

Calculating equilibrated Kt/V using the stop dialysate flow method of post-dialysis urea sampling

The stop dialysate flow method of post-dialysis urea sampling¹ has been in use within all Scottish renal units since 1999. Waiting 5 minutes after stopping dialysate flow has several advantages as well as allowing a more accurate sample to be collected. Although this 5-minute urea value can be used to calculate a urea reduction ration (URR), calculating a value for Kt/V is less straightforward. No method is available to calculate a Kt/V value directly from a 5-minute post dialysis sample since all Kt/V equations have been created based on either immediate/early post-dialysate sampling or based on a 30-minute sample.

However it is possible to use a 5-minute post urea sample and estimate 30 minute urea with a high degree of accuracy (R-squared value = 0.97). This method is described below.

Step 1.

Calculate estimated 30-minute urea value²

$$\text{Estimated 30-minute urea} = (1.06 \times \text{5-minute urea}) + 0.22$$

Step 2.

Use value estimated 30-minute urea in single-pool Daugirdas Kt/V equation³

$$\text{Kt/V} = -\ln(R - 0.008 \times t) + (4 - 3.5 \times R) \times \text{UF/W}$$

in which Ln is the natural logarithm; R is the post-dialysis blood urea * pre-dialysis blood urea; t is the dialysis session length in hours; UF is the ultrafiltration volume in litres; and W is the post-dialysis weight in kg

This method has been validated in patients receiving haemodiafiltration as well as low and high-flux haemodialysis⁴.

References

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<http://www.srr.scot.nhs.uk/Projects/Projects1.html#adequ>