



## RESEARCH ARTICLE

### INDICATIONS OF BLOOD TRANSFUSION AMONG PATIENTS ADMITTED AT THE MEDICAL WARDS OF MOI TEACHING AND REFERRAL HOSPITAL

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#### ARTICLE INFO

##### Article History:

Received 11<sup>th</sup> May, 2018  
Received in revised form  
03<sup>rd</sup> June, 2018  
Accepted 20<sup>th</sup> July, 2018  
Published online 30<sup>th</sup> August, 2018

##### Keywords:

Anemia, Blood transfusion,  
Hemoglobin.

#### ABSTRACT

Blood transfusion is a life saving procedure routinely given in hospitals, but it carries with it inherent risks, including infectious and non-infectious complications. Despite its common use, the clinical indications for transfusion continue to be the subject of considerable debate. Therefore, they should be used optimally and prudently if maximum patient outcomes are to be achieved. Most clinicians would agree that treating a patient with a low hemoglobin level and symptoms of anemia is reasonable. However, in the absence of overt symptoms, there arises a debate as to when transfusions are appropriate. Clinical trials investigating their use suggest that waiting to transfuse at lower hemoglobin levels is beneficial. The current study was carried out at the Medical Wards of Moi Teaching and Referral Hospital. Its objective was to establish the indications of blood transfusions among the patients admitted in the medical wards. 184 patients who were transfused on the months of May and June 2014 were recruited. The mean age of the patients was 39 years with a mean Hb of 6.669g/dl. Anemia was the greatest indicator for transfusion with 63 out of 184 accounting for 34.2%.

#### INTRODUCTION

Blood transfusions are a common medical procedures routinely given in hospitals (Sharma *et al.*, 2011). An estimated 15 million red blood cell (RBC) units are transfused each year in the United States (Carson *et al.*, 2012). Despite its common use, the clinical indications for transfusion continue to be the subject of considerable debate. Most clinicians would agree that treating a patient with a low hemoglobin level and symptoms of anemia is reasonable (Sharma *et al.*, 2011, Valeri *et al.*, 1998). However, in the absence of overt symptoms, there arises a debate as to when transfusions are appropriate (Carson *et al.*, 2012, Valeri *et al.*, 1998). Blood transfusion is a life saving procedure, but it carries with it inherent risks, including infectious and non-infectious complications. Therefore, they should be used optimally and prudently if maximum patient outcomes are to be achieved. Clinical trials investigating their use suggest that waiting to transfuse at lower hemoglobin levels is beneficial (Hébert PC *et al.*, 1999) (Lacroix J *et al.*, 2007). Various scientific societies have published guidelines on the use of blood transfusion. Some of the recent ones are from the American Society of Anesthesiologists, the Society of Critical Care Medicine, (Napolitano *et al.*, 2009) the American Association of Blood Banks (AABB), the American College of Physicians and the British Committee for Standards in Hematology (Carson *et al.*, 2012). Most recommend the use of restrictive transfusion strategy. However, high-quality evidence is available for very few clinical settings.

Blood transfusion has been widely used and overused in medical practice since early 20<sup>th</sup> century to treat anemia and hemorrhage. The efficacy of transfusion in improving patient outcomes is unsupported by scientific evidence, and its benefits have been mostly taken for granted. Excessive use of transfusion continues despite limited availability of blood on the one hand and high cost and serious risks associated with transfusion on the other (Sandhya Yaddanapudi and LN Yaddanapudi 2014). The guiding principle is to only transfuse when it is absolutely necessary so as to minimize on the risks associated with transfusion. This study sought to establish the indications of blood transfusions among the patients admitted in the medical wards at Moi Teaching and Referral Hospital.

#### MATERIALS AND METHODS

Patients admitted in the Medical wards who were transfused between the months of May and June 2015 were enrolled into the study. The information gathered from the patients files were age, gender, dates of admission and discharge, Hb levels, diagnosis and the number of units transfused. Data capturing and analysis was done in excel spread sheet.

#### RESULTS

184 patients with a mean age of 39 years were evaluated over a period of 2 months period. The mean Hemoglobin level was 6.669g/dl as shown in the Table 1.

#### DISCUSSION

In the current study, it can be noted that most patients who underwent blood transfusion suffered from anemia.

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**Table 1. Summary of age of the patients, units transfused and length of stay in hospital**

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Age of the patient	184	54	16	70	39.29	14.424	208.045
Patient Hemoglobin level	184	11.5	1.0	12.5	6.669	2.3581	5.560
Units transfused to the patient	184	11	1	12	3.16	2.294	5.263
The duration the patient stayed in the ward	184	12	3	15	7.08	2.743	7.524
Valid N (listwise)	184						

Legends N= Sample size

**Table 2. Patients Diagnoses**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Anaemia	63	34.2	34.2	34.2
	ISS related illness	35	19.0	19.0	53.3
	Cancer	10	5.4	5.4	58.7
	Leishmaniasis	3	1.6	1.6	60.3
	Leukemia	23	12.5	12.5	72.8
	Hepatosplenomegally	2	1.1	1.1	73.9
	Kalaazar	8	4.3	4.3	78.3
	Surgery	9	4.9	4.9	83.2
	Renal failure	9	4.9	4.9	88.0
	Sickle cell disease	8	4.3	4.3	92.4
	Thrombocytopenia	6	3.3	3.3	95.7
	Toxoplasmosis	4	2.2	2.2	97.8
	CCF with gastritis	1	.5	.5	98.4
	Liver cirrhosis	3	1.6	1.6	100.0
	Total	184	100.0	100.0	

Legend: ISS – Immunosuppression, CCF – Congestive Cardiac Failure

**Table 3. Summary of Hemoglobin levels**

Gender of the patient		N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Male	Patient Hemoglobin level	89	11.0	1.0	12.0	6.765	2.2888	5.239
	Valid N (listwise)	89						
Female	Patient Hemoglobin level	95	10.0	2.5	12.5	6.579	2.4298	5.904
	Valid N (listwise)	95						

**Table 4. Summary of units transfused**

Gender of the patient		N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Male	Units transfused to the patient	89	9	1	10	2.74	1.922	3.694
	The duration the patient stayed in the ward	89	12	3	15	7.63	2.656	7.054
	Valid N (list wise)	89						
Female	Units transfused to the patient	95	11	1	12	3.56	2.542	6.462
	The duration the patient stayed in the ward	95	11	3	14	6.56	2.736	7.483
	Valid N (list wise)	95						

This was followed by ISS related illness and leukemia in that order, it was demonstrated that Hemoglobin was the major indication of blood transfusion where the average Hb was 6.669 g/dl (SD 2.356). The minimum Hb level for a patient who received blood transfusion was 1.0g/dl and 2.5g/dl for male and female respectively. Furthermore, among 184 patients who underwent blood, 89 were found to be male and 95 were found to be female. These numbers were obtained by design. However, the study revealed that the mean HB level of male (6.765) is slightly higher than of female (6.579). Looking at the units transfused we find that, male received lower units (2.74) compared to their female counter parts (3.56). Contrary to that, male stayed for longer periods (7.63 days) in wards compared to female (6.56 days) which amounts to a difference of about one day. However, the correlation between the length of stay in ward and the amounts of units transfused is low (0.410) thus, the units transfused do not sufficiently determine the length of stay in ward. The average Hb in the current study is 6-669g/dl which is comparable to a study by Sandhya Yaddanapudi and LN Yaddanapudi (2014) that reported the trigger for transfusion at Hb of 7-8 g/dl or symptoms of anemia (Sandhya Yaddanapudi and LN Yaddanapudi 2014).

## Conclusion

Hemoglobin level is a significant factor in determining the indication of blood transfusion among patients admitted at medical wards at MTRH. However it was determined that it is not possible to give an exact hemoglobin (Hb) value below which blood infusion is indicated since the need for a transfusion is based on the patient's underlying illnesses and symptoms.

Anemia came out more clearly as the major indicator for blood transfusion followed by HIV related illness like pneumocystis, cryptosporidium, Streptococcus pneumoniae, Herpes simplex to name just but a few.

## Recommendation

The medical indication and the Hb level should be used as baseline for transfusion by the physicians and the clinicians. A research be carried out on the best way to reduce the prevalence of anemia among the population.

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