

The Chronic Kidney Disease Primary Care Practice

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I am intrigued by the implications of the title of this commentary. “Chronic Kidney Disease” could easily be replaced by “Diabetes” or “Asthma” or “Heart Disease.” Primary care figures prominently in all of these chronic diseases. This presents a tremendous management challenge when primary care providers’ time is being consumed by chronic disease management, while recognition of the importance of primary prevention is at an unprecedented high and is generating calls for even more attention. For example, the number of available and recommended immunizations for all age groups has dramatically multiplied in the last decade after years of incremental growth, and patients must still be seen for acute care with the expectation that access is timely. All the while, primary care providers are ordering tests and making referrals for patients on- and off-site. The practice of primary care is a daunting task, and I know as well as anyone that the environment is one of declining reimbursement for physician services.

Within primary care, we each have our own area of specific interest and expertise, which develops for a variety of reasons such as innate interest, location of practice, patient base, and happenstance. The latter reason stimulated my interest in chronic kidney disease (CKD). In 2000 I agreed to be the primary care representative on the KDOQI task force to develop evidence-based guidelines for CKD. Through the process I became convinced of the importance of this condition and the impact we can make on CKD through appropriate interventions in the primary care setting. In some respects, I became a CKD primary care practitioner. I could not say the same for myself about many other conditions.

Since the KDOQI guidelines were published in 2002, I have urged our primary care community to heighten awareness of CKD, screen individuals at high risk for CKD, and use KDOQI staging for those individuals found to have CKD (see Table 1). Fundamentally, I believe the literature that states early

diagnosis and intervention can slow the progress of CKD, and I strongly urge primary care doctors to adopt those modalities likely to result in improved outcomes.

When I graduated from medical school in 1977, it was almost possible to commit to memory most of the information needed to practice medicine on a daily basis. Now it would be ludicrous to even try. Over 3 decades, advances in research areas such as basic and molecular sciences, genomics, proteomics, and clinical nanomedicine have vastly increased the volume and complexity of the information required to practice medicine.

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Further, until relatively recently, neither the physician nor the patient had virtual access to this expanse of information. Today, the solution to information overload is to utilize the many tools available to manage access to information. Electronic journal resources facilitate evidence-based practice, while the adoption of electronic health records offers coordinated patient information systems. Adoption of the modalities recommended by the KDOQI task force further supports this integrated approach by reducing fragmented specialist care and diffusing expertise among health care providers.

Given the unevenness of our individual expertise, consider the following model. For those of us who commit to a generalist

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Table 1.
Stages of Chronic Kidney Disease: A Clinical Action Plan

Stage	Description	GFR (mL/min/1.73 m ²)	Action*
	At increased risk	>60 (CKD risk factors)	Screening, CVD risk reduction
1	Kidney damage with normal or ↑ GFR	≥90	Diagnosis and treatment, Treatment of comorbid conditions, Slowing progression, CVD risk reduction
2	Kidney damage with mild ↓ GFR	60-89	Estimating progression
3	Moderate ↓ GFR	30-59	Evaluating and treating complications
4	Severe ↓ GFR	15-29	Preparing for kidney replacement therapy
5	Kidney failure	<15 (or dialysis)	Replacement (if uremia present)

*Includes actions from preceding stages.

Abbreviations: CVD, cardiovascular disease

practice, we must prepare to undertake screening and primary prevention activities with our patient population. We need to begin with ourselves—as lifelong learners—to be familiar with evolving evidence-based practice. Using CKD as an example, this means knowing that the KDOQI guidelines exist and being familiar with them. The guidelines should then be incorporated into our practice. We can meet this challenge electronically using such modalities as prompts from our electronic health records to screen our high-risk patients. We need quick access to information on screening methodology that can also be accessed electronically. To be successful, the system of practice itself must be the underpinning to personalized, evidence-based care. As pointed out in the issue brief and by Thomas DuBose in his commentary, the laboratory should report estimated glomerular filtration rate (eGFR) without the physician's specific request. If necessary we should join our nephrology colleagues in advocating for our reference laboratories to report, in all cases, an eGFR. When we do identify a patient with CKD requiring specialty assistance and order a consultation, the response must be timely and standardized, whether from nephrologists, dietitians, or patient educators. If the care is not provided seamlessly, it is frustrating to all involved. And more importantly, the quality of the care diminishes.

The system of practice must be there for the primary care provider, but the provider must know when and how to access it so that recommended aspects of care are not overlooked. For example, the primary care provider, who has interest in and knowledge about CKD and who understands and follows the KDOQI guidelines, may be able to provide the preponderance

of care to these patients. At the other end of the spectrum would be the practice that performs only the “first contact” in primary care—identifying the patient who should be screened for CKD. The patient is then entered into another part of the integrated system. Confidence in the process results in decreased stress on the primary care provider and increased enjoyment in practicing medicine.

What are the key KDOQI guidelines that present the opportunity for early diagnosis and intervention in the CKD patient?^a First is familiarity with risk factors for CKD, including diabetes, hypertension, family history of CKD, and certain racial/ethnic groups including African American, Native American, Hispanic, and Asian and Pacific Islander. Individuals with any of these risk factors should undergo screening for CKD. Second is understanding—even a cursory understanding—of screening guidelines. These guidelines are much less complex—and more physician and patient friendly—than those we have used in the past, and they are evidenced-based. Quite simply, they consist of assessment of eGFR and of proteinuria.

Serum creatinine level, when used alone, is too inaccurate to determine kidney function in an individual patient. Rather, eGFR should be based on a prediction equation. Commonly used is the 4-variable MDRD (Modification of Diet in Renal Disease) equation which factors in serum creatinine, age, gender, and race. The result can be reported out as “African American” or “non African American” if the race is unknown. Age can be determined from the patient identifier. Usually gender can also be determined, but if not, the eGFR should be reported for both male and female. Automatic laboratory reporting of

a CKD as defined by KDOQI is a structural or functional abnormality of the kidney for ≥3 months, as manifested by either kidney damage with or without decreased GFR, or GFR<60 ml/min/1.73m², with or without kidney damage.

eGFR makes this process seamless for the patient and physician.

Initial assessment of proteinuria is as simple as dipstick testing using an untimed spot urine sample. Although a first morning urine sample is preferred, a random specimen is acceptable and does not add a step to the process. Most primary care providers (and patients) are pleased to learn that routine collection of 24-hour urine samples is unnecessary and required only in select circumstances. Patients with a positive dipstick test ($\geq 1+$) should undergo confirmation of proteinuria by a quantitative measurement. An albumin-to-creatinine ratio is the preferred technique in adults. Once again, an untimed spot urine sample can be used. Patients with 2 or more positive quantitative tests temporally spaced by 1 to 2 weeks should be diagnosed with persistent proteinuria.

For patients determined to have CKD, staging is based on the level of kidney function, irrespective of diagnosis, according to the KDOQI classification. Using this classification universally supports communication among providers and their patients, untangling the ambiguities caused by vague terms such as “chronic renal insufficiency” and “chronic renal failure.” Specific interventions in slowing the progression of CKD include the following:

- Lowering low-density lipoprotein (LDL) cholesterol to less than 100 mg/dl
- Lowering blood pressure to less than 130/80 mmHg
- Drug therapy with an Angiotensin-Converting Enzyme (ACE) Inhibitor or an Angiotensin Receptor Blocker (ARB) to slow progression of proteinuria (titrating to reach the target blood pressure and to decrease proteinuria to less than 1 gram)

The preceding interventions are ones the majority of primary care practices would want to carry out within their own settings. All practices should examine their systems and incorporate these interventions. Then, the interested and motivated practices will incorporate some of the remaining guidelines (15 in all) into electronic prompts. Practical examples include annual testing for anemia and evidence of disorders of bone metabolism beginning when the eGFR falls below 60 ml/minute.

With repetition, the primary care physician can become familiar with the broader array of the frequently used guidelines. Given the scope of the CKD problem, it is the hope of the North Carolina Institute of Medicine Task Force on Chronic Kidney Disease that the KDOQI guidelines are among those recognized and implemented regularly in practice. **NCMJ**