
Global Innovations in Patient-Centered Kidney Care

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Making Home Hemodialysis a Mainstream Dialysis Modality (Again)

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Perspectives from patients

In their own words...

“It’s absolutely amazing what a person can get used to.”
- ICHD Patient, U.S.

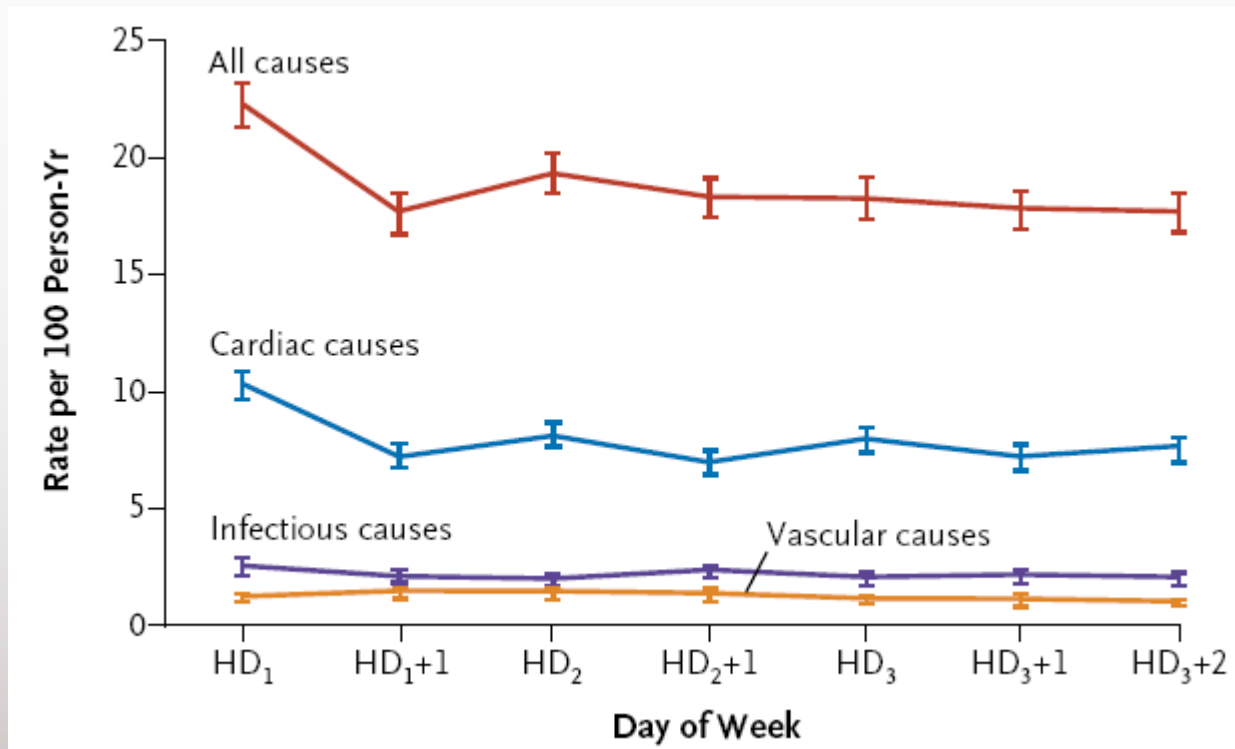
“Don’t get me wrong; I am grateful...I am living. But is this living?”
- ICHD Patient, Canada

“...and I feel guilty knowing that I have to sleep.”
- ICHD Patient, Australia

“When they saw you well, see you walking around, they’re like, ‘he’s ok,’ and there was no appreciation of just how bad you did feel, so there wasn’t that understanding, it was never there, everyone was like sympathetic but they could never relate to how bad you feel.”

Is there something inherently wrong with the current paradigm of dialysis care?

Annual Mortality Rate by Day of Week



Increased risk of death and hospitalization the day after the 2-day inter-dialysis interval

Event	% of Patients with Event	Event Occurred on Day after 2- Day Interval (per 100 p yrs)		Relative Difference (%)
		(yes)	(no)	
All cause death	41.1	22.1	18.0	22.7
Cardiac Death	17.4	10.2	7.5	36.0
Hospitalization for CHF	33.1	29.9	16.9	76.9
Hospitalization for dysrhythmia	25.9	20.9	11.0	90.0
Hospitalization for any CVD	45.8	44.2	19.7	124

“There may be no better example of how outdated payment systems distort Americans’ healthcare, and lower its quality, than what we have in kidney care today.”

Alex M. Azar II
National Kidney Foundation
March 4, 2019 Washington, D.C.

“The status quo is not acceptable”

Home Hemodialysis: The Past

- Home HD for the treatment of ESRD was first developed in the early 1960's
- By 1973 when the Medicare ESRD program began, 40% of all U.S. dialysis patients in the U.S. were on Home HD
- By 1980, facility based HD grew as did PD, and Home HD use dropped to 5%.
- In the U.S., the penetration of Home HD was 0.5% just before the market introduction of NxStage in the mid-2000's
- Elsewhere, there was a resurgence in Home HD, particularly long nocturnal HD, led by several groups in Australia, U.K., Canada and the U.S.

Clinical Benefits of More Frequent or Longer Duration HD *(randomized controlled trials; comparator – conventional HD)*

JAMA



Effect of frequent nocturnal HD vs conventional HD on LV mass and quality of life: a randomized trial

Culleton BF et al. *JAMA* (2007) 298: 1291-1299



The effects of frequent nocturnal home hemodialysis: the Frequent Hemodialysis Network trial

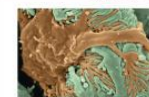
Rocco M et al. *Kidney Int* (2011) 80: 1080-1091



In-center hemodialysis six times per week versus three times per week

Chertow G et al. *N Engl J Med* (2010) 363: 2287-2300

JASN

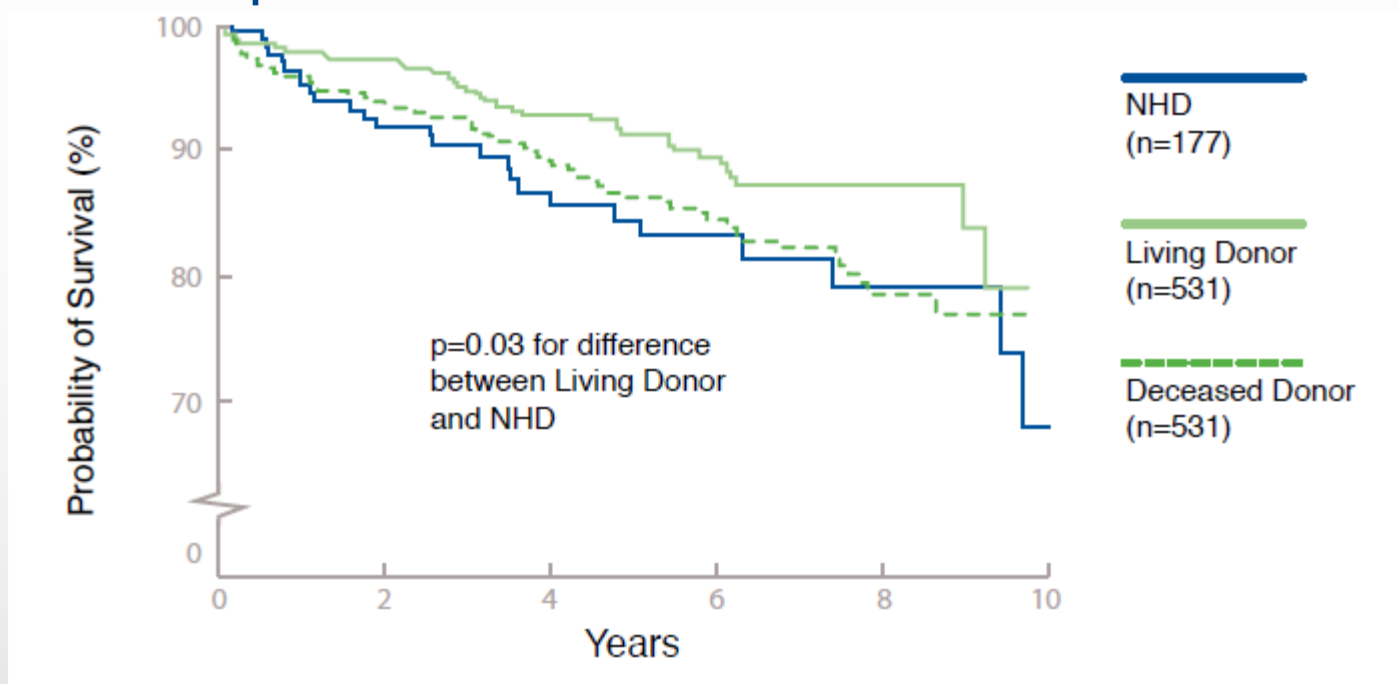


A trial of extending hemodialysis hours and quality of life.

Jardine MJ et al. *J Am Soc Nephrol* (2017) 28: 1898-1911

- Increased urea clearance
- Improved blood pressure control; reduced use of anti-hypertensive agents
- Improved serum phosphate control; reduced use of phosphate binders (NHD)
- Regression of LV mass
- Improved quality of life (selected measures)
- A signal for increased vascular access events and loss of residual kidney function

Residual confounding addressed by using transplant as the comparator



	3-month survival	6-month survival	1-year survival	3-year survival	5-year survival
Nocturnal HD	99.4%	99.4%	96.4%	90.3%	84.5%
Deceased Donor	98.1%	96.8%	95.9%	92.2%	86.2%
Living Donor	98.7%	98.5%	97.7%	94.9%	91.3%

Successful pregnancies on nocturnal hemodialysis – removing the ‘un-physiology’ of dialysis



Successful pregnancies on nocturnal home hemodialysis

Barua M et al. *Clin J Am Soc Nephrol* (2008) 3: 392-396

Table 1. Pregnancy outcomes^a

	Number of Weeks at Delivery	Mode of Delivery	Baby's Birth Weight (g)	Baby's APGAR Scores at 1 and 5 min
Patient 1	36	C/S	2020	9/9
Patient 2: Pregnancy 1	38	SVD	3000	5/8
Patient 2: Pregnancy 2	37 ⁴	SVD	2785	9/9
Patient 3	36 ⁵	Induced labor, vacuum extraction	2690	6/9
Patient 4	38 ⁵	C/S	2750	8/9
Patient 5	30	SVD	1260	5/7

^aC/S, cesarean section; SVD, spontaneous vaginal delivery. Superscript numerals indicate days.

Despite the clinical benefits, and a (self) preference of nephrologists and nephrology nurses ...

why are less than 2% of all dialysis patients in the U.S. treated with Home HD?

Frequently Stated Barriers to the Adoption and Growth of Home HD

- **Clinical**

- Physician lack of confidence (in prescribing and in patients)
- Time on therapy (churn)
- Absence of an 'easy button' for physicians

- **Operational**

- Lack of infrastructure
- Lack of staff training of health care staff (physicians and others)

Frequently Stated Barriers to the Adoption and Growth of Home HD

- **Economic disincentives**
 - **Provider (marginal costs, therapy costs, patient time on therapy)**
 - **Physician – CKD reimbursement, dialysis PMPM pmt, medical directorships, and in-center JV proliferation**
 - **Patient costs**
- **Patient and caregiver related**

Perspectives from Home HD patients

In their own words...

“When on [facility based] HD you were away from home, and my daughter and I grew apart during that time, because I was never there for her...and only through the home hemo we have got back together again...and we have a life together.”

“I saw others on Home HD and they looked better.”

“Completed education, [kept] financially independent, have an almost full and normal life. I have worked, taken care of myself, [and] controlled my own time.”

-

“I saw home hemo as a new beginning. And we saw benefits early on in doing it at home. I have energy so we can go out on nights after my treatment.”

“Home dialysis offers me flexibility and control”

Thematic Schema of Patients' and Caregivers' Perspectives of Home HD



Empowering Patients, Promoting Health and Applying Innovation Across the Care Continuum



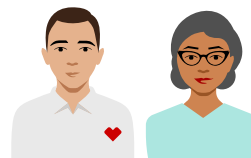
Identify and Engage

Early identification through claims, labs and algorithms
Patient segmented based on risk factors
Engage patient by telephone and mail



Ongoing Care Coordination

Telephonic care coordination and education to prolong progression
Connect patient to nephrologist as needed
Medication therapy management



Face-to-Face Education

Transplant facilitation and support
Modality choice education
Therapy education
Facilitation of planned start



Transition to Home

Home therapy services
Home hemodialysis device*
Network of in-center facilities
Ongoing medication therapy management

CVS KIDNEY CARE GOALS

Delay Onset of ESRD

Increased # of Transplants

Reduce Hospitalizations

Increase % of Planned Starts

Improve Uptake of Home Dialysis

*Home hemodialysis device under development has not received market clearance from the FDA.

Additional Role of Behavioral Economics

- Why do many people fail to exercise, despite the well known benefits?
- Why do some patients skip medications that prevent serious illness?
- Why do some physicians stick to their usual care practices despite ample evidence of better approaches?
- Why have pay-for-performance programs not always succeeded?

BE belief – patients and physicians are ‘predictably irrational’ in their decision making because they succumb to consistent and recognizable human foibles. A key principle behavioral economists rely on is one of loss aversion – we are more sensitive to the prospect of loss than the possibility of gain.

Concluding Remarks

