The need for advanced fellowship training in geriatric nephrology

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As mentioned earlier, the elderly CKD population is notable for the presence of a significant number of comorbid conditions, such as atherosclerotic cardiovascular disease, congestive heart failure, hypertension, diabetes and cognitive and functional impairment [4,5]. Several studies have demonstrated that both the prevalence and overall burden of these comorbidities is higher among older patients with CKD [5]. In addition to the comorbidity burden, all-cause mortality is six-times higher in the ESKD population than in the general Medicare population.

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The most common cause of CKD and ESKD in the USA is diabetic nephropathy, particularly in those over 60 years of age. It should be noted that, combined with the general aging of the population, the concurrent epidemic of Type II diabetes in the USA and elsewhere has led to a marked increase in the number of elderly diabetic patients affected by CKD and ESKD so that a third of new ESKD cases in individuals over 75 years of age are as a result of diabetic kidney disease [10]. As a result, complicating comorbidities in the elderly kidney patient lead to a higher threshold eGFR at which the risk of death exceeds that of developing ESKD [11]. These competing comorbid conditions require monitoring by the nephrologist in pursuit of a holistic, collaborative and individualized program of care.

Geriatric nephrology: a new focus
In describing the growth of geriatric medicine of the past quarter century, Besdine has written that ‘the consequences of inaction will be profound.'
The combination of a burgeoning number of older persons and an inadequately prepared physician workforce is a recipe for expensive, fragmented healthcare that does not meet the needs of an older population [12]. While many elderly advanced CKD patients in the past have been treated solely by non-nephrologists [13], the epidemiological facts described above demonstrate that the patient population cared for by nephrologists is increasingly elderly and associated with many comorbid conditions. However, in the face of increasing need, the number of physicians seeking specialty training in geriatric medicine may be decreasing [14]. Furthermore, it is known that primary care physicians themselves find caring for elderly patients challenging. Three reasons are commonly cited [15]:

• Medical complexity and chronicity of conditions;
• Coordination of medical and nonmedical conditions;
• The administrative burden.

These reasons are particularly pertinent to elderly patients with CKD. Elderly CKD patients experience a high rate of complications such as cardiovascular disease, anemia, hypertension, malnutrition and bone disease. The obstacles to effectively caring for these issues also increase (including interacting comorbidities, impaired physiologic reserve, cognitive dysfunction and limited economic and social resources). As primary care physicians look for assistance in the management of elderly patients with CKD, the nephrologist will have to confront the interacting effects of aging with kidney disease to be able to adequately address their patients’ problems.

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Furthermore, for those patients undergoing maintenance dialysis, the nephrologist commonly assumes many of the roles of the primary care physician [16]. The nephrologist almost always does this without specific geriatric training. Thus, the nephrologist is faced with issues such as fall risk, frailty, dementia, delirium, depression, polypharmacy and urinary incontinence in patients that they follow longitudinally in the outpatient setting and/or on dialysis. This requires the dialysis community to be educated regarding the basics of geriatrics, especially quality-of-life issues and their assessment. A specific example is the important but time-consuming task of involving patients over 85 years of age and their families in informed, shared decisions as to whether to choose dialysis or a more conservative treatment approach as kidney function worsens; and, conversely, how to counsel elderly patients on withdrawal of dialysis [17].

In addition, the nephrologist confronts a wide range of age-related functional and pathologic questions. With aging, there are well-documented changes in the anatomy and physiology of the kidneys; according to cross-sectional and longitudinal studies, the GFR decreases by approximately 1 ml/1.73m²/year after approximately 30 years of age [3]. As a result, elderly patients may be mislabeled as having moderate CKD even when their eGFR corrected for age is normal. Conversely, reliance on serum creatinine may be misleading; loss of lean body mass may allow a normal serum creatinine level despite significant loss of kidney function [3]. Kidney biopsies are increasingly being performed in the elderly and very elderly [18]. Although highly variable in severity, common findings are age-related kidney fibrosis owing to increased collagen accumulation and advanced vascular changes, similar to chronically damaged kidneys [3,18]. This is a different spectrum of pathologies than in the younger population, and it necessitates a careful assessment of the risks and benefits of any potential therapeutic intervention. An important caveat is that different pharmacodynamics/pharmacokinetics of drugs occur with aging [3]. In addition, nephrologists need to realize the socioeconomic burden that the cost of a drug may impose on those whose fixed incomes force them to make difficult decisions regarding the cost of medications versus the cost of maintaining a minimum standard of living.

The birth of geriatric nephrology
In anticipation of future resource requirements owing to increased numbers of elderly and very elderly people in the 21st century [19], geriatric nephrology was first recognized as a specialty in 1980. In 1985, the first international symposium on geriatric nephrology was held in Toronto, Canada. Subsequently, the Internal Society of Geriatric Nephrology was formed, and its own journal created. By 1997, the long-term growth in the ESKD population was recognized to be dependent on the aging US population, and to be a determinant of the ‘changing supply’ of nephrologists [20]. Since 2002, the American
Society of Nephrology (ASN), the world’s largest professional society devoted to the study of kidney disease, has partnered with the Association of Specialty Professors in awarding grants for training the next generation of scholars and leaders in the geriatric aspects of nephrology. Recently funded topics have included acute kidney injury and long-term kidney function in elderly patients, and aging candidates for kidney transplantation. However, only in the last 5 years has there been a determined focus on increasing the training and education of nephrologists in the care of geriatric patients. Starting in 2005, the Accreditation Council for Graduate Medical Education (ACGME) began to view geriatric nephrology as essential to nephrology training, and has mandated that fellows must have formal instruction in geriatric medicine and demonstrate competence in geriatric aspects of nephrology. Several initiatives have been taken to address the educational needs of nephrologists [101]:

- A 2-day in-depth course on the epidemiologic and clinical challenges of geriatric nephrology has been instituted;
- To supplement this course and to offer educational material to fellows in training, a comprehensive curriculum in geriatric nephrology has been developed.

This curriculum was developed in response to the ACGME mandate, and is based on the ACGME six core competencies aimed at an outcomes-based educational experience: patient care, medical knowledge, practice-based learning and improvement, interpersonal communication skills, professionalism and systems-based practice. However, nearly 25% of US institutions with ACGME-accredited nephrology training programs do not have concurrent training programs in geriatrics. As a result, these institutions lack an educational structure for teaching geriatric nephrology to fellows. Hopefully this curriculum will be used as a resource for the teaching of fellows and for practicing nephrologists who would like more in-depth coverage of geriatric issues.

Need for growing awareness & research
Geriatric nephrology has become a recently targeted topic [21] for nephrology training program directors, emphasizing self-evaluation, ongoing quality assurance and program improvement. The ASN has chartered a specific advisory group that is charged with developing the and implementation of specific initiatives in geriatric nephrology including education, research and policy recommendations. These initial initiatives are designed to jump-start a broader awareness of geriatric nephrology issues.

While the ASN has taken steps to address the training shortfalls in geriatric nephrology, there remain significant gaps in research funding specifically aligned to foster knowledge and understanding on the impact of aging on the kidneys. As recently as 2004, an ASN Renal Research Report has given no special priority to geriatric kidney research [22]. This research support is critical.

In summary, larger recognition of the shared areas of interest and philosophy between nephrology and geriatrics is required. This common commitment to the care of the elderly and those with kidney disease, and the recognition of the unique challenges and opportunities inherent to this population can be the basis for significant and lasting improvements in education, research and patient care in geriatric nephrology.

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**Website**

101. American Society of Nephrology www.asnonline.org/education_and_meetings/geriatrics