

## Chapter 2: Why Do We Need a Geriatric Nephrology Curriculum?

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In 2005, ACGME (Accreditation Council for Graduate Medical Education) issued the following statement with respect to nephrology fellowship training:

“Fellows must have formal instruction, clinical experience and demonstrate competence in the prevention, evaluation and management of geriatric aspects of nephrology, including disorders of the aging kidney and urinary tract.” In addition, the ACGME mandated that “fellows must receive formal instruction in geriatric medicine, including physiology and pathology of the aging kidney; and drug dosing and renal toxicity in the elderly patient.”

The following curriculum is an attempt to fulfill this mandate and prepare the next generation of nephrologists for the comprehensive care of the older population with kidney disease.

The over 65 population in the United States is rapidly growing. During the next 20 yr, it is expected to double (Figure 1). This means that during the professional lives of current fellows, they can expect to see an increasing number of older patients in their practice. Average life expectancy in 2004 was 75.2 yr for men and 80.4 yr for women; by 2015, it is expected to be 76.2 and 82.2 yr, respectively, and to continue growing. During the 1990s, the over 85-yr-old population was the fastest growing group at 38% growth. This older age group is the largest consumer of healthcare services. In 2005, only 5% of the over 75-yr population had no health visits, whereas fully 30% of those with 10 or more visits were in this age group, although they constitute <10% of the population.<sup>1</sup>

Why should the aging of the population impact nephrologists? There are currently about 35 million people over 65 yr of age in the United States. Forty percent of this population has some level of disability: sensory, physical, mental, or self-care.<sup>1</sup> Once a senior develops disability, it greatly impacts on their ability to follow a complex medical regimen. Pa-

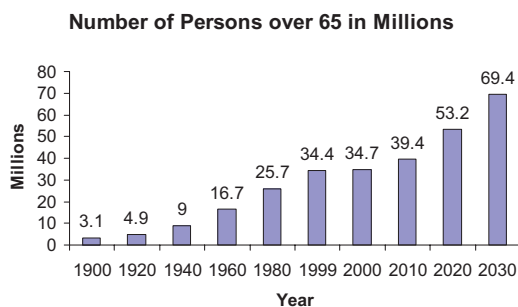
tients with chronic kidney disease (CKD) usually require complicated medication routines, complex dietary restrictions, and frequent medical visits. Many patients in this age group have lost the ability to administer their own pills, to buy and cook their own groceries, or to drive themselves to office visits or dialysis units. Many patients, particularly in the diabetic population, have difficulties with basic mobility. It is essential that the nephrologist be familiar with and able to perform routine functional assessments of their older patients. This includes evaluating cognitive, affective, functional, social, economic, and environmental status. This enables them to customize a regimen or direct the patient to a living environment where such supportive care is available. In a busy practice, some aspects of this assessment can be allocated to other providers such as social workers, nurses, nurse practitioners, or physician assistants. The management of those elderly who require chronic dialysis is even more complex. They frequently have more difficulty with vascular access; they have more cardiovascular disease that leads to arrhythmias and hypotension while on dialysis. Furthermore, traveling to and from the unit is a greater burden to them. Further improvements in assisted dialysis at home will allow them to enjoy the benefits of treatment at home and is an area that needs further exploration.

Patients in this older age group are likely to have multiple comorbidities. The average 75 yr old suffers from 3.5 chronic diseases.<sup>1</sup> Many symptoms in older patients are caused by multiple deficits and not by a single disease. These diseases and their treatments are likely to interact and complicate one another. Murray<sup>2</sup> has reported that up to 70% of dialysis patients 55 yr of age and older have chronic

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**Figure 1.** Projected population over age 65 yr from the US Census Bureau.

cognitive impairment of a level severe enough to impact on their compliance and ability to make informed decisions.<sup>3,4</sup> Prevalence of depression is reported to be as high as 45% in the older dialysis population.<sup>5–7</sup> Metabolic bone disease is complicated by age-related osteoporosis. The cardiovascular consequences of CKD are complicated by structural heart disease such as valvular insufficiency and atrial fibrillation. Neurodegenerative disease impacts on the patient’s mobility and cognitive function. Osteoarthritis and neuropathy limit their physical activity. As age and disease advance, frailty becomes an issue. All of these things combine to make their care much more complex than that of a younger patient. Drug interactions and inappropriate dosing becomes an increasing issue as the number of comorbidities and medications increases (Table 1).

In 1992, Nespore and Holley<sup>8</sup> did a small study of in-center hemodialysis patients in Pittsburgh. Eighty percent of these patients did not have a family physician and relied on their nephrologist for all of their medical care. Ninety-one percent sought treatment from their nephrologist for minor acute illness. Nephrologists were also providing ongoing treatment for comorbid chronic illnesses such as diabetes and heart disease. In 1993, they went on to confirm similar statistics in their chronic peritoneal dialysis patients.<sup>9</sup> This would suggest that the nephrologist needs to be prepared to take on the full complexity of care for their older patients, particularly their chronic dialysis population. In older patients, this would include health maintenance screening and immunizations. Although malignancies are more common in both the dialysis population and in the posttransplantation population than in the general population, life expectancy, age, and cost effectiveness need to be considered by the nephrologists before ordering screening tests.

Patients with possible CKD are being referred to nephrologists in greater numbers since the introduction of formulae for estimating GFR. Most clinical laboratories supply an eGFR when a serum creatinine is ordered. NHANES data estimates that approximately 11% of the US population has CKD, and this may be as high as 30% in the older population.<sup>10</sup> A recent Australian study showed that monthly referrals overall increased by 40% after the introduction of eGFR reporting, and this was most marked for the tertiary renal service (52% above baseline).<sup>11</sup> Patients referred after the introduction of eGFR

**Table 1.** Common geriatric conditions that impact on nephrology care

Visual impairment
Hearing impairment
Malnutrition/weight loss
Urinary incontinence
Balance/gait impairment/falls
Polypharmacy
Cognitive impairment
Affective disorders
Functional limitations
Lack of social support
Economic hardship
Home environment/safety

were significantly more likely to be older (median, 63.2 *versus* 59.3 yr;  $P < 0.05$ ), because serum creatinine is a poor predictor of renal function in the elderly. GFR declines with age in normal individuals; therefore, it can be difficult to distinguish age-related decrease in GFR from CKD in the elderly. Older patients with mild decreased GFR and low risk for progressive decline in GFR need to be distinguished from those with progressive disease, because once identified, they probably do not need to be followed by a nephrologist.

In conclusion, older patients will make up a growing proportion of the nephrologist’s practice. Thus, nephrologists need to become comfortable with shouldering the full care of this segment of their patient population or work closely with a geriatrician and family physicians. As we become more willing to offer life-prolonging technologies in the older age groups, we need to be willing to deal with the consequences of this decision. Finally, with their elderly patients, nephrologists face challenging ethical problems, such as whether to withhold or withdraw dialysis. Unless addressed promptly and effectively, these ethical issues will greatly increase the stress on both the healthcare provider and family members.

## TAKE HOME POINTS

- A knowledge of geriatric medicine is required by ACGME for training in nephrology
- The population over 65 yr of age will double in the next 20 yr
- This older population will bring their problems with them to the nephrologists
- Dialysis patients rely on their nephrologists for most or all of their care

## DISCLOSURES

None.

## REFERENCES

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**REVIEW QUESTIONS: WHY DO WE NEED A GERIATRIC NEPHROLOGY CURRICULUM?**

1. The 85-yr-old population is growing at what rate per year?
  - a. 10%
  - b. 45%
  - c. 25%
  - d. 38%
2. The average 75-yr-old suffers from how many chronic diseases?
  - a. 0
  - b. 5
  - c. 3.5
  - d. 10
  - e. 2
3. The prevalence of depression in the dialysis population is
  - a. 5%
  - b. 25%
  - c. 33%
  - d. 45%
  - e. 80%
4. What percent of dialysis patients receive all their medical care from their nephrologist?
  - a. 10%
  - b. 20%
  - c. 30%
  - d. 50%
  - e. 80%