

Education in CKD—Learning in the 21st Century

“Education is the most powerful weapon which you can use to change the world.”

—Nelson Mandela.

CKD remains a growing economic and social hardship, not only in the United States, but also around the world, and a multitude of providers are summoned to fight for advances. The Centers for Disease Control and Prevention estimates that 1 of 10 U.S. adults has CKD, and its incidence, especially in adults older than 65, is rising.^{1,2} Sadly, the cardiovascular mortality of patients with CKD greatly exceeds that of age-matched controls, and the high mortality and morbidity associated with ESRD have changed little over the past few decades. The costs of providing care to patients with ESRD in the United States, whether treated with dialysis or kidney transplant, are staggering, approximately \$40 billion annually.² New pharmacologic therapies are constantly being investigated as potential panaceas for this worldwide epidemic, but so far they have not arrested the disease process. Until such a remedy is achieved, nephrology caregivers will be grappling with innumerable patients with a chronic and complex disease, facing dialysis or death. We are charged with teaching patients, providers, and our students about CKD in an effort to stem the tide. In this issue of *Advances in Chronic Kidney Disease*, we explore the vast and far-reaching domains of CKD education and its efficacy in advancing our shared cause of reducing the burden of CKD.

At first thought, CKD education likely evokes recollections of conversations with patients regarding preparation for dialysis, access placement, modality type, and treatment for anemia and secondary hyperparathyroidism. Although of central importance, these are just a few points along the spectrum of CKD education. CKD education also encompasses topics ranging from trainee and provider education, adult learning theory, and health literacy. In the 21st century, education modality (ie, how the lesson is delivered) also warrants close attention as we refine our message. In this issue, we focus on 3 distinct targets for CKD education: patients, trainees, and primary-care providers. Soldiers and weapons are needed to fight a war against CKD, and we hope this issue will add both to your arsenal.

The multipronged educational approach initially focuses on instructing the patient. The first patient encounters are critical because a patient's early acknowl-

edgement, acceptance, and understanding of CKD are essential to facilitate active decisions regarding fistula placement, home dialysis, and kidney transplant. Many of our individual teaching styles and methods likely have been acquired from observing our own physician teachers at the bedside and honed by trial and error rather than formal training. In this issue, Porter and colleagues point out in their paper on decision-making in CKD that instruction in educational theory reveals how individual patients process information and make informed choices. Informed patient choices avoid less desirable dialysis situations such as urgent dialysis starts with an intravascular catheter, which are known to increase mortality. They then introduce educational theories such as pedagogy, androgogy, and Prochaska's Stages of Change to augment our ability to gauge our patients' readiness to learn and to choose optimal individual therapies. Fear of dialysis and death lurks beneath our observable conversations and complicates our attempts at encouraging active decision-making. Perhaps understanding how patients learn and make decisions will improve our ability to engage patients in the fight against CKD.

Dageforde and Cavanaugh then analyze the significance of health literacy in our patients. In the haste and enthusiasm to exhaustively educate patients, nephrology providers may overlook the patient's capacity to comprehend the lesson as intended and delivered. Complex decisions are required of patients managing hypertension, diabetes, and planning for renal replacement therapy; therefore, teaching the patients at their individual literacy level becomes essential for effective communication and facilitating decision-making. They review several tools readily available to providers that assess the learning capacity of the patient so that the message can be modified for effective delivery. Rounding out the patient experience, Davis and Zuber provide a portrait of a multidisciplinary CKD clinic dedicated to delivering patient education. They provide an overview of the Medicare Improvement for Patients and Providers Act, which compensates qualified nephrology providers for teaching patients. They also explain how advanced practitioners can join and augment shrinking nephrology ranks to provide appropriate kidney disease instruction with an emphasis on health literacy and actual gained knowledge.

The second focus of this edition centers on engaging students, residents, and fellows to appreciate, support, and join our cause. Parker and colleagues provide compelling statistics regarding our nephrology workforce. Despite an overall increase in nephrology trainees in the United States in the last several years, the projected

numbers of providers needed by 2020 will be difficult to attain. Starting in medical school, the traditional kidney physiology lecture is often our first contact with trainees, and less than positive perceptions during that encounter may forever negatively influence our potential ranks for the future. In an effort to attract more trainees to our specialty, traditional teaching methods should be examined and assessed for their effectiveness in introducing nephrology in a positive and engaging manner. On a note of encouragement, increasing racial, gender, and degree diversity among nephrology providers affords various role models that may help recruit others in the future. Jhaveri postulates that changing the methods we use to instruct trainees at multiple levels may better engage them. He suggests novel educational techniques to teach difficult nephrology concepts as one approach to take back the proverbial classroom, contesting the current negative perceptions of kidney physiology in the first year of medical school. Alternative techniques of teaching and communicating information about nephrology and CKD are necessary to persuade the current generation to carry on our charge. Teaching with excitement, intrigue, innovative educational tools, and modern technology applications are a few means at our disposal. Bhasin and colleagues join the discussion and provide an in-depth review of online educational resources that complement the traditional textbook and journal articles; these are necessary to reach a generation that is constantly "wired in." From online learning modules for trainees, websites dedicated to teaching difficult nephrology concepts or pathology, kidney blogs, and smartphone and tablet applications, one can recognize that electronic media-based education has a definite footprint. Finally, Shariff and colleagues introduce Twitter as an example of how social media can connect educators, trainees, and providers within a specialty. The 140-character tweet as a nephrology educational tool may be in its infancy, but it could potentially grow among our trainees, who are increasingly facile with smartphones and the attendant technology.

This edition concludes with supporting our allies on the front lines, the primary health-care providers, who will almost always be first in contact with CKD patients. Education has reduced, although not yet eliminated, the number of patients presenting on the cusp of dialysis. With several therapies and recommendations to slow the progression of kidney disease, such as blood pressure control, angiotensin converting enzyme inhibitors for proteinuria, cessation of nonsteroidal anti-inflammatory agents, and diabetic control, early nephrology evaluation and therapy implementation are imperative. However, the sobering statistics presented by Parker on the magni-

tudes of patients outpacing the numbers of nephrologists suggest that management of all CKD patients solely by a nephrologist will be impossible in the future. The nephrologist should ideally determine if remediable disease is present early in the course of disease and then return the patient to the primary-care provider for assistance in managing the co-morbidities. We must rely on our primary-care colleagues to recognize CKD early, refer to nephrologists for evaluation, and reintegrate the patient back into the primary-care clinic, even when on dialysis. Narva and colleagues introduce the newly redesigned provider portal on the National Kidney Disease Education Program website that directs primary-care providers to a wealth of online resources: glomerular filtration rate calculators, patient handouts, educational modules, and social media conversations. Nephrology providers would be well served to bookmark this "digital ecosystem" and to share it with our primary-care colleagues. Nunes explores the nephrology–primary care interface and the myriad of opportunities for nephrologists and primary-care providers to interact for the benefit of the patient. She deftly points out that early CKD education is "formidable" because of multiple system barriers, and we must work hard to ensure seamless transition of patient care between our respective office settings.

At the end, nephrology providers find themselves as the leaders in the battle against CKD. It will be our responsibility and privilege to communicate even more effectively with patients, better integrate the primary-care provider into CKD care, and entice trainees to passionately care for a complex patient population after we pass our torches. The English philosopher Herbert Spencer stated, "The great aim of education is not knowledge, but action." We challenge you to take a concept, a tool, an idea, or a strategy from this issue as your weapon, to put it into action, and to advance the front line against CKD.

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References

1. Coresh J, Selvin E, Stevens LA, et al. Prevalence of chronic kidney disease in the United States. *JAMA*. 2007;298(17):2038-2047.
2. U.S. Renal Data Systems. *USRDS 2010 Annual Data Report: Atlas of End-Stage Renal Disease in the United States*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 2011.