Adopting a simpler method to attain quicker result

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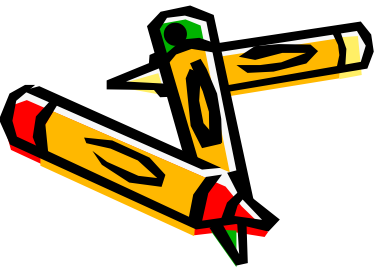
Outlines

- Conventional method to measure Adequacy of Haemodialysis (HD)
- On-line Clearance Monitoring (OCM) to measure Adequacy of Haemodialysis
- Our study to compare the above 2 methods

Adequate for your tummy?

Adequacy can be assessed by:

- **Clinical:** Patient well being
- **Nutrition**: reflected by albumin level, Protein Catabolic Rate
- **Dose of dialysis** (various dialyss indexes, especially: **Kt/V**)



National Cooperative Dialysis Study (NCDS)

- NCDS - evidence of positive correlation between morbidity & mortality rate of patients on HD & the monitoring of the dose of dialysis

- The dose of dialysis should be monitored at least monthly

Daugirdas 2nd generation formula

- $eKt/v = -In\ (R_{eq} - 0.008 \times t) + (4 - 3.5R_{eq}) \times UF/W$

- Kt/V = scientific index of adequacy

  K = dialyzer clearance of urea (ml/min)

  t = duration of dialysis (minutes)

  v = volume of Urea distribution (litres)

Laboratory tests for the formula

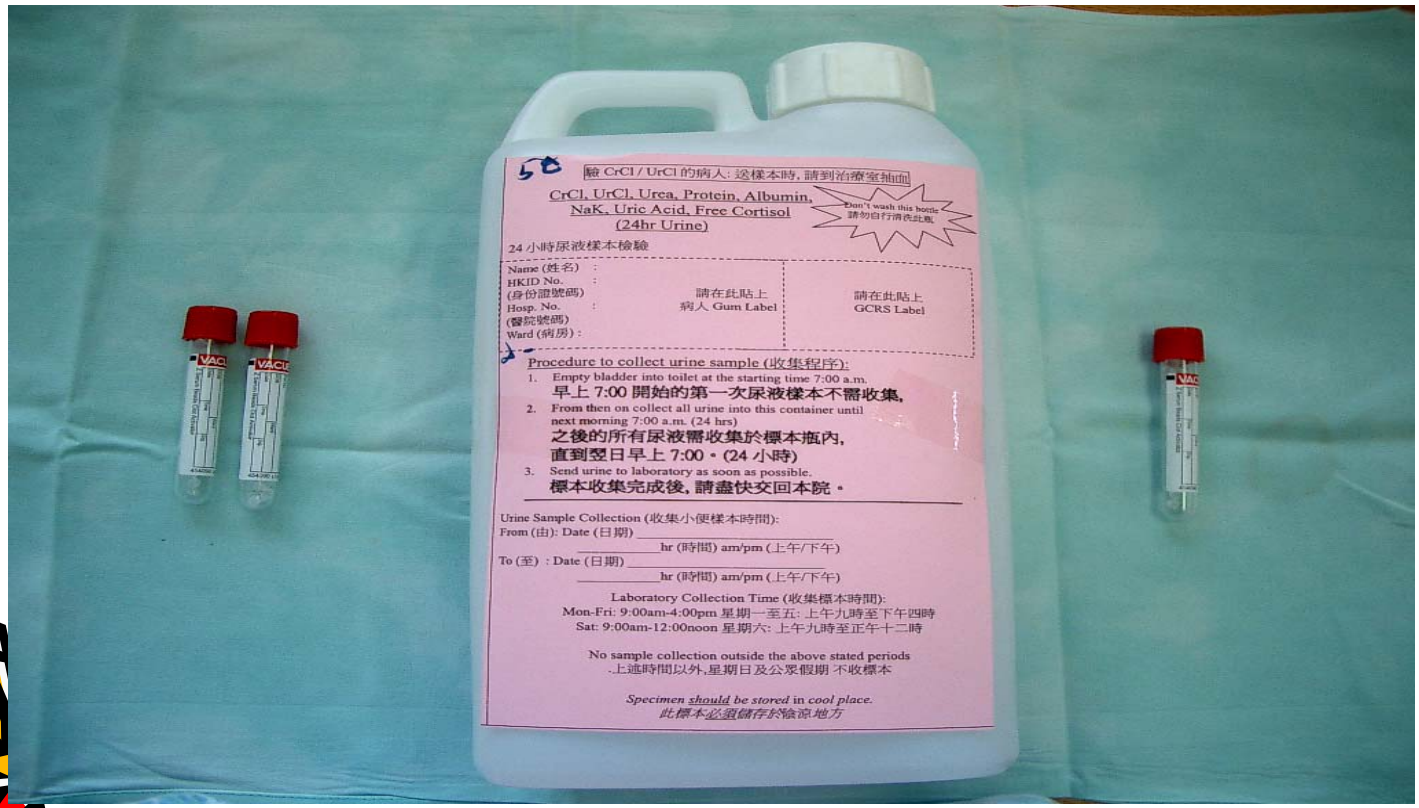
May 6,2008

Tuesday

May 7-8,2008

May 9,2008

Friday



Calculation of the result

UREA KINETIC STUDY FOR HAEMODIALYSIS

- Basic data

Name :

Height : cm

TBW =

Sex : (M=1 ; F=2)

IBW : kg

TBW/IBW=

Age :

B.S.A. : #NUM! sq m

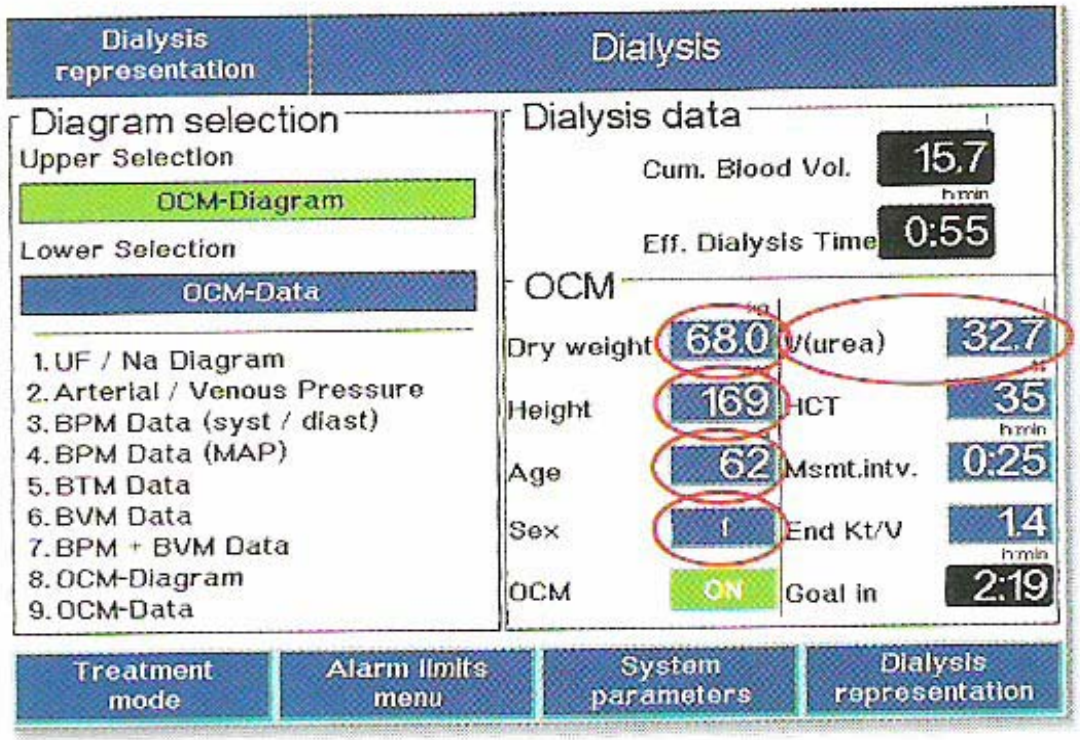
IBW - TBW =

			Bld flow	K, in vitro	Duration	weight (kg)			peri-HD urea (mmol/L)
Date	Dialyzer	No. of use	(ml/min)	(ml/min)	(min)	pre	post	next pre	pre

Online Clearance Monitoring (OCM)

- Integrated into Haemodialysis machine

- Automatic intra-dialytic measurement of in-vivo urea clearance, & calculation of Kt/V throughout the treatment



Estimated anthropometric V according to the Watson formula or direct entry of a measured V

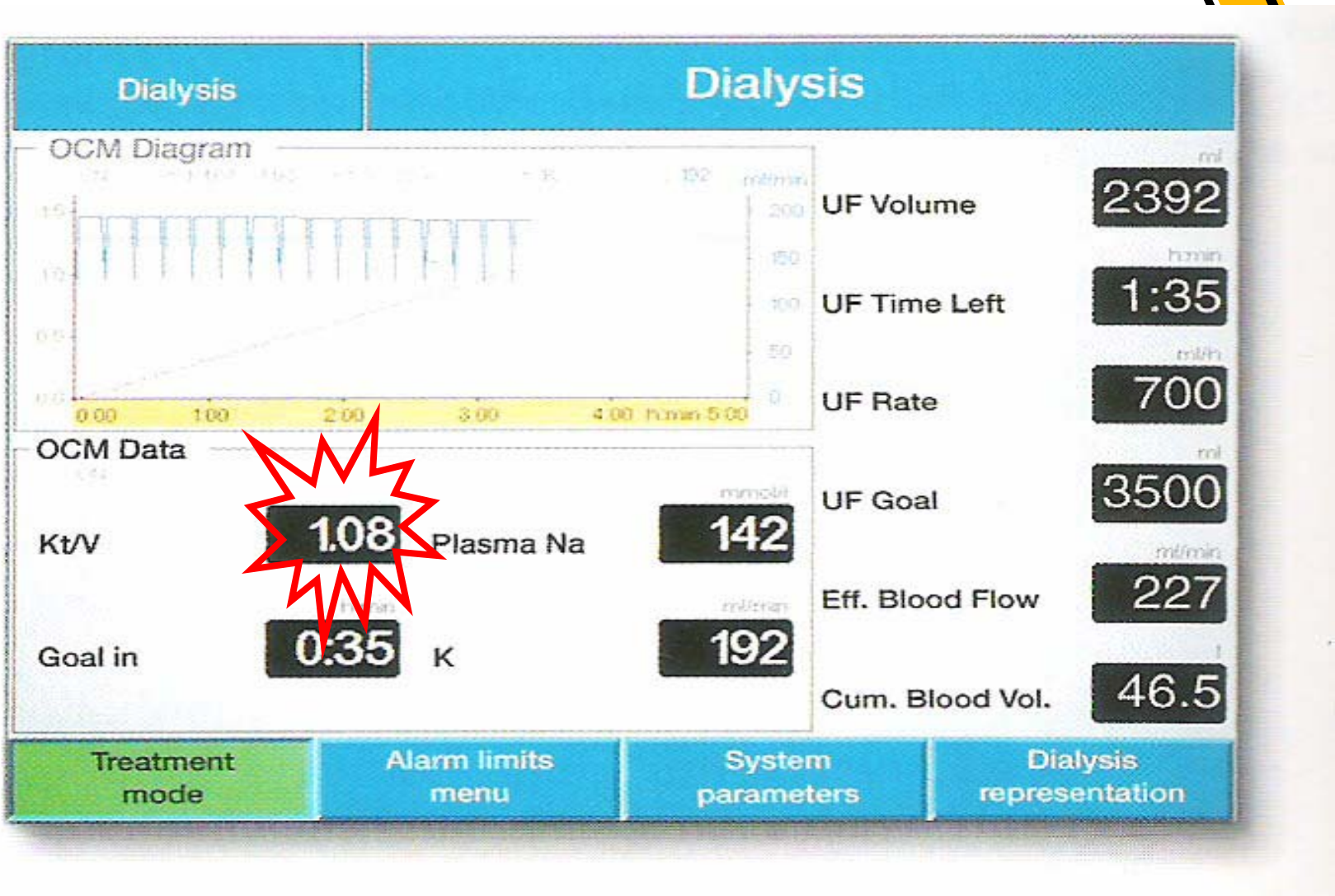
- Dry weight
- Height
- Age
- Gender

Male: $V_{urea} = 2.447 - 0.09516 \times age + 0.1074 \times height + 0.3362 \times weight$

Female: $V_{urea} = -2.097 + 0.1069 \times height + 0.2466 \times weight$

Fig. 12: A calculator to estimate the urea distribution volume V according to the anthropometric Watson formula is integrated in the OCM®

Measurement of OCM® Kt/V



Dialysis
Dialysis
Treatment mode
Standard HD
Calibration
Gauge unit 100

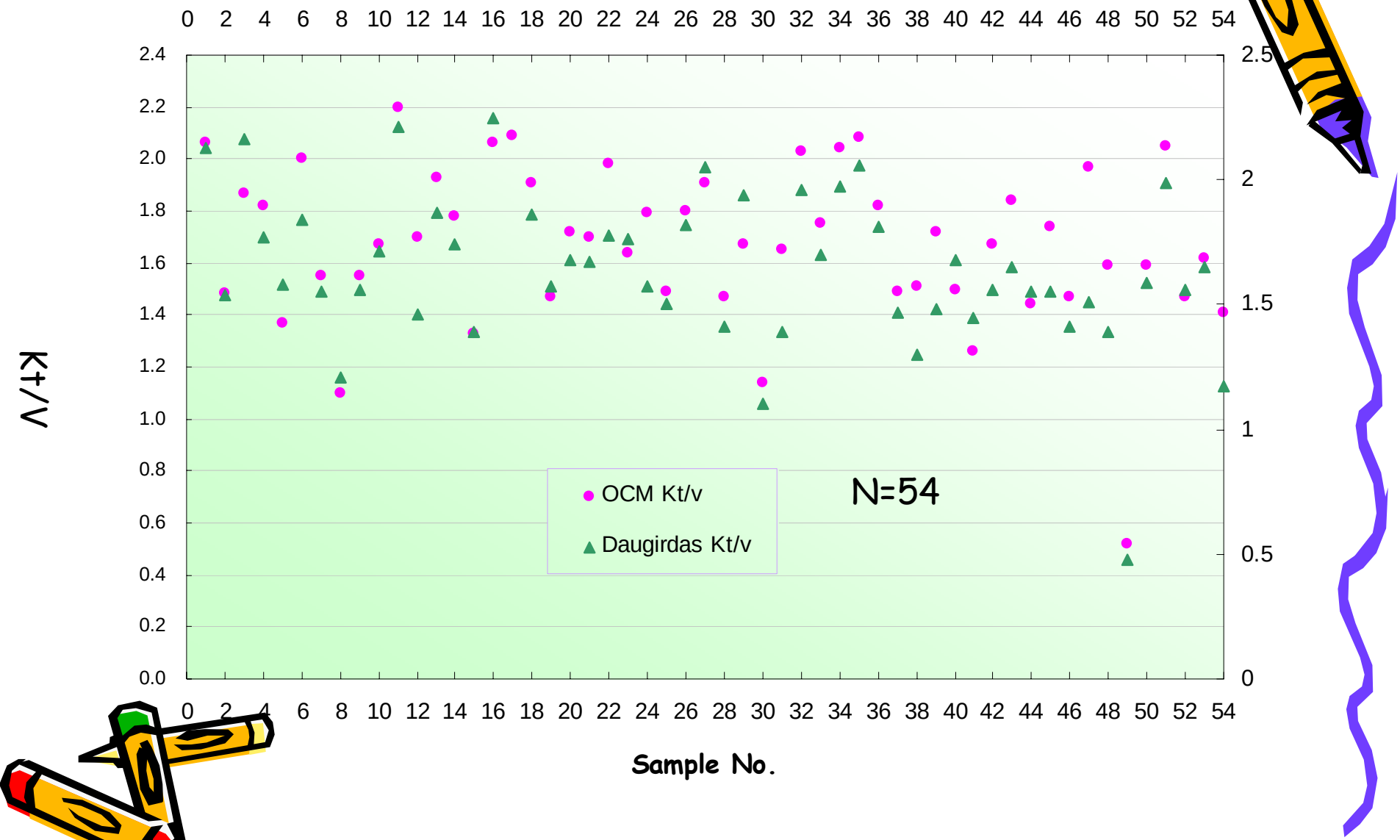
OCM® Kt/V Study

Comparison of Urea Kinetic Modelings by the non-invasive On-line Clearance Monitor (OCM®) Kt/V with the conventional Kt/V by Daugirdas second generation formula

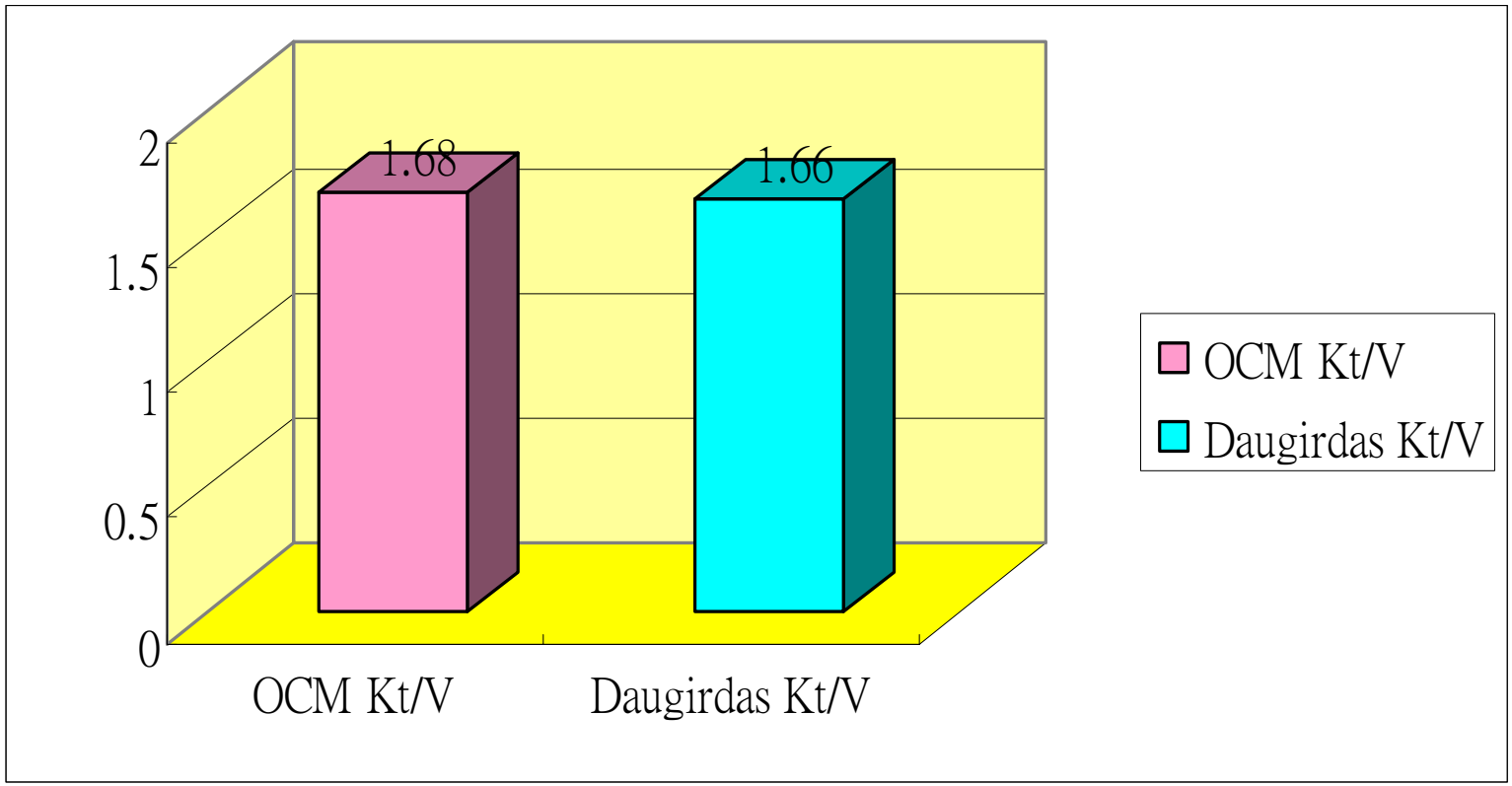
OCM® Kt/V Study

- 54 subjects were recruited
- Monitored with OCM® HD Machine
- Pre & post HD blood urea, inter-dialytic urine & the next pre RFT were taken for Daugirdas 2nd generation formula
- The results of OCM and conventional Kt/V were compared with Student t-test

OCM® & Daugirdas Kt/V results



Result of the study



Mean Kt/V result of OCM is 1.68 ± 0.30 and the Mean of Daugirdas Kt/V is 1.66 ± 0.33

Results of the study

- Pearson correlation coefficient was 0.872
- Paired T-test on the 2 sets of data showed non significant differences with p = 0.746
- no significant difference between OCM® and conventional Kt/V

Conclusion

- OCM® is a simpler, quicker, non-invasive & reliable method for close monitoring of haemodialysis patient adequacy with immediate result
- No extra cost & manpower required
- Timely adjustment of dialysis dose to improve patient's quality of life

Acknowledge

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This dog is having HD, how do you measure Kt/V for it?

Thank you!