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Intensive hemodialysis has improved physical and mental health-related quality of life

Dialysis patients commonly present limitations in both physical and mental health-related quality of life (HRQOL), with an especially high prevalence of depression.[1,2] Poor HRQOL may be partially due to inadequate dialysis, resulting in physical symptoms.[3] Diminished health-related quality of life associated with increased risks of morbidity and mortality.[4]

Topics discussed in this summary include:

- Health-related quality of life
- Depression
- Physical performance

Studies show intensive hemodialysis may positively impact HRQOL

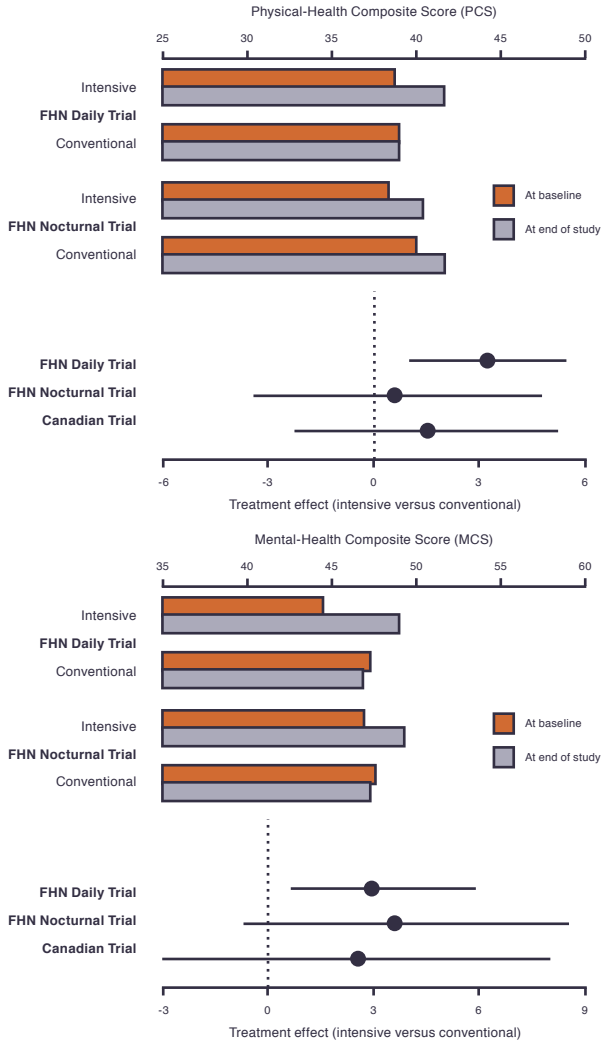
- In three randomized clinical trials comparing intensive and conventional hemodialysis, intensive hemodialysis increased physical and mental component summary scores from the 36-Item Short Form Health Survey (SF-36).[5,6,7,8]
- In another large prospective study, initiation of short daily hemodialysis was followed after 12 months by improvements in all SF-36 domains, sleep quality, and symptoms of restless legs.[9,10]
- In a small study of nocturnal hemodialysis, apnea and hypopnea episodes per hour decreased by almost 70% after conversion from conventional hemodialysis.[11]

But some studies suggest weak effects on depression and objective physical performance

- Two of the aforementioned, randomized clinical trials failed to demonstrate statistically significant effects of intensive hemodialysis on the Beck Depression Inventory (BDI) score, despite a significant decrease in BDI score in the prospective study of short daily hemodialysis.[5,6]
- Intensive hemodialysis may not improve objective physical performance and can increase burden on caregivers in the home setting.[7,12]

CHAPTER 4, FIGURES 1 & 2:[3]

Effects of intensive versus conventional hemodialysis on the physical-health composite score (top) and on the on the mental-health composite score (bottom) in the FHN Daily Trial,[5] the FHN Nocturnal Trial,[6,7] and the Canadian trial of nocturnal hemodialysis.[8] Estimated treatment effects (solid dots) and associated 95% confidence intervals (solid lines) are displayed at the bottom.



Conclusion

Evidence from randomized clinical trials and observational studies showed intensive hemodialysis positively addressed both physical and mental aspects of HRQOL, relative to conventional hemodialysis. However, the clinical significance of published effects, including specific schedules, of intensive hemodialysis relative to conventional hemodialysis at 9pt improvements may merit further investigation.[7] Therefore, the data should not be construed to suggest that intensive hemodialysis is a necessary modality for improving HRQOL or that intensive hemodialysis will improve HRQOL, rather, the data should be discussed during clinician-patient conversations about dialysis modality selection or transition.

All forms of hemodialysis, including treatments performed in-center and at home, involve some risks. In addition, there are certain risks unique to treatment in the home environment. Patients differ and not everyone will experience the reported benefits of more frequent hemodialysis.

Certain risks associated with hemodialysis treatment are increased when performing nocturnal therapy due to the length of treatment time and because therapy is performed while the patient and care partner are sleeping.

About this review

This summary is from a six-part series on intensive hemodialysis, covering the impact of intensive hemodialysis on cardiovascular disease, hypertension, mineral and bone disease, health-related quality of life, treatment tolerability, and potential risks. It was originally published as a supplement in the November 2016 issue of the *American Journal of Kidney Disease*.

For details, methodology, and full references for this summary—as well as the other topics in the series—visit **AdvancingDialysis.org**.

AdvancingDialysis.org is dedicated to providing clinicians and patients with better access to and more awareness of the reported clinical benefits and improved quality of life made possible with home dialysis, including more frequent, more intensive, and nocturnal therapy schedules.

AdvancingDialysis.org is a project of NxStage Medical, Inc.

References

[1] Fukuhara, S., Lopes, A.A., Bragg-Gresham, J.L. et al, Health-related quality of life among dialysis patients on three continents: the Dialysis Outcomes and Practice Patterns Study. *Kidney Int*. 2003;64:1903–1910.

[2] Zhang, M., Kim, J.C., Li, Y. et al, Relation between anxiety, depression, and physical activity and performance in maintenance hemodialysis patients. *J Ren Nutr.* 2014;24:252–260.

[3] Kraus, Michael A. et al. Intensive Hemodialysis and Health-Related Quality of Life. *Am J of Kidney Dis.* 2016;68:S33-S42.

[4] Mapes, D.L., Bragg-Gresham, J.L., Bommer, J. et al, Health-related quality of life in the Dialysis Outcomes and Practice Patterns Study (DOPPS). *Am J Kidney Dis.* 2004;44:54–60.

[5] FHN Trial Group, Chertow, G.M., Levin, N.W., Beck, G.J. et al, In-center hemodialysis six times per week versus three times per week. *N Engl J Med.* 2010;363:2287–2300.

[6] Rocco, M.V., Lockridge, R.S., Beck, G.J. et al, The effects of frequent nocturnal home hemodialysis: the Frequent Hemodialysis Network Nocturnal Trial. *Kidney Int.* 2011;80:1080–1091.

[7] Hall, Y.N., Larive, B., Painter, P. et al, Effects of six versus three times per week hemodialysis on physical performance, health, and functioning: Frequent Hemodialysis Network (FHN) randomized trials. *Clin J Am Soc Nephrol.* 2012;7:782–794.

[8] Culleton, B.F., Walsh, M., Klarenbach, S.W. et al, Effect of frequent nocturnal hemodialysis vs conventional hemodialysis on left ventricular mass and quality of life: a randomized controlled trial. *JAMA*. 2007;298:1291–1299.

[9] Finkelstein, F.O., Schiller, B., Daoui, R. et al, At-home short daily hemodialysis improves the long-term health-related quality of life. *Kidney Int.* 2012;82:561–569.

[10] Jaber, B.L., Schiller, B., Burkart, J.M. et al, Impact of short daily hemodialysis on restless legs symptoms and sleep disturbances. *Clin J Am Soc Nephrol.* 2011;6:1049–1056.

[11] Hanly PJ, Pierratos A. Improvement of sleep apnea in patients with chronic renal failure who undergo nocturnal hemodialysis. *N Engl J Med.* 2001;344(2):102-107.

[12] Suri, R.S., Larive, B., Hall, Y. et al, Effects of frequent hemodialysis on perceived caregiver burden in the Frequent Hemodialysis Network trials. *Clin J Am Soc Nephrol.* 2014;9:936–942.