

# Comparison of Cross Match and Transfusion Ratio with Utilization of Blood Components

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**ABSTRACT:** *Aim: To compare cross match and transfusion ratio with utilization of blood components Objectives: To find the cross match and transfusion ratio and compare them with utilization of blood components. Methodology: It is a retrospective study done in Saveetha Medical Hospital Blood Bank for a period of 1 year, Crossmatch to transfusion ratio calculated using the formula, C/T ratio= Number of units cross-matched / number of units transfused. Result: total number of crossmatched units of blood components was 3913and components issued was 2043 Overall C/T ratio was 1.91 which indicates efficient blood usage by all the departments of our hospital. Conclusion: Change of blood ordering patterns with use of restrictive transfusion strategy and MSBOS can avoid the over ordering of blood*

## 1. INTRODUCTION

Transfusion of blood and blood products is one of the most regularly performed procedures in hospitals. Blood transfusion process plays a significant role in the management of patient.<sup>[1]</sup> The American Medical Association recognized blood transfusion as one of the topmost frequently overused therapies.<sup>[2]</sup> Blood given by voluntary nonremunerated blood donors is a rare and precious resource, which must be effectively organized and stocked.<sup>[3]</sup> There is surpassing ordering of blood preoperatively for most of the surgical procedures generally.<sup>[5]</sup> It is very important that this sparse and expensive product be used efficiently and wisely. Patient blood management has become an integrative perspective to optimize the care of patient who may need transfusion. The elective surgeries have been identified one of the prominent areas of hospital wastage of its vital resources. The volume collected by the transfusion services in the Hospitals have exceeded.<sup>[6-8]</sup> Studies have shown that there is frequently a gross over-ordering of blood of elective surgical interventions, in excess of actual and anticipated need.<sup>[7]</sup> Over ordering of blood leads increase in demand for blood. Therefore, our study was conducted to use the blood stocks more efficiently and reduction in the wastage due to expiry of blood components, to prevent injudicious pre-operative undesired cross-matching of blood by calculating various blood utilization indices.

## 2. MATERIALS &METHODS

This study was a prospective study which was conducted in the Blood Bank, over a period of one year. Source of data was from the forms and registers of patients who underwent elective procedures in the hospital for which blood was ordered. Blood utilization indices were computed by the equations:

**Crossmatch to transfusion ratio (C/T ratio) = Number of unit's cross-matched / number of units transfused.**

A ratio of less than 2.5 is considered indicative of significant blood usage.

### 3. RESULTS

During the study period, total number of ordered units of blood components was 3913 and all units which were ordered were cross-matched for various elective medical conditions and surgical procedures. The total units of blood components which were transfused to patients in various departments were 2043. Majority of the patients were females 2503(64%) and males were 1410(36%). Patient's age ranges from 18-60 years. Maximum number of patients belongs to age group 46-60 years (51.9%) followed by 31-45 years (30.0%) and 18-30 years (18.0%). The age group of 46-60 years (51.0%) have received maximum number of blood transfusions . Table 1: Comparison of blood units cross matched and transfused in elective surgeries.

DEPARTMENTS	TOTAL NUMBER OF CROSSMATCH [N=3913]	TOTAL NUMBER OF TTRANSFUSION [N=2043]	C/T RATIO [1.91:1]
MICU	1045	522	2.01:1
Neurosurgery	784	341	2.29:1
General Surgery	1102	582	1.89:1
Obs/Gynae	982	598	1.64:1

This table depicts that maximum cross match to transfusion ratio was seen in neurosurgery department (2.29) followed by MICU (2.01), General surgery (1.89) and obs/gynae (1.64). Overall C/T ratio was 1.91 which indicates efficient blood usage by all the departments of our hospital.

### 4. DISCUSSION

The proper use of blood or blood components is a highly cost-effective practice but holding blood units for elective surgery and then not transfusing the demanded blood, adds to the testing cost for the patient, and overburdening a blood bank.

The present study was conducted to analyses the C/T ratio which was 1.91.C/T ratio did not exceed 2.5 for any of the department in our centre i.e. CVTS, Neurosurgery, General surgery, and Obs and Gynaecology and were 2.01, 2.29, 1.89, and 1.64 respectively. This calculated C/T ratio for various departments were comparable with the study done by Kushal S et al, that reported the C/T ratio for the above departments were 1.9, 2.2, 0.5 and 2.2 respectively and overall, the C/T Ratio was 1.8. Pradyuth I et al, also found that the overall C/T ratio calculated did not exceed 2.5. Many studies have reported C/T ratio which was comparable with our study.

### 5. CONCLUSION

Blood transfusion is a life saving measure in various medical and surgical conditions. To reduce the injudicious usage of blood, efforts should be made to adopt more conservative transfusion thresholds, periodic feedback to improve blood ordering, handling, distribution and utilization practices of this scarce resource and conducting regular audits that will ultimately reduce the burden of physical and human resources of a health care facility and increased cost of medical care and also reduce the stress on the blood transfusion services. Change of blood ordering patterns with use of restrictive transfusion strategy and MSBOS can avoid the over ordering of blood.

## 6. REFERENCES

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