

John Agar, MD

Synopsis from the article: Agar JW, Mahadevan K, Knight R, Antonis ML, Somerville CA. 'Flexible' or 'lifestyle' dialysis: Is this the way forward? *Nephrology* (Carlton) 2005; 10, 525-9

During the last decade, two additional dialysis modalities have expanded the hemodialysis (HD) options available to patients in need of renal replacement therapy. These two modalities are:

- (1) A new modality of short daily HD (SDHD) performed commonly 6-7 days/week for ~2 hours/treatment, either as a facility-based or as a home therapy.
- (2) A 're-born' overnight HD modality: nocturnal home HD (NHHD). Overnight HD is not a new concept—indeed it was practiced very early on in the current era of maintenance HD for end-stage renal failure, though had all but disappeared until, in 1993, Uldall and Pierratos sparked renewed interest in home-based NHD from their program in Toronto.

After first introducing long, slow, quotidian NHHD in Geelong, Victoria, Australia, the authors recognised early and significant financial savings accruing from their NHHD program. NHHD is cost-efficient—even when delivered, as in the Geelong program, at a 6 nights/week frequency. NHHD performed on alternate nights, though perhaps less clinically ideal when compared to 6 nights/week treatment, leads to even greater cost-effectiveness. Though the Geelong NHHD program demands one machine/patient and 6 nights/week and thus doubles the consumable expenditure in comparison with conventional daytime 3/week facility-based HD, the added machine and consumable costs were soon seen to be far less than the extra wage and infrastructure costs attached to the building and maintenance of a viable HD facility.

The authors applied the cost savings from their NHHD program to fund a SDHD program at their in-center and satellite facilities for those patients most likely to benefit from SDHD—those with compromised cardiac function and those whose volume tolerance was low and who were unable to easily cope with the wide fluctuations in intravascular volume associated with conventional 3 times/week HD (CHD).

The authors compared their multi-modality Geelong program with the national database for Australia and New Zealand (ANZDATA), the Australasian equivalent of the USRDS database. Significant differences in modality profile emerged.

As of March 2004, 92.9% of Australian and 95% of New Zealand HD patients were on CHD compared to Geelong, where only 73.5% were on CHD. Further differences emerge in dialysis frequency: 19% of Geelong HD patients vs. 1.8% of Australian and 0.9% of New Zealand patients dialyze for five or more sessions/week. Australian and New Zealand hours/session patterns were similar, with few dialyzing outside a 3.5-5 hr/session window. Nearly 7% of Geelong patients dialyzed for 2-2.5 hrs/session (the Geelong SDHD patients) vs. 0.9% in Australia and 0.2% in New Zealand. In addition, >15% Geelong patients dialyze \geq 8 hours/session (the NHHD patients) where few Australian (~1%) or New Zealand (~2%) HD patients did.

The authors have coined the terms 'flexible' or 'lifestyle' dialysis to describe their modality-expanded HD program, a program complimented also by an active peritoneal dialysis (PD) program—incidentally also heavily biased towards through-the-night automated PD (APD).

The authors believe that a far wider range of HD choices are and should be available to HD patients than the restrictive conventional '4 hours, 3 times a week' one-size-fits-all approach of most current dialysis services. They assert that it is both possible and preferable to tailor modality choice to lifestyle need. Further, this can be achieved at no greater cost than that which is currently attached to less imaginative, less patient-oriented, yet more 'conventional' programs.

References:

1. Agar JWM, Somerville CA, Dwyer KM, Simmonds RE, Boddington JM, Waldron CM. Nocturnal hemodialysis in Australia. *Hemodial Int* 2003; 7: 278-89.
2. Agar JWM, Somerville CA, Simmonds RE, Boddington JM, Waldron CM. Nocturnal haemodialysis: A preliminary cost comparison with conventional haemodialysis. *Hemodial Int* 2003; 7: 94.
3. Kjellstrand C, Ting G. Daily hemodialysis: Dialysis for the next century. *Adv Renal Repl Ther* 1998; 5: 267-74.
4. Kjellstrand C. Daily hemodialysis is best: Why did we stop at three? *Semin Dial* 1999; 12: 403-5.
5. 26th ANZDATA Registry Interim Report – March 2004, Australian and New Zealand Dialysis and Transplant Registry, Adelaide, South Australia.
6. Raj D, Charra B, Pierratos A, Work J. In search of ideal hemodialysis: Is prolonged frequent dialysis the answer? *Am J Kidney Dis* 1999; 34: 597-610.
7. McFarlane P, Bayoumi A, Pierratos A, Redelmeier D. The quality of life and cost utility of home nocturnal and conventional in-center hemodialysis. *Kidney Int.* 2003; 64:1004-11.
8. Mohr P, Neumann P, Franco S, Marainen J, Lockridge R, Ting G. The case for daily dialysis: its impact on costs and quality of life. *Am J Kidney Dis* 2001; 37: 777-89.
9. Lockridge R, Anderson H, Coffey L, Craft V, Jennings F, McPhatter L, Spencer M, Swafford A. Nightly home hemodialysis in Lynchburg, Virginia: Economic and logistic considerations. *Semin Dial* 1999; 12: 440-7.
10. Renal dialysis: a revised service model for Victoria (Final Report)
<http://www.health.vic.gov.au/renaldialysis/renal-finrep-1004.pdf>.

Commentary by Todd S. Ing, MD

Dr. Agar and associates present their excellent experience in short daily and long nocturnal hemodialysis therapies. What is more, by using the resources saved from their home long nocturnal program to support their in-center and satellite short daily programs, these authors were able to stay within a budget similar to that provided to a conventional dialysis program offering thrice weekly (3-4 hours per session) regular dialysis treatments and taking care of the same number of patients. As a result of this innovative approach, patients are given the flexibility of selecting the dialysis modality (including peritoneal dialysis) of their choice—hence, the designation, flexible or lifestyle dialysis!