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Original Article

Rationale of Day Care Blood Transfusion Services: Recent Trends in Transfusion Medicine

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Background: Day Care Transfusion Unit (DCTU) within Transfusion Medicine Department plays a key role to provide Transfusion therapy for those who are getting transfusion regularly or desperately need one or two units of blood for their treatment. Transfusion in a DCTU is also an alternative to hospital admission and cost effective benefit for recipient. The purpose of the study is to assess transfusion services in our Day care settings. **Materials and Methods:** We conducted a cross sectional observational study in DCTU of Transfusion Medicine Department of TMSS Medical College and Rafatullah Community Hospital, Bogura from January 2020 to December 2020. All prescribed data of blood recipient like name, age, sex, Blood group, clinical diagnosis, blood and blood component used etc were collected from record register. Recorded data were analyzed as percentage and proportion. **Results:** In this study total 715 blood recipients attended in our DCTU. Among those 408 (57%) were male, 307 (43%) were female and majority 283 (39.58%) of recipient were below 10 years. Transfusion was required more frequently in Thalassemic patient 525 (73.42%) & other diseases include undiagnosed Anemia 52 (7.27%), Chronic Kidney Disease 44 (6.15%), Ca Breast- 18 (2.51%), Ca Lung- 16 (2.23%) and Iron deficiency anemia- 12 (1.67) etc. Among recipient B +ve blood group 240(33.56%) being more prevalent. Out of 715 units transfusion, Red Cell Concentrate (RCC) was most commonly utilized product 683(95.52%) followed by Whole blood 30 (4.19%) and then Fresh Frozen Plasma 2 (0.27%). **Conclusion:** DCTU is now popular, convenient and hassle free transfusion services. We recommended establishing more DCTU for the Transfusion needed patients.

Key words: Blood Transfusion, Day Care transfusion unit, Recipient.

Introduction

Medical day care (MDC) is an outpatient clinic that provides medical interventions, as well as minor procedures for patients who required non-emergent infusions, transfusions and medical procedures. Some of the services provided at this clinic include: blood transfusions, intravenous immunoglobulin infusions, intravenous iron infusions, phlebotomies, IV medications, Thoracocentesis and Paracentesis, etc.¹ On the contrary, Day Care Transfusion Center (DCTC) is a specialized outpatient service center of Transfusion Medicine Department that provides only transfusion of blood or blood products, iron chelation and very recently started Platelet Rich Plasma (PRP) therapy to patients who do not require admission to the hospital rather receive above mentioned services as outdoor patients.

Transfusion of blood components and related services has become one of the essential components of medicine due to the development and modernization of medical services. Once Transfusion Medicine was a branch of clinical pathology, however the field has now expanded into a clinical, hospital-based specialty. Now Transfusion medicine (or transfusiology) is the branch of medicine that encompasses all aspects of the transfusion of blood and blood components including aspects related to hemovigilance. It includes issues of blood donation, immunohematology and other laboratory testing for transfusion-transmitted diseases, management and monitoring of clinical transfusion practices, patient blood management, therapeutic apheresis, stem cell collections, cellular therapy, and

coagulation. Laboratory management and understanding of state and federal regulations related to blood products are also a large part of the field.² In Bangladesh, blood transfusion service was started in Dhaka Medical College in 1950 by late Dr. Atabuddin who previously worked as one of the medical officer of Red Cross Blood Bank of Kolkata.³ The first blood transfusion service committee was formed in year 1952 and functioned till 1961. By the year 1968 three more centers were opened at Mitford Hospital Dhaka, Chittagong Medical College and Rajshahi Medical College Hospital. Since then other transfusion centers have been opened at Mymensing Medical College Hospital, Sylhet Medical College Hospital, Khulna Sadar Hospital and Barishal Sadar Hospital. In 1969 a new service committee was formed.⁴ Institute of Postgraduate Medicine and Research (IPGM&R) started this service on 8th October 1972. This service was inaugurated by the Prime Minister Bangabondhu Sheikh Mujibur Rahman as well as it expanded to other hospitals.^{4, 5} There was no day care transfusion service in any blood transfusion centers in Bangladesh till 1990. In early 1990 the authorities of the IPGM&R, Dhaka, Bangladesh, established first time a DCTC within Transfusion Medicine Department to provide transfusion therapy to patient who are waiting for long period for hospital beds and desperately need one or two units of blood transfusion for their treatment.⁶ Second DCTC was established in Dhaka Medical College Hospital (DMCH) in 2005 with a single bed aiming to provide transfusion of those patients who needed transfusion before or after chemotherapy or radiotherapy or those required transfusions at regular interval like Thalassemia and others.⁷ Now the number of beds are ten.

The third DCTC was established in TMSS Medical College and Rafatullah Community Hospital, Bogura a tertiary care hospital having 750 beds on 1st December, 2016 with only 5 bedded wards by the Transfusion Medicine Department of TMSS Medical College.⁸ Now it has 10 bedded wards including 2 cabins. Average daily patients are about 5 to 7 in number who are getting transfusion therapy per day

without requiring any admission in the hospital. The patients and their relatives are happy for such kind of transfusion therapy in this DCTC. Blood and blood components are transfused in this DCTC under direct supervision of Transfusion Medicine Specialist. There are a few studies about the services of these units in our country. The aim of the study is to assess transfusion services given in this DCTC in relation to age and sex, to find out the disease modalities of blood recipient and to find the type of blood components used in our day care settings.

Materials and Methods

This is cross sectional observational study was carried out during a period from January 2020 to December 2020, in the Transfusion Medicine Department of TMSS Medical College and Rafatullah Community Hospital, Bogura. Blood and blood components transfused to all referred patients for day care transfusion therapy were recorded. During blood transfusion every patient was carefully monitored by Transfusion Medicine Specialist. ABO and Rh blood grouping of blood recipients were determined by standard method with auto control. The types of blood components in day care unit were Whole Blood (WB), Red Cell Concentrate (RCC), Fresh Frozen Plasma (FFP). No medication was used before or during Transfusion except multi-transfused recipients having previous allergic reaction received anti-histamine as pre-medication. Some patients received antipyretic 30 minute before transfusion who had history of Febrile Non-Hemolytic Transfusion Reaction (FNHTR). Recorded data were analyzed as percentage and proportion.

Results

Table I: Sex distribution of patients (n=715)

Sex	Number	Percentage (%)
Male	408	57
Female	307	43

In the present study 715 blood recipients attended in DCTC of Rafatullah Community Hospital. Among the patients 408 (57%) were male and 307 (43%) were female (Table I).

Table II: Age distribution of patients (n=715)

Age (in years)	Number	Percentage (%)
< 10	283	39.58
11-20	153	21.39
21-30	95	13.28
31-40	42	5.87
41-50	22	3.07
51-60	38	5.31
> 60	82	11.46

Majority 283 (39.58%) of recipient were below 10 years (39.58%) followed by age group 11-20 (21.39%), 21-30 (13.28%) and then others (Table II).

Table III: Distribution of different diseases among patients (n=715)

Diseases	Number	Percentage (%)
Thalassemia	525	73.42
Undiagnosed Anemia	52	7.27
Chronic Kidney Disease	44	6.15
Ca Breast	18	2.51
Ca Lung	16	2.23
Iron Deficiency Anemia	12	1.67
Sickle Cell Anemia	11	1.53
Ca Prostate	10	1.39
Ca Cervix	8	1.11
Aplastic Anemia	5	0.69
Menorrhagia	4	0.55
Progressive Bone Marrow Failure	3	0.41
SLE	2	0.27
Ca Stomach	2	0.27
Leukemia	2	0.27
Hemophilia	1	0.13

Majority of transfusion-requiring patients were of Thalassemia- 525 (73.42%) followed by Undiagnosed Anemia- 52 (7.27%), then Chronic Kidney Disease (CKD)- 44 (6.15%), Ca Breast- 18 (2.51%), Ca Lung- 16 (2.23%), Iron deficiency anemia- 12 (1.67%), Sickle Cell Anemia- 11 (1.53%), Ca Prostate- 10 (1.39%), Ca Cervix- 8 (1.11%) and then others (Table III).

Table IV: Distribution of blood group among patients (n= 715)

Blood Group	Number	Percentage (%)
“ B” Positive	240	33.56
“ O” Positive	229	32.02
“ A” Positive	152	21.25
“ AB” Positive	90	12.58
“ A” Negative	2	0.27
“ B” Negative	Nil	Nil
“ O” Negative	1	0.13
“ AB” Negative	1	0.13

Table IV showed that out of all patients, 240 (33.56%) were of “B” Positive, 229 (32.02%) of “O” Positive, 152 (21.25%) of “A” Positive, 90 (12.58%) were of “AB” Positive then 2 (0.27%) and then others as negligible. None was of ‘B’ Negative.

Table V: Distribution of blood components among patients (n=715)

Component	Number of units	Percentage (%)
Red Cell Concentrate (RCC)	683	95.52
Whole Blood (WB)	30	4.19
Fresh Frozen Plasma (FFP)	2	0.27

Table-V: described the distribution of blood components used in our day care unit. Total 715 units of blood and blood components were used during this period. Red Cell Concentrate (RCC) was mainly transfused in patients with Thalassemia and Undiagnosed anemia and Malignancy. Whole Blood units were used in patients with Aplastic anemia, Progressive Bone Marrow failure and Sometimes after Chemotherapy. Most common utilized product RCC was 683 (95.52%) followed by WB 30 (4.19%) and then FFP 2 (0.27%).

Discussion

Day care transfusion center is essential for those patients who require blood transfusion regularly for treatment purpose. As there are plenty of patients with various diseases requiring transfusion of blood and blood components, iron chelation, now newly introduced PRP therapy, usually the patients had to pay for admission in hospital, for consultancy of doctors, for hospital beds, service charges. On the

contrary, these patients could get those services for a minimum cost and sufferings in a DCTC as they are treated as outpatient and need not get admission to a hospital; they get the services in a day and leave the hospital within a few hours.

In this study, 715 patients received blood transfusion from our DCTC, majority of them were patients of Thalassemia (73.42%), followed by Undiagnosed anemia (7.27%) and then CKD (6.15%), Malignancy (average 2%) and others (Table III). A study on DCTC by Kashem et al at IPGM&R now BSMMU, showed that out of 104 patients getting transfusion 76 (73.06%) were Thalassemic, which is similar to present study.⁸ Parvin et al also reported on a similar number of patients (n= 718) getting transfusion where Thalassemic patients were of much lower percentage (50.88%).⁹

Two studies done by Begum IA et al⁷ and Karim et al.¹⁰ carried out on patients attending in DCTC at Dhaka Medical College Hospital (DMCH) found that majority of patients were of Malignancy (73.23% and 73.45% respectively), followed by other diseases like Myeloproliferative disease, Aplastic anemia, menorrhagia and Thalassemia, CKD, anemia due to other diseases, etc. These studies are quite different from our study, Prevalence of patients with Thalassemia were very less compared to other diseases whereas Thalassemic patients were most prevalent in our situation. This variation may be due to facilities for admission of abundant malignant patients at DMCH coming from all over the country for transfusion. Another study in a private DCTC in Dhaka city stated that out of 383 patients, 180 (47.00%) suffered from anemia of various diseases and 120 (31.33%) suffered from carcinomas of various kinds.¹¹ As the study did not mention the diseases causing anemia, comparison with our study was not possible.

Types of blood components and amount of blood units required for patients were as follows: B+ 240 (33.56%), O+ 229 (32.02%), A+ 152 (21.25%), AB+ 90 (12.58%) and then others as negligible amount (Table IV). This results are dissimilar to Karim et al¹² who found most common blood group O+ 305 (41.10%) followed by B+197(26.54%), then A+ 167(22.50%), AB+ 49(6.60%) and so on which is similar to studies of Parvin F et al.⁶ and Begum IA⁷

Mainly three blood products were used in our center;

most common utilized product RCC was 683 (95.52%) followed by WB- 30 (4.19%) and then FFP- 2 (0.27%) (Table V), which is dissimilar to studies by others where use of whole blood was the highest utilized component.^{6, 10, 12} As the maximum patients need the correction of anemia, RCC is best for them. It is not clear why the other centers use WB as the majority of transfusion reactions occur due to WBC and plasma.

Conclusion

Now a day, DCTCs are becoming popular as they are very convenient options for patients who receive frequent blood transfusions for their survival. They need not admission in hospital for transfusion which reduces their sufferings. In our country day care transfusion facilities are very few (only three) in private as well as in Govt. medical college hospitals. So it is very essential to establish DCTCs in every hospital for such patients requiring transfusion of blood and other therapies. A combined effort of Govt. and non Govt. organizations should extend their hands to establish DCTCs and help for those patients.

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