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A transfusion audit of blood components in a tertiary care hospital

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Abstract
Background: As there are no alternatives to human blood, judicious use of blood by using components is the only means by which the increasing demand and short supply can be met with. Different components of blood are recommended by experts for different clinical indications but whole blood is still widely used.
Aims and objectives: To analyze the utilization of different blood components at study place.
Materials and methods: A retrospective study of the electronic records of the patients who were given different blood components blood bank records and were done at Life worth Hospital and City blood bank, Raipur from January 2014 to June 2016. Estimated production of blood components, number of patients transfused and number of transfusion episodes and indication for transfusion were assessed.
Results: Total prepared blood components were 17816 in numbers, 5.42% was the wastage rate of different components. 16591 units were transfused to 10036 males and 6555 females of different age groups. Though more number of whole blood units were issued to the cardiology department, the orthopedics department was the one with maximum usage of whole blood in comparison to the other departments (z=31.348) and pediatrics department was the department which used least whole blood.
Conclusions: Regular audit of blood and blood components is must so that necessary measures can be taken for appropriate use. Continuous educational program will be helpful to decrease the irrational use of blood.

Keywords: audit, blood components, blood, irrational use

1. Introduction

As there are no alternatives to human blood till now, though there are presence of some RBC and platelet substitutes but they are not still available. Most of them are still in the trial phase.
Around seven units of blood per bed are necessary for the tertiary hospitals and it increases to 20 units per bed in the super specialty branches [1, 2].
Blood availability is very less in comparison to the demand of blood. Blood Components are one of the means by which the increasing demand and short supply can be met with.[3, 4]
Blood is an expensive, scarce resource for saving the life of many needy persons. Unnecessary transfusion may cause a shortage of blood products for patients in real need. Judicious use of blood is the need of the day [1, 5, 6].
As per the quality assurance program an audit was conducted to determine the appropriateness of blood used by the clinicians. Present study was carried out to know the utilization of different blood components at Lifeworth Hospital, Raipur and to compare the irrational use of blood components between different departments.

2. Materials and methods

A retrospective study of the electronic records of the patients who were given different blood components blood bank records and was done at Lifeworth Hospital, Raipur and City blood bank Raipur from January 2014 to June 2016 and the data was included in the study.
We assessed the blood bank records for number of blood components prepared, number of blood components utilized, number of blood components wasted from January 2014 to June 2016.
We also recorded indication of component transfusion to the patient, number of components demanded by the clinicians, number of transfusion episodes for all patients and branch/specialty of medicine by which the components were demanded from blood requisition forms.

3. Results

In present study, total 17816 blood component were prepared from January 2014 to June 2016. The wastage rate of different components was 5.42%. A total 16591 (93.12%) units were transfused to males (60%) and females (40%) of different age groups. The cardiology department was supplied the maximum units (32.52%) but whole blood supply was 31.50% of the total components. Urology department was supplied least number of units (1.2%). The orthopedics department was supplied 7.58% units but whole blood supplied was 79.49% of total components which is statistically significant (z=31.48). Pediatrics department was supplied 10.49% of units but 0.68% whole blood was supplied which is statistically significant (z=83.44).

Table 1: Components utilization by various departments

Department	Whole blood	RBC concentrate	FFP	Cryoprecipitate	Platelet rich plasma	Cryo poor plasma
Cardiology	1795	958	840	50	1293	461
General medicine	590	734	535	347	543	0
General surgery	852	639	240	108	350	261
Obs & Gynec	568	255	170	189	376	0
Neurosurgery	426	90	87	0	0	0
Peadiatrics	12	894	100	116	619	0
Peadiatric surgery	28	166	80	0	22	0
Orthopedics	1000	198	60	0	0	0
Plastic surgery	335	64	100	0	0	0
Urology	96	51	30	0	22	0

*concentrate of RBC with additive solution, data is expressed as no of units

Table 2: Comparison of component supply in different departments

Department	Total units supplied	Whole Blood	Other Components	Z Value*
Cardiology	5397 (32.52)	1795 (33.25)	3602 (66.75)	0.71
General medicine	2749 (16.57)	590 (21.46)	2159 (78.54)	16.51
General surgery	2450 (14.76)	852 (34.77)	1598 (65.23)	1.28
Obs and gynec	1558 (9.3)	568 (36.45)	990 (63.55)	2.43
Neurosurgery	603 (3.6)	426 (70.65)	177 (29.35)	21.32
Peadiatrics	1741 (10.49)	12 (0.69)	1729 (99.31)	83.44
Pediatric surgery	296 (1.8)	28 (9.45)	268 (90.55)	13.93
Orthopedics	1258 (7.6)	1000 (79.49)	258 (20.51)	31.34
Plastic surgery	699 (4.2)	335 (47.93)	364 (52.07)	0.72
Urology	199 (1.2)	96 (48.24)	103 (51.76)	4.15

*z value was taken according to the comparison between different departments, data is expressed as no of unit (%)

4. Discussion

In present audit it was found that the blood is used irrationally in the hospital by most of the clinical units. More number of whole blood is used by the clinicians rather than components.

Regular audit of blood & blood components is must so that necessary measures can be taken for appropriate use of different components. Policies and procedures must be accessible, periodically reviewed for appropriateness and monitored for compliance. A similar study done by Simpson at a tertiary care medical center has reported that an audit and medical consultation on the utilization of blood component has resulted in a 56% decrease in the utilization of platelet concentrates. Simpson also advocated the importance of such audits which can definitely change the transfusion practices followed in the hospital [7].

A study done by Gaur *et al.* has reported that at the study place a total unit of blood supplied was 720, out of which whole blood was mostly used. Blood was mostly supplied to surgical ward.[8] But in present study cardiology department was supplied the maximum units whereas urology department was supplied least number of units.

Agrawal *et al.* did a similar audit in a tertiary care hospital and reported that out of total 1188 blood components distributed, 632 were of whole blood, 364 were for packed red cell, 182 requests was for FFP and 10 were of platelet concentrate. In present study also whole blood was the most commonly supplied blood component [9]. Similar results were reported by Kahn *et al.* [10].

A similar study was performed by Garg *et al.* they reported that a total 953 blood units was supplied out of that packed red blood cells were the mostly utilized. The utilization was maximum in the surgical ward, which is contrary to present study data [11].

The decision to transfuse should be based on the risks, benefits and alternatives of treatment. The decision to transfuse blood and blood product should be monitored regularly by hospital transfusion committee.[4, 12] Continuous educational programs will be helpful to decrease the irrational use of blood. A number of CMEs were organized by our institute for this purpose and clinicians were explained about the guidelines and the results were also positive for this at our level.

5. Conclusion

The conclusion of the audit was that there was irrational use of blood in the hospital. CMEs are helpful to prevent irrationality of the blood.

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