

Original Research Article

Pattern of blood requisition and utilization in a tertiary care hospital: a chart review study

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Received: 18 January 2021

Revised: 16 February 2021

Accepted: 18 February 2021

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ABSTRACT

Background: There is a tendency to order more units of blood than what are actually needed. As blood being finite and recognition of a high rate of inappropriate use, there is a need to monitor and regulate it. It can be done by the analysis of blood requisitions. This study was done to analyze the pattern of blood requisition and utilization in a tertiary care hospital considering the lack of such studies conducted.

Methods: A chart review was conducted during April to May, 2020 to analyse 5601 blood requisitions made during April 2019 to March 2020 in the Department of Transfusion Medicine, RIMS Imphal. Data abstraction form was used to abstract data and it was analyzed in IBM Statistical package for social sciences (SPSS) version 21.

Results: Out of total 5601 blood requisitions, 52.8% were made for female. Nearly one-fifth (18.4%) of the requisitions were for 50-59 years. Of the blood group, A+ (33.4%) was the commonest. Nearly one-third (32.4%) of blood units requested were from the Medicine Department. Anemia (71.6%) was the most common indication. Out of total 5601 requisitions, 4727 (84.4%) were made for packed RBC, 258 (4.6%) for FFP, 232 (4.1%) for platelets and 44 (0.8%) for whole blood. Majority (14.1%) of requisitions were made during the month of July. Replacement was the commonest mode of issue of blood.

Conclusions: Predominant blood requisitions were made for A+ blood group. PRBC constitute majority of the blood requisition. Majority of the requisitions were made from medicine department.

Keywords: Blood requisition, Blood component, Chart review

INTRODUCTION

Blood transfusion plays a vital role in day to day clinical practice and is also a lifesaving procedure. The appropriate use of blood and blood products means the transfusion of safe blood products only to treat a condition leading to significant morbidity or mortality that cannot be prevented or managed effectively by other means.¹ According to American Red Cross, there are four common types of blood transfusion: red blood cell transfusion, platelet transfusion, plasma transfusion, whole blood transfusion.

Each blood component has its own indications, contraindications and adverse reactions. Blood being a biologic agent, is associated with both infectious and non-infectious complications.^{2,3} Before prescribing blood or blood products for a patient, it is always essential to weigh up the risks of transfusion against the risks of not transfusing. The safety and effectiveness of transfusion depend on two key factors: supply of blood and blood products that are safe, accessible at reasonable cost and adequate to meet national needs and the appropriate clinical use of blood and blood products.¹ It appears that

surgeons and physicians order request for cross matching of blood on the basis of habit or as a part of hospital routines, and there is a tendency in most emergency medical and surgical departments to order more units of blood than what are actually needed.⁴⁻⁶ These unutilized but cross matched units are held in reserve and thus are unavailable for other needy patients which impose inventory problems for blood bank, loss of shelf life, and expiry of precious blood without being transfused.⁴⁻⁶ With the supply of blood being finite and with the added recognition of a high rate of inappropriate use of blood and its component services around the world, there is a need to monitor and regulate their services.⁷⁻⁹ One way of monitoring the blood usage is by the analysis of blood requisitions. Therefore, this study was designed to analyse the pattern of blood requisition and utilization in RIMS, Imphal, considering the lack of such studies conducted here in Manipur.

METHODS

A chart review study was conducted in the Department of Transfusion Medicine, RIMS, Imphal during April and May, 2020. All blood requisition forms made during April, 2019 to March, 2020 in the Department of Transfusion Medicine, RIMS Imphal were included in the study. Blood requisition forms without diagnosis were excluded. Age of the patient, sex, ABO group and Rh type, indication of transfusion, departments, month of requisition and blood components were the independent variables. Pattern of requisition and utilization of blood transfusion (single unit of blood requisition made, priority of requisition and means of issuing blood) were the outcome variables. Data abstraction form was used for data collection. Data was checked for consistency and completeness and then, entered into IBM Statistical package for social sciences (SPSS) version 21.0. Percentages, mean with SD were used for descriptive statistics. Approval was obtained from the research ethics board, RIMS Imphal. A written permission were also taken from Medical Superintendent, RIMS, Imphal and Head, the Department of transfusion Medicine, RIMS, Imphal to access the secondary data. Data were anonymized and confidentiality was maintained using password encryption.

RESULTS

Of the total 5601 blood requisitions made during the period of April 2019 to March 2020, more than 1/2nd (52.8%) were for female patients. Nearly 1/5th (18.4%) of the blood requisitions were for the age group (50-59 years), followed by 30-39 years (17.2%) and least (0.8%) were made for 90-99 years. Most of the blood requisitions were from RIMS, Imphal (88.1%), followed by private hospitals (11.0%), JNIMS, Imphal (0.8%) and district hospitals, Manipur (0.1%). Out of the 4374 blood units, most were supplied on the basis of replacement (90.6%), followed by without replacement (8.4%) and only 1 % was though donor card, 120(2.7%) were missing. More than half (52.7%) of all the requisition were made as a single unit requisition. Majority

of blood requisitions were made during the month of July 2019 (14.1%), least was during January, 2020.

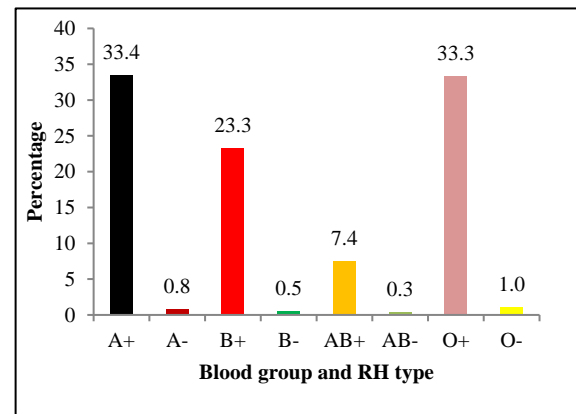


Figure 1: Distribution of blood requisition by ABO group and Rh type (n=5601).

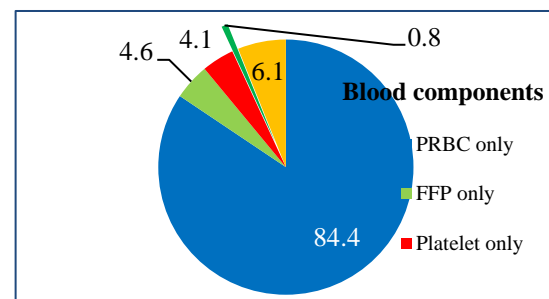


Figure 2: Pattern of requisition of blood and blood components (n=5601).

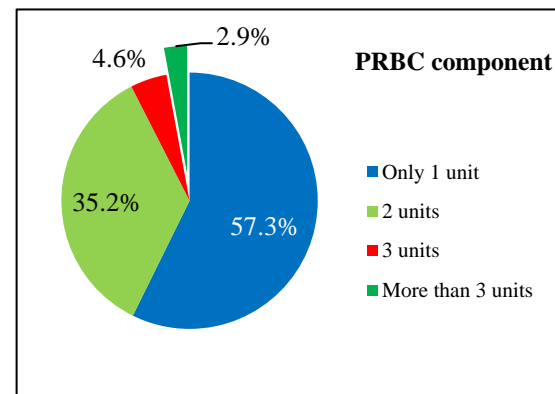


Figure 3: Pattern of PRBC component requisition by number of units (n=5051).

Blood requisitions were most commonly made for A positive blood group, 33.4% and O positive blood group, 33.3% (Figure 1). Out of total 5601 requisitions, 4727 (84.1%) were for packed RBC, 258 (4.6%) for FFP, 232 (4.1%) for platelets, and 44 (0.8%) for whole blood (Figure 2). Majority (57.3%) of the PRBC requisitions were for only 1 unit (Figure 3). More than three-fourth (76.7%) of the FFP component requisitions were for >3 units (Figure 4). Nearly two-third (65.0%) were requested as >3 units,

only 4.9% was requested as only 1 unit (Figure 5). Two-third (66.7%) were requested as 2 units, only 0.1 % was requested as 3 unit (Figure 6).

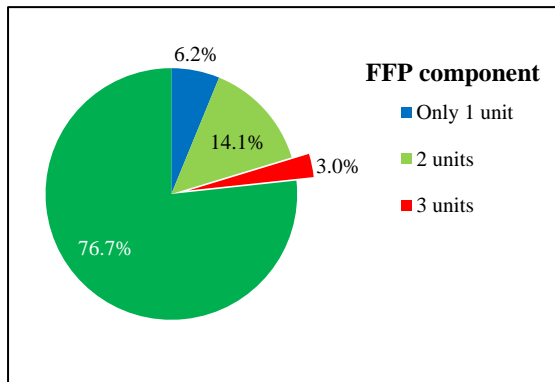


Figure 4: Pattern of FFP component requisition by number of units (n=467).

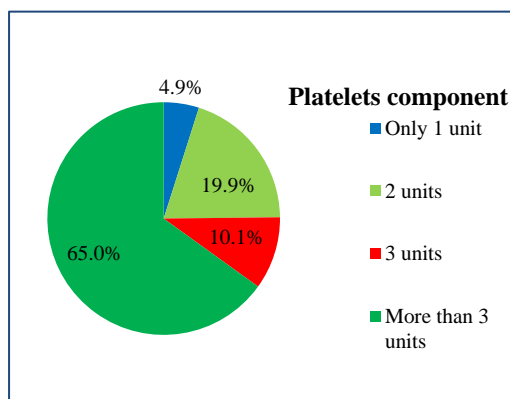


Figure : Pattern of platelets component requisition by number of units (n=386).

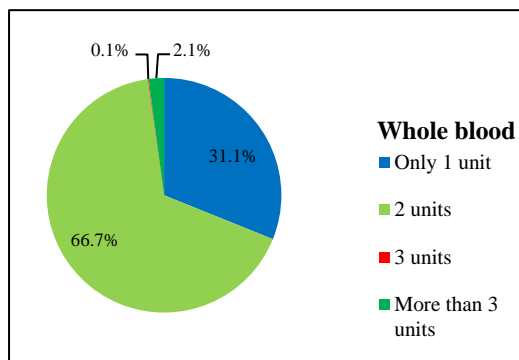


Figure: Pattern of whole blood requisition by number of units (n=44).

Anaemia (71.6%) was the most common indication for blood requisition, followed by active bleeding and anticipated bleeding (Figure 7). More than one-third (34.2%) of blood units requested were from the Department of Medicine, followed by Obstetrics and Gynaecology, 17.8% (Figure 8). Most of the requisition were made on urgent (72.6%) followed by immediate

(14.6%), group and save (5.4%) and least was made on routine, 3.1% (Figure 9).

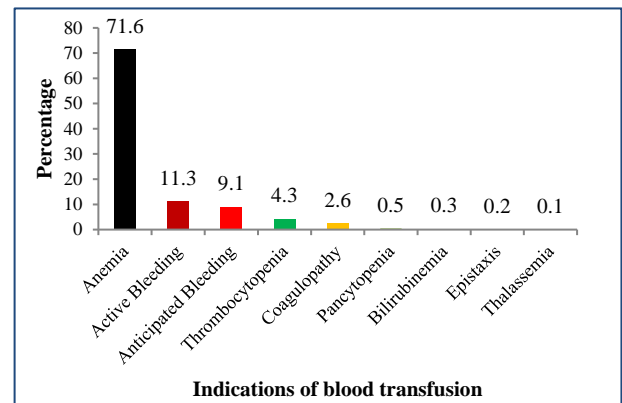


Figure 7: Distribution of blood requisition by indication of blood transfusion (n=5601).

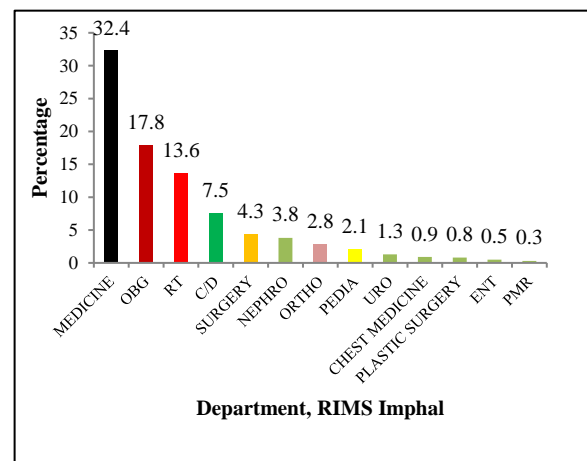


Figure 8: Distribution of blood requisition by departments N (%)=4933 (88.1).

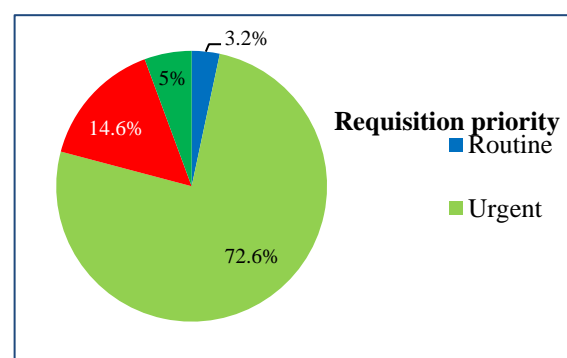


Figure 9: Distribution of blood requisition by priority (n=5601).

DISCUSSION

The transfusion of blood or blood components is one of the most significant aspect of delivery of healthcare services in a hospital setting. It is quite challenging to maintain a

balance between the ongoing blood demand and supply.² This study describes the blood requisition and utilization pattern in a tertiary care hospital. The study involved 5601 blood requisitions made during the period of April 2019 to March 2020. In this study, the maximum requisition was from Department of Medicine, RIMS and A positive was the most predominant requested blood group. Santosh et al study shows that the maximum requisitions were from Department of Obstetrics and Gynaecology, Birat Medical College and Teaching hospital and B positive was the predominant requested blood group.⁷ In this study, the maximum number of patients transfused were among 50-59 years age group, which is similar to the findings by a study conducted by Kaur et al, which showed that the maximum number of patients transfused were of the age group between 51-60.² This study found out that the most common indication for packed red blood cell was anaemia (71.6%). In a study conducted by Kaur et al, the commonest indication for packed red cell in Max super speciality hospital, Dehradun was elective surgery (47.7%) followed by anaemia (31.07%).² In this study 90.6% of blood and blood components were issued through replacement mode as compared to the study conducted by Memtombi which was 53.9%.¹⁰ This study also showed that the month of July had maximum number of blood requisitions which might be due to the reason that many blood donation camps are being held in this season.

Most probably this is one of the very limited study conducted in Manipur attempt to highlight the pattern of blood requisition and utilization. Data abstraction consumed more time than expected because some of the blood requisition forms were not kept properly.

This study finding can be used for estimating the requirements of blood and its components in the future. The requisition form should be properly maintained in periodic order. In order to preserve the handwritten collected data, it may be stored in a digital form.

CONCLUSION

Age group from 50-59 years has the maximum number of blood requisition. A+ blood group and O+ blood group were the predominant requested blood groups. Maximum blood requisitions were from RIMS followed by private hospitals. The Department of Medicine followed by the Department of OBG, RIMS made majority of the blood requisitions. Anaemia was the main indication for blood requisition. The month of July 2019 had the maximum number of blood requisition and also the wastage of blood. PRBC component constitute majority of the blood requisition followed by platelets. Majority of blood were issued through replacement mode of issue.

ACKNOWLEDGEMENTS

Would like to appreciate Professor Ch. Arun Kumar Singh, Medical Superintendent, RIMS Imphal and Professor A.

Barindra Sharma, Head of Transfusion Medicine for their permission to access and retrieve the secondary data. Express heartfelt gratitude to all the interns who had been in this study, thanking them especially for their untiring support and help in data collection

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Rafique M, Singh LT, Meetei NR, Konjengbam S, Akoijam BS. Pattern of blood requisition and utilization in a tertiary care hospital: a chart review study. Int J Community Med Public Health 2021;8:1991-4.