

Putting renal in recovery

American Society of Nephrology President Bruce A Molitoris MD urges a focus on generating more interest in and raising the global consciousness of kidney disease...



We must work together, across borders, to attract the best and the brightest to nephrology to maximise our ability to prevent kidney disease and provide high-quality care for kidney patients.

The incidence and prevalence of kidney disease are increasing worldwide at an alarming rate, yet public awareness remains low and the exact number of people with kidney disease remains undetermined and lacking consensus. Everyone is at risk. Hypertension, diabetes, obesity, ageing and injury increase the chance of developing kidney disease. Until the public, lawmakers and health professionals are fully aware of this health threat, kidney treatments will not advance, and dialysis will remain “one of medicine’s fastest growing and costly markets”.¹

Limited public recognition and insufficient governmental and commercial funding have hampered the ability of health professionals, scientists, and engineers to advance approaches needed to study, prevent, diagnose, quantify severity of injury and treat kidney diseases. Cohesive messaging by the kidney community would help raise awareness. For instance, if members were to collectively determine and agree upon the number of people who have kidney disease, we would much more effectively communicate the burden, be better able to argue for more research funding, attract the best and brightest healthcare workers, and develop tools to assess the progression of the disease.

Lack of awareness is especially evident in the case of acute kidney injury (AKI). A recent meta-analysis indicated the global incidence of AKI is over 20% in all hospitalised patients, over 30% in children and in the intensive care unit (ICU). Mortality rates for adult patients with AKI exceeds 20% overall and 30% in the ICU.² Severity of AKI correlates with mortality during the hospital stay and for the next year. Acute kidney injury also leads to chronic kidney disease (CKD), and accelerates the progression to end-stage kidney disease (ESKD) requiring renal replacement therapies such as dialysis or transplantation.

The professionals who care for kidney patients represent an increasingly diverse group; they have made nephrology more dynamic and helped the specialty address ongoing and unacceptable health dis-

parities in kidney disease. Development and refinement of dialysis and transplantation represent remarkable successes in clinical care. This success, however, has focused much of the community’s attention on a small select population of patients. Moving forward, we need to bring the same effort to preventing kidney injury and kidney disease and to improving care and finding cures.

Kidney disease is likely most treatable early in its course, yet our ability to detect it early is quite limited. Increases in serum creatinine, the present indicator of overall kidney function, do not occur until approximately 50% of kidney function has been lost. Furthermore, equations used to estimate glomerular filtration rate (GFR) are of no value until again half of the patient’s kidney function has been lost. Can you imagine if we had to wait until 50% of heart function was lost? Proteinuria, another sign of kidney dysfunction, does not occur in diabetes until progressive kidney disease is well under way. Poor quantification of kidney function also makes it challenging to determine the correct dose of a drug that is cleared by the kidney, often resulting in over or under treatment. We also have no way to quantify and follow ongoing kidney fibrosis, or scarring, a process known to be associated with progressive kidney failure.

Greatly hampering kidney disease detection and quantification, these limitations impair our ability to define sensitive surrogate endpoints that would allow for successful clinical studies early in the disease process. All too often, clinical studies focus on patients with late stage kidney disease who already possess a marked disease burden and may be less likely to respond to treatment.

The lack of awareness and funding that make it difficult to detect and treat kidney disease also make it difficult to captivate the next generation of professionals who might advance cures. Research, innovation and therapeutic advances have brought incredible excitement to many other areas of medi-

cine, such as cardiology, oncology, infectious disease and rheumatology. Medical students in many countries – including Australia, Germany, and the United States, choose other specialties over nephrology.³ The situation is particularly bad in the United States, where medical student interest in nephrology is at an all-time low. We must work together, across borders, to attract the best and the brightest to nephrology to maximise our ability to prevent kidney disease and provide high-quality care for kidney patients. And we must enhance the learning experience by instituting innovations in undergraduate and graduate medical education that appeal to today's students.⁴

The US government is investing less in medical research. Given its prevalence and financial burdens, kidney disease in the United States is underfunded, and recent automatic budget cuts instituted by the US government reduced overall funding for the National Institutes of Health by \$1.6bn. Many countries such as China and Korea are increasing their commitment to funding medical and scientific research. On a more positive note, The London Acute Kidney Injury Network is a clinical network composed of healthcare professionals and organisations around London that has produced several downloadable clinical manuals on AKI and sponsored educational meetings and awareness events for physicians and patients. A parallel programme started by the Royal College of Physicians of Edinburgh and NHS Kidney Care has undertaken a national campaign to alert physicians to AKI. Specifically, a free AKI mobile App has been developed to assist in the care of patients with AKI.⁵ These important endeavours may increase awareness of kidney health and disease among physicians, patients and their families, the rest of the public, other health professionals, and policymakers.

Biotechnology, medical device and pharmaceutical industries have identified unmet needs in developing drugs, devices, and biologics for patients with acute kidney injury and chronic kidney disease. As a result, these commercial entities are starting to make major investments in kidney disease. This is particularly exciting as translation of basic information into clinically useful technology and therapies requires commercial commitment. Advances in these areas will attract more interest in nephrology careers.

In summary, tremendous scientific and medical progress in other areas of medicine has created new opportunities to begin to explore pathways for preventing, diagnosing and treating kidney disease. All organisations that focus on kidney health and disease must commit to increasing awareness and investment in medical research as primary goals. Meeting

these goals will help kidney organisations further their aim to improve the lives of current and future patients.

¹ Parikh CR et al. The Dialysis Business: Stakes in Kidneys, *The Economist*, 15th April 2010

² Susantitaphong P et al. Worldwide Incidence of Acute Kidney Injury: A Meta-Analysis, *CJASN*, In Press

³ Parker et al. Recruiting the Next Generation of Nephrologists, *Advances in Chronic Kidney Disease*, in press

⁴ Jhaveri K et al. Case-Based Debates: An Innovative Teaching Tool in Nephrology Education *Ren Fail* 2012;34(8):1043-5

⁵ Acute Kidney Injury App, Royal College of Physicians of Edinburgh www.rcpe.ac.uk/clinical-standards/acute-kidney-injury-app.php (accessed 5th August 2013)

National Institute of Diabetes and Digestive and Kidney Diseases

Over 10% – around 20 million people – over the age of 20 in the US suffer with Chronic Kidney Disease (CKD).¹ The burden on health care services is vast, costing approximately \$57.5bn per year in 2008.² Kidney disease is steadfastly becoming a huge public health problem.

In the US, the government agency responsible for promoting, advancing and supporting kidney research is the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), of the National Institutes for Health.

The NIDDK supports research into nephrological diseases, working with universities and research institutes to assist government scientists in their research endeavours. It also provides outreach programmes to ensure dissemination of science-based information to patients and families.³

Raising awareness and educating the public about the risk factors and the symptoms is a vital part of improving the future outcome for renal patients. To ensure this, in 2000 the NIDDK launched the National Kidney Disease Education Programme (NKDEP), which not only promotes CKD but also serves to educate sufferers about the disease and also enable healthcare professionals to identify potential CKD patients.

Renal disease is an ongoing problem that requires significant support and funding in the future if research is to continue and strides made in advancing treatment.

¹ www.cdc.gov/diabetes/pubs/factsheets/kidney.htm

² <http://nkdep.nih.gov/about-nkdep.shtml>

³ www.nih.gov/about/almanac/organization/NIDDK.htm



Bruce A Molitoris MD
President
American Society of Nephrology
email@asn-online.org
www.asn-online.org