

Evaluation of Transfusion Practices in a Blood Bank at a Tertiary Care Teaching Centre

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ABSTRACT

Introduction: The transfusion requirements for patients undergoing surgical procedures are often overestimated. The consequence of such a practice include increased cost to the patient, outdated of blood, overburdening of blood bank personnel, depletion of blood bank resources, and wastage of time. In view of this, the present study was conducted to assess blood transfusion request patterns and usage in order to appraise transfusion practices.

Materials and Methods: The present retrospective study was carried over 500 patients who required blood transfusion during elective or emergency procedures in the hospital. The data was collected from registers of blood bank and from requisition forms. The cross matched blood which was obtained but not transfused was assessed. Data so obtained was and analyzed using SPSS version 22 and expressed as number and percentage as required.

Results: Out of total 1356 units of requested blood, 433 (32%) were ordered by Surgery department, 216 (16%) by medicine, 395 (29%) by gynaecology and 312 (23%) by orthopedics. Out of requested blood, 53% was transfused. 62% was transfused by surgery, 51% by medicine, 52% by gynaecology and 43% by orthopedics.

Conclusion: The present study found that in our hospital set-up, out of the total amount of blood requested and cross-matched for patients about approximate half of the amount was actually utilized. This increases workload as well as financial costs, henceforth policies for ordering a transfusion are required to be put into practice based upon discussion, audits and agreement made by the Hospital Transfusion Committee.

Keywords: Blood; Cross-Matching; Transfusion Practices.

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Article History:

Received: 30-11-2017, **Revised:** 27-12-2017, **Accepted:** 24-01-2018

Access this article online	
Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2018.4.1.131	

INTRODUCTION

Blood component transfusions form a vital role in the resuscitation and management of both medical and surgical patients.¹ It is performed for improvement in oxygen delivery at tissue level and to improve blood volume.² At present, the transfusion requirements for patients undergoing surgical procedures are being overestimated. Blood units arranged for elective surgery remain unutilized and get discarded. The consequence of such a practice include increased cost to the patient, outdated of blood, overburdening of blood bank personnel, depletion of blood bank resources, and wastage of time.³

Availability of adequate safe blood has been challenging in developing countries due to dearth of voluntary blood donors, poor facilities for storage and blood component preparation as well as inappropriate blood ordering and utilization.⁴ In addition, excessive ordering of blood can lead to an unintentional misuse of blood bank services. It appears that surgeons and physicians order request for cross-matching of blood on the basis of habit or as 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.⁵ Currently, there are no specific evidence-based guidelines for the appropriate amount of blood products to be ordered for specific procedures. Rather, excessive blood products are ordered due to outdated preoperative institutional or surgeon-specific guidelines.³ Periodic assessment of transfusion practice may highlight shortcomings that could be addressed toward provision of adequate safe blood or good practice that could be strengthened.⁴ In view of this, the present study was conducted to assess blood transfusion request patterns and usage in order to appraise transfusion practices.

MATERIALS AND METHODS

The present retrospective study was carried over 500 patients who required blood transfusion during elective or emergency procedures in Mahatma Gandhi Memorial (MGM) Medical College and Hospital, Indore, Madhya Pradesh, India. The data was collected from registers of blood bank and from requisition forms.

Demographic details including patient's age, gender, diagnosis, department which requested blood, type of treatment procedure performed and the required number of blood units cross matched and transfused were analyzed. The total number of units of whole blood and component transfusion carried out were analyzed. The cross matched blood which was obtained but not transfused was evaluated. Data so obtained was and analyzed using SPSS version 22 and expressed as number and percentage as required.

RESULTS

The present study found that 25.6% of blood transfusion requests were for whole blood 19.4% for platelet concentration, 52.5% for packed red cells and 2.5% for fresh frozen plasma (table 1).

Table 2 describes the utilization of requested blood units department wise. Out of total 1356 units of requested blood, 433 (32%) were ordered by Surgery department, 216 (16%) by medicine, 395 (29%) by gynaecology and 312 (23%) by orthopedics. Out of requested blood, 53% was transfused. 62% was transfused by surgery, 51% by medicine, 52% by gynaecology and 43% by orthopedics.

Table 1: Description of required blood and its components

Whole blood and component transfused	Number	Percentage
Whole blood	348	25.6%
Platelet concentration	263	19.4%
Packed red cells	712	52.5%
Fresh frozen plasma	33	2.5%
Total	1356	100%

Table 2: Utilization of blood units department wise

Parameters	Number	Percentage
No. of Blood units cross matched	1356	100%
Department		
Surgery	433	32%
Medicine	216	16%
Gynaecology	395	29%
Orthopedics	312	23%
No. of Blood units transfused	719	53%
Department		
Surgery	269	62%
Medicine	110	51%
Gynaecology	207	52%
Orthopedics	133	43%

DISCUSSION

Preoperative over-ordering of blood is common and leads to the wastage of blood bank resources.⁶ The present study examined the request and utilization pattern of blood transfusion in hospital set up. Out of total 1356 units of requested blood, 32% was requested by surgery department, 16% by medicine, 29% by gynaecology and 23% by orthopedics. Out of requested blood, only about half i.e. 53% was transfused. 62% was transfused by surgery, 51% by medicine, 52% by gynaecology and 43% by orthopedics. Umesh D et al¹ carried out a prospective study to assess transfusion practices at a tertiary care teaching hospital and during the study period, from 6197 units cross matched, 1040

(16.8%) were transfused and the rest of the cross matched units were temporarily removed from main stock and the complete blood utilization indices of the hospital were C/T ratio of 5.95, %T of 67.7% and TI = 0.87 respectively. Raghuwanshi B et al⁷ conducted a retrospective study of transfusion practices in a Tertiary Care Institute, the study found that the blood utilised was 16.04% of total cross matched blood, leaving 83.9% of units cross matched but not transfused to patient for whom it was prepared, i.e., wasted and the surgery department had the highest number of units cross matched and transfused. Kumari S⁵ evaluated the pattern of blood transfusion requests and utilization and reported that two thousand two hundred and sixty-eight units of blood were cross-matched for 1487 patient's transfusion requests, out of which only 1455 (64.2%) were transfused giving a total CTR of 1.6 for the hospital.

Over ordering blood is a common practice in hospital set-ups and need to be corrected by a simple means of changing the blood ordering pattern.⁸ Due to over ordering, patients requiring blood immediately or with legitimate blood requirements are deprived of it. This results in aging of blood units and wastage of blood bank resources.⁹ Hall TC et al⁶ evaluated the preoperative blood ordering and transfusion practices and suggested implementation of the updated recommended a maximum surgical blood ordering schedule (MSBOS) and introduction of group and save test preoperatively for eligible surgical procedures is a safe, effective and cost-effective method to prevent preoperative over-ordering of blood in elective general surgery. Mahar FK et al¹⁰ recommended that regular audits should be conducted in every institution to improve the quality of services, encourage team work and ensure high standards.

The MSBOS can be structured using national transfusion guidelines, data based formulae, audits, training programs, clinicians meetings and the Hospital transfusion committee. This will help in reducing the number of unused crossmatched blood units, maintaining inventory, cut financial costs and free technical hands.¹¹ The other group where transfusion probability is high, a maximum surgical blood ordering schedule (MSBOS) should be determined to identify the number of units to be cross-matched and kept ready before the procedure. The implementation of this proposal will avoid over-ordering of blood and will promote maximum utilization.⁸

The importance of blood transfusions for the survival of patients in appropriate cases is clear to everyone. Without blood and blood donations, thousands of operations could not be carried out safely.¹² On the other hand, it is impossible to predict or estimate blood loss during any surgery and requirements of blood for any haematology or oncology disease. Therefore, strict implementation of MSBOS within any hospital is technically difficult but with combined efforts from clinician and HTC, it can be adhered to maintain blood inventory and prevent wastage.¹¹

CONCLUSION

The present study found that in our hospital set-up, out of the total amount of blood requested and cross-matched for patients about approximate half of the amount was actually utilized. This increases workload as well as financial costs, henceforth policies for ordering a transfusion are required to be put into practice based upon discussion, audits and agreement made by the Hospital Transfusion Committee.

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Source of Support: Nil.

Conflict of Interest: None Declared.

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Cite this article as: Ramu Thakur, Priyanka Solanki. Evaluation of Transfusion Practices in a Blood Bank at a Tertiary Care Teaching Centre. *Int J Med Res Prof*. 2018 Jan; 4(1):600-02. DOI:10.21276/ijmrp.2018.4.1.131