



Blood Transfusion Audit in Tertiary Care Hospital Blood Bank

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ABSTRACT

Blood transfusion is lifesaving procedure in critical conditions like road accidents, postpartum hemorrhage etc. hence the rational and appropriate use of blood and blood products is very essential step to save life of many patients with available blood products in any blood bank. The purpose of a transfusion audit is to determine the appropriateness of blood transfusion practices, and provide data for the improvement of blood transfusion services. For the rational use of blood, it is essential to collect information about existing blood transfusion practices. In this study, an attempt was made to analyze and study the pattern of blood utilization among the various medical and surgical specialties of tertiary care hospital. A study was conducted on all the blood requisition forms received at the blood bank of tertiary care hospital during the period January 2017 to December 2021. The records of the blood issued to the patients were studied. Out of total 14028 units cross-matched, 6374 units (45.43%) were issued. Out of total 14028 requests, 5009 were for single unit of which 1480 units (29.54 %) were utilized. The transfusion committee in the hospital should conduct regular audits in order to achieve utmost efficiency and numerous benefits, in terms of workload, cost, errors of transfusion and betterment in patient services. It should develop and amend the policies time to time to abolish inappropriate transfusion practices.

Keywords: Audit, blood transfusion, rational use.

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INTRODUCTION

Audit of health care services is essential for the calculation of outcome and effectively of these services.

Blood transfusion services form a vital part in the national health care delivery system. The Central Drugs Standard Control Organization (CDSCO) is India's National Regulatory Body for cosmetics, pharmaceuticals and medical devices. Blood and blood products are categorized as a 'drug' under Section 2 (b) of the Drugs and Cosmetics Act, 1940.¹

The Transfusion Committee of the respective hospital audits blood transfusion practices. The purpose of a transfusion audit is to determine the appropriateness of blood transfusion practices, and give guidance for the improvement of blood transfusion practices.

The medical audit in a blood bank helps to improve the processes introduced in the ordering, distribution, handling, and administration of blood as well as to monitor the response to transfusion. For rational use of blood, it is necessary to look into the existing blood transfusion

practices and collect background information about the type of existing blood transfusion practices e.g. requests for single unit transfusion, fresh blood transfusion, use of blood component therapy, use of autologous blood transfusion, etc. and modify these practices for appropriate utilization of blood in the respective hospital setting after analyzing them periodically.

The present study was done to analyze and study, the pattern of blood utilization among the various health specialties of a tertiary public hospital.

Our findings were concordant with the study done by Bhatnagar et al regarding utilization of blood in the surgical operations.² The low issue of single unit of blood despite the requisition being high is highlighted in our study and similar findings were observed by Bharucha et al,³ Prabal Deb et al⁴ and Malik et al,⁵ Soumerai et al,⁶ Morrison et al,⁷ Shanberge et al,⁸ Giovanetti et al,⁹ Kakkar N et al,¹⁰ and Torella F et al.¹¹ Several national and international studies done in the past showed that the blood product utilization is reduced after approaching the clinicians.⁴⁻⁹

There is necessity of the regular audit of blood demand and the hospital transfusion committee set up to advocate rational transfusion practices.

MATERIALS AND METHODS

The detailed study was done on all the blood requisition forms received at the blood bank of a 500 bedded tertiary hospital in a tertiary care hospital blood bank for the period of January 2017 to December 2021.



The hospital blood requisition form provides details of the patient name, age, sex, address, unit, ward etc. It also provides information regarding the patient blood group, clinical diagnosis, indications and units needed for blood transfusion and the priority of the demand.

Record of blood products issued to patient is maintained on blood bank card with their unique number. Blood bank card has contains details of patient's name, age, sex, ward, unit, blood group, diagnosis, details of blood units and blood components cross matched and issued to the patient.

They were studied to collect data regarding the total units collected and details regarding their issue. The various broad specialties of the hospital i.e. medicine, surgery, pediatrics and obstetrics were studied individually regarding their requisition of the demand for emergency or elective surgeries and their actual utilization against the requested blood products units.

The demand and issue of single blood unit was studied separately for all the above mentioned hospital specialties.

RESULTS AND DISCUSSION

Table 1: Percentage utilization of blood units against the demand.

Department	Total cases		
	Units Requested	Units Issued	Percentage Utilization
Surgery	5331	1603	30.06 %
Medicine	4774	3374	70.67 %
Obstetrics and Gynaecology	3114	834	26.78 %
Pediatrics	691	522	75.54 %
Other Hospitals	118	41	34.74 %
Total	14028	6374	45.43 %

The blood requisition forms were scrutinized and it was found that out of 14,028 blood units requested, only 6374 blood units were issued i.e. 45.43 % utilization. The utilization by the Surgery department was 30.06 %, Medicine-70.67 %, and Pediatrics- 75.54 %. The lowest utilization was by the Obstetrics & Gynaecology department i.e. 26.78 %. (Table 1)

Out of total 14,028 requisition forms, there was demand for the single blood unit In 5009 requisition forms (35.70 %) and only 1480 single blood units (29.54 %) were issued. In Surgery, there were 1361 requisition forms mentioned requests for a single unit and only 442 units (32.47 %) were issued. (Table 2)

The Medicine department had submitted 1169 requisition forms with single unit requests and 731 single blood units were issued ie.62.53 %. In Obstetric & Gynaecology department, 2213 blood units were demand for single blood unit and only 109 single blood units (4.92 %) were

issued, which was the lowest as compared with other specialties. Maximum utilization of blood was in Pediatrics department with 76.62 % in which 177 units were issued single unit demand of 231 units. (Table 2)

Table 2: Utilization of single blood unit

Department	No. of forms with single unit demand	Units Issued	Percentage utilization
Surgery	1361	442	32.47 %
Medicine	1169	731	62.53 %
Obstetrics & Gynaecology	2213	109	4.92 %
Pediatrics	231	177	76.62 %
Other Hospitals	35	21	60.00 %
Total	5009	1480	29.54 %

Blood transfusion safety is a concern both for physicians and patients. Medical audit can achieve a variety of goals. The blood requisition form is an important medico legal document. It should contain the patient particulars without any error, date and time of demand and signature of a medical officer. The blood group, the urgency of demand, clinical indication to transfuse and number of units should be mentioned in blood requisition form. This information will enable the blood bank to process the demand without loss of valuable time, and plan to arrange for the required number of blood units for patient from the blood donors.

In the present study, 30.06 % of blood units against the total blood unit requests were utilized by Surgery department. The similar findings were found in the study done by Bhatnagar et al.²

The concept of single unit transfusion is a controversial aspect of transfusion medicine and is highlighted in the study. A single unit transfusion raises the haemoglobin by 1g/dl only and is therapeutically insignificant. Hence, the use of a single unit of blood should therefore be strongly discouraged.³

In the study by Deb P et al, the total 2793 blood requisition forms received.⁴ There were 1697 (60.71 %) demands were for single unit blood and total 713 (42.01 %) were utilized. In the present study, the total number of blood requests were 14,028 out of this 5009 were single unit requests, of which 1480 (29.54 %) were utilized.

The highlight of the present study is the low issue of single unit of blood despite the requisition being high. The single unit requests were highest in Gynaecology and utilization was least. Out of total 5009 single unit requests, the Gynecology and Obstetrics department requested 2213 single units and the actual utilization of single unit was 109 units (1.74%).



In the study by Malik et al, of the 497 patients, 438 (88.1 %) were sent the blood samples for group-and-save. However, only 19 (3.82 %) patients received a blood transfusion.⁵

With regard to cross matching and transfusion of blood, there is wide variation in clinical practice between individual obstetricians. Many obstetric patients are 'group and held' or cross-matched unnecessarily and that a significant proportion of blood units requested for transfusion is not utilized.

The various discussions are done at several forums and the consensus was done to abolish such blood transfusion practices. The first approach is to briefly meet one-on-one with the physicians and sort out the issue as per respective departmental conditions. Soumerai et al mentioned for reduction in appropriate transfusion services among study surgeons, from 40 % to 24 %.⁶ The second strategy is to conduct conferences and hospital seminars. Morrison et al improved transfusion practices in obstetrics and gynaecology by reducing the number of patients undergoing transfusion by 60% by this approach.⁷ The third approach for process improvement is by taking daily clinical rounds of patients who receive transfusion and study the daily requirement. Shanberge et al⁸ and Giovanetti et al⁹ achieved improvement in transfusion practice by this strategy. The fourth approach is to review each order before issue (concurrent review), and refer the matter to the hospital transfusion committee in case of controversy. The Kakkar N et al¹⁰ and Torella F et al¹¹ mention a reduction in requirement of FFP with this methodology. The fifth method is by way of installing algorithms and guidelines for transfusion in various different clinical settings.¹² Thus, the transfusion services have used various techniques to reduce blood product utilization.¹³

CONCLUSION

The practice of single unit blood transfusion can be reduced with regular audit of blood demand, proper documentation and adopting successful strategies as enumerated above. It will reduce the instances of inappropriate transfusions, hence, the risks of transfusion transmittable diseases, transfusion reactions and sensitization will also reduce. Blood transfusion should be used only when the clinical benefits outweigh the risks than its inherent hazards. The hospital transfusion committee (Comprising specialists from the Departments of Medicine, Surgery, Obstetrics and Gynaecology, Orthopedics, Anesthesiology and Pathology etc.) should advocate rational transfusion practices and enable the blood bank maximum utilization of existing available blood units in the respective blood bank. It will impact greatly in the management of the blood bank to plan its requirement judiciously and avoid unnecessary wastage and ultimately results in the decrease in the workload, cost, errors and risks related to transfusion. Thus, all such efforts will enhance rational use of limited resources.

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