The first governmental agency to provide maintenance hemodialysis to patients with end-stage renal disease (ESRD) was the Veterans Administration (VA; now the US Department of Veterans Affairs). Many historical VA policies and programs set the stage for the later care of both veteran and civilian patients with ESRD. More recent VA initiatives that target restructuring of care models based on quality management, system-wide payment policies to promote cost-effective dialysis, and innovation grants aim to improve contemporary care. The VA currently supports an expanded and diversified nationwide treatment program for patients with ESRD using an integrated patient-centered care paradigm. This narrative review of ESRD care by the VA explores not only the medical advances, but also the historical, socioeconomic, ethical, and political forces related to the care of veterans with ESRD.

INDEX WORDS: End-stage renal disease; public policy; US Department of Veterans Affairs.

ESRD Care Within the US Department of Veterans Affairs: A Forward-Looking Program With an Illuminating Past

Suzanne Watnick, MD, and Susan T. Crowley, MD

The Veterans Administration (VA; now the US Department of Veterans Affairs) was the first governmental agency to provide maintenance hemodialysis (HD) to patients with end-stage renal disease (ESRD). In 1963, three years after the first patient started maintenance HD therapy in the United States, the VA proposed creation of a large-scale long-term HD program for veterans. The VA announced its intention to provide HD to eligible beneficiaries in 30 units around the nation, at a time when no current or proposed network comparable to such a program existed anywhere in the world.

To understand this decision in its historical context and the full impact that this subsequently would have on the country, it is important to review the VA decision in light of the other medical, political, socioeconomic, and public health aspects of care for patients with ESRD occurring at that time. In essence, many of the initial VA policies and procedures set the stage for the later care of both veteran and civilian patients with ESRD. This look back is instructive for the future and will serve as a theme for this article (Box 1).

BRIEF HISTORICAL PRECEDENTS TO THE VA MAINTENANCE DIALYSIS PROGRAM

Starting with the Korean War, the US Department of Defense began to regularly implement the life-saving technology of dialysis, which was developed during World War II, to treat US troops who sustained acute kidney injury (AKI; referred to at the time as acute renal failure) during combat. What emerged from the military’s experience of treating AKI with dialysis was 2-fold: first, confirmation that correction of the metabolic milieu of trauma-associated AKI could save lives, and second, that using what was seen as a radical strategy of prophylactic dialysis potentially could prevent the onset of uremic symptoms in AKI, and by extension, be used to treat chronic kidney failure.

However, progress in the development of a long-term dialysis treatment program was stymied until the 1960s brought the development of reusable vascular accesses. Beginning with the Teflon arteriovenous conduit, developed by Scribner and Quinton in Seattle, and followed by the subcutaneous arteriovenous fistula by Brescia and Cimino at the Bronx VA Hospital, the treatment of
chronic kidney failure with maintenance dialysis was ushered in.8-10

**CREATION OF THE VA MAINTENANCE DIALYSIS PROGRAM**

In 1953, while Belding Scribner was serving as the Director of General Medical Research at the Seattle VA, the VA began purchasing artificial kidney machines to treat AKI. Accelerated by the subsequent commercial availability of artificial kidney devices and by the diffusion of the practice of acute dialysis within the VA health care system, more than 2 dozen of its hospitals had acute dialysis units and 20 VAs owned their own Travenol dialysis tanks (Baxter, Inc [formerly Baxter Travenol Laboratories] by 1961 (R.A. Rettig, personal communication, March 2013).11 Training of VA physicians in the use of a growing variety of artificial kidneys occurred in the late 1950s and early 1960s, under Scribner in Seattle and Willem Kolff at the Cleveland Clinic.3

In 1962, the first application to the VA to establish a maintenance dialysis program was submitted by Dr Martin Rubini from the Wadsworth VA in Los Angeles, CA.12 This was the herald for a host of similar appeals from other VAs, some of which had initiated maintenance HD programs without a sanctioned funding source. In 1963, William Tucker, Chief of Medical Services, and Harold Schnaper, Chief of Research in Internal Medicine, announced the agency’s intention to offer maintenance HD at 30 VA medical centers over the ensuing 3 years, subsidized by recurring hospital dollars rather than by precarious research funds7 (Fig 1). The subsequent VA Long Range Plan No. 10-111, issued in December 1963, detailed an even more ambitious proposal to establish maintenance uremia programs in 42 of its hospitals over 5 years (R.A. Rettig, personal communication, March 2013). The VA’s serial announcements to create a national maintenance HD program were unexpected by some because the medical community did not universally believe that long-term dialysis was standard of care, and many still thought this therapy remained experimental.13

Despite the skepticism, the VA rolled out maintenance HD as one of a series of special programs within the VA Medical Service. Because of his particular expertise, John H. Peters, Assistant Director of VA Medical Services, was given the task of developing the HD special program.1 Concurrently, but independently of the VA HD program, Thomas Starzl and his associates were developing a program in kidney transplantation at the VA hospital in Denver, CO.14 When the VA made its landmark decision to establish this nationwide network of maintenance dialysis centers, the proposed purpose was to “save and even rehabilitate persons in this category,” thus allowing

---

**Box 1. Timeline of Events Related to Dialysis Care in the United States and in the VA**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1913</td>
<td>John Abel performs the first in vivo dialysis, while professor at Johns Hopkins Medical School.</td>
</tr>
<tr>
<td>1945</td>
<td>Willem Kolff performs the first successful dialysis of a patient with AKI while still in the Netherlands, adding later improvements at the Cleveland Clinic and The Brigham and Women’s Hospital.</td>
</tr>
<tr>
<td>1953</td>
<td>The VA begins purchasing artificial kidney machines under the direction of Belding Scribner.</td>
</tr>
<tr>
<td>1960</td>
<td>Scribner and Quinton report from Seattle on the first Teflon arteriovenous conduit for dialysis.</td>
</tr>
<tr>
<td>1962</td>
<td>Brescia and Cimino report from the Bronx VA on the subcutaneous arteriovenous fistula.</td>
</tr>
<tr>
<td>1963</td>
<td>The VA proposes the creation of the first large-scale maintenance hemodialysis program under the direction of John Peters, William Tucker, and Harold Schnaper.</td>
</tr>
<tr>
<td>1963</td>
<td>The VA starts development of its kidney transplantation program in Denver under the direction of Thomas Starzl.</td>
</tr>
<tr>
<td>1966</td>
<td>The Committee on Chronic Kidney Disease was convened under the direction of Carl Gottschalk, in part due to the VA’s dialysis expansion program. The Gottschalk Report was issued in 1967.</td>
</tr>
<tr>
<td>1969</td>
<td>The VA had 30 functional dialysis units, with 4 more slated over the next 2 years.</td>
</tr>
<tr>
<td>1972</td>
<td>The Medicare Entitlement for Dialysis (Section 299I) of the Social Security Amendments was passed and signed into law on October 30.</td>
</tr>
<tr>
<td>1978</td>
<td>Congress passes legislation to favor home dialysis.</td>
</tr>
<tr>
<td>1980</td>
<td>VA providing dialysis at home to ~38% of population in comparison to 14% of Medicare-funded patients, and home dialysis starts to decline in all settings.</td>
</tr>
<tr>
<td>1995</td>
<td>VA undertakes a major restructuring under the leadership of Kenneth Kizer, emphasizing quality management, quality improvement, accountability for outcomes.</td>
</tr>
<tr>
<td>2008</td>
<td>MIPAA legislation passes, obligating CMS to create a bundled payment system.</td>
</tr>
<tr>
<td>2010</td>
<td>The VA Dialysis Steering Committee was created, targeting strategic planning, patient &amp; professional education, CKD/ESRD research, quality and safety, home dialysis, non-VA purchased care, the freestanding dialysis clinic pilot program, and collaboration with VA Transplant Program.</td>
</tr>
<tr>
<td>2011</td>
<td>CMS bundled payment system goes into effect.</td>
</tr>
<tr>
<td>2012</td>
<td>CMS Quality Incentive Program (QIP) goes into effect.</td>
</tr>
</tbody>
</table>

Abbreviations: AKI, acute kidney injury; CKD, chronic kidney disease; CMS, Centers for Medicare & Medicaid Services; ESRD, end-stage renal disease; MIPAA, Medicare Improvements for Patients and Providers Act; VA, Veterans Administration (now the US Department of Veterans Affairs).
individuals to continue with their prior contributions to society.\textsuperscript{1,2} The units were slated to be established within VA hospitals and would be built-in centers that were associated with universities, with the hope of attracting physicians and other providers knowledgeable in HD procedures.

The initial units were activated at the VA facilities in Los Angeles, CA; Hines, IL; and Washington, DC.\textsuperscript{2,15} These HD units were set up rapidly (over 6 months) with the goal of opening 7-9 more units per year until the VA achieved the planned goal of 30 units. The administration initially predicted that there would be approximately 10 patients per unit, for a total of 300 patients.

The first VA units based their dialysis therapy plans on the model of care advocated by Scribner. The treatments were slated to occur once or twice weekly for an all-day or all-night session, overseen by several providers. These early dialysis units quickly faced the problem of demand outstripping supply. Within 6 months, the Wadsworth VA in Los Angeles needed to double capacity and did so by creating a multiple-patient centralized dialysate delivery system.\textsuperscript{12} Training the associated staff and deciding on the optimal locations for the remaining initial dialysis units presented additional challenges. Locations that would best serve the veteran population were prioritized; thus, existing VA hospitals in large metropolitan areas that were affiliated with university medical schools were preferentially selected.\textsuperscript{1} As for training, a number of VA physicians were sent to Seattle to study under Scribner, while the instruction of nurses, nursing assistants, and technicians had to occur on the job, given the paucity of experienced staff.

There were no standards to follow for outfitting the dialysis units.\textsuperscript{1,12} The initial units had 1-2 isolation rooms designated for patients with active infections, whereas the main unit consisted of a large hospital ward with patients separated by curtains. Rather than nationally standardizing equipment, the VA gave dialysis unit directors the latitude to choose equipment according to their expertise. Thus, both Kiil and Kolff dialyzers were used.

By 1970, typical dialysis treatments in the VA system were offered 2-3 times per week. Carrying forward the concept of prophylactic dialysis, treatment time was expanded with the recognition that additional dialysis time improved symptom control and prevented uremic complications.
such as peripheral neuropathy, hypertension, and the notable electrolyte abnormalities of hyperkalemia and hypocalcemia.1 2

Prior to 1963, dialysis care within the VA was afforded by the use of hospital equipment funds and academic research grants (R.A. Rettig, personal communication, March 2013). Establishing a sustainable nonresearch treatment unit was recognized as a much more expensive undertaking, but costs of treatment were difficult to estimate.3 Deferring overhead costs to VA hospital facilities, initial estimates by VA administrators were $5,000-$7,000 per veteran per year. Initially earmarked from VA Regional Medical Directors funds, financing became ensured through the VA Central Office as the program gained value and importance (R.A. Rettig, personal communication, March 2013).1

By November 1968, recognizing the imminent shortage of dialysis capacity, the Chief Medical Director of the VA created a task force to develop solutions to the mismatch of supply and demand for ESRD services. This task force suggested an expanded program that more closely aligned maintenance dialysis programs with the burgeoning kidney transplant program.3 The dialysis centers would perform dialysis before and after transplantation through coordination of the dialysis staff and transplantation team, much as is the policy today in centers that are equipped for kidney transplantation. The task force also recommended a team-centered approach. Threads of this patient-centered approach are seen today in the VA’s patient-centered medical home care model and in other current models of accountable care.16

To optimize the use of limited ESRD treatment capacity, patient selection criteria were required, with some centers copying selection committee models from affiliated hospitals, such as the infamous “God committee”.7 Promotion of home dialysis was another task force recommendation to expand capacity. The training team for home dialysis at this time consisted of a patient, a spouse or friend, a nurse, and a physician at minimum.8 The home evaluation, installation of HD machines, and full expense were supported by the VA.8 By 1969, a total of 32 patients were receiving home dialysis.7 The Bureau of Budget further pressured the VA and the Public Health Service to increase use of home dialysis given the scarcity of dialysis units, and by January 1972, there were 40% of the almost 5,000 dialysis patients in the United States receiving home dialysis.3,9

To address a growing concern surrounding the mismatch of resources available to patients within and outside the VA system, Congress passed legislation in 1969 giving the VA statutory and regulatory authority for purchasing community health care at VA expense.19 Thus began purchased care, including dialysis, for veterans.


To support the VA’s proposed dialysis program expansion, the administration submitted a large construction budget request for fiscal year 1966.13 During the same period, the Public Health Service started receiving requests for dialysis unit support, to which they granted seed monies with the intention of learning about how dialysis centers could independently generate funds after federal support was no longer available. The first grants were awarded to the Seattle Artificial Kidney Center in Seattle, WA, and Downstate Medical Center in Brooklyn, NY.20 The creation of the Public Health Service’s Kidney Disease Control Program and the VA budget request captured the attention of the Bureau of the Budget (now the Office of Management and Budget), and prompted by the President’s Office of Science and Technology Policy, the Bureau of the Budget established an expert committee to investigate various aspects of advanced kidney disease.13 Formally titled The Committee on Chronic Kidney Disease (CKD) and led by Carl Gottschalk, the committee was convened in 1966.21 It issued its final report in 1967, a report that has been widely recognized as the pivotal point upon which the formation of a comprehensive federal policy toward ESRD was formed. A landmark in the field of nephrology, the report established dialysis as a nonexperimental therapy and paved the way for legitimization of treatment and payment for that treatment.21,22 It also recommended transplantation in preference to dialysis and home dialysis as preferable to in-center dialysis. Finally, it recommended the establishment of a federal program involving funding for dialysis for all US citizens.

The sweeping recommendations made by the Gottschalk Report were considered staggering in cost by initial estimates. In 1968, the Journal of Public Health reported: “If this committee’s recommendations were carried out, 22,000 patients could be under treatment by 1975 and the total cost of building facilities, training personnel, and treating patients would be between $800 million and $1 billion….In view of other present demands upon public money, it is likely that any massive national program for the prevention and treatment of kidney disease will be postponed for the time being.”22(p1804) and with that sentiment, the Gottschalk Report was shelved. The main recommendations were largely ignored at the time because, “The war in Southeast Asia was simply
too costly and new domestic initiatives were out of the question.\textsuperscript{13(p122)} Although this report was well known in the nephrology community, it was not widely circulated; thus, policy makers and congressional staff were relatively unaware of it.\textsuperscript{14} At the time that the Social Security Amendment was modified to include the Medicare Entitlement for ESRD Service, the Gottschalk Report was not even mentioned. Nonetheless, historians report that the document undoubtedly framed subsequent health policy, heavily drawing upon the experience gained by the VA maintenance dialysis program.\textsuperscript{23} The report set the stage for the development of a national maintenance dialysis program that ultimately would be funded by the Federal Government, the Medicare Entitlement Program, which currently supports nearly 90% of all dialysis patients in this country.\textsuperscript{24} It also paved the way for a program that would exceed $1.2 billion in cost by 1980, almost $3 billion by 1990, and $50 billion at 40 years after enactment.\textsuperscript{23}

The ethical and policy implications of the Gottschalk Report were also broad-sweeping: as a disease-specific funding approach, it possibly would leave behind individuals with other health conditions. Furthermore, while financing maintenance dialysis could postpone the need to make difficult choices regarding who would receive care, and could save lives, it placed a tremendous fiscal burden on society.\textsuperscript{12,21} The story of dialysis at the VA and throughout the country therefore serves as an excellent case study to explore the impact of advances in medical technology on the socioeconomic, political, and ethical challenges that continue to vex us today.

In 1972, governmental policy concerning the provision of maintenance dialysis was aligned. Section 299I of the Social Security Amendments passed after being adopted by both House and Senate,\textsuperscript{25} and the associated bill was signed into law by President Nixon on October 30.\textsuperscript{24} Veterans and nonveterans alike were entitled to maintenance dialysis therapy when medically appropriate. By January 1973, when the law became effective, approximately 10,000 beneficiaries were able to take advantage of this benefit, with veterans constituting a disproportionate 16% of the overall group due to the pre-existence of the VA maintenance dialysis program.\textsuperscript{20,26}

**Further Home Dialysis Provisions**

After the Medicare entitlement, in-center dialysis grew in the United States while the number of home dialysis patients sharply declined. Of the 45,000 patients receiving dialysis under the Medicare entitlement, >86% were receiving in-center treatments despite changes in legislation to provide few incentives for in-center dialysis in 1978.\textsuperscript{27-29} In contrast, home dialysis initially flourished in the VA population. In 1980, a survey of all VA dialysis centers described home dialysis use during that period, reporting that 38% of veterans were receiving home dialysis in comparison to 13.7% of Medicare-funded patients. Of note, VA patients were not believed to be more “well suited” for home dialysis.\textsuperscript{26} The VA population both in general and in this study contained individuals who were older and had a greater degree of comorbidity than the average Medicare-funded patient, with fewer resources. Given the convenience of home dialysis for eligible patients and the clear overall savings to the system, the investigators questioned the low rates of home dialysis use outside the VA.

Despite the high rate of home dialysis in the VA system in 1980, the VA numbers declined in the subsequent 30 years, following trends in the rest of the country. Some of the stated reasons for this trend include declining physician familiarity with the modality, reduced resource allocation for time-intensive home training and monitoring, and increasing patient comorbid conditions incurring reduced suitability for home dialysis.\textsuperscript{30}

Interestingly, the Medicare bundled payment system, which went into effect January 1, 2011, was designed specifically to incentivize the use of home dialysis.\textsuperscript{31} Although home dialysis is less expensive to administer, reimbursement for home and in-center modalities is now equivalent and an additional training fee can be recouped. With these financial incentives, home dialysis rates are increasing,\textsuperscript{30} with peritoneal dialysis patient numbers increasing by 17% in the Medicare population over 2 years, more than double the rate of increase in HD.\textsuperscript{32} The VA also is witnessing growth in the volume of patients enrolled in their home dialysis programs, with a 15% increase between fiscal years 2009 and 2012 to 397 veterans. Program reinvigoration efforts have included reiteration of the availability of veteran benefits in support of home dialysis; clarification of home dialysis program criteria; support for the development of a novel noncenter modality, the automated wearable artificial kidney (AWAK);\textsuperscript{33} and addition of home dialysis products to the General Services Administration schedule.

**Restructuring in the VA System Leading to Current Care Models**

Comparisons of dialysis within the VA system in the 1960s, 1970s, and 1980s with present-day practices requires an understanding of the VA restructuring that has occurred since that time. Following sharp criticism for its quality of care during the 1980s and early 1990s,\textsuperscript{34-36} a major restructuring
was undertaken under the leadership of Dr Kenneth Kizer, the Undersecretary of Veterans Affairs for Health. During this period, a foremost goal was to ensure consistent and predictable delivery of high-quality care throughout the system. The VA compiled more than 100 quality improvement activities in a structure, process, and outcomes-focused quality management accountability framework (QMAF) that targeted specific associated areas of quality management. The accountability framework had specific quality assessment and assurance strategies. This organizational structure, supported by a sophisticated health technology network, led to further policy development for systematizing quality management activities and became a unique opportunity to study quality improvement within a large contained health care system. The similarities to future national health care legislation cannot be overlooked. Elements of the VA restructuring in 1995 are reminiscent of other forms of accountable care models, such as the Accountable Care Organizations legislated by the Affordable Care Act of 2010. The quality of care within the VA improved dramatically within 2 years and is still recognized years later. The nationwide approach to measuring and managing quality and holding stakeholders accountable was thought to be the main reason for the marked improvements.

The Quality Improvement Program instituted in 2012 for the Medicare ESRD Program was the first of its kind within the Centers for Medicare & Medicaid Services (CMS), in which the CMS retains a percentage of payment when certain quality measures are not achieved. The VA restructuring based on quality management principles provided historical precedence for the success of such a program on a nationwide basis. Although there was not a monetary penalty at the VA, performance data were openly available and widely distributed to important constituents, such as veterans’ organizations and Congress.

GROWTH OF DIALYSIS WITHIN THE VA

Despite continued expansion of the VA dialysis program during the past 50 years, the need for dialysis outpaced the VA’s capacity to directly provide that care. Thus, VA reliance on non-VA care for ESRD services, as well as other care, grew. During the 4-year period of fiscal years 2005-2008, the total number of outpatient Non-VA Care Fee Program claims increased to 3.2 million and the total costs more than doubled, from ~$740 million to $1.6 billion, with dialysis constituting a significant fraction of the budget. The marked increase in overall non-VA care expenditures triggered an Office of the Inspector General (OIG) review of the VA Non-VA Care Program. Issued in 2009, the OIG recommended that the VA pursue regulatory changes in the Non-VA Care Program to ensure that payments were consistent both internally and with other federal agencies. With regard to dialysis, the VA responded by initiating a national bundled rate non-VA care contract for dialysis services and centralized its dialysis claims processing in order to standardize and enhance the efficiency and predictability of non-VA dialysis care payments. In addition, the VA issued Final Rule 75 FR 78901 on December 17, 2010, that clarified the VA’s regulatory and statutory authority to pay for in- and outpatient health care services, including ESRD care, using Medicare pricing methodology. Applying the new pricing methodology, the VA’s savings as of 2011 were projected to exceed $100 million per year for ESRD services alone, or nearly 50% of costs. Thus, just as the VA long-range plan affected the growth of the VA’s internal maintenance dialysis program at its outset, so the VA OIG report affected policy changes that strengthened control over the more recent burgeoning external non-VA dialysis care program.

As of fiscal year 2012, more than 14,000 enrolled veterans requiring maintenance dialysis were served by the VA, either at 1 of the 69 hospital-based and freestanding outpatient VA dialysis units or, not surprisingly for a growing proportion, at a community unit under the Non-VA Care Program. Projection models estimate a continued increase in the volume of veterans who will receive dialysis services through the VA. As we travel back to the future, the echo of prior VA program reviews can be heard in the more recent ones: recapitulating the Gottschalk Report, the recent non-VA care report rendered higher visibility for limited capacity services such as ESRD within the VA, endorsed program re-evaluation, suggested development of alternative financial models, and as a byproduct, reinvigorated interest in alternative innovative models to deliver critical health services. The latter in particular can be supported in the context of the recently developed Transformation to the 21st Century (T21) Plan and Specialty Care Strategic Plan of the VA.

VA NEPHROLOGY CARE TODAY AND THE VA T21 PLAN

Currently, among the 22.7 million living US veterans, approximately 8 million are enrolled in the VA Healthcare System. On average, this population is much older than the general population (median age, 64 vs 41 years, respectively) and is characterized as having a greater burden of CKD, comorbid conditions, and mental health disorders and consumes a greater degree of medical resource than the general...
US population. The 2013 VA medical care budget of $55.7 billion supports 152 hospitals, 821 geographically separate outpatient clinics, and 262,000 professional and support staff. The VA has been and remains the largest provider of graduate medical education in the nation and provided $583 million for research in fiscal year 2013 alone.

The T21 Plan advocated by the Honorable Eric Shinseki, Secretary of the Department of Veterans Affairs, aims to increase universal health care services by expanding access to care, creating veteran-centered delivery models, and anticipating complex patient care needs with an emphasis on coordinated care. All facets are particularly important for veterans with kidney disease. Of enrollees, more than 200,000 veterans have moderate to severe CKD, defined as estimated glomerular filtration rate < 50 mL/min/1.73 m², with an estimated prevalence that is 34% higher in the VA than in the general population (152 patients/100,000 vs 114 patients/100,000). Nearly 30,000 veterans have ESRD, with approximately half receiving their dialysis care through the VA, of which a growing majority is receiving dialysis under the Non-VA Purchased Care Program. Nearly 5% of enrolled veterans use home dialysis, although it is available to all veterans either directly (at 56% of VA units) or under the Non-VA Care Program.

In 2011, a total of 129 veterans received kidney transplants at one of the 4 regional VA kidney transplant centers, while 914 were listed as candidates with the United Network for Organ Sharing. The VA is expanding its kidney transplantation program to at least 7 centers, with the anticipation that increased access to transplantation will lead to increased transplant opportunity for veterans. In addition, the VA implemented a web-based centralized transplant referral system to expedite the evaluation decision process. Furthermore, although the distance to transplant centers can present a challenge for some, the established VA transplant centers offer living kidney donation and deceased donor organ transplantation through agreements with organ procurement organizations. Also, veterans eligible and enrolled in the VA may receive a lifetime of post-transplantation care and/or medications, including immunosuppressant drug coverage, regardless of whether the veteran underwent transplantation at a VA kidney transplant center or in the community.

The increasing costs of ESRD care and limited capacity of in-center dialysis have led to a re-examination of the focus of CKD care within the VA. Although the search for cost-effective models of care for veterans with ESRD remains an area of intense effort, a broader paradigm of CKD that emphasizes prevention is being cultivated. In keeping with the VA’s transformation over the past 2 decades from a hospital-based acute inpatient health care system to an outpatient prevention-based health care model, the VA’s emphasis increasingly is on primary and secondary CKD prevention within its primary care model, the patient-aligned care team.

For example, more than a decade ago, the VA and Department of Defense jointly issued the country’s first clinical practice guideline for the primary care management of patients with CKD. Developed by both primary care and nephrology providers, the guideline emphasized screening of at-risk patients with preferential use of estimated glomerular filtration rate and urine albumin-creatinine ratios, and early referral of veterans with CKD to nephrology specialists. A recent update of the guideline was video cast nationally and the recording was made available for ongoing continuing medical education—awarding professional education (available on VA intranet at https://www.tms.va.gov/learning/user/login.jsp; catalogue number 9349.)

As part of the broader federal consortium of agencies seeking to combine, coordinate, and leverage resources targeting kidney disease, the VA has shared and promoted prevention-oriented patient education materials developed by members of the Kidney Inter-agency Coordinating Committee.

More recently, with support from the VA’s Center for Innovation, the VA partnered with the medical education industry to develop an online, comprehensive, patient-centered education tool, enriched with alternative forms of renal replacement therapy including home dialysis and maximum medical management, which emphasizes CKD prevention through patient self-management (available at www.medicalsurgical.va.gov/kidney/program.asp). In addition, the VA also recently awarded grants to VA investigators and academia to test the utility of tele-technology to enhance preventative care management of veterans with CKD and develop a comprehensive national kidney disease registry. A growing suite of tele-health services, including clinical videoconferencing and home health monitoring, is now being used to provide care to veterans with CKD. Also, these services support their VA clinicians in the delivery of that care, especially in geographically inaccessible areas.

Extensive research dollars have been allocated for investigations targeting the improvement of CKD outcomes under the auspices of the VA Cooperative Studies Program, as well as by other national research opportunities with VA participation. Funding has included initiatives to delay the progression of CKD in patients with diabetic nephropathy, retard
nondiabetic kidney disease, and reduce cardiovascular disease in the CKD and dialysis patient populations. In addition, it was VA-funded research that described the relative cost savings of subcutaneous erythropoietin.50-54 The research and CKD prevention initiatives are dollars well spent in a system that plans to provide long-term care for its members. The rapidly increasing expense and demand for ESRD services by veterans makes it imperative for the VA to research and implement potential models of preventive care and evaluate alternative cost-effective models of ESRD care. Compared with hospital-based dialysis programs that offer both in- and outpatient dialysis care, the freestanding dialysis clinic model potentially offers a more cost-effective means of delivering maintenance dialysis. The VA therefore began piloting a freestanding VA dialysis unit model, opening 4 units between 2011 and 2013. Preliminary analyses support the VA’s ability to deliver high-quality cost-effective dialysis care with the added benefit of maintenance of fully integrated and coordinated patient care within the VA, and enhanced research opportunities for the identification of best practices in CKD and ESRD care. The VA also moved to a national bundled rate contract as its preferred model of Non-VA Purchased Dialysis Care beginning in 2009, auguring the CMS fully bundled payment system that began 17 months later.

The VA recognized that the care for veterans with kidney disease requires broad programmatic analysis, oversight, and recommendations to improve the prevention of ESRD, as well as the treatment for and delivery of ESRD services. As a result, the national VA Dialysis Steering Committee was created in 2010 and was charged with enabling strategic planning for ESRD services, developing patient and professional education pertaining to kidney disease, promoting CKD/ESRD research, ensuring dialysis quality and safety, redirecting home dialysis services, optimizing non-VA purchased dialysis care, assisting in implementation of the freestanding dialysis clinic pilot program, and coordinating with the VA National Surgery Office’s Transplant Program.

As the nation’s largest comprehensive health care system, the VA remains uniquely poised to contribute to improved understanding of best practices in CKD and ESRD care and in turn, can serve as a much needed model for delivery of care to those with chronic diseases. Although the VA provides dialysis care to only 4% of adult patients nationwide, the system serves as a case study for a fully integrated care model, particularly as the federal government is looking to create End Stage Renal Disease Seamless Care Organizations (ESCOs) and evaluate the CMS ESRD program. Perhaps this look back at a program that has served our veterans will be instructive as our nation plans for the future health and health care of its people.

ACKNOWLEDGEMENTS

The authors acknowledge the service of US military members and veterans and thank them for their contributions to realizing the US national treatment program for end-stage kidney disease.

Disclaimer: The work herein reflects the work of the individual authors and is not to be construed as the opinion of the US Government.

Support: None.

Financial Disclosure: The authors declare that they have no relevant financial interests.

REFERENCES

20. Rettig RA. The policy debate on patient care financing for victims of


