

ASN Presidential Address 2014: Moving Past Nephrology's Midlife Crisis

Sharon M. Moe

Indiana University School of Medicine, Indiana University Health, Roudebush Veterans Administration Medical Center, Indianapolis, Indiana

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Building New Paths to Kidney Health represents the reality of what we must do to reinvigorate our specialty for the next generation. We need to work together to overcome many of the challenges we face as caregivers, scientists, and educators committed to people with kidney disease. We need to build new paths to kidney health. We need to diagnose early to develop preventive strategies so we can offer hope at screenings, not fear. We need to identify those at highest risk for progression to kidney failure so we target the right patients for clinical trials and ensure success of our innovative therapies. We need to understand how even mild episodes of AKI can accelerate progression. We need to recognize that dialysis, while lifesaving, does not confer a high quality of life. We need to determine how everyone can have a kidney transplant without an agonizing wait. We need to improve care delivery across the spectrum of our patients' needs, with special attention at emotionally trying times, such as at dialysis initiation and a patient's end of life. The challenges can seem overwhelming.

MOVING FORWARD

It is time to stop the negativity and get to work. It is time to harness the brilliant minds at this meeting to build new paths to kidney health—not kidney disease, but kidney health! It is time to put the N back in nephrology. We must reinvigorate the workforce for tomorrow, reintroduce nephrology across the spectrum of health care delivery, increase the importance of the kidney to stakeholders, and improve

care through innovation in kidney research. We must embrace the physiology, continuity of care, patient relationships, and excitement that attracted each of us to nephrology.

Nephrology fellow applicants often remind us why nephrology is special. Nephrologists are great clinicians and scientists attempting to master a complicated organ with an intriguing physiology that regulates so many other organ systems. Nephrology is a pioneer. We led the way in developing and implementing quality metrics for patient care while containing costs. We have harnessed our unique patient relationships and continuity of care to implement novel methods of care delivery. We not only provide specialist care, but we have primary care relationships with our patients and their families and coordinate their care, a balance other specialties are only beginning to learn.

We help patients make life-and-death decisions. We deliver team-based care, a new standard of care other specialties are turning toward. We have the opportunity and responsibility to reduce disparities in access to care. We lead in new discoveries. Nearly 4000 abstracts are being presented at this meeting—scientific knowledge that can make a real difference to our patients. At Kidney Week, 36% of attendees present scientific abstracts, more than presented at the annual meetings of the American Urologic Association and American Society of Clinical Oncology combined.

Nephrology is 50 years old, and our specialty has made enormous strides in its first half-century. However, nephrology is facing the equivalent of a midlife crisis, and I am afraid a red sports car is not the

solution. It is time to move forward with a clear vision for a positive future. Let us explore this path to achieve greatness. Together, we must lead the way to kidney health and put the N back in nephrology.

REINVIGORATING THE WORKFORCE FOR TOMORROW

The number of patients with kidney disease is growing worldwide; however, in many countries, interest in nephrology careers has waned. The American Society of Nephrology (ASN) commissioned a series of workforce reports, the first of which was released and is available on ASN's website (<http://www.asn-online.org/workforce/>). This report used existing data and surveys of trainees. We have also commissioned a more extensive report that evaluates nephrology in the context of changing health care delivery models and job opportunities. The last workforce report was completed in 1997. At that time, we anticipated a shortage of nephrologists, and the number of nephrology programs increased. As a result, the number

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Correspondence: Dr. Sharon M. Moe, Stuart A. Kleit Professor of Medicine, Professor of Anatomy & Cell Biology, Director, Division of Nephrology, Immediate Past-President, American Society of Nephrology, Indiana University School of Medicine, 950 West Walnut Street, R2-202, Indianapolis, IN 46202. Email: smoe@iupui.edu

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of fellows increased. During the last 3 years, several programs have not filled, raising concerns. On the basis of surveys from fellows, there are a number of reasons for declining interest.

The ASN Workforce Committee has been working tirelessly to develop programs to enthuse and inspire nephrology's next generation. Engaging nephrology's future is a major priority, and ASN invests nearly \$4 million annually (Figure 1). At the medical school level, ASN created the Kidney MAPS (Mentoring and Assessment Program for Students) program, where students screen at-risk patients for kidney disease. ASN expanded its investment in Kidney TREKS (Tutored Research and Education for Students), a week-long program at the Mount Desert Island Biologic Laboratory, where students learn the fundamentals and excitement of renal physiology. ASN expanded the Kidney STARS (Students and Residents at Kidney Week) program—enhancing the Kidney Week experience for more than 200 medical students, graduate students, and residents—and awarded travel grants to nearly 150 fellows from across the globe. There are also approximately 1500 posters presented by nephrology trainees at Kidney Week.

In 2012, ASN established the ASN Foundation for Kidney Research to endow fellowship and career development grants

in nephrology research. In 3 years, we have raised 19 million of the 20 million required to endow the Ben J. Lipps Research Fellowship Program, which will help build many of the new paths to kidney health.

ASN is improving the diversity of the specialty and ensuring a more representative workforce. The society's Diversity and Inclusion Work Group has moved quickly to help ASN increase opportunities for the society, and nephrology, to become more diverse. ASN is pleased to announce it will fund a Robert Wood Johnson Harold Amos Scholar. This program supports trainees from historically disadvantaged backgrounds to foster individuals with outstanding careers in academic medicine.

We need to develop those who will educate our future workforce. This year, as a result of a contribution from former ASN President Dr. Bill Bennett and his wife, Sandra, ASN awarded the first William and Sandra Bennett Clinical Educator Scholarship to support exciting work developing novel nephrology teaching strategies.

Many of us were first attracted to nephrology because of the intriguing physiology. However, medical school curricula and the way individuals learn have changed, but we have not responded and changed the way we teach kidney physiology. To help address this, ASN has launched the ASN Innovations in Kidney Education Contest.

This contest invites the kidney community to develop innovative tools to teach how kidney physiology relates to human health. Interactive tools can excite medical students' and residents' interest in nephrology and reach students worldwide. This is a real contest, with prizes. Let us make the kidney rock through apps, videos, and interactive games that convey the excitement we all remember when learning kidney physiology.

REINTRODUCING NEPHROLOGY INTO THE CONTINUUM OF HEALTH CARE DELIVERY

The second pathway to kidney health is ensuring that nephrology and the care we provide is under our control. Reinvigorating our specialty means practicing across the spectrum of care—from dialysis unit to hospital to clinic and beyond—and applying our talents across this spectrum to improve our patients' lives and reduce redundancy and costs. Patients with kidney disease go from clinic to hospital to dialysis unit to transplant unit. It is a confusing and complex pathway not unlike a game of Pac-Man where many obstacles are encountered. Residents interested in nephrology believe the ability of nephrologists to see patients in multiple care venues is a positive aspect of the specialty. We must embrace this continuity and guide patients across this care spectrum and help them avoid these barriers to health. Otherwise, the specialty will splinter, and our ability to deliver the highest quality care will erode.

This fragmentation has already occurred in some areas. Critical care doctors, not nephrologists, perform continuous venovenous hemofiltration in some hospitals. Radiologists do biopsies, and hospitalists consult. Fellows no longer work up transplant recipients in some centers. That narrows nephrology to dialysis. Dialysis is, and will always be, the foundation of our specialty. But if we limit our care to only that aspect of nephrology, we cannot expect to improve the patient experience or attract the next generation to our field.

To ensure nephrology's leadership role in patient care, we must engage other

Early-Career Nephrologists and Scientists

Career Development Grants Program
Harold Amos Medical Faculty Development Program
Bennett Clinical Scholars Program

Fellows

Ben J. Lipps Research Fellowship Program
William E. Mitch International Scholars Program

Students, Residents, and PhD Candidates

Kidney STARS (Students and Residents at Kidney Week)

Medical Students and Graduate Students

Student Scholar Grants Program
Kidney TREKS (Tutored Research and Education for Students)
Kidney MAPS (Mentoring and Assessment Program for Students)

Figure 1. ASN programs to increase interest in nephrology. Each year, ASN commits >\$4 million to the nephrology workforce of the future.

health care providers and administrative leaders or become those leaders. ASN actively collaborates with other major health care organizations within and outside of nephrology and around the globe. We also recently began discussions with hospital associations to ensure they recognize nephrology's value to care and to their bottom line. Many countries have mastered health care delivery far better than the United States. But, in the last few years, many United States hospitals and insurance providers have finally begun to recognize the importance of this continuity of care and population health management.

Population health management means assuming accountability for the quality of care and cost of care provided to a defined group of people. Kidney care providers must assume this responsibility. Physicians must lead the team of caregivers rather than health care systems and payers leading us. If we do not assume this responsibility, our profession will become more fragmented. Nephrology has the opportunity to improve the patient experience, effect population health, and reduce costs.

Although most of the focus on the costs of delivering optimal health care for a population is focused on the cost of procedures and tests, this only contributes 10% to the overall costs of population health (Figure 2).¹ We must think about genetic differences and social and environmental factors. We must think about health care delivery from the patient perspective. This requires recognizing and addressing health disparities and fundamental differences in how patients access care, believe in care, and respond to care. Minority populations around the world have an increased prevalence of kidney disease, and many progress more rapidly to the need for dialysis. We are just unraveling the genetic and social determinants of these clinical observations. To improve kidney health, we must improve population health, and that means recognizing these differences and appropriately targeting our interventions. At Kidney Week we come together to examine how we can improve all of the factors shown in Figure 2 to improve the population health of individuals with

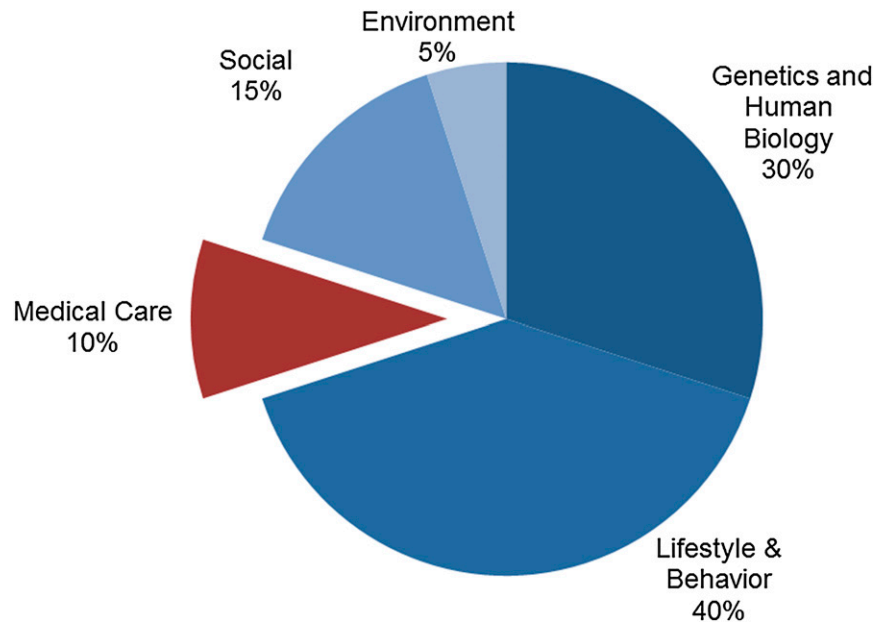


Figure 2. Relative contribution of factors to overall costs of population health. Population health is defined as caring for a population of patients to ensure their health. Most of the focus has been on the actual medical care, but this represents only 10% of overall costs. To truly improve the health of the population with kidney disease, we must also focus on the other pieces of the pie.

kidney disease. Our goal moving forward should be to ensure kidney health for all populations.

INCREASING THE IMPORTANCE OF THE KIDNEY TO STAKEHOLDERS

The kidney is an underappreciated organ, which is why it needs a facelift as part of the treatment for our midlife crisis. Most clinical trials lump all patients with CKD into the same bucket. Better characterization of the underlying disease state will allow stratification of individuals enrolled in clinical trials and lead to new therapies. In fact, we should not chastise ourselves for negative clinical trials when we remember all the different diseases we are actually treating. There are at least 100 causes of kidney disease; it would be naive to think they have the same pathogenesis, progression, and prognosis. Even diabetic nephropathy can have disparate features across populations. Recent studies finding genetic linkages with the APOL-1 gene and risk

of different kidney diseases is one example.² There are global differences in gene prevalence, the gene alters the course in multiple diseases, and it is influenced by other genes. Understanding this complexity and others like it is the key to curing kidney disease.

If we define kidney disease only or predominately by eGFR, we risk placing everyone in the same bucket and losing the disease specificity that will enable targeted therapies. Kidney professionals understand that premise, but other health care providers and health care systems do not. We need to make them understand. We need to communicate that kidney disease is the result of different diseases with multiple etiologies. Too often, I meet with politicians who think that if we just cure diabetes, we would cure all kidney diseases. The kidney is often considered a side effect of other organ systems rather than the primary cause of systemic problems. Lumping all kidney diseases into one bucket also adversely affects a patient's perception of kidney disease. Most patients immediately assume that a diagnosis of kidney disease means a life on

dialysis. That fear can lead to denial and prevent individuals from seeking appropriate care.

How do we raise awareness about kidney diseases? It starts right now in this room with each of us. We need to talk positively about kidney diseases, explain there are many causes. We need to give people hope and ask them to talk to neighbors, hospital administrators, and politicians. In addition, raising awareness of the complexity and types of kidney diseases will better position nephrology in the health care world, critical to advance research and innovation.

INNOVATION IN KIDNEY CARE REQUIRES INNOVATION IN KIDNEY RESEARCH

Research and innovation are essential to our future. The only way we will cure kidney disease is with targeted therapeutics. Disease personalization in predicting response to treatments is critical. Think about the advances in cancer treatment gained from knowledge of specific receptors on tumor cells. The new cystic fibrosis drug only works in patients with a specific genotype, and it is one disease. We must look at the patient and characterize the variety of phenotypes. We understand a lot about kidney diseases, but we have not taken it to the next level to individualize therapies and open those new pathways to health. We must build collaborative networks, obtain biopsies, and share tissue and DNA. We must encourage innovation, not discourage novel ideas. Sometimes, I think we are our own worst enemies. I have seen what is written on grant and manuscript reviews, and the negativity can be obstructive. The attention to detail that makes us good nephrologists sometimes clouds our ability to see the potential of our peers' work.

Across the globe, health care delivery systems are vastly different; however, they have one thing in common: health care costs need to be reduced. Most cost of care for kidney patients is for dialysis. In the United States, where the federal government pays for dialysis, 7% of the Medicare program's total budget is directed to just 1% of the beneficiaries who receive

dialysis. Worldwide, preventing patients from ever reaching dialysis is critically important for the patient and for society. It is a vicious cycle: more money spent on health care means less money for research, but less research in kidney disease means more patients will progress to need the expensive therapy of dialysis.

The amount of money spent on care in the Medicare dialysis program is \$34 billion annually, greater than the entire National Institutes of Health (NIH) budget, the world's largest funder of medical research. The budget of the National Institute of Diabetes and Digestive and Kidney Diseases, the predominant funder of kidney research in the United States, is only \$1.8 billion—and that amount has actually decreased since 2010 (Figure 3). If we want to reduce health care costs, we need more money for research, especially in kidney disease where innovation has been stagnant.

Last year, ASN launched an aggressive research advocacy strategy, highlighting the number of patients with kidney disease versus the percent of NIH funding for kidney disease. The ASN Research Advocacy Committee estimated that only \$30 is spent in NIH research annually for each patient with CKD in the United States. This is in sharp contrast with >\$500 per person with cancer and

>\$2500 per person afflicted with HIV. It is therefore not surprising that most major health care advances over the last few years have come in cancer and HIV areas.^{3–5} Supporting ASN's research strategy, Representative Tom Marino has requested a report from the US Government Accountability Office assessing the amount that we spend on kidney care versus the amount we spend on research. Such formal validated data can help raise awareness about the importance of research in containing costs.

Only through united, collaborative advocacy efforts will our community succeed in building the research funding required to transform the lives of people with kidney disease. This is the message you have to convey to those who make financial decisions for your government, to your friends and your family, and all of those who vote. Our job as scientists and clinicians is to figure out how we can keep people off dialysis whether through prevention or transplantation. We need research to make this possible. We need strategies to slow progression, increase the transplant donor pool, and keep transplanted kidneys functioning. The ASN and the US Food and Drug Administration partnered in 2012 to establish the Kidney Health Initiative (KHI). KHI is creating a collaborative environment

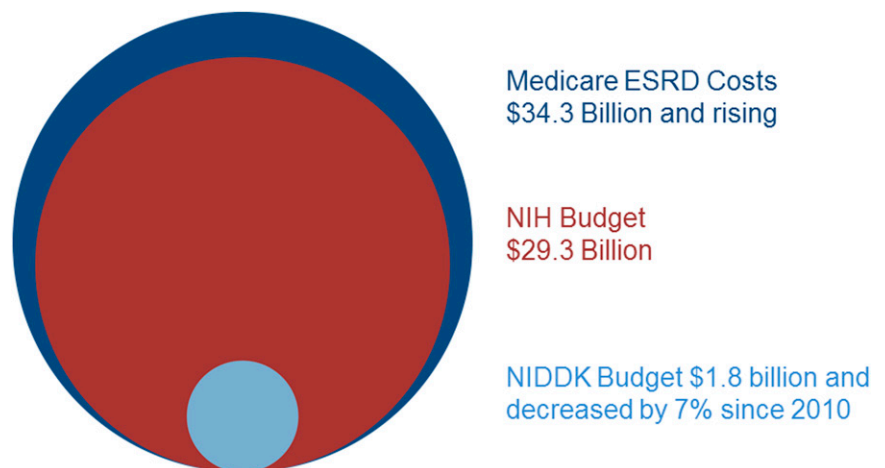


Figure 3. NIH kidney funding compared with costs of ESRD care. The costs to care for patients on dialysis and with a functioning kidney allograft are >\$34 billion annually (dark blue circle). By comparison, this is greater than the entire annual NIH budget of \$29.3 billion in 2014 (red circle). The National Institutes of Digestive, Diabetes, and Kidney Disease (NIDDK) budget (light blue circle) is a small proportion of the NIH budget.³

with multiple stakeholders from around the globe shown on this slide. The goal is to encourage faster adoption of innovative and safe therapies. But we have to discover those therapies. We need innovation, and we need it now.

Think about the excitement that started our profession 50 years ago: the ability to save someone's life with dialysis therapy. Unfortunately, we have not advanced dialysis to truly be renal replacement therapy. We know patients want therapies that help them to retain a quality of life and remain productive. They want a cure. If you consider the therapeutic advances in other areas of medicine in just the last 10 years, nephrology pales by comparison. ASN has been working with multiple government agencies to identify new funding to re-energize our field. This year, I testified before the House Science, Space and Technology Subcommittee about the need for research and innovation, specifically how a prize competition might work in kidney disease. In this case, the prize is a pot of money given when a metric is reached rather than given to conduct the studies and possibly achieve a metric, the usual grant format. Testifying with me was the vice president of the The XPrize Foundation, a not-for-profit organization.

They have spurred countless innovations through prize competitions, from commercial moon flights to new devices to make oil spill clean ups faster and more efficient. Clean-up technologies had not changed in 30 years until a prize competition. Such a competition may be just what is needed to spur innovation in nephrology.

CONCLUSION

Bold advances can happen with kidney diseases, and ASN is dedicated to achieving this vision. I am completely confident the knowledge and technology exists. All of you here today have produced the necessary building blocks. So together, let us collaborate, think big, and act boldly. Together, we can make a difference. Together, we can build new paths to kidney health.

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DISCLOSURES

None.

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