



## HAEMOVIGILANCE: ROLE AND IMPORTANCE OF BLOOD REQUEST FORMS IN ROUTINE HOSPITAL PRACTICE.

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**ABSTRACT... Objectives:** To assess the extent of Blood Request Forms (BRFs) usage in routine blood banking, at a major Hospital in Lahore. **Study Design:** Cross-sectional Descriptive study. **Setting:** Shaikh Zayed Medical Complex Blood Bank, Lahore. **Period:** 6 months (Sept 2016 to March 2017). **Material & Methods:** A total of 1052 BRFs dispatched from in-patient of Shaikh Zayed Medical Complex, Lahore were selected. Patient's MR number, date, demographic information, diagnosis, ward, history of transfusions, type of blood transfused, phlebotomist's name etc., were analyzed. **Results:** Among the 1052 BRFs, "MR number" was filled in 99.4% (n=1046) forms, while 0.6% (n=6) were not filled. The column of "Date" was filled in 97% (n=1020) forms, while it was left blank in 3% (n=32) forms. Similarly, the column of "Age" was filled in 97.7% (n=1028) forms, whereas it was left empty in 2.3% (n=24) forms. Demographic information like "Patient's Name" and "Gender" were filled in 100% forms. "Ward" was filled in 97.1% (n=1022) forms, while 2.9% (n=30) were unfilled. As far as "H/O previous transfusion(s)" column is concerned, 40.9% (n=430) forms were filled and 59.1% (n=622) were left unfilled. "H/O previous transfusion reaction(s)" column had almost the similar number with 37.6% (n=396) filled and 62.4% (n=656) left empty. The column of "Diagnosis" was filled in 22.4% (n=236) and was found unfilled in 77.6% (n=816). Moreover, the column of "Which type of component transfused" was filled in 96% (n=1010), while 4% (n=42) were unfilled. The column of "Amount of blood needed" was filled in 96.4% (n=1014) forms, while 3.6% (n=38) forms were unfilled. "When is the blood needed" column had only 29.3% (n=308) filled forms, whereas 70.7% (n=744) forms did not mention when the blood was needed. One of the most important columns is "Patient's blood group", which was filled in only 53.4% (n=562) forms, while 46.6% (n=490) forms were left empty. The column of "Name of phlebotomist" was filled in only 13.9% (n=146), while 86.1% (n=906) of the forms were found unfilled in this column. In total, our study revealed that among 1052 BRFs, only 6.8% (n=72) were completely filled, while 93.2% (n=980) were incompletely filled. **Conclusion:** Lack of awareness in BRF filling should be properly addressed to enhance efficiency and to reduce pre-analytical errors in healthcare setups. It is of utmost need that the clinicians and nurses should be made aware that BRFs play a pivotal role in smooth and error-free functioning of the healthcare setups.

**Key words:** Haemovigilance, Blood Request Forms, Blood Bank Audit, Blood Bank, Transfusion Medicine, Blood Request Protocol.

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### INTRODUCTION

Blood transfusion is an inevitable part of patient care in modern-day healthcare system.<sup>1-4</sup> In order to ensure safe procurement and requisition of blood products, haemovigilance plays a crucial role. Regarding transfusion medicine, haemovigilance is one of the key practices happening in the west. This is because it develops a system that can improve economics for both donors and recipients. Not only that, but it also

saves time and resources of the blood bank, thereby increasing efficiency and decreasing delays in blood supply chain. Development of an accurate design for haemovigilance will also help to avoid transfusion related complications such as TRALI, haemolysis and anaphylaxis.<sup>5</sup> It is a system which monitors adverse events that may occur during blood transfusion chain. It is responsible to improve the acquisition and quality of blood and/or its components for a safe

and efficient transfusion procedure.<sup>6,7</sup>

In any healthcare setup, safe blood transfusion practices can only be achieved with the help of a well-developed haemovigilance system, and the most basic entity to run a good haemovigilance system is a completely filled blood request form (BRF).<sup>8</sup> BRFs help avoid the pre- and post-analytical errors.<sup>9,10</sup> Almost 50% to 75% errors occurring in a laboratory are pre-analytical errors, where BRFs provide means to avoid them. Now-a-days proper test requesting and completely filled BRFs are considered as the most important aspects for provision of effective laboratory services.<sup>9</sup>

Completely filled BRFs not only help in attaining good standards for transfusion and haemovigilance, but they are also helpful in hospital and/or blood bank audits.<sup>11</sup> BRFs help to ensure that data provided is relevant and reliable; and help the blood banks to perform their services efficiently and effectively. Moreover, they also help to calculate exact blood transfusion requirements in hospitals rather than simple subjective estimation.<sup>12</sup> Contrary to that, incomplete BRFs can mislead the laboratory staff as well as the clinicians. Any sort of mistake in the blood bank chain can cause an inappropriate transfusion which can result in serious consequences including transfusion reactions or transfusion transmitted infections.<sup>13</sup>

Therefore, current study was designed in order to check our blood bank that whether it is following the updated pattern for blood requisition through completely filled BRFs or not.

## MATERIAL & METHODS

A total of 1052 BRFs were included in this study. Each BRF was closely observed and checked for the information provided. A total of 13 parameters were checked in every BRF that arrived at our blood bank. It was checked whether they have properly been filled out or not. Each parameter was individually checked. All the filled and unfilled parameters were carefully counted and frequencies were calculated using SPSS V20. The parameters of BRFs such as

patient's MR number, date, age, gender, ward, H/O previous transfusion(s), H/O previous reaction(s), diagnosis, which type of component transfused, amount of blood needed, when is the blood needed, patient's blood group and name of phlebotomist were checked.

## Study Design

Cross-sectional descriptive study.

## Setting

Blood Bank of Shaikh Zayed Medical Complex, Lahore.

## Study Duration

September 2016 to March 2017 (6 months).

## RESULTS

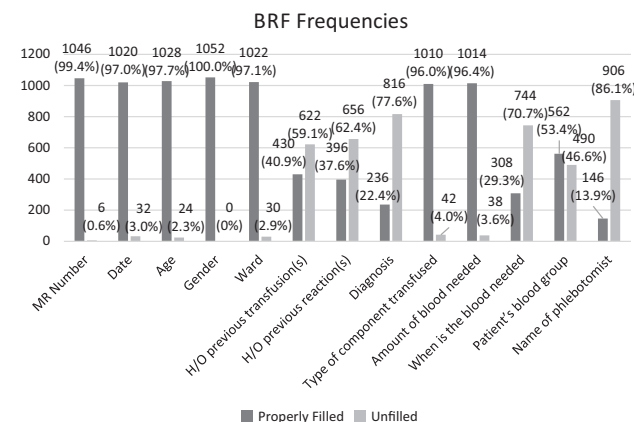
Among the 1052 BRFs "MR number" was filled in 1046 (99.4%) forms, while 6 (0.6%) were not filled. The column of "Date" was filled in 1020 (97%) forms, while it was left blank in 32 (3%) forms. Similarly, the column of "Age" was filled in 1028 (97.7%) forms, whereas it was left empty in 24 (2.3%) forms. Demographic information like "Patient's Name" and "Gender" were filled in 1052 (100%) forms. "Ward" was filled in 1022 (97.1%) forms, while 30 (2.9%) were unfilled. As far as "H/O previous transfusion(s)" column is concerned, 430 (40.9%) forms were filled and 622 (59.1%) were left unfilled. "H/O previous transfusion reaction(s)" column had almost the similar number with 396 (37.6%) filled and 656 (62.4%) left empty. The column of "Diagnosis" was filled in 236 (22.4%) and was found unfilled in 816 (77.6%). Moreover, the column of "Which type of component transfused" was filled in 1010 (96%), while 42 (4%) were unfilled. The column of "Amount of blood needed" was filled in 1014 (96.4%) forms, while 38 (3.6%) forms were found unfilled. "When is the blood needed" column had only 308 (29.3%) filled forms, whereas 744 (70.7%) forms did not mention when the blood was needed. One of the most important columns is "Patient's blood group", which was filled in only 562 (53.4%) forms, while 490 (46.6%) forms were left empty. The column of "Name of phlebotomist" was filled in only 146 (13.9%) forms, while 906 (86.1%) of the forms were found unfilled in this

column.

In total, our study revealed that among 1052 BRFs, only 6.8% (n=72) were completely filled, while 93.2% (n=980) were incompletely filled (Table-I & Figure-1).

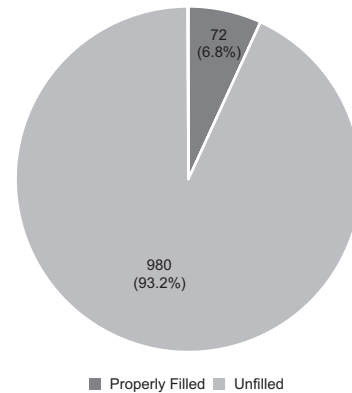
Data Element	Filled n (%)	Unfilled n (%)
MR number	1046 (99.4)	6 (0.6)
Date	1020 (97.0)	32 (3.0)
Age	1028 (97.7)	24 (2.3)
Gender	1052 (100.0)	0 (0.0)
Ward	1022 (97.1)	30 (2.9)
H/O previous transfusion(s)	430 (40.9)	622 (59.1)
H/O previous reaction(s)	396 (37.6)	656 (62.4)
Diagnosis	236 (22.4)	816 (77.6)
Type of component transfused	1010 (96.0)	42 (4.0)
Amount of blood needed	1014 (96.4)	38 (3.6)
When is the blood needed	308 (29.3)	744 (70.7)
Patient's blood group	562 (53.4)	490 (46.6)
Name of phlebotomist	146 (13.9)	906 (86.1)
Overall Completeness of BRFs	72 (6.8)	980 (93.2)

**Table-I. Frequencies of filled and unfilled parameters in BRFs**



**Figure-1. Filled and unfilled parameters frequencies**

**Overall Completeness of BRFs**



**Figure-2. Overall frequencies of filled and unfilled BRFs**

**DISCUSSION**

Since, it is a very sensitive matter, a lot of complex work with ultimate care is required prior to issuance of blood to a particular recipient. One of the pre-requisites that are observed in blood banks on a routine basis is pre-transfusion testing to avoid adverse transfusion outcomes.<sup>14</sup> It involves proper requisition, compatibility testing and pre-release checks<sup>15</sup> that includes ABO typing, Rh typing, antibody screening, antibody identification and crossmatch.<sup>16</sup> Pre-transfusion testing and procurement of proper blood and/or its component can be hindered by an incomplete request form.<sup>17</sup>

Request forms are very important to convey proper message from a physician to the blood bank, laboratory or radiological services.<sup>18,19</sup> A completely filled request form enhances the efficiency in services and reduces the chances of errors<sup>20</sup>, whereas, an incomplete request form contributes to pre-analytical errors which may cause fatal consequences.<sup>10</sup> Among all the medical areas, blood transfusion is a process where any sort of error can result in very serious outcomes.<sup>21</sup>

In routine work, patient's identifications and vital information such as indications and urgency are found mostly incomplete in blood request forms. These parameters are important in prioritizing release of the blood products.<sup>22</sup> An incomplete request form, therefore, can lead to complications

and can cause delay in provision of blood and/or its components.<sup>17</sup>

Blood transfusion has now become a vital part of everyday health management system and is now much more focused on the patients than ever before.<sup>23</sup> A good transfusion practice begins with a completely filled BRF.<sup>24</sup> BRFs are filled by the doctor who has complete basic information of the patient requiring transfusion, e.g., patient's MR number, age, diagnosis etc. Some more info like transfusion history and history of any reactions in previous transfusions are also required for the data to be complete and comprehensive.<sup>25</sup> A complete data shortens the delay of proper blood product issuance. On the other hand, it also provides means to cross-check discrepancies. Thus, complete BRFs plays a fundamental role in haemovigilance, patient care and flawless speedy blood issuance.<sup>11</sup> From our study, it is evident that in our hospital setup, significance of a fully filled BRF is not completely understood. Nursing staff as well as the physicians either lack the awareness of BRF importance or they find it unnecessary to completely fill out other information. Therefore, in this regard, awareness campaigns were designed to educate the healthcare professionals of our hospital and the importance of completely filled BRFs was addressed. This has not only enhanced the efficiency of our blood bank but has also reduced the pre-analytical errors in our hospital.

It was observed during our study that only a small percentage of BRFs were completely filled i.e., 6.8%. It revealed that demographic information like age and gender were filled out properly in almost all the BRFs. Similarly, information concerning the amount required for transfusion, date, in-patient MR numbers, ward etc., were also found completely filled in more than 95% of the BRFs.

On the other hand, some very important information was found missing in many BRFs. Elements like history of previous transfusions, history of transfusion reactions, diagnosis, patient's blood group, when is the blood required and phlebotomist's name were found empty in

more than 50% of BRFs.

The result of our study is somewhat comparable with two studies done in Pakistan<sup>17</sup> and Brazil<sup>26</sup>, where completely filled BRFs were found to be 12.7% and 14.07% respectively (Table-II).

Another study started in July 2014, which ended in December 2014 in India. According to this study, 91.42% (n=1109) BRFs out of 1213 were found to be incompletely filled in July 2014. But after conduction of an orientation program regarding importance of BRFs, this number reduced to 48.76% (n=512) out of 1050 BRFs by December 2014, causing substantial improvement. A statistically significant rise in completeness of BRFs was observed ( $p=0.004$ ).<sup>25</sup>

Moreover, another study conducted in 2016 by Jegede et. al., in Nigeria also had some promising results. Their study was done over a span of 3 months and a total of 1085 BRFs were analyzed. They found that 81.2% of the BRFs received at their Blood Transfusion Service were complete, while only 18.8% were incomplete.<sup>20</sup>

Another study, published in 2015 was conducted in Lagos, Nigeria. They performed an audit of blood bank, lab and radiology department of a privately-owned tertiary level diagnostic center between July 2011 to December 2011. A total of 7841 forms were included in their study. They found that only 1.3% of all the BRFs were completely filled. According to them, patient's names, genders and referring doctor's names were completely filled in almost all the BRFs, while the address of the patients were the least filled.<sup>18</sup>

Studies (Year)	Geographic Area	Completely Filled BRFs (%)	Incomplete BRFs (%)
Present study	Pakistan	6.8	93.2
De Souza et al (2013)	Brazil	14.07	85.93
Waheed U et al (2017)	Pakistan	12.7	87.3
Patidar and Kaur (2018)	India	8.58	91.42
Jegede F et al (2016)	Nigeria	81.2	18.8
Oyedeji et al (2015)	Nigeria	1.3	98.7
Kansay S et al (2016)	India	97.0	3.0

**Table-II. Comparison of our study with other studies.**

The need of required info to be filled completely is very crucial for the sake of time management and controlling work overload in the blood banks. Blood bank staff should be eased out by the physicians as much as possible by providing maximum information. Correspondingly, incomplete BRFs, at the time of blood bank audit, will end up in difficulty to carry out the analysis, where incomplete data will make it cumbersome and challenging to fulfill the required task. Likewise, in case of any mistake, BRFs play a fundamental role in tracking down the error source. A completely filled BRF makes it easy for the professionals to recognize the problem and eradicate it. By doing so, they can ensure that such issues may not arise in the future. Thus, BRFs help to maintain a steady and safe atmosphere for both the patients and the healthcare professionals.

## CONCLUSION

It is quite evident from these studies that our country lacks the awareness of importance of a completely filled BRF. Much effort is needed to make our healthcare professionals aware of the fact that duly completed BRFs are inevitable to reduce errors in blood transfusion practice. According to statistics, Pakistan faces an annual shortage of 40% of its blood requirements, where 1.2 million to 1.5 million units of blood are being transfused each year.<sup>2</sup> This shortage can easily be addressed and can be substantially reduced if regular audits of blood banks are done. These audits can never succeed unless BRFs are not completely filled and sent to the blood banks. It is therefore obvious that the first step in blood bank audits is requisition of blood and/or its components through a duly completed BRF.

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### AUTHORSHIP AND CONTRIBUTION DECLARATION

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3	Hasan Osman Mahmood	Article writing, data analysis.	
4	Sarah Rafi	Data collection, literature review.	