

ONLINE MONITORING OF Kt/V TO ALLOW MODIFICATION OF HAEMODIALYSIS TREATMENT TIMES AND ENSURE CONSISTENT DELIVERY OF ADEQUATE DIALYSIS DOSE.

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Problem: The Renal Association Standards recommend that all patients receive thrice-weekly haemodialysis and aim for a Kt/V of 1.2 or more. Currently Kt/V is monitored monthly and patient's require a fixed prescription based on these results. However, the dialysis dose received from each session can vary due to access issues and other factors. This means that despite an adequate monthly Kt/V patients still may not be consistently receiving an adequate dialysis dose.

Purpose: To discover if utilising the online monitoring of ionic dialysance and altering the patient's dialysis time for that same treatment can ensure that an adequate dialysis dose is delivered.

Design: 12 chronic haemodialysis patients were monitored for a total of 54 haemodialysis sessions. None of these patients had residual renal function. The ionic dialysance was measured at 60 minutes and 120 minutes during the haemodialysis treatment. Ionic dialysance is monitored every 30 minutes during haemodialysis, using the Integra haemodialysis machines (Hospal, Italy). It can be used to calculate the patient's actual and predicted Kt/V(ID) for each individual session. At 120 minutes, the dialysis time was altered by a maximum of $\pm 10\%$, in relation to the Kt/V(ID) readings taken at 60 and 120 minutes, to attempt to achieve the target Kt/V(ID) of 1.1 (equivalent to the urea based measurement of 1.2). When the dialysis time was altered, the ultra-filtration rate was also altered to ensure the patient still finished dialysis at their target weight. The alteration in time and end Kt/V were measured. A basic questionnaire related to the dialysis routine and patient symptoms was devised. This was given to each patient to complete and 6 nurses and technicians who regularly performed this treatment.

Findings: 51/54 sessions required the dialysis time to be altered to achieve the desired Kt/V. 37/54 sessions were increased by a mean time of 19 minutes. 14/54 were decreased by a mean time of 18 minutes. 44/54 sessions reached the target Kt/V of 1.1. A higher mean Kt/V (1.33) was achieved compared to a fixed treatment time of 4 hours (1.22).

All patients achieved within 0.2 kgs of their target weight at the end of each haemodialysis session. All the clinical staff (6/6) felt that the study had little effect on the dialysis unit routine and transport arrangements.

9/12 patients replied to the questionnaire. 5/9 patients stated they felt the new prescription was better, 3/9 stated it was worse and one patient did not reply to the question. Only one patient felt their transport arrangements were worse.

Conclusion: From the data, it can be seen that altering the haemodialysis session time according to the patient's individual ionic dialysance readings allowed a more consistent dialysis dose to be achieved. Overall, a better mean Kt/V was achieved with more consistent delivery. The online monitoring during the haemodialysis sessions made it easy and practical to monitor individual patients' Kt/V and make the necessary adjustments to time. As the haemodialysis session time was altered by only $\pm 10\%$, the disruption to the patients' and unit routine was minimal.

Relevance: The use of online monitoring to alter the patient's haemodialysis time and thus the delivered dialysis dose, leads to a treatment time that is responsive to the individual needs and more consistently provides an adequate haemodialysis dose.