

# **EFFECT OF UREA REBOUND ON ASSESSMENT OF DIALYSIS ADEQUACY**

## **THESIS**

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**By**

**Ashraf Tawadrose Metryose**

**SUPERVISORS**

**Prof. Dr. Waheeb Mohamed El-Saeed**

Prof. of Internal Medicine  
Ain Shams University

**Dr. Mohamed Ali Mohamed Ibrahim**

Assistant Prof. of Internal Medicine  
Ain Shams University

**Dr. Essam Nor El-Din**

Lecturer of Internal Medicine  
Ain Shams University

Faculty of Medicine  
Ain Shams University  
1995





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## **LIST OF ABBREVIATIONS**

A kt/v:	Approximate kt/v
BUN:	Blood urea nitrogen
Dx:	Dialysis
EDTA:	European Dialysis and Transplant Association
Epo:	Recombinant human erythropoietin
ESRD:	End stage renal disease
G:	Generation rate
ICV:	Intracellular volume
KoA:	Dialyzer blood urea water clearance in vitro
kt/v:	k: urea clearance of dialyzer t: times of dialysis session v:total distribution volume of urea
Kw:	Dialyzer clearance in vivo
L kt/v:	Logarithmic kt/v
NCDS:	National Co-operative Dialysis Study
PCR:	Protein catabolic rate
PCRn:	Protein catabolic rate, normalized to lean body weight
PDUR:	Post-dialysis urea rebound
PGE <sub>2</sub> :	Prostaglandin E <sub>2</sub>
PRU:	Percent urea reduction
R1:	Post blood urea at 15 minutes after Dx/pre-blood urea
R2:	Post blood urea at 30 minutes after Dx/pre-blood urea
R3:	Post blood urea at 60 minutes after Dx/pre-blood urea
Ro:	Post blood urea at 3 minutes after Dx/pre-blood urea
RPM:	Revolutions per minute
TAC urea:	Time Average of urea Clearance
TAC:	Time averaged BUN clearance
TBW:	Total body water
UKM:	Urea kinetics model
URR:	Urea reduction ratio
X:	Distribution coefficient



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## **ABSTRACT**

The low urea concentration immediately post-dialysis leads to an overestimation of  $kt/v$  based on single pool urea kinetic models. The aim of this study is to assess the effect of urea rebound on calculation of  $kt/v$  and study the effect of different factors on it. 20 patients on regular hemodialysis were subjected for calculation of  $kt/v$  by pre-dialysis blood urea sample and serial samples of blood urea at 3, 15, 30, 60 minutes post dialysis.

Results of this work showed that there were a reduction in  $kt/v$  values approached 16% after 30 minute post dialysis and its maximum at 60 minutes post dialysis. These results were demonstrated in calculated  $kt/v$  by the logarithmic method  $kt/v = -\text{Ln}(R-0.03)+[(4-3.5R)\times(uF/w)]$  (ANOVA = 2.1860,  $p<0.05$ ). Also, the same results was demonstrated in calculated  $kt/v$  through the relationship between  $R$  (post/pre urea ratio) and  $uF/wt$  (ANOVA = 2.15) ( $p<0.05$ ). There were no significant difference in values of  $kt/v$  obtained by the two methods at 3, 15, 30, 60 minutes post dialysis ( $p>0.05$ ). The urea rebound is not correlated with different factors such as age, sex, weight, height, volume, hours per session, frequency of sessions and ultrafiltration.



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