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Full Length Research Paper

Blood donor practices at two blood banks in Bayelsa State, Nigeria

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Abstract

Blood transfusion services are important in healthcare delivery, but are often poorly developed in sub-Saharan Africa. To evaluate the blood donor screening system, the deferral rate and reasons for deferral in two blood banks in Bayelsa State, Nigeria. Direct observation of the screening of prospective blood donors was done. The blood donor records were examined and the relevant information was abstracted. A defective recording system was observed, that records only potential donors whose haemoglobin levels were above the cut off mark of 12g/dl. Donor demographics were also not well recorded. Donors' ages ranged from 15 years to 60 years, with 98% of them being male. 80.6% of donors were commercial/professional donors, with only 0.93% being voluntary donors. 2.89% of potential donors were positive for markers of transmissible infections and were deferred. 80% of the deferred donors were positive for HBsAg, while 14.28% were positive for HIV. The blood group O Rh D positive was the commonest blood group. A poor recording/documentation system is used in the screening of potential blood donors in the blood banks examined. The donor screening system needs to be overhauled. Deferred donors also need to be counselled. A poor blood donation culture exists which needs urgent but definite strategies to overcome.

Keywords: Screening, blood donor, deferral

INTRODUCTION

Blood transfusion services are essential components of the healthcare delivery system. In Sub-Saharan Africa most secondary and tertiary hospitals run inadequate and inefficient blood bank services.

Most countries in Sub- Saharan Africa have National blood policies but blood transfusion services remain inadequate and inefficient. In Nigeria, the National Blood policy recommends obtaining blood from regular, voluntary, non-remunerated donors, screening for HIV, Hepatitis B, Hepatitis C and syphilis. It also requires that records be kept in a uniform and specified manner while maintaining confidentiality (Federal Ministry of Health Nigeria 2006).

In most cases, the demand for blood far outweighs the supply. In Nigeria, about 500,000 units of blood are collected yearly out of the required 1.5 million units of blood (Federal Ministry of Health Nigeria 2006).

Blood is usually obtained on an emergency basis. The typical scenario is that of a patient with an urgent need of a blood transfusion, and the doctor asks the patient's guardians/relatives to provide blood. The relatives donate blood or procure blood from private laboratories and blood banks. They may also enlist the services of commercial blood donors, popularly known as "blood touts".

A poor blood donation culture exists in sub-Saharan Africa and this is fuelled by religious, spiritual and superstitious beliefs (Koster and Hassall 2011).

This study aimed to evaluate the donor selection processes, determine the types of donors, reasons for deferment and the blood groups of donors in two tertiary health care facilities in Bayelsa state.

MATERIALS AND METHODS

Study design

The study had both qualitative and quantitative aspects. We first directly observed (weekly) all the processes/procedures from recruitment of donors, haemoglobin level screening, recording of patient's data, screening for markers of transmissible diseases, collection of blood and then blood grouping and cross-matching. Thereafter we analyzed the record books and extracted relevant information for this study.

Study area

The study was conducted at the Niger Delta University Teaching Hospital (NDUTH), Okolobiri and the Federal Medical Centre (FMC), Yenagoa, both tertiary health institutions in Bayelsa State, Nigeria, between the 1st of December 2011 and the 30th of November 2012.
They serve as referral hospitals and cater for patients from within the state and other neighbouring states.

Blood donor selection procedure

With the exception of voluntary donors, relatives of patients were given blood request forms from the wards, theatres or Accident and Emergency and these forms were taken to the Blood Transfusion unit of the Haematology department. There, the relatives were requested to provide donor/donors for the required units of blood. When the donor was available, a blood sample was obtained for Haematocrit (PCV). Prospective donors with Haemoglobin concentration (Hb) less than 12g/dl of blood are deferred whilst those with Hb levels more than 12g/dl proceed to the screening for markers of transfusion transmissible diseases. It is at this point that the donor's demographic details are recorded. The age, sex and address of the donor and the relationship to the blood recipient are noted.

Blood collection

5ml of blood was obtained by venepuncture from the prospective donor and screened for antibodies to Hepatitis C (anti-HCV), the Hepatitis B surface antigen (HBsAg), antibodies to HIV and the VDRL test for syphilis. If all the antibodies are negative, grouping for ABO and Rh is undertaken using appropriate kits according to the manufacturer's instructions. Those with non-reactive samples then proceed to donate blood.

Analysis

The data were transferred to an Excel spreadsheet and stratified into 6 age groups: 15 - 20 years, 21 - 30 years, 31 - 40 years, 41 - 50 years, 51-60years and greater than 60 years. Statistical analysis was performed with the Graphpad Prism version 4 (Graphpad software, San Diego, CA). Any differences between groups were determined by the one-way analysis of variance (ANOVA) or paired t- test with the level of significance set at $p < 0.05$.

RESULTS

Blood donor processing procedure

Details of potential donors deferred because of the haemoglobin levels are not recorded in the blood transfusion services register. Recording of donors starts only after the pre-screening test. The recorded addresses were all incomplete, with only the areas/towns of residence of the donors being recorded. Due to the design of the record books there was no space to record important patient demographics such as occupation, previous history of donation/deferral, history of blood transfusion, tattooing, past medical history/history of serious illness. There were no other criteria for deferral outside low haematocrit or detection of markers of disease, and therefore no temporary or permanent deferrals.

There was no distinction between first time donors and repeat donors and also no age restriction.

Missing data

Age was not recorded for 11 donors and the sex of the subject was not recorded for 8 donors. These were excluded from analysis.

Patient demographics

Ages of prospective donors ranged from 15 years to 56 years, mean 27.89 years (Table 1). Over 98% of the donors were males and less than 1.3% were females. Over 65% of the donors were of the 21 to 30 years age group. The youngest female donor was 19 years of age whilst the oldest was 37 years of age.

Type of donor

Majority of the donors (80.61%) were commercial/professional donors, whilst 18.45% were family replacement donors. Only 0.93% of donors were voluntary donors (Table 2).

Deferrals due to presence of disease markers

One thousand one hundred and seventy-six (1176) potential donors were screened for HIV, Hepatitis B, Hepatitis C and Syphilis. 34 donors (2.89%) had markers for at least one of the screened infections. One donor

Table 1. Age and sex distribution of donors

Age group (years)	Male	Female	Total
15 to 20	151	1	152
21 to 30	761	8	769
31 to 40	200	6	206
41 to 50	45	0	45
51 to 60	4	0	4
> 60	0	0	0
Total	1161	15	1176

Table 2. Frequency of donor types

Type of donor	no.
Relative replacement donor	217
Voluntary donor	11
Professional donor	948
Total	1176

Table 3. Reasons for deferral

Reactive to	Number	%
anti- HIV	5	
HBsAg	28	
anti- HCV	1	
VDRL	1	
	35	

Table 4. Distribution of blood group combination among prospective donors.

Blood Group	no.
O Rh D +ve	735
O Rh D -ve	27
A Rh D +ve	138
A Rh D -ve	4
B Rh D +ve	255
B Rh D -ve	6
AB Rh D +ve	11
Total	1176

was reactive for both HBsAg and anti-HCV. 28 donors (2.38% of all donors, or 82.35% of deferred donors) were reactive for HBsAg (Table 3), whilst 5 donors (0.43% of all donors) were reactive for anti-HIV.

Blood group types

Blood group O was the commonest blood group accounting for 64.8% of donors, whilst 96.9% of the prospective donors were Rh D positive. Overall, 61.46% of the prospective donors were of the O Rh D positive blood group, B Rh D positive blood group accounted for 22.64% of the donors, whilst 10.97% were A Rh D positive (Table 4).

DISCUSSION

Blood transfusion is a therapeutic lifesaving intervention that needs to be properly managed. Presenting for donation does not automatically translate to eligibility to donate, and being eligible to donate does not mean provision of blood that will be released for transfusion (Custer et al., 2004).

Our study observed that the records kept omitted some prospective donors, those whose donations were deferred due to low haemoglobin/PCV levels. Exclusion of this group of potential donors skews the prevalent values of the measured indices.

We also observed that majority of the donors were of the professional donors group. In our study, replacement donors accounted for only 18.45% of donors, while in Brazil, replacement donors accounted for 50% of first time donors and 30% of repeat donors (Carneiro-Proietti et al., 2010). While not encouraging people to sell their blood for money, those who choose to do so should not be excluded as the ultimate aim is to make blood available to save lives. The World Health Organization (WHO) recommends blood donations from regular, voluntary, non-remunerated donors (World Health Organization 2010). The current donor situation in Bayelsa State as depicted in our results is a long way from this. It is also very different from statistics in the National Blood policy which states "in the public sector, 25% and 75% respectively of donors are from commercial and replacement donors, whilst the reverse is the case for the private sector" (Federal Ministry of Health Nigeria 2006). Challenges exist in resource-poor countries in reducing replacement donors and increasing voluntary donors (Bates et al., 2007).

There were only ten voluntary donors in the Register. This implies a very low awareness/culture of voluntarily donating blood. A massive enlightenment campaign needs to be instituted in Bayelsa State about the benefits of voluntary blood donation to the society. Voluntary donors could be encouraged with incentives like certificates, medals, plaques and public acknowledgements. Some voluntary donors in Greece were inspired to donate because of future availability of blood for self and family (Marantidou et al., 2007).

Majority of the donors were within the 21 to 40 years age group. This was expected as most people within that age group are strong and healthy.

Only fifteen donors were female. This was not surprising as women are usually excluded on the basis of pregnancy and lactation (Misje et al., 2010). Some others are excluded whilst menstruation was on. Gender has been shown to play key roles in the motivation to donate blood, with fewer women becoming regular donors (Bani and Giussani 2010). The main cause for asking women to defer from giving blood is believed to be low haematocrit or low iron concentration (Custer et al., 2004; Zou et al., 2008). In Africa, it is on the occasion where no other donor can be found that women usually step forward to donate blood. People need to be educated that gender should not affect voluntary blood donation.

Our results confirm the blood group O Rh D positive as the prevalent blood group in our environment, which is in agreement with other studies in Nigeria (Adeyemo and Soboyejo 2006; Muhibi et al., 2012) and elsewhere in the Niger Delta (Nwauche and Ejele 2004). Most people are not aware of their blood group types, and some find out only after donating blood. People should be encouraged to find out their blood group types as it saves valuable time in narrowing the type of blood to look for in emergencies, especially those with rare blood types.

Our observed 0.43% sero-prevalence of HIV among prospective donors is similar to the 0.7% obtained in another study (Olokoba et al., 2010).

Education of the public plays an important role in blood donation. Lack of public awareness was responsible for a high rate of donor deferrals in Trinidad and Tobago (Charles et al., 2010), and gaps in knowledge and practice were shown to affect voluntary blood donation in Nigeria (Salaudeen et al., 2011).

There are no deferral registers and deferred donors are not counselled. We suggest the offering of counselling services to deferred donors. We also advocate a comprehensive recording system in our blood banks to enhance referencing and research.

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