Intra-dialysis Blood Transfusion Burden Among Chronic Kidney Disease Patients At Kidney Care Centre, Ondo State, South-west Nigeria

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INTRODUCTION

- Current guidelines prefer erythropoietin and parenteral iron to red cell transfusion for the management of anaemia in chronic kidney disease (CKD) patients.
- This is to avoid Transfusion-Transmitted Infections (TTIs) and risk of graft rejection.
- Burden of blood transfusion among CKD patients is as high as 70.2% at Boston, USA.
- In Africa, up to 11.7% and 16.3% of donor blood are omitted during screening for HBV and HCV respectively.
- This is risky as CKD patients are immune-compromised
- For example, approx 20% of dialysis patients fail to develop a protective titre of antibodies to HBV after vaccination.

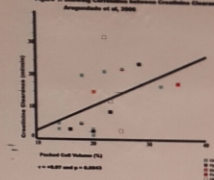


Figure 1: Showing Correlation between Creatinine Clearance and PCV Arogundade et al, 2008

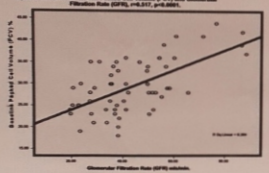
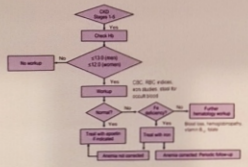


Figure 2: Correlation between Packed Cell Volume (PCV) and Glomerular Filtration Rate (GFR), r=0.217, p<0.0001.

Figure 3



NOTES ON ERYTHROPOIETIN

ERYTHROPOIETIN

- Exogenous erythropoietin becomes necessary when poor erythropoietin production results from damaged kidneys
- Inhibition of erythropoietin production by ACE inhibitors and ARB's in CKD patients
- Inhibition of erythropoietin production by uraemia

NOTES ON RED CELLS

RED CELL TRANSFUSION

- Avoid as much as possible because of risks of Transfusion-Transmitted Infections (TTIs)
- Avoid in transplant candidates because of risk of allograft rejection
- Use in severe ESA resistance
- Use in severe acute conditions only e.g anaemic heart failure

OBJECTIVES

1. Quantify blood transfusion rates among CKD haemodialysis patients
2. Identify factors (if any) that determine blood transfusion among them.

METHOD

- A retrospective survey of patients' records: dialysis charts, case notes, laboratory records
- Period: January 2015 to December 2016.
- All consecutive CKD-HD patients included
- AKI subjects were excluded
- Data was analyzed with SPSS 20.

CORE PARAMETERS OF INTEREST:

- Bio-data, serum Cr and blood pressure
- Clinical diagnosis
- PCV at start of haemodialysis
- PCV at last haemodialysis
- Number of red cell transfusion
- Number of erythropoietin doses
- Number of dialysis sessions

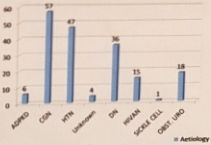
RESULTS

GENDER DISTRIBUTION

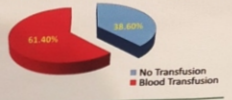
SOCIODEMOGRAPHICS OF SUBJECTS

Parameters	Mean	SD
Age (years)	47.8	15.6
Serum creatinine (umol/L)	1212.9	771.8
PCV at first dialysis (%)	23.1	5.4
PCV at last dialysis (%)	22.8	4.4
SBP (mmHg)	159.8	37.2
DBP (mmHg)	93.9	21.4
No of blood transfused	4.12	3.99
Other parameters		
Median no of days on HD	22	
Median no of dialysis = 5	5	

AETIOLOGICAL DISTRIBUTION

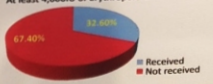


PREVALENCE OF RED CELL TRANSFUSION



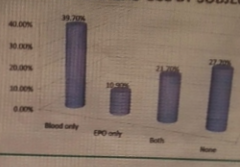
PREVALENCE OF EPO USE

At least 4,000IU of Erythropoietin



RESULTS CONT.

BLOOD AND EPO USE BY SUBJECTS



SEROLOGY STATUS OF HD PATIENTS

Virus	Frequency	Percent
HBV	16	9.4%
HCV	3	1.8%
HIV	19	11.2%

ASSOCIATION BETWEEN BLOOD, EPO AND PCV

Group	Pcv start	Pcv end	Independent sample T-test
EPO only	27±4.7	24.1±4.7	0.05
Blood only	19.8±4.7	22.2±4.9	0.01
Blood and EPO	22.7±4.3	22.3±4.3	0.423
None	26.6±4.2	23.4±4.1	0.01

CORRELATES OF NUMBER OF RED CELL TRANSFUSION

Determinant	P value	Correlation coefficient
PCV preceding dialysis	0.004	-0.214
Days on dialysis	0.001	0.233
No of dialysis session	0.000	0.374
Use of erythropoietin	0.000	0.258
Educational Level	0.541	-0.068

CORRELATES OF EPO USE

Determinant	P-value	Correlation coefficient
Educational level	0.015	0.337
Days on dialysis	0.000	0.596
No of dialysis	0.000	0.858

REGRESSION ANALYSIS

Model	Unstandardized coefficient		Standardized coefficients	t	Sig.
	B	Std error	Beta		
(Constant)	7.453	3.486		2.150	0.039
PCV preceding dialysis	-.284	0.154	-0.264	-1.842	0.074
Days on dialysis	0.018	0.010	0.403	1.736	0.092
No of dialysis session	0.145	0.070	0.658	2.051	0.048
Use of erythropoietin	-0.284	0.163	-0.506	-1.737	0.092

CONCLUSIONS

- Red cell transfusion among CKD pts is high
- Use of erythropoietin among CKD pts is low
- Education of CKD patients is key to reducing blood transfusion burden in this population
- CKD patients who receive frequent blood transfusion are the ones who are likely to require more erythropoietin
- Early identification of CKD and start of erythropietin should be emphasized in renal clinics.

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