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A “Quiet Revolution” in Nephrology

Challenges and Opportunities for Advancing the Treatment of Chronic Kidney Disease

For nearly 40 years, kidney disease has been defined primarily in terms of end-stage renal disease (ESRD), i.e., kidney failure requiring dialysis or kidney transplantation. Recently, however, the disease has been redefined as chronic kidney disease (CKD), a progressive condition that culminates in ESRD and that often can be effectively treated in its earlier stages; prevention is now a realistic possibility. Clinical interventions at earlier stages of CKD can effectively slow, stop, or, in some cases, reverse the progress to ESRD. This development can be characterized as a “quiet revolution” in nephrology.

The possibility of preventing early-stage CKD from developing into kidney failure has presented an opportunity to improve patient outcomes, but it also poses challenges for both practitioners and policymakers. For medicine, CKD represents a challenge in moving from a model focused on treatment for the end stage of disease (i.e., dialysis, kidney transplantation) to a model that balances the relationship between prevention and care. For policy, a key issue is who will pay for the range of care associated with the expanded definition of kidney disease.

There is a need for both practitioners and policymakers to have a better understanding of what leading CKD clinics and practices in the United States are doing to address the challenges of CKD throughout the disease continuum. A 2006–2007 study conducted through the Health Policy and Outcomes Core of the Comprehensive

Key findings:

- Chronic kidney disease (CKD) clinics are relatively new but offer benefits including early preventive treatment, clinical guidelines for patient identification, and the increasing possibility of preemptive kidney transplantation.
- The limitations on reimbursement for CKD preventive care, which typically involves nutritionists, exercise physiologists, dieticians, social workers, and others, are an ongoing challenge.
- Other challenges include late referrals for treatment, limitations on screening, the need to educate both patients and providers, and ongoing racial and ethnic disparities in the CKD population.

Center for Health Disparities—Chronic Kidney Disease (CCHD-CKD) represents an initial step in developing that understanding. The CCHD-CKD is composed of researchers at Charles Drew University, the David Geffen School of Medicine at the University of California at Los Angeles, and the RAND Corporation. The findings from this study highlight the benefits of CKD clinics, including the potential for early treatment, and point to several challenges facing CKD practitioners, such as limitations on reimbursement and the

This research highlight summarizes RAND Health research reported in the following publication:

Rettig RA, Vargas RB, Norris KC, and Nissenson AR, *Chronic Kidney Disease—A Quiet Revolution in Nephrology: Six Case Studies*, Santa Monica, Calif.: RAND Corporation, TR-826-DREW, 2010 (http://www.rand.org/pubs/technical_reports/TR826/).

need for better coordination between primary care physicians (PCPs) and kidney specialists (nephrologists). These findings inform a set of policy and clinical recommendations about how to advance the treatment of CKD in the United States.

The Problem of CKD

The number of individuals in the United States with some stage of CKD is estimated to be nearly 30 million. Each year nearly 500,000 individuals with ESRD undergo dialysis and kidney transplantation at a cost of about \$35 billion, mainly to Medicare but also to private insurers. There are marked disparities in both the incidence and prevalence of ESRD among minority populations, with relatively higher rates of disease among African Americans and, to a lesser extent, Native Americans and Hispanics. Medicare pays for the care of all individuals with a diagnosis of permanent kidney failure who need dialysis or kidney transplantation to avoid death. However, Medicare does not pay for treatment associated with earlier stages of disease.

In 2002, the National Kidney Foundation issued the Kidney Disease Outcomes Quality Initiative (KDOQI) guidelines for the diagnosis and treatment of CKD. These guidelines classify CKD into five progressive stages, as shown in the table. The stages are distinguished from each other in terms of the level of kidney function. Each stage corresponds to the respective ability of the kidneys to filter cellular toxins, which is indicated by a measure known as the estimated glomerular filtration rate (eGFR). The eGFR, although not a marker of definitive diagnosis, is an important tool intended to make the diagnosis of CKD relatively simple for both nephrologists and non-nephrologists (e.g., PCPs, cardiologists, and endocrinologists).

Stages of Chronic Kidney Disease

Stage	
1	Kidney damage, with normal or increased kidney function (i.e., ability to filter cellular toxins)
2	Kidney damage, with mild decreased kidney function
3	Moderate decreased kidney function
4	Severe decreased kidney function
5	Kidney failure (i.e., dialysis needed)

Findings from the Research

In 2006, the CCHD-CKD conducted a series of telephone interviews, which were followed in 2007 by site visits to six CKD clinics or practices:

- the CKD Clinic at Northwestern University, Chicago, Illinois
- Associates in Nephrology (AIN) Chronic Kidney Disease Clinic, Chicago, Illinois

- Mayo Clinic Nephrology, Jacksonville, Florida
- Indiana Medical Associates, Fort Wayne, Indiana
- St. Clair Specialty Physicians, P.C., Detroit, Michigan
- Winthrop University Hospital, Division of Nephrology and Hypertension, Long Island, New York.

The site visits provided an in-depth understanding of how diverse groups of leading nephrology practices around the United States are confronting the challenges of CKD. The cases highlight the benefits of CKD clinics, as well as major issues that need to be addressed if a solid foundation for CKD care is to be established.

Benefits of CKD Clinics

The study highlighted a number of benefits that flow from CKD clinics:

- **The advantages of early treatment.** Most practices favor early intervention. Several clinic directors noted that one of the most dramatic motivators of the need for early treatment was the recognition that some of the patients coming for dialysis today were the sons and daughters of patients from 20 years earlier.
- **Use of clinical practice guidelines.** Guidance on treating CKD is increasingly available through continuously updated clinical practice guidelines. All CKD clinics in the study used guidelines as a means to identify patients, organize practices, and build data systems. The clinics had adapted the guidelines for local and patient-specific purposes.
- **Success in using eGFR for early referrals.** The clinics reported that eGFR was increasingly being used in early referrals: Approximately 60 percent of lab tests now include eGFR.
- **The increasing possibility of preemptive kidney transplantation.** As a result of the CKD clinics and early treatment, transplantation before a patient is placed on dialysis is increasingly possible.

Challenges

The study also identified a number of ongoing challenges for CKD care.

Limitations on reimbursement pose a major barrier to clinic operations. Preventive care for CKD involves a multidisciplinary approach that typically includes nutritionists, exercise physiologists, dietitians, social workers, and others. Such care is critical to reducing costly interventions later on. However, this care is not currently reimbursed by Medicare. All six of the CKD clinics and practices in the case studies reported financial challenges in providing CKD care, especially to support the multidisciplinary staff of nurses and other health professionals needed for a compre-

hensive practice. Practices also noted that the availability of funding from other sources is shrinking.

In general, nephrologists felt that patients were being referred for CKD care too late, although respondents also noted a recent trend toward earlier referrals. Patient referral requires effective working relations between nephrologists and other specialists. All CKD clinics and practices in the study have confronted the need to reach out to PCPs, cardiologists, and endocrinologists to ensure the referral of patients for CKD care before patients need immediate dialysis. Some nephrologists expressed concern that PCPs were reluctant to refer for fear of losing patients. To temper this concern, some academic and integrated CKD clinics sought to co-manage CKD with PCPs. Recently, nephrologists have noticed an increase in the number of early referrals. Some referrals resulted from nephrologists' outreach to specialists in other fields, while others resulted from specialists' recognition of the value of early referrals.

The ability to screen potential CKD patients is limited by weak referral patterns. The ability to screen potential CKD patients varied across clinics but was generally limited by weak referral patterns in health systems and limited public awareness of the need for early-stage care.

More patient and provider education is needed. The need to educate both patients and PCPs was seen by nephrologists as critical, both to increase patient awareness of CKD and to ensure that physicians know the early indications of CKD. All CKD clinics in the study engaged in some educational efforts, such as presentations by nurse educators, community education through local talks and public service announcements, and provider education (e.g., through dinners for PCPs and protocols to assist decisionmaking).

CKD practice organization remains quite varied and in flux. Because CKD clinics are relatively new, there are uncertainties about how best to structure CKD practices in relation to other medical facilities and organizations to ensure continuity of care through all stages of CKD. The practices interviewed organized CKD care in a variety of ways: Some lacked any formal approach to CKD care, others have a CKD emphasis but lacked a clear organization, and still others had established clinics specifically focused on CKD. Some nephrology divisions of large multispecialty group practices had carved out a CKD clinic within that context, while in others the CKD effort was an extension of a clinical base in ESRD.

Health information technology (HIT) systems are generally inadequate. The use of HIT can facilitate CKD care by tracking care across different sites and practices. The six CKD clinics in the case studies varied greatly in the stage of development of their HIT systems. Some have purchased off-the-shelf products, while others have developed their own.

One site received financial assistance from a state and federal government effort to encourage the transition to electronic medical records.

Racial and ethnic disparities persist in the CKD population. Unfortunately, the racial and ethnic disparities prevalent in the ESRD population also appear in the CKD population. In the case studies, sites that served predominantly minority and underserved communities had patients presenting at much younger ages and with more advanced disease. In response, they employed targeted community outreach and educational programs.

Policy Recommendations

On the basis of the telephone interviews and case studies, CCHD-CKD researchers developed a set of policy and clinical recommendations about how to advance the treatment of chronic kidney disease:

- Appropriate reimbursement needs to be available to screen at-risk populations and to enable ongoing care by physicians as CKD is diagnosed and progresses.
- Patient referral requires negotiations between nephrologists and other providers and specialists at the local clinic or practice level. Guidelines for referral need to be developed between nephrology and other professional societies.
- Screening patients for CKD by eGFR should be made obligatory by Medicare and state Medicaid agencies, and private insurers should be strongly encouraged to pay for such screening.
- Both patients and providers need to be educated about the prevalence of CKD, who is at risk, who should be treated, and which treatments are effective in slowing the progression of the disease, as well as treating its complications and those associated with comorbid conditions that are present.
- Available clinical practice guidelines, such as the KDOQI guidelines published by the National Kidney Foundation and the Renal Physicians Association guidelines, need to be integrated into clinical practice.
- Consistent with current health reform efforts, robust HIT is essential to track and evaluate care across various delivery sites.
- Nephrologists and other providers need to be held accountable for the outcomes of their patients.
- Substantial investments in health services research are needed to better understand how to prevent CKD, treat it when it occurs, and carry out these activities efficiently and effectively.

Conclusion

The quiet revolution now occurring in nephrology has shifted attention in clinical and policy realms toward treating CKD

at stages before ESRD is reached. It has given rise, however, to an unresolved tension between the specialty's increasing ability to provide effective preventive care and the persistent barriers to doing so, including inadequate reimbursement, weak working relations between nephrology and other medical specialties, organizational impediments, ineffective clinical

procedures, and a lack of HIT systems. To the extent that the findings of this study identify models of improved access to CKD care for all individuals as well as efforts targeted at minority populations, this work may help eliminate disparities in kidney disease outcomes. Action on CKD policy will equip clinicians with the basic tools to respond to such disparities. ■

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