33

# Should we use a dialysate potassium concentrate of 3mmol/l more often?

Dr Felicia Tan, Daniele Trinca, Dr Zena Hassnwy, Dr Mark Wright
[1]*St James' University Hospital, Leeds, United Kingdom*

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Background
DOPPS data suggests optimal survival for patients using a 3mmol/l KCL (3K) dialysate. We have previously used a 2mmol/l KCL (2K) concentration for our standard dialysis prescription. We were keen to find out how much difference in blood results arose after switching to a 3K dialysate.

Method
This service evaluation study was carried out in a 40 patient satellite dialysis unit. It involved nine people with average pre-dialysis potassium level less than 5mmol over three months and average post dialysis potassium less than 3.5mmol. All of these people had an unrestricted diet in terms of potassium. The change occurred in March 2018. For this analysis, monthly serum pre and post-dialysis potassium levels were analysed for the six month period prior to change and the six months after. The volume of blood processed on those dialysis sessions was also analysed. Our SOP indicated that patients should revert to 2K dialysate if monthly bloods showed pre dialysis potassium levels over 6.0mmol/l on two occasions.

Results
Average pre dialysis potassium was 0.45 +/- 0.31mmol/l, $P<0.05$ higher and average post dialysis potassium was 0.51 +/- 0.22mmol/l, $P<0.001$ higher using 3K dialysate. The average interdialytic change in serum potassium during dialysis was 0.09 +/- 0.16mmol/l, P=NS less using 3K concentrate. The ratio of interdialytic potassium change per litre of blood processed was 0.022mmol/l/l with 2K and 0.020 with 3K.

In the 6 months after conversion, two people changed back to 2K for hyperkalaemia (K> 6.0 mmol/l). One developed this when spironolactone was added to her medication; the other had abbreviated dialysis due to recurrent access problems. 45% of patients have remained on 3K dialysate for 18 months now. The other three people switched back to 2K because of intercurrent septic illness affecting dialysis, reduced blood flow and as a prophylactic measure when spironolactone was added to treatment.
When we compared the incidence of hyperkalaemia in those using 3K and 2K dialysate, we found it was present in 11% of pre dialysis blood tests in both groups.

Conclusion
There was no increased rate of symptomatic hyperkalaemia-related adverse events in patients using 3K in this group. The changes in average pre dialysis potassium levels were small. The amount of potassium removed per session was similar in keeping with the principle of conservation of matter. When hyperkalaemia occurred, there was an external factor contributing. Given that there is some evidence that 3K concentrate has optimal survival outcomes, we believe that we should look to use it more widely as part of an individualised dialysis prescription.