Presidential Address, American Society of Nephrology

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On behalf of the officers and council of the American Society of Nephrology, our dedicated professional staff, and members of the Program Committee, I welcome you to the 39th annual meeting of the American Society of Nephrology (ASN).

The program that is about to be launched is a result of the talent and perseverance of the outstanding chair of the 2006 Annual Meeting Program Committee, Dr. Lisa Guay-Woodford, and the innovative and conscientious members of the Program Committee. The theme they have chosen for this program conveys recognition of the immense potential for rapid advances in the field of nephrology through translational investigation. The program highlights major advances in biomedical and clinical sciences. Expect a glimpse into the future toward what can be accomplished.

As president, this year it has been my privilege to work very closely with a dedicated and responsible ASN Council and with our extraordinarily devoted professional staff, led by Karen Campbell, our executive director, and Robert Fulcher, chief operating officer. This group is responsible for most of what the society accomplishes during the year. All of us are indebted to the members of our board of advisors, made up of ASN advisory groups and committees for their effort on behalf of the society.

While this has been an exceptional year in many respects, unfortunately, the last year was not without great loss. Several prominent members died this year and include, Mackenzie Walser in November; Louis Tobian, a recipient of the Peters Award in 1990, died in September, and Nancy Gary, founding president of Women in Nephrology, died in May.

Our dear friend and colleague Norman Siegel died suddenly in April. Dr. Siegel served as president of the ASN in 2002 and of the American Society of Pediatric Nephrology in 1989. As president of the ASN, Norm’s contributions resulted in a more effective organization and one that better serves its members. To commemorate his service and example, the ASN Council has designated one of our Career Development Awards in his honor. The first ASN-ASPN Norman Siegel Career Development Grant is awarded this year to a pediatric nephrologist, Fangming Lin.

I refer you to the on-site publication ASN Highlights for a detailed president’s report. Let me review a few of the high points of our activities this year.

Establishment of the Public Policy Board

By establishing the Public Policy Board, our society has not only bolstered advocacy for kidney research but has extended our effort to a broader public policy. The Public Policy Board is under the capable direction of Jonathan Himmelfarb, MD, Chair, and Paul Smedberg, our full-time director of public policy. Board members include Connie Davis, MD; Thomas Hostetter, MD; Eric Neilson, MD; Brian Pereira, MD; and Donald Wesson, MD.

The Public Policy Board is engaged in building a platform for the ASN in the public health arena related to the importance and consequences of kidney disease. The council has endorsed expansion of our public policy efforts and will encourage cooperative advocacy with our sister renal organizations.

Recruitment to Key Positions

This has been an active year for filling key positions. Paul Kimmel began as the new full-time director of education in September. Eric Nielsen and his deputy and associate editors will take over the reins at JASN beginning July 2007, and Stanley Goldfarb will become the new editor of NephSAP beginning July 2007. With the publication of CJASN in January of this year, the ASN now provides a unique compendium of journals covering nephrology from bench to bedside. We thank Bill Couser and Dick Glassock for their visionary and capable leadership of JASN and NephSAP, respectively. These journals have advanced successfully during their term as editor.

Chronic Kidney Disease as a Public Health Threat

Everyone in this audience is aware that we are witness to an epidemic of chronic kidney disease (CKD). There are currently approximately 387,000 patients with end-stage kidney disease in the United States and 1.8 million patients worldwide who...
require dialysis therapy or a transplant for survival (1–4). Forty-two percent of the 100,000 new patients in the United States annually have diabetes mellitus as a cause of their kidney disease, and over 90% of the diabetics have type 2 diabetes (4) (Table 1). The economic burden of this population on health care expenditures is forecast to be staggering. If, for example, the number of dialysis patients in the United States in 2010 reaches 650,000 as predicted, the public expenditure for dialysis care from Medicare alone will increase from $17 to $28 billion per year (4).

Paradoxically, while we are spending a staggering amount on end-stage kidney care, our health care system has not yet developed a comprehensive approach for the care of the 11% of the US population, approximately 19 million people, who have CKD at some stage (5). More important, most of the CKD patients are not aware they have kidney disease, yet they are at risk for developing end-stage kidney disease and/or dying prematurely of one of its major complications, cardiovascular disease (CVD). Unfortunately, no federal agency has yet officially declared that CKD is a public health threat.

What Is a “Public Health Threat”?

Scholeweth et al. (6,7) published an informative and relevant article earlier this year and defined the conditions that must be met for a health problem to be considered a public health issue (Table 2). These include:

1. High burden of disease; “burden” is experienced in terms of mortality and morbidity, quality of life, and cost.
2. Problem is distributed unfairly (i.e., affects minorities and disadvantaged individuals to a greater extent).
3. Evidence exists that upstream preventive strategies could reduce the burden of the condition.
4. Preventive strategies are not yet in place.

CKD clearly meets all criteria, and it is time that it be considered a threat to the health of the public. Although formal programs are not yet in place, the efforts of nephrologists are making a difference.

Recent US Renal Data System data indicate slowing of the annual increase in the incidence of end-stage disease, experienced since the 1980s (7) (Figure 1). The fact that the incident rates seem to be declining is very encouraging, especially since this progress has been made in the absence of a fully integrated national program to slow progression of CKD. Therefore, the potential for achieving current treatment goals in at-risk patients with a more focused approach promises a much greater reduction in incidence in the future.

Disturbingly, the increase in the incidence of ESRD continues to mount in young African Americans (7) (Figure 2). African Americans make up only 13% of the US population yet constitute 32% of patients with ESRD. Although the risk for developing ESRD is at least three-fold higher in African Americans, over 43% of African Americans with kidney failure are not aware of kidney disease until 1 wk before their kidneys fail entirely. Hispanic Americans have a high prevalence of diabetest. Among diabetics, Hispanic patients are six times more likely to develop CKD and to advance to end-stage disease (1,7). Expect the dialysis incidence to grow in this expanding population in the future. Therefore, the burden of this disease is borne disproportionately by certain ethnic groups in which worse outcomes and higher costs are typical.

The incidence of ESRD in older patients is increasing (Figure 3). In addition, as many as 11% of Americans aged 65 or older have moderate to severe CKD (7). With the increase in life expectancy in the United States, the epidemic of both ESRD and CKD will increase.

The ASN was challenged 8 years ago by then-president Thomas Hostetter (8) to raise awareness of CKD through education of physicians, patients, and communities. Another ASN president, Roland Blantz, encouraged a CKD initiative that involved the cooperation of all of the major kidney organizations (9).

<table>
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<tr>
<th>Table 1. Burden of kidney disease in 2006a</th>
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<td>387,000 people in the United States and 1.8 million worldwide have ESRD</td>
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<tr>
<td>100,000 new ESRD patients in the United States annually</td>
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<td>42% have diabetes</td>
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<tr>
<td>90% of these have type 2 diabetes</td>
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<tr>
<td>Health care expenditures</td>
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<tr>
<td>$17 billion in fiscal year 2005 to $28 billion in 2010 (8% of CMS expenditure for health care)</td>
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<tr>
<td>11% of US population has CKD (19 million)</td>
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aCKD, chronic kidney disease; CMS, Centers for Medicare and Medicaid Services.

<table>
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<th>Table 2. Definition of ‘public health threat’ (7)</th>
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<td>1. High burden of disease</td>
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<td>2. Problem distributed unfairly</td>
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<td>3. Evidence that upstream preventive strategies could reduce burden of condition</td>
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<td>4. Preventive strategies not yet in place</td>
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CKD meets all criteria to qualify as public health threat.
A plan of action was conceived to solve some of the problems associated with obtaining the best outcomes for patients with CKD. The committee ranked highly the need to develop and promulgate simple guidelines for distribution to both patients and providers and to devise effective screening strategies.

Things have changed since 2003. The federal government is taking a much more active role in 2006. Specifically, the Centers for Medicare and Medicaid Services (CMS) and the Centers for Disease Control and Prevention are recognizing the need for a quality assurance agenda around CKD. Moreover, several recent studies compel us to be part of a more coordinated effort in the United States.

It is well appreciated that the incidence of ESRD is significantly lower in Europe, compared with the United States, yet the prevalence of CKD is similar. A recent study by Hallan et al. (10) compared the relationship between CKD and the prevalence of ESRD in two well-studied populations in the United States and Norway (Table 3). While the incidence of CKD is essentially identical, the relative risk for progression from stage 3 or 4 CKD to stage 5 kidney disease in Caucasian patients from the United States is almost three-fold higher than in Norwegian patients with CKD, even when the higher prevalence of diabetics in the United States is taken into consideration. Obviously, differences in health care access between Norway and the United States might be a contributor to variations in the prevalence of end-stage disease. Referral to a nephrologist occurs at an earlier juncture, and the management of patients with CKD is better coordinated between the primary and secondary physicians. This results in a higher frequency of erythropoietin administration, higher levels of serum albumin, and better nutrition in the Norwegian with CKD (Table 4).

That there are significant differences in CKD care in this country was substantiated by Boulware et al. (11) through use of a questionnaire directed to primary care physicians and nephrologists in the United States. The study revealed that primary care physicians in this country recognize and recommend specialist care for progressive kidney disease less often than nephrologists and differ significantly in their clinical evaluations and expectations for referral. Fewer than 20% of primary care physicians routinely screen for CKD those diabetics or hypertensives in their practices, and less than one third with CKD receive angiotensin-converting enzyme inhibitors (ACE-

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**Table 3. Comparison of NHANES III and HUNT II Data (United States and Norway) (10)**

| Incidence of CKD in both populations identical | 10.2 versus 11% |
| Risk for progression from stage 3 to 4 kidney disease | three-fold higher in United States |
| Possible explanations for differences in US and Norway ESRD prevalence* | differences in health care access in Norway |
| earlier referral to nephrologists | coordinated CKD care more widely available |


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**Figure 2. Adjusted incident rates of ESRD as a result of diabetes, by age and race/ethnicity: Ages 20 to 39. Incident ESRD patients, adjusted for gender. Source: USRDS, 2006 ADR (http://www.usrds.org/2006/slides/html/02_incid_prev_06_files/frame.htm).**

**Figure 3. Incident and prevalent rates, by age. Incident ESRD patients 75 yr and older at initiation, and December 31 point prevalent ESRD patients, 75 yr and older. Rates adjusted for gender and race. Source: USRDS, 2006 ADR (http://www.usrds.org/2006/slides/html/02_incid_prev_06_files/frame.htm).**
Table 4. CKD is not being recognized or treated by PCP (17)

| Most primary care practices screen <20% of Medicare patients with diabetes for kidney disease. |
| Less than one third of patients diagnosed with CKD get an ACE-I. |
| Patients are referred late to a nephrologist, especially African-American men. |

ACE-I, angiotensin-converting enzyme inhibitor; PCP, primary care physicians.

Table 5. Optimal care of CKD requires coordinated management

| CKD care is highly fragmented; guidelines are too complicated for PCP. |
| Partnership with PCP desirable for early-stage kidney disease; could be managed with little input from nephrologists until late stage 3. |
| Coordinated care requires: heightened public awareness and education, health care system redesign; integrated health care teams, professional education, and clinical guidelines achieve BP 130/80, reduce proteinuria, address cardiovascular risk factors, reduce phosphate and protein consumption, ensure adequate nutrition, treat anemia, education for RRT, vascular access. |

RRT, renal replacement therapy.

I). Late referral to nephrology is common, especially among young African American men (4) (Table 4). These data, taken together, suggest that we have a serious problem with quality of care for CKD in the United States and provide evidence for meeting the fourth requirement for a public health crisis; that is, preventive strategies are not in place. Unfortunately, however, for the population at risk, with a nephrology workforce of only 5000 specialists in the United States, direct involvement of nephrologists early in the course of treatment for CKD is untenable.

If the health care system in this country is to blame, in part, for poor outcomes of patients with CKD, should we not advocate for funding from CMS and private payers for wide application of therapy specifically designed to impede progression? Several economic analyses of existing databases suggest that significant savings for the health care system are possible. Alexander et al. (12) estimated the cost savings for specific therapy, after accounting for drug costs, of $3522 per patient over 3 years. Trivedi et al. (13) analyzed the impact of availability of ACE-I or angiotensin receptor blocker (ARB), assuming the rate of decline in GFR could be slowed by as little as 10% in all patients with estimated GFR of <60 ml/min. The cumulative direct health care savings by postponing dialysis could be as astonishing as $18.6 billion dollars over a 10-yr span. Rosen’s (14) analysis projected the cost savings for full Medicare coverage of ACE-I for beneficiaries under Medicare Part D. If out-of-pocket expenses are completely eliminated, Medicare could save more than $1600 per beneficiary per year. The findings suggest we should advocate for wider application of proven pharmacologic intervention in CKD. In other words, this country needs a policy that values health care and is based on the long-term benefits to the society.

The optimal care of patients with CKD will require coordinated management (Table 5). Certainly, it is fair to say that, at present, CKD care is highly fragmented (15,16). Existing clinical guidelines for CKD are simply too complex to be accomplished in the limited office encounter of the primary care physician. If we agree that we should work with primary care physicians on CKD, then we as nephrologists will need to develop partnerships with primary care physicians in our own communities. Ideally, patients could be identified in the earlier stages of kidney disease and managed by primary care physicians and non-nephrology specialists with little input from individual nephrologists until later in stage 3 kidney disease (15,17–19).

Levin (20) emphasized that the ability to deliver optimal care must be coupled with heightened public awareness and education and health care system redesign. Obviously, care plans for primary care physicians should include clinical strategies that are well known to nephrologists (20,21) (Table 5).

**CKD Initiative**

To respond to the challenges of CKD, a special meeting of the presidents and presidents-elect of the major kidney societies was held in Chicago on August 28, 2006, at the invitation of the Renal Physicians Association (RPA). All those represented agreed that we need to formulate a simple, unified message that should resonate with the public and primary care physicians. It was further agreed that to serve the public health, we have the opportunity to develop a cooperative plan that transcends societal interests by focusing on a broader public health agenda. We agreed we need to work together to develop a consistent theme when it comes to dealing with Congress, federal agencies, and primary care societies and in our messages to the public.

It is widely appreciated by this audience that CKD is a major risk factor for the development of progressive CVD (22–26) (Figure 4). This figure shows the risks for CVD at various levels of kidney function. Actually, as you know, most patients with early-stage kidney disease do not reach the point of dialysis because of death from CVD (22,24,27).

Perhaps a message that emphasizes the major role that kidney disease plays in increasing the risk for death from CVD may resonate more effectively with both primary care physicians and with federal funding agencies (26). Such an approach could place CKD into the framework of the overall public health agenda (Table 6). To have a greater impact on the CKD–CVD connection, we will need additional data.

Coca et al. (27) recently explored large, randomized, con-
trolled clinical trials on congestive heart failure and acute myo-
cardial infarction published from 1985 through 2005. This anal-
ysis showed that 60% of major cardiovascular trials exclude
patients with kidney disease and 90% do not provide adequate
information on kidney function in enrolled patients. The VAL-
IANT trial showed that use of aspirin, β blockers, statins, or
coronary revascularization was much lower in patients with CKD
ACC/AHA Clinical Guidelines discourage ACE-I/ARB
therapy for patients with CKD–CVD

Table 7. State of CKD–CVD clinical trials

<table>
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<th>Clinical Trials</th>
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<tr>
<td>60% of major CVD clinical trials exclude patients with kidney disease (27)</td>
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<tr>
<td>90% provide inadequate information on kidney function in enrolled patients</td>
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<tr>
<td>VALIANT Trial: Use of aspirin, β blockers, statins, or coronary revascularization was much lower in patients with CKD</td>
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<tr>
<td>ACC/AHA Clinical Guidelines discourage ACE-I/ARB therapy for patients with CKD–CVD</td>
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*ACC, American College of Cardiology; AHA, American Heart Association; ARB, angiotensin receptor blocker.*

Clinical guidelines published by the American College of Cardiology/American Heart Association actually discourage ACE-I/ARB therapy for patients with CKD and CVD.

Emphasize CKD as multiplier of CVD
kidney plays major role in acceleration of CVD extend broader strategy to diabetes, high blood pressure, families of patients with kidney disease Place CKD within framework of public health agenda

Figure 4. Chronic kidney disease is a multiplier of cardiovascular disease. Reprinted from Go et al. (23), with permission.

Table 6. CKD–CVD connection: Time for a broader strategy

<table>
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<th>Connection</th>
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<tr>
<td>Emphasize CKD as multiplier of CVD</td>
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<td>Place CKD within framework of public health agenda</td>
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Figure 5 summarizes current knowledge of the various pathways involved in the pathogenesis of CKD. If the goal is to stabilize or improve kidney function, additional research will be needed on regression and remission of fibrosis. Several new concepts and potential therapeutic targets, some of which are highlighted on this slide, will be reviewed in detail in presentations at this meeting.

If we align clinical and basic research objectives in this area, we may stimulate new research funding opportunities. Research programs that might be jointly funded by the National Institute of Diabetes and Digestive and Kidney Diseases and the National Heart, Lung, and Blood Institute, for example, were encouraged by introduction of the National Institutes of Health Reform Bill, encouraging cooperative funding by institutes.

Let me conclude by summarizing some of the suggestions made today.

Table 8. Research funding strategies around link of CKD–CVD

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<th>Strategies</th>
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<tr>
<td>Need therapeutic strategies beyond ACE-I and ARB</td>
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<tr>
<td>Pathogenesis of accelerated vascular disease of CKD has not been elucidated</td>
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<tr>
<td>Genetic and environmental risk factors</td>
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<tr>
<td>Biomarkers to identify highest risk patients</td>
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<tr>
<td>Specific therapy for repression of fibrosis</td>
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Recommendations/Summary:
1. Shift advocacy from detection and prevention of CKD alone to CKD within the framework of CVD and diabetes (i.e., as a public health issue).
2. That we align public health advocacy and professional education opportunities within this broader framework.
3. Join with all kidney societies and members to develop a true partnership with primary care physicians to advance the concept of coordinated care.
4. Advocate for the incorporation of care plans for CKD into existing CVD and diabetes clinical guidelines. To be effective, we should partner with the National Kidney Foundation, RPA, American Heart Association, and American Diabetes Association to develop guidelines suitable for primary care physicians.
5. Advocate for application of quality assurance measures for CKD care by CMS and other payers.
6. Encourage collaboration and resource sharing by the Centers for Disease Control and Prevention and National Kidney Disease Education Program (for enhanced surveillance and education, respectively).
7. Work with the National Kidney Disease Education Program to focus on educational approaches to reduce CKD disease burden in ethnic minorities.
8. Direct the National Institute of Diabetes and Digestive and Kidney Diseases to raise the priority for funding of needed basic and clinical research in kidney disease. We can bolster advocacy for investigator-initiated research by stressing the significant return on investment by the National Institutes of Health in translational studies of fundamental measurements of glomerular hemodynamics that resulted in substantive advances in the care of CKD patients.
9. Participate in organization of a multisociety initiative on World Kidney Day, March 8, 2007. For 2007, the ASN will participate in simultaneous congressional lobbying events with the National Kidney Foundation and RPA.
10. Develop the educational resources needed by our members to provide instructive presentations on the coordinated management of CKD and CVD at the level of local medical societies and hospital grand rounds. The ASN will develop a set of instructional slides for use by our members in their own communities.

Conclusion
A great deal of progress on the understanding of the pathogenesis of CKD has been made in a short time, and limited interventional strategy has been successful, but we have not yet successfully projected the view that CKD is a public health issue, and we have not offered a method to approach CKD in the population at risk. I have suggested today that it is time for us to take ownership of the CKD problem by changing our focus.

About Change
“It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change.”
—Charles Darwin
Acknowledgments

I owe a debt of gratitude to my colleagues at Wake Forest in Nephrology, especially Barry Freedman and Mike Rocco for their encouragement, but especially for their collegiality and support. In addition, I thank Tom Hostetter for assistance. I acknowledge the unwavering support of my wife, Linda, during this year not only to me personally but for her support of the ASN.

Disclosures

None.

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Group—Developed in collaboration with the National Kidney Foundation. Circulation 114: 1083–1087, 2006


