INCREASED Kt/V AND DECREASED BETA-2 WITH CITRATE DIALYSATE
ROBERT KOSSMANN¹, ROBIN CALLAN², SUHAAIL AHMAD³
¹Nephrophiles, Santa Fe, New Mexico; ²Advanced Renal Technologies, Bellevue, Washington; ³University of Washington, Seattle, Washington

BACKGROUND & PURPOSE:
► Clotting of dialyzer often occurs during dialysis and is a major cause of reduced delivered dose of dialysis.
► Citrate Dialysate has been reported to have anticoagulant properties (Yu et al Dial & Transpl, 29 932, 2000).
► In a small number of patients over short study period, the dialysis dose increased with CD (Ahmad et al, AJKD, 35 493, 2000).
► The effect of Citrate D Dialysate on the dose was evaluated in a larger number of patients (n=142), over longer duration (6 months) and utilizing single use dialyzers (F160 NR & F180 NR).

METHODS:
► Three FMC dialysis units in New Mexico were switched from regular bicarbonate non citrate dialysate (Naturalyte® & Granulofit®, “NCD”) to Citrate Dialysate (Citisrate®,“CD”) for 6 months.
► During the study dialysis time, dialyzer type, blood and dialysate flow remained unchanged.
► The dialysis dose in terms of Kt/Vurea was measured monthly on NCD and CD.
► Pre-dialysis Beta-2 microglobulin (B2Mg) was also measured at the beginning and end of CD use.
► Patients with Kt/V being 1 SD below average during the 6 months of NCD were labelled as “clotters”.
► Predialysis Beta-2 microglobulin was measured twice; at the end of NCD and CD use.

RESULTS & CONCLUSIONS:
► Six months of Citrate Dialysate was associated with a significant increase in the dose of dialysis as measured by Kt/Vurea.
► This increase was particularly significant in 19 patients whose baseline (NCD) Kt/Vurea was <1.20 (1 Std. Dev. < population mean).
► In the remaining 123 patients, with mean Kt/V of 1.55, the Kt/V also increased significantly to 1.65 with Citrate Dialysate (p<0.0001).
► Associated with increase in Kt/V was a significant decrease in pre dialysis BUN and creatinine concentrations (p<0.008).
► Predialysis blood concentration of beta-2 microglobulin also declined significantly with 6 months of citrate dialysate.
► It is postulated that anticoagulation property of CD kept the dialyzer fibers and its pores open resulting in better removal of both small (urea, creatinine) and middle molecules (beta-2 microglobulin).
► CD anticoagulation caused an increase in the dose of dialysis.