2017

End Stage Renal Disease Network (ESRD) Organization Program Summary Annual Report

ESRD National Coordinating Center (ESRD NCC)
www.esrdncc.org

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Centers for Medicare & Medicaid Services Contracting Officer Representative:
Renee Dupee, JD

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For additional information about the ESRD Program or to review prior *Summary Annual Reports*, please visit www.esrdNCC.org or contact the NCC at NCCinfo@hsag.com.

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Introduction

The End Stage Renal Disease (ESRD) Network Program is a national program funded by the Centers for Medicare & Medicaid Services (CMS) to improve the quality of care for individuals with irreversible kidney disease and who require dialysis or transplantation to sustain life. Eighteen ESRD Networks conduct the activities of the ESRD Network Program "in support of achieving national quality improvement goals and statutory requirements as set forth in Section 1881 of the Social Security Act and the Omnibus Budget Reconciliation Act of 1986."[1] The healthcare improvement activities of the 18 ESRD Networks align with the Health and Human Services (HHS) National Quality Strategy, the CMS Quality Strategy, and other CMS priorities designed to improve the care of individuals with ESRD. This report details the activities carried out by the Networks in 2017, as well as information on prevalence of ESRD, kidney transplantation, and ESRD-related grievances. The report highlights Network Program activities conducted in 2017 overall, and then provides detailed descriptions of Network activities.

Report Highlights

Dialysis Prevalence

The ESRD Networks reported a 2.2% increase in the prevalent dialysis population, i.e., the total number of dialysis patients, between December 31, 2016, and December 31, 2017. There was considerable variation in ESRD prevalence across the 18 ESRD Networks' geographic areas in 2017. Network 1, the New England region comprised of the states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont, had the fewest patients (14,669). Network 14, comprised of the state of Texas, had the largest number of patients (50,308).

Home Dialysis

Following recent trends, the use of home dialysis increased by 3.3% from December 31, 2016, to December 31, 2017. It is expected that more dialysis patients will choose home dialysis as their modality in the future, as it has been linked to better clinical and psychosocial outcomes.

Grievances and Sanctions

The 18 ESRD Networks processed 1,350 beneficiary grievances in 2017. Of the 1,350 grievance cases processed, 725 (53.7%) involved Immediate Advocacy, 391 (28.9%) were General Grievance, and 234 (17.3%) were based on a Clinical Area of Concern. See Table 2 for Network-specific data.

[1] Centers for Medicare & Medicaid Services. *ESRD Network Statement of Work*. C.1 Purpose of the SOW. October 30, 2017. Washington, DC: Centers for Medicare & Medicaid Services; 2017.

Patient Engagement

In 2017, the ESRD Networks recruited approximately 270 volunteer patient and family/caregiver representatives to provide input on Network activities and ensure that the patient perspective was incorporated in all Network-developed patient educational resources. Patient Subject Matter Experts (SMEs) helped to promote and provide peer-to-peer education within the dialysis units. The Networks recruited patients who also wanted to serve at the national level as part of the ESRD NCC National Patient and Family Engagement Learning and Action Network (NPFE-LAN). The NPFE-LAN brings together healthcare professionals, patients, and other stakeholders to achieve rapid-cycle improvement, create opportunities for in-depth learning and problem solving, and harness participants shared knowledge and skills to achieve specific Program-wide objectives.

Emergency Management

CMS enhanced its focus on emergency management practices and requirements for the ESRD Networks during 2017. On a national level, the Kidney Community Emergency Response (KCER) Program continued to expand relationships with CMS emergency management professionals, the Office of the Assistant Secretary for Preparedness and Response (ASPR) of HHS, and the U.S Public Health Service (PHS). On regional, state, and local levels, the ESRD Networks continued to engage in outreach, training, and technical assistance activities to help ensure that the needs of ESRD patients were met in emergency situations. In 2017, the Networks responded to over 65 events, including three overlapping category five hurricanes with damaging winds, extreme rainfall, and record-breaking floods. Hurricanes Harvey, Irma, and Maria caused disruptions to facility operations and presented unique patient access-to-care issues. Other emergency conditions that had the potential to impact ESRD patients and/or providers included wildfires, tornadoes, winter storms, earthquakes, structure fires, and power outages.

Impact of Network Quality Improvement Activities (QIAs)

The Networks serve all patients with ESRD and support all in-center and home dialysis providers, as well as kidney transplant providers, across the U.S. and its territories. Through the development and implementation of QIAs, each Network collaborates with a specific subset of facilities in their service area to improve targeted outcomes. These activities enrich the lives of kidney patients through a mix of clinical initiatives, quality of life improvements, and efforts to enhance continuity of care. Using prescribed quality improvement tools, the Networks conduct data analysis to develop improvement strategies. From January to September 2017, the ESRD Network Program QIAs included 5,426 out of 7,158 total dialysis facilities, representing 75.8% of all dialysis facilities. That means that 343,650 out of 728,470 period prevalent dialysis patients in the U.S. and its territories (47.2%) were impacted over the course of the QIAs for the same time period. While some QIAs require several cycles before substantial progress is made and sustained, other QIAs make an immediate positive impact on the ESRD population.

The following are just three highlights from the Networks' achievements in 2017. Through facility implementation of Network QIA interventions, 10,394 patients were positively impacted by either catheter removal, reduced bloodstream infection (BSI) rates or prevented involuntary discharges (IVDs). In addition, there were 343,650 period prevalent patients in the LTC and BSI facilities QIA facilities, and 1,431 patients that at-risk for an IVD, that benefited from process and policy changes, implementation of best practices, and enhanced patient and family engagement activities that improved overall care in the QIA facilities. These interventions also reduced Medicare ESRD costs during, and after, 2017 by more than $199 million dollars.

Long-Term Catheter (LTC) Reduction

Given the well-documented higher risk of LTC use,[2] the Networks' interventions are life impacting work. They also produce impressive cost savings to the CMS Medicare ESRD Program.

[2] Rehman R, Schmidt R J, Moss A H. Ethical and Legal Obligation to Avoid Long-Term Tunneled Catheter Access. CJASN. 2009; 4 (2) 456-460.

In 2017, the Networks implemented facility-level, targeted interventions based on the results of root cause analyses (RCAs) and plan-do-study-act (PDSA) cycles. All 18 Networks reduced use of LTCs by the end of the QIA time period. While the interventions took many forms, the majority focused on patient education, patient rights, empowerment of the patient and family, and establishing facility processes for sustainable improvement.

An estimated 7,823 (27.1%) patient lives were positively impacted with a cost savings to CMS of $140.8 million due to the Networks' catheter-reduction QIAs.

Guidelines for vascular access management highlight the elevated risk of infection and mortality from the use of LTCs. The annual cost for outpatient treatment of an LTC patient can be up to $25,000 more than for a patient with an arteriovenous fistula (AVF) access, with the average cost difference between a catheter and a graft or fistula being approximately $18,000.[3] Hospitalizations due to catheter-related infections are also a major cost to the healthcare system and will be addressed in the section on BSIs.

Two-thousand eight hundred and fifty-four out of 7,158 total dialysis facilities participated in the ESRD Network LTC Reduction QIAs, representing 39.9% of the ESRD facilities nationally. Over the course of the QIA project, January to September 2017, there were 262,965 period prevalent patients positively impacted by overall facility improvements, such as implementation of CDC guidelines. In January 2017, 28,873 patients were classified as LTC, meaning they were listed as "catheter only" for 90 days or greater in CROWNWeb. At the end of the project period in September 2017, 22,186 of the original 28,873 patients were still dialyzing, but 7,823 were converted to a permanent vascular access. This is a 27.1% improvement in the QIA cohort patient population for LTC.

[3] United States Renal Data System. *2010 USRDS Annual Data Report: Epidemiology of Kidney Disease in the United States.* Bethesda, MD: National Institute of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 2010.

According to USRDS data, the cost of dialysis per year for an LTC patient is approximately $90,000. The cost for a patient dialyzing with a permanent access is approximately $72,000[4] per year, a difference of $18,000. The 7,823-catheter reduction achieved as a result of the 2017 QIA interventions, therefore, represents a cost savings to CMS of approximately $140 million. Additionally, there is indication that QIA interventions and education spread outside of the QIA facility pool. During the same time period of January to September 2017, the national ESRD program, as a whole, experienced a decrease in LTC use by 13,831 in the period prevalent dialysis population. The lives of almost 14,000 patients were positively impacted with the additional benefit of a cost savings to CMS of $248.9 million.

Nationally, 13,381 (30.1%) patient lives were positively impacted and $248.9 million in cost savings to CMS due to the Networks' interventions and education- reaching farther than the catheter reduction QIA facilities.

BSIs Prevented

Infections contribute a very real threat to the length and quality of life for ESRD patients due to their increased risk for acquiring HAIs, specifically BSIs, due to the regular and frequent use of CVCs and other forms of access to their bloodstream while dialyzing.[5] Data indicates that patients with a BSI have an attributable mortality of 12.0–25.0%.[6] Additionally, the financial cost of treatment and possible hospitalizations associated with catheter line-acquired BSIs ranges from $3,700 to $28,000 per patient, per episode.[7]

The Networks worked with 1,360 of 7,158 total dialysis facilities nationally (19.0%) in 2017, to reduce BSIs. At baseline of the QIA in January 2017, there were 6,285 BSIs nationally, representing a cost of an estimated $99.6 million, or $15,850 per BSI episode. By the conclusion of the QIA at the end of September 2017, there were 3,879 BSIs, a reduction of 2,406 BSIs (38.3%) over the nine-month QIA period. Using the midpoints for cost, this effort demonstrates

[4] United States Renal Data System. *2010 USRDS Annual Data Report: Epidemiology of Kidney Disease in the United States.* Bethesda, MD: National Institute of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 2010.

[5] Centers for Disease Control. Dialysis Safety, 2018. Available at: https://www.cdc.gov/dialysis/index.html. Accessed on: October 24, 2018.

[6] Srinivasan A, Wise M, Bell M, et al. Vital Signs: Central Line--Associated Blood Stream Infections -- United States, 2001, 2008, and 2009. *Morbidity and Mortality Weekly Report*. 2011; 60(08): 243-248.

[7] Scott II RD. The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention (Publication No. CS200891-A). Available at: https://www.cdc.gov/hai/pdfs/hai/scott_costpaper.pdf. Accessed on: August 27, 2018.

a cost savings to CMS of an estimated $38.1 million. The QIAs, by increasing awareness and educating both facility staff and patients, directly impacted the quality of life for patients.

An additional outcome of the QIA was increased collaboration between the Networks and with stakeholders, including hospitals, Quality Innovation Networks-Quality Improvement Organizations (QIN-QIOs), large dialysis organizations (LDOs), and patient subject matter experts (SMEs).

Individual highlights from Network BSI reduction QIAs can be found on page 16 of this report.

Involuntary Discharges Averted

> Each averted IVD equals approximately $253,800 per year in savings to CMS.
>
> In 2017, the Networks averted 165 IVDs or placed patients in another facility, resulting in a savings of $20.9 million.

According to the ESRD Conditions for Coverage (CfCs) and the CMS defintion of an IVD, a facility may IVD a dialysis patient, leaving him or her without an outpatient facility to provide weekly dialysis. An ESRD patient who is unable to dialyze in an ESRD dialysis outpatient setting must be evaluated in a hospital emergency room for acute dialysis treatment at a substantial increase in cost and at a detriment to his or her life expectancy.[8] The Networks are often able to avert an IVD by educating both patients and staff on de-escalation techniques, the importance of patients' perceptions, coaching of patients through understanding of facility procedures, and through investigation and issue resolution.

The average estimated cost of outpatient dialysis per patient, per year is approximately $88,700. The estimated cost of emergency dialysis provided by a hospital in 2017 was $342,500 per year, [9] an increased cost over outpatient treatment of $253,800. Taking into consideration that not all IVDs are averted early in the year and therefore the savings are not for a full year, the NCC calculated potential savings at $126,900 per patient, per year.

In 2017, the 18 Networks responded to 1,431 reports of patients being at-risk to an access-to-care issues, as well as assisting to avert 61 of the 499 IVDs that had been given a 30-day notice. According to data reported by the Networks in the Patient Contact Utility (PCU) in the patient

[8] Cervantes L, Tuot D, Raghavan R, et al. Association of Emergency-Only vs Standard Hemodialysis with Mortality and Health Care Use Among Undocumented Immigrants with End-stage Renal Disease. JAMA Intern Med. 2018; 178(2):188–195.

[9] Cervantes L, Fischer S, Berlinger N. The Illness Experience of Undocumented Immigrants with End-stage Renal Disease. *JAMA Intern Med.* 2017; 529-535.

status Post Discharge Follow-Up Disposition, an additional 104 non-averted patients were admitted to another outpatient facility, bringing the total number of averted IVDs to 165 at a cost savings to CMS of $20.9 million.

In 2017, through the Networks' interventions in these three areas alone (LTC reduction, BSI prevention, and aversion of IVDs), 10,394 lives were positively affected specifically by BSI reduction, catheter removal or a prevented IVD, at a savings of $199.8 million to the Medicare ESRD Program. There were 345,081 lives impacted by facility interventions that improved overall patient care.

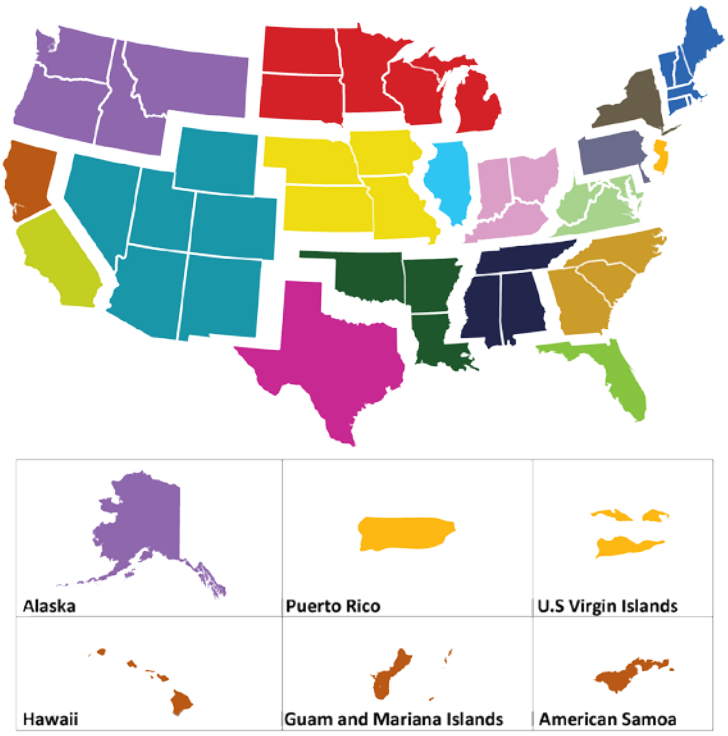
ESRD Program Funding and Definition of Service Areas

CMS funds the ESRD Network Program by withholding $0.50 from the Medicare composite rate payment for each dialysis treatment received by an ESRD patient. This rate has remained the same since 1989. These withheld funds support ESRD Network Program activities, including patient and dialysis staff member education.

The 18 ESRD Networks serve the 50 states, the District of Columbia, and the U.S. territories of Puerto Rico, the Virgin Islands, American Samoa, Guam, and the Northern Mariana Islands (see Figure 1). In 2017, the ESRD Networks worked to improve healthcare for approximately 505,000 dialysis patients.

Figure 1

FIGURE 1 ESRD Network Areas	
Network	Geographic Area
1	CT, MA, ME, NH, RI, VT
2	NY
3	NJ, PR, VI
4	DE, PA
5	DC, MD, VA, WV
6	GA, NC, SC
7	FL
8	AL, MS, TN
9	IN, KY, OH
10	IL
11	MI, MN, ND, SD, WI
12	IA, KS, MO, NE
13	AR, LA, OK
14	TX
15	AZ, CO, NM, NV, UT, WY
16	AK, ID, MT, OR, WA
17	American Samoa, Guam, HI, Northern California, Northern Mariana Islands
18	Southern California



The ESRD National Coordinating Center

The ESRD NCC assists CMS in supporting ESRD Network activities and coordinates initiatives on a national scope that include:

- Convening NPFE and Network QIA LANs.
- Collecting, analyzing, and reporting data for use by the Networks and CMS.
- Providing support for the ESRD Networks, including:
  - Achievement of vascular access goals.
  - Reduction in rates of preventable hospitalizations.
  - Reduction in rates of HAIs.
- Developing and distributing technical and educational materials to members of the ESRD community, including practitioners and new dialysis patients.

The ESRD NCC also prepares the *ESRD Network Program Summary Annual Report* (this document), which is distributed to the U.S. Secretary of HHS, the U.S. Congress, CMS, the ESRD Networks, and other stakeholders. The report compiles information from the Networks' Annual Reports, as well as data from the ESRD NCC.

Network Requirements

The activities of the ESRD Network contractors are guided by the ESRD Network Statement of Work (SOW). The activities in the SOW align with the HHS National Quality Strategy, the HHS Secretary's priorities, and other CMS priorities designed to improve the care of individuals with ESRD.

In 2017, the CMS goals for the ESRD Network Program were:

- Goal 1: Empower patients and doctors to make decisions about their health care
- Goal 2: Usher in a new era of state flexibility and local leadership
- Goal 3: Support innovative approaches to improve quality, accessibility, and affordability
- Goal 4: Improve the CMS customer experience

The ESRD Networks are charged with promoting positive change relative to the CMS goals, as well as targeting disparities when conducting all the activities outlined in the SOW; the Networks must develop, implement, and assess interventions aimed at reducing disparities in ESRD patients' access to care, quality of care, and health outcomes.

Network Staffing

Network staff members provide support to ESRD patients and families, providers, and health professionals. Network contract activities support more than 7,000 dialysis facilities and more than 250 transplant centers performing kidney transplants across the U.S. and its territories (Table 1 in the Data Tables section of this document). CMS requires each Network to employ an Executive Director to oversee administration of all contract requirements and overall operation of the Network. The Executive Director is to have professional relationships within the ESRD community, as well as expertise in administration of the CMS contract, management and supervision of staff, and fiscal oversight of the Network.

CMS also requires each Network to employ a registered nurse with nephrology experience and a Master of Social Work-level social worker with experience in case review. Support staff and other personnel with experience in program planning, implementation, data analysis, and evaluation, are utilized to conduct the activities and assume the responsibilities outlined in the Network contracts and other CMS directives. Job titles, specific responsibilities, and the number of support staff vary from Network to Network.

Network Governance

Each Network must establish and maintain a Network Council (NC), Corporate Governing Body (CGB), Medical Review Board (MRB), and Patient Advisory Committee (PAC). Networks have the option of establishing additional committees as necessary. The responsibilities and composition of each mandatory board or committee are outlined below:

- The NC must include at least two patient representatives, as well as representatives from dialysis and transplantation providers located in the Network area. The NC meets at least annually to provide input on Network activities and serve as a liaison between the Network and providers.

- The CGB must include at least one patient representative and sets overall policy and direction for the Network; it retains oversight responsibility. The CGB also reviews and approves any recommendations from the MRB for sanctions to be imposed on ESRD facilities prior to submission of these recommendations to CMS.
- The MRB is made up of at least two patient representatives and a mix of ESRD professionals, typically nephrologists, surgeons, physician assistants, nurses, social workers, and dietitians, who are qualified to evaluate the quality and appropriateness of renal care. The MRB serves as an expert panel on patient quality of care issues.
- The PAC ensures that the patient perspective is incorporated into all Network activities and is instrumental in providing input into the development of informational and educational materials for patients and families/caregivers. The members must be representative of the diversity of the ESRD population in the Network service area.

The dialysis and transplant providers in each Network area are invited to appoint patient representatives to the Network boards and committees, and practitioners are encouraged to participate in Network-organized committees. Participants in these organizations offer their time on a volunteer basis and provide invaluable hours of service to the Networks. The contributions of these members are a critical part of the effective functioning of the Networks and the success of the ESRD Network Program.

Patient Profile

Patients and Facilities

As of December 31, 2017, there were 505,076 prevalent dialysis patients and 7,158 dialysis facilities covered by the ESRD Network Program. Network 6, comprised of the states of Georgia, North Carolina, and South Carolina, served the largest number of dialysis facilities (720). Network 1, the New England region comprised of the states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont, had the fewest facilities (191).

Understanding Patient Characteristics

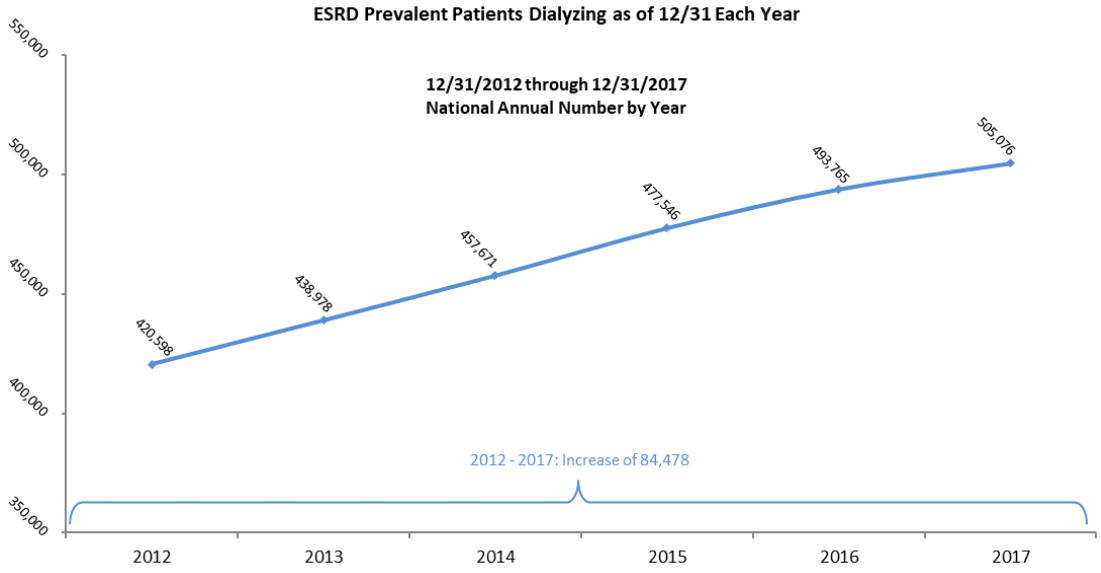
CMS defines ESRD as "permanent kidney failure treated with dialysis or a transplant." ESRD is the final stage on the spectrum of chronic kidney disease (CKD). The prevalence of CKD in the U.S. adult population is high, with an estimate of more than 14.8% of adults affected.[10] This is attributable, in part, to high rates of diabetes and hypertension in the adult population.

[7] United States Renal Data System. *2016 USRDS Annual Data Report: Epidemiology of Kidney Disease in the United States.* Bethesda, MD: National Institute of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 2015.

Information about the number prevalent dialysis patients (i.e., total dialysis patients at a given point in time) and new renal transplant patients in 2017 is highlighted in the following sections.

Prevalent Dialysis Patients

Information on prevalent dialysis patients is drawn from the Consolidated Renal Operations in a Web-Enabled Network (CROWNWeb) database that identifies all patients who are alive and on dialysis as of December 31 of the given year. According to the Networks' annual reports 505,076 patients were receiving dialysis in the U.S. as of December 31, 2017, indicating an increase of 2.2% (11,311 patients) from 2016 (Figure 2).



Improving Care for ESRD Patients by Increasing the Use of Permanent Vascular Accesses

Vascular Access

Renal replacement therapy of HD requires repeated access to large blood vessels capable of effectively removing wastes, water, and excess electrolytes from the blood. There are three types of vascular access: AVF, arteriovenous graft (AVG), and CVC. A patient's vasculature and other medical and physical conditions are considered in determining the access type most efficacious for each individual patient. AVFs are considered the gold standard, although not all patients can support the use of an AVF. An AVF is a surgical connection between a vein and an artery, usually in the forearm. An AVG, another form of permanent access, is created using a synthetic tube implanted under the skin that connects an artery and a vein. An AVG is an acceptable alternative when AVF placement is not deemed possible.

A CVC, when used for vascular access in dialysis, is a flexible tubular instrument that is surgically inserted, often into a large vein in the neck, with the tip resting in the right atrium of the heart. Catheters pose a higher risk of infection, clotting, and narrowing of vessels than AVFs and AVGs, leading to increased morbidity and mortality in patients.[11] As a result, CVCs should be viewed as a temporary "bridge" to an AVF or AVG if a patient needs dialysis before an AVF or AVG is created and/or ready for use. There are some patients who are unable to have an AVF or AVG created or have other clinical conditions that preclude AVF/AVG placement. In such cases, use of a CVC may be their only access option.

The Role of the Networks in Increasing Fistula Placement Rates and Decreasing Long-Term Catheter Use Rates

In 2017, the ESRD Networks developed targeted strategies to assist dialysis facilities in increasing AVF use rates and decreasing LTC use rates in incident and prevalent dialysis patients. Strategies were developed through the performance of environmental scans using root cause analysis (RCA), an approach used to identify the origins of a problem or error, and included:

- Educational webinars.
- Online needs assessments.
- Action plan development.
- Focus groups.
- Site visits by Network staff.

[8] Vachharajani TJ. *Atlas of Dialysis Vascular Access*. 2010. Available at: http://fistulafirst.esrdncc.org/wp-content/uploads/2015/12/Access-Atlas.pdf

To achieve improvements in permanent vascular access use (more AVFs/AVGs and fewer LTCs), the Networks first identified dialysis facilities that had not reached CMS targets (i.e., facilities who still showed use greater than or equal to 10.0% in the prevalent HD population). The Networks then provided individualized support via QIAs to the identified facilities. Different Networks took different approaches:

- **Network 6** focused their QIA on education and inclusion of all stakeholders for maximum impact. They established multiple education touchpoints for facility operations managers, patient care technicians, multidisciplinary facility staff, peer mentors, and patients in collaboration with patient SMEs. The Network also supported the creation of a vascular access task force, and facility-level vascular access planning teams to sustain these efforts for future success. The Network concluded the intervention period with outcomes better than the national goal of 14.5% LTC use by 1.6 percentage points.
- **Network 13** conducted a QIA that included a patient engagement component aimed at increasing patient knowledge of vascular access types and their associated complications. The Network implemented the use of a Patient Vascular Access Checklist that was completed by patients with a catheter in use at the beginning of the QIA, and again at the end, following the provision of vascular access education. This innovative strategy increased patient understanding significantly. The rate of correct responses to the Patient Vascular Access Checklist prior to any vascular access education was 78.3%, and the rate of correct responses after all educational materials were shared with patients was 87.3% ($p<0.01$), a 9-percentage point improvement.
- **Network 15** led a QIA that included 119 facilities, with 26 of those receiving more intensive interventions based on having both low AVF rates in addition to high LTC rates. An identified barrier to placement of permanent access was the initiation of treatment in an urgent manner, which did not allow time for patients to receive education for proper vascular access planning. Another barrier reported by facilities was not having a designated staff member to monitor vascular access planning and maturing accesses, which caused delays in the process. Best practices used during the interventional period attempted to address these issues. QIA facilities encouraged: vascular access surgeons to round at the facility, allowing them to establish vascular access plans and address any barriers in an outpatient setting; communicating the expectation of establishing a permanent access upon admission; and, providing frequent patient education on infection prevention to create a heightened awareness of the risks associated with having an LTC. The baseline LTC rate for the cohort was 14.7%. The cohort facilities reduced their aggregate LTC rate to 12.5%, which was a decrease of 2.2 percentage points. This exceeded the QIA goal and was also lower than the final measurement at the national QIA level, which was 14.5%.
- **Network 17** supported 97 facilities with LTC rates greater than 10.0% serving approximately 9,000 patients. The Network analyzed final evaluation results from the subset facilities to identify interventions that were most successful and would be sustained after the QIA. Results indicated that 84.6% would continue to use a vascular access tracking tool and a vascular access manager, plus 70.8% of facilities would continue to use the educational tools developed. The cohort facilities reduced their aggregate LTC rate to 12.7%, which was

a decrease of 1.3 percentage points, as of the end of the intervention period. This final measurement was also lower than the national QIA goal, which was 14.5%.

Patient Safety

Support for the National Healthcare Safety Network

The Centers for Disease Control and Prevention's (CDC's) National Safety Health Care Network (NHSN) is the most widely used HAI tracking system in the nation. It provides facilities, states, regions, and the nation with the HAI data needed to identify areas for improvement, measure the progress of prevention efforts, and ultimately eliminate HAIs as a threat to patients' health.

Patients who undergo dialysis treatment are at an elevated risk for infection due to the frequent use of catheters or insertion of needles to access the bloodstream as part of the HD process.[12] NHSN data is critical to the improvement of care provided by dialysis facilities. It also enables staff at all 18 ESRD Networks to easily identify high rates of HAIs in individual dialysis facilities. Once these facilities are identified, the Networks can work with facility staff to implement quality improvement efforts aimed at reducing incidence of HAIs. Additionally, NHSN's infection tracking system:

- Helps to identify both at-risk patients and which part of a facility might need improvement.
- Allows the CDC to see national trends and direct prevention efforts for the country.
- Permits facilities to categorize HD patients by type of vascular access used.
- Provides a variety of analysis options that can be used to better inform quality improvement decisions.

In 2017, a significant part of Network support for the NHSN included review of facilities' monthly reporting of intravenous (IV) antimicrobial starts, positive blood cultures, and evidence of local access site infections. Network support also included technical assistance to the facilities with data entry, so that these events were entered accurately and in a timely manner. The Network assisted new users and facilities with completing enrollment in NHSN. The Networks were also charged with providing technical assistance and resources to ensure that a new ESRD Quality Incentive Program (ESRD QIP) reporting requirement for payment year (PY) 2019 (measured in calendar year [CY] 2017) was understood and could be met by all dialysis facilities. The NHSN Healthcare Personnel (HCP) Influenza Vaccination Summary Surveillance requirement directed dialysis facilities to collect HCP influenza vaccination data, according to the HCP Influenza Vaccination Summary Protocol, beginning with the 2016–2017 influenza season, and to report a summary of those data to NHSN on or before May 15, 2017. This

[9] Centers for Disease Control and Prevention. Dialysis. Accessed August 2017. Available at: https://www.cdc.gov/dialysis/index.html

requirement applied to all outpatient dialysis facilities, whether they provided in-center HD, peritoneal dialysis (PD), or home HD services.

Healthcare-Associated Infections Learning and Action Network

In 2017, the ESRD Networks continued to assist in the elimination of HAIs through national education for the ESRD community aimed at standardization of practice and widespread comprehension of relevant infection control concepts. This was accomplished through the work of the HAI LANs. The HAI LANs provided a variety of resources to assist dialysis facilities in reducing the occurrence of HAIs, including education for patients and family members about infection control, webinars for dialysis facility staff that featured presentations by public health and medical experts, and behavioral self-management policies and procedures (e.g., infection control protocols).

Bloodstream Infections

Dialysis patients are at higher risk than the general population for acquiring HAIs, specifically BSIs, due to the regular and frequent use of catheters and other forms of access to their bloodstream while dialyzing. In addition, the financial cost associated with HAIs is staggering. The goal of the BSI QIA was to increase awareness and reporting of BSIs in at least 20.0% of facilities in each Network's service area, while decreasing rates of dialysis events. In 2017, the Networks specifically strived to achieve a 5.0% relative reduction in the pooled mean BSI rate for the targeted facilities at the re-measurement period.

- **Network 6** worked with 145 facilities with infection rates ranging from 0.33 to 5.20 per 100 patient months and with between three and 14 BSIs during the evaluation period. Prior to designing QIA interventions, the Network worked with targeted facilities to complete a 5-Whys RCA Tool for each targeted facility for each infection, then followed up with additional CDC tools specific to their facilities' identified RCA to improve BSI rates through targeted feedback and individualized strategies. The Network achieved success by: conducting feedback audits with facilities to ensure they were using the materials and resources provided; using one-on-one coaching with poor performing facilities; distributing educational materials and resources from the CDC website; and facilitating quarterly HAI LAN meetings featuring presentations by experts in BSI reduction and facility best practices. The Network's interventions succeeded in decreasing the pooled mean BSI rate from 1.04 at baseline to 0.60 at remeasurement, yielding a 0.68 relative reduction. This translates into 340 actual BSIs prevented in the Network service area.
- **Network 9** supported 129 facilities with infection rates ranging from 0.92 to 6.38 per 100 patient months and with between two and 19 BSIs in the first and second quarters of 2016 as the baseline data. Highlights of the Network's efforts include: use of Patient Ambassadors at the facility level in auditing tools and educational programming; implementation of a monthly facility summary report documenting successes, challenges, and observations; and creation of Quality Assessment Performance Improvement (QAPI) and corporate leadership teams of 12 facilities to concentrate efforts within their regional LDOs to sustain success. The Network's interventions succeeded in decreasing the pooled mean BSI rate from 1.0% at baseline to .079% at re-measurement, yielding a 21.7% relative

reduction in BSIs and surpassing the Network target of 0.963 average BSIs or less. The Network's efforts with the facilities prevented 229 BSIs.

- **Network 11** collaborated with two patient SMEs to develop patient-focused materials for distribution. The Network also hosted monthly coaching calls coupled with facility best practices and patient stories, and monthly audits and comparative data analysis to provide real time progress toward goal. At the end of the intervention period, the Network prevented 116 actual BSIs.
- **Network 14** encouraged facility use of the CDC's Core Interventions, resulting in a ten percentage-point increase in adoption by the close of the QIA. Of the 114 facilities in the project, 98 facilities (86.0%) surpassed the project goal of a 5.0% or greater reduction in their pooled mean BSI rate at re-measurement. The focus facilities' BSI rates decreased, on average, by 0.76 percentage points; the Network's interventions prevented 287 actual BSIs.

Vaccinations

CDC recommends all ESRD patients receive vaccinations for both Hepatitis B (HBV) and Pneumococcal Pneumonia (PPV) due to increased risk. The Networks' goal was to educate patients on the importance of receiving vaccinations and improve ESRD patient vaccination rates. Through data analysis, Networks identified the lowest-performing facilities and implemented measures in the entirety of this target group. Patient SMEs were included in the development and implementation of materials whenever possible.

- **Network 5** focused on increasing vaccination rates through creation of a program called, *Coverage,* which established and disseminated best practices to all participating facilities through monthly webinars. Patient engagement and use of a facility-based vaccination manager trained in the protocols were associated with improved outcomes. The Network increased the HBV rate to 73.9% by re-measurement compared to the National QIA rate of 66.6% for the same period. Network 5 exceeded its goal of 53.8%. PPV Rates for QIA facilities were 44.0% at project initiation and increased to a final rate of 71.0% compared to the National QIA rate of 65.1% for the same period. Network 5 exceeded its goal of 47.0%.
- **Network 16** demonstrated a baseline PPV rate of 57.2% and a HBV rate of 55.5% in 1,466 patients across QIA participants. There were 25 project facilities, 19 of which met the criteria for graduation prior to the close of the project. Overall, participants increased the vaccination rates for HBV by 14% (from 67.0% to 81.0%) and PPV by 24.0% to 81.0% and 66.0% respectively. The Network created an HBV kit to educate both staff and patients on the multi-step hepatitis B series. The Network's PAC created a tracking form designed for nurses to use in discussions with patients. The form outlines where a patient is in the HBV series, how many more shots are expected, and the relevant timeframes for the remaining shots. A colorful "quick reference guide" was created to clearly state the guidelines for nurses' use.
- **Network 14** used a cross-functional team approach to design individualized interventions aimed at increasing patient education and effective tracking at the facility level. As a result, patients were educated on vaccination(s) upon admission or within the first week of dialysis. Patient discussion groups were successful at addressing general misconceptions and establishing an informed consensus among patients. Effective tracking tools developed

by the Network allowed charge nurses to maintain up-to-date patient vaccination records. From baseline to project completion, the HBV rate increased from 37.7% to 67.4%, and the PPV rate increased from 28.8% to 70.8%, which represents a significant improvement based on statistical analysis for both vaccines. A total of 493 patients were vaccinated against HBV, and 772 patients were vaccinated against PPV during the project period.

- **Network 18** conducted a QIA to increase vaccination rates at the 10.0% of clinics with the lowest performance scores. The Network identified record keeping and data entry as two common barriers. Therefore, the Network created an "HBV Kit" to educate both staff and patients on the complicated HBV series. A tracking form and colorful "quick reference guide" were created to simplify guidelines, so nurses could more easily provide vaccinations per the recommended timeline. Additional resources from HealthInsight, a private, non-profit, community-based organization dedicated to improving healthcare systems, vaccine manufacturers, the CDC, and the Immunization Action Coalition were provided to participants for each vaccination type, allowing facilities to target their patient education toward disparate groups found in their facility-specific data. By focusing on system improvements, better reporting practices, coordination of care, and patient education, Network 18 significantly improved vaccination rates for both HBV and PPV in target facilities. At the end of the year, 732 additional patients had received a PPV vaccine and an additional 400 patients completed the HBV series.

Support for the ESRD Quality Incentive Program

The ESRD QIP was established under the provisions of the Medicare Improvements for Patients and Providers Act (MIPPA) of 2008. Administered by CMS, the ESRD QIP is designed to promote high-quality services in outpatient dialysis facilities. The ESRD QIP was CMS' first value-based purchasing (VBP) initiative, representing a shift from quantity-based payment to quality-based payment by the Medicare Program. A percentage of each dialysis facility's Medicare reimbursement is contingent on the facility's performance on:

- Kt/V dialysis adequacy in HD, PD, and pediatric dialysis patients.
- Maximizing placement of AVFs.
- Minimizing use of catheters.
- Decreasing the proportion of patients with hypercalcemia.
- Decreasing the rate of BSIs.
- Lowering the rate of hospital readmissions.
- Reporting mineral metabolism and anemia values.
- Administering the In-Center Hemodialysis Consumer Assessment of Healthcare Providers and Systems (ICH CAHPS) Survey.

The ESRD Network Program provides ongoing support to dialysis facilities by offering ESRD QIP education, technical support, and updates to help facilities understand and comply with ESRD QIP requirements. The CROWNWeb system and the CDC's NHSN provide the necessary data to calculate facility performance.

Quality Incentive Program Quality Improvement Activity

During CY 2017, the ESRD Network Program used a multi-pronged approach to assist facilities in understanding and complying with ESRD QIP processes and requirements, including but not limited to site visits, webinars, and newsletters. The Networks also partnered with low-performing facilities to address areas of deficiency that resulted in payment reductions.
CY 2017 also saw the Networks continuing to focus on educating patients and family members on accessing and understanding dialysis facility Performance Score Reports (PSRs) and Performance Score Certificates (PSCs), so that patients could make educated decisions about their care.

- **Network 1** focused on facilities that had lost QIP points on the hypercalcemia measure and facilities that showed a continued trend of increased hypercalcemia during the baseline period. Highlights of the QIA interventions included collaboration with patients and facilities to provide individualized patient education and partnering with corporations and independent facilities to assist with protocol development and accurate CROWNWeb system reporting to support timely progress tracking and evaluation of effectiveness of project interventions. The ten participating facilities met the goals of a 25.0% relative improvement from baseline to re-measurement in the rate of hypercalcemia in participating facilities, or the QIP threshold being exceeded for three consecutive months or more, and a minimum of eight facilities completing the PDSA cycle by October 2017.
- **Network 3** assisted a total of ten facilities in the QIP QIA, nine new facilities plus one facility carried over from 2016. The QIA targeted nine of the poorest performing facilities in Kt/V adequacy from the Network 3 service area. Facilities had to complete at least one full PDSA cycle and work to achieve at least a 25.0% relative improvement (RI) in their overall Kt/V adequacy performance rate or exceed the ESRD QIP penalty threshold for three consecutive months by the end of third quarter of 2017. The goal for the facility carried over from 2016, was to achieve a 25.0% reduction in hypercalcemia rates. Identified best practices encouraged facilities to utilize weekly patient-specific lab reports with monthly team review of patient-specific needs to improve Kt/V using algorithms and decision trees for addressing sub-optimal lab results, and education for clinical staff on achieving optimal blood flow. At the end of this project, seven of ten facilities were improving and trending towards meeting their improvement goal for adequacy. The facility identified to improve hypercalcemia achieved their RI goal.
- **Network 8** collaborated with project facilities to design interventions aimed at the top causes of hypercalcemia. Tools, resources, and coaching calls to support improvement efforts were provided to project leads over the course of the QIA as they implemented facility-level interventions focused on titration of Vitamin D analogues, appropriate use of calcium-based binders, and intensive dietary instruction. By project conclusion, seven of ten units were able to meet and sustain facility-specific improvement of >25.0% relative improvement in the baseline hypercalcemia rate for three consecutive months, resulting in 16 of 19 (94.7%) units meeting or exceeding goal during the two-year cumulative project.

- **Network 9** supported facilities still participating in the 2016 QIP measure, focusing on hypercalcemia while involving new facilities in an improvement of Kt/v measures. As facilities 'graduated' from the hypercalcemia project, the Network enrolled new facilities in the Kt/V QIA. The goal for this QIP was to maintain a minimum of ten facilities with a 25.0% relative improvement from baseline to remeasurement in the rate of hypercalcemia or exceeding the QIP threshold for three consecutive months and a minimum of eight of the ten facilities completing the PDSA cycle. Again, as facilities' performances allowed them to graduate from the hypercalcemia project, new facilities were added into the Kt/V project. The Network held informational calls, provided monthly feedback calls, and conducted individualized coaching sessions with facility staff as needed. the Network also encouraged collaboration by working with State Survey Agencies (SAs) to administer support to participating facilities. The Network exceeded their goal of eight facilities successfully completing the PDSA cycle and meeting the improvement target for three consecutive months, with 21 facilities meeting these goals.

Provider Education

The Networks strive to ensure that dialysis facility and transplant center staff are up-to-date regarding developments in ESRD care by providing a robust program of educational activities and resources. In 2017, these activities and resources included:

- Hosting Network annual meetings.
- Providing on-site trainings and workshops to support QIAs and promote patient safety.
- Sponsoring continuing education seminars and symposia.
- Convening LANs to reduce HAIs.
- Developing and presenting webinars to educate dialysis facility staff on:
  - Increasing transplantation referrals.
  - Reducing LTC use.
  - Utilizing post-hospitalization checklists to reduce readmissions.
  - Improving communication with patients to reduce grievances and increase patient satisfaction.
  - Recognizing high-performing facilities in monthly newsletters.
- Spreading promising approaches and best practices.
- Maintaining frequent email communication with facilities.
- Posting information on Network websites.
- Producing and distributing provider-focused newsletters.
- Mailing and faxing information to providers on relevant clinical issues.
- Providing up-to-date information about product and medication recalls.

Ensuring Data Quality

CROWNWeb

The ESRD Network Program uses the CROWNWeb data management system to obtain and track data on patient age, gender, ethnicity, race, primary diagnosis, and treatment modality, among other characteristics, for incident and prevalent ESRD patients. Network staff uses these data points to inform quality improvement activities, strengthen outreach efforts, document demographic trends, and assess disparities in ESRD care.

The CROWNWeb system supports data collection for two primary CMS ESRD forms, the ESRD Medical Evidence Report: Medicare Entitlement and/or Patient Registration (CMS-2728) and the ESRD Death Notification (CMS-2746). Dialysis facilities and ESRD Networks, the primary users of CROWNWeb, employ the system to add, modify, and delete information associated with these forms. CROWNWeb is also used by facility staff to enter clinical data on all dialysis patients and report administrative information on facility personnel and dialysis services. The system is also used to track all patient admissions and discharges.

In 2017, the Networks continued their ongoing collaboration with the ESRD NCC on the ESRD Data Committee. The work done by these committees advanced the refinement and evolution of the library of data reports provided to Networks from the ESRD NCC utilizing CROWNWeb data. Network representatives on these committees:

- Informed the ESRD NCC on the ever-changing Network data reporting needs, priorities, and perspectives.
- Offered guidance on the requirements for specific reports.
- Tested data report updates prior to release to the entire community.
- Collaborated with the ESRD NCC to make important data available to the facilities (e.g., updates to gap reports, which identify patients in CROWNWeb not currently admitted to a specific facility) to support Network QIAs and to assist in enhancing the accuracy and completeness of data reported in CROWNWeb.

The ESRD NCC utilized feedback from these committees to produce updated reports quarterly throughout the contract year.

Veterans Health Administration and Transplant Facility Data

In 2017, Veterans Health Administration facilities and transplant facilities were not required to use CROWNWeb for data submission. To assist these organizations with timely processing of required CMS forms, the ESRD Networks accepted paper copies (instead of digital copies in CROWNWeb) of the CMS-2728, CMS-2746, and Annual Facility Survey (CMS-2744) forms and dialysis patient tracking forms. The Networks then manually entered the data on these forms into CROWNWeb for the facilities.

Disparities in ESRD Care

In 2017, each of the 18 ESRD Networks developed a Population Health Focused Pilot Project (PHFPP) to promote better health in the ESRD population. Each Network selected a project based on one of the following CMS-approved priorities:

- Improve Dialysis Care Coordination with a Focus on Reducing Hospital Utilization
- Increase the Frequency of Transplant Coordination
- Increase the Frequency of Home Dialysis Referrals
- Improve the Quality of Life of ESRD Patients

As part of the project, each Network conducted a disparity assessment to determine the target population for the project. The following categories were considered in identifying the target disparity: Race (African American versus White or race other than White versus White); ethnicity (Hispanic versus non-Hispanic); facility location (rural versus urban); gender (female versus male); and age (65 years and older versus younger than 65 years).

The following six attributes were incorporated into each Network's project:

1. **Rapid Cycle Improvement in Quality Improvement Activities and Outputs**
   On a routine basis, each Network evaluated and assessed the success of the project's interventions to make appropriate adjustments based on available information and feedback from project participants.
2. **Customer Focus and Value of the QIAs to Patients, Participants, and CMS**
   Each project incorporated a focus on the needs of customers. Input from patients, family members/care partners, and other stakeholders helped to inform the strategies and guide the quality improvement initiative.
3. **Ability to Prepare the Field to Sustain the Improvement**
   In the early development stage of the project, each Network established a sustainability plan that outlined how the project would continue after the Network was no longer actively involved.
4. **Value Placed on Innovation**
   Each project incorporated innovative approaches based on recommendations and ideas from identified participants; new tools and/or interventions were developed when needed to benefit all participants.
5. **Commitment to Boundarilessness**
   Information about each Network's project was communicated to and supported by stakeholder groups and organizations.
6. **Unconditional Teamwork**
   To further demonstrate each Network's commitment to boundarilessness, best practices and lessons learned through the project were disseminated to stakeholders, including other Networks.

Population Health Focused Pilot Projects

Focus on Reducing Hospital Utilization

In 2017, Networks coordinated stakeholders, including state hospital associations, QIN-QIOs, and ESRD professionals to reduce hospital utilization for ESRD patients. A secondary goal of this activity was to reduce the hospitalization rate between the identified disparate and non-disparate populations within each Network's service area. Following are a few examples of Network projects on this topic:

- **Network 13** participated in this QIA by collaborating with key stakeholders, including state hospital associations, QIN-QIOs within the Network service area, as well as applicable ESRD professionals. One best practice identified by facilities was consistent use of the Transitions of Care Checklist. Use of the checklist by the facilities increased performance from 28.1% at QIA initiation to 47.6% at completion. The baseline hospitalization rate for the eight facilities was 15.7%. By QIA completion, the hospitalization rate decreased to 14.6%, representing a reduction of 1.1 percentage points. By the end of the QIA, the Network reduced the female hospitalization rate from 19.0% to 15.2%. The male baseline was 13.4%, with a final measurement of 15.2%, eliminating the disparity at that given time.
- **Network 17** conducted a project with five facilities in the service area to reduce hospitalization and disparity rates between White and African-American populations. Interventions for the QIA included: addressing fluid management by conducting dry weight reviews; implementing use of a post-hospitalization checklist; conducting RCAs for patients with albumin levels under 3.5; identifying patients who were prescribed a high-risk medication; and providing patient education using resources developed by the Network Patient Advisory Committee (PAC). One best practice identified during the QIA was providing patient education using the Network PAC-developed resource, *Take Charge of Your Health: Reduce Unnecessary Hospitalizations*. In addition to receiving positive feedback from facilities, final evaluation results indicated that 86.8% of patients reported that the resource was helpful or very helpful, and 78.2% responded they would use the booklet's discharge planning checklist the next time they went to the hospital. By QIA completion, the hospitalization rate decreased to 15.1%, representing a reduction of 2.8 percentage points. The Network's efforts with facilities also reduced the disparate rate from 19.6% to 15.1%, and the non-disparate rate from 14.2% to 11.9%.

Improve Transplant Coordination

For the purposes of this project, a "transplant referral" was defined as any first-time referral for a patient (i.e., the patient had not already been referred or placed on a transplant waitlist), and for which either a dialysis facility or transplant center provided an indication that the patient had been referred. As with the other PHFPPs, a secondary goal was to decrease the gap in transplant referrals between identified disparate and non-disparate populations within the Network's service area. Examples of Network efforts conducted during 2017 to increase transplant referral rates included:

- **Network 1** conducted a PHFPP to both increase the rate of patient transplant referrals by five percentage points and decrease the identified disparity gap (females and males) by one percentage point from the baseline period to the re-measurement period. An evaluation of transplant waitlist data revealed that only 30.3% of the entire service area patient population were on the transplant waitlist. In collaboration with patient SMEs, facility-level interventions centered around education and peer-mentoring. At the provider level, interventions focused on RCA to identify and correct deficiencies in the transplant process, and process improvement for referral and tracking. The transplant referral rate at the re-measurement period for the selected facilities was 18.0%, which was an 11.9 percentage point increase (190.5% RI). The gender disparity gap for the baseline period in the targeted

facilities was 5.4%. The Network's interventions resulted in a 4.0 percentage point reduction (73.2% improvement), to a 1.5% disparity gap at re-measurement.

- **Network 2** supported twelve facilities to affect change in the rate of transplant referrals for African Americans in the Network service area as a disparity assessment for race, ethnicity, location, gender, and age showed a gap. Robust interventions included creation of a Transplant Advisory Committee to address barriers in data collection, inconsistent reporting, and communication breakdowns between dialysis facilities and transplant centers. Quarterly educational webinars to facilitate sharing of best practice models, educational articles and resources, and recommendations was implemented. The Network, having success, spearheaded an initiative with other Networks conducting a transplant QIA to create a Sustainability Guide that included best practices, lessons learned, and success stories from seven participating Networks. This Sustainability Guide was shared with all 18 Networks as part of the Network's support of unconditional teamwork and boundarilessness. At the end of the QIA, the transplant referral rate showed a 25.8 percentage point increase, significantly surpassing the goal. The racial disparity gap for the baseline period in the targeted facilities was 5.6%; the Network's interventions resulted in a 6.0-percentage point reduction, ending the project with a -0.4% disparity gap.
- **Network 10** implemented a QIA to increase the overall transplant referral rate by five percentage points, and to decrease the disparity between men and women being referred to transplant by one percentage point. The Network took a creative approach in their patient education, developing podcasts targeting common themes in women's experiences in the referral process, including: living donation, assessing patient readiness for change, transplant navigator, one woman's personal journey to transplant, and one "older" woman's experience working through the waitlist and transplant process. Though the resources could be used for male or female patients, the messaging directly addressed concerns of female patients. At the end of the project, the goals had been attained and exceeded in both increasing referral to transplant and in decreasing the disparity of women being referred to transplant. In total, 444 patients were referred for transplant evaluation that also reflected a decrease in the disparity of 3.3 percentage points.

Promote Appropriate Home Dialysis in Qualified Patients

Home dialysis modalities are underutilized in the U.S., with only 11.700% of dialysis patients using home renal replacement therapies as of the end of calendar year 2017. At the same time, this does reflect an increase of 0.167% (2,111 patients) from the end of calendar year 2016, choosing to dialyze at home. To further increase that rates of patients dialyzing at home, select Networks participated in a PHFPP aimed at increasing the number of patients referred to a home therapy while reducing the disparity rates among referred patient groups. For the purposes of this QIA, a "home dialysis referral" was defined as any first-time referral for a patient (i.e., the patient had not already been referred or failed on a home therapy), and for which a dialysis facility had documentation of the referral process. Networks identified the disparate and non-disparate groups within their service area through data analysis. A secondary goal was to decrease the disparity rate in home dialysis referrals among the two groups. Network efforts during 2017 to increase home dialysis referral rates and minimize disparity included:

- **Network 8** implemented a program branded as Make Yourself at Home to increase home modality referrals while also aiming to reduce disparity between African American patients and White patients. Fifteen facilities with low home dialysis rates in their service area were chosen for this project. Data for the target facilities revealed a 6.2% baseline home dialysis referral rate and an 8.6 percentage point difference between referrals for African American and White patients. The project goals were to increase the overall home modality referral rate by 5.0% and decrease the racial disparity by one percentage point. Through use of peer education, Town Hall meetings that included collaboration with the National Association for the Advancement of Colored People and partnering with an LDO, Network 8 exceeded both goals; results indicated an overall referral rate of 26.1% and a 3.8 percentage point reduction in disparity at the end of the project. A resounding best practice for the project was that patients were more inclined to consider a home modality if peer interactions regarding home dialysis experiences were included in the targeted interventions.
- **Network 14** worked with 24 focus facilities in Texas with low home modality referral rates. The project baseline was 13.9%; there was also a gap between Hispanic and non-Hispanic patients of 7.5 percentage points. The goals, as outlined in the SOW, were to increase referrals by 5 percentage points and decrease the disparity by 1 percentage point. The PHFPP goals were added to QAPI meetings; pre-dialysis patients were targeted for home modalities, and patients shared home modality success stories. Patients with interest in home modalities but without family support, invited their families to lobby days on home modalities. Including PD nurses in monthly facility team meetings to discuss patient referrals led to four facilities recruiting new Facility Patient Representatives. Additionally, the best practice of adopting a Network-standardized quarterly contact form resulted in a sustainable practice across facilities. By the conclusion of the project, facilities had referred 49.5% of their patients for home modality, far exceeding the five-percentage point project improvement goal of greater than or equal to 18.9%.

Support Improvement in Quality of Life

The topic area focusing on supporting improvement in quality of life for ESRD patients was not selected by any of the 18 Networks for the 2017 PHFPP.

Partnerships and Coalitions

In 2017, the ESRD Networks engaged in a variety of collaborative activities that included communication and coordination with renal partners at the local, state, Network, regional, and/or national levels. In addition to conducting collaborative activities with patients, family members/caregivers, independent dialysis corporations, and LDOs, the Networks partnered with organizations such as the:

- National Kidney Foundation (NKF).
- American Kidney Fund (AKF).
- American Association of Kidney Patients (AAKP).
- National Association of Nephrology Technicians/Technologists.
- National Renal Administrators Association.
- Council of Nephrology Social Workers.
- American Nephrology Nurses' Association.
- Association of Professionals in Infection Control and Epidemiology.
- Renal Physicians Association.
- American Society of Nephrology.
- National Hospice and Palliative Care Organization.
- Forum of ESRD Networks.
- Medical Education Institute.
- United Network for Organ Sharing.
- USRDS.
- National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health.

Of equal importance are the Network collaborations with hospital associations, health departments, emergency medical services, transplant organizations, patient and professional organizations, Offices of Emergency Management, State SAs, and Medicare QIN-QIOs in their geographic areas. Some examples of Network collaborative projects include:

- **Network 12** collaborated with many agencies in their effort to improve the capturing and accurate reporting of bloodstream cultures, as evidenced by BSI rates documented in NHSN. Improving communication between hospitals and dialysis centers was paramount in the success of this quality improvement initiative. Network 12 engaged all stakeholders for maximum impact. Partnering with hospital infection control councils and infection preventionists, as well as holding focus meetings between dialysis providers, QIN-QIOs and hospitals, assisted in gap reduction between actual BSIs and reported BSIs. The Network partnered with infection preventionists in Iowa, Kansas, and Nebraska to assist recruitment of dialysis units to take part in a voluntary national Infection Control Assessment and Response.
- **Network 13** included collaboration with stakeholders in several of its QIAs. In the Network's efforts to reduce hospitalizations, they partnered with state hospital associations, QIN-QIOs within the Network service area, as well as applicable ESRD professionals not engaged with providers. When working on the NHSN QIA, the Network engaged hospital infection preventionists to develop plans for improving data sharing with local dialysis providers.

Patient and Family Engagement

Education for Patients and Caregivers

In 2017, the ESRD Networks partnered with dialysis facilities to strengthen patient and family engagement and to help patients and their care partners to better understand patients' rights and responsibilities. An important aspect of this was helping them feel comfortable with the grievance process. The Networks distributed printed materials and published newsletters targeting both patients and providers, as well as using social media outlets, such as YouTube, Facebook, and Twitter, to share tools, resources, and best practices. Additional Network outreach included site visits, LANs, and QIA meetings. All approaches shared the goal of providing educational resources to ESRD patients, family members, and care partners.

Network-Specific Patient Engagement Activities

In 2017, the ESRD Networks implemented a wide range of notable patient and family engagement (PFE) QIAs. For example:

- **Network 12** launched the grievance QIA with a program titled, Tune Up to Speak Up, with demonstrated success. The Network used a five-question needs assessment focused on the internal grievance process and patient satisfaction with staff interactions to drive results. The program utilized a three-pronged approach toward improvement: the facility level grievance process; patient experience of care through patient engagement; and opportunities for positive staff/patient interactions. The strategies engaged both staff and patients in education related to the grievance process and understanding of what patients may perceive as retaliation. Patient partnership was incorporated in the project through the identification of a Network Patient Representative who engaged as a member of the QAPI team to address grievance concerns and assist patient education and engagement activities. The Network accomplished a 6.0% increase in positive responses to five questions related to understanding of the grievance process and satisfaction with staff interactions. The Network had success with 75.0% of the participating facilities showing an overall improvement in "Always" responses to the patient survey and an 8.0% improvement patients perception that staff spend enough time with patients.
- **Network 6** fostered personal engagement with patients by using tools from the Institute for Healthcare Improvement. The tools focus on engagement as the foundation of developing partnerships to enhance patients' relationships with their healthcare providers, resulting in improved healthcare outcomes. Work on the ICH CAHPS QIA centered on the survey question asking patients whether, in the last three months, any staff member at the facility asked about how the patient's kidney disease affected other parts of his or her life. Initially, the Network provided educational sessions via the train-the-trainer model on how to effectively communicate with patients who have a chronic illness. As the QIA progressed, the Network implemented patient-focused strategies driven by recommendations of a committee of Patient SMEs. The Network succeeded in achieving the goals of the QIA. While the baseline responses showed a 38.0% positive response to the target question, the rate of positive responses at remeasurement was 65.0%, representing a 27.0% improvement.

National Patient and Family Engagement Learning and Action Network Activities

The NPFE LAN includes patient and care partner representatives drawn from the 18 ESRD Networks, as well as representative Network staff members, delegates from CMS, and participants from the ESRD NCC. The ESRD NCC works with NPFE LAN members to ensure that all project goals and objectives are driven by patients' viewpoints and experiences. In collaboration with the ESRD Networks, the ESRD NCC supports the NPFE LAN in its leadership efforts that focus, in part, on giving a voice to ESRD patients and facilitating dialogue between patients and CMS leadership.

The NPFE LAN's vision is that all ESRD patients and care partners will be actively involved in the continuum of kidney care, resulting in patients living longer, healthier lives. Its mission is to serve as a national leader and partner in enhancing the quality of life and care for patients with kidney disease through active engagement and the provision of education to empower patients in the renal community to make better health choices. The NPFE LAN provides strategic leadership in determining goals that will help all ESRD patients manage their health and well-being. It supports these goals by assisting in the development of educational materials focused on raising awareness, increasing knowledge, and improving the health behaviors of ESRD patients. The NPFE LAN also helps guide the dissemination of educational resources using social media and an easily accessible website portal.

The 2017 NPFE LAN continued the work of the 2016 NPFE LAN by increasing efforts to enhance patient and family engagement, including:

- Educating and coaching patients and family members on ways they can become more active as partners in their healthcare teams.
- Encouraging patient-to-patient support through mentorship and coaching programs.

Additionally, in response to requests from NPFE LAN members, Affinity Groups focused on specific outcome areas were formed that focused on:

- HAIs
- ICH CAHPS
- Improving the grievance process
- Mental health (patient-selected topic)

Organizing into these focus areas allowed the workgroups to target specific clinical goals and act collaboratively to achieve shared objectives. The groups discussed their interests and identified how they could work to enhance or create new educational materials to inspire and engage others to become actively involved in improving kidney care outcomes. Through the new workgroup model and continuous collaboration, the NPFE LAN created patient-friendly educational tools. The group focused on mental health, a patient-selected topic, initiated work on a QIA to encourage ESRD patients to live productive lives. Members of the group recorded selfie videos in which they talked about how they were thriving in life, not just surviving, despite having a chronic illness. These extraordinary efforts demonstrate the strong leadership NPFE LAN members provided to their renal communities at the local and national level.

Additionally, many NPFE LAN members contributed to national conferences, including the CMS Quality Conference held in February 2018.

Support for the In-Center Hemodialysis Consumer Assessment of Healthcare Providers and Systems Survey

In 1995, the Agency for Healthcare Research and Quality (AHRQ), in conjunction with CMS, developed a CAHPS survey to collect data about the healthcare patients receive in a variety of settings, including hospital and home health. In 2004, CMS partnered with AHRQ to develop a more focused version of the CAHPS Survey for ESRD patients who receive in-center HD from Medicare-certified dialysis facilities. AHRQ and CMS developed and tested the ICH CAHPS Survey in 2005. The survey's measures were endorsed by the National Quality Forum (NQF) in 2007. Beginning in calendar year 2014, the ICH CAHPS Survey was conducted by CMS-approved survey vendors.

In an effort to assist qualified dialysis facilities in utilizing the ICH CAHPS Survey to successfully fulfill the ESRD QIP measurement requirements related to patient experience of care, the Networks disseminated information and training resources about the survey, including the current final CMS ESRD QIP Rule and AHRQ guidelines posted at www.ahrq.gov/cahps. The Networks provided CMS with surveillance data reflecting the number of facilities that were utilizing the ICH CAHPS Survey monthly.

In 2017, the Networks conducted QIAs to improve scores for one Network-selected ICH CAHPS survey question. For example:

- **Network 4** aimed to achieve at least a 5.0% improvement in the systematic inclusion of patient-driven Specific, Measurable, Achievable, Realistic and Timely (SMART) goals when developing patients' plans of care to impact the ICH CAHPS survey scores. Kick-off webinars were hosted by the Network for each selected facility. Participating facilities also received a project-specific "toolkit" containing improvement concepts from the Institute for Healthcare Improvement model for improvement, along with other QI tools. Each facility used a true team approach, including all staff in the QIA and employing team huddles to discuss each patient's goal and to resolve any patient-identified barriers. All but two facilities achieved at least a 5.0% improvement; one facility achieved a 4% improvement; one facility had mitigating circumstances.
- **Network 7** identified the lowest score with the most reasonable opportunity to improve to the goal of a 5-point percentage increase, which was related to a patient receiving education on PD from the facility staff or nephrologist in the last 12 months. The QIA included 20 dialysis facilities, with 1,837 hemodialysis patients. The Network supported facilities through several educational tools featuring patient stories, like: *Patients Decide*, a plain language tool created with input from patient SMEs; a guide to host a PD lobby day, which encouraged inviting a current PD patient; and use of the patient education resource titled, *Consider Your Dialysis Choices: Choosing the right option for you!,* that had a high acceptance rate (60.0%) among facilities. As of the final measurement, 85.1% of

respondents answered “Yes” to the selected question, exceeding the QIA goal, as well as the national rate for that same timeframe, which was 77.7%.

Grievances and Access to Care

Evaluation and Resolution of Grievances

In 2012, CMS amended the ESRD complaints and grievance policy to require that all concerns related to care that does not meet a Medicare beneficiary’s expectations be classified as grievances and that the Networks’ procedures for evaluating and resolving grievances be patient-centered. A grievance can be filed with the Network—by an ESRD patient, an individual representing an ESRD patient, or another party—when there is a concern that an ESRD service did not meet the grievant’s expectation, recognized standards of safety or civility, or professionally-recognized clinical standards of care.

As of 2017, the ESRD Networks were also responsible for resolving all patient-appropriate access to care cases, both at the grievance and non-grievance level. Patient-appropriate access to care is determined by the nephrologist working with the patient to identify a clinically appropriate treatment modality that takes into consideration patient choice. Access-to-care cases included cases in which ESRD patients were at risk for an IVD or IVT, and cases in which a patient was scheduled for, or had already experienced an IVD or IVT, or did not currently have access to an outpatient dialysis facility.

Each ESRD Network established a system for promoting awareness of all options for filing grievances, including the option of filing grievances anonymously. The ESRD Networks worked to ensure that patients were able to file grievances without fear of reprisal. When a grievance is filed with the Network, the Network reminds the provider and/or practitioner(s) of their responsibility to support the grievant throughout the grievance process and that no reprisal may be imposed because of the grievance. The Networks have also advised the patient community about the revised CMS policy for evaluating, resolving, and reporting patient grievances. Each Network followed grievance resolution protocol as directed by CMS, including the time frames for investigating and completing an investigation, as well as for notifying patients of investigation outcomes. All correspondence sent to patients and/or facilities for distribution to patients, included language on how to contact the Network to file a grievance.

Grievance Process and Data

In 2017, as in previous years, patients had the option to initiate the grievance process at either the Network or facility level. The Network option allowed patients who had concerns about potential retaliation by facility staff the opportunity to protect their confidentiality. Patient family members, friends, representatives and/or advocates, facility employees, physicians, SAs, and other interested parties also submitted grievances concerning dialysis facilities and transplantation centers to the Networks. Grievances regarding care provided at acute care hospitals, in nursing homes, at home by home care providers, or by physicians were also received by the Network. When a grievant had concerns outside the scope of the ESRD

Network, the Network assisted the grievant in forwarding his or her concern to the appropriate regulatory entity, such as one of two CMS Beneficiary- and Family-Centered Care QIOs. Grievances could be submitted by mail, telephone, or email. As required by CMS, each Network provided a toll-free number for patients' inquiries and grievances. All grievances received by the Networks were entered into the PCU database. The PCU is the CMS-approved application to log case review interactions with the Networks. When a patient at an ESRD facility contacts his or her Network to file a grievance pertaining to a facility, the grievance, or case, is tracked in the PCU, along with all contact and follow-up activities.

The 18 ESRD Networks processed 1,350 beneficiary grievances in 2017, representing 2.7 grievances per 1,000 dialysis patients. All 18 ESRD Networks reported a rate lower than 4.0 grievances per 1,000 patients. Of the 1,350 grievance cases processed, 725 (53.7%) involved Immediate Advocacy, and 234 (17.3%) were based on a Clinical Area of Concern. See Table 2 for Network-specific data.

Recommendations for Sanctions

In 2017, no sanction recommendations were submitted to CMS by an ESRD Network.

Recommendations to CMS for Additional Facilities

Although CMS received no formal recommendations for additional facilities in 2017, the 18 ESRD Networks did provide policy recommendations that included:

- Establishing special needs dialysis facilities that can accommodate/treat patients who:
  - Have special physical requirements, such as patients who are ventilator-dependent or morbidly obese, or who have antibiotic-resistant infections or other needs that require services that are unavailable in a typical dialysis facility.
  - Have been involuntarily discharged from other dialysis programs, many of whom have exhibited socially unacceptable or erratic behavior and may represent a risk to other patients and staff.
  - Reside in extended care facilities that have dialysis on-site.
- Increasing the numbers of facilities that provide nocturnal dialysis in some geographic areas.
- Waiving the three-month Medicare waiting period for new patients to have an AVF placed prior to beginning dialysis or at the start of dialysis.
- Mandating pre-ESRD educational programs throughout the country.
- Studying ESRD Medicare medication payment policies to identify ways to reduce costs by improving care.
- Providing innovative ESRD treatment options for involuntarily discharged patients and special needs patients.

- Coordinating comprehensive care for ESRD patients due to patients' comorbid conditions for which dialysis facilities and their staff members are not trained, equipped, or reimbursed.
- Adopting a special needs composite rate to help ESRD facilities that provide care for special needs patients.
- Allowing inpatient dialysis units to accept special needs ESRD patients (e.g., a patient on a ventilator) and reimbursement comparable to the composite rate.

The aforementioned policy recommendations and special facility requests represent important approaches to improve the scope and quality of care for patients with ESRD. However, the costs associated with implementing these recommendations present a recognized and significant barrier. The ESRD Networks strongly encourage consideration of short- and long-term strategies that will support ESRD facilities in the provision of services to a complex patient population that presents with many psychosocial and healthcare needs.

Emergency Preparedness and Response

For ESRD patients, missed dialysis treatments can have serious adverse health effects. This makes the ESRD patient population especially vulnerable during emergencies and disasters. Networks partner with state and city health departments, offices of emergency management, and regional/national coalitions to ensure the safety and continuity of care for ESRD patients during emergencies. Network responsibilities related to emergency preparedness and response include:

- Development of a Comprehensive Emergency Management Plan.
- Provision of information to educate facilities and patients on the actions to take during emergency and disaster situations.
- Reporting of open and closed facilities, alterations in dialysis facility schedules, and unaccounted for patients during actual incidents.

For more information about Network disaster preparedness activities, see the KCER Program overview in this report.

Within their individual service areas, the Networks engaged in outreach, training, and technical assistance activities to help ensure that the needs of ESRD patients were met in emergency situations. During 2017, the Networks responded to over 65 events, including three overlapping category 5 hurricanes with damaging winds, extreme rainfall, and record-breaking floods. Hurricanes Harvey, Irma, and Maria caused had a significant impact on facility operations in several geographic areas. Other emergency conditions that had the potential to impact ESRD patients and/or providers included wildfires, tornadoes, winter storms, earthquakes, structure fires, and power outages. Following are representative examples of emergency preparedness and response activities conducted:

- **Network 14** responded to Hurricane Harvey, which was a severe weather event that included damaging winds, and extreme rainfall leading to record-breaking flooding in parts of Texas. Network 14 had a total of 132 ESRD facilities, treating roughly 7,000 patients, with

reported changes in their operational status due to Hurricane Harvey. Seven facilities sustained long-term damage during the event, and all patients had to be slotted in other facilities until repairs could be made. Network 14 requested support from KCER, which activated its Emergency Operations Plan (EOP) and supported the Network and the Texas Emergency ESRD Coalition.

- **Network 3** had a total of 51 facilities with reported changes in their operational status due to Hurricane Irma. Only a week after Irma caused the evacuation of all patient from St. Thomas, Network 3 formally prepared for Hurricane Maria that was projected to directly impact the U.S. Virgin Islands and Puerto Rico as a catastrophic category five hurricane. Hurricane Maria left a path of destruction across the U.S. Virgin Islands and Puerto Rico, leading to the eventual evacuation of dialysis patient populations from the islands of St. Croix and Puerto Rico also suffered catastrophic damage from Hurricane Maria, with many ESRD facilities operating on generator power and water cisterns for weeks following the storm. Network 3 had a total of 51 facilities, treating approximately 6,200 patients, with reported changes in their operational status due to Hurricane Maria. To support Network 3, KCER activated its EOP and coordinated, facilitated, and documented minutes for daily Emergency Status Calls.
- **Network 7** had a total of 449 facilities with reported changes in their operational status due to Hurricane Irma. Widespread evacuations were ordered for nearly 7 million residents across the state of Florida, leading to one of largest emergency evacuations in American history. Network 7 remained in contact with all facilities in the Network service area to assess and track operational status and identify patient access to care issues. The Network received and addressed over 100 calls from patients and family members related to facility operational status, including patients who evacuated and needed placement at a new facility. The Network collaborated with stakeholders to resolve patient access to care issues, such as coordinating with the Florida Health Care Association to arrange dialysis treatment for nursing home residents in an impacted area. Hurricane Maria caused Network 7 to deploy staff to Miami to support evacuated patients as they arrived, collaborating with the Assistant Secretary for Preparedness and Response, the Florida Department of Health, the Office of the ASPR, and the United States Public Health Service to coordinate care for dialysis patients.

Special Projects

National Coordinating Center

CMS contracted with HSAG: The ESRD Network of Florida (Network 7) to act as the ESRD NCC. The ESRD NCC serves as a coordinator for the 18 ESRD Networks and liaison between the Networks and CMS. Tasks under the NCC contract are varied and include data analytics and delivery, patient outreach, coordination of QIAs with ESRD Networks and facilities, and production of ESRD events at the annual CMS Quality Conference held by CMS. In 2017, the ESRD NCC:

- Partnered with the 18 Networks to form the ESRD Data Committee. The committee worked to define methods for updating and delivering data used for emergency reporting, such as patient tracking during disaster recovery, and for clinical reporting, including vascular access, vaccination, and hospitalization. Other committee activities included providing input on reporting needs, guiding functional requirements, and performing user acceptance testing.
- Collaborated with patients through the NPFE-LAN, which supports dialysis patients, families, and providers in all 50 states, as well as U.S. territories. The LAN included more than 80 patient SMEs; each member selected an affinity group in which to participate, and each affinity group was tasked with creating patient-friendly educational tools related to designated areas of care. For example, the ICH CAHPS affinity group developed the *My Experience of Care* card to help patients track their experience of care over time, making it easier to recall feelings about care when completing the survey.
- Maintained the Fistula First Catheter Last Workgroup Coalition, which, during 2017, focused on development of a Patient Vascular Access Packet that included education related to using a new fistula or graft, keeping dialysis accesses clean and healthy, self-cannulation, and how to stop a dialysis access bleed. The packet also included tip sheets for improving vascular access communication between patients and staff.
- Conducted bi-monthly discovery events for the HAI LAN. Discovery event topics included antibiotic stewardship, dialysis facility medical director intervention and leadership, and improving dialysis facility infection reporting communication with hospitals. The discovery event presentations and resources are housed on the HAI LAN section of the ESRD NCC website.

Kidney Community Emergency Response Program

Supporting dialysis facilities and patients in preparing for an emergency or disaster continued to be a priority for the ESRD Network Program in 2017. Network 7 was funded by CMS to serve as the national emergency management contractor. Under the KCER contract, HSAG provided support to the ESRD Networks to strengthen their disaster preparedness and response capacities. KCER's 2017 activities included:

- Collaborating with the renal community in response to weather-related events, including tropical storms and hurricanes, flooding, and wildfires, and in monitoring other situations with the potential to impact the ESRD population, such as a nursing strike or power outage. The KCER contractor also fostered relationships with HHS ASPR to connect dialysis information and preparedness with existing federal protocols, so that all entities would benefit from information sharing and mutual understanding of an emergency or disaster situation.
- Participating in national-level emergency preparedness exercises with federal partners to integrate the dialysis population into the overall national emergency strategy. KCER participated in the exercises by providing ESRD tracking information, including a list of facilities and patient counts, the operational status of facilities, and any facility needs or services. KCER also provided multiple status updates over the course of the exercises at the

request of CMS. KCER utilized the exercise as an opportunity to test processes and information in the KCER Emergency Standard Operating Procedure (SOP) and updates were made to the SOP following each exercise based upon lessons learned.

- Planning and implementing its annual national disaster exercise, Operation KCER NExUS in 2017 at the Office of the ASPR's "War Room," in Baltimore, Maryland. The drill was an operations-based functional exercise, which included actual reactions to the exercise scenario. The scenario was based on a terrorist attack that shut down the water treatment systems in major metropolitan areas across the country. All 18 Networks participated in the drill and actively tested their ability to respond to a major disaster. Representatives from EPRO and CMS participated in the exercise as part of the simulation cell located in in Baltimore. EPRO and CMS are critical federal partners that had not been included in the exercise previously. Exercise participants were highly engaged throughout the drill, and feedback provided on the exercise evaluations was very favorable. More than 85.0% of the participants who responded to the survey either "agreed" or "strongly agreed" that following the exercise, they were better prepared to deal with the capabilities and hazards addressed.
- Convening the National KCER PFE LAN (N-KPFE-LAN) ensured that the patient voice was incorporated into all KCER activities and encouraged implementation of the patient perspective within the emergency and disaster community. The N-KPFE-LAN included 32 patients, family members, and caregivers drawn from across the kidney community. The N-KPFE-LAN Kickoff Meeting took place in February, with subsequent meetings held every other month. During meetings, patients were asked to share the aspects of emergency preparedness that are important to them. The members also reviewed the KCER *WHAT IF…* campaign materials and decided to expand the *WHAT IF…* campaign by adding three additional scenarios, including No Water, No Support, and No Medication to a patient brochure. It was shared on the KCER website and social media pages, with ESRD Networks, and community partners, including the AAKP the NKF and the AKF.The KCER LAN created a second QIA, the KCER Prep Rally Campaign. The campaign aimed to get patients talking with their care team, family, neighbors, and friends about their emergency preparedness plans.

Data Tables

The following data tables are included and begin on the next page:

Table 1: ESRD Medicare-Certified Dialysis Facilities – Modality Offered – Calendar Year 2017

Network	Transplant	In-Center Hemodialysis and Home Dialysis	In-Center Hemodialysis (Only)	Home Dialysis (Only)	Total Dialysis Facilities (Home, In-Center, Both)	Total Facilities (including Transplant)
1	15	135	54	2	191	206
2	10	143	148	8	299	309
3	4	139	90	7	236	240
4	20	214	114	11	339	359
5	12	234	163	27	424	436
6	10	367	310	43	720	730
7	10	276	156	23	455	465
8	10	167	262	29	458	468
9	12	281	290	40	611	623
10	9	128	141	54	323	332
11	21	228	244	29	501	522
12	13	165	150	13	328	341
13	10	145	180	7	332	342
14	23	276	371	28	675	698
15	15	167	179	12	358	373
16	7	134	81	3	218	225
17	6	94	161	39	294	300
18	15	183	179	34	396	411
NATIONAL	222	3,476	3,273	409	7,158	7,380

Table 2. Grievances and Non-Grievances by Case Type, Number, and Percent - Calendar Year 2017

Network	General Grievance	Immediate Advocacy	Clinical Area of Concern	Facility Concern	Access to Care	At-Risk Access to Care	Total All Case Types	Total Grievance Cases	Percent of National Grievance Cases	Total Non-Grievance Cases	Percent of National Non-Grievance Cases
1	0	10	1	6	3	3	23	11	0.81%	12	0.28%
2	5	46	2	10	17	47	127	53	3.93%	74	1.71%
3	4	52	1	33	9	22	121	57	4.22%	64	1.48%
4	9	25	9	30	11	21	105	43	3.19%	62	1.44%
5	11	46	5	94	37	168	361	62	4.59%	299	6.93%
6	90	1	14	17	48	90	260	105	7.78%	155	3.59%
7	17	62	39	37	85	90	330	118	8.74%	212	4.91%
8	17	51	10	104	31	253	464	78	5.78%	386	8.94%
9	28	49	9	225	20	89	420	86	6.37%	334	7.74%
10	22	21	7	140	22	71	282	50	3.70%	232	5. 38%
11	2	81	3	341	22	75	524	86	6.37%	438	10.15%
12	8	16	23	38	11	86	182	47	3.48%	135	3.13%
13	26	30	3	67	34	91	251	59	4.37%	192	4.45%
14	57	18	33	66	66	60	300	108	8.00%	192	4.45%
15	13	42	10	50	11	48	174	65	4.81%	109	2.53%
16	4	43	11	75	19	70	222	58	4.30%	164	3.80%
17	13	50	16	552	20	57	708	79	5.85%	629	14.57%
18	65	82	38	504	33	90	812	185	13.70%	627	14.53%
NATIONAL	391	725	234	2,389	499	1,431	5,666	1,350	--	4,316	--

Table 3. National ESRD Patient Data Overview as of 12/31/2017

Network	Dialysis Facilities	Percent of Dialysis Facilities Nationally	Transplant Facilities	Percent of Transplant Facilities Nationally	Dialysis Patients	Percent of Dialysis Patients Nationally	In-Center Patients	Home Patients	Percent of Home Patients Nationally	Transplant Patients	Percent of Transplant Patients Nationally	Total Patients Dialysis and Transplant
1	191	2.67%	15	6.76%	14,669	2.90%	13,014	1,655	2.74%	10,993	4.92%	25,662
2	299	4.18%	10	4.50%	29,851	5.91%	27,865	1,986	3.29%	14,559	6.52%	44,410
3	236	3.30%	4	1.80%	19,818	3.92%	18,387	1,431	2.37%	5,736	2.57%	25,554
4	339	4.74%	20	9.01%	20,389	4.04%	18,114	2,275	3.76%	12,359	5.53%	32,748
5	424	5.92%	12	5.41%	27,356	5.42%	24,072	3,284	5.43%	13,555	6.07%	40,911
6	720	10.06%	10	4.50%	49,148	9.73%	42,928	6,220	10.29%	14,728	6.59%	63,876
7	455	6.36%	10	4.50%	31,311	6.20%	27,569	3,742	6.19%	11,890	5.32%	43,201
8	458	6.40%	10	4.50%	28,237	5.59%	24,571	3,666	6.07%	9,379	4.20%	37,616
9	611	8.54%	12	5.41%	33,556	6.64%	29,281	4,275	7.07%	14,637	6.55%	48,193
10	323	4.51%	9	4.05%	20,502	4.06%	17,126	3,376	5.59%	8,996	4.03%	29,498
11	501	7.00%	21	9.46%	28,149	5.57%	24,814	3,335	5.52%	21,039	9.42%	49,188
12	328	4.58%	13	5.86%	16,654	3.30%	13,990	2,664	4.41%	10,444	4.68%	27,098
13	332	4.64%	10	4.50%	20,006	3.96%	17,413	2,593	4.29%	6,477	2.90%	26,483
14	675	9.43%	23	10.36%	50,308	9.96%	45,104	5,204	8.61%	17,127	7.67%	67,435
15	358	5.00%	15	6.76%	24,946	4.94%	21,851	3,095	5.12%	13,595	6.09%	38,541
16	218	3.05%	7	3.15%	14,914	2.95%	12,556	2,358	3.90%	7,702	3.45%	22,616
17	294	4.11%	6	2.70%	28,497	5.64%	24,759	3,738	6.19%	13,004	5.82%	41,501
18	396	5.53%	15	6.76%	46,765	9.26%	41,230	5,535	9.16%	17,174	7.69%	63,939
NATIONAL	7,158	--	222	--	505,076	--	444,644	60,432	--	223,394	--	728,470