

## **An Audit Report for Assessment and Platelet Utilization in Tertiary Care Hospital**

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### **Abstract**

**Background:** Platelet transfusion is an important treatment modality for prevention and treatment of bleeding. Indiscriminate use and non-compliance to platelet transfusion have been found despite having various guidelines and recommendations. This study is aimed at assessing the preparation, utilization and discard of platelets in our hospital.

**Methods:** This is a retrospective study conducted in the Department of Immunohematology and Blood Transfusion at SMS Medical college and attached hospitals Jaipur over a period 6 month study from Jan. 2019 to June 2019.

**Results:** During 6 month of study period 5411 units of platelets (PRP-PC =3847 around 71 %, BC-PC =1063 around 20 % , PRP=152 around 3% , SDP=349 around 6 %) were prepared. There units were transfused to 779 patients (RDP' to 634 patients and SDP to 115 patients during their hospital stay).

**Conclusion:** Regular audit of blood and blood components is an important tool to maximize judicious utilization of each component.

**Keywords:** PRP, SDP, Audit

### **Introduction**

Platelets play a key role in maintaining haemostasis. They are amongst the most valuable and expensive commodities in transfusion medicine. Platelet transfusion is an important therapeutic modality, which can be life-saving in certain circumstances and its demand is on rise. However, the decision to transfuse platelets should be taken carefully, as it exposes the patient to various risks and can lead to deprivation of this precious product to actually needy patients.<sup>1</sup>

In 1910, it was Duke who first recognized that increase in platelet counts after the transfusion of whole blood led to increased haemostasis.<sup>2</sup> However, routine transfusion of platelets, independent of fresh whole-blood transfusion, was not feasible until 1960s. This delay was because of the technical inability to isolate and preserve platelets for transfusions. With advances in the collection and storage of platelets, routine platelet transfusions for thrombocytopenic patients became possible.<sup>3</sup>

Guidelines have been developed internationally as well as nationally to improve safe transfusion therapy to each patient without ant unwanted risk, platelet, a major

and important blood component for patients with thrombocytopenia diagnosed with various clinical conditions like haematological malignancies, solid tumors, major surgical bleeding, trauma and pyrexia. Inappropriate use or an eagle eye for platelet transfusion in time' for a patient is a level of awareness among clinicians.<sup>4</sup>

Platelet transfusion audit is an important tool to reduce inappropriate transfusion in patients, while continuously improving practice guidelines, encouraging consultation with prescribers and identifying areas for further improvement.<sup>5</sup> The present study was undertaken to review the platelet transfusion practices at our health care centre.

#### Materials And Methods

This is a retrospective study conducted in the Department of Immunohematology and Blood Transfusion at SMS Medical college and attached hospitals over a period 6 month study from Jan. 2019 to June 2019.

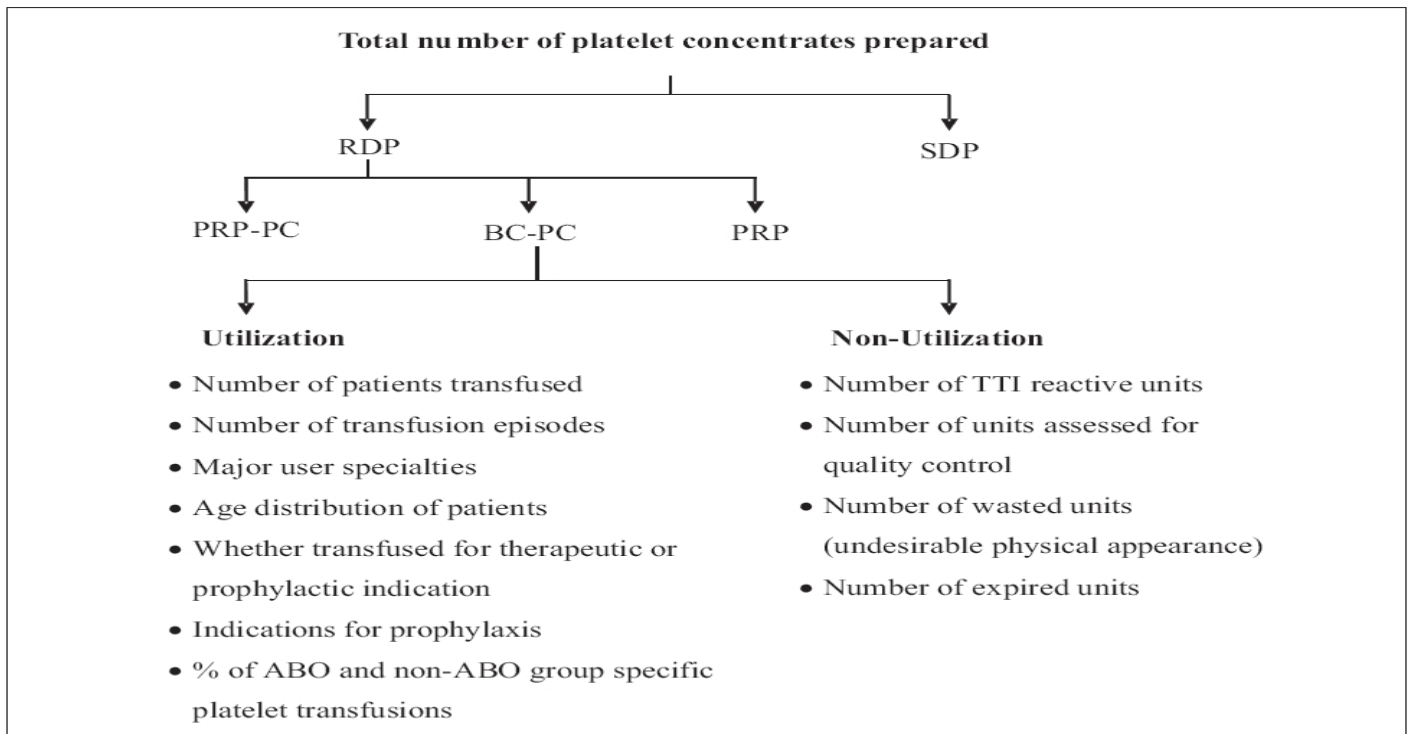
Before conducting the audit, a resident manual on 'Guidelines for blood and blood components: Preparation, storage and its administration' was released for educating all clinicians and nursing staff of the Institute. The manual is also issued to all new resident doctors enrolling for various specialties and super-specialties in the Institute. We follow platelet transfusion guidelines laid down by the British Committee for Standards in Haematology (BCSH). As per the standards, the department is following the policy of transfusing ABO and Rh (D) group-specific platelet transfusions and recommending Rh IgG immunoprophylaxis in Rh (D) negative woman of

child-bearing potential where Rh (D) positive platelet transfusions were warranted

The data for monthly platelet preparation (PRP-PC, BC-PC, PRP and SDP) was obtained from departmental records. Random donor platelets were stored for a maximum period of 3 days and SDP for 5 days (as per storage bags available) at  $22\pm 2^{\circ}\text{C}$  with continuous horizontal, gentle agitation ( $70\pm 5$  oscillations/min) in a platelet incubator-cum-agitator. Patient's information regarding their age, gender, specialty, platelet counts, transfusion episodes, therapeutic or prophylactic transfusion and ABO and Rh (D) group specific or non-group specific was obtained from requisition forms and platelet issue record registers. The data regarding platelet wastage (undesirable physical appearance, leaks or bag rupture, TTI reactive) and expiry was analyzed from departmental records to calculate expiry rate and wastage rate. One percent of the platelets prepared/month or 10 units/month, whichever was more, was taken for quality control parameters.

Table 1: Suggested ABO selection order for transfusion of random donor concentrates

Recipient ABO Group	Component ABO Group			
	Option 1	Option 2	Option 3	Option 4
O	O	B	A	AB
A	A	AB	O	B
B	B	AB	O	A
AB	AB	B	A	O



## Results

Table 2: Utilization pattern

Parameters		RDP	SDP
No of prepared units		5062(93.50%)	349(6.50%)
No of patients transfused		737	42
Mean age of patients		22.7 years	38.4 years
Male : Female		1.8:1	1.2:1
Prophylactic utilization		20.00%	79.00%
Therapeutic utilization		76.00%	21.00%..
Utilization By Specialist	Adult Haemato-oncology	29.00%	83.9%
	Pediatrics Haemato-oncology	12.00%	3.7%
	Pediatrics	27.00%	-
	Neurosurgery	7.00%	-
	CTVS	7.00%	6.2%
	Gynecology & obstetrics	5.00%	2.5%
	Miscellanies	5.00%	3.7%
Expiry rate		3.00%	0.00%
Wastage rate		1.00%	0.00%

## Discussion

In India, majority of blood banks are individual hospital-based and noncentralized. Blood banks perform the roles of both blood collection and transfusion centre unlike in the west, where a large blood collection and component preparation centre meets the demands of various hospital based transfusion medicine departments in its vicinity. In India, only 20% of the blood banks are preparing blood components which are grossly inadequate to cater growing patient demands.<sup>6</sup> Out of these, very few centers in India perform component preparation through apheresis technology or pool platelets concentrates to administer correct dose to their thrombocytopenic patients.

During the last two decades all over the world platelet utilization has increased more than the use of any other blood components.<sup>4</sup> On one hand, the ready availability of platelet concentrates has undoubtedly made a major contribution to modern clinical practice, in allowing the development of intense treatment regimens for hematological or other malignancies; on the other hand misuse due to mishandling or inappropriate use is also prevalent. We found that maximum of the platelet transfusions were utilized appropriately with hemato-oncology specialty as the major user department. This high percentage of appropriate use of platelet transfusions was seen after educating the residents by direct interactions and release of educational material in the form of resident manual.

Similar findings of inappropriate use of platelets are reported by Hui *et al*<sup>7</sup> and Cheng *et al*<sup>8</sup> However, prospective randomized trials have demonstrated no clinically significant benefit in terms of decrease in blood loss, platelet count, bleeding time, transfusion requirements or postoperative hospital stay in CPB

patients who received prophylactic platelet transfusions.

## Conclusion

Regular audit of blood and blood components is an important tool to maximize judicious utilization of each component.

Regular audit helps us to assess the current platelet transfusion practices and to identify areas of deficiencies, so that appropriate remedial measures can be taken. It will be a fruitful exercise if greater awareness can be created by educating the clinicians, especially at the resident and intern level. This can be done by conducting regular workshops, seminars, lectures and presentations for educating the clinicians and residents regarding transfusion trigger and filling of the feedback forms completely

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