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Pattern of blood component utilization in a tertiary care center

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ABSTRACT

Blood is a living fluid which requires careful administration and transfusion practices. The aim of any blood bank should be to continuously supply the required product and at the same time, ensure very minimal wastage of the less demanded products. The present study was conducted to assess the utilisation pattern of various blood component products at the blood bank of a tertiary care centre. This was a retrospective study for a period of one year and requisitions for various blood component products were analysed for their utilisation patterns from various departments of the hospital. The department catering to highest number of the component products was also analysed. Packed cells was the most common component product ordered for and most number of requisitions were from the department of General Medicine. Fresh frozen plasma was the second most common requested blood component and the department of Obstetrics requested for the highest number of requisitions. Platelet rich plasma was the last ordered component product and the department of General Surgery requested for the highest number.

INTRODUCTION

The preparation as well as utilization of blood components is a task which requires continuous surveillance and improvements(1). Each blood bank has its own pattern of requisitions from the various health care providers around them. As such, the utilization as well as wastage and infrastructure needed to maintain them is different for each blood bank(2). Every blood bank should formulate its own guidelines in relationship to local requisitions from various healthcare providers so that there is no delay in supply of the required product and also there is no undue wastage(3). The present study was carried out at the blood bank of Bhaskar Medical College, Telangana to analyse the pattern of requisitions it receives from various departments of the hospital and assess the utilization of various blood components manufactured in the blood bank.

MATERIALS AND METHODS

The present study was carried out at the Blood bank of Bhaskar Medical College & Hospital, Telangana for a period of 1 year, January 2013 to December 2013. It was a retrospective study. The requisitions for various components from various departments of the hospital were analysed. Only the requisitions which have the complete data were included in the study. The following data was checked for in all the requisitions:

1. Name/ Inpatient registration number of the patient to which the product was requested for.

2. Clinical indication for which the product was required
3. Pre-transfusion values:
4. History of previous transfusions of same or any other blood product
5. Date of the product preparation
6. Date of product expiry
7. Date of issue of the product to the patient

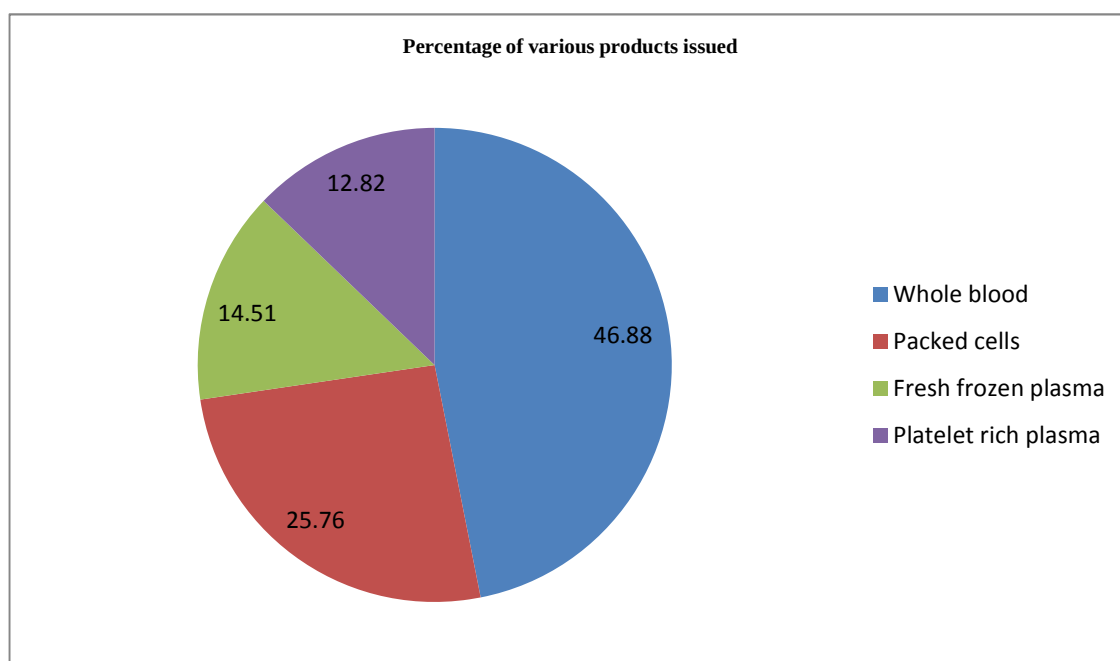
The data was analysed and the results tabulated.

RESULTS

For a period of 1 year, the following observations were made in the present study:

Whole blood was the most common product ordered for from various departments of the Hospital. Packed cells, Fresh frozen plasma and Platelet rich plasma were the blood components requested from various departments. As we analysed only component requisitions from various departments we have omitted the results of whole blood from the interpretations. Packed cells was the most common component requested for from various departments of the hospital(28.13%) followed by fresh frozen plasma(10.72%) and platelet rich plasma(9.74%) (Figure 1).

Figure1: Distribution of blood products issued for a period of one year



Requisitions for packed cells were highest from General Surgery department(22.23%). Requisitions for Fresh frozen plasma were highest from the department of Obstetrics(34.37%) and requisitions for platelet rich plasma were highest from the department of general Medicine(39.11%)(Table 1).

Table 1: Requests for blood component products from various departments

Department	Number of packed cell units requested per year
General medicine/ICU/ICCU	201
TB & Chest	216
Paediatrics	194
Obstetrics	237
Gynaecology	543
General Surgery	505
Orthopaedics	227

	Total = 2123
Department	Number of fresh frozen plasma requested per year
General medicine/ICU/CCU	-
TB & Chest	-
Paediatrics	254
Obstetrics	368
Gynaecology	-
General Surgery	236
Orthopaedics	178
	Total = 1196
Department	Number of platelet rich plasma requested per year
General medicine/ICU/CCU	408
TB & Chest	-
Paediatrics	87
Obstetrics	139
Gynaecology	186
General Surgery	237
Orthopaedics	-
	Total = 1107

Anemia constituted the most common clinical indication for packed cell transfusion(72%)(Table 2).

Table 2: Indications for the requisition of packed cells

Clinical indication	Percentage
Anemia	72
Prophylactic supplement during surgeries	28

Acute Disseminated intravascular coagulation was the most common indication for Fresh frozen plasma(63%)(Table 3) and thrombocytopenia with volume depletion was the commonest indication for platelet rich plasma(79%)(Table 4).

Table 3: Indications for requisition of fresh frozen plasma

Clinical indication	Percentage
Acute DIC	63
Excessive bleeding	29
Volume depletion	8

Table 4: Indications for requisition of platelet rich plasma

Clinical indication	Percentage
Thrombocytopenia with volume depletion	79
Thrombocytopenia	21

DISCUSSION

Blood transfusion comprises a significant part of different treatment practice. Blood must be transfused considering clear precautions because like drugs, blood and its components have the predisposition to cause side effects such as introduction of donor antigens in the recipient, exposure to transfusion transmissible diseases and transfusion reactions(4). The present retrospective study analyses the pattern of demand for various blood components from various departments of the hospital. The purpose of the present study was to assess the demand for various blood components and thus ensure their even supply without shortage and also simultaneously reduce the wastage of the less frequently requested components(5).

The present study was conducted for a period of one year anuary 2013 to December 2013 at Blood bank of Bhaskar Medical College & General Hospital. A total of 8239 units as a whole were dispatched during the year. Out of these units, 46.88% were whole blood units, 25.76% were packed cell units, 14.51% were Fresh frozen plasma and 12.82% were platelet rich plasma units. In the study by alcantara et al(6), a total of 8065 blood products were issued in a period of one year. The highest requested product was packed cells constituting 42% of the requisitions. A similar result was obtained in the study by Kaur et al(7), where 67.8% of the requisitions were for packed cells. In the present study, the highest number of requisitions among components was also for packed cells. The next

commonly ordered component was Fresh frozen plasma(25.88%). In the study by bank at a Chalapathy et al(8), the second highest number of requisitions were for Fresh frozen plasma. The findings of the present study also correlated with the findings of a similar study by Singhal et al(9), where the most common requested blood component was packed cells followed by Fresh frozen plasma. In the study by Alcantara et al, the second most common component which was requested was also Fresh frozen plasma. In the present study, general medicine department ordered for the highest number of packed cells, the department of obstetrics requested for the highest number of Fresh frozen plasma and the department of General surgery requested for the highest number of platelet rich plasma. These findings correlated with the findings of the study by Alcantara et al. In the present study, anemia was the most common clinical indication for packed cells, acute disseminated intravascular coagulation was the most common clinical condition which required Fresh frozen plasma and thrombocytopenia with volume depletion was the most common clinical condition for which platelet rich plasma was requested for.

Figure1: Distribution of blood products issued for a period of one year

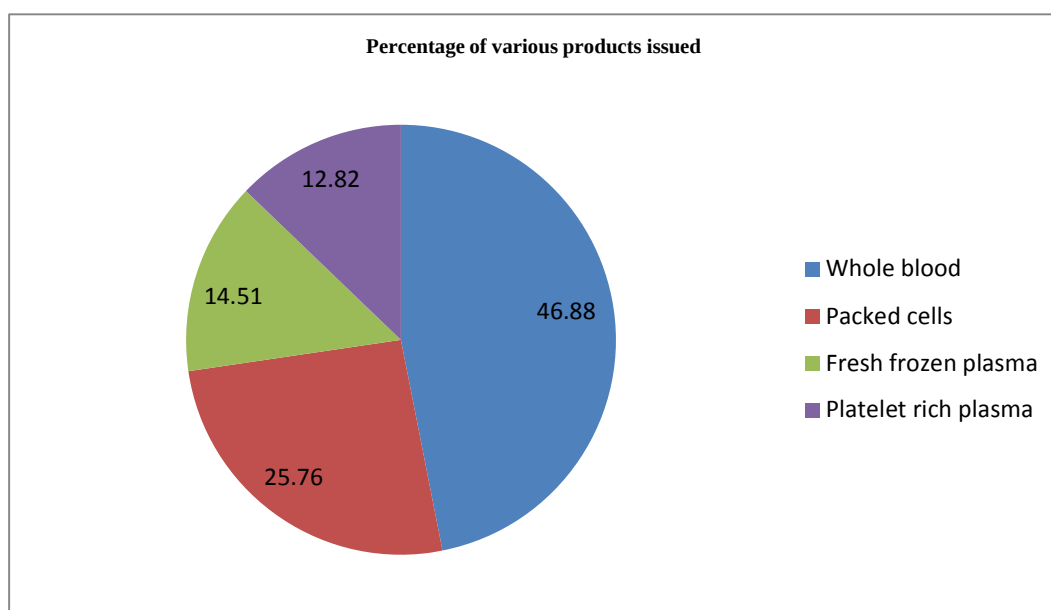


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CONCLUSION

The present study analysed the utilisation of various components in a blood bank of a tertiary care centre and thus was able to throw light on the most common blood component requested for thus ensuring its uninterrupted supply. The wastage of less frequently ordered component product can also be reduced to a large extent.

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