to persons to whom such blood is transfused. The group for safe blood transfusion is that of voluntary donors that constitute only 10% of blood donors in Pakistan. In advanced countries, the blood donation is a regular feature and scarcity of blood is a distant problem, while in Pakistan, scarcity of blood is 40% for many patients, specifically road accidents because of excessive bleeding, as no blood is available for transfusion. The public in Pakistan needs to be motivated to donate blood voluntarily, and also screening facility may be available to common man, as at present, it is only available to the patients, as was observed in present study in hospitals of Islamabad. The notion prevalent among masses may be shed-forth with the fact that blood donation weakens the health, rather it may be advocated that blood donation inculcate healthy life and more vigour by replacement of old blood with new blood. This also controls cholesterol, fatness and induce resistant to diseases. The blood replacement occurs instantaneously as it is a log and not a lag phenomenon.

As regards to criteria of blood donors, the data in Tables 1 and 2 revealed that age of old blood donors was between 18 to 60 years and weight of donors was not less than 45 kg, and this was determined prior to blood donation. The physical examination of blood donors in all three blood banks was conducted and donors have good physique. The temperature of donors was also recorded. The history of addiction was determined, alcohol effect at time of blood donation was also checked and donors were free from these menaces when blood was taken for donation. All these observations were in line with WHO blood donor criteria and also prerequisite of blood donation according to national health care policy. Contrary to this and in violation of WHO standards, pulse, haemoglobin, respiratory diseases and skin diseases were not checked in all three blood banks of hospitals of Islamabad. The interval between blood collection was three months in all the hospitals under investigation. As such, a healthy person may donate blood four times a year. However, a woman according to Shamsi (2011) investigations may donate blood only two times a year. This is in coincidence to WHO (2009) criteria that interval between two blood donation by a healthy person may not be less than three months.

BBF1 whole blood, 450 ml, was taken prior to screening, which was clear contradiction of WHO guidelines which narrated that small portion of blood may be taken prior to screening, otherwise, if confirmed positive, it may result in wastage of time, labour and resources. However, in BBF2 and BBF3, the guidelines of WHO were kept in view, and small portion of blood

was collected prior to screening. After screening, blood collected in BBF2 was 500 ml and in BBF3 was 450 ml. The blood was stored in plastic bags as prescribed by Walter (1948), prior to that, that blood was stored in glass bottles. The plastic bags are easy to handle and transfuse blood to patient. The deferment period in rabies vaccination was known in BFF1 and was not known in BBF2 and BBF3. However, deferment period in cholera, typhoid, tetanus, plaque and gammaglobulin was not known in all three blood banks. As regards deferment period in case of hepatitis vaccination, it was known in BBF1 and BBF2 and not known in BBF3. The technician in all three hospitals of Islamabad had knowledge of permanent deferment in case of cancer, heart disease, diabetes, weight loss, liver disease, asthma, epilepsy and leprosy.

It is worthwhile that facility for screening of HBV, HCV and HIV was available in three blood banks of Islamabad. The number of HBV positive donation in six months was 251 out of a total of 13,133 blood donations. The number of HBV positive donation was 82, 163 and 6 in BBF1, BBF2 and BBF3, respectively. The number of HCV positive donations in six months was 236, 306 and 34 in BBF1, BBF2 and BBF3, respectively, and this constituted a total of 576 HCV positive donations. The number of HIV positive donation was only 4 out of 13,133. This revealed that HCV was more prevalent than other viruses and was quite fatal for human life in Pakistan. The occurrence of HIV, though nominal, still is a great alarm and may pose a severe threat to human health in the country in future. This is commendable that in hospitals of Islamabad, positive donations are kept separately and no such transfusion with such blood donations is in practice. However, it poses a valid question. "Is this practice carried out all over the country?"

Blood transfusion authorities are to be made effective to streamline the network of blood banks in order to follow the WHO standards and national health care guidelines, specifically in criteria of blood donor selection, so that safe blood is available for transfusion to save human life. Moreover, voluntary blood donation may be encouraged and on national day every healthy person may donate one bag of blood voluntarily.

## CONCLUSION AND RECOMMENDATION

Criteria of blood donor selection for blood screening in hospitals of Islamabad are not followed as prescribed by WHO standards or National health care guidelines. The criteria of blood donor selection may be ensured in hospitals of Islamabad and also elsewhere in other part of Pakistan so that safe blood is available for transfusion to patients. The voluntary blood donation may be propagated so as to curtail deaths due to scarcity of blood that occur frequently in Pakistan. Similar study may

be extended to rural area of country and awareness pertaining to voluntary blood donation may be imparted to the general public in remote areas of the country as well.

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