

This is a Fresenius Medical Care summary of:

## Effects of Hemodiafiltration versus Conventional Hemodialysis in Children with ESKD: The HDF, Heart and Height Study

Shroff R et al., *J Am Soc Nephrol*, April 2019;30(4):678-691

### Introduction

Hypertension and cardiovascular disease are commonly seen in children on dialysis, with 30% of deaths caused by cardiovascular events. Study data from adult dialysis patients suggest mortality can be reduced by hemodiafiltration (HDF), although there is a paucity of data from children. This 3H study investigates post-dilution online HDF versus conventional hemodialysis (HD) in the largest cohort of children to date.

### Objective

The primary objective of the study was to assess changes in standard deviation (SD) scores of carotid intima-media thickness (cIMT) and patient height. cIMT is a surrogate marker for pre-clinical cardiovascular disease and is known to progress in patients on dialysis.

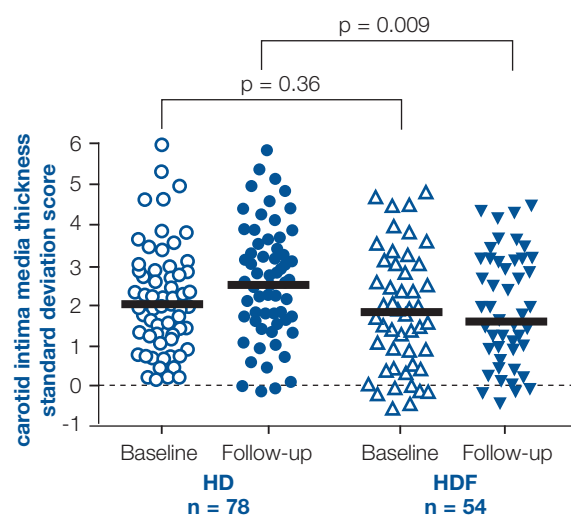
### Design

This is a non-randomised, parallel-arm intervention study performed within the International Pediatric Hemodialysis Network in incident and prevalent children aged 5-20 years receiving 4 hours HD or HDF, 3 times/week. The required follow-up was  $\geq 12$  months, with cIMT, height, and multiple secondary endpoints including serum parameters assessed annually or 6-monthly. High substitution volumes were the target for children receiving HDF.

### Results

In total 106 children received HD and 71 HDF, of whom 78 and 55 reached the 1-year follow up, respectively. The choice of HD or HDF was the decision of the treating physician.

At 1 year follow up, cIMT SD scores, which were similar between groups at baseline, increased in the HD group and remained unchanged in the HDF group.



Graph modified from Shroff R JASN 2019;30(4):678-691

Children in the HDF group had a small but significant increase in height SD scores, and were taller at 12 months. Serum levels of b2-microglobulin, C-reactive protein and PTH decreased in the HDF group, and hemoglobin increased without changes in erythropoietin or iron dose. Post-dialysis recovery time and physical activity were superior with HDF, while there were no differences in the numbers of hospitalizations or serum phosphate levels.

### Conclusion

In children, HDF may be associated with various benefits over HD, including smaller changes in cIMT, increases in height and shorter recovery times. The findings need to be confirmed in randomised studies.