Telemedicine and Nephrology: The Slow Revolution Continues

By Eric Wallace, MD, FASN

Almost 25 years after the Texas Telemedicine Project, one of the first major telemedicine initiatives, we are still trying to determine where and how telemedicine fits into modern nephrology. Increased access to care is just one of many potential advantages of telemedicine. However, at a time of increasing healthcare costs, policymakers and payers ask, “What is the added value?” Furthermore, debates about acceptable means of providing telemedicine care rage on. Legal battles waged between providers of telemedicine and state medical boards have provided further hesitancy on the part of physicians to incorporate telemedicine into their daily practice. Many of the concerns surrounding telemedicine could take another 25 years of study to answer. However, for many patients, telemedicine is not needed for mere convenience or easy access to treatment for sore throats. It is needed to extend standard access to subspecialty care, as well as expanded treatment options, and it is needed now.

Telemedicine has been primarily used to bridge geographic disparities in access to care, and has been focused mainly on provision of care in rural areas. Approximately 25% of the US population lives in areas considered rural, and rural location has been associated with increased incidence of end stage renal disease (ESRD). Thus telemedicine provides a means to improve access to care where the need is greatest. Luckily, the rural patient is considered the most appropriate recipient of telemedicine visits. In large part, Medicare and Medicaid already cover telemedicine for standard outpatient visits for this population, as do many other private insurers in states with existing telemedicine parity laws. Telemedicine for this population not only serves to increase access to subspecialty care, but also increases the comfort levels of rural primary care physicians who are otherwise practicing in medical deserts with little to no subspecialty support. While standard outpatient subspecialty visits are covered, coverage of home dialysis follow-up visits is another story. Prior to January 2016, there was no coverage of any telemedicine visits for the home dialysis population. The 90963-90966 outpatient home dialysis codes appeared in January of 2016 as a covered telemedicine code for Medicare. Unfortunately, this coverage excludes home hemodialysis patients (or even peritoneal dialysis patients) with a vascular access as it is stipulated that an in-person face-to-face visit must be provided to examine any vascular access. Still, acceptance of the 90963-90966 codes by the Centers for Medicare & Medicaid Services (CMS) represents a large step for telemedicine in the provision of rural peritoneal dialysis.

Rural patients are the natural focus of telemedicine services, but should rural areas be the only focus of telemedicine? For many patients living remotely from care but in a metropolitan area, the answer is no. Certain super-subpecialized care might only be achieved in tertiary referral centers or university settings. Patients who might fall into this category include those with rare diseases, pediatric nephrology patients, and transplant recipients. These patients currently have no option for telemedicine. Furthermore, for the elderly and those with limited mobility of all ages living in metropolitan areas, telemedicine might limit non-emergent ambulance transport to and from clinic visits and improve the ability of these patients to make appointments that might thwart frequent hospitalizations. This feature of telemedicine is even more applicable for the home dialysis patient population with limited mobility. Unfortunately, owing to CMS’s geographic restrictions on telemedicine, patients such as these do not have access to telemedicine services. Thus a large barrier for many applications of telemedicine lies in the removal of the rural restrictions on telemedicine services.

Improving quality of care

Telemedicine may be a means to not just improve access to care but to also improve quality of care through remote monitoring and by facilitating the creation of centers of expertise. Already remote monitoring—such as Bluetooth-enabled blood pressure monitors and weight scales—is being used to improve our ability to manage hypertension, for example. Furthermore, the chronic care management code (90940) allows for reimbursement of remote monitoring in select populations. Notably, however, ESRD is excluded from coverage.

Remote monitoring for the home dialysis patient may provide the means to truly have an impact on outcomes such as hospitalizations. Systems providing real-time evaluation of vital signs and real-time therapy monitoring provide a means to intervene with patients to avoid hospitalizations for hypertensive emergencies and volume overload. Remote monitoring, however, is not without its issues. With remote monitoring comes the need for increased nursing and physician time. Only human or computer analytic interpretation of data and intervention paired with remote monitoring can have an impact on outcomes. Furthermore, questions about liability regarding remote monitoring remain. Carefully designed studies to determine appropriate clinical algorithms that maximize outcomes without overwhelming both nurses and physicians with a massive influx of data are needed to guide the use of these exciting technologies.

Telemedicine may also improve quality of care by serving as a way to link centers of expertise with the patients they serve. Certain types of super-subspecialized care might be best achieved by centers of expertise. In this way, adequate staffing, multidisciplinary teams, and continued education can allow patients to receive cutting-edge care. However, patients may only be able to take advantage of centers of expertise if they can make the commute to one. Telemedicine may serve to bridge this gap, thus enabling centers of expertise to ensure patient access.

The designation of “rare” in the US is defined as affecting fewer than 200,000 patients at any one time. By this definition, home dialysis could also be considered rare. It has been shown in 4 separate studies that larger home dialysis units achieve better outcomes for their patients than smaller units. Much of the advantage of larger units is thought to result from their ability to maintain adequate patient volumes, allowing dialysis staff and nephrologists to hone the skills and knowledge required to care for this relatively small group of patients. Still, a large percentage of home dialysis units have fewer than 5 patients. Telemedicine may provide a means by which smaller home dialysis units might benefit from nursing and physician expertise in larger units to improve patient outcomes. However, currently a home dialysis unit is not a covered originating site according to the Centers for Medicare & Medicaid Services.

Telemedicine may further increase uptake of home dialysis modalities by improving patient comfort and knowledge regarding the modality via tele-education, engagement, and care coordination. More confident providers and patients should be the result of telemedicine-enhanced communication.

Much has changed since Jack Moncrief, MD, one of the primary drivers of the Texas Telemedicine Project and pioneers in home dialysis, began the Texas Telemedicine Project. At the time of the project, telemedicine cost over $50,000 per site for capabilities that now can be achieved using technology that many carry in their pockets every day. But the
By Bridget M. Kuehn

Electronic health records (EHRs) have made it much easier for physicians treating patients with chronic kidney disease (CKD) to collect data, including glomerular filtration rate (GFR), creatinine, blood pressure, cholesterol, anemia, and bone health, said Joseph Nally, MD, Director of the Center for Chronic Kidney Disease at the Cleveland Clinic. But they don’t always make it easy for physicians to use the data to improve patient care.

“The EHR has simplified the process in terms of information gathering, but it is still up to the physicians and caregiver team to do all the right things to optimize patient care,” Nally said.

It can be an exercise in frustration for clinicians to access the data. Physicians may have to visit multiple screens and may not be able to easily look at trends in the data over several months, said Paul E. Drawz, MD, a nephrologist at the University of Minnesota.

The “holy grail” for CKD patients would be to develop a care plan that makes all the critical clinical information and patient preferences easily accessible, said Nally.

To make such a plan a reality, Drawz, chair of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Health Information Technology Working group, is working with Nally and other nephrologists and technology experts from across the country. Building off progress made at a meeting held at NIDDK last October, the working group has begun to develop the plan and other tools that will help nephrologists and their institutions better leverage EHR data to improve patient care (Drawz PE, et al. Clin J Am Soc Nephrol 2015; 10:1488).

The “holy grail”

For patients with CKD, it is especially important for a care plan to be portable. The plan needs to be able to follow the patient from the dialysis unit, to the emergency department, to the hospital, and back to their physician, said Andrew S. Narva, MD, Director of the NIDDK’s National Kidney Disease Education Program.

“The CKD patient in many ways is the perfect storm of the patient who suffers from not having something like this,” said Narva. “These patients are on a lot of medicines, they are very complicated, and they get their care in many different places that don’t usually talk to each other.”

The NIDDK working group is working closely with the Office of the National Coordinator for Health Information Technology, which is working on developing electronic care plans for many conditions as a way to boost evidence-based care, improve outcomes, and lower care costs, noted Jenna Norton, a project manager aiding the effort at NIDDK.

“We are having a rapidly escalating collaboration with them to do this because they now understand that CKD patients are sort of a model chronic disease patient likely to benefit from this,” Narva said.

For patients, the care plans will help ensure that their desires and goals stay at the forefront even as they transition between care settings. For example, if a patient ends up in the emergency department in need of dialysis, there will be something in the care plan that indicates the patient’s preferences regarding dialysis modality, Narva said.

“It will allow the outpatient to not have to repeat themselves over and over and to have more of a voice in their care,” Drawz said.

To ensure that patients’ needs are considered, the working group includes representatives from the American Association of Kidney Patients.

“It’s not happening in a vacuum,” Narva said. “We all understand that patient input and the patient voice is key.”

Initially, the care plan document will be physician-facing, Norton said. But eventually the working group would like to provide a way for patients to see their information in one place or to engage their physicians. One possibility is creating a mobile application so the patient can navigate his or her care, Norton said.

Challenges ahead

But creating such a care plan is not an easy process. The plan can’t be so long or complex that physicians won’t use it, Narva said. It also must avoid being “nephrocentric.” He explained that most patients with CKD die from heart disease, so other specialists like cardiologists must be able to use it as well. It must be designed to avoid having different recommendations, for example for blood pressure, given by different specialists.

“There’s a long way to go before we have a digital information system that really works for patients and clinicians,” Narva said.

One of the first hurdles will be deciding how to define CKD. One of the reasons EHRs are particularly useful for CKD care is that the diagnosis of the disease is based on objective laboratory values, which can be identified in EHRs, Narva said.

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The working group is currently hammering out what the “computable phenotype” for CKD diagnosis will be. For example, what are the cutoff readings for laboratory values that indicate CKD? The group is also working on an electronic profile of CKD patients at risk of progression. Already, the group has made substantial progress toward these goals, Drawz said.

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Interoperability problems between organizations’ electronic records systems are another challenge the working group is trying to address.

“The data doesn’t move between providers,” Drawz explained. “Just about every single EHR has so many homogenized aspects it is difficult to collaborate across sites.”

Blueprint for population health

Finally, the working group is developing a business case for why health systems should invest in the tools and upgrades necessary to use health information technology for population health management.

For example, most patients with CKD go undiagnosed, even though the data needed to identify these patients is in their EHRs. Large organizations like the University of Minnesota’s health system have been able to develop tools that can extract this kind of data from their electronic medical record systems to drive quality improvement efforts and research, said the University of Minnesota’s Drawz. But it wasn’t an easy process. It took hours of a computer programmer’s time and the resulting programs can’t easily be shared with other institutions, he said. So, many smaller systems go without such tools, leaving CKD patients unrecognized. Or other large systems have to duplicate these efforts.

“You have hundreds, if not thousands, of programmers around the country doing these one-off designs,” he said. “If a system were built so it could be exported from one institution to another there would be tremendous savings.”

The working group hopes to enable that kind of sharing. The tools developed as a result will help health systems adapt to the ongoing shift toward accountable care organizations and value-based payments from public and private insurers, for example, by helping systems identify CKD patients at risk of hospitalization or those receiving contraindicated medications, Drawz said.

“Once these new payment systems are in place it becomes something that saves money and improves the health of the population,” he said.

Ultimately, Drawz said the goal is to provide nephrologists with a blueprint for population health and the tools to implement it.

“The bottom line is we can’t improve care without data, and if we can’t find CKD patients we can’t get the data,” Narva said. “These tools are critical as we move forward.”

Could CKD Become a Model for Use of EHRs for Quality Improvement?