Focus on Function: Implementation of Mobility Programs for Older Adults Living with End Stage Renal Disease

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ESRD Program of Medicare:
2018 US Renal Data System Annual Report (www.usrds.org)

ESRD INCIDENCE: 2016

- **Approximately 124,000 newly reported cases of ESRD**
- **Estimated lifetime risk of being diagnosed with ESRD from birth**
  Males: 3.4% in Whites; 8.1% in Blacks/African Americans

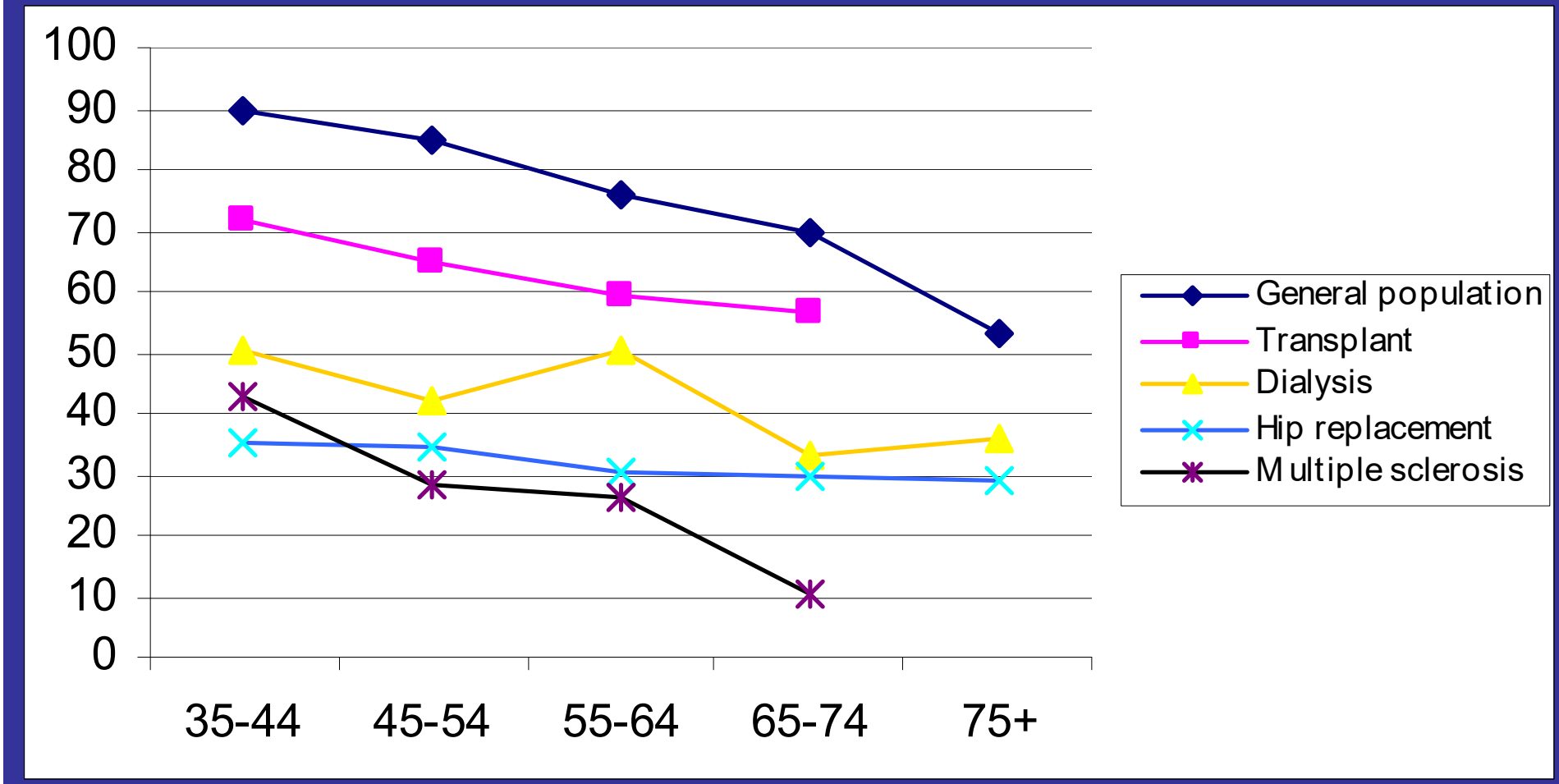
  Females: 2.3% in Whites; 6.8% in Blacks/African Americans
- **87.3% began renal replacement therapy with hemodialysis (HD), 9.7% started with peritoneal dialysis (PD), and 2.8% received a preemptive kidney transplant**

ESRD PREVALENCE: DECEMBER 31, 2016

- **726,331 prevalent cases of ESRD (dialysis, transplant); number continues to rise by about 20,000 cases per year**
- **Compared with Whites, ESRD prevalence in 2016 was about 9.5 times greater in Native Hawaiians/Pacific Islanders, 3.7 times greater in Blacks, 1.5 times greater in American Indians/Alaska Natives, and 1.3 times greater in Asians**
- **63.1% of prevalent ESRD patients were receiving HD therapy (98% in-center, 2% home) 7.0% were treated with PD, and 29.6% had a functioning kidney transplant**
- **Over half of prevalent in-center HD patients are aged 65 and older**

USRDS

Physical Functioning



Physical inactivity contributes to a decline in function, and most patients starting dialysis are very inactive

- **Incident dialysis patients in all age and gender categories scored below 5th percentile for healthy individuals on the Human Activity Profile (USRDS Comprehensive Dialysis Study; Johansen, Chertow, Kutner et al. *Kidney Int.* 2010).**

- **<u>However</u>, as early as 1980, a clinical trial (Goldberg et al.) showed that dialysis patients could experience multiple benefits from exercise training**

- **And the benefits of exercise/physical activity have been shown in multiple subsequent studies, using various designs**

  --RCTs and observational studies, cross-sectional and longitudinal

  and focusing on various types of physical activity

  --including structured exercise programs as well as "leisure-time physical activity"

  ****Little focus on <u>targeted</u> <u>mobility</u> <u>programs</u>, however**

USRDS ACTIVE-ADIPOSE Study (prevalent in-center HD cohort)

Do any of these reasons limit your physical activity?

Feel too sick
*__Feel too tired__
Feel sad
Don't have time
*__Just not motivated__
Don't have any place to exercise or any exercise equipment
Don't know what to do
Don't think it is good for you
In too much pain
Afraid of getting hurt
Family doesn't think you should
Doctor doesn't think you should

Mean # activity barriers reported by participants ages 65+

Non-frail	Pre-frail	Frail
2.6	3.3	5.1

Importance of an exercise "climate"

- **Facilities that offer exercise programs:** **Higher odds that patients report that they do "regular exercise" (≥ once/week)**

  Survey of 20,000+ patients in 12 countries (*Nephrol Dial Transplant* 2010)

- **Staff encouragement:** **"I have a crew at the dialysis clinic that don't let you sit and mope around. They encourage exercise…it's just a good environment."**

  Knowledge, barriers and facilitators of exercise in dialysis patients: a qualitative study of patients, staff and nephrologists.
  (*BMC Nephrol* 2016)

Categories of Exercise for Dialysis Patients

- **“INTRA-dialytic” exercise**
  - Cycling is most feasible

  and most of what we know about

  – *Benefits*: Captive audience. May improve mobility?

  Example: UVA “Sit Fit” program
  *https://**www.youtube.com**/watch?v=_5QyVrOpQjE*

  – *Concerns*: Limited improvement in mobility likely?
  - Strength training (during dialysis) is difficult

- **Exercise/activity not during dialysis**
  – *Benefits*: in theory, unlimited options
  – *Concerns*: Compliance
  - Access, motivation, supervision

Resources

- Life Options Rehabilitation Advisory Council
  - Multidisciplinary panel of researchers, clinicians, patients
  - Materials at http://lifeoptions.org/
    - *Exercise: A Guide for People on Dialysis*
    - *Exercise for the Dialysis Patient: A Guide for the Nephrologist*
    - *Evaluation: Unit Self-Assessment Manual for Renal Rehabilitation*
    - *Building Quality of Life: A Practical Guide to Renal Rehabilitation*
    - *Exercise for the Dialysis Patient: A Prescribing Guide*

- Resources to facilitate exercise on dialysis, especially intradialytic cycling and resistance training
  - Parker K. Intradialytic exercise is medicine for HD patients. *Current Sports Med Reports* 2016
  - http://kidney.org.au/
  - http://www.ncbi.nlm.nih.gov/pubmed/26863718
- ACSM guide on how to start a walking program:
  - http://www.acsm.org/docs/brochures/starting-a-walking-program.pdf
- CDC: Falls prevention recommendations; “MyMobility Plan”
  - http://www.cdc.gov

Walking Disability: A Key Area for Research

- Nearly 1 in 2 **incident** dialysis patients has some walking disability, i.e. difficulty walking, abnormal gait, hx of falling, and/or assistive device use (https://www.usrds.org/2008/pres/15U_asn08_walking_disability.pdf.

- 55.6% of all incident and prevalent patients hospitalized for any fracture 2000-2009 had walking disability/hx of falls, compared with 16.7% of a comparator group with non-fracture hospitalization
  (USRDS files; Beaubrun et al., *J Am Soc Nephrol* 2013)

- Among 750 participants in the ACTIVE-ADIPOSE Study 2009-2013:
  Gait speed <0.8 m/s, with and without recent fall hx, was associated with patients' new hospitalization for multiple causes (Kutner et al., *World J of Nephrol* 2014).
  At 12 m, gait speed <0.8 m/s was associated with increased odds for reported ADL difficulty and with an estimated decrease of 8.2 in SF-36 PF score (Kutner et al., *Am J Kidney Dis* 2015).


HOLDEN

Opportunities in Practice and Research

- **Physical therapists—an underutilized resource**
  - Williams et al. Exercise in CKD: Why is it important and how should it be delivered? *Am J Kidney Dis* 2014; 64(3): 329-331.
  - Braden H. Self-selected gait speed: A critical clinical outcome. *Lower Extremity Review* November 2012. http://lermagazine.com/article/self-selected-gait-speed-a-critical-clinical-outcome.

- **Global Renal Exercise Group**
  - Informal working group loosely affiliated with the American Society of Nephrology since 2015; now developing an official affiliation with the International Society of Renal Nutrition and Metabolism
  - Goal: Develop a global network of researchers and stakeholders. Any interested persons may join the mailing list

A central focus: Identify specific areas of research that are needed to strengthen the data regarding efficacy, and that would help develop efficient and cost-effective implementation of exercise into routine care (Wilund/Painter *Am J Kidney Dis* 67(5), 2016)

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