

2015

End Stage Renal Disease Network Organization Program Summary Annual Report



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



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Additional information:

For additional information about the End Stage Renal Disease Network Program or to review prior *Summary Annual Reports*, please visit www.esrdNCC.org or contact the National Coordinating Center at ESRD_NCCinfo@hsag.com or ESRD_NCC@ESRD_NCC.esrd.net.

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Introduction

The End Stage Renal Disease Network Program (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 who require dialysis or transplantation to sustain life. Eighteen End Stage Renal Disease Network Organizations (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 Department of Health and Human Services’ National Quality Strategy, the CMS Quality Strategy, and other CMS priorities designed to improve the care of individuals with ESRD.

This report details the Networks’ activities carried out in 2015 as well as information on prevalence and incidence of ESRD, transplantation, grievances, dialysis access type, dialysis type, data forms, and employment. The report begins with highlights of the Networks’ activities in 2015, followed by detailed descriptions of Network activities and the data tables showing information per Network.

Report Highlights

End Stage Renal Disease Incidence and Dialysis Prevalence

The rate of newly occurring cases of ESRD, i.e., incident ESRD patients, in the United States (U.S.) increased from 353 per million population in 2014 to 377 per million population in 2015. Of note, in 2015, considerable variation continued in ESRD incidence across the 18 ESRD Networks’ geographic areas—from 242 patients per million population to 455 per million population. The ESRD Networks reported a 4.0% increase in the prevalent dialysis population, i.e., the total number of dialysis patients at a given point in time, from December 31, 2014 to December 31, 2015.

Home Dialysis

The use of home dialysis continued to improve, demonstrating a 5.5% increase from 2014 to 2015. In the future, it is expected that more dialysis patients will use home dialysis as their treatment modality, which has been linked to better clinical and psychosocial outcomes.

Fistula First Catheter Last

The national rate for arteriovenous fistulas (AVFs) in use among in-center and home hemodialysis patients continued to improve, increasing from 62.3% of hemodialysis patients in 2014 to 63.2% in 2015. As of December 2015, 17 of 18 Networks (94.4%) exceeded the 60.0%

¹ Centers for Medicare & Medicaid Services. ESRD Network Statement of Work. C.1 Purpose of the SOW. May 31, 2012.



threshold for AVFs in use among in-center and home hemodialysis patients. Additionally, Networks 15 and 16 exceeded the 68.0% national goal, according to Fistula First Catheter Last (FFCL) data.

Grievances, Involuntary Discharges, and Sanctions in 2015

The 18 ESRD Networks processed 1,829 beneficiary grievances in 2015, with an average rate of 3.81 grievances per 1,000 dialysis patients. In 2015, 15 of the 18 Networks (83.4%) reported a rate of less than 5.0 grievances per 1,000 patients. Of the 1,829 grievance cases reported in 2015, 109 (5.9%) involved an access-to-care issue. The 18 Networks processed 31 grievance cases involving involuntary discharge (IVD) cases in 2015, with 17 (94.4%) reporting five or fewer IVDs. Twelve of the 18 Networks (66.7%) reported involuntary discharges below the mean rate of 0.06 per 1,000 patients.

In 2015, one Network recommended that CMS impose a sanction on a facility in its service area after unsuccessful attempts to address and resolve performance concerns.

Patient Engagement

In 2015, the ESRD Networks recruited approximately 180 volunteer patient representatives to participate in their Network Patient Engagement Learning and Action Networks (PE LANs). A LAN is an improvement initiative that brings together healthcare professionals, patients, and other stakeholders around an evidence-based agenda to achieve rapid, wide-scale improvement. LANs employ change methodologies, implementation tools, and rapid-cycle improvement approaches; create opportunities for in-depth learning and problem solving; and provide an opportunity for stakeholders (e.g., patients, family members, care partners, healthcare practitioners) to harness their shared knowledge and skills in an effort to achieve specific objectives.

These patient representatives ensured that the patient perspective was incorporated in all Network-developed patient educational resources. At the regional level, the input from patient subject matter experts (SMEs) and family members or care partners was used by the LANs to help guide Network activities. In addition, LAN members helped promote and provide peer-to-peer education within dialysis units.

Emergency Management

CMS enhanced its focus on emergency management practices and requirements for the ESRD Networks during 2015. On a national level, the Kidney Community Emergency Response (KCER) Program continued to expand relationships with CMS emergency management professionals and the Office of the Assistant Secretary for Preparedness and Response of the U.S. Department of Health and Human Services. 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 2015, Networks responded to over 80 incidents, including severe weather, tropical systems, civil unrest, chemical spills, earthquakes, and wildfires, with the potential to impact ESRD patients and/or providers.

End Stage Renal Disease Program Overview

The ESRD Network Program is a national program funded by CMS to improve the quality of care for individuals with irreversible kidney disease who require dialysis or transplantation to sustain life. To fund this program, CMS withholds \$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.

Eighteen contractors, known as ESRD Network Organizations (ESRD Networks), carry out 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.”² 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 map and Figure 1). In 2015, the ESRD Networks worked to improve healthcare for more than 479,000 dialysis patients and 18,446 kidney transplant recipients. The number of patients receiving ESRD treatment as of December 31, 2015, was 3.9% higher than the comparable number for 2014. Figure 1 shows the service areas covered by the 18 ESRD Networks.

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



² Centers for Medicare & Medicaid Services. ESRD Network Statement of Work. C.1 Purpose of the SOW. May 31, 2012.



The ESRD National Coordinating Center

The ESRD National Coordinating Center (ESRD NCC) assists CMS in supporting ESRD Network activities and coordinates initiatives on a national scope that include the following:

- Convening National Patient and Family Engagement and Clinical AIM Learning and Action Networks (LANs).
- Collecting, analyzing, and reporting data for use by the Networks and CMS.
- Providing support for the ESRD Networks, including support for the achievement of vascular access goals, reduction in rates of preventable hospitalizations, and reduction in rates of healthcare-associated infections.
- 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 Health and Human Services, the U.S. Congress, CMS, the ESRD Networks, and other stakeholders. The report compiles information from the Networks' Annual Reports as well as outcome data from the ESRD NCC.

Network Requirements

The activities of the ESRD Network contractors are guided by the ESRD Network Statement of Work (SOW). In 2013, the SOW was revised to align with the U.S. Department of Health and Human Services' National Quality Strategy, CMS' three AIMs for the ESRD Network Program, and other CMS priorities designed to improve the care of individuals with ESRD.

CMS' three AIMs for the ESRD Network Program are:

- AIM 1: Better care for the individual through patient- and family-centered care
- AIM 2: Better health for the ESRD population
- AIM 3: Reduce costs of ESRD care by improving care

ESRD Networks are charged with promoting positive change relative to the three AIMs. The achievement of specific goals under each AIM is influenced by numerous factors, including patient demographics, patients' social support networks, and aspects of the healthcare delivery system. To address these varied influences on ESRD care, each Network is charged with targeting disparities when conducting all of the activities outlined in the SOW. Most directly, ESRD Networks must develop, implement, and assess interventions aimed at reducing disparities in ESRD patients' access to care and health outcomes.

Network Staffing

Network staff members provide support to ESRD patients and families, providers, and health professionals as part of Network contract activities that support 6,745 dialysis facilities and 228 transplant centers across the U.S. and its territories (Table 1). In 2015, CMS required each Network, at a minimum, to employ the following staff:

- Executive Director: Responsible for the administration of all contract requirements and overall operation of the Network. The Director has professional relationships within the



ESRD community and has expertise in administration of the CMS contract, management and supervision of staff, and fiscal oversight of the Network.

- Quality Improvement Director: Coordinates quality-related initiatives and creates and implements the Network's quality improvement program.
- Data Manager: Oversees the collection, accurate recording, security, and transmission of data between providers, the Network, and CMS.
- Patient Services Director: Responsible for assisting patients and their families by responding to questions and information requests, resolving patient or provider complaints and grievances, and on request, conducting training on conflict resolution. This position is full time and performed by a person with a master's degree in social work or an equivalent qualification.

Additional sufficient support staff (including a registered nurse with nephrology experience and other personnel with experience in program planning, implementation, data analysis, and evaluation) are utilized to conduct the activities and responsibilities in the Network contracts and in other CMS directives, with job titles and responsibilities varying from Network to Network.

Network Governance

Each Network must establish and maintain a Network Council (NC), Board of Directors (BOD), Medical Review Board (MRB), and Patient Advisory Committee (PAC). Networks have the option of establishing additional committees as necessary.

- 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 BOD, which also includes at least two patient representatives, sets overall policy and direction for the Network and retains oversight responsibility. The BOD is also responsible for reviewing and approving any recommendations from the MRB for sanctions to be imposed on ESRD facilities prior to submission 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, 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 also invited to participate in these Network-organized committees. Participants in these organizations offer their time on a volunteer basis and provide invaluable hours of service to the Networks. The



contribution of these members as a whole is a critical part of the effective functioning of the Networks and the success of the ESRD Network Program.

Patient Profile

Patients and Facilities

Table 1 provides an overview of the number of prevalent dialysis patients (479,446) and the number of dialysis facilities (6,745) covered by the ESRD Network Program as of December 31, 2015. The region with the largest number of dialysis facilities (690) comprised the states of Georgia, North Carolina, and South Carolina (Network 6); the New England region, comprising the states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont (Network 1), had the fewest facilities (186).

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. population is high among adults, with an estimate of more than 14% of adults affected.³ This is attributable in part to high rates of diabetes and hypertension. Information about the number of incident ESRD patients (i.e., new ESRD patients in a given time period), prevalent dialysis patients (i.e., total dialysis patients at a given point in time), and new renal transplant patients in 2015 is highlighted in the following sections.

Incident End Stage Renal Disease Patients

There were 122,381 new ESRD patients in 2015. Table 2 shows the number of new ESRD patients in 2015 for each Network service area and the ESRD Network Program as a whole as well as incident rates per million populations for 2014 and 2015. Incident patient counts are taken from the Networks’ 2015 Annual Reports and are based on all CMS-2728 forms submitted in 2015 for new patients, as well as any supplementary information obtained by the Networks.

Table 3 provides the distribution of incident ESRD patients in 2015 by age for the 18 Network service areas and the nation as a whole. In 2015, approximately four of five incident patients (81.3%) were 50 years of age or older, and under 1 percent (0.9%) of the incident ESRD patients were younger than 20 years of age.

In 2015, the leading causes of kidney failure in new ESRD patients in the U.S. were diabetes (56,997, 46.6% of new patients) and hypertension (35,187, 28.8%).

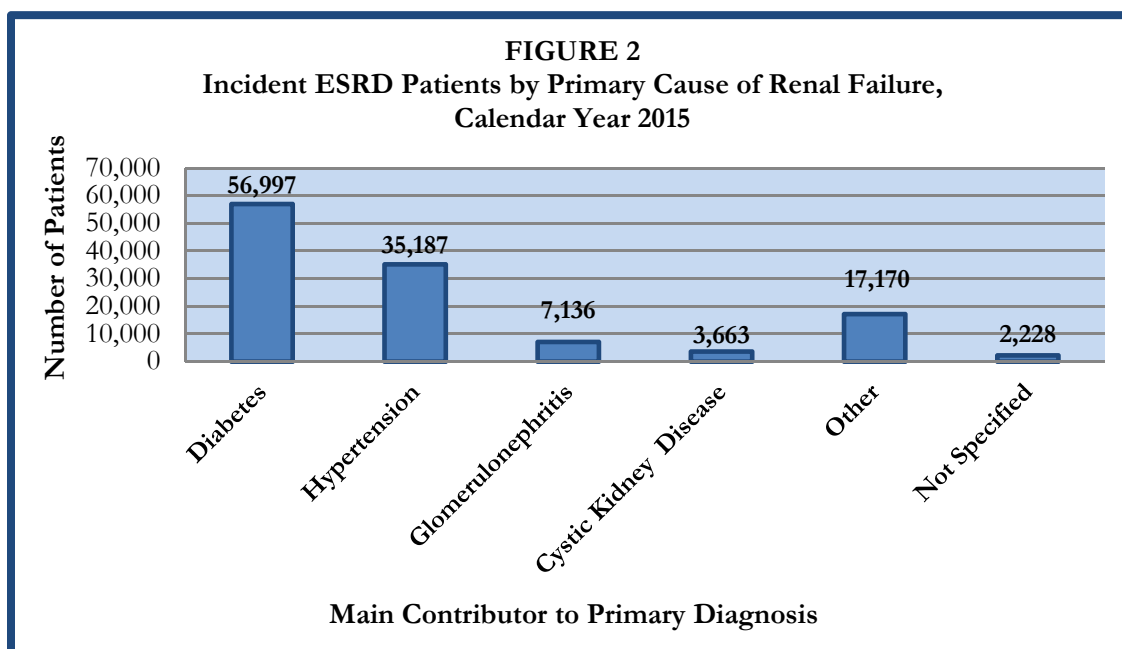
In 2015, males represented more than half of the incident ESRD population (58.1%), as outlined in Table 4. All Networks reported a positive ratio of males to females for the incident population.

³ United States Renal Data System. *2015 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.

Table 5 illustrates the distribution of incident ESRD patients by reported race. Findings continue to demonstrate disparities by race, i.e., a disproportionately high percentage of new patients identified as black or African American relative to the proportion of individuals identified as black or African American in the population as a whole. Patients identified as black or African American comprised 25.9% of the total incident dialysis population in 2015, compared to 12.6% of the general population.⁴

It should be noted, however, that national and Network-specific race data should be interpreted with caution because of the inherent instability of such data. Form CMS-2728 also collects data on Hispanic ethnicity, but CMS does not currently require the Networks to report this information. Table 6 shows a comparison of incident ESRD patients, prevalent dialysis patients, and transplant recipients by reported race for calendar year 2015.

In calendar year 2015, the leading causes of kidney failure in new ESRD patients in the U.S. were diabetes (56,997, 46.6% of new patients) and hypertension (35,187, 28.8% of new patients). See Figure 2 and Table 7.



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

⁴ U.S. Census Bureau. *Population Estimates, National Characteristics: Vintage 2015*. Available at: <https://www.census.gov/programs-surveys/popest.html>

dialysis as of December 31 of the given year. At the end of 2015, 479,446 patients were receiving dialysis in the U.S. (Table 1), according to the Networks’ Annual Reports—a 3.9% increase from 2014 (Figure 3).

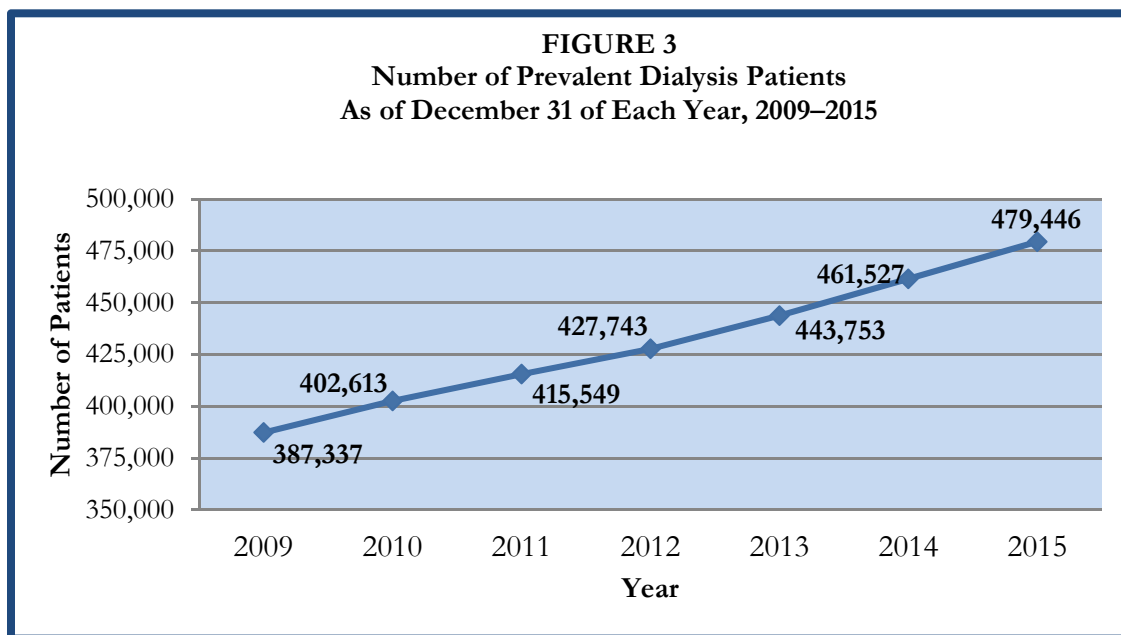


Table 8 shows the age distribution of prevalent dialysis patients in 2015 for the 18 Network areas. The majority (79.9%) of patients were 50 years of age or older, and only 0.4% of prevalent dialysis patients were younger than 20 years of age in 2015.

In 2015, males represented more than half of the prevalent dialysis population (56.8%) as reported in Table 9. All Networks reported a positive ratio of males to females for the prevalent dialysis population.

At the end of 2015, 479,446 patients were receiving dialysis in the U.S., according to the Networks’ Annual Reports—a 3.9% increase from 2014.

Table 10 shows the distribution of prevalent dialysis patients by reported race. As noted above, Form CMS-2728 also collects data on Hispanic ethnicity, but CMS does not currently require the Networks to report this information. As was true for incident patients, the proportion of prevalent dialysis patients identified as black or African American was disproportionately high in comparison to the representation of Blacks or African Americans in the general population. Patients identified as black or African American comprised 34.9% of the total prevalent dialysis population as of December 31, 2015, while residents identified as black or African American comprised 12.6% of the general population.⁵ As noted above, data on patients’ race should be

⁵ U.S. Census Bureau. *Population Estimates, National Characteristics: Vintage 2015*. Available at: <https://www.census.gov/programs-surveys/popest.html>

interpreted with caution. See Table 6 for a comparison of incident ESRD patients, prevalent dialysis patients, and transplant recipients by reported race for calendar year (CY) 2015.

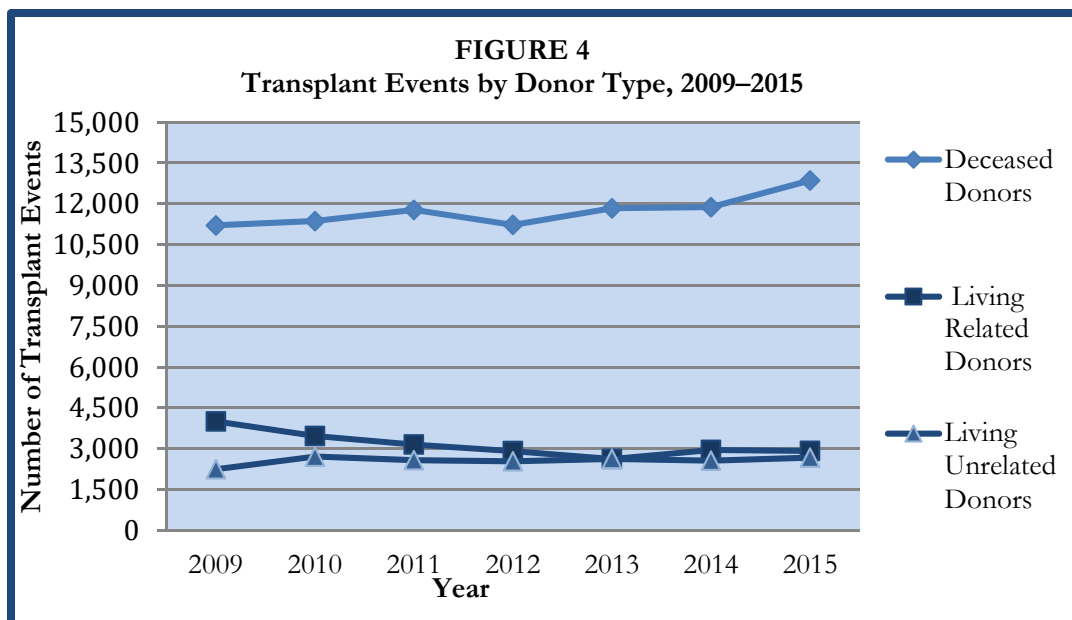
Table 11 shows the distribution of prevalent dialysis patients by primary cause of ESRD for the 18 Network service areas in 2015. All Networks reported diabetes as the most frequent cause of ESRD for prevalent patients as well as incident patients. Overall, diabetes was listed as the primary cause of ESRD for 45.1% of prevalent dialysis patients, while hypertension was listed for 29.1%.

Renal Transplant Patients

In 2015, the ESRD Network Program reported a total of 18,458 renal transplants (Tables 12–15). Table 12 shows the age distribution of transplant patients for each Network. In 2015 slightly more than two-thirds (67.7%) of transplant recipients were in the age range of 40 to 69 years old; 6.2 % were age 70 or older, while 26.1% were 39 years old or younger. Data on the gender of transplant recipients in 2015 are shown in Table 13. Overall, 60.9% of these transplant recipients were male.

Table 14 shows the distribution of transplant recipients in 2015 by race, as recorded on Form CMS-2728. In 2015, 64.7% of all renal transplant recipients were in the White category. Slightly more than one-quarter (26.8%) of the transplant recipients fell into the black or African American category. See Table 6 for a comparison of incident ESRD patients, prevalent dialysis patients, and transplant recipients by reported race for calendar year 2015.

Table 15 shows the distribution of transplant events by donor type for 2015, and Figure 4 highlights comparative data of transplant events by donor type for the years 2009–2015. Of the 18,458 transplant events in 2015, the majority of organs used in these transplants were from deceased donors (69.7%). Living related donors and living unrelated donors accounted for organs used in 15.8% and 14.5% of transplant events, respectively. The Network service area with the highest number of transplants in calendar year 2015 was Texas (Network 14).



Vocational Rehabilitation and Employment

All ESRD Networks are required to inform patients and providers on an annual basis about vocational rehabilitation programs available in their service areas. Facilities are surveyed by the Networks to determine the demographics of patients 18 to 54 years old who are attending school, employed, or receiving vocational rehabilitation services (see Table 16).

In 2015, 18.2% of dialysis patients aged 18-54 reported being employed either full- or part-time, 0.7% reported receiving vocational rehabilitation services, and 1.2% reported attending school either full- or part-time. Activities conducted by the Networks to encourage employment, vocational rehabilitation, and enrollment in school included:

- Developing and/or distributing brochures and other written materials (e.g., the Life Options publication, *Employment: A Kidney Patient's Guide to Working & Paying for Treatment*);
- Posting contact information for vocational rehabilitation programs on the Network's website and/or mailing this contact information to dialysis facilities;
- Advocating for patients who are threatened with job loss; and
- Referring patients and employers or potential employers to advocacy and disability rights organizations.

Improving Care for End Stage Renal Disease Patients

Vascular Access

Hemodialysis requires repeated access to large blood vessels capable of effectively removing wastes, water, and excess electrolytes from the blood. The three types of vascular access are AVF, arteriovenous graft (AVG), and central venous catheter. A patient's vasculature and other medical and physical conditions are considered in determining access type. 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. The AVF causes the vein wall to thicken, allowing for adequate blood flow to support the repeated needle insertions. AVFs offer less chance of infection or clotting and greater access longevity than other forms of vascular access. If properly maintained, AVFs can remain an effective means of hemodialysis access for an extended period of time.

An AVG 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 central venous catheter, 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 should be viewed as a “bridge” to an AVF or AVG to be used if dialysis is needed before an AVF or AVG is created or ready for use. Patients who are unable to have an AVF or AVG created or have other clinical conditions that preclude AVF/AVG placement may need to use a central venous catheter as a permanent access. Catheters pose a higher risk of infection, clotting, and narrowing of vessels than AVFs and AVGs and lead to increased morbidity and mortality in patients.⁶

In 2013, the FFCL Workgroup Coalition was established to build on the success of the Fistula First Breakthrough Initiative, with the specific goals of reducing the use of hemodialysis catheters and increasing the number and percentage of AVFs in use. The FFCL Workgroup Coalition comprises representatives from the ESRD Network Program, vascular access experts, dialysis providers, patient subject matter experts, and other stakeholders. The ESRD Network Program has implemented strategies to decrease long-term catheter (LTC) use (90 days or longer) in order to reduce morbidity and mortality and improve the quality of life of patients on hemodialysis.

In 2015, the FFCL Workgroup Coalition convened two sub-workgroups: one focusing on access monitoring and the other focusing on access planning and coordination. These workgroups identified and implemented strategies to effect process changes in access care and management at the chairside for patients on hemodialysis.

Access Monitoring

It Only Takes a Minute to Check Your Access

To support the goal of incorporating access monitoring into the daily routine of patients and into the care pathways for the dialysis care team (DCT), the workgroup developed a simple and easy-to-remember process to help ensure regular and consistent performance of an access check. The workgroup used a multimedia approach to accommodate the various learning styles of patients and the teaching preferences of the DCT. For example, the workgroup made

⁶ Vachharajani TJ. *Atlas of Dialysis Vascular Access*. 2010. Available at: <http://fistulafirst.esrdncc.org/wp-content/uploads/2015/12/Access-Atlas.pdf>



available a video presentation (<http://fistulafirst.esrdESRD NCC.org/ffcl/>) demonstrating proper access monitoring, as well as written materials detailing the process, for use by both patients and the DCT. These tools, which are available on the ESRD NCC website, can be downloaded for display on portable electronic devices to increase the availability of these resources to patients and the DCT. Patient tools are written at a fifth to sixth grade reading level, as recommended by the National Institutes of Health (NIH) National Library of Medicine and other health literacy experts, and are made available in Spanish to accommodate the needs of Spanish-speaking patients, family members, and care partners.

One-Minute Catheter Check: A Bridge to Vascular Access

Although the Centers for Disease Control and Prevention (CDC), catheter manufacturers, and the dialysis community have tools and resources dealing with catheter care and function, the FFCL Workgroup Coalition reported no consistent approach for patients and the DCT to promote catheter monitoring and safety. To establish a uniform approach, catheter monitoring tools were developed in 2014 and added to the FFCL toolkit in 2015. Specifically, the FFCL Workgroup created tools that teach patients how to check their catheter dressing for drainage, identify pain or discomfort associated with the catheter exit site and tunnel, and note the presence of a fever, all of which could indicate an infection. Patients are instructed to report any changes or concerns to the DCT. It is important to note that the catheter monitoring tools convey the message that, for most patients, the catheter is a bridge to an AVF or AVG.

Access Planning and Coordination

Lifeline for a Lifetime: Planning for Your Vascular Access

The FFCL Access Planning and Coordination Workgroup created two vascular access planning guides, one written for patients and one for staff. Both guides include eight essential steps that patients should follow to ensure a thorough and consistent approach to developing an access plan and to help preserve the existing AVF or AVG. A comprehensive access plan can be successful only if the patient and the DCT work together to achieve and maintain dialysis catheter freedom. The steps are:

1. Making an access plan
2. Finding a place for my access
3. Going to see the surgeon
4. Going for surgery
5. Waiting for my access to mature or heal
6. Using my access
7. Getting my catheter out
8. Monitoring access via a one-minute access check

The final step of the plan focuses on access health, early identification of access problems, and appropriate intervention and follow-up. These activities promote reduction in the use of tunneled catheters, an increase in AVF and AVG longevity, and a decrease in the total number of days a patient uses a catheter.

The tools created in the FFCL Workgroup as part of the “One Minute Catheter Check” enable practitioners and patients to access resources on mobile devices and computers at the patient’s chairside. In 2015, members of the FFCL Workgroup Coalition presented the toolkits to the ESRD Networks and at meetings of national organizations, including the National Kidney Foundation (NKF) and the American Association of Kidney Patients (AAKP), and clinical conferences. The FFCL Workgroup Coalition also identified future opportunities and strategies to maximize spread of the toolkits and their components.

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

In 2015, the ESRD Networks developed customized and targeted strategies to assist dialysis facilities in increasing AVF in-use rates and decreasing LTC use rates in incident and prevalent dialysis patients. These efforts included environmental scans using root cause analysis (an approach used to identify the origins of a problem or error), webinar education series, online surveys, action plan development, focus groups, and site visits by Network staff. To achieve improvements in access use, the Networks first identified dialysis facilities that had not reached CMS targets (i.e., LTC use greater than or equal to 10% in the prevalent hemodialysis population) and then worked with these facilities to provide individualized support. For example:

- **Network 10** conducted a campaign, *Catheter Use is Risky Business*, with a goal of achieving a 10% increase in the number of referrals made for a permanent access. Working with 41 facilities, the Network implemented interventions that included developing and distributing monthly vascular access educational resources to the facilities for use in educating patients. The Network exceeded its goal for the campaign, achieving a 97.4% improvement in the number of permanent access referrals made each month, as well as converting 10% of catheter-only patients to a permanent access.
- To prevent and reduce the long-term use of catheters in facilities with LTC use rates greater or equal to 10% in the prevalent hemodialysis population, **Network 13** conducted a Quality Improvement Activity (QIA) that included a patient engagement component. The goal was to decrease LTC in-use rates and increase patient knowledge of vascular access types and associated complications. The Network utilized innovative patient engagement strategies in support of the QIA goals, including a regional educational puzzle contest and Network staff visiting each of the 41 facilities, presenting a Lobby Day Patient Workshop. Overall, the aggregate LTC in-use rate decreased by 1.8% among included facilities.
- In 2015, **Network 16** used interventions, such as working one-on-one with LTC facilities to identify root causes, providing blinded surgeon data to facilities, and working with hospitals and facilities on surgeon sharing (a program involving surgeons who would travel to a remote or underserved area monthly to provide vascular access strategies). Using these strategies, the Network reduced the LTC use rate among facilities by 2.95 percentage points.
- **Network 17** conducted interventions with a targeted group of facilities with the goal of improving permanent access conversion rates. For one facility, a major factor that contributed to success was the utilization of a vascular access coordinator. Using this



best practice, the facility demonstrated an 8 percentage point decrease in its LTC use rate, moving from 20% to 12%. This facility provided peer-to-peer support and presented its interventions to other targeted facilities during project calls.

The data in Table 17 show that the national average AVF rate in the prevalent hemodialysis population was 63.2% as of December 2015. This represents a 0.9 percentage point increase from calendar year 2014. As shown in Table 18, the national LTC use rate as of December 2015 was 10.9%.

Long-term catheter use ranged from 9.1% to 12.7% in 2015, with four out of 18 Networks (22.2%) reporting an LTC use rate of less than 10% of prevalent hemodialysis patients (Table 18). As of December 2015, 17 of 18

As of December 2015, 17 of 18 ESRD Networks exceeded the 60% threshold for AVFs in use among in-center and home hemodialysis patients.

(94.4%) ESRD Networks exceeded the 60% threshold for AVFs in use among in-center and home hemodialysis patients. Additionally, two Networks exceeded the national CMS goal of 68%.

Patient Safety: Support for the National Healthcare Safety Network

The CDC's National Healthcare Safety Network (NHSN) is the nation's most widely used healthcare-associated infection (HAI) tracking system. It provides facilities, states, regions, and the nation with the HAI data needed to identify problem areas, measure the progress of prevention efforts, and ultimately eliminate HAIs as a threat to patients' health.

HAIs, such as bloodstream infections (BSIs), are the leading cause of death among hemodialysis patients, second only to vascular disease.⁷ This makes the data available from the NHSN 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, and once identified, to work with facility staff to implement quality improvement efforts aimed at reducing their incidences. 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 hemodialysis patients by type of vascular access used.
- Provides a variety of analysis options that can be used to better inform quality improvement decisions.

In 2015, a significant part of Network support for the NHSN included review of facilities' monthly reporting of dialysis events, which include IV antimicrobial starts, positive blood

⁷ Utah Department of Health. *Healthcare-Associated Infections in Utah, 2014 Annual Report*. Salt Lake City, UT: Utah Department of Health; October 2015. Available at: http://health.utah.gov/epi/diseases/HAI/surveillance/2014_HAI_Report.pdf

cultures, and evidence of local access site infection. Network support also included technical assistance with data entry, so that dialysis events were entered accurately and in a timely manner. Additionally, the Networks were charged with providing technical assistance and resources to ensure that a new ESRD Quality Incentive Program (QIP) reporting requirement for payment year 2018 (calendar year [CY] 2016) 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 2015–2016 influenza season, and to report a summary of those data to NHSN on or before May 15, 2016. This requirement applied to all outpatient dialysis facilities, whether they provided in-center hemodialysis, peritoneal dialysis, or home hemodialysis services.

Patient Safety: Healthcare-Associated Infection Learning and Action Network Events

In 2015, 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:

- Hands-on educational training for patients and family members about infection control.
- Webinars for dialysis facility staff that featured presentations by public health and medical experts.
- CDC audit tools and video courses.
- Behavioral self-management policies and procedures (e.g., infection control protocols).

By encouraging the LAN all-teach, all-learn concept, ESRD Networks were able to effect noticeable change in their stakeholder communities. For example:

- **Network 2** targeted patients at 59 facilities for participation in the *Hand Hygiene All-Star* (HHAS) campaign, which educated and encouraged dialysis patients to routinely follow the international World Health Organization (WHO)/CDC *Guidelines for Hand Hygiene* prior to treatment. Facility staff participated by celebrating positive achievements in hand hygiene. This campaign successfully changed hand hygiene practices, with 100% of patients participating in hand hygiene educational activities and pledging to wash their hands and permanent access prior to every treatment.
- **Network 3** established a LAN focused on reducing rates of HAIs in Puerto Rico. The LAN revised previously developed communications and facility/hospital contact forms to make them more user-friendly. Using the revised forms, facilities reported that they received appropriate records for 88% of hospital discharges by the end of the project.
- **Network 6** led a campaign to address infection prevention from a patient and family engagement perspective. The campaign began with 28.6% of patients from 134 facilities pledging to practice positive infection prevention methods and to speak up against



negative practices. By the end of the project, 82.4% of the patients had received infection prevention education, participated in educational sessions, and taken the pledge.

- **Network 11** worked with 93 dialysis facilities to reduce BSIs by encouraging the completion of HAI process audits developed by the CDC. The facilities were provided detailed instructions on how to conduct the audits, along with Network best practices for completing successful audits, such as varying the staff observed, conducting audits unannounced, and limiting those who can complete the audits. At the end of the project, 100% of facilities were correctly conducting audits and entering them into NHSN. In addition, project facilities demonstrated a greater rate of BSI reduction (36%) than facilities in the Network region overall (18%).

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 goal of the ESRD QIP is 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 hemodialysis, peritoneal dialysis, and pediatric dialysis patients; maximizing placement of AVFs; minimizing use of catheters; decreasing the proportion of patients with hypercalcemia; decreasing the rate of bloodstream infections; lowering the rate of hospital readmissions; reporting mineral metabolism and anemia values; and 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.

During CY 2015, 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 and provider staff to address areas of deficiency that resulted in payment reductions. CY 2015 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) in an effort to help patients make educated decisions about their care.

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 2015, 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
 - Utilization of post-hospitalization checklists to reduce readmissions
- Recognizing high-performing facilities in monthly newsletters
- Spreading promising approaches and best practices
- Maintaining frequent email communication with facilities

Contributions to Professional Literature

In 2015, authors associated with the ESRD Network Program published the following articles in peer-reviewed journals and other professional publications. In addition, Networks began development of other articles in preparation for 2016 publication.

1. Culp S, Lupu D, Arenella C, Armistead N, Moss AH. Unmet supportive care needs in U.S. dialysis centers and lack of knowledge of available resources to address them. *Journal of Pain Symptom Management*. 2016 Apr;51(4):756-761.e2. Epub 2015 Dec 17.
2. Ball LK, George C, Duval L, Denmon D. Increasing pneumococcal and hepatitis B vaccination rates. *Hemodialysis International*. January 2015;19(1):193-194.
3. Dommert-Breckler B, et al. Impact of a regional collaborative to reduce bloodstream infections in outpatient hemodialysis facilities. *American Journal of Infection Control*. June 2015;43(6):S61.
4. Hall L. The individual with kidney disease: Psychosocial impact and spirituality. In: *ANNA Core Curriculum for Nephrology Nursing*. 6th ed. 2015:192-200.
5. Lynch JR, Armistead N, Vinson BB, Howard AD. Correlates of change in health care worker seasonal influenza vaccination rates among dialysis facilities. *American Journal of Infection Control*. 2015;43: 409-411.
6. Velasquez-Peralta D. Planning for the future includes making your wishes known. Available at: *American Association of Kidney Patients* website. Posted May 20, 2015.,

Ensuring Data Quality

Consolidated Renal Operations in a Web-Enabled Network (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. These data are used by Network staff to inform quality improvement activities, strengthen outreach efforts, document demographic trends, and assess disparities in the ESRD population.

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.

In 2015, the Networks collaborated with the ESRD NCC on two national data committees: the ESRD Data Committee and the Fistula First Catheter Last (FFCL) Data Committee. The efforts of these committees resulted in a rollout of 18 new data reports and/or enhancements to existing reports available in CROWNWeb. Network representatives provided input to the ESRD NCC related to Network data reporting needs, priorities, and perspectives; offered guidance on the requirements for specific reports; and tested data reports prior to release to the entire community. Further, the ESRD NCC collaborative efforts with committee members made possible the availability of important data (e.g., updates to FFCL and Gap reports, which identify patients in CROWNWeb not currently admitted to a specific facility) to support Network quality improvement activities and to assist in enhancing the accuracy and completeness of data reported in CROWNWeb. These report and enhancement rollouts were part of four CROWNWeb releases in 2015.

Veterans Health Administration and Transplant Facility Data

In 2015, the Veterans Health Administration 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 CMS-2728, CMS-2746, Annual Facility Survey forms (CMS-2744), and dialysis patient tracking forms and then manually entered the data on these forms into CROWNWeb.

Disparities in End Stage Renal Disease Care

In 2015, each of the 18 ESRD Networks developed a Population Health Innovation Pilot Project (PHIPP) to promote better health in the ESRD population. Each Network selected a project based on one of the following CMS-approved priorities:

- Increase Hepatitis B and Pneumococcal Pneumonia Vaccination Rates
- Improve Dialysis Care Coordination with a Focus on Reducing Hospital Utilization Project

- Improve Transplant Coordination
- Promote Appropriate Home Dialysis in Qualified Patients
- Support Improvement in Quality of Life

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 in order to make appropriate adjustments based on available information and feedback from project participants.
2. **Customer Focus and Value of the Quality Improvement Activities to Patients, Participants, and CMS:** Each project incorporated a focus on the needs of customers. Input from patients, family members and care partners, as well as 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, in an effort 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 Innovation Pilot Projects (PHIPP)

Increase Hepatitis B and Pneumococcal Pneumonia Vaccination Rates

In 2015, 10 of the 18 ESRD Networks (55.6% of Networks) structured their PHIPP to address CMS' goal of increasing hepatitis B vaccination (HBV) and pneumococcal pneumonia vaccination (PPV) rates among eligible dialysis patients by 5 percentage points (10 percentage points for the five Networks that had also selected vaccination in 2014). Seven of the Networks selected race as their disparity focus, while one Network each selected ethnicity, rural vs. urban, and age. Based on available project findings, these Network projects reported an average increase in HBV and PPV rates of 29.6 percentage points. Network-specific improvements ranged from 17.1% to 44.1%. The disparity was reduced by an average of 6.8 percentage points, with Network-specific improvements ranging from 1.0% to 15.95%. The following are examples of Network projects on this topic:

- Utilizing lessons learned from 2014, **Network 3** implemented successful interventions to improve vaccination rates in project facilities, including patient educational resources and facility-specific feedback reports. A LAN was formed to spread knowledge about local efforts to improve adult vaccination rates and to disseminate best practices among facilities. The project resulted in a 10.6 percentage point reduction in the disparity between patients who were 65 years of age and older and patients who were younger than 65 for HBV and a 9.1 percentage point disparity reduction for PPV. The overall HBV rate increased 18.7 percentage points, while the overall PPV rate increased by 30.2 percentage points.
- **Network 14** used a cross-functional team to design interventions for the PHIPP project. Interventions included vaccination discussion groups with black/African American patients and facility-specific vaccination awareness campaigns. At project close, the disparity between white and black/African American patients was reduced by 3.3 percentage points. Additionally, the HBV rate among inpatients at the focus facilities increased by 17.6 percentage points and the PPV rate increased by 26 percentage points in focus facility patients. The average vaccination rate for both HBV and PPV increased from 45.7% to 67.5%, which was a statistically significant improvement.

Improve Dialysis Care Coordination with a Focus on Reducing Hospital Utilization

One Network selected the project focused on reducing hospital utilization.

- **Network 16** successfully reduced hospital utilization rates, both among female patients and overall, by implementing a mix of interventions. Standardized interventions based on best practices included Post-Hospitalization Assessments and prevention of infection of the dialysis access site. Facility-specific interventions were also developed based on discharge diagnoses and patient comorbidities. Both the overall hospital utilization rate and the disparity between female and male patients were reduced by 2.4 percentage points using these strategies.

Improve Transplant Coordination

Four Networks participated in efforts focusing on increasing transplant referral rates. The Networks identified disparities in both race and gender. Based on available project findings, the Networks increased transplant referrals by a mean of 17.3 percentage points in all focus facilities in reporting Networks. Network-specific increases ranged from 11.9% to 24.9%. The four Networks also decreased each of the disparities by an average of 7.7 percentage points. The Network-specific reduction in disparities ranged from 1.4% to 16.1%. Following are examples of Network projects on this topic:

- **Network 4** developed an "Are You Kidney Me?" Toolkit that included a Transplant Referral Process for Women flow chart. The flow chart provided steps to assist in the transplant referral process for women. If, during the referral process, a female patient was not quite ready to accept a kidney transplant referral, facility staff encouraged the patient to agree to receive a call from the transplant center(s) of their choice. Overall, project facilities improved the percent of patients in focus facilities referred for transplant by 11.9%. The gender disparity decreased by 5.5 percentage points.
- **Network 6** worked with facilities to form patient and family advisory groups that included transplant patients and donors. Facilities also established mentor programs to

connect transplant patients and donors with patients and families that were interested in learning more about kidney transplantation. At project conclusion, transplant referrals increased by 24.9 percentage points, and the racial disparity had decreased by 1.4% in focus facilities.

Promote Appropriate Home Dialysis in Qualified Patients

Utilization of home dialysis services has been a priority for CMS under AIM 1. The number of in-center dialysis patients increased by 4% from December 31, 2014, to December 31, 2015, resulting in a total of 423,129 patients receiving in-center dialysis during calendar year 2015 (Table 19). By contrast, only 56,280 patients utilized home dialysis services exclusively at the end of 2015 (Table 20), representing a 5% increase in utilization from the end of 2014 (Table 21).

Three Networks (16.7% of Networks) opted to focus on promoting home dialysis for qualified ESRD patients. Race was identified as the disparity focus for all three Networks. The Networks partnered with dialysis facilities to implement strategies that promoted awareness of home dialysis treatment modalities. (For the purposes of the PHIPP, a referral was defined as “a physician recommendation for patient placement or training for home dialysis (either HD or PD).” The Networks increased home dialysis referrals by an overall mean of 43.2 percentage points (range = 17.7% to 59.3%) and reduced racial disparities by an overall mean of 12.4 percentage points (range = 5.1% to 19.0%). The following are examples of Network projects on this topic:

- **Network 1** conducted educational site visits and conference calls, as well as developed a Home Therapies Resource Toolkit. The toolkit included reference materials, resource articles, and helpful decision-making tools developed by the Medical Education Institute as well as handouts with discussion points for patients about therapy options. The Network increased referrals for home dialysis to 75.7% at re-measurement. In addition, the Network was able to decrease the racial disparity in referrals between white and African American patients by 13.2 percentage points, exceeding the CMS goal of one percent.
- **Network 2** launched a *Dialysis Home Decorating* promotion program as an intervention to support and inspire patients to consider home modalities. Patients from five of the participating facilities shared pictures and stories to illustrate how they adapted their homes to accommodate the home dialysis lifestyle. The project resulted in a 52.6 percentage point improvement in the rate of referrals of the target population to home dialysis modalities. In addition, the Network was able to decrease the racial disparity in referrals between white and African American patients by 19.6 percentage points.
- **Network 11** implemented a project with 12 facilities aimed at increasing the home dialysis referral rate. Interventions were focused on raising awareness of, and addressing misperceptions about, candidacy for home dialysis. In addition, facility staff were provided “Ask Me About Home Dialysis” stickers to engage patients in conversation about home dialysis, and home referral was added to the electronic medical record to easily monitor progress toward the goal. In less than nine months, the



focus facilities had increased the referral rate by 17.7% and referred over 576 patients for home dialysis.

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 2015 PHIPP.

Partnerships and Coalitions

In 2015, the ESRD Networks engaged in a variety of collaborative activities that included communication and coordination with renal partners at the local, state, Network-area, regional, and/or national levels. The Networks partnered with organizations such as the National Kidney Foundation, the American Kidney Fund, AAKP, the National Association of Nephrology Technicians/Technologists, the National Renal Administrators Association, the Council of Nephrology Social Workers, the American Nephrology Nurses' Association, the Association of Professionals in Infection Control and Epidemiology, the Renal Physicians Association, the American Society of Nephrology, the National Hospice and Palliative Care Organization, the Dental Lifeline Network–Donated Dental Services, the Forum of ESRD Networks, the Association of Health Facility Survey Agencies, the Life Options Rehabilitation Advisory Council, the Medical Education Institute, the United Network for Organ Sharing, the United States Renal Data System Coordinating Center, and the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health, in addition to patients, family members, caregivers, independent dialysis corporations, and large dialysis organizations (LDOs).

The Networks also actively collaborated with hospital associations, health departments, emergency medical services, transplant organizations, patient and professional organizations, Offices of Emergency Management, State Survey Agencies, and Medicare Quality Improvement Organizations in their geographic areas.

- In 2015, **Network 13** partnered with professional organizations to provide education, including submitting abstracts to present at the 36th Annual Dialysis Conference (ADC) and the NKF 2016 Spring Clinical Meeting. Both abstracts were accepted for presentations. Additionally, an abstract, *Increasing Pneumococcal and Hepatitis B Vaccination Rates*, was submitted for the 35th Annual Dialysis Conference and published in January 2015.
- **Network 15** partnered with patient SMEs to develop the *Learn About Blood (LAB) Campaign*. Educational materials were developed and provided to all patients in the campaign, including a set of laminated lab information cards on a ring binder that included facts about specific tests selected by the patient SMEs for inclusion in the campaign. Project results indicated an improvement of 20 percentage points in the number of patients who were able to name three things they could do to maintain or improve lab results, with a final measurement of 81%.
- **Network 18** engaged community partners including the NKF, the Renal Support Network, the Alzheimer's Association, Partners in Care, and the Braille Institute in its



Patient Engagement LAN. The Braille Institute shared resources available to the ESRD community and the Alzheimer's Association discussed management of Alzheimer's and dementia patients in the dialysis setting.

Patient and Family Engagement

Education for End Stage Renal Disease Patients and Caregivers

In 2015, 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. They provided facilities with patient engagement calendars and corresponding downloadable monthly patient education handouts and used social media outlets to share tools, resources, and best practices. Additional Network outreach included site visits and PE LAN meetings and webinars. All of these approaches shared the goal of providing educational resources to ESRD patients, family members, and care partners.

For example:

- To overcome barriers faced by dialysis facilities when referring patients for transplant, **Network 5** developed a patient education model, PAM, for providers to use when discussing transplant referral with patients. The model signifies a patient, Pam, who is considering transplant but has concerns about Passing required medical tests, is Afraid of transplant, and has Money concerns. The Network met its goal of a 5 percentage point increase in referrals in the same month the model was shared with facilities and sustained the improvement through the end of the project.
- As part of its PE LAN campaign, **Network 7** developed a "What's Your Plan?" patient education booklet for participating facilities. Facilities were instructed to provide the booklet to patients scheduled for a Plan of Care (POC) meeting during each month. Successes reported included attendance from patients who had refused to attend meetings in the past, more patient engagement at the facility, and development of enhanced and streamlined processes that helped patients better understand the reasons for the meetings. At the end of the campaign, 61% of patients who responded to a re-measurement survey reported they had participated in a scheduled POC meeting, which represented a 23 percentage point increase over baseline.
- **Network 12** developed the *MY KIDNEY CALENDAR*, which was distributed to all patients in the Network area. The calendar incorporated quotes from patients and provided weekly tips to motivate patients to stay informed, healthy, and prepared, as well as empowered to advocate for others in the kidney patient community. Overall, 44% of patients said they read the entire calendar's information, 33% of patients said they used the weekly tips, and 31% of patients said they used a suggestion in the notes section.
- In collaboration with patient SMEs, **Network 18** developed a POC meeting invitation letter for facilities to use to educate patients on the importance of the meeting. The letter also provided 10 tips on ways patients can better engage with their care team

while in the meeting. Patients were encouraged to bring a care partner with them and to come ready to ask important questions about their care and their treatment plan. At the conclusion of the project, 93% of the patients in project facilities were being formally invited to their annual POC meetings.

Patient Engagement Learning and Action Network

In 2015, each of the 18 Networks facilitated a sustainable Patient Engagement (PE) LAN to promote patient, family, and care partner engagement (i.e., active participation of patients and family members in healthcare decision-making and planning). The PE LANs were patient-driven, with topics and activities selected by the patient SMEs who served on the LAN. Patient SMEs are committed and informed patients who are representative of the demographic characteristics of their respective Network's geographic region. SMEs provide essential patient perspectives that help to guide Network improvement activities. LAN members are also instrumental in promoting and providing peer-to-peer education within the dialysis facilities.

Each ESRD Network is required to have at least 10 volunteer SMEs who participate in their PE LAN. The SMEs work collaboratively with the Networks to ensure that the patient perspective is incorporated in all Network-developed patient educational resources. Input from patient SMEs and their family members or care partners is used to help guide Network activities.

Network-Specific Patient Engagement Activities

In 2015, Network PE LANs implemented a wide range of notable patient and family engagement QIAs. Described immediately below are examples of Network projects that capture the depth and breadth of PE LAN efforts.

- The **Network 7** PE LAN focused on establishing a Patient Education and Engagement Representative (PEER) program in 33 dialysis facilities. At the end of the project, 10 PEERs were in place in these facilities. One facility with two PEERs presented best practices during an in-person LAN meeting. The facility representative and facility PEERs presented how they utilized story boards to provide patient education and placed a mailbox in the waiting room where patients could leave questions for the PEERs or facility representatives to answer individually or for all patients.
- **Network 9** conducted a PE LAN project to improve patient binder adherence. The campaign, *Raising the BAR (Binder Adherence Report): Controlling Phosphorus through Binder Adherence*, resulted in an 83.3% improvement, which was maintained throughout the project. This improvement exceeded CMS goals.
- To promote peer mentoring programs and facilitate improved communication in dialysis facilities, **Network 14** launched a PE LAN QIA that included the development of a Facility Patient Representative (FPR) Toolkit to guide implementation of facility FPR programs. At baseline, 5 of 125 (4.0%) participating facilities had an active FPR program. At the conclusion of the QIA, 98 of 121 (81.0%) participating facilities reported an active FPR program, as measured by the number of FPRs who had received one or more hours of training using the FPR Toolkit. This outcome reflects a 75.6% increase and a relative improvement of 78.8%.



- **Network 15** worked with the PE LAN to develop a QIA to improve patient engagement and participation in the dialysis facility care planning process. Interventions included a Patient Engagement in Goal-Setting Toolkit (available in English and Spanish), four shared-learning PE LAN sessions (including one in-person meeting), facility site visits, and a program to recognize high-performing facilities. The final QIA data demonstrated a 64.9% increase in the percent of patients submitting a self-identified goal for their care plan meeting. In addition, 94.8% of patients responding to the evaluation indicated that setting a goal made a positive difference in their health.

National Patient and Family Engagement Activities

The National Patient and Family Engagement Learning and Action Network (NPFE LAN) includes patient and care partner representatives drawn from the 18 ESRD Networks. The NPFE LAN also includes staff members who represent the 18 ESRD Networks, representatives 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 manage the health and well-being of all ESRD patients. 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 has also helped guide the dissemination of educational resources using social media and an easily accessible website portal.

The NPFE LAN continued the work of the 2014 NPFE LAN in 2015 by stepping up 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.

During 2015, NPFE LAN members requested the formation of subgroups that would focus on specific outcome areas. Five affinity groups were formed to focus on:

- Increasing transplant referrals
- Increasing use of home therapies
- Increasing AVF/AVG access planning and decreasing catheters
- Decreasing infection rates
- Increasing patient-to-patient connections



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 reviewed and released over 30 new patient-centered educational tools in 2015. Forty percent of the tools that went through this development process originated from successful ESRD Network campaigns and were repurposed for national use. These extraordinary efforts demonstrate the strong leadership NPFE LAN members provided to their renal communities at the local and national level.

Many NPFE LAN members have become patient advocates and have contributed to national conferences, e.g., the CMS QualityNet Conference held in December 2015. A number of NPFE LAN members have contributed to other national quality improvement and outreach projects.

Peer Mentoring Training Program

In 2015, the ESRD NCC launched the Peer Mentoring Training Program. The goals of the Program were to:

- Help patients understand the benefits of participating in their health care, which can result in living a longer and healthier life.
- Close the gap in communication with dialysis staff in an effort to ensure that staff understand patients' concerns, issues, and priorities.
- Provide needed support to new patients, increasing their confidence.

The ESRD NCC partnered with six Networks to pilot the program as part of a national QIA. In cooperation with the NPFE LAN and the six ESRD Networks, patient toolkits were developed to target the improvement of specific health outcomes. Additionally, an online training program was launched in which patients were trained and certified to mentor other patients using the tools developed in partnership with the NPFE LAN and ESRD Networks. Participating ESRD Networks recruited 70 patients from 46 dialysis facilities to complete the training program. The pilot project concluded on November 30, 2015, with a 70% training program completion rate. Nineteen NPFE LAN members participated in an additional training program to form a Coach Counsel. The Coach Counsel offered support and guidance to patients interested in becoming peer mentors.

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

In 1995, the Agency for Healthcare Research and Quality (AHRQ), in conjunction with CMS, developed a CAHPS Survey that is used to collect data about the health care 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 hemodialysis from dialysis facilities. AHRQ and CMS developed and tested the ICH CAHPS



Survey in 2005. The ICH CAHPS Survey was designed to measure the experiences of people receiving in-center hemodialysis care from Medicare-certified dialysis facilities. 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.

During 2015, the Networks disseminated information and training resources, including the current final CMS ESRD QIP Rule and AHRQ guidelines posted at www.ahrq.gov/cahps to qualified outpatient hemodialysis facilities, to assist them in utilizing the ICH CAHPS Survey to successfully fulfill the ESRD QIP measurement requirements related to patient experience of care. The Networks provided CMS with surveillance data, reflecting the number of facilities that were utilizing the ICH CAHPS Survey on a monthly basis.

Networks Address Involuntary Discharges, Involuntary Transfers, and Failures to Place

The following are CMS definitions of IVD, involuntary transfer (IVT), and failure to place (FTP):

- **Involuntary Discharge:** A situation in which, consistent with the Conditions for Coverage for End-Stage Renal Disease Facilities (ESRD CfCs), a patient is informed in writing that treatment at a dialysis facility will terminate in 30 days or the dialysis facility notifies the Network and State Survey Agency (SA) that it is following an abbreviated termination procedure for a patient who has made an immediate severe threat of physical harm.
- **Involuntary Transfer:** A situation in which a patient who is registered to receive dialysis treatment at one dialysis facility is dissatisfied with being transferred to another dialysis facility when the transferring facility temporarily or permanently ceases to operate or exist, due to a merger, an emergency or disaster situation, or other circumstances.
- **Failure to Place:** A situation in which no outpatient dialysis facility can be located that will accept an ESRD patient for routine dialysis treatment. This may include situations in which a transient patient has been refused admission to a dialysis facility for a reason that violates the ESRD CfCs. An involuntary discharge may, but does not necessarily, lead to a failure to place.

Involuntary Discharges

IVDs present substantial challenges for the ESRD Network Program. The Networks continue to educate dialysis facility staff about ways to identify potential conflicts and about the use of therapeutic communication techniques with patients and their families. There was an increased focus from the ESRD Network Program on reducing or averting IVDs by providing staff with materials and resources to help them work effectively with patients. In 2015, Networks used a number of tactics to address and prevent conflicts between facility staff and patients, including print and electronic materials focused on education and prevention of IVDs; identification of potential patterns of discrimination or unequal access to care; and training sessions for dialysis facility staff.

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 procedures for evaluating and resolving grievances be conducted with a patient-centered orientation. 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.

In 2015, the ESRD Networks were responsible for facilitating patient-appropriate access to care, which is determined by the nephrologist working with the patient to identify a clinically appropriate treatment modality that takes into consideration patient choice. The ESRD Networks intervened to resolve both grievance and non-grievance access-to-care cases. Access-to-care cases included ESRD patients that were at-risk for an IVD or IVT and those that had already been discharged or transferred. Grievance access-to-care cases were those filed with the Network by an ESRD patient, while a non-grievance access-to-care case involved a dialysis facility contacting the Network to notify of its intent to involuntarily discharge or transfer a patient.

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 work to ensure that patients are 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 as a result of the grievance. The Networks have promoted to the patient community the revised CMS policy for evaluating, resolving, and reporting patient grievances. Each Network developed a grievance resolution protocol that was approved by CMS, which included time frames for investigating and completing the investigation, with shortened time frames for notifying patients of the outcome of the investigation. Additionally, any correspondence sent to patients, or to facilities for distribution to patients, included language on how to contact the Network to file a grievance.

Grievances in 2015

In 2015, as in previous years, patients had the option to implement the grievance process at 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 and alleviate their concerns by having the Network investigate their claims.

Patients, family members, friends, patient representatives or advocates, facility employees, physicians, State Survey Agencies, and other interested parties submitted grievances concerning dialysis facilities and transplantation centers to the Network. The Network also received grievances regarding care provided at acute care hospitals, in nursing homes, at home



by home care providers, or by physicians. When a grievant had concerns in an area outside the ESRD Network's scope, the ESRD Network assisted the grievant in forwarding his or her concerns to the appropriate regulatory entity, such as one of two CMS Beneficiary and Family Centered Care Quality Improvement Organizations. Grievances were submitted by mail, telephone, or e-mail. 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 Patient Contact Utility (PCU) database.

The 18 ESRD Networks processed 1,829 beneficiary grievances in 2015, representing 3.81 grievances per 1,000 dialysis patients. In 2015, 15 of the 18 Networks (83.4%) reported a rate of less than 5.0 grievances per 1,000 patients. Of the 1,829 grievance cases in 2015, 109 (5.9%) involved an access-to-care issue. The 18 Networks processed 31 grievance cases involving IVD in 2015, with 17 (94.4%) reporting five or fewer IVD cases. Twelve of the 18 Networks (66.7%) reported IVDs below the mean rate of 0.06 per 1,000 patients. See Table 22 for Network-specific data.

Grievance and Non-Grievance Involuntary Discharges in 2015

ESRD Network Program staff processed 31 grievance and 587 non-grievance cases involving IVDs in 2015, for a total of 618 total cases. Total IVDs reported by the Networks ranged from 9 to 84. Five of the 18 Networks (27.8%) reported fewer than 20 total cases involving IVDs in 2015. See Table 22 for Network-specific data.

Grievance and Non-Grievance Involuntary Transfers in 2015

ESRD Network Program staff worked diligently in 2015 to address IVTs, implementing focused efforts to provide education and mediation before a patient situation rose to a level of possible transfer. During 2015, there were 50 total cases involving IVTs reported across all ESRD Networks. This includes 37 grievance cases and 13 non-grievance cases. In addition, 14 of the 18 Networks (77.8%) reported fewer than five total IVTs in 2015. CMS continues to closely monitor IVTs that occur as a result of mergers and acquisitions in order to evaluate how these organizational changes affect patient care. See Table 22 for Network-specific data.

Grievance and Non-Grievance Failures to Place in 2015

Failure-to-place ESRD patients in appropriate care settings is an important concern for CMS and the ESRD Network Program. The ability to provide access to care to challenging or complex patients requires a concerted effort among the Networks, hospital discharge planners, the dialysis facility care team, and ESRD practitioners. In 2015, there were a total of 204 cases involving failure to place. This includes 41 grievance cases and 163 non-grievance cases. Two Networks (11.1%) reported only one failure-to-place case each. The remaining 16 Networks ranged from 5 to 29 total failure-to-place cases. See Table 22 for Network-specific data.

Grievance and Non-Grievance Access-to-Care Cases Referred to State Survey Agencies

In 2015, the 18 Networks submitted 349 cases to SAs for review. These grievances were referred based on issues related to infection control, medical transportation scheduling, dialysis



facility staff comportment, and/or any violation of the ESRD CfCs, including a lack of cooperation with the Network.

Recommendations for Sanctions

In 2015, one sanction recommendation was submitted to CMS by an ESRD Network, representing approximately 0.01% of all 6,745 U.S. facilities.

Recommendations to the Centers for Medicare & Medicaid Services for Additional Facilities

Although CMS received no formal recommendations for additional facilities in 2015, ESRD Networks did provide policy recommendations that included:

- Waive the three-month Medicare waiting period for new patients to have an AVF placed prior to beginning dialysis or at the start of dialysis.
- Explore mandating pre-ESRD educational programs throughout the country.
- Study ESRD Medicare medication payment policies to identify ways to reduce costs by improving care.
- Consider innovative ESRD treatment options for involuntarily discharged patients and special needs patients.
- Coordinate comprehensive care for ESRD patients because many of these patients have comorbid conditions for which dialysis facilities and their staff members are not trained, equipped, or reimbursed.
- Adopt a special needs composite rate to help ESRD facilities that accept care for such special needs patients.
- Allow inpatient dialysis units to accept special needs ESRD patients (e.g., a patient on a ventilator) and be reimbursed comparable to the composite rate.
- Establish special needs dialysis facilities such as:
 - A facility that can treat dialysis patients with special physical requirements (e.g., 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).
 - An acute outpatient dialysis facility for acute kidney disease patients who require a short-term course of dialysis as an outpatient, usually less than three months, as kidney function is recovered.
 - A facility that can treat dialysis patients that 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.

The aforementioned policy recommendations and special facility requests represent important ways 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 an increasingly 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 (CEMP); provision of information to educate facilities and patients on the actions to take during emergency and disaster situations; and 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 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. In 2015, ESRD Networks responded to over 80 incidents with the potential to impact ESRD patients and/or providers. The incidents included severe weather, tropical systems, civil unrest, chemical spills, earthquakes, and wildfires. The following examples are representative of emergency preparedness and response activities conducted in 2015:

- **Network 1** responded to Winter Storm Juno, a widespread blizzard occurring in January 2015 that affected 109 dialysis facilities within the Network 1 service area. The total patient population throughout the affected facilities was 4,758. The Network staff held regular conference calls to coordinate facility tracking and address emerging issues, as well as participated in daily calls with the KCER Program. Patient access-to-care barriers regarding transportation were addressed through collaboration with the Network and local offices of emergency management, and alternate transportation services were provided for patients in need.
- The **Network 5 PAC** provided specific recommendations in the development of the Network's *What If...?* emergency preparedness campaign. The objective of this campaign was to assist in-center dialysis patients in preparing for emergencies by helping them identify simple activities they could do immediately and obtaining their commitment to follow through on at least one activity. The framework of the campaign was based on a Loyola University study.⁸ Over 80% of patients reported being better prepared for an emergency because of their participation in the project.

⁸ *Nephrology News & Issues* Web site. 80% of dialysis patients unprepared for natural disaster or emergency. November 20, 2014. Available at: <http://www.nephrologynews.com/articles/110561-80-percent-of-kidney-dialysis-patientsunprepared-for-natural-disaster-or-emergency>



- In February 2015, Winter Storm Octavia blanketed areas of Tennessee and Alabama, and extreme conditions led to state of emergency declarations in all three states in the **Network 8** region. The National Weather Service reported that Octavia was the most significant ice storm Nashville had seen in 20 years. Due to proactive Network and facility implementation of emergency planning at the local level, most of the 21 impacted facilities were able to treat patients before the storm and resumed normal operations within three days.
- **Network 17** responded to four Category 4 typhoons experienced by the Pacific Islands of Guam and Saipan during August and September of 2015. Saipan was hit the hardest and power was disrupted to the island for over three months, with the hospital facility and the free-standing facility running on generator power for over two months. Due to the continuous preparation for emergencies undertaken by the Network and the renal community, patients were able to dialyze without interruption.

Special Projects

Business Requirements for End Stage Renal Disease Systems (BRES)

In 2015, Health Services Advisory Group (HSAG), Network 7, served as the BRES contractor and provided subject matter experts (SMEs) for the CROWNWeb application. This contractor was responsible for the creation of the Business Requirements (BR) for CROWNWeb, maintenance of the Kidney Data Dictionary (KDD) that outlined terminology usage within the CROWNWeb application, and Change Requests (CRs) from CROWNWeb stakeholders regarding updated or new functionality. The contractor also provided insight into future development of the CROWNWeb system and continued to develop the PCU.

During the 2015 calendar year, the BRES contractor completed the following key activities:

- Collaborated with the Integrated Project Team (IPT) for CROWNWeb requirements, development, and implementation activities. The IPT has the authority to approve CROWNWeb changes and documentation to ensure work is executed appropriately.
- Deployed PCU 3.0 with several upgrades and enhancements to track grievances.

End Stage Renal Disease National Coordinating Center

CMS contracted with IPRO End Stage Renal Disease Network of New York (Network 2) to act as the ESRD NCC. The ESRD NCC served as a coordinator for the 18 ESRD Networks and a liaison between the Networks and CMS. Tasks under this contract were varied and included data analytics and delivery, patient outreach, coordination of quality improvement activities with ESRD Networks and facilities, and production of ESRD events at the annual CMS QualityNet Conference held by CMS. In 2015, the ESRD NCC accomplished the following:



- ESRD Data Committee—Partnered with Data Managers and staff from all 18 ESRD Networks to create needed reports based on data from CROWNWeb and other sources, create functional requirements for requested reports, and perform User Acceptance Testing (UAT) on report output.
- Grievant Satisfaction Survey—Subcontracted with a new survey contractor to program the Computer Assisted Telephone Interviewing (CATI) system for the grievant satisfaction survey, which allows a grievant to provide feedback on his or her satisfaction with the resolution of the filed grievance. Work with this contractor resulted in initial increases in survey completion due to more flexibility in the call dates/times available to patients.
- FFCL Workgroup—Led this workgroup to increase placement and improve care of AVFs and AVGs and reduce the use of catheters. Tools supporting these goals were spread to more than 400,000 patients and practitioners through a variety of delivery methods.
- NPFE LAN—Peer Mentoring Training Pilot Program—Working with six ESRD Networks, developed and piloted a peer mentoring training program for patients as part of a national QIA. The ESRD NCC achieved a 70% participant completion rate, and 19 members participated in an additional training program to form a Coach Counsel.

Kidney Community Emergency Response (KCER) Program



Supporting dialysis facilities and patients in preparing for an emergency incident or event continued to be a priority for the ESRD Network Program in 2015. The KCER Program, coordinated by IPRO End Stage Renal Disease Network of New York (Network 2), which was funded by CMS to serve as an emergency management contractor, provided support to the ESRD Networks to strengthen each Network’s disaster preparedness and response capacity. In 2015, the KCER Program’s activities included:

- Collaborating with the renal community in response to weather-related events, including tropical storms and typhoons; communicating altered treatment schedules to federal partners due to civil unrest in Baltimore; and successfully collaborating with local emergency management offices and federal partners such as the U.S. Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response (HHS ASPR) for Pope Francis’ visit to several major U.S. cities, including Washington, D.C., New York City, and Philadelphia.
- Planning and implementing the second annual Emergency Preparedness Exercise to address a simulated emergency. This exercise, based on a terrorist attack scenario in which the water supply becomes contaminated, was developed to test the newly implemented Terrorism Annex and the CEMPs. The purpose of the Terrorism Annex is to serve as a complementing document to the CEMP by setting forth the specific measures that the Networks will take in preparing for, responding to, and recovering from a terrorism incident. Prior to implementing the simulated exercise, the ESRD Networks were trained in the U.S. Department of Homeland Security Exercise and Evaluation Program protocol. The 18 ESRD Networks formed a team in conjunction with the KCER contractor to plan



the national exercise and design a realistic scenario that considered the various levels of ESRD community and agency involvement in an emergency situation. All 18 ESRD Networks participated in the National Network Exercise to test their emergency management plans and procedures, identify gaps that required further development to improve overall preparedness, and pinpoint areas of success. The participants in this exercise benefitted from strong ESRD Network collaborations and information sharing.

- Coordinating and facilitating conference calls to address shortages of normal saline solution and peritoneal dialysis solution. Conference calls to coordinate an effective response to the unavailability of these critical medical resources included the following stakeholders: manufacturers, federal agencies (CMS; HHS ASPR; Health and Human Services Biomedical Advanced Research and Development Authority; Food and Drug Administration; CDC; Veterans Affairs), state agencies, clinicians, renal associations, and dialysis and healthcare organizations to respond effectively to the unavailability of medical resources.
- Building stakeholder relationships to strengthen interactions and obtain accurate information in an emergency or disaster in order to achieve optimal response and recovery. The KCER contractor fostered relationships with HHS ASPR in an effort 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.
- Recognizing the 10th anniversary of Hurricane Katrina in a commemoration. The KCER Training & Exercise and Communications Committees collaborated to develop a presentation that described Katrina's impact on the dialysis community, community and stakeholder response to the crisis, lessons learned, emergency preparedness best practices, and how KCER emerged with the mission of helping the ESRD community prepare and respond to emergencies.

Data Tables

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

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- Table 2: Incident ESRD Patients, 2015, and ESRD Incidence per Million Population, 2014 Compared with 2015
- Table 3: Incident ESRD Patients by Age Group (in Years), Calendar Year 2015
- Table 4: Incident ESRD Patients by Gender, Calendar Year 2015
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- Table 16: Number of Dialysis Patients Aged 18–54 Years, Number and Percent Employed, Number and Percent Receiving Vocational Rehabilitation Services, Number and Percent Attending School, and Number and Percent of Facilities Offering Dialysis after Regular Business Hours, as of December 31, 2015
- Table 17: Number and Percent of In-Center and Home Dialysis Patients with an Arteriovenous Fistula (AVF) in Use, December 2014 Compared with December 2015
- Table 18: Percentage of Dialysis Access Type by Network, as of December 31, 2015
- Table 19: Number of In-Center Dialysis Patients as of December 31, 2014 and December 31, 2015
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- Table 21: Number of Patients Using In-Center and Home Dialysis as of December 31, 2014 and December 31, 2015
- Table 22: Complaints, Grievances, Non-Grievance Access-to-Care Cases, and Involuntary Discharges, Calendar Year 2015



Table 1: Prevalent Dialysis Patients, Dialysis Facilities, and Transplant Centers in Network Area, 2015

Network	Number of Dialysis Patients as of December 31, 2015	Number of Dialysis Facilities in Network Area as of December 31, 2015	Number of Transplant Centers in Network Area as of December 31, 2015
1	13,923	186	15
2	29,039	279	13
3	19,603	211	6
4	19,338	314	18
5	26,624	386	9
6	46,035	690	10
7	29,169	446	9
8	26,998	420	11
9	32,791	570	14
10	19,622	278	9
11	27,036	498	21
12	15,748	320	15
13	19,072	330	11
14	46,792	609	23
15	23,275	351	15
16	13,800	206	8
17	26,656	279	6
18	43,925	372	15
TOTAL	479,446	6,745	228
Mean	26,636	375	13

SOURCE: Networks 1–18, 2015



Table 2: Incident ESRD Patients, 2015, and ESRD Incidence per Million Population, 2014 Compared with 2015

Network	Number of Incident Patients, Calendar Year 2015*	Population of Network Area 2015	Incidence per Million Population 2014	Incidence per Million Population 2015
1	3,995	14,727,584	246	271
2	7,719	19,795,791	370	390
3	5,159	12,620,000	410	409
4	5,121	13,748,437	383	372
5	6,601	16,600,000	389	398
6	10,363	25,150,000	384	412
7	8,069	20,271,272	368	398
8	6,569	14,451,611	433	455
9	9,237	22,604,475	405	409
10	5,295	12,859,995	395	412
11	7,346	22,798,903	315	322
12	4,579	14,000,000	301	327
13	4,995	11,560,266	408	432
14	11,619	27,469,114	377	423
15	5,835	20,842,619	273	280
16	3,539	14,625,639	250	242
17	6,125	16,275,035	351	376
18	10,215	24,412,207	405	418
TOTAL	122,381	324,812,948	360	377

*Drawn from data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks.

SOURCES: Patient data: Networks 1–18 Annual Reports, 2015.

Population data for 50 U.S. states, District of Columbia, and Puerto Rico: U.S. Census Bureau, retrieved from: <http://www.census.gov/popest/data/state/totals/2015/>

Population data for American Samoa, Guam, the Northern Mariana Islands, and the U.S. Virgin Islands: Central Intelligence Agency World Factbook, retrieved from: <https://www.cia.gov/library/publications/download/download-2015/index.html>

County-level population data for California: U.S. Census Bureau, retrieved from: <http://www.census.gov/popest/data/counties/totals/2015/>

Table 3: Incident ESRD Patients by Age Group (in Years), Calendar Year 2015

Network	0–19	20–29	30–39	40–49	50–59	60–69	70–79	≥80	Total Number of Incident ESRD Patients, Calendar Year 2015
1	34	70	162	340	710	1,057	923	699	3,995
2	64	162	363	769	1,433	1,974	1,762	1,192	7,719
3	22	103	208	440	944	1,311	1,261	870	5,159
4	50	119	203	468	953	1,287	1,243	798	5,121
5	48	143	312	690	1,333	1,847	1,461	767	6,601
6	98	244	604	1,280	2,158	2,902	2,179	898	10,363
7	71	164	322	728	1,438	2,075	1,984	1,287	8,069
8	41	162	386	833	1,352	1,811	1,396	588	6,569
9	76	160	420	839	1,752	2,483	2,233	1,274	9,237
10	41	118	254	493	949	1,395	1,229	816	5,295
11	72	173	348	730	1,356	1,968	1,650	1,049	7,346
12	49	97	219	424	911	1,211	1,062	606	4,579
13	46	120	320	571	1,060	1,355	1,039	484	4,995
14	123	279	641	1,459	2,581	3,287	2,216	1,033	11,619
15	79	153	328	691	1,141	1,581	1,238	624	5,835
16	46	95	187	397	624	991	816	383	3,539
17	69	166	307	625	1,267	1,651	1,250	790	6,125
18	84	250	524	1,054	2,051	2,592	2,134	1,526	10,215
TOTAL	1,113	2,778	6,108	12,831	24,013	32,778	27,076	15,684	122,381
% of Total	0.9%	2.3%	5.0%	10.5%	19.6%	26.8%	22.1%	12.8%	100%

SOURCE: Networks 1–18 Annual Reports, 2015.



Table 4: Incident ESRD Patients by Gender, Calendar Year 2015

Network	Male	Female	Total Number of Incident Patients, Calendar Year 2015
1	2,407	1,588	3,995
2	4,657	3,062	7,719
3	3,127	2,032	5,159
4	3,025	2,096	5,121
5	3,760	2,841	6,601
6	5,703	4,660	10,363
7	4,810	3,259	8,069
8	3,548	3,021	6,569
9	5,332	3,905	9,237
10	3,075	2,220	5,295
11	4,197	3,149	7,346
12	2,677	1,902	4,579
13	2,784	2,211	4,995
14	6,635	4,984	11,619
15	3,556	2,279	5,835
16	2,153	1,386	3,539
17	3,589	2,536	6,125
18	6,033	4,182	10,215
TOTAL	71,068	51,313	122,381
% of Total	58.1%	41.9%	100%

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks.

SOURCES: Patient data: Networks 1–18 Annual Reports, 2015.

Table 5: Incident ESRD Patients by Reported Race, Calendar Year 2015

Network	Black or African American	White	Asian	Native Hawaiian or Other Pacific Islander	American Indian or Alaska Native	Multiracial	Not Specified	Total Number of Incident ESRD Patients, Calendar Year 2015
1	584	3,255	113	13	4	9	17	3,995
2	2,275	4,781	524	49	22	60	8	7,719
3	1,135	3,803	154	40	2	17	8	5,159
4	1,230	3,764	99	13	2	4	9	5,121
5	2,920	3,397	198	51	4	16	15	6,601
6	5,253	4,854	134	40	37	25	20	10,363
7	2,310	5,515	112	72	8	21	31	8,069
8	3,020	3,468	31	17	22	10	1	6,569
9	2,032	7,067	64	18	1	12	43	9,237
10	1,563	3,511	159	24	1	5	32	5,295
11	1,596	5,306	183	25	203	20	13	7,346
12	941	3,513	64	17	27	9	8	4,579
13	1,925	2,820	52	22	136	20	20	4,995
14	2,471	8,784	248	64	16	24	12	11,619
15	471	4,637	185	87	423	26	6	5,835
16	221	2,882	221	106	93	16	0	3,539
17	675	3,452	1,254	627	23	52	42	6,125
18	1,112	7,704	1,105	218	28	45	3	10,215
TOTAL	31,734	82,513	4,900	1,503	1,052	391	288	122,381
% of Total	25.9%	67.4%	4.0%	1.2%	0.9%	0.3%	0.2%	100%

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks. The form also provides data on ethnicity, defined as “Hispanic or Latino” or “not Hispanic or Latino” (data not shown).

SOURCES: Patient data: Networks 1–18 Annual Reports, 2015.

Table 6: Incident ESRD Patients, Prevalent Dialysis Patients, and Transplant Recipients by Reported Race, 2015

Patient Category	Black or African American		White		Asian		Native Hawaiian or Other Pacific Islander		American Indian or Alaska Native		Multiracial		Not Specified		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Incident ESRD Patients, Calendar Year 2015	31,734	25.9%	82,513	67.4%	4,900	4.0%	1,490	1.2%	1,065	0.9%	391	0.3%	288	0.2%	122,381	100%
Prevalent Dialysis Patients as of December 31, 2015	167,336	34.9%	278,448	58.1%	20,313	4.2%	6,628	1.4%	5,489	1.1%	1,091	0.2%	141	0.0%	479,446	100%
Transplant Recipients, Calendar Year 2015	4,936	26.8%	11,926	64.7%	993	5.4%	183	1.0%	150	0.8%	53	0.3%	205	1.1%	18,446	100%

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks. The form also provides data on ethnicity, defined as “Hispanic or Latino” or “not Hispanic or Latino” (data not shown). Race data are reported here to highlight disproportionate burdens of disease for certain population groups.

SOURCE: Networks 1–18 Annual Reports, 2015.

Table 7: Incident ESRD Patients by Primary Cause of Renal Failure, Calendar Year 2015

Network	Diabetes	Hypertension/ Large Vessel Disease	Glomerulonephritis	Cystic/ Hereditary/ Congenital Diseases	Interstitial Nephritis/ Pyelonephritis	Neoplasms/ Tumors	Other*
1	1,700	875	334	198	177	130	0
2	3,261	2,077	503	232	193	185	0
3	2,551	1,564	315	108	116	107	0
4	2,205	1,353	342	178	144	135	0
5	2,831	2,253	335	159	123	111	0
6	4,453	3,678	539	290	193	195	0
7	3,463	2,788	410	225	163	177	0
8	2,885	2,356	338	164	129	116	0
9	4,365	2,412	520	262	237	196	0
10	2,348	1,807	261	153	82	101	0
11	3,050	1,858	540	374	276	162	0
12	2,005	1,248	317	154	140	113	0
13	2,278	1,729	231	135	95	93	0
14	6,377	3,052	477	268	194	148	0
15	2,961	1,298	401	203	174	126	0
16	1,638	603	373	156	152	110	0
17	3,234	1,371	385	162	154	98	0
18	5,392	2,865	515	242	152	137	0
TOTAL	56,997	35,187	7,136	3,663	2,894	2,440	0
% of Total	46.6%	28.8%	5.8%	3.0%	2.4%	2.0%	0.0%

*"Other" includes all other Primary Diagnosis Codes from Field 15 of the CMS-2728 Form not specified in individual columns. Please refer to Page 3 of the CMS-2728 Form (<https://www.cms.gov/Medicare/CMS-Forms/CMS-Forms/Downloads/CMS2728.pdf>) for a list of additional codes.

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks.

SOURCE: Networks 1–18 Annual Reports, 2015.

Table 7 (Cont'd): Incident ESRD Patients by Primary Cause of Renal Failure, Calendar Year 2015

Network	Secondary GN/ Vasculitis	Acute Kidney Failure	Genitourinary System	Disorders of Mineral Metabolism	Transplant Complications	Miscellaneous Conditions	Not Specified	Total Number of Incident ESRD Patients, Calendar Year 2015
1	104	27	5	2	6	382	55	3,995
2	131	73	13	1	10	797	243	7,719
3	61	27	3	1	4	291	11	5,159
4	79	42	8	1	16	435	183	5,121
5	109	35	6	1	4	395	239	6,601
6	192	39	5	1	5	632	141	10,363
7	146	29	2	1	7	522	136	8,069
8	119	35	2	0	4	341	80	6,569
9	145	67	10	1	12	825	185	9,237
10	80	25	5	0	7	306	120	5,295
11	189	65	5	2	12	741	72	7,346
12	102	30	4	1	12	362	91	4,579
13	87	32	3	1	0	266	45	4,995
14	188	58	2	0	9	605	241	11,619
15	145	31	12	1	5	406	72	5,835
16	116	22	6	2	3	324	34	3,539
17	98	34	3	2	5	388	191	6,125
18	153	66	5	1	9	589	89	10,215
TOTAL	2,244	737	99	19	130	8,607	2,228	122,381
% of Total	1.8%	0.6%	0.1%	0.0%	0.1%	7.0%	1.8%	100.0%

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks.

SOURCE: Networks 1–18 Annual Reports, 2015.

Table 8: Prevalent Dialysis Patients by Age Group (in Years) as of December 31, 2015

Network	0–19	20–29	30–39	40–49	50–59	60–69	70–79	≥80	Total Number of Dialysis Patients as of December 31, 2015
1	32	258	594	1,388	2,720	3,632	3,071	2,228	13,923
2	93	588	1,494	3,090	6,005	7,710	6,054	4,005	29,039
3	38	334	918	1,980	3,897	5,276	4,439	2,721	19,603
4	76	384	906	2,030	3,909	5,329	4,091	2,613	19,338
5	64	534	1,509	3,227	5,762	7,172	5,515	2,841	26,624
6	137	999	2,882	6,419	10,402	12,904	8,607	3,685	46,035
7	126	542	1,554	3,280	5,925	7,557	6,211	3,974	29,169
8	76	608	1,748	3,804	6,049	7,446	5,048	2,219	26,998
9	129	643	1,685	3,751	6,749	9,092	6,849	3,893	32,791
10	66	477	1,123	2,273	3,964	5,197	4,049	2,473	19,622
11	109	608	1,502	3,035	5,408	7,199	5,629	3,546	27,036
12	82	315	791	1,709	3,279	4,303	3,327	1,942	15,748
13	108	433	1,297	2,528	4,358	5,298	3,505	1,545	19,072
14	278	1,033	2,712	6,054	10,923	13,673	8,470	3,649	46,792
15	134	591	1,313	2,806	5,039	6,335	4,682	2,375	23,275
16	69	394	833	1,597	2,864	3,810	2,759	1,474	13,800
17	93	616	1,487	2,880	5,653	7,265	5,316	3,346	26,656
18	196	1,196	2,504	5,044	9,559	11,709	8,476	5,241	43,925
TOTAL	1,906	10,553	26,852	56,895	102,465	130,907	96,098	53,770	479,446
% of Total	0.4%	2.2%	5.6%	11.9%	21.4%	27.3%	20.0%	11.2%	100%

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks.

SOURCE: Networks 1–18 Annual Reports, 2015.



Table 9: Prevalent Dialysis Patients by Gender as of December 31, 2015

Network	Male	Female	Total Number of Dialysis Patients as of December 31, 2015
1	8,183	5,740	13,923
2	16,954	12,085	29,039
3	11,748	7,855	19,603
4	11,333	8,005	19,338
5	14,872	11,752	26,624
6	25,230	20,805	46,035
7	16,947	12,222	29,169
8	14,650	12,348	26,998
9	18,612	14,179	32,791
10	11,228	8,394	19,622
11	15,369	11,667	27,036
12	8,969	6,779	15,748
13	10,408	8,664	19,072
14	25,921	20,871	46,792
15	13,468	9,807	23,275
16	7,952	5,848	13,800
17	15,022	11,634	26,656
18	25,522	18,403	43,925
TOTAL	272,388	207,058	479,446
% of Total	56.8%	43.2%	100%

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks.

SOURCES: Patient data: Networks 1–18 Annual Reports, 2015.



Table 10: Prevalent Dialysis Patients by Reported Race as of December 31, 2015

Network	Black or African American	White	Asian	Native Hawaiian or Other Pacific Islander	American Indian or Alaska Native	Multi-racial	Not Specified	Total Number of Dialysis Patients as of December 31, 2015
1	3,030	10,332	440	59	25	34	3	13,923
2	11,136	15,505	1,916	180	99	181	22	29,039
3	5,857	12,865	588	127	9	154	3	19,603
4	6,727	12,223	286	64	12	23	3	19,338
5	15,330	10,316	743	180	16	26	13	26,624
6	30,092	15,049	508	149	178	47	12	46,035
7	11,590	16,790	471	201	45	55	17	29,169
8	16,356	10,325	156	47	92	20	2	26,998
9	10,777	21,630	238	79	17	45	5	32,791
10	7,494	11,398	626	64	2	30	8	19,622
11	8,546	16,691	829	83	827	49	11	27,036
12	4,636	10,723	202	63	104	18	2	15,748
13	9,825	8,274	200	78	648	45	2	19,072
14	12,913	32,598	932	214	79	45	11	46,792
15	2,395	17,016	730	406	2,665	59	4	23,275
16	1,150	10,834	919	455	408	33	1	13,800
17	3,631	13,763	5,890	3,105	136	121	10	26,656
18	5,851	32,116	4,639	1,074	127	106	12	43,925
TOTAL	167,336	278,448	20,313	6,628	5,489	1,091	141	479,446
% of Total	34.9%	58.1%	4.2%	1.4%	1.1%	0.2%	0.0%	100%

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks. The form also provides data on ethnicity, defined as “Hispanic or Latino” or “not Hispanic or Latino” (data not shown).

SOURCES: Patient data: Networks 1–18 Annual Reports, 2015.

Table 11: Prevalent Dialysis Patients by Primary Diagnosis as of December 31, 2015

Network	Diabetes	Hypertension/Large Vessel Disease	Glomerulonephritis	Cystic/Hereditary/Congenital Diseases	Interstitial Nephritis/Pyelonephritis
1	5,816	3,038	1,551	713	638
2	12,131	7,676	2,584	1,055	820
3	9,368	5,551	1,656	617	532
4	8,070	5,242	1,669	730	574
5	10,306	9,259	1,965	733	527
6	18,449	16,785	3,502	1,276	844
7	11,982	9,949	2,060	1,038	648
8	11,224	10,064	1,874	806	542
9	14,536	8,672	2,724	1,206	963
10	8,015	6,852	1,349	614	433
11	11,417	7,231	2,565	1,137	982
12	6,856	4,451	1,356	614	505
13	8,236	6,665	1,198	636	383
14	25,054	12,557	2,710	1,300	783
15	11,975	5,045	1,981	867	740
16	6,244	2,386	1,705	752	583
17	13,938	6,074	2,302	785	691
18	22,659	12,084	3,053	1,289	727
TOTAL	216,276	139,581	37,804	16,168	11,915
% of Total	45.1%	29.1%	7.9%	3.4%	2.5%

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks.

SOURCE: Networks 1–18 Annual Reports, 2015.

TABLE 11 (Cont'd): Prevalent Dialysis Patients by Primary Diagnosis as of December 31, 2015

Network	Neoplasms/ Tumors	Other*	Secondary GN/Vasculitis	Miscellaneous Conditions	Not Specified	Total Number of Dialysis Patients as of December 31, 2015
1	655	35	386	1,042	49	13,923
2	991	75	704	2,715	288	29,039
3	572	30	360	887	30	19,603
4	909	60	416	1,374	294	19,338
5	737	35	546	1,909	607	26,624
6	1,181	46	1,033	2,515	404	46,035
7	915	26	649	1,527	375	29,169
8	639	30	567	1,159	93	26,998
9	1,229	74	647	2,511	229	32,791
10	624	33	400	1,082	220	19,622
11	870	73	776	1,845	140	27,036
12	566	37	356	902	105	15,748
13	630	27	385	818	94	19,072
14	1,233	51	930	1,753	421	46,792
15	722	46	586	1,213	100	23,275
16	633	29	403	1,048	17	13,800
17	639	39	543	1,359	286	26,656
18	968	60	834	2,013	238	43,925
TOTAL	14,713	806	10,521	27,672	3,990	479,446
% of Total	3.1%	0.2%	2.2%	5.8%	0.8%	100%

*“Other” includes all other Primary Diagnosis Codes from Field 15 of the CMS-2728 Form not specified in individual columns. Please refer to Page 3 of the CMS-2728 Form (<https://www.cms.gov/Medicare/CMS-Forms/CMS-Forms/Downloads/CMS2728.pdf>) for a list of additional codes.

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks.

SOURCE: Networks 1–18 Annual Reports, 2015.

**Table 12: Renal Transplant Recipients by Age Group (in Years),
Calendar Year 2015**

Network	0–19	20–29	30–39	40–49	50–59	60–69	70–79	≥80	Total Number of Transplant Recipients, Calendar Year 2015
1	43	52	90	146	177	184	59	3	754
2	48	90	168	232	358	312	99	6	1,313
3	11	45	79	105	150	114	23	0	527
4	46	81	144	197	286	263	77	2	1,096
5	44	70	160	251	360	280	79	6	1,250
6	66	94	199	284	304	323	67	2	1,339
7	46	71	138	211	248	266	89	0	1,069
8	33	51	146	200	191	156	28	0	805
9	55	77	183	220	250	257	56	0	1,098
10	30	53	78	116	128	124	28	2	559
11	73	105	189	321	391	376	113	1	1,569
12	43	61	135	176	194	203	41	3	856
13	32	44	86	144	123	136	27	0	592
14	91	140	243	353	369	349	50	1	1,596
15	43	79	168	222	276	255	80	3	1,126
16	27	43	86	119	118	135	57	0	585
17	51	104	148	222	259	240	69	3	1,096
18	49	87	199	206	283	329	62	1	1,216
TOTAL	831	1,347	2,639	3,725	4,465	4,302	1,104	33	18,446
% of Total	4.5%	7.3%	14.3%	20.2%	24.2%	23.3%	6.0%	0.2%	100%

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks.

SOURCE: Networks 1–18 Annual Reports, 2015.

Table 13: Renal Transplant Recipients by Gender, Calendar Year 2015

Network	Male	Female	Total Number of Transplant Recipients, Calendar Year 2015
1	464	290	754
2	838	475	1,313
3	318	209	527
4	664	432	1,096
5	795	455	1,250
6	813	526	1,339
7	660	409	1,069
8	486	319	805
9	661	437	1,098
10	352	207	559
11	928	641	1,569
12	550	306	856
13	357	235	592
14	937	659	1,596
15	703	423	1,126
16	359	226	585
17	617	479	1,096
18	735	481	1,216
TOTAL	11,237	7,209	18,446
% of Total	60.9%	39.1%	100%

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks.

SOURCE: Networks 1–18 Annual Reports, 2015.

Table 14: Renal Transplant Recipients by Reported Race, Calendar Year 2015

Network	Black or African American	White	Asian	Native Hawaiian or Other Pacific Islander	American Indian or Alaska Native	Multiracial	Not Specified	Total Number of Transplant Recipients, Calendar Year 2015
1	114	581	33	4	0	2	20	754
2	372	816	99	10	5	10	1	1,313
3	149	328	33	8	1	1	7	527
4	339	693	48	9	0	3	4	1,096
5	614	569	42	12	2	5	6	1,250
6	675	606	35	8	3	4	8	1,339
7	354	647	30	7	2	2	27	1,069
8	421	367	12	1	2	2	0	805
9	280	758	20	4	0	2	34	1,098
10	160	345	20	0	1	1	32	559
11	296	1,157	74	4	33	5	0	1,569
12	202	631	12	4	1	0	6	856
13	212	312	15	7	24	2	20	592
14	369	1,165	47	9	1	4	1	1,596
15	92	899	48	17	63	3	4	1,126
16	51	464	51	9	7	2	1	585
17	116	668	213	56	5	4	34	1,096
18	120	920	161	14	0	1	0	1,216
TOTAL	4,936	11,926	993	183	150	53	205	18,446
% of Total	26.8%	64.7%	5.4%	1.0%	0.8%	0.3%	1.1%	100%

NOTE: Reporting based on data recorded on Form CMS-2728, supplemented by additional information obtained by the Networks. The form also provides data on ethnicity, defined as “Hispanic or Latino” or “not Hispanic or Latino” (data not shown).

SOURCE: Networks 1–18 Annual Reports, 2015.

Table 15: Transplant Events by Donor Type, Calendar Year 2015

Network	Deceased Donors	Living Related Donors	Living Unrelated Donors	Total Number of Renal Transplants, Calendar Year 2015
1	437	142	177	756
2	825	250	239	1,314
3	356	75	97	528
4	789	164	144	1,097
5	854	241	139	1,234
6	997	245	103	1,345
7	860	129	81	1,070
8	624	74	109	807
9	749	168	182	1,099
10	348	156	55	559
11	931	304	345	1,580
12	669	109	79	857
13	486	66	41	593
14	1,071	267	254	1,592
15	817	122	189	1,128
16	435	65	86	586
17	764	159	173	1,096
18	850	185	182	1,217
TOTAL	12,862	2,921	2,675	18,458

SOURCE: Networks 1–18 Annual Reports, 2015.



Table 16: Number of Dialysis Patients Aged 18–54 Years, Number and Percent Employed, Number and Percent Receiving Vocational Rehabilitation Services, Number and Percent Attending School, and Number and Percent of Facilities Offering Dialysis after Regular Business Hours, as of December 31, 2015

Network	Number of Dialysis Patients Aged 18–54 Years as of December 31, 2015	Number Employed*	Percent Employed*	Number Receiving Vocational Rehabilitation Services	Percent Receiving Vocational Rehabilitation Services	Number Attending School*	Percent Attending School*	Number of Dialysis Facilities After Regular Hours (5 PM)	Percent of Dialysis Facilities After Regular Hours (5 PM)
1	3,427	711	21%	31	1%	32	1%	61	33%
2	7,804	1,598	20%	51	1%	93	1%	111	40%
3	4,978	872	18%	22	0%	41	1%	72	34%
4	5,000	822	16%	24	0%	39	1%	51	16%
5	7,807	1,497	19%	18	0%	38	0%	87	23%
6	15,104	2,069	14%	76	1%	147	1%	680	99%
7	8,030	1,582	20%	71	1%	181	2%	67	16%
8	8,854	1,117	13%	18	0%	43	0%	26	6%
9	9,075	1,840	20%	49	1%	66	1%	91	16%
10	5,633	1,027	18%	5	0%	43	1%	37	13%
11	7,586	1,675	22%	128	2%	196	3%	272	57%
12	4,285	836	20%	11	0%	25	1%	28	9%
13	6,174	1,032	17%	117	2%	109	2%	34	11%
14	14,650	2,930	20%	158	1%	218	1%	68	11%
15	7,012	1,497	21%	12	0%	45	1%	90	26%
16	4,108	1,033	25%	65	2%	117	3%	109	53%
17	7,467	1,380	18%	14	0%	63	1%	69	25%
18	13,015	2,017	15%	70	1%	116	1%	86	23%
TOTAL	140,009	25,535	—	940	—	1,612	—	2,039	—
% of Total	—	—	18%	—	1%	—	1%	—	30%

*Full- or part-time. NOTE: Items in this table are reported on the CMS-2744 Form in CROWNWeb. Due to the manner in which CROWNWeb calculates employment, vocational rehabilitation, and school on the CMS-2744 Form, the numbers reported in this table may vary slightly from actual totals.

SOURCE: Networks 1–18 Annual Reports, 2015.

Table 17: Number and Percent of In-Center and Home Dialysis Patients with an Arteriovenous Fistula (AVF) in Use, December 2014 Compared with December 2015

Network	2014		2015	
	Number	Percent	Number	Percent
1	7,702	66.2%	8,136	66.1%
2	16,615	65.6%	17,729	66.4%
3	10,403	60.5%	10,934	61.0%
4	10,408	63.4%	10,790	63.5%
5	13,397	60.6%	14,117	60.5%
6	23,046	60.7%	24,199	60.9%
7	13,987	60.6%	15,270	60.5%
8	13,678	60.8%	14,456	61.2%
9	15,836	59.6%	16,601	59.7%
10	9,511	60.6%	10,325	60.9%
11	14,238	62.8%	14,763	63.0%
12	7,907	63.0%	8,348	63.2%
13	9,348	60.9%	10,194	61.7%
14	23,913	62.4%	25,484	61.7%
15	13,072	69.7%	14,013	69.5%
16	7,616	69.2%	8,123	70.2%
17	13,951	65.5%	14,875	66.2%
18	23,899	66.5%	25,605	66.7%
Weighted Mean	—	62.3%	—	63.2%
TOTAL	248,527	—	263,962	—

NOTES: Home dialysis includes dialysis received in another residential setting such as a nursing home. Starting in March 2010, a small number of patients with missing data on access type were excluded from the denominators used in calculating these percentages.

SOURCE: Data for 2015 were obtained from the Fistula First Dashboard, as of December 2015.

Table 18: Percentage of Dialysis Access Type by Network, as of December 31, 2015

Network	AVF	AVG	Catheter ≥90 Days	Catheter Less Than 90 Days	AVF with AVG	AVF with Catheter	AVG with Catheter	Port	Other/Unknown
1	66.11%	14.80%	10.66%	6.56%	0.08%	1.41%	0.34%	0.02%	0.02%
2	66.43%	13.76%	12.20%	6.49%	0.04%	0.91%	0.16%	0.00%	0.01%
3	60.97%	17.59%	12.68%	7.34%	0.06%	1.05%	0.28%	0.00%	0.02%
4	63.46%	17.00%	10.70%	7.12%	0.09%	1.33%	0.27%	0.01%	0.02%
5	60.47%	18.75%	12.04%	7.17%	0.07%	1.19%	0.30%	0.01%	0.00%
6	60.86%	22.11%	9.23%	6.20%	0.08%	1.12%	0.35%	0.03%	0.03%
7	60.50%	18.49%	11.69%	7.11%	0.08%	1.67%	0.38%	0.04%	0.04%
8	61.18%	20.62%	9.91%	6.56%	0.09%	1.14%	0.47%	0.01%	0.01%
9	59.69%	18.93%	11.85%	7.12%	0.13%	1.79%	0.49%	0.00%	0.01%
10	60.93%	18.00%	12.38%	6.79%	0.06%	1.53%	0.29%	0.01%	0.03%
11	63.01%	16.81%	11.91%	6.62%	0.13%	1.26%	0.23%	0.01%	0.02%
12	63.18%	17.07%	10.61%	7.27%	0.11%	1.33%	0.41%	0.02%	0.00%
13	61.74%	17.96%	11.39%	6.74%	0.12%	1.62%	0.39%	0.01%	0.03%
14	61.65%	19.73%	10.18%	6.65%	0.10%	1.30%	0.35%	0.01%	0.02%
15	69.49%	12.89%	9.82%	6.24%	0.06%	1.29%	0.17%	0.01%	0.02%
16	70.20%	13.23%	9.08%	5.91%	0.10%	1.21%	0.24%	0.00%	0.02%
17	66.24%	16.25%	10.40%	5.99%	0.08%	0.80%	0.19%	0.05%	0.00%
18	66.70%	15.17%	10.38%	6.50%	0.04%	1.01%	0.16%	0.02%	0.02%
National Total	63.19%	17.59%	10.88%	6.66%	0.08%	1.26%	0.30%	0.02%	0.02%

SOURCE: Fistula First Catheter Last Dashboard.

Table 19: Number of In-Center Dialysis Patients as of December 31, 2014 and December 31, 2015

Network	Number of In-Center Dialysis Patients* as of December 31, 2014	Number of In-Center Dialysis Patients* as of December 31, 2015	% Change
1	11,916	12,386	4%
2	26,405	27,264	3%
3	17,714	18,204	3%
4	16,988	17,334	2%
5	23,095	23,679	3%
6	38,567	40,019	4%
7	24,316	25,637	5%
8	22,914	23,662	3%
9	27,625	28,535	3%
10	15,932	16,762	5%
11	23,409	24,038	3%
12	12,819	13,175	3%
13	16,006	16,709	4%
14	39,687	41,875	6%
15	19,368	20,439	6%
16	11,146	11,532	3%
17	22,162	23,030	4%
18	37,432	38,849	4%
TOTAL	407,501	423,129	4%

*Includes patients in training for home modalities.

SOURCE: Networks 1–18 Annual Reports, 2015. Due to changes in data sources, slight differences may exist between the 2015 counts reported above and those provided for the 2014 Summary Annual Report.

Table 20: Number of Home Dialysis Patients by Modality as of December 31, 2014 and December 31, 2015

Network	Hemodialysis			Continuous Ambulatory Peritoneal Dialysis			Continuous Cycling Peritoneal Dialysis			Other Peritoneal Dialysis*		Total	
	2014	2015	% Change	2014	2015	% Change	2014	2015	% Change	2014	2015	2014	2015
1	221	231	5%	242	251	4%	1,102	1,078	-2%	2	1	1,567	1,561
2	347	370	7%	429	478	11%	989	1,015	3%	1	0	1,766	1,863
3	115	130	13%	192	209	9%	999	1,134	14%	0	0	1,306	1,473
4	297	306	3%	298	319	7%	1,481	1,495	1%	1	2	2,077	2,122
5	528	530	0%	664	632	-5%	1,651	1,844	12%	12	7	2,855	3,013
6	851	908	7%	812	859	6%	3,898	4,105	5%	1	1	5,562	5,873
7	591	610	3%	405	451	11%	2,434	2,537	4%	3	1	3,433	3,599
8	395	446	13%	471	437	-7%	2,287	2,474	8%	0	2	3,153	3,359
9	577	631	9%	788	847	7%	2,538	2,652	4%	7	3	3,910	4,133
10	994	824	-17%	263	309	17%	1,547	1,718	11%	0	2	2,804	2,853
11	497	517	4%	692	809	17%	1,637	1,720	5%	0	0	2,826	3,046
12	434	453	4%	306	389	27%	1,655	1,754	6%	10	5	2,405	2,601
13	237	272	15%	292	396	36%	1,596	1,712	7%	1	0	2,126	2,380
14	607	605	0%	640	684	7%	3,325	3,423	3%	3	6	4,575	4,718
15	282	303	7%	442	456	3%	2,015	2,151	7%	0	0	2,739	2,910
16	347	333	-4%	318	318	0%	1,455	1,606	10%	1	1	2,121	2,258
17	318	304	-4%	670	681	2%	2,350	2,529	8%	0	1	3,338	3,515
18	442	407	-8%	844	957	13%	3,520	3,638	3%	2	1	4,808	5,003
TOTAL	8,080	8,180	1%	8,768	9,482	8%	36,479	38,585	6%	44	33	53,371	56,280

*Includes Intermittent Peritoneal Dialysis, which is similar to Continuous Cycling Peritoneal Dialysis but is usually performed in a hospital.

NOTE: Home dialysis includes dialysis received in another residential setting such as a nursing home.

SOURCE: Networks 1–18 Annual Reports, 2015. Due to changes in data sources, slight differences may exist between the 2015 counts reported above and those published in the 2014 Summary Annual Report.

Table 21: Number of Patients Using In-Center and Home Dialysis as of December 31, 2014 and December 31, 2015

Network	In-Center Dialysis			Home Dialysis			Total		
	2014	2015	% Change	2014	2015	% Change	2014	2015	Total
1	11,916	12,386	4%	1,567	1,561	0%	13,483	13,947	3%
2	26,405	27,264	3%	1,766	1,863	5%	28,171	29,127	3%
3	17,714	18,204	3%	1,306	1,473	13%	19,020	19,677	3%
4	16,988	17,334	2%	2,077	2,122	2%	19,065	19,456	2%
5	23,095	23,679	3%	2,855	3,013	6%	25,950	26,692	3%
6	38,567	40,019	4%	5,562	5,873	6%	44,129	45,892	4%
7	24,316	25,637	5%	3,433	3,599	5%	27,749	29,236	5%
8	22,914	23,662	3%	3,153	3,359	7%	26,067	27,021	4%
9	27,625	28,535	3%	3,910	4,133	6%	31,535	32,668	4%
10	15,932	16,762	5%	2,804	2,853	2%	18,736	19,615	5%
11	23,409	24,038	3%	2,826	3,046	8%	26,235	27,084	3%
12	12,819	13,175	3%	2,405	2,601	8%	15,224	15,776	4%
13	16,006	16,709	4%	2,126	2,380	12%	18,132	19,089	5%
14	39,687	41,875	6%	4,575	4,718	3%	44,262	46,593	5%
15	19,368	20,439	6%	2,739	2,910	6%	22,107	23,349	6%
16	11,146	11,532	3%	2,121	2,258	6%	13,267	13,790	4%
17	22,162	23,030	4%	3,338	3,515	5%	25,500	26,545	4%
18	37,432	38,849	4%	4,808	5,003	4%	42,240	43,852	4%
TOTAL	407,501	423,129	4%	53,371	56,280	5%	460,872	479,409	4%

NOTES: Home dialysis includes dialysis received in another residential setting such as a nursing home.

Due to differences in data abstraction protocols and the dynamic nature of the patient population, the total prevalence reported in this table (N = 460,872) differs from the total prevalence reported in Tables 1, 8, 9, and 10 (N = 461,572).

SOURCE: Networks 1–18 Annual Reports, 2015. Due to changes in data sources, slight differences may exist between the 2015 counts reported above and those published in the 2014 Summary Annual Report.

Table 22: Complaints, Grievances, Non-Grievance Access-to-Care Cases, and Involuntary Discharges, Calendar Year 2015

Network	Number of Dialysis Patients as of December 31, 2015	Number of Grievance Cases Opened by the Network	Rate of Grievance Cases per 1,000 Prevalent Patients	Total Number of Grievance Cases Involving Access to Care	Rate of Grievance Cases Involving Access to Care per 1,000 Prevalent Patients	Number of Grievance Cases Involving Involuntary Transfer
1	13,923	22	1.58	1	0.07	0
2	29,039	91	3.13	12	0.41	4
3	19,603	83	4.23	19	0.97	14
4	19,338	202	10.45	4	0.21	0
5	26,624	80	3.00	4	0.15	4
6	46,035	256	5.56	22	0.48	15
7	29,169	86	2.95	0	0.00	0
8	26,998	65	2.41	3	0.11	0
9	32,791	84	2.56	10	0.30	0
10	19,622	31	1.58	4	0.20	0
11	27,036	69	2.55	6	0.22	0
12	15,748	63	4.00	4	0.25	0
13	19,072	164	8.60	7	0.37	0
14	46,792	197	4.21	2	0.04	0
15	23,275	84	3.61	9	0.39	0
16	13,800	56	4.06	0	0.00	0
17	26,656	88	3.30	0	0.00	0
18	43,925	108	2.46	2	0.05	0
TOTAL	479,446	1,829	---	109		37
Mean	---	---	3.81		0.23	---

NOTE: The data in this table reflect only IVD, IVT, and FTP cases. For some Networks, "At Risk" cases have been removed to standardize the data that are reported across Networks.

SOURCE: Networks 1–18, 2015 Annual Report Table D.

Table 22 (Cont'd): Complaints, Grievances, Non-Grievance Access-to-Care Cases, and Involuntary Discharges, Calendar Year 2015

Network	Rate of Grievance Cases Involving Involuntary Transfer per 1,000 Prevalent Patients	Number of Grievance Cases Involving Involuntary Discharge	Rate of Grievance Cases Involving Involuntary Discharges per 1,000 Prevalent Patients	Number of Grievance Cases Involving Failure to Place	Rate of Grievance Cases Involving Failure to Place per 1,000 Prevalent Patients	Total Number of Non-Grievance Cases Involving IVT, IVD, and FTP
1	0.00	0	0.00	1	0.07	12
2	0.14	8	0.28	0	0.00	24
3	0.71	1	0.05	4	0.20	37
4	0.00	2	0.10	2	0.10	41
5	0.15	0	0.00	0	0.00	39
6	0.33	3	0.07	4	0.09	84
7	0.00	0	0.00	0	0.00	70
8	0.00	0	0.00	3	0.11	40
9	0.00	0	0.00	10	0.30	43
10	0.00	0	0.00	4	0.20	24
11	0.00	4	0.15	2	0.07	70
12	0.00	3	0.19	1	0.06	15
13	0.00	1	0.05	6	0.31	33
14	0.00	2	0.04	0	0.00	101
15	0.00	5	0.21	4	0.17	35
16	0.00	0	0.00	0	0.00	20
17	0.00	0	0.00	0	0.00	60
18	0.00	2	0.05	0	0.00	15
TOTAL	---	31	---	41	---	763
Mean	0.08	---	0.06	---	0.09	---

NOTE: The data in this table reflect only IVD, IVT, and FTP cases. For some Networks, "At Risk" cases have been removed to standardize the data that are reported across Networks.

SOURCE: Networks 1–18, 2015 Annual Report Table D.

Table 22 (Cont'd): Complaints, Grievances, Non-Grievance Access-to-Care Cases, and Involuntary Discharges, Calendar Year 2015

Network	Rate of Non-Grievance Cases Involving IVT, IVD, and FTP per 1,000 Prevalent Patients	Number of Non-Grievance Access-to-Care Cases Involving Involuntary Transfer	Rate of Non-Grievance Access-to-Care Cases Involving Involuntary Transfer per 1,000 Prevalent Patients	Number of Non-Grievance Access-to-Care Cases Involving Involuntary Discharge	Rate of Non-Grievance Access-to-Care Cases Involving Involuntary Discharge per 1,000 Prevalent Patients
1	0.86	0	0.00	12	0.86
2	0.83	2	0.07	13	0.45
3	1.89	0	0.00	27	1.38
4	2.12	0	0.00	38	1.97
5	1.46	1	0.04	23	0.86
6	1.82	0	0.00	81	1.76
7	2.40	0	0.00	52	1.78
8	1.48	0	0.00	27	1.00
9	1.31	2	0.06	32	0.98
10	1.22	0	0.00	17	0.87
11	2.59	3	0.11	59	2.18
12	0.95	0	0.00	6	0.38
13	1.73	2	0.10	31	1.63
14	2.16	3	0.06	69	1.47
15	1.50	0	0.00	20	0.86
16	1.45	0	0.00	12	0.87
17	2.25	0	0.00	54	2.03
18	0.34	0	0.00	14	0.32
TOTAL	---	13	---	587	---
Mean	1.59	---	0.03	---	1.22

NOTE: The data in this table reflect only IVD, IVT, and FTP cases. For some Networks, "At Risk" cases have been removed to standardize the data that are reported across Networks.
SOURCE: Networks 1–18, 2015 Annual Report Table D.

Table 22 (Cont'd): Complaints, Grievances, Non-Grievance Access-to-Care Cases, and Involuntary Discharges, Calendar Year 2015

Network	Number of Non-Grievance Access-to-Care Cases Involving Failure to Place	Rate of Non-Grievance Access-to-Care Cases Involving Failure to Place per 1,000 Prevalent Patients	Total Number of Grievance and Non-Grievance Cases Involving Access to Care
1	0	0.00	13
2	9	0.31	36
3	10	0.51	56
4	3	0.16	45
5	15	0.56	43
6	3	0.07	106
7	18	0.62	70
8	13	0.48	43
9	9	0.27	53
10	7	0.36	28
11	8	0.30	76
12	9	0.57	19
13	0	0.00	40
14	29	0.62	103
15	15	0.64	44
16	8	0.58	20
17	6	0.23	60
18	1	0.02	17
TOTAL	163		872
Mean	---	0.34	---

NOTE: The data in this table reflect only IVD, IVT, and FTP cases. For some Networks, "At Risk" cases have been removed to standardize the data that are reported across Networks.
SOURCE: Networks 1–18, 2015 Annual Report Table D.