

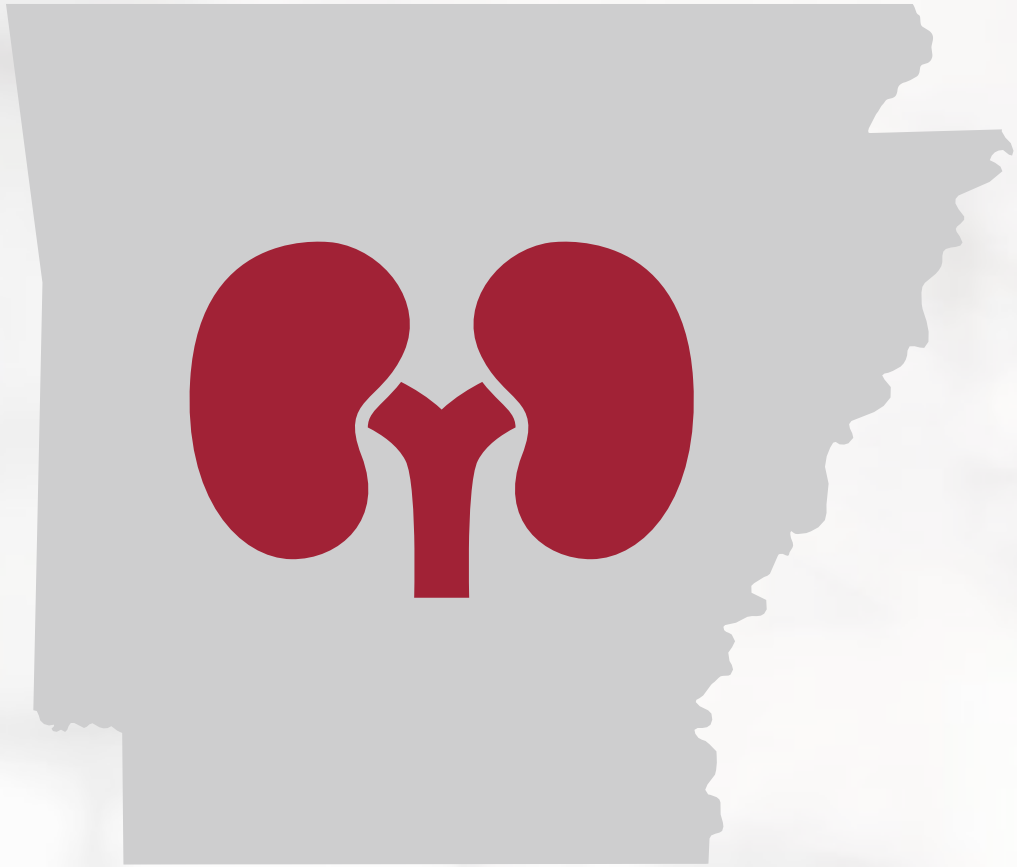


# The State of Chronic Kidney Disease in Arkansas

2021

A white paper developed by the AR  
Chronic Kidney Disease Advisory  
Committee (ARCKDAC)

UAMS®



# THE STATE OF CHRONIC KIDNEY DISEASE IN ARKANSAS 2021



NEPHROLOGY DIVISION

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# INTRODUCTION



**The University of Arkansas for Medical Sciences (UAMS) and Arkansas Health Department (ADH)** faculty partnering with other stakeholders established the Arkansas Chronic Kidney Disease Advisory Committee (ARCKDAC) in 2018. Data from a pilot chronic kidney disease (CKD) patient education study identified barriers to CKD awareness and clinical care in Arkansas including low referrals rates to telemedicine sites at both UAMS Regional Programs and ADH sites, lack of infrastructure in some areas, and policy issues affecting practice patterns. Patients completing education classes also wished they had access to CKD education earlier (Stage 3). It was evident that a statewide approach to recognize and treat CKD was necessary.

The ARCKDAC Mission statement is to increase CKD awareness, detection and education for patients and providers through community engagement activities that provide baseline AR data that can be utilized to promote CKD patient and provider education, optimize clinical outcomes, improve systems of care, and obtain research grants while also decreasing health care costs.

This multidisciplinary team of health care professionals and other stakeholders, including patients with CKD and their family members, identified the following projects:

1. Compare and contrast end-stage renal disease (ESRD) incident data provided by ESRD Network 13 for 2016 and 2017 by ADH regions to understand regional differences and inform regional workgroups.
2. Compile a cost/savings analysis of health care dollars spent on CKD nationally and in AR (where available) and identify areas for potential cost savings.
3. Explore and promote development of continuous quality improvement models on CKD detection and clinical outcomes.
4. Improve and increase access to CKD patient, provider, and public education by:
  - Exploring current CKD patient education programs and their outcomes.
  - Educating primary care providers (PCPs) through web-based and local CKD presentations and publications. Develop the “10 Points Checklist for Managing CKD for the PCP” System.
  - Designing a “Know Your Kidney Number (eGFR)” poster campaign.

Their findings in this paper will be distributed to providers and stakeholders statewide. Of the almost 350,000 adult Arkansans that have CKD, over 312,000 (9 out of 10) are not aware they have it. Regional ARCKDAC subcommittees are being established in each of the 5 AHD regions to increase community engagement and CKD awareness. Having this data to compare and contrast local outcomes with regional, state, and national outcomes, identify resources and barriers in their regions and promote development of action plans as they explore a broad range of solutions that can lead to positive changes for Arkansans. Though CKD can improve at any stage, early CKD detection education and management can slow CKD progression and improve clinical outcomes. CKD education for both patients and providers is essential. With over 310,000 Arkansans unaware they have CKD, multidisciplinary approaches and collaboration will be needed.



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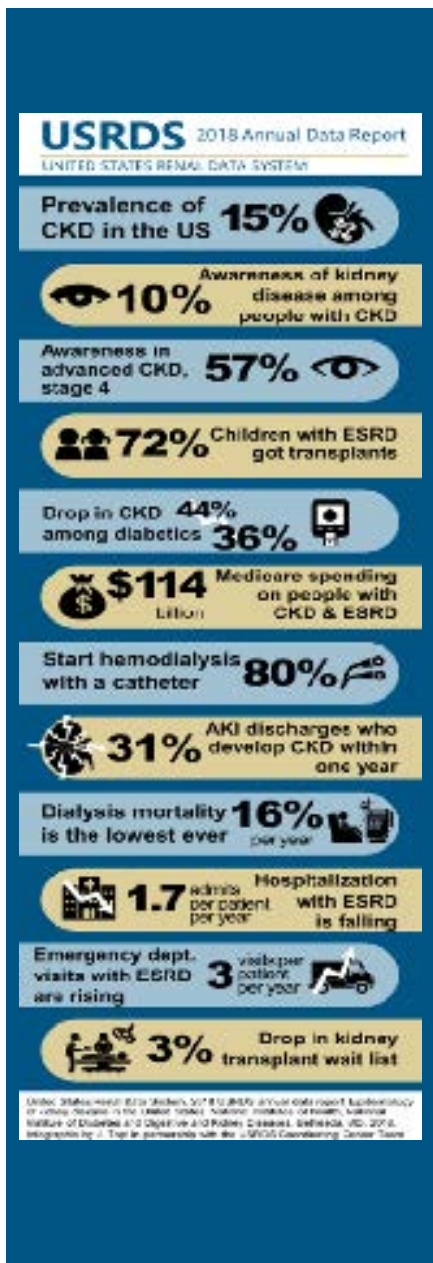


## TABLE OF ABBREVIATIONS

<b>ACR</b>	albumin-to-creatinine ratio
<b>ADH</b>	American Health Directory
<b>AFMC</b>	Arkansas Foundation of Medical Care
<b>AKF</b>	Arkansas Kidney Foundation
<b>AR-CDR</b>	Arkansas Clinical Data Repository
<b>ARCKDAC</b>	AR Chronic Kidney Disease Advisory Council
<b>AV</b>	arteriovenous
<b>AVF</b>	arteriovenous fistula
<b>AVG</b>	arteriovenous graft
<b>CMS</b>	Centers for Medicare
<b>CKD</b>	chronic kidney disease
<b>CQI</b>	continuous quality improvement
<b>CSAT</b>	Complete Standard Analytical Table
<b>DM</b>	diabetes mellitus
<b>DSME</b>	Diabetes Self-Management Education
<b>eGFR</b>	estimated glomerular filtration rate
<b>EPO</b>	erythropoietin
<b>ESRD</b>	end-stage renal disease
<b>ESA</b>	erythropoiesis-stimulating agent
<b>FFS</b>	Medicare Fee For Service
<b>FTF</b>	face to face
<b>HD</b>	hemodialysis
<b>HF</b>	heart failure

<b>Hgb</b>	hemoglobin
<b>HHD</b>	home hemodialysis
<b>HM</b>	home modality
<b>HOD</b>	home dialysis
<b>HTN</b>	Hypertension
<b>ICHD</b>	In Center Hemodialysis
<b>KDIGO</b>	Kidney Disease Improving Global Outcomes
<b>KDOQI</b>	Kidney Disease Outcomes Quality Initiative
<b>LVH</b>	left ventricular hypertrophy
<b>MDRD</b>	Modification of Diet in Renal disease
<b>NKF</b>	National Kidney Foundation
<b>PCP</b>	Primary Care Physician
<b>PD</b>	peritoneal dialysis
<b>PP</b>	physician practices
<b>PPPY</b>	per patient per year
<b>QIN-QIO</b>	Quality Innovation Network - Quality Improvement Organization
<b>RRT</b>	renal replacement therapy
<b>SIP</b>	Special Innovation Project
<b>TM</b>	tele-medicine
<b>T-SQL</b>	Transact Structured Query Language

# 2021 HIGHLIGHTS



## The United States Renal Data System (USRDS)

reported in 2018 that 15% of the adult US population has CKD while only 10% of those with CKD are aware they have it. Using 2019 US census data, Arkansas has close to 350,000 adults that have CKD with over 312,000 unaware they have it. There were 4,736 ESRD patients in the state of Arkansas for the year 2017, compared to 4,632 reported the preceding year. Approximately 1,200 Arkansans start end stage renal disease (ESRD) therapies yearly with the majority starting on in-center hemodialysis (88%) and 12% starting on home peritoneal dialysis (PD). The Central region had the highest rate for PD at 18.9%. The national rate is 10%. US spending per patient per year (PPPY) for those with all three chronic conditions of CKD, diabetes mellitus (DM), and heart failure (HF) was more than twice as high (\$39,506) than that for beneficiaries with only CKD (\$16,176). PPPY spending for patients with no CKD, DM, or HF was \$8,400. In Arkansas, PD saves \$13K PPPY compared to

hemodialysis, and each Arkansan that receives a kidney transplant saves over \$54K per year compared to ICHD and \$39K compared to PD. Patients starting hemodialysis using a catheter ranged from a low of 76.8% in the Southwest region to 92.3% in the Southeast region. The other regions all exceeded the 80% national average. Access to pre-ESRD dietitian care was low statewide with only 4.3% of patients reporting being under the care of a renal dietitian prior to starting dialysis in 2016 and 7.6% in 2017. Almost 26% of Arkansans starting dialysis reported no care by a nephrologist compared to 21% nationally. Only 9.1% of Arkansans received ESAs prior to starting dialysis yet 77.5% of incident ESRD patients had hemoglobin < 10 g/dL, which would qualify them for ESA therapy. The majority of incident ESRD patients in the state were insured (97.6%) and had access to health care. Data for each of the above metrics are available and discussed in the associated project reports.

# PROJECT 1

## AR-ESRD INCIDENT DATA ANALYSIS (2016-2017)



### PURPOSE

The purpose of this project is to provide Arkansas incident end-stage renal disease (ESRD) patient data broken down into the Arkansas Department of Health (ADH) regions to compare ESRD prevalence, incidence, and burden and to better understand chronic kidney disease (CKD) care and practice variances. Comparative analysis of the 5 different regions (Southeast, Southwest, Northeast, Northwest, and Central regions) will help local providers identify concerns and develop action plans to address them.

### DATA SOURCE

A Centers for Medicare and Medicaid Services (CMS) form 2728 is completed on every patient that starts dialysis (Copy of form in Appendices). In Arkansas, those forms are submitted to ESRD Network 13 (AR, LA, and OK) where the data is analyzed and then sent to the United States Renal Data System (USRDS) for further analysis, after which it is combined into a national report. The data published in the USRDS annual report is close to 2 years behind the current year. For example, the report for the calendar year 2015 data is available in the fall of 2017 in the 2017 USRDS Annual Report <sup>2</sup>, and data for the year 2016 is available in the fall of 2018 in the 2018 USRDS Annual Report <sup>3</sup>. ESRD Network 13 was able to compile and provide annual data by ADH region by September of the following year for 2016 and 2017. This is the first time data like this has been available by ADH region. Having timely access to regional data for state and regional teams to compare and contrast has been invaluable. As regional teams develop their action plans, continued access to this data for ongoing quality assurance can help guide statewide initiatives. Any data that was not available in the special regionally report will be compared based on 2016 data published in the 2018 USRDS annual report. The Regional ESRD Network Reports are available in the appendix. The data reported here have been supplied by the United States Renal Data System (USRDS). The interpretation and reporting of these data are the responsibility of the author(s) and in no way should be seen as an official policy or interpretation of the U.S. Government.

### FINDINGS

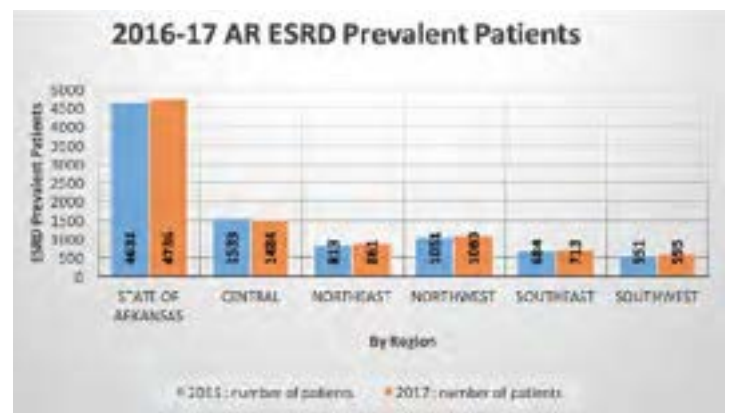
#### 1 - Prevalence

There were 4,736 ESRD patients in the state of Arkansas for the year 2017, compared to 4,632 reported the preceding year (**Table 1.1 and Figure 1.1**). The highest percentage was in the Central region (n=1,533). There were increases in prevalence in all regions except the Central region, which had a 3% decline.

**Table 1.1:** Number of prevalent ESRD patients by ADH regions in the state of Arkansas for the years 2016 and 2017. Data from Renal Network 13.

Region	2016: Number of Patients	2017: Number of Patients
State of Arkansas	4632	4736
Central	1533	1484
Northeast	813	861
Northwest	1051	1083
Southeast	684	713
Southwest	551	595

**Figure 1.1:** Number of prevalent ESRD patients by ADH regions in the state of Arkansas for the years 2016 and 2017: Data from Renal Network 13.



<sup>2</sup>United States Renal Data System. 2017 USRDS Annual Data Report: Epidemiology of kidney disease in the United States. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2017

<sup>3</sup>United States Renal Data System. 2018 USRDS Annual Data Report: Epidemiology of kidney disease in the United States. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2018.

## PROJECT 1 AR-ESRD INCIDENT DATA ANALYSIS (2016-2017)

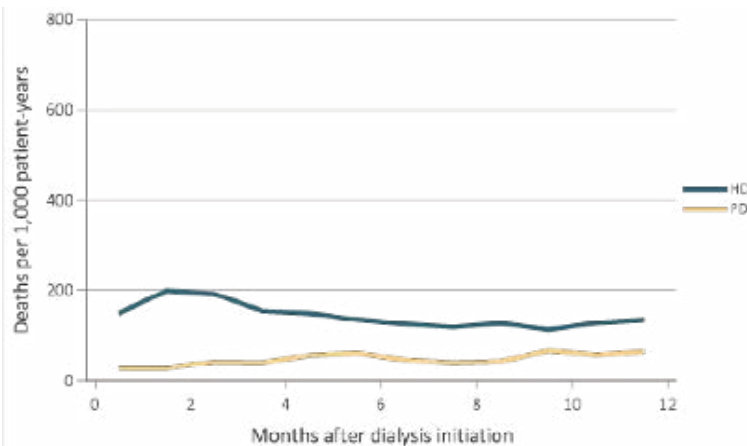
**DISCUSSION:** In general, the northern regions (Northeast, Northwest) were predominately White, the southern regions (Southeast, Southwest) were predominately African American, and the Central region was more equally mixed. The Northwest region was most diverse having 19 of the 24 American Indians and 68 of the 98 Other/Mixed races in 2016 and 18 of 24 and 64 of 99, respectively, in 2017. The Central region had the largest number of both younger <18 (48 of 49) and older 85+ (54 of 145) patients in 2016 and 19 of 19 and 53 of 147, respectively, in 2017. Refer to the regional reports found in the appendix for breakdowns by gender, age, and race.

Mortality data was not included in the regional reports, but the 2018 USRDS report showed the lowest mortality rate ever at 16% per year 3. The primary growth of the prevalent ESRD population was attributed to the increasing lifespan among ESRD patients. Overall, mortality rates, both in dialysis and transplant patients, have consistently decreased from 2001 through 2016, though ESRD mortality rates among the 18 ESRD Networks varied substantially. After adjusting for differences in age, sex, race, ethnicity, diagnosis, and vintage, the lowest rate (121.3 per 1,000 patient-years at risk) was in Network 15 (AZ, CO, NV, NM, UT,

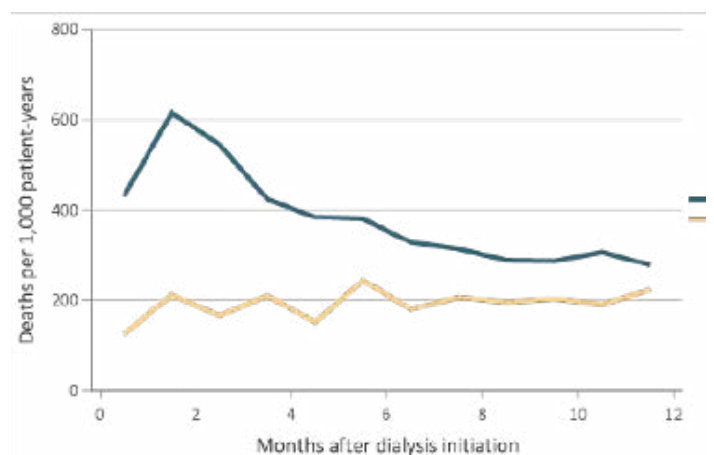
and WY), and the highest rate (152.2) was in our Network, Network 13. Network 13's rate was 25% higher than Network 15's. The data below from the 2018 USRDS Annual reports addresses some mortality related factors. There is a high mortality rate in the first year of dialysis; however, for patients who were initially started on peritoneal dialysis as their renal replacement modality, mortality did not peak early but tended to increase gradually during the first year on dialysis. Outcomes were age-dependent (Figures 1.2), but survival was better with peritoneal dialysis compared to hemodialysis at all-time points. Mortality rates among dialysis patients aged 65+ years ranged from 1.7 times higher than for congestive heart failure patients without kidney disease to 4.0 times higher than patients with diabetes, but no ESRD. For transplant patients aged 65+, the mortality rate was within the same range as Medicare patients with the other listed conditions for 2016. See Project 2 data for cost-related data by these comorbidities. Overall, 5-year survival rates were best in patients receiving living donor transplants (84.1%) followed by deceased donor transplants (76.8%), peritoneal dialysis (52.1%), and hemodialysis (42%) (**Table 1.2**).

**Figure 1.2:** Adjusted mortality by treatment modality and number of months after treatment initiation among ESRD patients, 2015

### (a) Under age 65



### (b) Aged 65 and older





## PROJECT 1 AR-ESRD INCIDENT DATA ANALYSIS (2016-2017)

**Table 1.2:** Annual adjusted survival rates from the 2018 USRDS Annual Report.

**vol 2 Table 5.3 Adjusted survival by treatment modality and incident cohort year (year of ESRD onset)**

	3 months (%)	12 months (%)	24 months (%)	36 months (%)	60 months (%)
<b>Hemodialysis</b>					
2003	91.0	74.8	61.8	51.4	36.6
2005	91.2	75.4	62.7	53.0	38.6
2007	91.6	76.3	64.1	54.6	40.0
2009	91.8	77.5	65.7	56.2	41.6
2011	92.1	78.3	66.8	57.4	42.0
<b>Peritoneal dialysis</b>					
2003	96.3	83.9	69.0	57.7	42.9
2005	96.5	85.6	72.1	61.6	45.7
2007	96.9	87.5	74.8	64.5	48.8
2009	97.4	87.8	76.6	66.7	51.5
2011	97.7	89.7	79.0	69.5	52.1
<b>Deceased-donor transplant</b>					
2003	95.7	89.9	84.5	79.5	69.2
2005	95.6	89.7	84.9	80.3	71.0
2007	96.7	91.2	88.1	83.7	73.3
2009	96.7	92.0	88.7	84.0	75.1
2011	97.1	93.9	90.4	86.4	76.8
<b>Living-donor transplant</b>					
2003	98.1	95.3	91.3	86.9	77.9
2005	98.2	95.2	91.7	88.2	80.3
2007	99.0	97.0	94.3	91.0	83.5
2009	98.9	97.1	94.4	91.1	84.1
2011	98.9	96.3	94.3	91.2	84.1

Data Source: Reference Tables I.1\_adj-I.35\_adj. Adjusted survival probabilities, from day one, in the ESRD population. Reference population: incident ESRD patients, 2011. Adjusted for age, sex, race, Hispanic ethnicity, and primary diagnosis. Abbreviation: ESRD, end-stage renal disease

*Data Source: Special analyses, USRDS ESRD Database. Adjusted (age, race, sex, ethnicity, and primary diagnosis) mortality among 2015 incident ESRD patients during the first year of therapy. Reference population: Incident ESRD patients, 2011. Abbreviations: ESRD, end-stage renal disease; HD, hemodialysis; PD, peritoneal dialysis.*

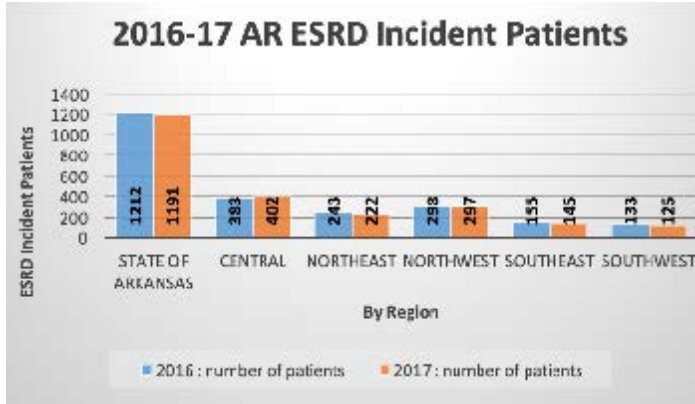
### 2 - Incidence

**Overall Incidence:** There were 1191 new ESRD patients in the state of Arkansas for the year 2017, compared to 1212 reported the preceding year. The highest percentage was in the Central region (n=402). The overall incidence in Arkansas went down by 2% between 2016 and 2017, and all regions except the Central region decreased in number (**Table and Figure 2.1**).

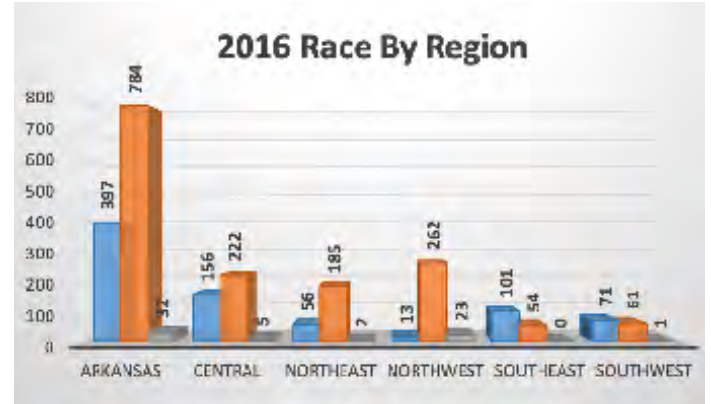
Region	2016: Number of Patients	2017: Number of Patients
State of Arkansas	1212	1191
Central	383	402
Northeast	243	222
Northwest	298	297
Southeast	155	145
Southwest	133	125

## PROJECT 1 AR-ESRD INCIDENT DATA ANALYSIS (2016-2017)

**Figure 2.1:** Incident Arkansas ESRD Patients by Year



**Figure 2.2:** Incident ESRD patients by Race and Region for 2016

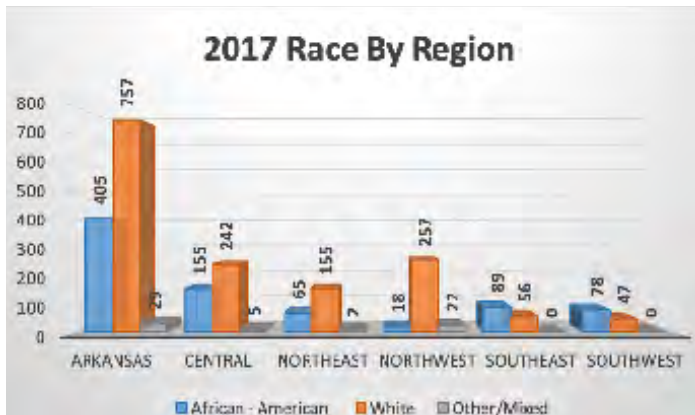


**Incidence by Race:** More incident ESRD patients were White in the Northern and Central regions and more were African American in the Southern regions. Variances are substantial.

**Table 2.2:** 2016 Incidence by race and region

	Arkansas	Central	Northeast	Northwest	Southeast	Southwest
African - American	397	156	56	13	101	71
White	784	222	185	262	54	61
Other/Mixed	32	5	2	23	0	1

**Figure 2.1:** Incident Arkansas ESRD Patients by Year



**Table 2.3:** 2017 Incidence by race and region

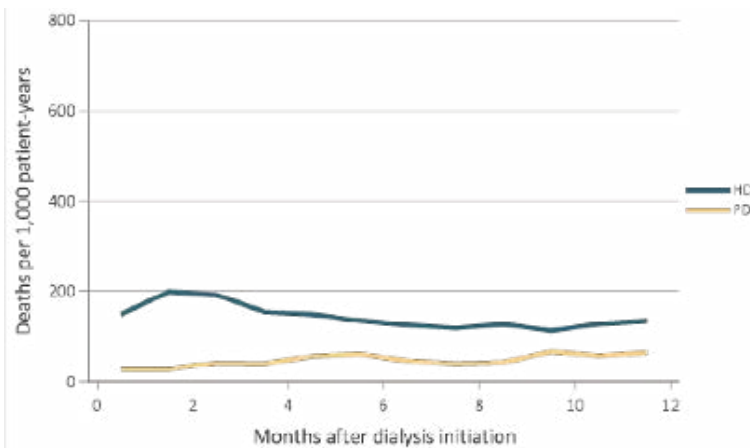
	Arkansas	Central	Northeast	Northwest	Southeast	Southwest
African - American	405	155	65	18	89	78
White	757	242	155	257	56	47
Other/Mixed	29	5	2	22	0	0

## PROJECT 1 AR-ESRD INCIDENT DATA ANALYSIS (2016-2017)

**DISCUSSION:** The 2016 crude incidence rate for the US decreased by 0.2% while the Arkansas rate decreased by 2%. The relative rate of ESRD in minorities has decreased compared to Whites over the past 16 years. In 2016, the age-sex-standardized ESRD incidence rate ratio, compared with Whites was 2.9 for Blacks/African Americans, 1.2 for American Indians/Alaska Natives, and 1.1 for Asians. The incidence rate ratio for Hispanics versus non-Hispanics was 1.3. Overall, Arkansas's ESRD incidence rates are highest in Whites.

The trends in ESRD incidence by modality can be seen in Figure 2.4.

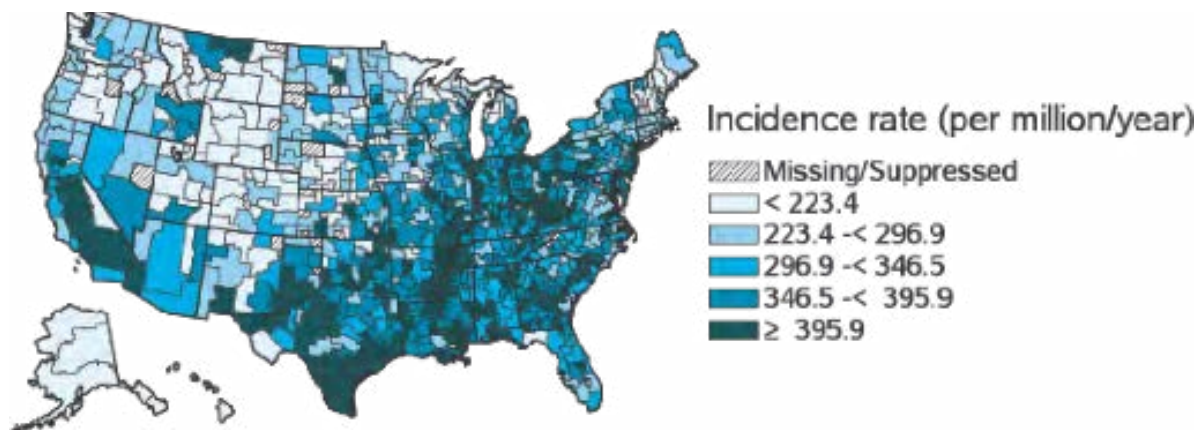
**Figure 2.5** shows the standard incidence rates from 2012 to 2016 on the US map. Arkansas counties that are in the highest quintile are mostly in the delta region.



**Figure 2.4** Trends in the annual number of ESRD incident cases, by modality, in the US population: 1980-2016

*Data Source: Reference Table D.1 and special analyses of the USRDS ESRD Database. Persons with "Uncertain Dialysis" were included in the "All ESRD" total, but are not represented separately. Abbreviation: ESRD, end-stage renal disease.*

**Figure 2.5** Map of the standardized incidence rate of ESRD, by Health Service Area, in the US population: 2012-2016



*Data Source: Special analyses, USRDS ESRD Database. Standardized to the age-sex-race distribution of the 2011 US population. Special analyses exclude unknown age, sex, HSA, and unknown/other race. Values for cells with 10 or fewer patients are suppressed. Abbreviation: ESRD, end-stage renal disease.*

### 3 - Modality of Renal Replacement Therapy for Incident ESRD Patients

In 2017, the majority of patients started renal replacement therapy on hemodialysis, which was unchanged compared to the previous year (88.3% and 88.8% respectively). The Central region had a 3.5% decrease in hemodialysis starts while the Northwest region had a 3.1% increase and the Southeast had a 2.1% increase in hemodialysis starts (**Table 3.1 and Figure 3.1**).

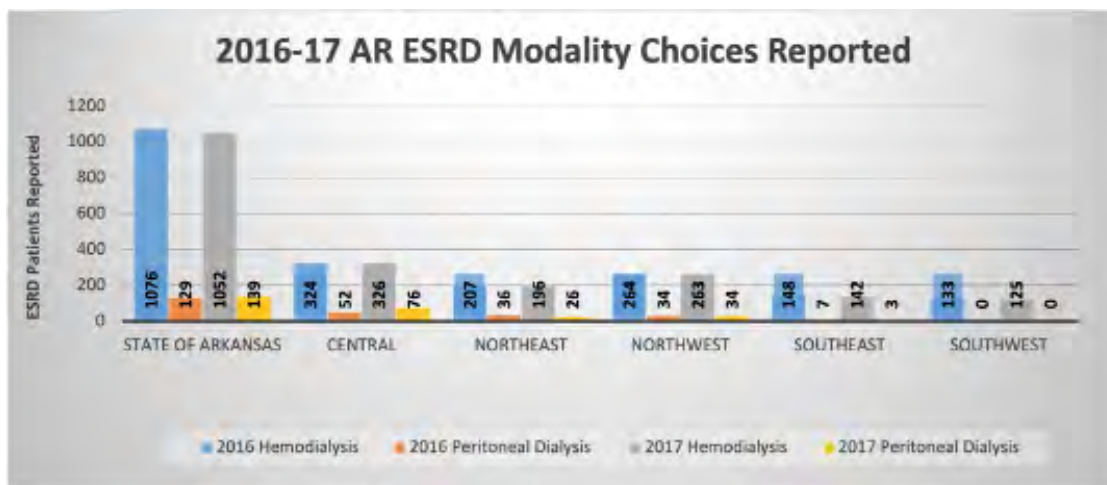
In 2017, the highest percentage of treatment by peritoneal dialysis was in the Central

region. There were 76 patients started on peritoneal dialysis, up from 52 in 2016, which was an increase of 5.3%. The Central region accounted for 54% of all incident peritoneal dialysis patients in 2017. In the other 4 regions, peritoneal dialysis start rates were either stable or decreased slightly. Note that no peritoneal dialysis patients were recorded for the Southwest region for either year. It is believed that those Arkansans starting on peritoneal dialysis in that region may be receiving care on the Texas side of Texarkana, which put them in a different USRDS region.

**Table 3.1:** Number of incident ESRD patients in Renal Network 13 receiving hemodialysis and peritoneal dialysis in the different regions of the state of Arkansas for the years 2016 and 2017.

Region	2016		2017	
	Hemodialysis	Peritoneal Dialysis (n)	Hemodialysis (n)	Peritoneal Dialysis (n)
<b>State of Arkansas</b>	1076	129	1052	139
<b>Central</b>	324	52	326	76
<b>Northeast</b>	207	36	196	26
<b>Northwest</b>	264	34	263	34
<b>Southeast</b>	148	7	142	3
<b>Southwest</b>	133	0	125	0

**Figure 3.1:** Modality choice by year



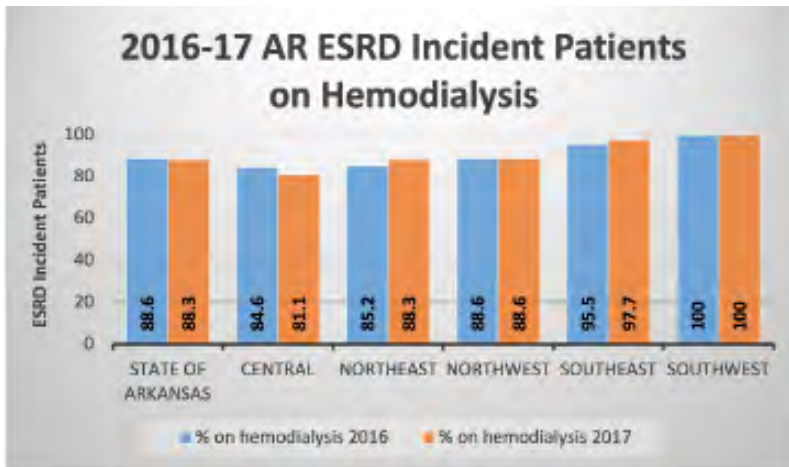




**Table 3.2:** Percentage of Incident ESRD patients in the different regions of the state of Arkansas for the years 2016 and 2017 receiving hemodialysis: Data from Renal Network 13.

	<b>% on Hemodialysis 2016</b>	<b>% on Hemodialysis 2017</b>
<b>State of Arkansas</b>	88.6	88.3
<b>Central</b>	84.6	81.1
<b>Northeast</b>	85.2	88.3
<b>Northwest</b>	88.6	88.6
<b>Southeast</b>	95.5	97.7
<b>Southwest</b>	100	100

**Figure 3.2:** Percentage of incident ESRD patients in the different regions of the state of Arkansas for the years 2016 and 2017 receiving hemodialysis

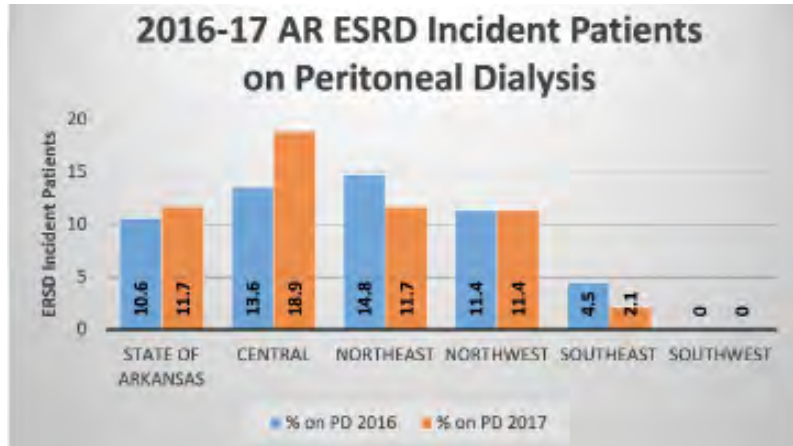


**Table 3.3:** Percentage of incident ESRD patients in the different regions of the state of Arkansas for the years 2016 and 2017 receiving peritoneal dialysis: Data from Renal Network 13.

	<b>% on PD 2016</b>	<b>% on PD 2017</b>
<b>State of Arkansas</b>	10.6	11.7
<b>Central</b>	13.6	18.9
<b>Northeast</b>	14.8	11.7
<b>Northwest</b>	11.4	11.4
<b>Southeast</b>	4.5	2.1
<b>Southwest</b>	0	0

PD = peritoneal dialysis

**Figure 3.3:** Percentage of incident ESRD patients in the different regions of the state of Arkansas for the years 2016 and 2017 receiving peritoneal dialysis



ESRD = end-stage renal disease; PD = peritoneal dialysis

**DISCUSSION:** Almost a third of all incident ESRD patients were in the Central region. The majority of patients were started on hemodialysis, though there was a slight decrease from 88.6% in 2016 to 88.3% in 2017. There were no peritoneal dialysis patients in the Southwest region, and a small percentage of ESRD patients were receiving peritoneal dialysis in the Southeast region. The Central region was the only region where the percentage of patients on peritoneal dialysis increased (13.6% in 2016 to 18.9% in 2017) (Table 3.3). Nationally, 87.3% of incident patients started on hemodialysis, 9.7% started on peritoneal dialysis, and 2.8% received pre-emptive transplants compared to prevalent ESRD patients where 63.1% were on hemodialysis, 7% were on peritoneal dialysis, and 29.6% had functioning kidney transplants. Of the patients on hemodialysis, 98% were on in-center hemodialysis and 2% were on home hemodialysis (2016 data from 2018 USRDS report). In 2016, the Arkansas incident peritoneal dialysis rate was 10.6% with 3 regions (Central, Northeast, and Northwest) having rates between 11.4% and 14.8%. Arkansas's prevalent peritoneal dialysis rate for 2016 was 16.9% with the same 3 regions having rates between 17.6% and 22.0%. It is expected that the rate of peritoneal dialysis could increase significantly with early CKD education. Peritoneal dialysis patients generally have better clinical outcomes and improved survival compared to in-center hemodialysis patients. See Project 2 for details associated with cost savings.

#### 4 - Dialysis Access

Dialysis catheters remain the most common dialysis access for incident ESRD patients. In 2017, 891 patients out of 1051 starting hemodialysis had a catheter as their initial hemodialysis access (84.7%). The highest incidence was in the Southeast region with 92.3% (n=131) and the lowest was in the Southwest region with 76.8% (n=96) (Table 4.2). The Southwest region also had the highest percentage of incident patients

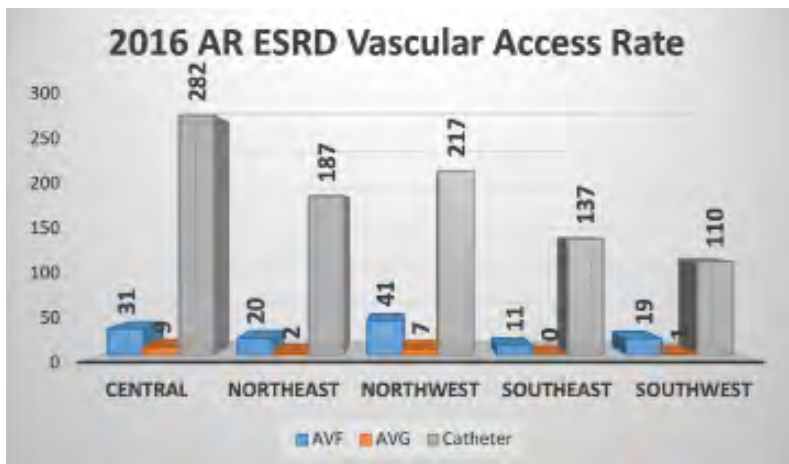
starting with an arteriovenous fistula (AVF) (n=22, 17.6%), 23.2% of patients in that region started with an arteriovenous graft (AVG) or AVF, up from 17.3%. The only region to attain a rate better than the national average was the Southwest in 2017. The Southwest region also had the highest percentage of maturing vascular accesses at the time of initiation of hemodialysis in 2017 (20%). The Arkansas average was 11.6%.



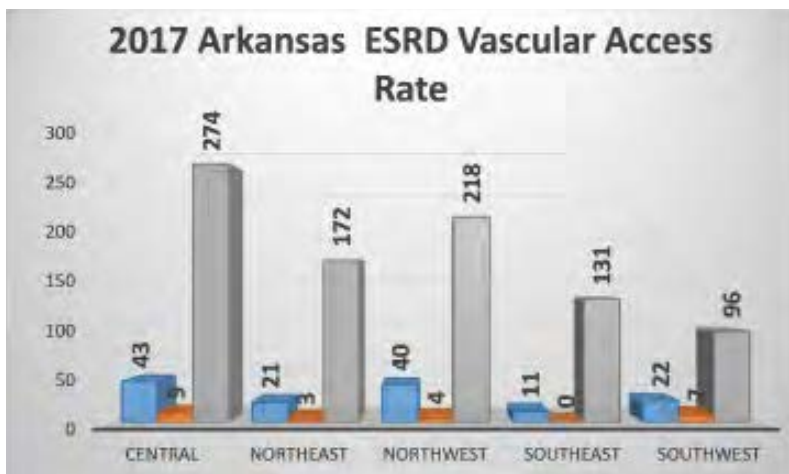
**Table 4.1:** Dialysis Access in Use for Incident Hemodialysis in Arkansas by Year

Year	2016		2017	
	N	%	N	%
<b>AVF</b>	122	11.3%	137	13%
<b>AVG</b>	22	2%	23	2.2%
<b>Catheter</b>	933	86.7%	891	84.7%
<b>Total</b>	1077		1051	

**Figure 4.1:** Dialysis access in use for incident hemodialysis by region in 2016



**Figure 4.2:** Dialysis access in use for incident hemodialysis by region in 2017



**Table 4.2:** Dialysis access in use for incident hemodialysis by region by year

Year	2016		2017	
	N	%	N	%
<b>Central Region</b>				
<b>AVF</b>	31	9.6%	43	13.2%
<b>AVG</b>	9	2.8%	9	2.8%
<b>Catheter</b>	282	87%	274	84%
<b>Northeast</b>				
<b>AVF</b>	20	9.7%	21	10.7%
<b>AVG</b>	2	1%	3	1.5%
<b>Catheter</b>	187	90.3%	172	87.8%
<b>Northwest</b>				
<b>AVF</b>	41	15.5%	40	15.2%
<b>AVG</b>	7	2.7%	4	1.5%
<b>Catheter</b>	217	82.2%	218	82.9%
<b>Southeast</b>				
<b>AVF</b>	11	7.4%	11	7.7%
<b>AVG</b>	0	0%	0	0%
<b>Catheter</b>	137	92.6%	131	92.3%
<b>Southwest</b>				
<b>AVF</b>	19	14.3%	22	17.6%
<b>AVG</b>	4	3.0%	7	5.6%
<b>Catheter</b>	110	82.7%	96	76.8%

AVF = arteriovenous fistula. AVG = arteriovenous graft.

**Table 4.3:** Percent of patients with Maturing AVF or AVG at time of initiation of hemodialysis by region.

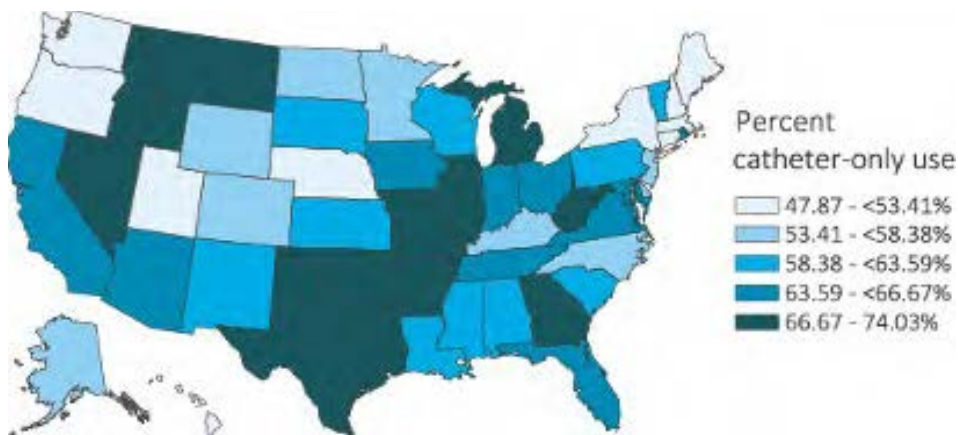
	2016		2017	
	AVF Maturing N (%)	AVG Maturing N (%)	AVF Maturing N (%)	AVG Maturing N (%)
<b>Arkansas</b>	125 (11.6%)	7 (0.7%)	111 (10.6%)	11 (1.1%)
<b>Central</b>	34 (3.2%)	4 (0.4%)	31 (2.9%)	5 (0.5%)
<b>Northeast</b>	18 (1.7%)	1 (0.1%)	13 (1.2%)	0 (0%)
<b>Northwest</b>	35 (3.3%)	0 (0.0%)	34 (3.2%)	2 (0.2%)
<b>Southeast</b>	13 (1.2%)	1 (0.1%)	11 (1.0%)	1 (0.1%)
<b>Southwest</b>	25 (2.3%)	1 (0.1%)	22 (2.1%)	3 (0.3%)



**DISCUSSION:** Vascular access type influences mortality, and the use of a Catheter is associated with greater infectious-, cardiovascular-, and all-cause-related death compared with AVF use . Clinical practice guidelines recommend referral for and subsequent placement of vascular access when the eGFR is 15-20 in patients with progressive decline in kidney function and earlier in those with unstable or rapid rates decline (e.g. >10 mL/min/year). AVFs are considered optimal due to its potential for durability and lower risks of infection and the need for intervention to ensure patency. However, recent focus has shifted toward individualization of access choice based upon patient characteristics, life expectancy, co-morbidities, preference, and other factors . Nationally, minorities tend to have the lowest AVF rates and highest catheter rates at initiation <sup>3</sup>.

Overall, the use of catheters for initiation of dialysis in Arkansas remained similar between 2016 and 2017. The rate did decrease slightly from 86.7% in 2016 to 84.7% in 2017, which was slightly higher than the nationwide 80.2% rate (2016 latest data) <sup>3</sup>. The Northwest region had the highest percentage of patients using an AVF at initiation and the lowest percentage of catheters (15.5% and 82.2%, respectively) in 2016, and the Southwest region had the highest AVF rate (17.6%) and the lowest catheter rate (76.9%) in 2017. The Southeast region had the lowest rate of AVF usage (7.4% and 7.7%) and the highest rate of catheters (92.6% and 92.3%) in both years. Nationally, Arkansas is in the highest quintile for catheter use and the lowest for AVFs (Figures 3.3 and 4.4). The cause for low AVF rates has partially been placed on patients' "lack of insurance" prior to ESRD and late referrals to nephrology, but most patients in Arkansas now have insurance. In incident patients, only 3.1% in 2016 and 2.4% in 2017 had no insurance and pre-ESRD nephrology care was slightly less than 60% both years. Root cause analysis, per region, may be beneficial to determine other factors that can be addressed to improve outcomes.

**Figure 4.2:** Dialysis access in use for incident hemodialysis by region in 2017

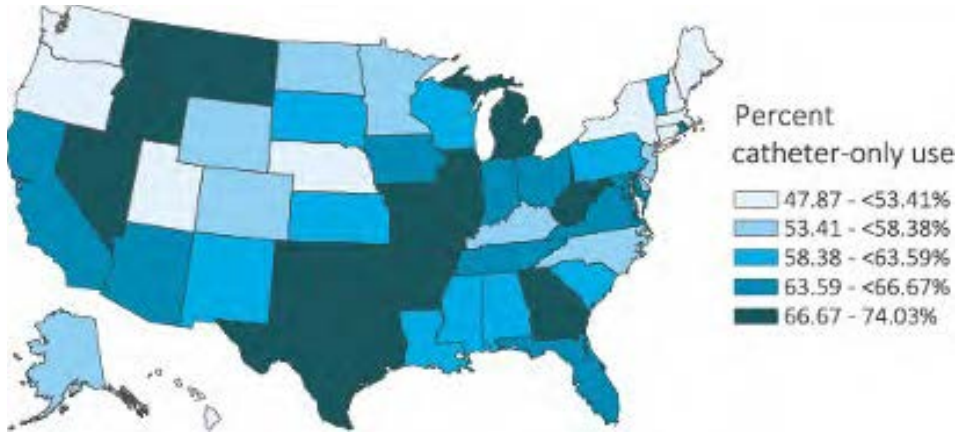


Geographic variation in the percentage of catheter-only use at hemodialysis initiation, from the ESRD Medical Evidence form (CMS 2728), 2016. Special analyses, USRDS ESRD Database. Abbreviations: CMS, Centers for Medicare & Medicaid; ESRD, end-stage renal disease.

<sup>4</sup> Catheter- Related Mortality among ESRD Patients. *Semin Dial.* 2008 Nov–Dec; 21(6): 547–549

<sup>5</sup> KDOQI Clinical Practice Guidelines for Vascular Access: Update 2019. *Am J Kidney Dis*, 75 (4) (Supp2). <https://doi.org/10.1053/j.ajkd.2019.12.001>

**Figure 4.4:** Dialysis access in use for incident hemodialysis by region in 2017



Special analyses, USRDS ESRD Database. AV fistula use includes not only AV fistulas but also catheters with a maturing fistula from the 2016 ESRD Medical Evidence form (CMS 2728). Abbreviations: AV, arteriovenous; CMS, Centers for Medicare & Medicaid; ESRD, end-stage renal disease.

### 5 - Demographics

In 2017, 55.2% of incident ESRD patients were male (Table 5.1), which is comparable to the nation according to the USRDS report (57.9%).

Most patients were adults 45-64 years of age (39.5%) and 19% of all incident patients were above the age of 75 including 43 (3.6%) were 85 years old or older

**Table 5.1:** Distribution of incident ESRD patients in the state of Arkansas for the years 2016 and 2017 by gender

Gender	2016 N (%)	2017 N (%)
Male	683 (56.4%)	658 (55.2%)
Female	529 (43.6%)	533 (44.8%)

**Table 5.2:** Distribution of incident ESRD patients in the state of Arkansas by age group for the years 2016 and 2017

Age Group	2016 N (%)	2017 N (%)
<18	6 (0.5%)	13 (1.1%)
18-44	165 (13.6%)	152 (12.8%)
45-64	456 (37.6%)	470 (39.5%)
65-74	327 (27%)	330 (27.7%)
75-84	219 (18.1%)	183 (15.4%)
85+	39 (3.2%)	43 (3.6%)



**DISCUSSION:** Nationally, males continue to have a higher lifetime risk of being diagnosed with ESRD (4.0%) compared to females (2.9%) (USRDS, 2018). In Arkansas, the incident patients with ESRD are in mid-50% for males and mid 40% for females (Table 5.1).

The highest number of incident patients in Arkansas were in the age range of 45-64 (37-39%), followed by 65-74 years old with 27% and an additional almost 20% above the age of 75 (21%-19%) (Table 5.2). The population of ESRD patients continues to rise in age, which attributes to the higher prevalence rates.

**6 - Dietician Care Pre-ESRD**

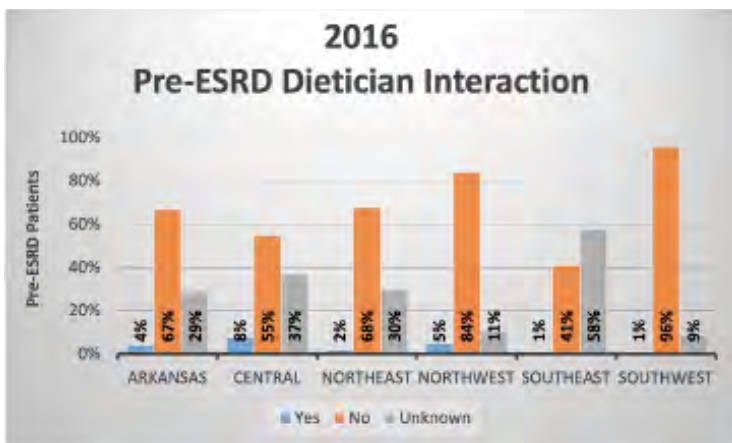
Access to pre-ESRD dietitian care was low statewide with only 4.3% of patients reported being under the care of a renal dietitian prior to starting dialysis in 2016 and 7.6% in 2017. The highest rates were in the Central region (9.65% in 2016, 15.3% in 2017) and the lowest were in the Southeast (0.7% in 2016, 1.4% in 2017) the

Southwest had the biggest gain (0.8% in 2016 to 7.6% in 2017). Rates for “No” and “Unknown” varied greatly from year to year by region. Overall, the majority of patients in Arkansas (64% or greater) reported having no dietitian care prior to initiation of dialysis and 29% were listed as “Unknown” (Table 6.1 and Figures 6.1 and 6.2).

**Table 6.1:** Pre-ESRD dietician interaction per year

	Pre-ESRD Dietician Interaction: 2016			Pre-ESRD Dietician Interaction: 2017		
	Yes N (%)	No N (%)	Unknown N (%)	Yes N (%)	No N (%)	Unknown N (%)
<b>Arkansas</b>	52 (4%)	810 (67%)	350 (29%)	80 (7%)	761 (64%)	350 (29%)
<b>Central</b>	31 (8%)	211 (55%)	141 (37%)	50 (13%)	202 (50%)	150 (37%)
<b>Northeast</b>	5 (2%)	165 (68%)	73 (30%)	7 (3%)	126 (57%)	89 (40%)
<b>Northwest</b>	14 (5%)	250 (84%)	34 (11%)	17 (6%)	256 (86%)	24 (8%)
<b>Southeast</b>	1 (1%)	64 (41%)	90 (58%)	2 (1%)	63 (44%)	80 (55%)
<b>Southwest</b>	1 (1%)	120 (90%)	12 (9%)	4 (3%)	114 (91%)	7 (6%)

**Figure 6.1:** Pre-ESRD dietician interaction for 2016



**Figure 6.2:** Pre-ESRD dietician interaction for 2016



**DISCUSSION:** The rates of pre-ESRD dietician interactions were extremely low with the Central region having the highest rates (8% in 2016 and 13% in 2017). Almost two-thirds of the patients were listed as “No” and 29% as “unknown”. The accuracy of the reporting in this area may be an issue. Pre-ESRD dietician interactions are key to slowing progression. Starting dietary modifications early in CKD (by stage 3b, 30-45 eGFR) can both help slow CKD progression and manage or prevent comorbidities such as diabetes and heart disease from progression. Encouraging nephrology practices to ensure the accuracy of the CMS 2728 data, as well as, regional assessment of access to dietician interactions is needed. Statewide access to online CKD dietary classes may need to be developed.

**7 - Nephrology Care Pre-ESRD**

A little over 25% of patients reported no care by a nephrologist. The Southeast region had the lowest pre-ESRD nephrologist care percentage (45% in 2016 and 46% in 2017). Three regions (Northeast, Northwest, and Southwest) had over 60% that reported

receiving pre-ESRD nephrologist care in 2016 and the Northwest increased their rate to 75% in 2017 (**Table 7.1**). The Northwest and Southwest regions only had 4% listed as “unknown” in 2016, which dropped to 3% in 2017. The Northeast region had 15% listed as unknown and dropped to 6% in 2017.

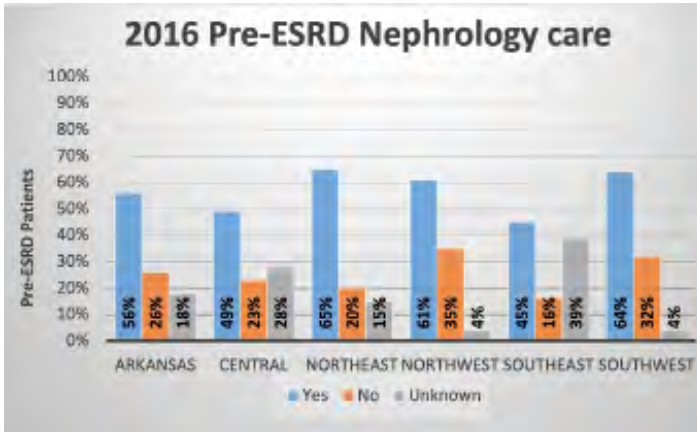
**Table 7.1:** Pre-ESRD nephrology care by year

	Pre-ESRD Nephrology Care: 2016			Pre-ESRD Nephrology Care: 2017		
	Yes N (%)	No N (%)	Unknown N (%)	Yes N (%)	No N (%)	Unknown N (%)
<b>Arkansas</b>	605 (56%)	277 (26%)	194 (18%)	620 (59%)	284 (27%)	148 (14%)
<b>Central</b>	158 (49%)	76 (23%)	90 (28%)	172 (53%)	69 (21%)	85 (26%)
<b>Northeast</b>	134 (65%)	41 (20%)	32 (15%)	147 (75%)	38 (19%)	11 (6%)
<b>Northwest</b>	162 (61%)	93 (35%)	9 (4%)	162 (61%)	94 (36%)	7 (3%)
<b>Southeast</b>	66 (45%)	24 (16%)	58 (39%)	65 (46%)	35 (25%)	42 (29%)
<b>Southwest</b>	85 (64%)	43 (32%)	5 (4%)	74 (59%)	48 (38%)	3 (3%)

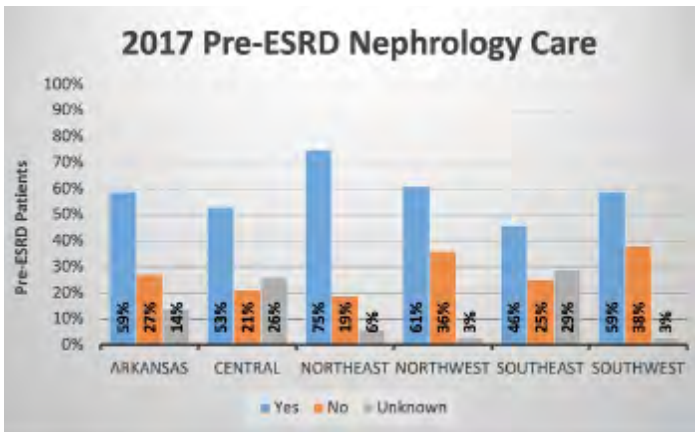




**Figure 7.1:** Pre-ESRD Nephrology for 2016



**Figure 7.2:** Pre-ESRD nephrology care for 2017



**DISCUSSION:** The 2018 USRDS report (2016 data) states that nationally 20.8% of patients starting ESRD therapy did not receive nephrology care before ESRD onset, a decrease of 1.2% from 2015. An additional 14.6% had an unknown duration of pre-ESRD nephrology care. This compares to Arkansas's 26% receiving no nephrology care and 18% unknown.

Because treatment characteristics, such as erythropoiesis-stimulating agent (ESA) use and dietary care, for the unknown group were similar to those with no pre-ESRD nephrology care, one may assume that up to 35.4% of new ESRD cases received little or no pre-ESRD nephrology care (Table 7.3). Patients 0-21 years old were most likely (43.8%) and adults 22-44 years old were least likely (28.4%) to have had 12 months or more of pre-ESRD nephrology care. Blacks/African Americans were slightly less likely to have had pre-ESRD care than other racial groups, and Hispanics were less likely to have had pre-ESRD care compared to non-Hispanics.

Note that Arkansas regional reports do not break down pre-ESRD care by nephrologists into duration. If regional committees would like to study the impact of nephrology care pre-ESRD, a request can be made to obtain the data needed. Since Arkansas rates are higher than the national rates for no pre-ESRD or unknown care, using their assumption, up to 44% of new ESRD patients in Arkansas received little or no pre-ESRD care.

**Table 7.3:** USRDS Distribution of reported pre-ESRD care for 2016

**vol 2 Table 1.8.a Distribution (in %) of the reported duration of pre-ESRD nephrology care, by category of each demographic variable, among incident ESRD cases in the U.S. population, 2016**

Variable Category	(a) Demographic characteristics (% within row)						
	No. of cases	Duration of pre-ESRD nephrology care					
		>12 months	6-12 months	0-5 months	None	Unknown /Missing	Unknown /Missing
	121,198	31.8	19.3	13.6	20.8	14.6	100
<b>Age</b>							
0-21	1,412	45.8	14.5	15.9	18.8	6.9	100
22-44	13,487	28.4	18	14	26.7	13	100
45-64	45,765	29.6	19.8	14.1	22.3	14.2	100
65-74	32,687	35.6	19.7	13.4	18.4	14.9	100
75+	27,846	34.2	18.8	12.7	18.5	15.9	100
<b>Sex</b>							
Female	51,326	31.8	19.7	13.7	20	14.8	100
Male	69,872	31.8	19	13.4	21.4	14.4	100
<b>Race</b>							
White	81,985	33.6	19.4	13.4	20.1	13.5	100
Black	31,298	26.9	19.1	13.6	22.9	17.5	100
American Indian/Alaska Native	1,185	29.5	18.4	16.8	21	14.2	100
Asian	5,167	34	19.2	15.2	17.7	14	100
Native Hawaiian/ Pacific Islander	1,555	27.9	21.5	14.5	24	12.1	100
Other/Unknown	*	50	*	*	50	*	100
<b>Ethnicity</b>							
Hispanic	17,294	25.8	18.9	14.3	26.1	14.9	100
Non-Hispanic	103,904	32.7	19.4	13.4	19.9	14.5	100
<b>Primary diagnosis</b>							
Diabetes	58,308	32.2	21.4	13.9	18.3	14.2	100
Hypertension	34,905	29.1	18.7	13.2	21.7	17.3	100
Glomerulonephritis	9,189	40.3	17.7	13.6	19.7	8.7	100
Cystic kidney	3,545	55.8	16.9	10	9.7	7.6	100
Other/Unknown	15,249	25.4	14.5	14	31.4	14.8	100



## 8 - Incident ESRD Care Indicators

### A) Anemia

Anemia is prevalent in advanced CKD and ESRD patients due to erythropoietin deficiency. Across all regions, over two-thirds of all patients had hemoglobin values less than 10 grams/dL (g/dL) meeting the criteria for treatment with ESAs, yet less than 10% were

reported as having exogenous erythropoietin therapy prior to starting dialysis. ESA therapy is funded by CMS and most insurance companies when the patient has an eGFR of 45 or less and a hemoglobin of less than 10grams/dL and symptoms of anemia.

**Table 8.1:** Percentage of incident ESRD patients in Arkansas with reported hemoglobin values for the year 2016 by the Arkansas Department of Health region

	Arkansas (overall)	Central	Northeast	Northwest	Southeast	Southwest
# of reported lab values	771	241	107	189	138	82
Hgb < 10	69.0%	66.4%	73.6%	66.1%	68.1%	78.0%
Hgb 10-11	16.7%	17.8%	12.4%	18.5%	18.1%	13.4%
Hgb 11-12	8.7%	9.5%	8.3%	9.0%	8.0%	7.3%
Hgb >12	5.6%	6.2%	5.8%	6.3%	5.8%	1.2%

**Table 8.2:** Percentage of incident ESRD patients in Arkansas with reported hemoglobin values for the year 2017 by the Arkansas Department of Health region in the different region

	Arkansas (overall)	Central	Northeast	Northwest	Southeast	Southwest
# of reported lab values	683	195	101	181	126	80
Hgb < 10	69.7%	73.3%	67.3%	65.7%	66.7%	77.5%
Hgb 10-11	17.9%	15.9%	16.8%	19.9%	20.6%	15%
Hgb 11-12	7%	5.6%	7.9%	7.2%	7.9%	7.5%
Hgb >12	5.4%	5.1%	7.9%	7.2%	4.8%	0%

### B) Pre-ESRD Erythropoietin Stimulating Agent Use (ESAs)

Though anemia was very prevalent among the patients starting dialysis in Arkansas (**Tables 8.1 and 8.2 above**), the percentage of patients on ESAs before starting dialysis was surprisingly low (**Tables 8.3 and 8.4**). Comparisons of

percentages of patients receiving ESA therapy and percentage of patients with Hgb below 10 g/dL who may qualify for ESA reimbursement are shown in Tables 8.5 and 8.6 and Figures 8.1 and 8.2.

**Table 8.3:** Pre-ESRD exogenous erythropoietin or equivalent received for 2016 and 2017 for the state of Arkansas.

State of Arkansas	Percentage
Percentage of patients who received EPO or equivalent-2016	7.9%
Percentage of patients who received EPO or equivalent-2017	9.1%

**Table 8.4:** Pre-ESRD exogenous erythropoietin or equivalent received for 2016 and 2017 for the different regions of Arkansas

Region	Central	Northeast	Northwest	Southeast	Southwest
Percentage of patients who received EPO or equivalent-2016	6%	11.5%	7.4%	9%	6.8%
Percentage of patients who received EPO or equivalent-2017	6.5%	10.8%	11.4%	7.6%	10.4%

**Table 8.5:** 2016 Comparison of patients with Hgb <10 g/dL and percentage of patients receiving ESAs

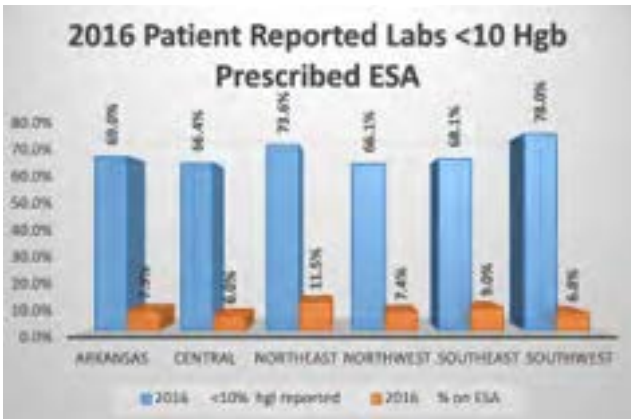
	Arkansas N=771	Central N=241	Northeast N=121	Northwest N=189	Southeast N=138	Southwest N=82
<10% Hgb reported	69.0%	66.4%	73.6%	66.1%	68.1%	78.0%
% prescribed ESA	7.9%	6.0%	11.5%	7.4%	9.0%	6.8%

**Table 8.6:** 2017 Comparison of patients with Hgb <10 g/dL and percentage of patients receiving ESAs

	Arkansas N=683	Central N=195	Northeast N=101	Northwest N=181	Southeast N=126	Southwest N=80
<10% Hgb reported	69.7%	73.3%	67.3%	65.7%	66.7%	77.5%
% prescribed ESA	9.1%	6.5%	10.8%	11.4%	7.6%	10.4%



**Figure 8.1:** Comparison of the percentage of incident patients with Hgb <10 g/dL and percentage of patients prescribed ESAs in 2016 by state and ADH region.



**Figure 8.2:** Comparison of the percentage of incident patients with Hgb <10 g/dL and the percentage of patients prescribed ESAs in 2017 by state and ADH region.



**DISCUSSION:** There was a small increase (1.2%) in ESA use in Arkansas from 2016 to 2017, yet only 9.1% of Arkansans received ESAs while 77.5% of incident ESRD patients had hemoglobin <10 g/dL in 2017, which may qualify them for ESA therapy. The majority of incident ESRD patients in the state were insured (97.6%) and had access to health care.

Some factors for this underuse of ESAs could be the result of late referrals to nephrology, long wait times to see a nephrologist after referral, lack of awareness of the adverse effect of anemia, and lack of access to ESA monitoring programs.

Most patients with CKD die of cardiovascular disease that starts years before they reach ESRD. Of those that live to reach stage 5, about 75% have left ventricular hypertrophy (LVH) at the time they start dialysis. Correction of CKD-related anemia can improve cardiovascular health and decrease LVH, as well as improve quality of life because raising the hemoglobin increases oxygen-carrying capacity. A recent analysis of Dialysis Outcomes and Practice Patterns Study data reported at the 55th European Renal Association-European Dialysis and Transplant Association Congress in Denmark in May 2018 compared CKD patients with anemia versus those without (Hgb <10 g/dL). This analysis found that those with anemia prior to starting hemodialysis were more likely to die despite achieving target hemoglobin levels (>10 g/dL) by month 4 after hemodialysis initiation. In an adjusted analysis, each 1% g/dL increase in hemoglobin was associated with a significant 11% decreased risk of first-year mortality. This assumption may not be completely accurate as the etiology of anemia is multifactorial. With that said, maintaining hemoglobin in the 10-11.5 range using low dose ESAs should be a reasonable goal for patients with CKD stages 3b-5. Exploring how to improve these outcomes by region would be helpful. See ARCKDAC submission to CMS regarding anemia metrics in appendices.

### C) Albumin Levels

Less than half (530 of 1212 in 2016, 529 of 1191 in 2017) of the patients' albumin values were reported in the entire state and of those, only about 30% were normal (albumin >3.7 g/dL) (26.8% in 2016, 31% in 2017) (Tables 8.7 and 8.8).

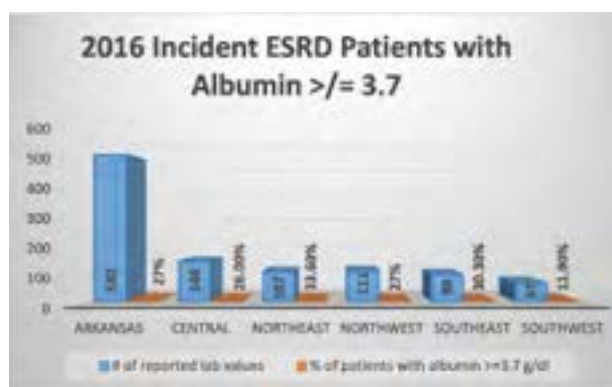
The Northwest and Southwest regions reported the most patients with albumin values less than 3.7 grams/dL and the Northeast and Southeast regions had the most patients with albumin values above 3.7 g/dL.



**Table 8.7:** Percentage of incident ESRD patients with a normal serum albumin for the year 2016.

2016						
Region	Arkansas	Central	Northeast	Northwest	Southeast	Southwest
# of reported lab values	530	146	107	111	99	67
% prescribed ESA	27%	26.00%	33.60%	27%	30.30%	11.90%

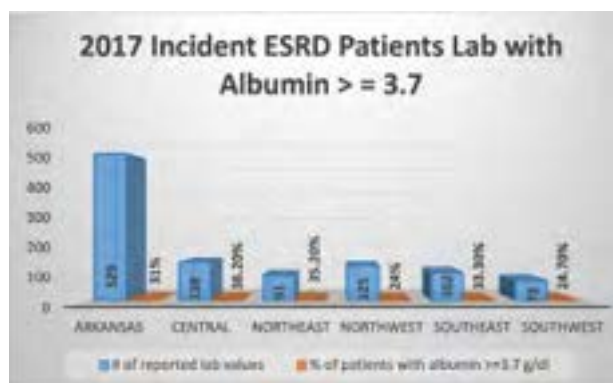
**Figure 8.3:** 2016 Incident ESRD patients with albumin  $\geq 3.7$  g/dL



**Table 8.8:** 2017 Percentage of incident ESRD patients with a serum albumin  $\geq 3.7$  g/dL

2017						
Region	Arkansas	Central	Northeast	Northwest	Southeast	Southwest
# of reported lab values	529	138	91	125	102	73
% prescribed ESA	31%	36.20%	35.20%	24%	30.30%	24.70%

**Figure 8.3:** 2017 Incident ESRD patients with albumin  $\geq 3.7$  g/dL





**DISCUSSION:** Across all regions, less than a third of reported serum albumin levels were normal. Serum albumin may fall in association with malnutrition, inflammation, and anemia and is an independent predictor of death in chronic dialysis patients <sup>6 7</sup>. However, over half of the incident ESRD patients had no serum albumin value reported.

It is imperative that nephrology practices know that the Arkansas State CKD Advisory Committee is using the CMS 2728 data for quality improvement activities and the importance of accuracy and completeness of the data collected is vital.

**9 - Medical Coverage at Initiation of Renal Replacement Therapy**

Though lack of medical coverage is often thought to be a major factor for lack of early CKD care, by the time ESRD therapy is needed the vast majority have some type of coverage. For those starting ESRD therapy, only 3.1% in 2016 and 2.4% in 2017 had no insurance and less than 24% were on Medicaid. USRDS’ 2019 annual report provides the National Health and Nutrition Examination Survey data on 2013-2016 trends for CKD patients. Only 11.6% were uninsured. The highest number of uninsured for both years was in the Central region (4.2% and 3.5%). The lowest numbers of uninsured were in the Northwest region (1.7%) in 2016 and the Northeast region (1.4%) in 2017 (Tables 9.1 and 9.2).

**Table 9.1:** Overall Medical Coverage percentage as of the date of the first dialysis for Incident Arkansas ESRD patients by Year

<b>Insurance if present</b>	<b>% for 2016</b>	<b>% for 2017</b>
<b>Medicaid</b>	21.6	23.9
<b>Department of Veterans Affairs</b>	2.1	1.9
<b>Medicare</b>	64.5	60.3
<b>Medicare advantage</b>	11.2	12.3
<b>Employer group</b>	16	17.5
<b>Other (Railroad, CHAMPUS)</b>	21.6	19.4
<b>None</b>	3.1	2.4

<sup>6</sup> Iseki, K (07/1993). Serum albumin is a strong predictor of death in chronic dialysis patients. *Kidney International* (0085-2538), 44 (1), p. 115

<sup>7</sup> “Revisiting mortality predictability of serum albumin in the dialysis population: time dependency, longitudinal changes and population-attributable fraction” *Nephrol Dial Transplant*. 2005 Sep;20(9):1880-8. Epub 2005 Jun



**Table 9.2:** Medical Coverage percentage by region as of the date of the first dialysis for Incident Arkansas ESRD patients

Insurance if present	Central		Northeast		Northwest		Southeast		Southwest	
	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017
<b>Medicaid</b>	21.1	20.1	25.1	28.8	19.5	18.5	17.4	26.9	26.3	36.8
<b>Department of Veterans Affairs</b>	0.8	0.7	1.2	1.4	5	4.4	2.6	1.4	0	1.6
<b>Medicare</b>	62.9	57	64.2	63.1	67.8	61.3	63.2	61.4	63.9	62.4
<b>Medicare advantage</b>	9.4	12.2	15.2	15.8	8.7	12.5	3.2	4.1	24.1	16
<b>Employer group</b>	20.4	25.1	10.7	12.2	18.8	17.2	13.5	11.7	9.8	9.6
<b>Other (Railroad, CHAMPUS)</b>	21.7	20.6	24.7	23	24.5	21.9	16.1	11.7	15.8	11.2
<b>None</b>	4.2	3.5	2.9	1.4	1.7	2	3.2	2.1	3.8	2.4

**DISCUSSION:** Though lack of insurance will be an issue for some Arkansans and many immigrants, access to care may be an even bigger issue that needs to be evaluated. As we move to increase awareness and detection of CKD statewide, providing accessible, cost-effective CKD education and care will be needed. Exploring current resources and how to expand services will be necessary.

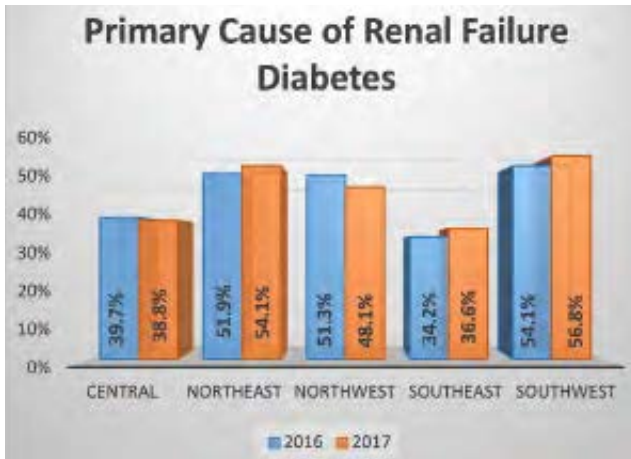
#### 10 - Cause of ESRD

Both nationally and in Arkansas, the two major causes of ESRD are diabetes and hypertension. Almost half of Arkansans with new-onset ESRD had diabetes (45.9%, n= 556 in 2016; 45.6%, n=543 in 2017) and about a third had hypertension (32.5%, n=394 in 2016; 35.9%, n=427 in 2017). USRDS cautions that the reliability of clinician-assigned “primary cause” of ESRD has not been established. There may be over-reporting for both diabetes and hypertension. Confirmatory biopsies for diabetes are rarely performed nor is genotyping for African Americans with hypertension. Even though a patient may have diabetes and/or hypertension, determining primary causation can be difficult. Data from the CMS 2728 forms is used to compare populations and assess trends.

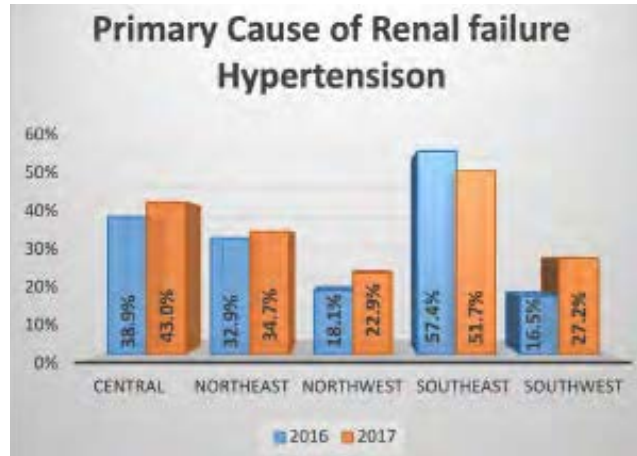




**Figure 10.1:** Primary cause of ESRD: Diabetes by Arkansas region and year



**Figure 10.2:** Primary Cause of ESRD: Hypertension by Arkansas Region and Year



**DISCUSSION:** Nationally, there was a drop in CKD among diabetics in 2016 from 44% to 36%. One reason for the improvement is the increase in both diabetes awareness and improved care models triggered, in part, by know your Hemoglobin A1C initiatives and education programs for the public, patients with diabetes, and health care providers. Hypertension is both a frequent cause of CKD, but also an effect of CKD. When patients are seen in the later stages of CKD, it is sometimes hard to determine which came first. When present controlling both of these causes can slow CKD progression.

The hope is that public, patient, and provider CKD education will raise CKD awareness and care models that can prevent some CKD and slow progression, improve clinical outcomes, and better prepare those patients that do progress to renal replacement therapy.

# PROJECT 2

## HEALTH ECONOMICS & CHRONIC KIDNEY DISEASE

### PURPOSE

The purpose of this project is to provide healthcare expenditure data for persons with chronic kidney disease (CKD) nationwide and throughout the state of Arkansas. When various

entities can use actual costs/savings data to guide decision-making for proposed changes or research proposals, they build stronger consensus and obtain better outcomes.

### DATA SOURCE

The primary data source for this section comes from the United States Renal Data System (USRDS), which includes Medicare beneficiaries and Optum Clinformatics™ Data Mart for persons with Medicare Advantage and commercially managed care coverage. While USRDS analyses “provide a sound and valid estimate of the costs of CKD to the healthcare system, the impact of potential under-identification should be kept in mind,” especially for earlier stages of CKD. In addition, it is not possible to attribute expenditures solely to kidney disease because the costs of CKD are influenced by other chronic conditions

associated with CKD. To better understand the complexity of these often-present conditions, the USRDS has provided cost comparisons for various combinations of CKD, diabetes mellitus (DM), and heart failure (HF). Select results are outlined below. For more information, review chapters 7 and 9 of the 2018 USRDS Annual Report. Arkansas cost data for 2015 and 2016 are from USRD 2017 and 2018 reports. There is a 2 year delay for these data (full page reports of these data are in the appendix). Sources that are not from the USRDS are identified when discussed.

### SPENDING ON CKD AND RELATED CHRONIC COMORBIDITIES

- Total Medicare spending for both CKD and early-stage renal disease (ESRD) was over \$114 billion (CKD \$79 billion and ESRD \$34 billion) and represents 23% of total Medicare fee-for-service (FFS) spending.
- The growth in total CKD spending has been driven mostly by the increase in early-stage CKD identification (stages 1-3).
- Over 78% of total Medicare spending for beneficiaries with CKD aged 65 and older was incurred by 71% of these patients who also had DM, HF, or both (Table 7.1).
- Spending per patient per year (PPPY) for those with all three chronic conditions of CKD, DM, and HF was more than twice as high (\$39,506) than for beneficiaries with only CKD (\$16,176; Table 7.1). PPPY spending for patients without CKD, DM, or HF was \$8,400.

**Table A. ICD-9-CM and ICD-10-CM codes for Chronic Kidney Disease (CKD) stages**

ICD-9-CM code*	ICD-10-CM code*	Stage
585.1	N18.1	CKD, Stage 1
585.2	N18.2	CKD, Stage 2 (mild)
585.3	N18.3	CKD, Stage 3 (moderate)
585.4	N18.4	CKD, Stage 4 (severe)
585.5	N18.5	CKD, Stage 5 (excludes 585.6: Stage 5, requiring chronic dialysis) <sup>a</sup>
CKD Stage-unspecified	CKD Stage-unspecified	For these analyses, identified by multiple codes including 585.9, 250.4x, 403.9x & others for ICD-9-CM and A18.xx, E08.xx, E11.xx and others for ICD-10-CM.

a For analyses in this chapter, CKD stage estimates require at least one occurrence of a stage-specific code, and the last available CKD stage in a given year is used. In USRDS analyses, patients with ICD-9-CM code 585.6 or ICD-10-CM code N18.6 & with no ESRD status from or other indication of end-stage renal disease (ESRD) are considered to have code 585.5 or N18.5.

USRDS 2018 Annual Data Report Volume 1 CKD, Chapter 7



- PPPY costs for Medicare Advantage and Optum Clinformatics beneficiaries over the age of 65 had slightly higher expenditures than Medicare FFS (79% and 123%).
- “The analysis of expenses for beneficiaries with CKD indicates the effect of cost-containment efforts in this population and avenues for potential savings. Reduction in expenditures could be achieved through the prevention of disease progression to later stages of CKD, and prevention of the development of concurrent chronic conditions such as DM and HF.”

**vol 1 Table 7.1 Prevalent Medicare fee-for-service patient counts and spending for beneficiaries aged 65 and older, by diabetes, heart failure, and/or CKD, ESRD excluded, 2016**

	U.S. Medicare Population	Total Spending (millions, U.S. \$)	PPPY (U.S. \$)	Population (%)	Spending (%)
All	24,247,520	\$271,334	\$11,534	100	100
With HF or CKD or DM	8,246,040	\$159,558	\$17,809	34.01	51.45
CKD only (- DM & HF)	1,176,200	\$18,139	\$16,176	4.85	6.69
DM only (- HF & CKD)	3,730,480	\$44,555	\$12,229	15.39	16.41
HF only (- DM & CKD)	860,780	\$17,372	\$21,808	3.55	6.40
CKD and DM only (- HF)	1,189,580	\$21,738	\$19,248	4.88	8.01
CKD and HF only (- DM)	367,500	\$10,124	\$31,887	1.52	3.73
DM and HF only (- CKD)	424,260	\$10,445	\$26,544	1.75	3.85
CKD and HF and DM	503,240	\$17,187	\$39,506	2.08	6.33
No CKD or DM or HF	16,001,480	\$151,798	\$8,400	65.99	48.57
All CKD (+/- DM & HF)	3,730,520	\$67,188	\$22,369	13.32	24.76
All DM (+/- CKD & HF)	5,841,560	\$98,904	\$16,769	24.09	34.61
All HF (+/- DM & CKD)	2,155,780	\$55,128	\$28,378	8.89	20.32
CKD and DM (+/- HF)	1,686,820	\$58,925	\$24,877	6.96	14.35
CKD and HF (+/- DM)	870,740	\$27,311	\$36,291	3.59	10.07
DM and HF (+/- CKD)	927,500	\$27,633	\$33,350	3.83	10.18

Data Source: Medicare 5% sample. Abbreviations: CKD, chronic kidney disease; ESRD, end-stage renal disease; HF, heart failure; DM, diabetes mellitus; PPPY, per-person per-year.

**vol 1 Table 7.2 Prevalent Medicare Advantage and managed care spending for beneficiaries aged 65 and older, by diabetes, heart failure, and/or CKD, ESRD excluded, 2016**

	Medicare Advantage			Managed care		
	PPPY (U.S. \$)	Population (%)	Spending (%)	PPPY (U.S. \$)	Population (%)	Spending (%)
All	\$10,356	100	100	\$12,176	100	100
With HF or CKD or DM	\$15,362	34.15	49.97	\$20,552	24.15	41.95
CKD only (- DM & HF)	\$15,438	3.56	4.55	\$21,124	3.53	6.04
DM only (- HF & CKD)	\$11,042	15.46	17.02	\$15,627	13.74	17.58
HF only (- DM & CKD)	\$18,251	2.74	4.97	\$24,352	1.98	3.53
CKD and DM only (- HF)	\$16,051	3.31	6.15	\$25,154	2.68	5.31
CKD and HF only (- DM)	\$24,301	1.53	3.36	\$37,928	0.77	2.25
DM and HF only (- CKD)	\$23,349	1.38	3.28	\$32,533	0.87	3.28
CKD and HF and DM	\$35,143	1.75	5.17	\$48,130	0.78	2.50
No CKD or DM or HF	\$7,613	65.85	50.03	\$2,527	75.85	50.47
All CKD (+/- DM & HF)	\$17,757	14.34	24.32	\$27,285	7.56	15.70
All DM (+/- CKD & HF)	\$14,954	25.42	34.57	\$19,154	13.07	24.51
All HF (+/- DM & CKD)	\$21,062	2.70	16.24	\$23,356	1.40	11.35
CKD and DM (+/- HF)	\$20,006	7.06	13.32	\$28,032	3.40	6.41
CKD and HF (+/- DM)	\$29,154	1.24	6.52	\$45,037	1.55	4.15
DM and HF (+/- CKD)	\$24,968	2.23	6.25	\$29,754	1.65	5.18

Data Source: Optum Longitudinal Research and Analytics. Abbreviations: CKD, chronic kidney disease; ESRD, end-stage renal disease; HF, heart failure; DM, diabetes mellitus; PPPY, per person per year. Numbers of MA patients included in this table are 2,336,921 and 236,263 for Medicare Advantage and Commercial managed care respectively.

vol 1 Table 7.3 Prevalent Medicare fee-for-service patient counts and spending for beneficiaries younger than age 65, by diabetes, heart failure, and/or CKD, ESRD excluded, 2016

	U.S. Medicare Population	Total Costs (millions, U.S. \$)	PPPY spending (U.S. \$)	Population (%)	Spending (%)
All	4,709,780	\$66,276	\$14,558	100	100
With HF or CKD or DM	1,269,900	\$28,917	\$23,851	26.96	43.63
CKD only (- DM & HF)	111,820	\$1,691	\$25,394	2.37	4.06
DM only (- HF & CKD)	714,800	\$12,248	\$17,705	15.18	18.48
HF only (- DM & CKD)	96,120	\$1,401	\$26,462	2.04	3.62
CKD and DM only (- HF)	190,680	\$5,429	\$30,002	4.05	6.19
CKD and HF only (- DM)	25,400	\$992	\$46,599	0.50	1.50
DM and HF only (- CKD)	67,100	\$1,078	\$33,051	1.43	5.14
CKD and HF and DM	65,980	\$1,079	\$52,335	1.40	4.65
No CKD or DM or HF	3,439,880	\$57,359	\$11,185	73.04	55.37
All CKD (+/- DM & HF)	391,880	\$12,190	\$33,214	8.32	18.39
All DM (+/- CKD & HF)	1,038,560	\$12,834	\$22,961	21.05	34.45
All HF (+/- DM & CKD)	252,600	\$3,549	\$36,580	5.36	12.90
CKD and DM (+/- HF)	256,660	\$3,508	\$35,481	5.45	12.84
CKD and HF (+/- DM)	89,380	\$4,071	\$50,812	1.90	6.14
DM and HF (+/- CKD)	133,080	\$5,157	\$42,374	2.83	7.78

Data Source: Medicare 5% sample. Abbreviations: CKD, chronic kidney disease; DM, diabetes mellitus; ESRD, end-stage renal disease; HF, heart failure.

vol 1 Table 7.5 Per person per year Medicare Parts A, B, and D fee-for-service spending for all CKD beneficiaries aged 65 and older, by CKD stage, age, sex, and race, 2015 & 2016

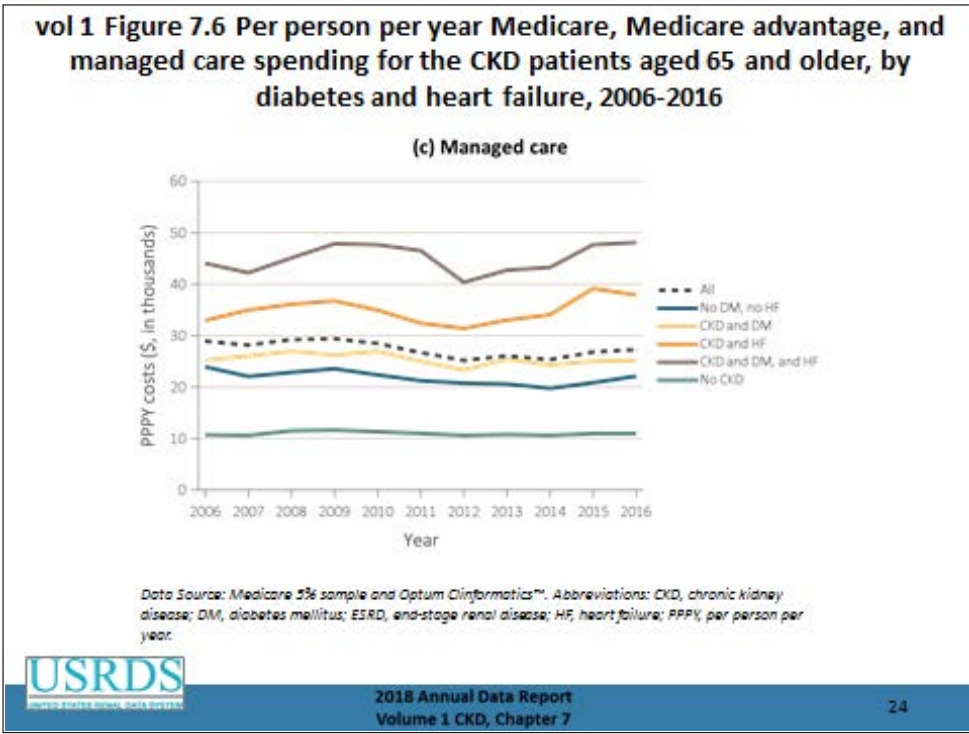
	2015					2016				
	Any CKD	Stages 1-2	Stage 3	Stages 4-5	Link/Unspc	Any CKD	Stages 1-2	Stage 3	Stages 4-5	Link/Unspc
Patient years at risk	1,309,300	206,020	1,121,457	220,519	194,710	1,302,261	207,714	1,111,380	244,261	1,040,222
All patients	\$21,214	\$19,127	\$21,324	\$19,128	\$21,322	\$21,268	\$19,737	\$21,931	\$20,285	\$21,337
Age										
65-69	\$21,226	\$17,840	\$20,297	\$21,206	\$21,297	\$21,266	\$18,416	\$21,820	\$21,291	\$21,160
70-74	\$20,461	\$18,248	\$20,282	\$20,808	\$20,918	\$21,287	\$17,800	\$21,018	\$20,204	\$21,184
75-79	\$21,287	\$20,772	\$20,321	\$20,808	\$21,818	\$22,082	\$19,492	\$21,817	\$20,840	\$21,981
80-84	\$22,818	\$19,411	\$22,288	\$20,779	\$22,888	\$22,888	\$20,711	\$21,784	\$20,883	\$24,061
85+	\$24,474	\$22,612	\$28,128	\$19,329	\$24,872	\$24,178	\$23,718	\$28,180	\$20,460	\$24,728
Sex										
Male	\$22,031	\$18,577	\$21,488	\$20,348	\$21,770	\$22,184	\$19,898	\$21,974	\$20,488	\$21,488
Female	\$22,872	\$19,881	\$21,780	\$20,184	\$21,754	\$22,088	\$19,820	\$21,639	\$20,118	\$21,689
Race										
White	\$22,074	\$18,880	\$21,648	\$20,287	\$22,021	\$22,189	\$19,898	\$21,829	\$20,440	\$22,012
Black/African American	\$24,288	\$19,907	\$22,948	\$24,080	\$24,284	\$24,088	\$20,219	\$23,104	\$24,118	\$25,800
Other	\$22,877	\$20,528	\$21,884	\$20,097	\$22,283	\$21,870	\$19,878	\$21,787	\$20,784	\$21,812

Data source: Medicare 5% sample. Abbreviations: CKD, chronic kidney disease; ESRD, end-stage renal disease; Link/Unspc, CKD stage unknown or unspecified.

vol 1 Table 7.6 Per person per year Medicare Advantage and managed care spending for all CKD beneficiaries aged 65 and older, by CKD stage, age, sex, and race, 2016

	Medicare Advantage					Managed care				
	Any CKD	Stages 1-2	Stage 3	Stages 4-5	Link/Unspc	Any CKD	Stages 1-2	Stage 3	Stages 4-5	Link/Unspc
Patient years at risk	190,359	70,106	109,180	17,833	71,490	16,012	1,943	6,534	1,751	4,802
All patients	\$17,797	\$16,091	\$15,708	\$26,314	\$19,787	\$27,269	\$26,889	\$28,394	\$28,886	\$28,888
Age										
65-69	\$20,238	\$16,393	\$18,406	\$31,200	\$21,120	\$27,172	\$27,983	\$45,841	\$29,013	\$27,172
70-74	\$11,399	\$14,977	\$18,476	\$31,232	\$20,080	\$28,413	\$27,221	\$41,549	\$28,117	\$28,433
75-79	\$13,411	\$16,221	\$18,645	\$27,222	\$20,342	\$28,993	\$24,990	\$31,114	\$26,515	\$23,990
80-84	\$17,602	\$16,526	\$15,505	\$28,061	\$18,129	\$28,480	\$28,935	\$29,830	\$24,974	\$28,480
85+	\$13,161	\$15,891	\$13,207	\$19,234	\$17,391	\$24,092	\$20,803	\$23,393	\$19,519	\$24,092
Sex										
Male	\$18,745	\$17,096	\$16,898	\$27,768	\$19,949	\$27,717	\$26,428	\$38,590	\$27,716	\$27,717
Female	\$16,936	\$15,071	\$14,841	\$25,084	\$19,590	\$25,516	\$28,820	\$31,944	\$25,682	\$25,516
Race										
White	\$18,655	\$18,145	\$16,437	\$25,779	\$20,591	\$27,390	\$27,098	\$25,287	\$25,384	\$27,487
Black/African American	\$11,489	\$10,069	\$12,821	\$21,314	\$14,478	\$19,892	\$18,936	\$17,829	\$24,665	\$26,269
Other	\$18,543	\$13,617	\$14,579	\$27,791	\$18,621	\$27,696	\$27,816	\$26,475	\$28,615	\$25,260

Data Source: Optum Clinformatics™. Abbreviations: CKD, chronic kidney disease; ESRD, end-stage renal disease; Link/Unspc, CKD stage unknown or unspecified.



- Arkansans with CKD could benefit from improved cardiovascular healthcare and awareness. Arkansas ranks in the highest quintile for the proportion of deaths attributed to cardiovascular causes in the first year post-transition to ESRD.

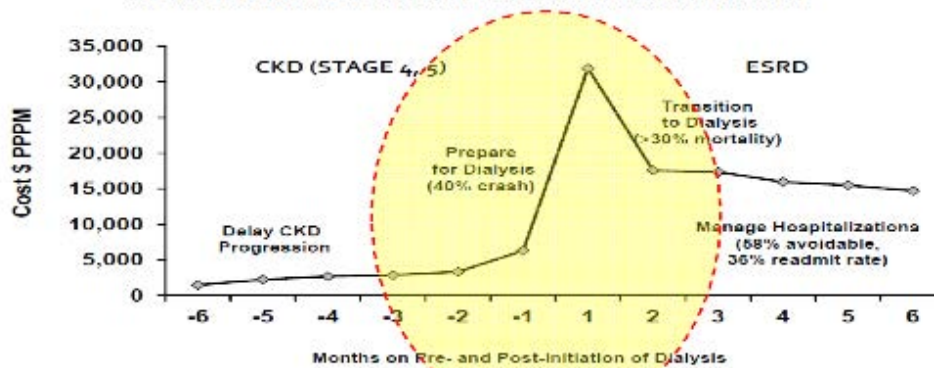
**vol 1 Figure 9.18 Distribution of proportion of deaths in the first year post-transition to ESRD and between 10/1/2007 8/1/2015 attributed to cardiovascular causes among 18,492 incident ESRD veterans across the United States 10/1/2007 3/31/2015**



- CKD costs start increasing about 3 months before initiating ESRD care, and then they level out about 3 months after beginning dialysis. These costs could be reduced with better education, management, and planning.

## Costs of CKD to ESRD Transition

AVERAGE \$PPPM COST THROUGH TRANSITION TO DIALYSIS

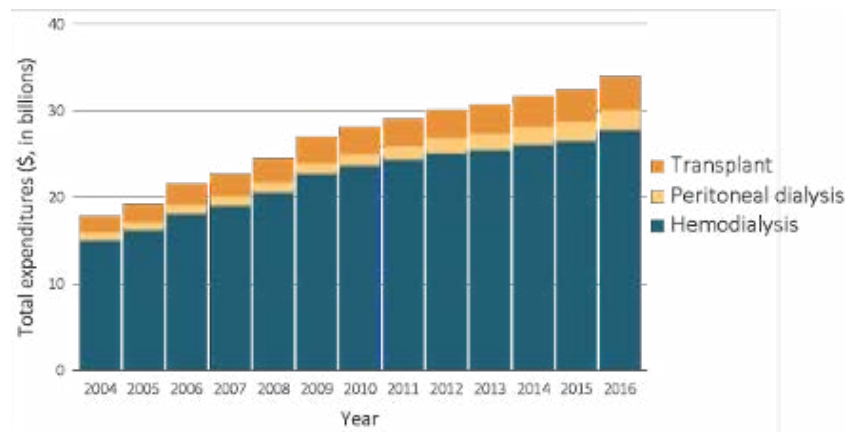


For Commercial member, based on MarketScan data, from 2010 USRDS Annual Report, Page 127. MarketScan is a commercial claims dataset comprised of 10.5 million covered lives that USRDS uses as a benchmark for CKD utilization.

## HEALTHCARE SPENDING FOR PATIENTS WITH ESRD

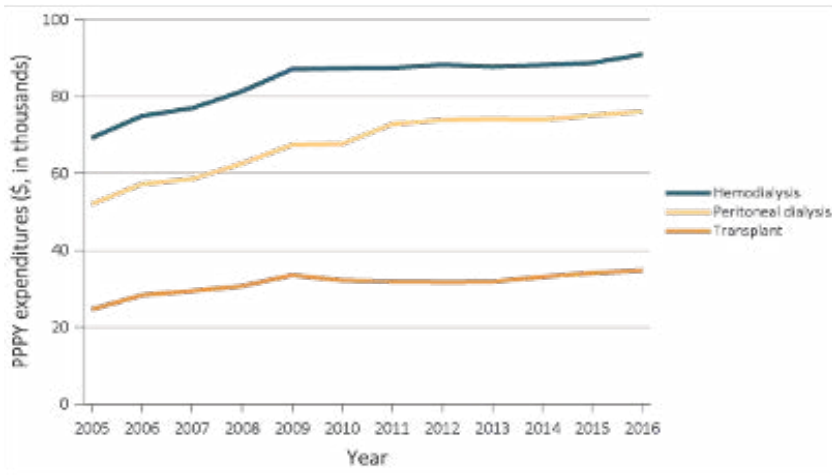
- Medicare FFS spending for ESRD increased by 4.6% for 2016, rising from \$33.8 billion in 2015 to \$35.4 billion. This rate is 7.2% of the overall Medicare-paid claims and has been stable since 2004.
- In 2016, the ESRD population grew to 511,270. Although this is less than 1% of the total Medicare population, it accounts for 7% of Medicare FFS spending.
- PPPY costs have increased by 2.5%. Most of the increase in Medicare expenditures for ESRD is attributed to increased PPPY costs rather than growth in the number of people covered.
- Hemodialysis (HD) care increased to \$28 billion, and PPPY increased to \$90,971.
- Peritoneal Dialysis (PD) spending increased by 5.7% due to an increase in patients diagnosed with PD. PPPY spending rose 1.4% to \$76,177 but remains less costly than HD.
- Total spending on kidney transplants increased by 4.6% to \$3.4 million, and PPPY costs increased by 2.1% to \$34,080.

**Figure 9.7:** Total Medicare ESRD Expenditures by Modality, 2004–2016





**Figure 9.8:** Total Medicare ESRD Expenditures PPPY by Modality, 2004-2016



- Medicare FFS cost data for patients with ESRD in Arkansas was evaluated for 2015 and 2016.

### 2015 AR Medicare Spending per person/per year

Category	2015	2014	% Change	2013	2012	2011	2010	2009	2008	2007	2006	2005
Medicare Spending per Person	1,212	1,188	2%	1,165	1,142	1,119	1,096	1,073	1,050	1,027	1,004	981
Medicare Spending per Person (FFS)	1,188	1,164	2%	1,141	1,118	1,095	1,072	1,049	1,026	1,003	980	957
Medicare Spending per Person (Capitated)	24	24	0%	24	24	24	24	24	24	24	24	24
Medicare Spending per Person (Total)	1,212	1,188	2%	1,165	1,142	1,119	1,096	1,073	1,050	1,027	1,004	981

### 2016 AR Medicare Spending per person/per year

Category	2016	2015	% Change	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Medicare Spending per Person	1,235	1,212	2%	1,189	1,166	1,143	1,120	1,097	1,074	1,051	1,028	1,005	982
Medicare Spending per Person (FFS)	1,211	1,188	2%	1,165	1,142	1,119	1,096	1,073	1,050	1,027	1,004	981	958
Medicare Spending per Person (Capitated)	24	24	0%	24	24	24	24	24	24	24	24	24	24
Medicare Spending per Person (Total)	1,235	1,212	2%	1,189	1,166	1,143	1,120	1,097	1,074	1,051	1,028	1,005	982

- Each Arkansan who starts on peritoneal home dialysis saves over \$13K per year compared to in-center hemodialysis (ICHD) costs in Arkansas dollars.
- Each Arkansan that is transplanted saves over \$54K per year compared to ICHD and \$39K compared to PD in Arkansas (AR) dollars.
- Costs for all modalities of ESRD care for prevalent patients in Arkansas are significantly less than the US average costs.

<b>2016 Variance between US Average Cost PPPY and Arkansas Average Cost PPPY</b>			
<b>Modality</b>	<b>US</b>	<b>Arkansas</b>	<b>Cost Difference</b>
In-center Hemodialysis	\$90,971	\$81,306	\$9,665
Peritoneal Dialysis	\$76,177	\$66,290	\$9,887
Transplant	\$34,080	\$27,194	\$6,886

**DISCUSSION:** Total Medicare spending for CKD care will continue to increase as more patients with CKD are correctly identified. Currently, the USRDS estimates that CKD prevalence in adults in the US is 15% (almost 350,000 Arkansans) with less than 10% of those with CKD being aware they have it. Leaving over 312,000 (9 out of 10) Arkansans with CKD unaware they have it. Awareness increases in later stages, with 57% being aware by stage 4 of CKD.

Focusing on PPPY cost analysis may be a more effective way to track outcomes. Medicare FFS costs PPPY for CKD are twice as high as those for people without CKD (\$8,400 vs. \$16,176) and increases to \$19,243 for those with CKD and DM and \$31,887 for those with CKD and HF. A patient with CKD, DM, and HF has costs averaging \$39,506. DM outcomes have improved nationally with a drop in CKD among diabetics from 44% to 36%. Arkansas, along with all southeast states, is in the highest quintile (55.1-71.4%) for the proportion of deaths attributed to cardiovascular causes in the first year after transitioning to ESRD. The USRDS suggests that reduced expenditures can be obtained through initiatives that prevent and/or slow CKD progression and the development of concurrent chronic conditions like DM and HF.








Education and care management costs for the transition to ESRD could also be reduced by early detection. Besides slowing progression, patients can choose and prepare for either a functional dialysis access or a preemptive kidney transplant. Either could avoid acute hospital admissions and the need for acute access placements (central venous catheters). Kidney Disease Improving Global Outcomes (KDIGO) guidelines estimate that only 10% of ICHD patients should require a central venous catheter, yet 80% start HD with a catheter. In AR, the rate is even higher (84.7%). In many of the cases, catheters could have been avoided entirely with proper preparation and planning. Although current cost data for Arkansans with CKD is not yet available, the lower costs for ESRD care infers that CKD costs may be lower than the national average as well. Data from Project 1 shows that over 95% of incident ESRD patients have insurance, so funding for care should not be the issue; access to care may be. Arkansans start dialysis with higher rates of catheters, ranging between 83% and 92% depending on their ADH region; only 56% of Arkansans received pre-ESRD nephrology care; less than 10% have seen a renal dietitian pre-ESRD; and less than 12% have been treated for ESRD-related anemia, although almost 70% have a hemoglobin value less than 10. Improving these outcomes could potentially save healthcare dollars and improve clinical outcomes for these patients.

In 2016, prevalent ESRD PPPY costs in Arkansas were almost \$10,000 lower than the US average for both ICHD and PD, and they were almost \$7,000 lower for Arkansans who received a kidney transplant. The explanation for why needs to be explored. Arkansas had more incident home dialysis patients (11.7%) than the national average (9.7%), and the ADH central region percentage of PD increased from 13.6% in 2015 to 18.9% in 2016. This could, in part, be due to the University of Arkansas for Medical Sciences' (UAMS) comprehensive early CKD Patient Education Program. The overall rate in Arkansas may be even higher because PD was not attributed to the ADH southwest region. Those patients wanting PD were most likely started in Texarkana, TX. UAMS has restructured its kidney transplant program. and expect to transplant 160 Arkansans this year. Early CKD education has proven to empower patients, slow CKD progression, and increase home dialysis as the choice for their ESRD care. Arkansas has about 1200 incident ESRD patients each year. A 10% increase in those starting home dialysis could save \$1.2 million annually. From the UAMS CKD Patient Education Program, over 50% of those attending at least one of the three classes (n = 195) chose home dialysis as their preferred dialysis choice, and of the 69 patients that started renal replacement therapy (RRT) during the 3-year pilot study, 40% started on home dialysis (PD 36%, Home HD 4%) and 3% received a preemptive transplant. Of the 45 patients that never attended a class, 9 started RRT with only one starting PD. Increasing home dialysis and transplant rates can reap significant cost savings. Transplants are more costly the first year but then drop to slightly over a third of the cost of ICHD for prevalent patients. Savings between \$30K and \$54K per patient can be achieved depending on which type of dialysis that patient chooses. Home dialysis offers an additional cost benefit. Medicare offers an incentive to home patients by starting coverage on the first day of the month the patient starts dialysis. Medicare starts on the day the patient is transplanted. If ICHD is started, there is a 3-month waiting period before Medicare is effective. Frequently, this 3-month period is covered by Medicaid. Shifting the first 3 months of dialysis costs to Medicare can save AR Medicaid dollars.

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<sup>8</sup> Scientific Registry of Transplant Recipients. OPTN/SRTR Annual Data Report. [www.strt.org](http://www.strt.org). Accessed 02/20/23.



The University of Arkansas for Medical Sciences' kidney transplant program received high national rankings in a biannual data released Jan. 5, 2021 by the Scientific Registry of Transplant Recipients (SRTR), a contractor of U.S. Department of Health and Human Services. The registry gave its highest ranking, five bars, to the UAMS kidney transplant program in two categories: the speed of obtaining donor kidneys and patient survivability one year after transplant. UAMS ranked second, based on volumes and outcomes, on a list of national kidney programs with five-tier rankings. Their one year survival rate was 97.1%. There are 192 patients, most on dialysis, awaiting a transplant. UAMS transplanted 158 patients from 7/2019 thru 6/2020, all but 2 of the kidneys were from deceased donors<sup>8</sup>. Patients can be referred for transplant when their eGFR is 20 or less. If they have a living donor that matches, they may be able to schedule their transplant at a time that is convenient for all parties and avoid the need for dialysis. Increased CKD detection, awareness and education could improve living donor transplants which offer most patients better outcomes than dialysis and costs significantly less.

As the Arkansas Chronic Kidney Disease Advisory Committee branches out into regional subcommittees this year and regional action plans and goals are developed, we hope monetizing some of these clinical outcomes can help garner support for regional interventions. Annual updates will be provided for ongoing continuous quality improvement.



## PROJECT 3

# CKD DETECTION AND CARE QUALITY IMPROVEMENT MODELS

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### PURPOSE

The purpose of this project is to identify and/or promote the creation of quality metrics used for monitoring chronic kidney disease (CKD)

detection and care in Arkansas that can serve as models for the development of further quality improvement programs.

### UAMS CKD DETECTION MODEL

The Baptist Health/University of Arkansas for Medical Sciences (UAMS) Affordable Care Organization has a CKD care continuous quality improvement (CQI) project similar to the one used by the Arkansas Foundation of Medical Care (AFMC), but with more care points. However, there is no clear estimate of how many patients with CKD received health care at UAMS. The 2018 United States Renal Data System (USRDS) report estimates 15% of the US adult population has CKD, and of those, only 10% are aware they have it<sup>3</sup>. Applying those rates to the over 2.3 million Arkansans who are age 18 or older yields almost 350,000 Arkansans with CKD and over 312,000 (9 out of 10) don't know they have it. In preparation for the launch of a statewide "Know Your Kidney Number...eGFR" campaign, a CKD Detection CQI Model was designed to determine the number of CKD patients served at UAMS in 2018 by comparing patients receiving care at UAMS with an estimated glomerular filtration rate [eGFR] less than 59, CKD Stages 3-5 with the number of patients whose provider listed a CKD code on their chart. The data was extracted from clinical diagnosis coding and problem list data, not billing data.

Process: A broad approach was developed to determine the number of unique patients that received either in-patient care, outpatient care, or both at UAMS in the 2018 calendar year. A total of 234,755 unique patients were identified. Patients were grouped into two groups using the most recent CKD ICD-10 code listed by the provider and the most recent eGFR in the patient's chart. For example, the same patient could be coded in January in stage 3, in March in stage 4, in July in unspecified, and in October stage 3. In this example, the patient would be in the Stage 3 group. If the most recent ICD code was N18.9 (unspecified), the last specific code (N18.1-5) would be used. Comparisons were also made for the patients who were identified as being in both groups, those that had both a CKD code and an eGFR <59. Both clinical ICD-10 codes and patient problem lists were used to exclude patients on dialysis (N18.6), with acute kidney injury (various N17 codes), and those that were transplanted (Z94.0) unless their eGFR was below 59 (those would be included by stage). Even though there is only one ICD-10 code for CKD stage 3, CKD stage 3 is broken down into the international guidelines stages

3a, mild CKD, (45-59), and stage, 3b moderate CKD (30-44). It is important to break down the report in this way for at least three reasons:

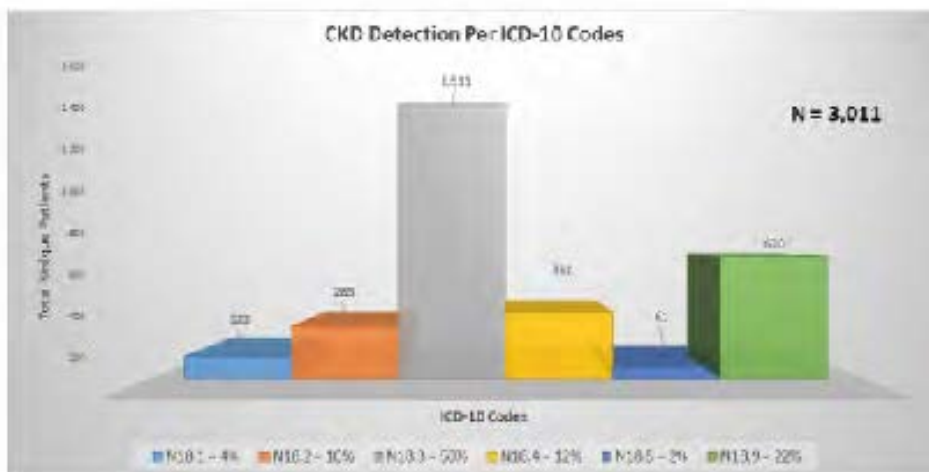
1. The eGFR calculation our lab reported in 2018, the MDRD equation, is not as reliable in patients above 70 of age, potentially falsely increasing the number of stage 3a patients.
2. Many CKD associated problems start in stage 3b. Early education and intervention can improve outcomes and slow CKD progression.
3. Most CKD patients are in Stage 3. The majority die of cardiovascular disease, never reaching stage 4. Dividing this stage will provide a better understanding of the severity of CKD and help to prioritize the use of resources to reach the most at-risk patients first.

The data was extracted from Arkansas Clinical Data Repository (AR-CDR), UAMS's enterprise clinical data warehouse. Transact Structured Query Language (T-SQL) is used to query the AR-CDR database system that is in Microsoft SQL Server.

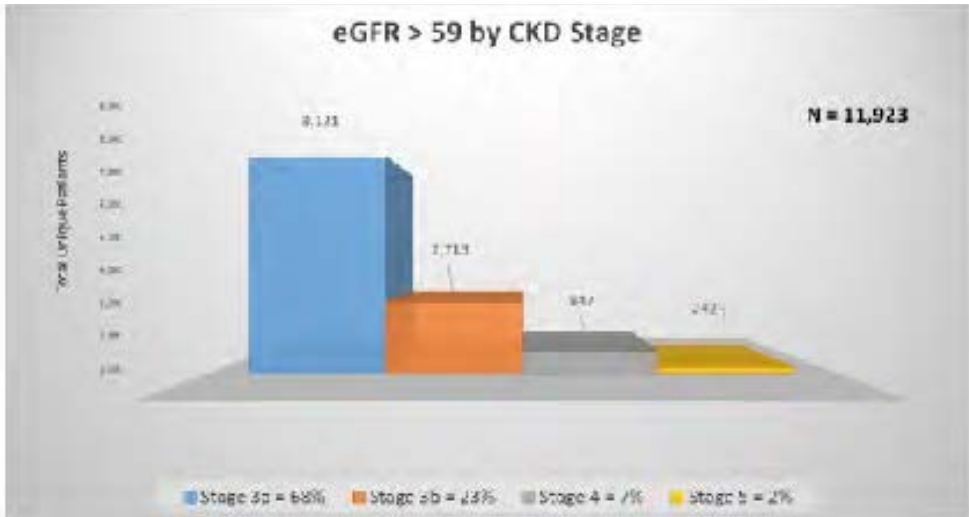
Data analysis and aggregation are done using a GROUPING SETS operator native to T-SQL to define each grouping set within the same query. These grouping operators enabled us to summarize and produce grand totals and subtotals.

## FINDINGS

**CKD Detection per ICD-10 Codes:** A total of 3,748 unique patients had CKD codes. After excluding patients on dialysis (737), 3011 patients remained. Of the 3011, 64 had both a transplant and CKD code. The majority of those detected were in stage 3 (51%) and 23% were unspecified.

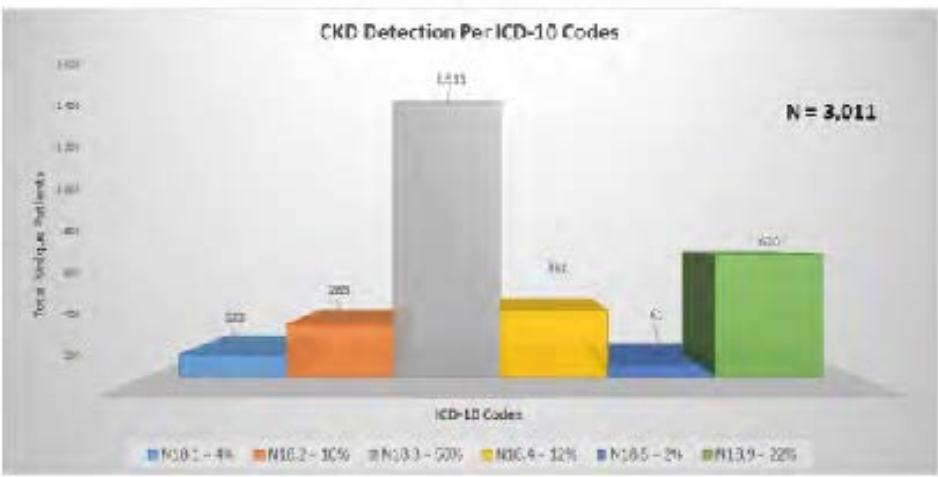


**eGFR <59 by CKD Stage:** A total of 16,262 unique patients had eGFRs less than 59. After excluding patients on dialysis (1259), with a transplant code only (143), and those with an acute kidney injury code (2937), a total of 11,923 were grouped by stage. The majority were in stage 3a (mild) (68%), followed by 3b (moderate) (23%), followed by stage 4 (severe) (7%), and lastly stage 5, not yet on dialysis (2%).



**Detection Rate:** Patients with ICD-10 CKD Stage 1 and 2 codes (407) were subtracted from the 3011 patients that had a CKD code. A comparison of these two findings, the presence of an ICD-10 code of CKD Stages 3-5 and unspecified (N=2604) with patients whose eGFR was <59 (N=11,923) found a UAMS Providers CKD detection rate of 22%. This leaves 9300 UAMS patients at risk and probably unaware they may have CKD in 2018.

**Comparison of CKD Code and eGFR:** Lastly we compared the unique patients that had both an eGFR <59 and an ICD CKD code. Only 2513 of the 3011 had both codes. Miscoding was evident in all stages. A maximum of 2604 patients could have both codes. Only patients with CKD stage 3-5 (1935) or unspecified (670) codes could have an eGFR less than 59 and a CKD code. So for this comparison, no stage 1 or 2 patients should be found. By comparison, stages 3, 4, 5, and unspecified numbers are all less than the CKD Detection by ICD-10 codes findings.



**Discussion and Action Plan:**

1. The 22% CKD detection rate by UAMS clinicians is better than the 15% prevalence rate that USRDS states for the US population. It was expected that UAMS's patient population would be older and sicker than the US population and the detection rate would be higher but there was no baseline data for comparison.
2. Almost 12,000 patients have eGFRs <59. This leaves 9300 patients that are at risk and possibly unaware they have CKD. Research has shown that if the provider does not code for CKD, the likelihood the patient is CKD aware is only 3%<sup>9</sup>. Planning for an influx of CKD education referrals is needed.
3. It was expected that the majority of patients would have CKD stage 3. Identifying patients in this stage, earlier in their CKD process, and providing adequate screening, management, and education has been shown to improve patient outcomes and decrease costs<sup>10</sup>.
4. Comparing CKD coding and eGFRs found errors in coding across all stages. CKD Staging and coding education are needed. The 10 points of care of a CKD patient for the Primary Care Provider with its companion documents were launched in 2019. Both coding and staging are included in the program. These tools will also be included on the "Know Your Kidney Number" website when it is launched in 2022.
5. The UAMS lab was asked to change the formula used to calculate eGFR to the CKD-EPI formula to improve the accuracy of eGFR measurements, especially in those over 70 years of age. This was started at the end of October 2019. Note more changes to the formula are being considered to address the race variable. See the NKF/ASN letter regarding changes.
6. The eGFR should be below 59 for 3 months for a diagnosis of CKD. Data will be analyzed to see if there is a way to tease this out.
7. Transplant data will be reviewed with the transplant team to determine parameters to use to best capture transplant patients with eGFRs less than 59 that do not include patients getting transplant work-ups etc. that are not under the care of UAMS providers.
8. The next data set to be evaluated will be a baseline for ongoing semiannual CKD Detection CQI. It will be limited to patients seen in UAMS Outpatient clinics to better represent UAMS providers' detection rates and include patient demographics to be able to describe populations. Due to COVID interruption of most clinics in 2020. A repeat of the CQI project has been postponed considering all the factors listed above.



# IMPROVING EARLY DIAGNOSIS OF CHRONIC KIDNEY DISEASE: PRIMARY CARE SCREENING AND PATIENT ENGAGEMENT

## PURPOSE

To improve early diagnosis and treatment of CKD, the TMF Quality Innovation Network Quality Improvement Organization (QIN-QIO), contracted by CMS, implemented a CKD Special Innovation Project (SIP) in its region (Arkansas, Missouri, Oklahoma, Puerto Rico, and Texas). Arkansas Foundation of Medical Care was a subcontractor for TMF in the state of Arkansas. This project aims to increase awareness of CKD and improve early diagnoses and treatment of the disease. This was accomplished by engaging practices to implement effective screening and treatment plans, and empowering at-risk beneficiaries who have diabetes and/or hypertension to increase self-management of their disease.

This 2-year SIP offered a systematic approach to educate and implement evidence-based interventions that will prevent the progression of CKD in beneficiaries. The TMF QIN-QIO guided the appropriate CKD screening tests and increased awareness through various educational modalities. Outcome measures for this SIP were based upon Medicare fee-for service (FFS) claims. About 15% of the US population - roughly 37 million people - has CKD <sup>11</sup>. Additionally, 9 in 10 adults with CKD and 50% of people with low kidney function who are not being treated with dialysis are not aware

they have CKD <sup>11</sup>. It is asymptomatic in the early stages and often goes undiagnosed until it is very advanced, which is why kidney disease is referred to as a “silent disease <sup>12</sup>.” As a result, only 10% of adults ages 60 or older who had kidney disease are aware they had the disease <sup>13</sup>. According to the most current estimates by the Centers for Disease Control and Prevention, CKD is more prevalent in people ages 65 or older than any other age group <sup>11</sup>. Furthermore, the main causes of CKD in adults are diabetes and high blood pressure. Screening beneficiaries with diabetes and/or hypertension early and consistently will improve early diagnosis of CKD before the disease progresses to End-Stage Renal Disease (ESRD). <sup>11, 16</sup>

Table 1 depicts screening rates from Medicare FFS claims data for the TMF QIN-QIO region. In the TMF QIN-QIO region, fewer than 32% of the patients with diabetes received the estimated glomerular filtration rate (eGFR) and albumin-to-creatinine ratio (ACR) screenings needed to identify patients with CKD, and fewer than 13% of the patients with hypertension received both CKD screening tests as recommended by the National Kidney Foundation Kidney Disease Outcomes Quality Initiative (KDOQI) guidelines in the state of Arkansas. <sup>14</sup>

**Table 1:** Overall CKD Screening Rates for Patients Diagnosed with Diabetes and Hypertension in States/Territories in the TMF QIN-QIO Region

<b>State</b>	<b>% of beneficiaries with diabetes state/territory-wide receiving CKD screening (4/1/16-3/31/2017)</b>	<b>% of beneficiaries with hypertension state/territory-wide receiving CKD screening (4/1/16-3/31/2017)</b>
Arkansas	31.6%	12.4%
TMF Region-wide	34.9%	16.8%

## **DATA SOURCE**

The data source used for this project was Medicare FFS claims for 4/1/2016-3/31/2017 and for 4/1/2018-3/31/2019.

## **GOALS AND INTERVENTIONS**

Research indicates that the current estimates of provider-level awareness of CKD remains unacceptably low . Many factors associated with CKD awareness, which could help guide the implementation of provider interventions, have yet to be fully examined <sup>15</sup>. A study published by Akbari, Swedko, Clark, et al. showed that recognition of CKD by primary care physicians increased dramatically from 22.4% of patients to 85.1% of patients with implementation of a CKD provider educational curriculum <sup>15</sup>. This combined evidence suggests that provider identification of CKD could be improved through targeted interventions.

This CKD SIP project employed two main interventions: 1) implementing a comprehensive provider approach focused on improving awareness of clinical guidelines by applying office based, at-risk patient engagement strategies, and enhancing office processes to increase CKD screening and provide appropriate treatment; and 2) expanding the scope of current DSME efforts to augment patient understanding and engagement in CKD early detection and treatment. After the initial months of the project, the CKD education intervention expanded beyond beneficiaries who are part of the DSME effort and was offered to all Medicare beneficiaries in the TMF QIN-QIO region.

Aggressive recruitment strategies began in October 2017 to engage 125 practices region-wide that were performing in the lower 50th percentile for at least two out of the three diabetes measures, namely lipid testing, HgA1C testing, and dilated eye exams. Further data analysis identified practices that had the greatest opportunity for improvement in annual urine microalbumin testing and estimated GFR screening among empaneled patients. The special innovation project focused on two simple tests to detect CKD in patients with diabetes and hypertension:

1. A urine test, Albumin Creatinine Ratio (ACR)
2. A blood test, Glomerular Filtration Rate (GFR)

The TMF-QIN had four outcome measures for the SIP, shown in Table 2





**Table 2:** CKD early diagnosis and treatment SIP outcome measures

<b>Outcome Measure</b>	<b>Data Source</b>	<b>Target Improvement by End of Year 2</b>
Screening for nephropathy among diabetes patients	Medicare FFS claims	25% RIR
Screening for nephropathy among hypertensive patients	Medicare FFS claims	30% absolute rate
Improved understanding of CKD screening and treatment among attendees of physician education webinars	Pre- and post-survey collected from attendees of physician education webinars	20% RIR
Improved understanding of the relationship between CKD and diabetes among DSME graduates	Pre- and post-survey collected from CKD education graduates	20% RIR

The SIP tracked percent of participating practices that identified patients with diabetes mellitus (DM) and hypertension, and percent of participating practices that screened and identified empaneled patients out of compliance with evidence-based guidelines. The other process measures and the final performance in the state of Arkansas and the region’s overall

**Table 3:** SIP process measures and final performance

<b>Process Measure</b>	<b>Arkansas</b>	<b>TMF Region-wide</b>
Number of recruited participating practices	26	128
Number of beneficiaries completing CKD education	265	2,248
Number of educators trained in CKD	85	603

The TMF QIN-QIO partnered with the National Kidney Foundation (NKF) and the American Kidney Fund (AKF) to access experts, tools, and community relationships. Quality improvement staff followed the NKF KDOQI guidelines to help practices use eGFR and ACR to identify patients with CKD. In addition, the TMF QIN-QIO’s KDIGO initiative recommended best clinical practices for managing blood pressure in patients diagnosed with CKD <sup>16</sup>.

Throughout the project time period, practice staff were provided education on CKD via webinars and face-to-face sessions held on-site at the practice locations. The TMF QIN-QIO partnered with NKF, which provided a modified version of its training symposium that was based upon the TMF QIN-QIO’s feedback for providers and clinicians on CKD early detection and prevention. Training included a collection of evidence-based resources and providers were able to claim continuing medical education (CME) credits in exchange for their time.

To educate patients on CKD, the TMF QIN-QIO collaborated with community health education focused organizations, used AKF's Kidney Health Coach Certification program to train interested clinicians and health educators in the community, and assisted the certified coaches to conduct CKD education sessions in various settings.

**Table 4:** Recruited PPs' CKD screening Percentage rates for Medicare beneficiaries with diabetes (Outcome Measure 1)

State	Baseline (April 1, 2016 - March 31, 2017)		Final Remeasurement (April 1, 2018 - March 31, 2019)		RIR Regional Year 2 Goal = 25%
	Number of Beneficiaries w/DM	% of Medicare Beneficiaries w/DM screened for CKD	Number of Beneficiaries w/DM	% of Medicare Beneficiaries w/DM screened for CKD	% Improvement of Beneficiaries Receiving Both Tests
AR	3,492	44.00%	3,296	52.10%	18.40%
Region Total	12,838	35.50%	11,017	38.90%	9.40%

**Data Source:** Medicare FFS claims

**CKD screening consists of both Urine Albumin and eGFR**

**Table 5:** Recruited PPs' CKD Screening Percentage Rates for Medicare Beneficiaries with Hypertension (Outcome Measure 2)

State	Baseline (April 1, 2016 - March 31, 2017)		Final Remeasurement (April 1, 2018 - March 31, 2019)		Regional Year 2 Goal = 30%
	Number of Beneficiaries w/HTN	% of Medicare Beneficiaries w/HTN screened for CKD	Number of Beneficiaries w/HTN	% of Medicare Beneficiaries w/HTN screened for CKD	

**Data Source:** Medicare FFS claims

**CKD screening consists of both Urine Albumin and eGFR**

The TMF QIN-QIO exceeded the year two goal for the physician webinars improving understanding of CKD screening as shown in Table 6 below, as well as the goal for improving the understanding of CKD among graduates as shown in Table 7 below. Tables 6 and 7 depict the regional over-all numbers and individual Arkansas numbers are not available.



**Table 6:** TMF Region-wide overall mean pre- and post-test for physician education webinars

<b>Mean Pre-Test Score</b>	<b>Mean Post-Test Score</b>	<b>Relative Improvement Rate (RIR) Year 2 Goal 20%</b>
60.5%	74.5%	23.1%*(N = 20)

**Table 7:** TMF Region-wide overall mean Pre- and Post-Test Results for CKD Graduates

<b>Mean Pre-Test Score</b>	<b>Mean Post-Test Score</b>	<b>Relative Improvement Rate (RIR) Year 2 Goal 20%</b>
65.7%	89.8%	36.2%

<sup>11</sup> Centers for Disease Control and Prevention (CDC). Chronic Kidney Disease in the United States, 2019. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention; 2019. Retrieved from [https://www.cdc.gov/kidneydisease/pdf/2019\\_National-Chronic-Kidney-Disease-Fact-Sheet.pdf](https://www.cdc.gov/kidneydisease/pdf/2019_National-Chronic-Kidney-Disease-Fact-Sheet.pdf)

<sup>12</sup> U.S. Department of Health and Human Services, National Institutes of Health, “Kidney Disease Statistics for the United States” <https://www.niddk.nih.gov/health-information/health-statistics/kidney-disease>

<sup>13</sup> United States Renal Data System (2018). New Report Captures the High Burden, High Cost and Low Awareness of Kidney Disease in the United States. Retrieved from <https://www.usrds.org/adrhighlights.aspx>

<sup>14</sup> Centers for Medicare and Medicaid Services (CMS), 2016. CSAT & Diabetic Analytic Files, claims for the state overall CKD Screening including annual eGFR and UACR Testing.

<sup>15</sup> Laura C. Plantinga, Delphine, S. Tuot, and Neil R. Powe. Awareness of Chronic Kidney Disease among patients and providers. (PMC) 17(3), pp. 225-236. (May 2010), US National Library of Medicine, National Institutes of Health

<sup>16</sup> Ashutosh M. Shukla, Andrea Easom, Manisha Singh, Richa Pandey, Dumitru Rotaru, Xuerong Wen, and Sudhir V. Shah. Effects of a Comprehensive Predialysis Education Program on the Home Dialysis Therapies: A Retrospective Cohort Study. *Perit Dial Int* September-October 2017 37:542-547; published ahead of print May 25, 2017



## PROJECT 4

# PATIENT, PROVIDER, AND PUBLIC CKD EDUCATION

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### PURPOSE

The purpose of this project is to explore the need for patient, provider, and public chronic kidney disease (CKD) educational programs

statewide, to identify resources and gaps, and to promote or develop CKD educational programs as needed.

### THE NEED

Almost 350,000 adult Arkansans (15%) have CKD, but 9 out of 10 people with CKD don't know they have it <sup>3</sup>. This leaves over 312,000 Arkansans who are unaware that they have CKD. Although awareness has improved in the later stages of CKD, only around 50% of those with severe CKD (stages 4 and 5 when less than 30% of kidney function remains) know they have CKD. Most people with CKD are in stage 3, and

many will die of cardiovascular disease without ever progressing to stage 4 <sup>3</sup>. However, research has shown that kidney function can improve by making positive changes at any stage of CKD <sup>10</sup>. Patients that have completed CKD education frequently report that they wished they had known they had CKD earlier so they could have made changes sooner <sup>1</sup>.

### PATIENT EDUCATION

Research has consistently cited the benefits of early CKD patient education including, but not limited to, increased knowledge, improved blood pressure control, increased permanent accesses at the start of hemodialysis, longer maintenance of kidney function postponing the need for dialysis, a higher choice of home or self-care dialysis, and improved survival <sup>16</sup>.

A UAMS/ADH pilot study comparing face-to-face (FTF) education and education via telemedicine (TM) in patients with CKD showed that in pre-education testing, about half the patients reported not having enough information to choose a modality. This

decreased significantly by the third visit (FTF 7.4%, TM 13.2%), and home modality choices more than doubled in both groups (FTF 25.8–67.7%, TM 22.2–50.1%). Additionally, 47% of the 68 participants who attended at least one of three classes and began renal replacement therapy either started on a home modality (HHD 6%, PD 38%) or received a preemptive transplant (3%). Both the Arkansas and national rates for home modalities are around 10%. Each home patient saves Medicare an average of \$19,000 per year per patient. Even a modest increase in the rate of HM would be significant for the healthcare system because cost savings are large <sup>1</sup>.



**Table 3:** Descriptive statistics of questions about kidney transplant, dialysis start, and making a decision by the assessment period from the UAMS/ADH pilot study (3)

Group	Measure	Pre, n (%)	Post, n (%)	Visit 2, n (%)	Visit 3, n (%)
	<b>Interested in kidney transplant?</b>				
FTF	Yes	78 (91.8)	73 (90.1)	62 (84.9)	60 (88.2)
	No	7 (8.2)	8 (9.9)	11 (15.1)	8 (11.8)
TM	Yes	83 (92.2)	76 (91.6)	71 (91.0)	61 (88.4)
	No	7 (7.8)	7 (8.4)	7 (9.0)	8 (11.6)
	<b>If you had to start dialysis today, which of the following would you choose?</b>				
FTF	HHHD	11 (12.9)	17 (20.7)	20 (27.0)	17 (25)
	ICHD	18 (21.2)	19 (23.2)	13 (17.6)	15 (22.1)
	PD (CAPD/APD)	11 (12.9)	27 (32.9)	26 (35.1)	29 (42.7)
	Not enough information	40 (47.1)	17 (20.7)	12 (16.2)	5 (7.4)
	No dialysis	5 (5.9)	2 (2.4)	3 (4.1)	2 (2.9)
TM	HHHD	12 (13.3)	23 (27.7)	13 (16.9)	15 (22.1)
	ICHD	20 (22.2)	22 (26.5)	23 (29.9)	21 (30.1)
	PD (CAPD/APD)	8 (8.9)	16 (19.3)	20 (26.0)	19 (27.9)
	Not enough information	47(52.2)	18 (21.7)	13 (16.9)	9 (13.2)
	No dialysis	3 (3.3)	4 (4.8)	8 (10.4)	4 (5.9)
	<b>Enough information to make decision?</b>				
FTF	Yes	45 (52.9)	65 (79.3)	62 (83.8)	63 (92.7)
TM	Yes	43 (47.8)	65 (78.3)	64 (83.1)	59 (85.8)


APD: ambulatory PD; CAPD: continuous ambulatory PD.

Many patients in the pilot study expressed the wish that they had an opportunity to be educated earlier so they could make changes to protect their kidney function earlier. Therefore, in late 2018, UAMS expanded the scope of the pilot study to include patients in stages 3b-5 of CKD and developed and tested 2nd editions of the original workbook, slides, and testing materials on a small group of CKD patients. The new program is now being used in the UAMS CKD clinic as the standard of care. The 138-page workbook “Chronic Kidney Disease: What You Need to Know” is also being used as a textbook for nephrology fellows during their CKD rotation. UAMS is not charging patients for initial CKD education. Administrators noted that numerous patients had complained about being billed for diabetes education in the past. It was decided that education was important and cost should not be a deterrent for patients to attend classes. Providers can refer their patients to the UAMS CKD clinic for CKD education consisting of three 2.5-hour classes given in person, via TM, or by using the workbook as a self-study tool.

The “Chronic Kidney Disease: What You Need

to Know” system can be made available for others to use in developing their own programs, arranging to be a TM site that can be linked to UAMS providers, for use as a self-study program for patients, and for use as a tool for case managers to follow high-risk patients.

The TMF Quality Innovation Network Quality Improvement Organization (QIN-QIO)—has a contract with the Centers for Medicare and Medicaid Services (CMS) to implement a CKD Special Innovation Project in its region including Arkansas, Missouri, Oklahoma, Puerto Rico, and Texas. This project aims to increase awareness of CKD and improve early diagnoses and treatment of the disease. This is being accomplished by encouraging practices to implement effective screening and treatment plans and by empowering at-risk beneficiaries who have diabetes and/or hypertension to increase self-management of their care. The Arkansas Foundation for Medical Care performed this work for Arkansas, working with partner organizations to provide CKD education to Medicare beneficiaries with diabetes and/or hypertension. The education was offered in



several formats to reach as many people as possible. The peer educators across our state used the American Kidney Fund Kidney Health Coach curriculum to provide CKD education as an extension of Diabetes Self-Management Education classes or stand-alone classes. There is also a video for classroom use or an on-demand video available for those who cannot attend a class. As of mid-July 2019, 265 Medicare beneficiaries have completed CKD education in Arkansas.

Several nephrology offices and dialysis providers offer CKD classes. Some focus on dialysis options, but some also include information on slowing CKD progression. Check with your local providers for details.

Numerous websites offer a vast array of education and other opportunities. Check out the forums in the attached resource list to identify resources for people struggling with CKD to share their experiences with others who have CKD. See Attached link to a resource guide for helpful CKD websites.

Medicare provides funding for CKD patient education, but only for patients in CKD stage 4 (N18.4, eGFR 15-29). That code must accompany the appropriate G Code (G0420 for individual education, reimbursement \$125/hour or G0421 for group education, limit 2-20 patients, reimbursement \$25/hour). An hour is considered 31 minutes up to 60 minutes. Up to three hourly codes can be billed on the same date. There is a limit of 6 hours of CKD education in a lifetime. There are guidelines regarding who can make referrals and who can be reimbursed. The referring provider should be the one managing the patient's CKD, and the classes must be taught by a physician, physician assistant, nurse practitioner, or clinical nurse specialist. The links below also detail hospitals and other entities, especially in rural areas, that can bill. CKD education has been approved for reimbursement via TM.

For more details on provider guidelines and expectations for CKD education, review the following links from the CMS:

- [www.cms.gov/Regulations-and-Guidance/Guidance/Transmittals/downloads/r1876cp.pdf](http://www.cms.gov/Regulations-and-Guidance/Guidance/Transmittals/downloads/r1876cp.pdf)
- [www.medicare.gov/coverage/kidney-disease-education](http://www.medicare.gov/coverage/kidney-disease-education)
- [www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/downloads/MM6557.pdf](http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/downloads/MM6557.pdf)

Note that the complications associated with CKD start mid-CKD around stage 3b (eGFR 30-45), and dialysis or transplant are not usually needed until the eGFR reaches about 10, which is in stage 5 of CKD. By limiting CKD education to only people with stage 4 CKD, those in lower stages will not be able to make life changes early enough in their CKD development to be most beneficial, and people in later stages will experience limited opportunities for improvement and an increase in their risk of acute hospitalization to initiate dialysis.

## **PROVIDER EDUCATION**

Primary care providers (PCPs) can be powerful advocates for positive changes that can protect kidney function and slow CKD progression because they encounter patients long before specialists; however, under-identification of CKD by PCPs results in extremely low patient awareness.

Three ARCKDAC members (Hobby, Easom, and Singh) developed a checklist PCPs can use for managing CKD. This checklist, called "10 Point Checklist for Managing CKD for the Primary Care Provider," has been used in both UAMS regional programs and the Baptist Health/UAMS Affordable Care Alliance.



A National Kidney Foundation Grant has been received by UAMS to expand the checklist model to include the following:

- A revision of the “10 Point Checklist for Managing CKD for the Primary Care Provider”
- A companion document with “talking points” that explain to patients the testing options and the reasons for pursuing them
- A companion to the PCP checklist that explains the international guidelines and expert opinions upon which the 10 points are based
- A list of ICD-10 codes that can be billed for test that is recommended.

The Program is also available free of charge on the UAMS’ Learn on Demand website with the title “Chronic Kidney Disease Update for the Primary Care Provider”. And will be available on the KnowYourKidneyNumber.com website which launches this fall. CMEs are offered on all platforms.. Practices that would like to have live or telemedicine programs can contact UAMS Nephrology (Dr. Manisha Singh or Andrea Easom) at 501-686-5295 for more details.

The CMS special innovation project on improving early diagnosis of CKD by The Arkansas Foundation for Medical Care (AFMC), as a subcontractor of the TMF QIN-QIO, addressed many of the care items on the checklist. Their data is outlined in Project 3. PCPs and office staff were taught about the CKD Continuous Quality Improvement (CQI) project, which encourages patients to obtain many of the tests recommended in the guidelines and tracks the results through claims data. Note this project has ended and a new CKD project has started. Contact AFMC for details.

To increase CKD awareness and risk of progression, the KDIGO heat graphic outlining the prognosis of CKD by GFR stage and albuminuria categories is included in this report (appendix IX). The report will be distributed electronically to AR providers.

Articles on meeting the treatment challenges of CKD were published in the *AFMC pages of the Journal of the Arkansas Medical Society*<sup>17</sup> in 2018 and the *Arkansas State Board of Nursing* in 2019.

## **PUBLIC EDUCATION**

A “Know Your Kidney Number” campaign will be launched. The expected launch date is in the fall of 2022. Poster content has been created, undergone health literacy editing and UAMS Creative Services designed three posters that have been submitted to ARCKDAC stakeholders and other interested parties for input. Each entity had the option to be a sponsor of the campaign and have their name or logo at the bottom of the posters. These posters have been completed. Fifteen sponsors have their logos on the posters a digital copied of the posters have been sent to them to utilize in their areas.

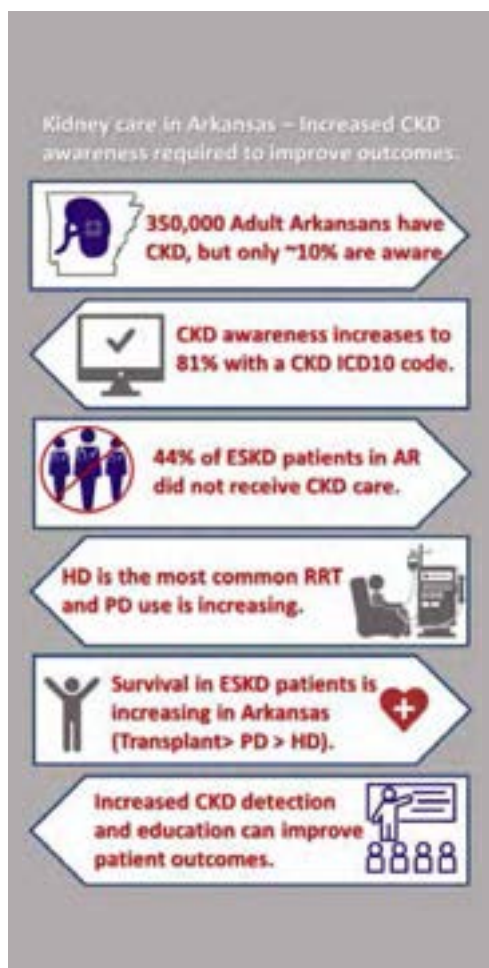
A UAMS Provost grant has been received to develop the “Know Your Kidney Number” website, which should be fully functional by the fall of 2022.

Public Service Announcements based on the Know Your Kidney Number Campaign are planned and should be available by the end of 2022.

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<sup>17</sup> Meeting Treatment Challenges of Chronic Kidney Disease. MD GERREN HOBBY, APRN ANDREA EASOM, MNsc, MD MANISHA SINGH 2018/9 The Journal of Arkansas Medical Society <https://afmc.org/download/849/2018/86686>

# WHITE PAPER SUMMARY



We believe this state-wide collaborative, multidisciplinary, targeted approach is the first of its kind in the country. Healthy People 2020 is a US Health and Human Services Department program that establishes national priorities and science-based guided efforts for disease prevention and health promotion. The ADH uses their guidance to select objectives and indicators to include in the AR response to Healthy People 2020. Healthy People 2020, which measured progress from 2010 to 2020, was the 4th iteration of the initiative and the first to include CKD as a separate, 14-objective category (see appendices for CKD goals). Also, President Trump signed an executive order on “Advancing American Kidney Health” on July 10, 2019, that supports research funding “preventing, treating, and slowing the progression of kidney disease; to improve kidney transplantation; and to share information with patients and providers to enhance awareness of the causes and consequences of kidney disease” and addresses payment models to identify and treat at-risk populations earlier in disease development and increase home dialysis and kidney transplant rates. These shared visions and incentives have increased CKD awareness and interest in developing collaborations that improve kidney health both nationally and in Arkansas.

Regional sub-committees are being established in each of the five ADH regions to increase community engagement. The state and specific regional data along with access to CQI tools, cost analysis, and education programs outlined in the white paper can support committee activities. Many of Arkansas’s major health entities are participating and their partnership increases

the collaboration needed to assess regional strengths and opportunities for improvement and the formulation of action plans for identified problems.

Patient partners and family members have been active participants in UAMS’ CKD research since the initial education project started in 2013 through the development of ARCKDAC. Patient partners have helped create evidence-based educational materials, taught classes, and have helped build collaborative relationships with interested ARCKDAC stakeholders. Their input and leadership have and will continue to be invaluable. Co-learning and empowerment among patient partners and other stakeholders will be fostered as subcommittees are developed, as well as through, training sessions and focus groups

Core task force members will be selected by ARCKDAC stakeholders and regional chairs can add members as needed.





## **ARCKDAC WILL:**

1. Provide an ongoing annual data stream to support quality assurance and future research. Due to administrative changes, regional data is no longer available through ESRD Network 13 but can be requested through USRDS. Requests are being made for multiple state and regional data including 2728 regional data and AR cost reports.
2. Encourage, mentor and support subcommittee members in developing research and/or quality assurance projects in their regions.
3. Encourage labs and providers new CKD-EPI creatinine equation (2021) which no longer adjusts for race.
4. Support CKD education that can empower patients to make changes that can slow CKD progression, improve clinical outcomes, and ensure they know their choices for renal replacement therapy and the preparation needed for each of them.
5. Increase access to CKD education in all areas of the state including self-study, in person, via the web or via tele-education technology options.
6. Provide access to provider education through “10 Points of CKD Care for PCPs Checklist” Program.
7. Be a conduit for initiatives between subcommittees to improve care throughout the state through highlighting areas of excellence and providing guidance or support where opportunities for improvement are identified.
8. Support endeavors for policy and/or infrastructure changes identified by regional subcommittees.
9. Develop a website to support committee initiatives and network working opportunities.
10. Increase community- engaged research to identify effects/implications of climate change (CC) on the health of Arkansans with CKD and inform the response needed to improve health outcomes. Examples include Health Effects Research, Health Equity, Intervention Research, and Training and Capacity Building.

Together with the state-wide launch of the “Know Your Kidney Number” poster campaign, the distribution of this White Paper, and the start of public service announcements featuring patients with CKD, CKD awareness in AR will increase. Many of the 350,000 Arkansans with CKD will become aware of their kidney disease for the first time and they will reach out for help. Each of them needs to hear a message of hope and empowerment that they can make changes that can improve and slow the progression of their CKD and that they have choices, if or when dialysis or transplantation may be needed, that can support a productive life.

**If you are a provider, stakeholder, or patient or family member of a patient who would like to become a member of ARDAC or want more information, please contact us at [easomandreak@uams.edu](mailto:easomandreak@uams.edu).**



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## APPENDICES

- 59 i. Copy of CMS Form 2728
- 63 ii. ESRD Network 13 Incident Regional Data (2016 and 2017) Northeast, Northwest, Central, Southeast, Southwest
  - 64-67.....Central
  - 68-71.....Northwest
  - 72-75 Northeast
  - 76-79 Southwest
  - 80-83 Southeast
- 84 iii. ARCKDAC CMS Submission on Anemia
- 86 iv. USRDS Arkansas Cost Data for 2015 and 2016
- 90 v. USRDS Healthy People 2020 Objectives
- 92 vi. Web-Based CKD Educational Sites
- 94 vii. CKD Checklist: Ten Points of Care for Primary Care Providers
- 95 viii. Know Your Kidney Number Posters
- 98 ix. NKF/ASN Letter re Assessing the Inclusion of Race in Estimates of Kidney Function
- 99 x. NKF/ASN Graphic on Task Force Recommendations 9.20.21
- 99 xi. Prognosis of CKD by GFR and albuminuria categories. KDIGO 2012

# END STATE RENAL DISEASE FORM

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
CENTERS FOR MEDICARE & MEDICAID SERVICES

Form Approved  
OMB No. 0938-0046

## END STAGE RENAL DISEASE MEDICAL EVIDENCE REPORT MEDICARE ENTITLEMENT AND/OR PATIENT REGISTRATION

**A. COMPLETE FOR ALL ESRD PATIENTS** Check one:  Initial  Re-entitlement  Supplemental

1. Name (Last, First, Middle Initial)

2. Medicare Claims Number

3. Social Security Number

4. Date of Birth  
MM / DD / YYYY

5. Patient Mailing Address (Include City, State and Zip)

6. Phone Number  
( )

7. Sex  Male  Female

8. Ethnicity  Not Hispanic or Latino  Hispanic or Latino (Complete item 9)

9. Country/Area of Origin or Ancestry

10. Race (Check all that apply)

White  Asian

Black or African American  Native Hawaiian or Other Pacific Islander

American Indian/Alaska Native  
Print Name of Individual/Principal Tribe \_\_\_\_\_ \*complete item 9

11. Is patient applying for ESRD Medicare coverage?  
 Yes  No

12. Current Medical Coverage (Check all that apply)

Medicaid  Medicare  Employer Group Health Insurance

DVA  Medicare Advantage  Other  None

13. Height  
was \_\_\_\_\_ in  
now \_\_\_\_\_ in

14. Dry Weight  
was \_\_\_\_\_ on  
now \_\_\_\_\_ on

15. Primary Cause of Renal Failure: (Use code from back of form)

16. Employment Status (6 mos prior and current status)

**Prior**  **Current**

Unemployed

Employed Full Time

Employed Part Time

Homemaker

Retired due to Age/Preference

Retired (Disability)

Medical Leave of Absence

Student

17. Co-Morbid Conditions (Check all that apply correctly and/or during last 10 years) \*See instructions

a.  Congestive heart failure

b.  Atherosclerotic heart disease/ASHD

c.  Other cardiac disease

d.  Cerebrovascular disease, CVA, TIA\*

e.  Peripheral vascular disease\*

f.  History of hypertension

g.  Amputation

h.  Diabetes, currently on insulin

i.  Diabetes, on oral medications

j.  Diabetes, without medications

k.  Diabetic retinopathy

l.  Chronic obstructive pulmonary disease

m.  Tobacco use (current smoker)

n.  Malignant neoplasia, Cancer

o.  Toxic nephropathy

p.  Alcohol dependence

q.  Drug dependence\*

r.  Inability to ambulate

s.  Inability to transfer

t.  Needs assistance with daily activities

u.  Institutionalized

1. Assisted Living

2. Nursing Home

3. Other Institution

v.  Non-renal congenital abnormality

w.  None

18. Prior to ESRD therapy:

a. Did patient receive congenital cytomegalovirus or hepatitis?  Yes  No  Unknown If Yes, answer:  6-12 months  >12 months

b. Was patient under care of a nephrologist?  Yes  No  Unknown If Yes, answer:  6-12 months  >12 months

c. Was patient under care of kidney specialist?  Yes  No  Unknown If Yes, answer:  6-12 months  >12 months

d. What access was used on final outpatient dialysis?  
If not AVF, then: Is existing AVF present?  AVF  Graft  Catheter  Other  
Is existing graft present?  Yes  No  Yes  No

19. Laboratory Values Within 45 Days Prior to the Most Recent ESRD Episode. (Lipid Profile within 1 Year of Most Recent ESRD Episode)

LABORATORY TEST	VALUE	DATE	LABORATORY TEST	VALUE	DATE
a.1. Serum Albumin (g/dl)			d. HbA1c	%	
a.2. Serum Albumin Lower Limit			e. Lipid Profile TC		
a.3. Lab Method Used (BCG or BCP)			LDL		
b. Serum Creatinine (mg/dl)			HDL		
c. Hemoglobin (g/dl)			TG		

**B. COMPLETE FOR ALL ESRD PATIENTS IN DIALYSIS TREATMENT**

20. Name of Dialysis Facility

21. Medicare Provider Number (for item 20)

22. Primary Dialysis Setting  
 Home  Dialysis Facility/Center  SNF/Long Term Care Facility

23. Primary Type of Dialysis  
 Hemodialysis (Sessions per week \_\_\_\_\_ hours per session \_\_\_\_\_)  
 CAPD  CCPD  Other

24. Date Regular Chronic Dialysis Began  
MM / DD / YYYY

25. Date Patient Started Chronic Dialysis at Current Facility  
MM / DD / YYYY

26. Has patient been informed of kidney transplant options?  
 Yes  No

27. If patient NOT informed of transplant options, please check all that apply:  
 Medically unfit  Patient declines information  
 Unavailable due to age  Patient has not been assessed  
 Psychologically unfit  Other

# END STATE RENAL DISEASE FORM

## C. COMPLETE FOR ALL KIDNEY TRANSPLANT PATIENTS

28. Date of Transplant (mm/dd/yyyy)	29. Name of Transplant Hospital	30. Medicare Provider Number for Item 29
Date patient was admitted as an inpatient to a hospital in preparation for, or anticipation of, a kidney transplant prior to the date of actual transplantation.		
31. Enter Date (mm/dd/yyyy)	32. Name of Preparation Hospital	33. Medicare Provider number for Item 32
34. Current Status of Transplant (if functioning, skip Items 34 and 37) <input type="checkbox"/> Functioning <input type="checkbox"/> Non-Functioning	35. Type of Donor: <input type="checkbox"/> Deceased <input type="checkbox"/> Living Related <input type="checkbox"/> Living Unrelated	
36. If Non-Functioning, Date of Return to Regular Dialysis (mm/dd/yyyy)	37. Current Dialysis Treatment Site <input type="checkbox"/> Home <input type="checkbox"/> Dialysis Facility/Center <input type="checkbox"/> SNF/Long Term Care Facility	

## D. COMPLETE FOR ALL ESRD SELF-DIALYSIS TRAINING PATIENTS (MEDICARE APPLICANTS ONLY)

38. Name of Training Provider	39. Medicare Provider Number of Training Provider (for Item 38)
40. Date Training Began (mm/dd/yyyy)	41. Type of Training <input type="checkbox"/> Hemodialysis    a. <input type="checkbox"/> Home    b. <input type="checkbox"/> In Center <input type="checkbox"/> CAPD <input type="checkbox"/> CCPD <input type="checkbox"/> Other
42. Patient is Expected to Complete (or has completed) Training and will Self-dialyze on a Regular Basis. <input type="checkbox"/> Yes <input type="checkbox"/> No	43. Date When Patient Completed, or is Expected to Complete, Training (mm/dd/yyyy)

I certify that the above self-dialysis training information is correct and is based on consideration of all pertinent medical, psychological, and sociological factors as reflected in records kept by this training facility.

44. Printed Name and Signature of Physician personally familiar with the patient's training			45. UPIN of Physician in Item 44
a.) Printed Name	b.) Signature	c.) Date (mm/dd/yyyy)	

## E. PHYSICIAN IDENTIFICATION

46. Attending Physician (Print)	47. Physician's Phone No. (include Area Code)	48. UPIN of Physician in Item 46
---------------------------------	---	----------------------------------

### PHYSICIAN ATTESTATION

I certify, under penalty of perjury, that the information on this form is correct to the best of my knowledge and belief. Based on diagnostic tests and laboratory findings, I further certify that this patient has reached the stage of renal impairment that appears irreversible and permanent and requires a regular course of dialysis or kidney transplant to maintain life. I understand that this information is limited for use in establishing the patient's entitlement to Medicare benefits and that any falsification, misrepresentation, or concealment of essential information may subject me to fine, imprisonment, civil penalty, or other civil sanctions under applicable Federal laws.

49. Attending Physician's Signature of Attestation (Same as Item 46)	50. Date (mm/dd/yyyy)
51. Physician Recertification Signature	52. Date (mm/dd/yyyy)

53. Remarks

--

## F. OBTAIN SIGNATURE FROM PATIENT

I hereby authorize any physician, hospital, agency, or other organization to disclose any medical records or other information about my medical condition to the Department of Health and Human Services for purposes of reviewing my application for Medicare entitlement under the Social Security Act and/or for scientific research.

54. Signature of Patient (Signature by mark must be witnessed.)	55. Date (mm/dd/yyyy)
---	-----------------------

## G. PRIVACY STATEMENT

The collection of this information is authorized by Section 226A of the Social Security Act. The information provided will be used to determine if an individual is entitled to Medicare under the End Stage Renal Disease provisions of the law. The information will be maintained in system No. 09-70-0520, "End Stage Renal Disease Program Management and Medical Information System (ESRD PMMIS)", published in the Federal Register, Vol. 67, No. 116, June 17, 2002, pages 41244-41250 or as updated and republished. Collection of your Social Security number is authorized by Executive Order 9397. Furnishing the information on this form is voluntary, but failure to do so may result in denial of Medicare benefits. Information from the ESRD PMMIS may be given to a congressional office in response to an inquiry from the congressional office made at the request of the individual, an individual or organization for research, declassification, evaluation, or epidemiologic project related to the prevention of disease or disability, or the restoration or maintenance of health. Additional disclosures may be found in the Federal Register notice cited above. You should be aware that P.L. 101-503, the Computer Matching and Privacy Protection Act of 1988, permits the government to verify information by way of computer matches.

**ESRD DEATH NOTIFICATION**  
**END STAGE RENAL DISEASE MEDICAL INFORMATION SYSTEM**

1. Patient's Last Name		First	MI	2. Medicare Claim Number	
3. Patient's Sex a. <input type="checkbox"/> Male   b. <input type="checkbox"/> Female		4. Date of Birth ____ / ____ / ____ Month   Day   Year		5. Social Security Number	
6. Patient's State of Residence		7. Place of Death a. <input type="checkbox"/> Hospital   c. <input type="checkbox"/> Home   e. <input type="checkbox"/> Other b. <input type="checkbox"/> Dialysis Unit   d. <input type="checkbox"/> Nursing Home		8. Date of Death ____ / ____ / ____ Month   Day   Year	
9. Modality at Time of Death a. <input type="checkbox"/> Incenter Hemodialysis   b. <input type="checkbox"/> Home Hemodialysis   c. <input type="checkbox"/> CAPD   d. <input type="checkbox"/> CCPD   e. <input type="checkbox"/> Transplant   f. <input type="checkbox"/> Other					
10. Provider Name and Address (Street)				11. Provider Number	
Provider Address (City/State)					
12. Causes of Death (enter codes from list on back of form)					
a. Primary Cause   _ _ _					
b. Were there secondary causes? <input type="checkbox"/> No <input type="checkbox"/> Yes, specify:   _ _ _ _ _					
c. If cause is other (98) please specify: _____					
13. Renal replacement therapy discontinued prior to death: <input type="checkbox"/> Yes <input type="checkbox"/> No			14. Was discontinuation of renal replacement therapy after patient/family request to stop dialysis?		
If yes, check one of the following: a. <input type="checkbox"/> Following HD and/or PD access failure b. <input type="checkbox"/> Following transplant failure c. <input type="checkbox"/> Following chronic failure to thrive d. <input type="checkbox"/> Following acute medical complication e. <input type="checkbox"/> Other f. Date of last dialysis treatment   ____ / ____ / ____ Month   Day   Year			<input type="checkbox"/> Yes <input type="checkbox"/> No  <input type="checkbox"/> Unknown <input type="checkbox"/> Not Applicable		
15. If deceased ever received a transplant: a. Date of most recent transplant   ____ / ____ / ____ <input type="checkbox"/> Unknown Month   Day   Year b. Type of transplant received <input type="checkbox"/> Living Related <input type="checkbox"/> Living Unrelated <input type="checkbox"/> Deceased <input type="checkbox"/> Unknown c. Was graft functioning (patient not on dialysis) at time of death? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown d. Did transplant patient resume chronic maintenance dialysis prior to death? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown			16. Was patient receiving Hospice care prior to death?  <input type="checkbox"/> Yes <input type="checkbox"/> No  <input type="checkbox"/> Unknown		
17. Name of Physician (Please print complete name)		18. Signature of Person Completing This Form		Date	

This report is required by law (42, U.S.C. 426; 20 CFR 405, Section 2133). Individually identifiable patient information will not be disclosed except as provided for in the Privacy Act of 1974 (5 U.S.C. 5520; 45 CFR Part 5a).

# END STATE RENAL DISEASE FORM

## ESRD DEATH NOTIFICATION FORM LIST OF CAUSES

### CARDIAC

- 23 Myocardial infarction, acute
- 25 Pericarditis, incl. Cardiac tamponade
- 26 Atherosclerotic heart disease
- 27 Cardiomyopathy
- 28 Cardiac arrhythmia
- 29 Cardiac arrest, cause unknown
- 30 Valvular heart disease
- 31 Pulmonary edema due to exogenous fluid
- 32 Congestive Heart Failure

### VASCULAR

- 35 Pulmonary embolus
- 36 Cerebrovascular accident including intracranial hemorrhage
- 37 Ischemic brain damage/Anoxic encephalopathy
- 38 Hemorrhage from transplant site
- 39 Hemorrhage from vascular access
- 40 Hemorrhage from dialysis circuit
- 41 Hemorrhage from ruptured vascular aneurysm
- 42 Hemorrhage from surgery (not 38, 39, or 41)
- 43 Other hemorrhage (not 38-42, 72)
- 44 Mesenteric infarction/ischemic bowel

### INFECTION

- 33 Septicemia due to internal vascular access
- 34 Septicemia due to vascular access catheter
- 45 Peritoneal access infectious complication, bacterial
- 46 Peritoneal access infectious complication, fungal
- 47 Peritonitis (complication of peritoneal dialysis)
- 48 Central nervous system infection (brain abscess, meningitis, encephalitis, etc.)
- 51 Septicemia due to peripheral vascular disease, gangrene
- 52 Septicemia, other
- 61 Cardiac infection (endocarditis)
- 62 Pulmonary infection (pneumonia, influenza)
- 63 Abdominal infection (peritonitis (not comp of PD), perforated bowel, diverticular disease, gallbladder)
- 70 Genito-urinary infection (urinary tract infection, pyelonephritis, renal abscess)

### LIVER DISEASE

- 64 Hepatitis B
- 71 Hepatitis C
- 65 Other viral hepatitis
- 66 Liver-drug toxicity
- 67 Cirrhosis
- 68 Polycystic liver disease
- 69 Liver failure, cause unknown or other

### GASTRO-INTESTINAL

- 72 Gastro-intestinal hemorrhage
- 73 Pancreatitis
- 75 Perforation of peptic ulcer
- 76 Perforation of bowel (not 75)

### METABOLIC

- 24 Hypertalemia
- 77 Hypotalemia
- 78 Hyponatremia
- 79 Hyponatremia
- 100 Hypoglycemia
- 101 Hyperglycemia
- 102 Diabetic coma
- 95 Acidosis

### ENDOCRINE

- 96 Adrenal insufficiency
- 97 Hypothyroidism
- 103 Hyperthyroidism

### OTHER

- 80 Bone marrow depression
- 81 Cachexia/failure to thrive
- 82 Malignant disease, patient ever on immunosuppressive therapy
- 83 Malignant disease (not 82)
- 84 Dementia, incl. dialysis dementia, Alzheimer's
- 85 Seizures
- 87 Chronic obstructive lung disease (COPD)
- 88 Complications of surgery
- 89 Air embolism
- 104 Withdrawal from dialysis/uremia
- 90 Accident related to treatment
- 91 Accident unrelated to treatment
- 92 Suicide
- 93 Drug overdose (street drugs)
- 94 Drug overdose (not 92 or 93)
- 98 Other cause of death
- 99 Unknown

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0938-0448. The time required to complete this information collection is estimated to average 30 minutes per response, including the time to review instructions, search existing data sources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to: OMB, Attn: PRA Reports Clearance Office, 7500 Security Boulevard, Baltimore, Maryland 21244-1850.

Form OMB-2746-L2 (08/05) EF 882206



## Introduction to ESRD Network 13 Regional Data (2016 and 2017)

These data has been provided at the request of ARCKDAC by ESRD Network 13 based on the county the patient is receiving dialysis and reported cumulatively by Arkansas Health Department Regions. USRDS has since changed their policies and requests for future data will be handled through USRDS' national office.

ARCKDAC is requesting current data by both where the patient lives and where they are receiving dialysis. This decision was made to capture home dialysis rates. The Southwest region had no home patients in either year but this may be due to AR patients being trained and followed across state lines. Other regions could also have this issue. Comparing this data will be helpful as we move forward with regional initiatives.

We will also be requesting data on patients that transfer to other modalities, especially within 3 months. Many home patients start in-center and then transfer to home. USRDS staff have reported our home numbers are even higher when these patients are included. Areas where patients start in-center can better evaluate the reasons why and what can be done to avoid in-center hemodialysis, whenever possible.

Many thanks to Network 13 for their help with both the design and production of these data. Annual data reports will be requested and provided to each region as we develop regional subcommittees. We are hopeful that the data will be used in continuing quality improvement projects, as well as, helping identify areas of concern that can undergo root cause analysis and development of action plans to address them.

### **The Regional Data can be found:**

ESRD Network 13 Incident Regional Data (2016 and 2017)

Northeast, Northwest, Central, Southeast, Southwest

64-67.....Central

68-71.....Northwest

72-75.....Northeast

76-79.....Southwest

80-83.....Southeast

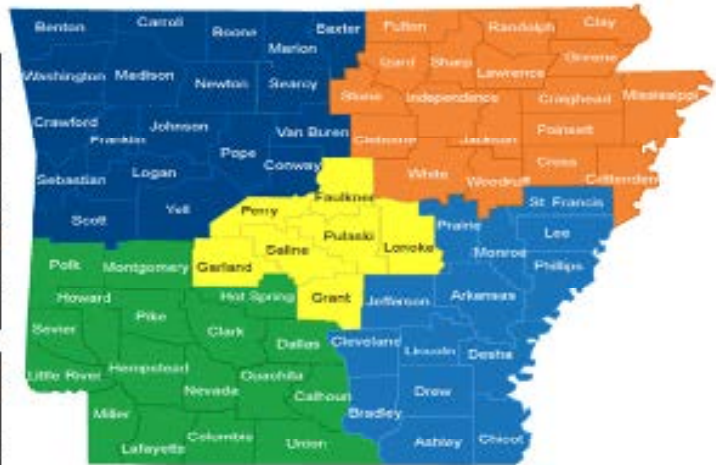
# ESRD NETWORK 13 INCIDENT REGIONAL DATA CENTRAL

## Arkansas Regional Data Profile

Region: **Central**

2016 Comparative Analysis: Percent of Incident Patients by Access Used at First Outpatient Dialysis				
	Region		Arkansas	
ESRD Patients <sup>2</sup>	343		1812	
Hemodialysis (HD)	324	84.0%	1878	88.0%
Peritoneal Dialysis	62	19.0%	129	11.0%
Transplant	7	1.0%	7	0.0%
Pre-ESRD Dietitian Interactions				
Yes	31	8.1%	62	4.2%
No	211	55.1%	810	65.0%
Unknown	141	36.8%	260	28.5%

Incident HD Patient-Specific Numbers by Region				
Access in Use				
AVF	31	8.0%	122	11.0%
AVG	9	2.0%	22	2.0%
Catheter	202	67.0%	823	88.7%
AVF/AVG in Place				
AVF Maturing	34	10.0%	126	11.0%
AVG Maturing	4	1.0%	7	0.7%
Pre-ESRD Neph Care				
Yes	65	48.0%	165	63.0%
No	78	23.0%	277	25.7%
Unknown	90	27.0%	184	18.0%



Legend:  
 Central (Blue)  
 Northwest (Green)  
 Northeast (Orange)  
 South (Light Blue)  
 Southwest (Yellow)

## Demographics Analysis for Arkansas Dialysis Patients

2016 Incident Patient Demographics <sup>1</sup>				
	Region		Arkansas	
	N	%	N	%
ESRD Patients <sup>2</sup>	343		1812	
Hemodialysis	324	84.0%	1878	88.0%
Peritoneal Dialysis	62	19.0%	129	10.0%
Gender				
Male	218	67.0%	883	86.4%
Female	134	42.0%	629	42.6%
Age				
< 18	5	1.0%	8	0.6%
18 - 44	83	26.4%	185	12.6%
45 - 64	141	38.9%	458	37.0%
65 - 74	98	28.0%	297	27.0%
75 - 84	63	14.0%	219	18.1%
85 +	23	6.9%	29	2.9%
Race				
African-American	168	47.4%	267	22.9%
American-Indian	0	0.0%	8	0.7%
White	222	68.0%	784	84.7%
Other/Mixed Race	5	1.0%	23	1.9%

Current Prevalent Patient Demographics				
	Region		Arkansas	
	N	%	N	%
Patients	1683		4882	
Hemodialysis	1170	76.9%	2854	83.1%
Peritoneal Dialysis	264	22.1%	781	18.0%
Gender				
Male	880	86.1%	2670	88.0%
Female	873	42.9%	2182	44.0%
Age				
< 18	46	2.1%	40	1.1%
18 - 44	220	16.0%	837	14.4%
45 - 64	858	48.9%	1082	43.0%
65 - 74	280	24.8%	1158	38.0%
75 - 84	185	10.8%	823	13.7%
85 +	54	2.8%	145	2.1%
Race				
African-American	844	88.1%	2120	48.0%
American-Indian	0	0.0%	24	0.5%
White	870	42.7%	2371	81.0%
Other/Mixed Race	10	1.0%	68	2.1%

Incident Data Source: CMS 2728 R-3 Form (ESRD Medical Claims Report) Includes ESRD Incident and/or Prevalence Patients Reported Through CRO/PRO as available from 01/01/16 through 12/31/16.

Current Prevalent Data Source: 2016 Incident Reports with Initial 2728 available in CRO/PRO as of 7/1/2017

Prevalent Data Source: Hemodialysis and Peritoneal Dialysis reports in CRO/PRO as of 7/1/2017

Note:  
<sup>1</sup> May include 0-100% (e.g., rounding, multiple entries)  
<sup>2</sup> Includes Transplant/End-stage Renal Disease (ESRD) patients for small Per capita values

# ESRD NETWORK 13 INCIDENT REGIONAL DATA CENTRAL



## Reported Incident Patient Clinical Indicators (Laboratory Results)<sup>1</sup>

	Region	Arkansas
<b>Albumin (BCG/BCP)</b>		
# of Reported Lab	148	680
% Pts. w/ Albumin $\geq$ 3.7	98.0%	98.8%
<b>Hemoglobin (Hgb)</b>		
# of Reported Lab	541	771
Hgb $<$ 10.0	88.4%	88.0%
Hgb 10.0 - 11.0	17.9%	18.7%
Hgb 11.1 - 12.0	8.8%	8.7%
Hgb $>$ 12.0	5.9%	6.6%
<b>Pre-ESRD Exogenous Erythropoietin (EPO) or Equivalent Received</b>		
EPO	81.7%	7.8%
<b>Calculated Glomerular Filtration Rate (GFR) from Mandatory Reporting</b>		
Incidents of Patients Daily	383	1212
Mean GFR	10.5	10.1
CKD Stage 1 <sup>2</sup> - GFR $\geq$ 90	0.00%	0.00%
CKD Stage 2 <sup>2</sup> - GFR 60 - 89	0.00%	0.00%
CKD Stage 3 <sup>2</sup> - GFR 30 - 59	0.88%	0.80%
CKD Stage 4 <sup>2</sup> - GFR 15 - 29	14.10%	11.14%
CKD Stage 5 <sup>2</sup> - GFR $<$ 15	84.98%	88.07%

## Medical Coverage As of Date of First Dialysis/Transplant

	Region		Arkansas	
	N	%	N	%
<b>ESRD Patients<sup>3</sup></b>	383		1212	
Medicaid	61	21.1%	282	21.8%
COVA	3	0.8%	25	2.1%
Medicare	241	62.9%	782	64.8%
Medicare Advantage	28	9.4%	128	11.3%
Employer Group	78	20.4%	104	18.8%
Other private insurance	63	21.7%	282	21.8%
None	18	4.7%	38	3.1%
<b>Primary Cause of Renal Failure (ICD-10)</b>				
Diabetes	152	39.7%	558	46.8%
Hypertension	140	36.6%	264	22.6%
Glomerulonephritis	0	0.0%	40	3.3%
Other	73	19.1%	292	24.3%

Key:

<sup>1</sup> May not add to 100% (e.g., rounding, multiple selections)

<sup>2</sup> Includes Transplant candidates as Transplant candidates are too small for public release

<sup>3</sup> Includes Stages of Chronic Kidney Disease (CKD)

# ESRD NETWORK 13 INCIDENT REGIONAL DATA CENTRAL

## Arkansas Regional Data Profile

Region: **Central**

2017 Comparative Analysis: Percent of Incident Patients by Access Used at First Outpatient Dialysis				
	Region		Arkansas	
ESRD Patients	402		1101	
Hemodialysis (HD)	328	81.7%	1032	88.2%
Peritoneal Dialysis	78	18.1%	129	11.7%
Pre-ESRD Dietitian Interactions				
Yes	60	12.4%	88	6.7%
No	202	52.2%	781	63.8%
Unknown	160	37.3%	260	23.3%

Incident HD Patient-Specific Numbers by Region				
Access in Use				
AVF	43	12.8%	127	13.0%
AVG	9	2.6%	22	2.2%
Catheter	274	84.6%	851	84.7%
AVRAVG in Place				
AVF Maturing	31	8.6%	111	10.8%
AVG Maturing	5	1.5%	11	1.0%
Pre-ESRD Neph Care				
Yes	172	62.8%	820	68.0%
No	89	21.2%	294	27.0%
Unknown	35	28.1%	146	14.1%



## Demographics Analysis for Arkansas Dialysis Patients

2017 Incident Patient Demographics <sup>1</sup>				
	Region		Arkansas	
ESRD Patients	402	%	1101	%
Hemodialysis	328	81.4%	1032	88.2%
Peritoneal Dialysis	78	18.9%	129	11.7%
Gender				
Male	213	58.0%	658	68.1%
Female	188	47.0%	423	44.9%
Age				
< 18	11	2.7%	13	1.1%
18 - 44	63	14.7%	152	12.9%
45 - 64	158	38.2%	470	39.8%
65 - 74	98	24.4%	220	19.7%
75 - 84	63	15.9%	183	16.4%
85+	21	5.0%	43	3.6%
Race				
African-American	155	38.6%	405	34.0%
American-Indian	1	0.2%	8	0.6%
White	242	60.2%	757	62.8%
Other/Mixed Race	4	1.0%	22	1.9%

Current Prevalent Patient Demographics				
	Region		Arkansas	
Patients	1454		4738	
Hemodialysis	1180	78.9%	2826	84.4%
Peritoneal Dialysis	215	21.9%	741	18.1%
Gender				
Male	818	56.1%	2559	58.1%
Female	663	44.9%	2107	44.9%
Age				
< 18	10	1.2%	10	0.4%
18 - 44	227	16.2%	658	13.9%
45 - 64	653	44.9%	2048	43.3%
65 - 74	361	23.7%	1177	24.8%
75 - 84	178	12.0%	580	14.1%
85+	63	3.8%	147	3.1%
Race				
African-American	705	48.6%	2151	45.4%
American-Indian	2	0.1%	21	0.4%
White	657	44.9%	2462	51.8%
Other/Mixed Race	20	1.3%	100	2.1%

Incident Data Source: CMS 322B E-3 Form (ESRD Medical Evidence Report) National Endpoints Audit/CR Report; Single-Source Form; Rejected Through CRO/WRP as available from 01/2017 through 12/2017.

Current Prevalent Analysis Includes 2017 Incident Patients with Initial 2728 enrolled in CRO/WRP as of 02/2018.

Prevalent Data Source: Hemodialysis and Peritoneal Dialysis reports to CRO/WRP as of 02/2018.

ESRD: 1 May 2018 to 30 June 2018 (excluding multiple reporting)

# ESRD NETWORK 13 INCIDENT REGIONAL DATA CENTRAL

## Reported Incident Patient Indicators<sup>1</sup>

	Region	Nation
<b>Albumin (BCG/BCP)</b>		
# of Reported Labs	138	829
% Pts. w/ Albumin >= 2.7	26.2%	31.0%
<b>Hemoglobin (Hgb)</b>		
# of Reported Labs	195	853
Hgb < 10.0	73.5%	81.7%
Hgb 10.1 - 11.0	16.9%	17.8%
Hgb 11.1 - 12.0	6.6%	7.0%
Hgb > 12.0	3.1%	3.4%
<b>Pre-ESRD Exogenous Erythropoietin (EPO) or Equivalent Received</b>		
EPO	8.6%	8.1%
<b>Calculated Glomerular Filtration Rate (GFR) from Mandatory Reporting</b>		
Incident Patients Only	402	1281
Mean GFR	10.1	9.9
CKD Stage 1 <sup>2</sup> - GFR >= 90	0.00%	0.00%
CKD Stage 2 <sup>2</sup> - GFR 60 - 89	0.00%	0.00%
CKD Stage 3 <sup>2</sup> - GFR 30 - 59	0.98%	0.34%
CKD Stage 4 <sup>2</sup> - GFR 15 - 29	10.98%	10.33%
CKD Stage 5 <sup>2</sup> - GFR < 15	88.01%	89.34%

Medical Coverage As of Date of First Dialysis				
	Region		Nation	
	N	%	N	%
ESRD Patients	402		1101	
Medicaid	81	20.1%	295	26.8%
Medicare	220	54.9%	718	64.9%
Medicare Advantage	40	10.0%	147	13.3%
Employer Group	101	25.1%	208	17.9%
Other patient category	64	16.0%	231	21.0%
None	14	3.5%	30	2.7%
<b>Primary Cause of Renal Failure (ICD-10)</b>				
Diabetes	155	38.5%	543	49.3%
Hypertension	173	43.0%	427	38.8%
Glomerulonephritis	18	4.5%	40	3.6%
Other	57	14.0%	181	16.3%

ESRD = End Stage Renal Disease  
 \* May not add to 100% (e.g., rounding, multiple categories)  
<sup>2</sup> CKD = Stages of Chronic Kidney Disease (NIDDK)

# ESRD NETWORK 13 INCIDENT REGIONAL DATA NORTHWEST

## Arkansas Regional Data Profile

Region: Northwest

2016 Comparative Analysis: Percent of Incident Patients by Access Used at First Outpatient Dialysis				
	Region		Arkansas	
ESRD Patients <sup>2</sup>	288		1812	
Hemodialysis (HD)	284	98.6%	1878	98.1%
Peritoneal Dialysis	34	11.4%	129	11.0%
Transplant	0	0.0%	7	0.4%
Pre-ESRD Dietitian Interactions				
Yes	14	4.7%	82	4.2%
No	260	83.5%	810	65.9%
Unknown	34	11.4%	260	28.5%

Incident HD Patient-Specific Numbers by Region				
Access in Use				
AVF	41	16.6%	129	11.3%
AVG	7	2.7%	22	2.0%
Catheter	217	82.2%	823	88.7%
AVF/AVG in Place				
AVF Maturing	35	13.2%	126	11.8%
AVG Maturing	0	0.0%	7	0.7%
Pre-ESRD Neph Care				
Yes	182	61.4%	885	68.2%
No	93	36.2%	277	26.7%
Unknown	9	3.4%	184	18.0%



Legend:  
 Northwest (Blue)  
 Central (Orange)  
 South (Yellow)  
 East (Green)

## Demographics Analysis for Arkansas Dialysis Patients

2016 Incident Patient Demographics <sup>1</sup>				
	Region		Arkansas	
	N	%	N	%
ESRD Patients <sup>2</sup>	288		1812	
Hemodialysis	284	98.6%	1878	98.9%
Peritoneal Dialysis	34	11.4%	129	10.8%
Gender				
Male	177	61.4%	883	86.4%
Female	121	40.6%	629	42.6%
Age				
< 18	0	0.0%	8	0.8%
18 - 44	34	11.4%	185	12.6%
45 - 64	113	37.9%	458	37.0%
65 - 74	88	28.6%	287	27.0%
75 - 84	63	21.6%	219	18.1%
85 +	5	1.7%	29	2.9%
Race				
African-American	13	4.4%	267	22.9%
American-Indian	8	2.7%	8	0.7%
White	262	87.9%	784	64.7%
Other/Mixed Race	15	5.0%	53	4.9%

Current Prevalent Patient Demographics				
	Region		Arkansas	
	N	%	N	%
Patients	1091		4882	
Hemodialysis	888	82.4%	2854	83.1%
Peritoneal Dialysis	185	17.6%	781	18.0%
Gender				
Male	815	80.0%	2670	81.0%
Female	428	41.0%	2182	44.0%
Age				
< 18	1	0.1%	40	1.1%
18 - 44	121	11.0%	837	14.4%
45 - 64	450	40.9%	1082	42.0%
65 - 74	268	27.4%	1153	38.0%
75 - 84	174	16.0%	823	13.7%
85 +	28	2.6%	145	2.1%
Race				
African-American	80	6.0%	2120	48.0%
American-Indian	10	1.0%	20	0.5%
White	885	80.9%	2371	61.3%
Other/Mixed Race	86	6.0%	85	2.1%

Incident Data Source: CMS 2728 R-3 Form (ESRD Medical Evidence Report) Medicare Enrollment and/or Part B; Hospitalization Form  
 Submitted Through CRO/SPS as available from 6/1/2016 through 12/31/16.

Current Prevalent Analysis Includes 2016 Incident Patients with Initial 2728 available in CRO/SPS as of 7/1/2017

Prevalent Data Source: Hemodialysis and Peritoneal Dialysis reports in CRO/SPS as of 7/1/2017

Note:  
<sup>1</sup> May include 0-100% (e.g., missing multiple values)

<sup>2</sup> Includes Transplant/End-stage Renal Disease/End-stage Peritoneal Dialysis

# ESRD NETWORK 13 INCIDENT REGIONAL DATA NORTHWEST



## Reported Incident Patient Clinical Indicators (Laboratory Results)<sup>1</sup>

	Region	Admission
<b>Albumin (BCG/BCP)</b>		
# of Reported Lab	111	680
% Pts. w/ Albumin $\geq$ 2.7	27.0%	28.8%
<b>Hemoglobin (Hgb)</b>		
# of Reported Lab	189	771
Hgb $<$ 10.0	28.1%	28.0%
Hgb 10.0 - 11.0	26.8%	28.7%
Hgb 11.1 - 12.0	8.0%	8.7%
Hgb $>$ 12.0	8.3%	8.8%
<b>Pre-ESRD Exogenous Erythropoietin (EPO) or Equivalent Received</b>		
EPO	7.4%	7.8%
<b>Calculated Glomerular Filtration Rate (GFR) from Mandatory Reporting</b>		
Incidents Reported Only	228	1212
Mean GFR	10.3	10.1
CKD Stage 1 <sup>2</sup> - GFR $\geq$ 90	0.00%	0.00%
CKD Stage 2 <sup>2</sup> - GFR 60 - 89	0.00%	0.00%
CKD Stage 3 <sup>2</sup> - GFR 30 - 59	0.87%	0.80%
CKD Stage 4 <sup>2</sup> - GFR 15 - 29	8.73%	11.14%
CKD Stage 5 <sup>2</sup> - GFR $<$ 15	88.80%	88.37%

## Medical Coverage As of Date of First Dialysis/Transplant

	Region		Admission	
	N	%	N	%
<b>ESRD Patients<sup>3</sup></b>	228		1212	
Medicaid	68	29.8%	282	23.3%
Medicare	15	6.6%	25	2.1%
Medicare Advantage	212	93.6%	782	64.6%
Medicare Advantage	28	12.3%	128	10.6%
Employer Group	68	29.8%	104	8.6%
Other private insurance	72	31.6%	282	23.3%
None	5	2.2%	28	2.3%
<b>Primary Cause of Renal Failure (ICD-10)</b>				
Diabetes	158	69.3%	558	46.0%
Hypertension	64	28.1%	204	16.8%
Glomerulonephritis	20	8.8%	40	3.3%
Other	71	31.2%	292	24.0%

Key:

<sup>1</sup> May not add to 100% (e.g., rounding, multiple indicators)

<sup>2</sup> Includes Transplant/primary or Transplant secondary use (as used for public release)

<sup>3</sup> Includes Stages of Chronic Kidney Disease (CKD)

# ESRD NETWORK 13 INCIDENT REGIONAL DATA NORTHWEST

## Arkansas Regional Data Profile

Region: Northwest

2017 Comparative Analysis: Percent of Incident Patients by Access Used at First Outpatient Dialysis				
	Region		Arkansas	
ESRD Patients	287		1191	
Hemodialysis (HD)	283	98.6%	1182	98.4%
Peritoneal Dialysis	34	11.4%	129	11.7%
Pre-ESRD Dietitian Interactions				
Yes	17	5.7%	88	6.7%
No	259	90.1%	781	63.9%
Unknown	94	31.9%	260	21.9%

Incident HD Patient-Specific Numbers by Region				
Access in Use				
AVF	40	13.9%	137	13.0%
AVG	4	1.3%	23	2.2%
Catheter	215	72.0%	681	64.7%
AVRAVG in Place				
AVF Maturing	34	12.0%	111	10.8%
AVG Maturing	2	0.6%	11	1.0%
Pre-ESRD Neph Care				
Yes	182	61.9%	820	68.0%
No	94	31.9%	294	27.0%
Unknown	7	2.7%	148	14.1%



## Demographics Analysis for Arkansas Dialysis Patients

2017 Incident Patient Demographics <sup>1</sup>				
	Region		Arkansas	
ESRD Patients	287		1191	
Hemodialysis	283	98.6%	1182	98.4%
Peritoneal Dialysis	34	11.4%	129	11.7%
Gender				
Male	182	61.9%	658	54.9%
Female	115	38.7%	523	44.9%
Age				
< 18	2	0.7%	13	1.1%
18 - 44	34	11.4%	152	12.8%
45 - 64	112	38.0%	470	39.5%
65 - 74	87	28.9%	320	27.7%
75 - 84	43	14.6%	183	15.4%
85+	12	4.0%	43	3.6%
Race				
African-American	18	6.1%	405	34.0%
American-Indian	4	1.3%	8	0.6%
White	257	88.6%	757	62.8%
Other/Mixed Race	18	6.1%	23	1.9%

Current Prevalent Patient Demographics				
	Region		Arkansas	
Patients	1083		4738	
Hemodialysis	865	79.7%	3835	80.7%
Peritoneal Dialysis	108	9.9%	741	15.6%
Gender				
Male	642	59.2%	2559	53.9%
Female	441	40.7%	2107	44.3%
Age				
< 18	0	0.0%	19	0.4%
18 - 44	135	11.9%	658	13.9%
45 - 64	447	41.0%	2048	43.2%
65 - 74	288	26.5%	1177	24.8%
75 - 84	167	15.3%	689	14.5%
85+	28	2.5%	147	3.1%
Race				
African-American	78	7.0%	2161	45.6%
American-Indian	18	1.7%	29	0.6%
White	855	78.4%	2482	52.3%
Other/Mixed Race	64	5.9%	160	3.4%

Incident Data Source: CMS 3235 E-3 Form (ESRD Medical Evidence Report) National Endpoints Audit/CR Report; Single-Source Form; Revalidated Through CRO/WRP as available from 01/2017 through 12/2017.

Current Prevalent Analysis Includes 2017 Incident Patients with Initial 3728 revalidated in CRO/WRP as of 02/2018.

Prevalent Data Source: Hemodialysis and Peritoneal Dialysis reports in CRO/WRP as of 02/2018.

Map:  
1 May not add to 100% due to rounding multiple categories



# ESRD NETWORK 13 INCIDENT REGIONAL DATA NORTHWEST



## Reported Incident Patient Indicators<sup>1</sup>

	Region	Admission
<b>Albumin (BCG/BCP)</b>		
# of Reported Lab	155	529
% Pts. w/ Albumin $\geq$ 2.7	26.0%	31.0%
<b>Hemoglobin (Hgb)</b>		
# of Reported Lab	191	553
Hgb $<$ 10.0	88.7%	88.7%
Hgb 10.1 - 11.0	48.9%	47.8%
Hgb 11.1 - 12.0	7.2%	7.0%
Hgb $>$ 12.0	7.2%	8.4%
<b>Pre-ESRD Exogenous Erythropoietin (EPO) or Equivalent Received</b>		
EPO	11.4%	8.1%
<b>Calculated Glomerular Filtration Rate (GFR) from Mandatory Reporting</b>		
Incident Patients Only	257	1281
Mean GFR	10.4	9.9
CKD Stage 1 <sup>2</sup> - GFR $\geq$ 90	0.00%	0.00%
CKD Stage 2 <sup>2</sup> - GFR 60 - 89	0.00%	0.00%
CKD Stage 3 <sup>2</sup> - GFR 30 - 59	1.01%	0.34%
CKD Stage 4 <sup>2</sup> - GFR 15 - 29	11.11%	10.33%
CKD Stage 5 <sup>2</sup> - GFR $<$ 15	87.88%	89.34%

Medical Coverage As of Date of First Dialysis				
	Region		Admission	
	N	%	N	%
<b>ESRD Patients</b>	297		1101	
Medicaid	55	18.5%	295	26.8%
Medicare	13	4.4%	23	2.1%
Medicare Advantage	182	61.3%	718	65.1%
Employer Group	51	17.3%	208	17.8%
Other patient category	55	18.5%	231	21.0%
None	8	2.0%	30	2.4%
<b>Primary Cause of Renal Failure (ICD-10)</b>				
Diabetes	143	48.1%	543	49.3%
Hypertension	55	18.5%	427	38.8%
Glomerulonephritis	14	4.7%	40	3.4%
Other	72	24.3%	181	16.5%

ESRD = End Stage Renal Disease  
 \* May not add to 100% (e.g., rounding, multiple categories)  
<sup>2</sup> CKD = Stages of Chronic Kidney Disease (NIDDK)

# ESRD NETWORK 13 INCIDENT REGIONAL DATA NORTHEAST

## Arkansas Regional Data Profile

Region: **Northern**

2016 Comparative Analysis: Percent of Incident Patients by Access Used at First Outpatient Dialysis				
	Region		Arkansas	
ESRD Patients <sup>2</sup>	343		1312	
Hemodialysis (HD)	207	60.3%	1078	81.9%
Peritoneal Dialysis	38	11.1%	129	10.0%
Transplant	0	0.0%	7	0.5%
Pre-ESRD Dietitian Interactions				
Yes	6	2.1%	82	4.3%
No	186	57.5%	810	65.9%
Unknown	73	20%	260	21.8%

Incident HD Patient-Specific Numbers by Region				
Access in Use				
AVF	20	8.7%	122	11.3%
AVG	2	1.0%	22	2.0%
Catheter	187	90.3%	883	86.7%
AVF/AVG in Place				
AVF Maturing	19	8.7%	125	11.8%
AVG Maturing	1	0.5%	7	0.7%
Pre-ESRD Neph Care				
Yes	134	64.7%	885	68.2%
No	41	19.8%	277	25.7%
Unknown	32	15.5%	184	16.0%



## Demographics Analysis for Arkansas Dialysis Patients

2016 Incident Patient Demographics <sup>1</sup>				
	Region		Arkansas	
ESRD Patients <sup>2</sup>	343		1312	
Hemodialysis	207	60.3%	1078	81.9%
Peritoneal Dialysis	38	11.1%	129	10.0%
Gender				
Male	142	41.4%	583	44.4%
Female	101	29.4%	529	40.4%
Age				
< 18	0	0.0%	8	0.6%
18 - 44	26	7.6%	185	14.1%
45 - 64	98	28.6%	458	34.9%
65 - 74	81	23.6%	287	21.9%
75 - 84	66	19.2%	219	16.7%
85 +	4	1.2%	29	2.2%
Race				
African-American	63	18.4%	267	20.4%
American-Indian	0	0.0%	8	0.7%
White	186	54.2%	784	59.7%
Other/Mixed Race	2	0.6%	53	4.0%

Current Prevalent Patient Demographics				
	Region		Arkansas	
Patients	812		4882	
Hemodialysis	824	73.0%	2854	81.1%
Peritoneal Dialysis	170	21.0%	781	21.8%
Gender				
Male	423	52.1%	2570	52.6%
Female	289	35.5%	2182	44.9%
Age				
< 18	0	0.0%	40	1.1%
18 - 44	100	12.3%	887	18.2%
45 - 64	280	34.5%	1082	22.2%
65 - 74	202	24.9%	1158	23.7%
75 - 84	108	13.3%	823	16.8%
85 +	22	2.7%	145	3.0%
Race				
African-American	260	32.1%	2120	43.4%
American-Indian	1	0.1%	20	0.4%
White	465	57.3%	2271	46.5%
Other/Mixed Race	7	0.9%	88	1.8%

Incident Data Source: CMS 2728 R-3 Form (ESRD Medical Claims Report) Includes End-stage Renal Disease (ESRD) Patients; Hemodialysis (HD) and Peritoneal Dialysis (PD) as well as Transplant (Trans) as of 7/1/2017

Current Prevalent Data Source: Hemodialysis and Peritoneal Dialysis reports in CPOD/CRS as of 7/1/2017

Note:  
<sup>1</sup> May not add to 100% (e.g., rounding, multiple selections)  
<sup>2</sup> Includes Transplant/Trans as well as Peritoneal Dialysis

# ESRD NETWORK 13 INCIDENT REGIONAL DATA NORTHEAST



## Reported Incident Patient Clinical Indicators (Laboratory Results)<sup>1</sup>

	Region	Admission
<b>Albumin (BCG/BCP)</b>		
# of Reported Lab	107	680
% Pts. w/ Albumin $\geq$ 2.7	22.6%	28.8%
<b>Hemoglobin (Hgb)</b>		
# of Reported Lab	121	771
Hgb $<$ 10.0	73.6%	88.0%
Hgb 10.0 - 11.0	12.4%	16.7%
Hgb 11.1 - 12.0	6.2%	8.7%
Hgb $>$ 12.0	6.8%	8.6%
<b>Pre-ESRD Exogenous Erythropoietin (EPO) or Equivalent Received</b>		
EPO	11.6%	7.8%
<b>Calculated Glomerular Filtration Rate (GFR) from Mandatory Reporting</b>		
Incidents of Patients Only	202	1212
Mean GFR	10.3	10.1
CKD Stage 1 <sup>2</sup> - GFR $\geq$ 90	0.00%	0.00%
CKD Stage 2 <sup>2</sup> - GFR 60 - 89	0.00%	0.00%
CKD Stage 3 <sup>2</sup> - GFR 30 - 59	0.82%	0.80%
CKD Stage 4 <sup>2</sup> - GFR 15 - 29	11.11%	11.14%
CKD Stage 5 <sup>2</sup> - GFR $<$ 15	88.07%	88.07%

## Medical Coverage As of Date of First Dialysis/Transplant

	Region		Admission	
	N	%	N	%
<b>ESRD Patients<sup>3</sup></b>	348		1212	
Medicaid	61	26.1%	282	21.3%
Medicare	3	1.3%	25	2.1%
Medicare Advantage	158	64.3%	782	64.6%
Medicare Advantage	27	16.3%	128	11.3%
Employer Group	28	10.7%	104	18.8%
Other private insurance	60	24.7%	282	21.3%
None	7	2.0%	28	2.1%
<b>Primary Cause of Renal Failure (ICD-10)</b>				
Diabetes	128	61.9%	558	48.8%
Hypertension	60	22.9%	204	23.8%
Glomerulonephritis	8	2.8%	40	3.3%
Other	31	12.3%	292	18.3%

Key:

<sup>1</sup> May not add to 100% (e.g., rounding, multiple indicators)

<sup>2</sup> Includes Transplant candidates as Transplant candidates are too small for public release

<sup>3</sup> ESRD<sup>4</sup> Stages of Chronic Kidney Disease (CKD)

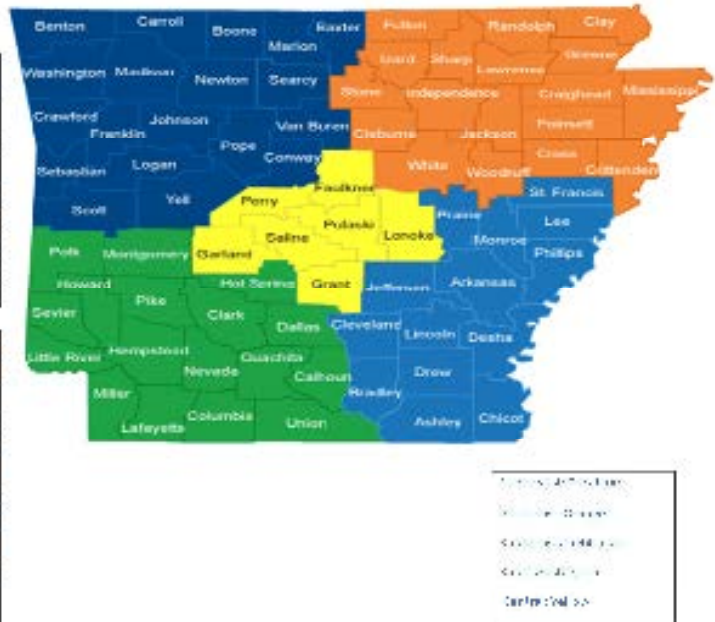
# ESRD NETWORK 13 INCIDENT REGIONAL DATA NORTHEAST

## Arkansas Regional Data Profile

Region: **Northern**

2017 Comparative Analysis: Percent of Incident Patients by Access Used at First Outpatient Dialysis				
	Region		Arkansas	
ESRD Patients	222		1101	
Hemodialysis (HD)	198	89.2%	1052	95.5%
Peritoneal Dialysis	24	10.8%	59	5.3%
Pre-ESRD Dietitian Interactions				
Yes	7	3.2%	88	8.0%
No	195	86.8%	1013	92.0%
Unknown	20	9.0%	100	9.0%

Incident HD Patient-Specific Numbers by Region				
Access in Use				
AVF	21	10.7%	127	11.5%
AVG	3	1.5%	22	2.0%
Catheter	172	87.8%	852	76.5%
AVRAVG in Place				
AVF Maturing	19	8.6%	111	10.0%
AVG Maturing	0	0.0%	11	1.0%
Pre-ESRD Neph Care				
Yes	147	70.7%	820	74.5%
No	39	17.6%	204	18.5%
Unknown	11	5.0%	145	13.0%



## Demographics Analysis for Arkansas Dialysis Patients

2017 Incident Patient Demographics <sup>1</sup>				
	Region		Arkansas	
ESRD Patients	222		1101	
Hemodialysis	198	89.2%	1052	95.5%
Peritoneal Dialysis	24	10.8%	59	5.3%
Gender				
Male	129	58.1%	658	59.7%
Female	93	41.9%	443	40.3%
Age				
< 18	0	0.0%	13	1.1%
18 - 44	28	12.6%	152	13.8%
45 - 64	87	39.2%	470	42.7%
65 - 74	83	37.4%	330	29.9%
75 - 84	40	18.0%	183	16.6%
85+	4	1.8%	43	3.9%
Race				
African-American	86	38.7%	405	36.8%
American-Indian	1	0.4%	8	0.7%
White	135	60.9%	687	62.5%
Other/Mixed Race	1	0.4%	21	1.9%

Current Prevalent Patient Demographics				
	Region		Arkansas	
Patients	881		4738	
Hemodialysis	860	96.6%	4635	97.8%
Peritoneal Dialysis	21	2.4%	103	2.2%
Gender				
Male	482	54.7%	2559	54.0%
Female	399	45.3%	2179	46.0%
Age				
< 18	0	0.0%	19	0.4%
18 - 44	105	11.9%	558	11.8%
45 - 64	277	31.4%	1448	30.6%
65 - 74	223	25.3%	1177	24.8%
75 - 84	125	14.1%	660	13.9%
85+	21	2.4%	147	3.1%
Race				
African-American	280	31.8%	1464	30.9%
American-Indian	2	0.2%	21	0.4%
White	482	54.7%	2492	52.6%
Other/Mixed Race	7	0.8%	40	0.8%

Incident Data Source: CMS 2728 E-S Form (ESRD Medical Evidence Report) National Endpoints Audit/CR Report, Single-Pass Form  
Prevalent Data Source: CROHRS as available from 01/2017 through 12/2017.

County specific Analysis includes 2017 incident patients with initial 2728s available in CROHRS as of 02/2018.

Prevalent Data Source: Hemodialysis and Peritoneal Dialysis reports in CROHRS as of 02/2018.

Map:  
<sup>1</sup> May not add to 100% due to rounding multiple categories

# ESRD NETWORK 13 INCIDENT REGIONAL DATA NORTHEAST

## Reported Incident Patient Indicators<sup>1</sup>

	Region	Admission
<b>Albumin (BCG/BCP)</b>		
# of Reported Labs	81	89
% Pts. w/ Albumin $\geq$ 2.7	26.2%	31.0%
<b>Hemoglobin (Hgb)</b>		
# of Reported Labs	101	883
Hgb $<$ 10.0	87.5%	88.7%
Hgb 10.1 - 11.0	12.9%	11.8%
Hgb 11.1 - 12.0	7.9%	7.0%
Hgb $>$ 12.0	7.9%	8.4%
<b>Pre-ESRD Exogenous Erythropoietin (EPO) or Equivalent Received</b>		
EPO	18.6%	8.1%
<b>Calculated Glomerular Filtration Rate (GFR) from Mandatory Reporting</b>		
Incident Patients Only	222	1181
Mean GFR	27	29
CKD Stage 1 <sup>2</sup> - GFR $\geq$ 90	0.00%	0.00%
CKD Stage 2 <sup>2</sup> - GFR 60 - 89	0.00%	0.00%
CKD Stage 3 <sup>2</sup> - GFR 30 - 59	0.00%	0.34%
CKD Stage 4 <sup>2</sup> - GFR 15 - 29	8.01%	10.33%
CKD Stage 5 <sup>2</sup> - GFR $<$ 15	88.99%	89.34%

Medical Coverage As of Date of First Dialysis				
	Region		Admission	
	N	%	N	%
ESRD Patients	222		1181	
Medicaid	54	24.3%	295	24.9%
Medicare	3	1.4%	23	1.9%
Medicare Advantage	140	62.1%	718	60.3%
Employer Group	27	12.2%	208	17.5%
Other patient category	51	22.9%	231	19.4%
None	3	1.4%	30	2.4%
<b>Primary Cause of Renal Failure (ICD-10)</b>				
Diabetes	120	54.1%	543	46.0%
Hypertension	77	34.7%	427	36.1%
Glomerulonephritis	1	0.5%	40	3.4%
Other	24	10.8%	181	15.3%

Footnote:
<sup>1</sup> May not add to 100% (e.g., rounding, multiple indicators)
<sup>2</sup> CKD Stage 1-5 based on GFR (e.g., CKD Stage 1: GFR $\geq$ 90)

# ESRD NETWORK 13 INCIDENT REGIONAL DATA SOUTHWEST

## Arkansas Regional Data Profile

Region	Southwest			
<b>2016 Comparative Analysis: Percent of Incident Patients by Access Used at First Outpatient Dialysis</b>				
	Region	Arkansas		
ESRD Patients <sup>2</sup>	133		1312	
Home Dialysis (HD)	133	100.0%	1078	81.9%
Peritoneal Dialysis	0	0.0%	129	10.0%
Transplant	0	0.0%	7	0.5%
<b>Pre-ESRD Dietitian Interactions</b>				
Yes	1	0.8%	62	4.2%
No	132	99.2%	810	61.9%
Unknown	0	0.0%	240	18.5%



Legend:  
 Northwest (Blue)  
 Central (Orange)  
 South (Green)  
 East (Yellow)

Incident HD Patient-Specific Numbers by Region				
Access in Use				
AVF	79	14.2%	122	11.2%
AVG	4	2.0%	22	2.0%
Catheter	110	82.7%	823	86.7%
AVF/AVG in Place				
AVF Maturing	25	11.6%	125	11.6%
AVG Maturing	1	0.6%	7	0.7%
Pre-ESRD Neph Care				
Yes	35	82.0%	265	63.2%
No	43	22.0%	277	26.7%
Unknown	5	2.6%	184	18.0%

## Demographics Analysis for Arkansas Dialysis Patients

2016 Incident Patient Demographics <sup>1</sup>				
	Region		Arkansas	
	N	%	N	%
ESRD Patients <sup>2</sup>	133		1312	
Home Dialysis	133	100.0%	1078	81.9%
Peritoneal Dialysis	0	0.0%	129	10.0%
<b>Gender</b>				
Male	83	62.4%	683	52.4%
Female	50	37.6%	629	47.6%
<b>Age</b>				
< 18	1	0.8%	8	0.6%
18 - 44	34	26.0%	185	14.2%
45 - 64	48	36.1%	458	35.0%
65 - 74	30	22.5%	287	22.0%
75 - 84	21	15.8%	219	16.7%
85 +	2	1.5%	20	1.5%
<b>Race</b>				
African-American	71	53.4%	267	20.4%
American-Indian	0	0.0%	8	0.7%
White	61	46.0%	784	60.0%
Other/Mixed Race	1	0.8%	53	4.0%

Current Prevalent Patient Demographics				
	Region		Arkansas	
	N	%	N	%
Patients	664		4882	
Home Dialysis	641	96.5%	2854	58.5%
Peritoneal Dialysis	10	1.5%	781	16.0%
<b>Gender</b>				
Male	293	44.1%	2570	52.6%
Female	268	40.2%	2312	47.4%
<b>Age</b>				
< 18	0	0.0%	40	1.1%
18 - 44	65	10.0%	637	14.4%
45 - 64	220	33.1%	1982	42.6%
65 - 74	128	19.3%	1158	25.8%
75 - 84	77	11.6%	823	18.7%
85 +	12	1.8%	145	3.1%
<b>Race</b>				
African-American	283	42.6%	2120	43.4%
American-Indian	4	0.6%	20	0.4%
White	181	27.3%	2371	48.6%
Other/Mixed Race	3	0.4%	68	1.4%

Incident Data Source: CMS 2728 R-3 Form (ESRD Medical Claims Report) Medicare Enrollment and/or Part B; Supplemental Form Submitted Through CRO/FFS as available from 6/1/2016 through 12/31/16.

Current Prevalent Analysis Includes 2016 Incident Patients with Initial 2728 available in CRO/FFS as of 7/1/2017.

Prevalent Data Source: Home Dialysis and Peritoneal Dialysis reports in CRO/FFS as of 7/1/2017.

Map:  
 1 May not add to 100% (e.g., rounding, multiple selections)  
 2 Includes Transplant/End-stage Renal Disease/End-stage Peritoneal Dialysis

# ESRD NETWORK 13 INCIDENT REGIONAL DATA SOUTHWEST



## Reported Incident Patient Clinical Indicators (Laboratory Results)<sup>1</sup>

	Flagson	Arkansas
<b>Albumin (BCG/BCP)</b>		
# of Reported Lab	87	880
% Pts. w/ Albumin $\geq$ 2.7	11.9%	28.8%
<b>Hemoglobin (Hgb)</b>		
# of Reported Lab	82	771
Hgb $<$ 10.0	76.0%	88.0%
Hgb 10.0 - 11.0	23.4%	12.7%
Hgb 11.1 - 12.0	7.3%	8.7%
Hgb $>$ 12.0	1.3%	8.6%
<b>Pre-ESRD Exogenous Erythropoietin (EPO) or Equivalent Received</b>		
EPO	8.6%	7.8%
<b>Calculated Glomerular Filtration Rate (GFR) from Mandatory Reporting</b>		
Incidents of Patients Only	122	1212
Mean GFR	12.5	10.1
CKD Stage 1 <sup>2</sup> - GFR $\geq$ 90	0.00%	0.00%
CKD Stage 2 <sup>2</sup> - GFR 60 - 89	0.00%	0.00%
CKD Stage 3 <sup>2</sup> - GFR 30 - 59	0.00%	0.80%
CKD Stage 4 <sup>2</sup> - GFR 15 - 29	8.77%	11.14%
CKD Stage 5 <sup>2</sup> - GFR $<$ 15	88.23%	88.07%

## Medical Coverage As of Date of First Dialysis/Transplant

	Flagson		Arkansas	
	N	%	N	%
<b>ESRD Patients<sup>3</sup></b>	122		1212	
Medicaid	25	20.5%	282	23.3%
Medicare	0	0.0%	25	2.1%
Medicare Advantage	85	69.5%	782	64.6%
Employer Group	22	18.0%	128	10.6%
Other private insurance	13	10.7%	104	8.6%
None	21	17.2%	282	23.3%
Other	5	4.1%	38	3.1%
<b>Primary Cause of Renal Failure (ICD-10)</b>				
Diabetes	72	58.2%	558	46.0%
Hypertension	22	18.0%	204	16.8%
Glomerulonephritis	4	3.3%	40	3.3%
Other	25	20.5%	292	24.0%

**Key:**

<sup>1</sup> May not add to 100% (e.g., rounding, multiple indicators)

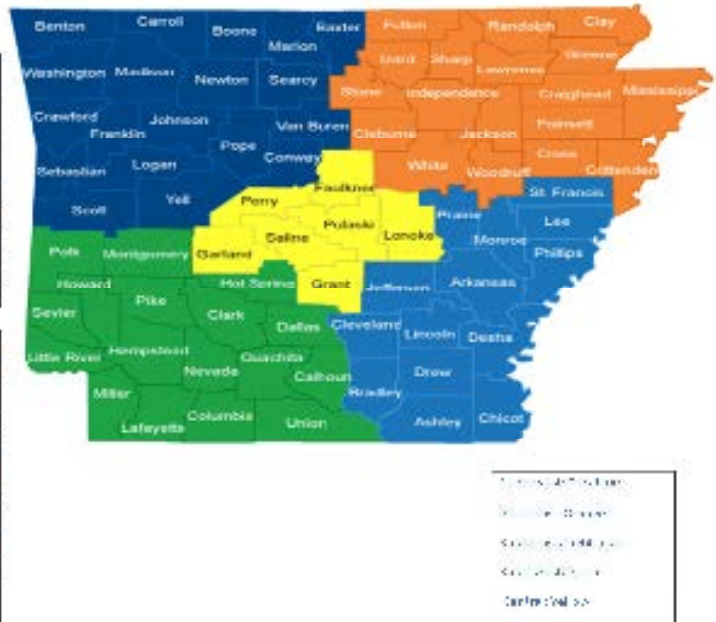
<sup>2</sup> Includes Transplant/primary or Transplant secondary use (as noted for public release)

<sup>3</sup> ESRD<sup>4</sup> Stages of Chronic Kidney Disease (CKD)

# ESRD NETWORK 13 INCIDENT REGIONAL DATA SOUTHWEST

## Arkansas Regional Data Profile

Region	Southwest			
<b>2017 Comparative Analysis: Percent of Incident Patients by Access Used at First Outpatient Dialysis</b>				
	Region		Arkansas	
ESRD Patients	125		1181	
Hemodialysis (HD)	125	100.0%	1182	99.2%
Peritoneal Dialysis	0	0.0%	129	11.7%
<b>Pre-ESRD Dietitian Interactions</b>				
Yes	4	3.2%	88	6.7%
No	114	91.5%	781	63.8%
Unknown	7	5.6%	260	21.3%



Incident HD Patient-Specific Numbers by Region				
Access in Use				
AVF	22	17.6%	127	13.0%
AVG	7	5.6%	22	2.3%
Catheter	98	78.6%	881	84.7%
AVRAVG in Place				
AVF Maturing	22	17.6%	111	10.8%
AVG Maturing	3	2.4%	11	1.0%
Pre-ESRD Neph Care				
Yes	74	59.2%	820	68.6%
No	49	39.4%	294	27.0%
Unknown	3	2.4%	148	14.1%

## Demographics Analysis for Arkansas Dialysis Patients

2017 Incident Patient Demographics <sup>1</sup>				
	Region		Arkansas	
	N	%	N	%
ESRD Patients	125		1181	
Hemodialysis	125	100.0%	1182	99.2%
Peritoneal Dialysis	0	0.0%	129	11.7%
<b>Gender</b>				
Male	81	64.8%	858	86.2%
Female	44	35.2%	623	44.9%
<b>Age</b>				
< 18	0	0.0%	13	1.1%
18 - 44	18	14.4%	152	12.9%
45 - 64	62	49.6%	470	39.8%
65 - 74	40	32.0%	220	18.7%
75 - 84	18	14.4%	183	15.4%
85+	1	0.8%	43	3.6%
<b>Race</b>				
African-American	78	62.4%	405	34.0%
American-Indian	0	0.0%	8	0.6%
White	47	37.6%	757	62.8%
Other/Mixed Race	0	0.0%	23	1.9%

Current Prevalent Patient Demographics				
	Region		Arkansas	
	N	%	N	%
Patients	635		4738	
Hemodialysis	634	99.8%	2826	84.4%
Peritoneal Dialysis	11	1.8%	741	18.8%
<b>Gender</b>				
Male	210	33.1%	2559	58.1%
Female	295	46.9%	2107	44.9%
<b>Age</b>				
< 18	0	0.0%	19	0.4%
18 - 44	88	13.9%	858	18.1%
45 - 64	248	39.1%	2048	43.2%
65 - 74	148	23.3%	1177	24.8%
75 - 84	85	13.4%	889	18.8%
85+	16	2.5%	147	3.1%
<b>Race</b>				
African-American	281	44.3%	2161	45.6%
American-Indian	2	0.3%	21	0.4%
White	188	29.6%	2482	52.4%
Other/Mixed Race	8	1.3%	100	2.1%

Incident Data Source: CMS 325B E-3 Form (ESRD Medical Evidence Report) National Endpoints Audit/CR Report; Single-Source Form; Revalidated Through CRO/WRP as available from 01/2017 through 12/2017.

Current Prevalent Analysis Includes 2017 Incident Patients with Initial 3728 revalidated in CRO/WRP as of 02/2018.

Prevalent Data Source: Hemodialysis and Peritoneal Multiple reports in CRO/WRP as of 02/2018.

Map:  
<sup>1</sup> May not add to 100% due to rounding multiple categories.



# ESRD NETWORK 13 INCIDENT REGIONAL DATA SOUTHWEST

## Reported Incident Patient Indicators<sup>1</sup>

	Region	Admission
<b>Albumin (BCG/BCP)</b>		
# of Reported Labs	73	829
% Pts. w/ Albumin $\geq$ 2.7	26.7%	31.0%
<b>Hemoglobin (Hgb)</b>		
# of Reported Labs	80	883
Hgb $<$ 10.0	77.5%	88.7%
Hgb 10.1 - 11.0	16.0%	17.8%
Hgb 11.1 - 12.0	7.5%	7.0%
Hgb $>$ 12.0	0.0%	6.4%
<b>Pre-ESRD Exogenous Erythropoietin (EPO) or Equivalent Received</b>		
EPO	18.4%	8.1%
<b>Calculated Glomerular Filtration Rate (GFR) from Mandatory Reporting</b>		
Incident Patients Only	126	1281
Mean GFR	2.0	2.2
CKD Stage 1 <sup>2</sup> - GFR $\geq$ 90	0.00%	0.00%
CKD Stage 2 <sup>2</sup> - GFR 60 - 89	0.00%	0.00%
CKD Stage 3 <sup>2</sup> - GFR 30 - 59	0.00%	0.34%
CKD Stage 4 <sup>2</sup> - GFR 15 - 29	6.80%	10.33%
CKD Stage 5 <sup>2</sup> - GFR $<$ 15	84.40%	88.34%

Medical Coverage As of Date of First Dialysis				
	Region		Admission	
	N	%	N	%
<b>ESRD Patients</b>	126		1121	
Medicaid	48	38.9%	295	26.3%
Medicare	2	1.6%	23	2.1%
Medicare Advantage	78	62.4%	718	63.9%
Employer Group	12	9.6%	208	18.6%
Other patient category	14	11.2%	231	20.7%
None	3	2.4%	30	2.7%
<b>Primary Cause of Renal Failure (ICD-10)</b>				
Diabetes	71	56.4%	543	48.4%
Hypertension	24	19.1%	427	38.1%
Glomerulonephritis	4	3.2%	40	3.6%
Other	18	14.3%	181	16.3%

Footnote:
<sup>1</sup> May not add to 100% (e.g., rounding, multiple indicators)
<sup>2</sup> CKD = Stages of Chronic Kidney Disease (NIDDK)

# ESRD NETWORK 13 INCIDENT REGIONAL DATA SOUTHEAST

## Arkansas Regional Data Profile

Region	Southeast			
2016 Comparative Analysis: Percent of Incident Patients by Access Used at First Outpatient Dialysis				
	Region		Arkansas	
ESRD Patients <sup>2</sup>	188		1812	
Home Dialysis (HD)	148	95.0%	1078	88.0%
Peritoneal Dialysis	7	4.0%	129	10.0%
Transplant	0	0.0%	7	0.0%
Pre-ESRD Dietitian Interactions				
Yes	1	0.5%	82	4.2%
No	84	41.3%	810	65.0%
Unknown	80	58.1%	260	28.5%



Legend for map:  
 Southeast (Orange)  
 West (Blue)  
 South (Green)  
 North (Yellow)

Incident HD Patient-Specific Numbers by Region				
Access in Use				
AVF	11	7.4%	122	11.3%
AVG	0	0.0%	22	2.0%
Catheter	137	82.6%	823	86.7%
AVF/AVG in Place				
AVF Maturing	13	8.0%	126	11.6%
AVG Maturing	1	0.7%	7	0.7%
Pre-ESRD Neph Care				
Yes	88	44.8%	885	68.2%
No	94	48.2%	277	25.7%
Unknown	68	38.2%	184	18.0%

## Demographics Analysis for Arkansas Dialysis Patients

2016 Incident Patient Demographics <sup>1</sup>				
	Region		Arkansas	
	N	%	N	%
ESRD Patients <sup>2</sup>	188		1812	
Home Dialysis	148	88.0%	1078	88.0%
Peritoneal Dialysis	7	4.8%	129	10.8%
Gender				
Male	79	61.0%	883	86.4%
Female	78	48.0%	629	42.6%
Age				
< 18	0	0.0%	8	0.8%
18 - 44	19	12.3%	185	12.6%
45 - 64	68	37.4%	468	37.6%
65 - 74	41	28.6%	287	27.0%
75 - 84	23	18.7%	219	18.1%
85 +	8	6.9%	28	2.9%
Race				
African-American	101	66.9%	267	22.9%
American-Indian	0	0.0%	8	0.7%
White	64	34.9%	784	64.7%
Other/Mixed Race	0	0.0%	23	1.9%

Current Prevalent Patient Demographics				
	Region		Arkansas	
	N	%	N	%
Patients	864		4882	
Home Dialysis	821	98.9%	2854	88.1%
Peritoneal Dialysis	68	7.7%	781	18.0%
Gender				
Male	220	48.0%	2670	88.0%
Female	245	50.4%	2982	44.0%
Age				
< 18	0	0.0%	40	1.1%
18 - 44	112	16.4%	887	14.4%
45 - 64	208	42.6%	1082	42.0%
65 - 74	180	21.9%	1188	38.0%
75 - 84	100	16.9%	823	13.7%
85 +	16	2.9%	145	2.1%
Race				
African-American	613	76.0%	2120	48.0%
American-Indian	0	0.0%	20	0.9%
White	170	24.9%	2271	61.3%
Other/Mixed Race	1	0.1%	88	2.1%

Incident Data Source: CMS 2728 R-3 Form (ESRD Medical Evidence Report) Medicare Enrollment and/or Part B; Supplemental Form  
 Submitted Through CRO/FFS as available from 6/1/2016 through 12/31/16.

Current Prevalent Analysis Includes 2016 Incident Patients with Initial 2728 submitted to CRO/FFS as of 7/1/2017

Prevalent Data Source: Home Dialysis and Peritoneal Dialysis reports to CRO/FFS as of 7/1/2017

Note:  
<sup>1</sup> May include 0-100% (e.g., rounding, multiple imputation)  
<sup>2</sup> Includes Transplant/Transplant/Transplant/Transplant (as small Per patient values)

# ESRD NETWORK 13 INCIDENT REGIONAL DATA SOUTHEAST



## Reported Incident Patient Clinical Indicators (Laboratory Results)<sup>1</sup>

	Florida	Alabama
<b>Albumin (BCG/BCP)</b>		
# of Reported Lab	89	830
% Pts. w/ Albumin $\geq$ 2.7	30.5%	36.6%
<b>Hemoglobin (Hgb)</b>		
# of Reported Lab	139	771
Hgb $<$ 10.0	86.1%	86.0%
Hgb 10.0 - 11.0	16.1%	16.7%
Hgb 11.1 - 12.0	6.0%	6.7%
Hgb $>$ 12.0	6.8%	6.6%
<b>Pre-ESRD Exogenous Erythropoietin (EPO) or Equivalent Received</b>		
EPO	8.0%	7.8%
<b>Calculated Glomerular Filtration Rate (GFR) from Mandatory Reporting</b>		
Incidents of Patients Daily	186	1212
Mean GFR	6.9	10.1
CKD Stage 1 <sup>2</sup> - GFR $\geq$ 90	0.00%	0.00%
CKD Stage 2 <sup>2</sup> - GFR 60 - 89	0.00%	0.00%
CKD Stage 3 <sup>2</sup> - GFR 30 - 59	0.00%	0.00%
CKD Stage 4 <sup>2</sup> - GFR 15 - 29	7.74%	11.14%
CKD Stage 5 <sup>2</sup> - GFR $<$ 15	82.98%	88.87%

## Medical Coverage As of Date of First Dialysis/Transplant

	Florida		Alabama	
	N	%	N	%
<b>ESRD Patients<sup>3</sup></b>	186		1212	
Medicaid	27	14.5%	282	23.3%
Medicare	4	2.0%	25	2.1%
Medicare Advantage	28	15.1%	782	64.6%
Medicare Advantage	5	2.7%	128	10.6%
Employer Group	21	11.3%	104	8.6%
Other private insurance	25	13.4%	282	23.3%
None	5	2.7%	38	3.1%
<b>Primary Cause of Renal Failure (ICD-10)</b>				
Diabetes	53	28.5%	558	46.0%
Hypertension	60	32.3%	264	21.8%
Glomerulonephritis	1	0.5%	40	3.3%
Other	12	6.3%	292	24.0%

**Key:**

<sup>1</sup> May not add to 100% (e.g., rounding, multiple indicators)

<sup>2</sup> Includes Transplant recipients as Transplant recipients are too small for public release

<sup>3</sup> ESRD<sup>4</sup> Stages of Chronic Kidney Disease (CKD)

# ESRD NETWORK 13 INCIDENT REGIONAL DATA SOUTHEAST

## Arkansas Regional Data Profile

Region	Southeast			
2017 Comparative Analysis: Percent of Incident Patients by Access Used at First Outpatient Dialysis				
	Region		Arkansas	
ESRD Patients	148		1181	
Hemodialysis (HD)	142	97.0%	1062	90.2%
Peritoneal Dialysis	3	2.0%	120	11.7%
Pre-ESRD Dietitian Interactions				
Yes	2	1.3%	88	6.7%
No	83	43.4%	781	63.8%
Unknown	80	55.2%	260	21.3%



Incident HD Patient-Specific Numbers by Region				
Access in Use				
AVF	11	7.7%	127	13.0%
AVG	0	0.0%	22	2.2%
Catheter	131	82.3%	881	84.7%
AVRAVG in Place				
AVF Maturing	11	7.7%	111	10.8%
AVG Maturing	1	0.7%	11	1.0%
Pre-ESRD Neph Care				
Yes	35	45.8%	820	68.0%
No	35	24.0%	294	27.0%
Unknown	42	28.0%	146	14.1%

## Demographics Analysis for Arkansas Dialysis Patients

2017 Incident Patient Demographics <sup>1</sup>				
	Region		Arkansas	
	N	%	N	%
ESRD Patients	145		1181	
Hemodialysis	142	97.9%	1062	90.2%
Peritoneal Dialysis	3	2.1%	120	11.7%
Gender				
Male	78	53.4%	658	55.7%
Female	67	46.6%	523	44.3%
Age				
< 18	0	0.0%	13	1.1%
18 - 44	17	11.7%	162	13.8%
45 - 64	80	54.4%	470	39.8%
65 - 74	42	28.0%	220	17.7%
75 - 84	22	15.2%	183	15.4%
85+	4	2.8%	43	3.6%
Race				
African-American	80	54.4%	405	34.0%
American-Indian	0	0.0%	8	0.6%
White	63	43.6%	767	64.8%
Other/Mixed Race	0	0.0%	22	1.9%

Current Prevalent Patient Demographics				
	Region		Arkansas	
	N	%	N	%
Patients	713		4738	
Hemodialysis	696	97.6%	3836	80.8%
Peritoneal Dialysis	45	6.3%	741	15.6%
Gender				
Male	267	37.5%	2659	56.1%
Female	348	48.8%	2107	44.3%
Age				
< 18	0	0.0%	19	0.4%
18 - 44	103	14.4%	858	18.1%
45 - 64	280	39.3%	2048	43.2%
65 - 74	187	26.3%	1177	24.8%
75 - 84	104	14.6%	880	18.6%
85+	19	2.7%	147	3.1%
Race				
African-American	639	74.2%	2161	45.6%
American-Indian	0	0.0%	29	0.6%
White	162	22.7%	2462	51.8%
Other/Mixed Race	2	0.3%	10	0.2%

Incident Data Source: CMS 322B E-3 Form (ESRD Medical Evidence Report) National Endpoints Audit/Report Single-Region Form  
 Prevalent Data Source: CMS 322B as available from 01/2017 through 12/2017.

County specific Analysis includes 2017 incident patients with initial 3722b submitted to CRO/WRPs as of 02/2018

Prevalent Data Source: Hemodialysis and Peritoneal Dialysis reports to CRO/WRPs as of 02/2018

Map:  
<sup>1</sup> May not add to 100% due to rounding multiple categories

# ESRD NETWORK 13 INCIDENT REGIONAL DATA SOUTHEAST

## Reported Incident Patient Indicators<sup>1</sup>

	Region	Admission
<b>Albumin (BCG/BCP)</b>		
# of Reported Labs	102	829
% Pts. w/ Albumin $\geq$ 2.7	33.3%	34.0%
<b>Hemoglobin (Hgb)</b>		
# of Reported Labs	188	883
Hgb $<$ 10.0	88.7%	88.7%
Hgb 10.1 - 11.0	30.8%	17.8%
Hgb 11.1 - 12.0	7.9%	7.0%
Hgb $>$ 12.0	4.8%	8.4%
<b>Pre-ESRD Exogenous Erythropoietin (EPO) or Equivalent Received</b>		
EPO	7.8%	8.1%
<b>Calculated Glomerular Filtration Rate (GFR) from Mandatory Reporting</b>		
Incident Patients Only	148	1281
Mean GFR	10.2	9.9
CKD Stage 1 <sup>2</sup> - GFR $\geq$ 90	0.00%	0.00%
CKD Stage 2 <sup>2</sup> - GFR 60 - 89	0.00%	0.00%
CKD Stage 3 <sup>2</sup> - GFR 30 - 59	0.00%	0.34%
CKD Stage 4 <sup>2</sup> - GFR 15 - 29	18.10%	10.33%
CKD Stage 5 <sup>2</sup> - GFR $<$ 15	81.90%	89.34%

Medical Coverage As of Date of First Dialysis				
	Region		Admission	
	N	%	N	%
<b>ESRD Patients</b>	148		1121	
Medicaid	20	13.5%	295	26.3%
Medicare	2	1.4%	23	2.1%
Medicare Advantage	80	54.1%	718	64.3%
Employer Group	17	11.5%	208	18.6%
Other patient category	17	11.5%	231	20.7%
None	3	2.1%	30	2.7%
<b>Primary Cause of Renal Failure (ICD-10)</b>				
Diabetes	53	36.0%	543	48.3%
Hypertension	75	51.0%	427	38.1%
Glomerulonephritis	5	3.4%	40	3.6%
Other	12	8.2%	181	16.3%

Footnote:
<sup>1</sup> May not add to 100% (e.g., rounding, multiple indicators)
<sup>2</sup> CKD = Stages of Chronic Kidney Disease (NIDDK)



# ARCKDAC CMS SUBMISSION ON ANEMIA

**Agency:** Centers for Medicare Medicaid Services (CMS)

**Document Type:** Rulemaking

**Title: Medicare Program:** *End-Stage Renal Disease Prospective Payment System, Payment for Renal Dialysis Services Furnished to Individuals with Acute Kidney Injury, End-Stage Renal Disease Quality Incentive Program, Durable Medical Equipment, Prosthetics, Orthotics and Supplies Competitive Bidding Program and Fee Schedule Amounts, etc.*

**Document ID:** CMS-2018-0079-0002

**Comment:**

Thank you for the opportunity to respond to the new proposed rule. Even though the ESRD QIP measure of anemia may not be alignment with the Meaningful Measures Initiative proposed measures for quality in ESRD, the Anemia measures are helpful as regional and state measures for comparing and contrasting pre-ESRD care and development of initiatives that can improve clinical outcomes for people in earlier stages of CKD. We ask that you continue collecting the data for both the hemoglobin value and if the patient received pre-ESRD anemia treatment. They are items 18a and 19c on the ESRD 2728 form. It would be even more helpful if instead of ending reporting the lowest hemoglobin category at "< 10", reporting continued for each level down to < 7 for example add 9.0-9.9, 8.0-8.9, 7.0-7.9 and <7. This would give us a better idea of how severe pre-ESRD anemia truly is. It would not change the actual ESRD 2728 form which includes space for the hemoglobin value but it would allow the gathering of the expanded ranges for ESRD Network reporting. In 2016, only 7.9% of the 1212 incident ESRD population in AR received pre-ESRD Exogenous Erythropoietin (EPO). One may assume that it would be because hemoglobin levels were good, but they would be wrong. Sixty nine (69) percent had hemoglobin levels below 10. The 2017 data shows little improvement. Though 9.1% of the 1191 incident patients received pre-ESRD EPO, hemoglobin levels below 10 remained at 69.7%. This is AR data, national data is also poor for these measures.

If almost 70% of the AR incident ESRD population had a hemoglobin below 10, why did less than 10% get treatment? Why is this important? Most patients with CKD die of cardiovascular disease which starts years before they reach ESRD. Of those that live to reach stage 5, about 75% have left ventricular hypertrophy (LVH) at the time they start dialysis. Correction of CKD related anemia can improve cardiovascular health and decrease LVH, as well as, improve quality of life since raising the hemoglobin increases oxygen carrying capacity. Recent analysis of DOPPS data reported at the 55th European Renal Association-European Dialysis and Transplant Association congress in Denmark this May comparing patients with versus without anemia (hemoglobin<10) prior to starting hemodialysis (HD) were more likely to die despite achieving target hemoglobin levels (>10) by month 4 after HD initiation. In adjusted analysis, each 1% g/dL increase in hemoglobin was associated with a significant 11% decrease risk of first year mortality. Though many factors may impact this including access to care and overall clinical status, maintaining a hemoglobin in the 10-11.5 range using low dose Erythropoietic stimulating agents (ESAs) should be a reasonable goal for patients with CKD stage 3b-5. And CMS seems to agree with this. CMS reimbursement for ESAs since the 1990s has provided coverage for patients with a hemoglobin <10, creatinine more than 2 (or eGFR less than 45) and symptoms of anemia. The problem is deeper than money because funding is available. Only 3.1% of incident Arkansans had no insurance. Access to care, systems of care, under appreciation of CKD and the recognition that early CKD education and treatment can prevent or slow CKD progression are a few of the issues.

# ARCKDAC CMS SUBMISSION ON ANEMIA

The University of Arkansas for Medical Sciences (UAMS) in collaboration with the AR Health Department (AHD) established the AR CKD Advisory Committee (ARCKDAD) in February 2018. Other stakeholders include AR Foundation for Medical Care and the UAMS/Baptist Health Affordable Care Alliance. Attached are the slides reporting results for the initial 6 months and expectations for the rest of 2018. As you can see, slides 5-11 discuss the first of 4 projects, ESRD Incident Data Analysis. The executive director of Network 13 serves on the committee as a mentor and provides incident data by each of the AHD's five regions annually. The data being gathered from each of the projects will be compiled into "The State of CKD in Arkansas" report. Work groups from each of the 5 AHD regions can use the report to identify areas of concern for their region and develop action plans to address them. Education programs targeting patients with CKD Stages 3b through 5 will be available state wide in early 2019 encouraging patients to be proactive members of their health care team including asking for anemia care when their hemoglobin falls below 10. Provider education has already started and will continue.

Anemia is a modifiable risk factor that already has funding and treatment has the potential to improve clinical outcomes. There is much room for improvement in this area. Continuing to get annual anemia statistics through Network 13 will enable us to track our progress and improve our systems of care. Please continue to collect and report the data for us and for other states working to improve pre-ESRD care and outcomes.

# USRDS ARKANSAS COST DATA FOR 2015

**Table K.b.4 (supplement)**

**Medicare spending (\$) per person per year: Arkansas (model 1)**

2015 period prevalent patients, as-treated model: Medicare primary payer only

	All ESRD	All Dialysis	Hemodialysis	CAPD/ CCPD	Other Dialysis	Transplant
<b>Patients</b>	4,664	3,969	3,421	752	7	775
<b>Patient years at risk</b>	3,843	3,156	2,634	522	0	687
<b>Total Medicare (\$)</b>	67,297	76,022	77,942	66,290	152,541	27,202
<b>Total Inpatient (\$)</b>	19,252	21,226	21,473	19,953	71,147	10,180

<b>Total Inpatient (\$)</b>	<b>19,252</b>	<b>21,226</b>	<b>21,473</b>	<b>19,953</b>	<b>71,147</b>	<b>10,180</b>
Medical DRG	9,240	10,381	10,601	9,241	*	3,996
Surgical DRG	7,220	7,988	8,148	7,180	.	3,691
Other DRG	274	291	312	*	.	*
Rehab admission	1,572	1,778	1,742	1,959	.	624
Transplant DRG	408	226	96	*	.	1,247
Non-Transplant pass-throughs	520	554	567	492	*	364
Transplant pass-throughs	18	8	6	*	.	62

<b>Total Outpatient (\$)</b>	<b>26,982</b>	<b>32,234</b>	<b>32,499</b>	<b>30,893</b>	<b>34,919</b>	<b>2,849</b>
Outpatient hemodialysis	17,912	21,808	26,064	344	*	*
Outpatient peritoneal dialysis	3,782	4,605	71	27,479	.	.
Outpatient other dialysis	11	14	15	*	*	.
Outpatient ESAs	7	6	5	*	*	.
Outpatient Vitamin D	.	.	.	.	.	.
Outpatient Iron	*	*	*	*	.	.
Outpatient other injectables	337	339	402	21	.	327
Radiology	374	402	429	268	*	246
Pharmacy	135	161	165	141	*	15
Ambulance	63	69	75	37	.	35
Laboratory / pathology	211	134	137	116	*	568
Other OP	4,150	4,696	5,135	2,473	*	1,642



# USRDS ARKANSAS COST DATA FOR 2015

	All ESRD	All Dialysis	Hemodialysis	CAPD/ CCPD	Other Dialysis	Transplant
Skilled nursing facility	1,955	2,256	2,553	758	.	575
Home health agency	1,109	1,244	1,310	915	.	487
Hospice	228	244	235	287	.	*
<b>Total Physician/ supplier (\$)</b>	10,098	10,456	11,130	7,040	44,634	8,450
Transplant surgery	43	5	4	*	*	215
Inpatient surgery	311	326	330	306	*	243
Outpatient surgery	744	805	870	476	*	467
E&M nephrologist IP	410	456	468	393	*	200
E&M nephrologist OP	57	26	19	58	.	204
E&M non-nephrology IP	1,142	1,263	1,329	931	*	583
E&M non-nephrology OP	722	745	767	633	*	619
Dialysis capitation	1,714	2,087	2,146	1,791	*	*
Inpatient dialysis	161	195	187	233	*	6
Home dialysis	5	5	*	27	.	.
Vascular access	925	119	1,314	135	*	32
Peritoneal access	10	10	8	22	.	6
Physician/Supplier ESA	23	20	22	*	.	38
Physician/Supplier iron	*	*	*	.	.	*
Immunosuppressive drugs	479	4	4	*	.	2,663
Durable medical equipment	278	304	314	250	.	161
Physician/Supplier radiology	247	260	273	193	*	186
Physician/Supplier lab & path	325	261	265	245	*	616
Physician/Supplier ambulance	1,091	1,283	1,463	374	*	210
Other Physician/Supplier	1,409	1,281	1,347	946	*	1,999
Part D	7,673	8,362	8,743	6,444	*	4,508

# USRDS ARKANSAS COST DATA FOR 2016

**Table K.b.4 (supplement)**

**Medicare spending (\$) per person per year: Arkansas (model 1)**

2015 period prevalent patients, as-treated model: Medicare primary payer only

	All ESRD	All Dialysis	Hemodialysis	CAPD/ CCPD	Other Dialysis	Transplant
<b>Patients</b>	4,786	4,117	3,562	773	22	757
<b>Patient years at risk</b>	3,843	3,156	2,634	522	0	687
<b>Total Medicare (\$)</b>	3,973	3,300	2,745	552	3	673
<b>Total Inpatient (\$)</b>	70,345	79,136	81,306	68,171	117,552	27,194

<b>Total Inpatient (\$)</b>	<b>20,621</b>	<b>22,728</b>	<b>23,266</b>	<b>19,819</b>	<b>73,192</b>	<b>10,278</b>
Medical DRG	9,169	10,133	10,410	8,638	*	4,435
Surgical DRG	7,962	8,939	9,008	8,559	*	3,168
Other DRG	576	654	754	*	.	*
Rehab admission	1,956	2,243	2,390	1,441	*	550
Transplant DRG	394	199	125	*	.	1,352
Non-Transplant pass-throughs	539	548	568	430	*	493
Transplant pass-throughs	25	12	9	*	.	88

<b>Total Outpatient (\$)</b>	<b>27,271</b>	<b>32,175</b>	<b>32,441</b>	<b>30,912</b>	<b>19,700</b>	<b>3,207</b>
Outpatient hemodialysis	18,007	21,677	25,944	528	*	.
Outpatient other dialysis	3	4	4	.	*	.
Outpatient other injectables	229	208	245	17	*	332
Radiology	386	399	428	253	*	322
Pharmacy	219	253	274	150	*	49
Ambulance	67	74	81	41	.	33
Laboratory/pathology	188	105	105	104	*	591
Other OP	4,385	4,896	5,299	2,885	0	1,874
Skilled nursing facility	2,165	2,433	2,723	998	*	848
Home health agency	1,166	1,303	1,396	842	*	497
Hospice	217	242	231	295	.	99

# USRDS ARKANSAS COST DATA FOR 2016

	All ESRD	All Dialysis	Hemodialysis	CAPD/ CCPD	Other Dialysis	Transplant
<b>Total Physician/ supplier (\$)</b>	10,243	10,658	11,250	7,674	19,389	8,201
Transplant surgery	50	10	8	*	*	243
Inpatient surgery	334	346	359	283	*	275
Outpatient surgery	736	761	803	550	*	613
E&M nephrologist IP	416	462	481	364	*	189
E&M nephrologist OP	50	20	16	42	*	195
E&M non- nephrology IP	1,265	1,416	1,489	1,037	4,832	527
E&M non- nephrology OP	749	776	793	691	*	617
Dialysis capitation	1,685	2,028	2,074	1,807	*	*
Inpatient dialysis	163	195	191	216	*	5
Home dialysis	5	5	2	24	.	.
Vascular access	945	1,131	1,321	188	*	34
Peritoneal access	13	14	9	39	.	11
Physician/Supplier ESA	25	20	21	*	.	45
Physician/Supplier iron	*	*	*	.	.	*
Immunosuppressive drugs	397	8	7	*	*	2,306
Durable medical equipment	199	213	220	182	*	127
Physician/Supplier radiology	247	256	262	223	577	204
Physician/Supplier lab & path	315	260	252	295	*	587
Physician/Supplier ambulance	1,160	1,354	1,550	376	*	207
Other Physician/ Supplier	1,488	1,381	1,393	1,319	2,218	2,010
<b>Part D</b>	8,662	9,598	9,999	7,632	3,325	4,065

# USRDS HEALTHY PEOPLE 2020 OBJECTIVES

USRDS HEALTHY PEOPLE 2020 OBJECTIVES			
Objective	Indicator * Arkansas 2020 objective	Target	Reported 2018
CKD-1	* Reduce the proportion of the U.S. population with chronic kidney disease	13.30%	15%
CKD-2	* Increase the proportion of persons with chronic kidney disease (CKD) who know they have impaired renal function	13.40%	10.00%
CKD-3	* Increase the proportion of hospital patients who incurred acute kidney injury who have follow-up renal evaluation in 6 months post discharge	12.30%	17.60%
CKD-4 Increase the proportion of persons with diabetes and chronic kidney disease who receive recommended medical evaluation	* 4.2 Increase the proportion of persons with type 1 or type 2 diabetes and chronic kidney disease who receive medical evaluation with serum creatinine, microalbuminuria, HbA1c, lipids, and eye examinations	25.30%	30.70%
	* Increase the proportion of persons with diabetes and chronic kidney disease who receive recommended medical treatment with angiotensin-converting enzyme (ACE) inhibitors or angiotensin II receptor blockers (ARBs)	74.10%	71.40%
CKD-5	* Increase the proportion of persons with diabetes and chronic kidney disease who receive recommended medical treatment with angiotensin-converting enzyme (ACE) inhibitors or angiotensin II receptor blockers (ARBs)	17.60%	
CKD-6	* 6.1 Reduce the proportion of persons with chronic kidney disease who have elevated blood pressure	25.60%	
CKD-7	* Reduce the number of deaths among persons with chronic kidney disease	Not applicable	
CKD-8	* Reduce the number of new cases of end-stage renal disease (ESRD)	352.1 PMP	358.10%
CKD-9 Reduce kidney failure due to diabetes	* 9.1 Reduce kidney failure due to diabetes	154.4 PMP	166.30%
	* 9.2 Reduce kidney failure due to diabetes among persons with diabetes	2,352.7 PMP	2412.00%
CKD-10	Increase the proportion of chronic kidney disease patients receiving care from a nephrologist at least 12 months before the start of renal replacement therapy	30.00%	36.80%

# USRDS HEALTHY PEOPLE 2020 OBJECTIVES

<b>CKD-11 Improve vascular access for hemodialysis patients</b>	11.1 Increase the proportion of adult hemodialysis patients who use arteriovenous fistulas as the primary mode of vascular access	50.60%	64.10%
	11.2 Reduce the proportion of adult hemodialysis patients who use catheters as the only mode of vascular access	26.10%	15.90%
	11.3 Increase the proportion of adult hemodialysis patients who use arteriovenous fistulas or have a maturing fistula as the primary mode of vascular access at the start of renal replacement therapy	34.80%	34.90%
<b>CKD-12</b>	Increase the proportion of dialysis patients waitlisted and/or receiving a deceased donor kidney transplant within 1 year of end-stage renal disease (ESRD) start (among patients under 70 years of age)	18.70%	15.80%
<b>CKD-13 Increase the proportion of patients with treated chronic kidney failure who receive a transplant</b>	13.1 Increase the proportion of patients receiving a kidney transplant within 3 years of end-stage renal disease (ESRD)	20.10%	12.70%
	13.2 Increase the proportion of patients who receive a preemptive transplant at the start of ESRD	Not applicable	4.00%
<b>CKD-14 Reduce deaths in persons with end-stage renal disease (ESRD)</b>	* 14.1 Reduce the total number of deaths for persons on dialysis	187.3 per 1,000 patient-years	173.1 per 1,000 patient-years
	* 14.2 Reduce the number of deaths in dialysis patients within the first 3 months of initiation of renal replacement therapy	335.0 per 1,000 patient-years	291.3 per 1,000 patient-years
	* 14.3 Reduce the number of cardiovascular deaths for persons on dialysis	81.3 per 1,000 patient-years	67.2 per 1,000 patient-years
	* 14.4 Reduce the total number of deaths for persons with a functioning kidney transplant	27.8 per 1,000 patient-years	33.2 per 1,000 patient-years
	* 14.5 Reduce the number of cardiovascular deaths in persons with a functioning kidney transplant	4.5 per 1,000 patient-years	2.6 per 1,000 patient-years

# ONLINE RESOURCES

This is a list of web based sites that you may find helpful. There are many more, but these can get you started. Advice from your health care team is your most important resource since they know you and know what's available in your area. They can explain how what you've learned applies to you. If you find another site that you feel is very helpful, please share it with us and we will add it to the list for others to check out.

Understanding CKD	Comments
<a href="http://www.rsnhope.org/">http://www.rsnhope.org/</a>	Renal Support Network Org.
<a href="http://nkdep.nih.gov/">http://nkdep.nih.gov/</a>	National Health Inst. - Kidney Disease
<a href="https://www.kidney.org/atoz/content/about-chronic-kidney-">https://www.kidney.org/atoz/content/about-chronic-kidney-</a>	National Kidney Foundation
<a href="http://www.davita.com/kidney-disease">http://www.davita.com/kidney-disease</a>	Davita Inc. Renal Division
<a href="https://www.kidneyfund.org/kidney-disease/">https://www.kidneyfund.org/kidney-disease/</a>	American Kidney Fund
<a href="https://kidneycarepartners.com/kidney-care-first/">https://kidneycarepartners.com/kidney-care-first/</a>	Improving Renal Disease Support
<a href="https://lifeoptions.org/learn-about-kidney-disease/">https://lifeoptions.org/learn-about-kidney-disease/</a>	Life Options Org.
<a href="http://www.knowyourkidneynumber.uams.com">http://www.knowyourkidneynumber.uams.com</a>	UAMS / ARCKD Advisory Council
<a href="http://www.pdempowers.com">http://www.pdempowers.com</a>	Baxter Inc.
<a href="https://www.pdempowers.com/patients/what-is-ckd">https://www.pdempowers.com/patients/what-is-ckd</a>	Baxter Inc.
Tools	Comments
<a href="https://www.kidney.org/professionals/kdoqi/gfr_calculator">https://www.kidney.org/professionals/kdoqi/gfr_calculator</a>	eGFR Calculator
<a href="https://www.davita.com/tools/kidney-disease-quiz">https://www.davita.com/tools/kidney-disease-quiz</a>	Kidney Disease Risk Quiz
<a href="https://www.davita.com/diet-nutrition/food-analyzer">https://www.davita.com/diet-nutrition/food-analyzer</a>	Food Nutrient Info
<a href="https://homedialysis.org/documents/ModalityComparison.pd">https://homedialysis.org/documents/ModalityComparison.pd</a>	Compares PD Treatments/Pros & Cons
Forums	Comments
<a href="http://www.kidney.org/patients/peers/">http://www.kidney.org/patients/peers/</a>	Patient and Family Support
<a href="http://ihatedialysis.com/forum/">http://ihatedialysis.com/forum/</a>	Patient and Family Support
<a href="https://forums.homedialysis.org/c/ask-our-experts/7">https://forums.homedialysis.org/c/ask-our-experts/7</a>	Ask an Expert
Emergency Prep	Comments
<a href="http://www.uptodate.com/contents/chronic-kidney-disease-beyond-the-basics">http://www.uptodate.com/contents/chronic-kidney-disease-beyond-the-basics</a>	Plan for severe events. What to do in case of emergencies.
Diet	Comments
<a href="http://niddk.nih.gov/health-information/kidney-disease/chronic-kidney-disease-ckd/eating-nutrition">http://niddk.nih.gov/health-information/kidney-disease/chronic-kidney-disease-ckd/eating-nutrition</a>	How to Manage your Diet
<a href="https://www.davita.com/diet-nutrition">https://www.davita.com/diet-nutrition</a>	Helpful Nutrition Information
<a href="https://nephcure.org/livingwithkidneydisease/diet-and-nutrition/renal-diet/">https://nephcure.org/livingwithkidneydisease/diet-and-nutrition/renal-diet/</a>	Kidney Friendly Diet Recommendations
Travel	Comments
<a href="http://www.kidney.org/atoz/content/traveltip.cfm">http://www.kidney.org/atoz/content/traveltip.cfm</a>	Travel tips for CKD patients
<a href="http://sath.org/how-to-travel-with-a-kidney-disease">http://sath.org/how-to-travel-with-a-kidney-disease</a>	Traveling with CKD

# CKD CARE CHECKLIST FOR PRIMARY PROVIDER

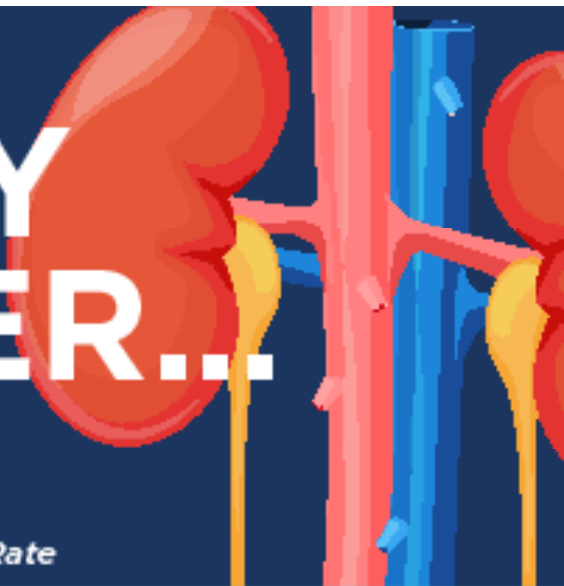
In order to provide the best possible medical care for a Chronic Kidney Disease patient, the Arkansas Chronic Kidney Disease Advisory Committee developed key measures that can improve kidney health. The 10 steps for primary provider, listed below are to help in management of CKD patients. Rationale for these is given along with for your consideration.

- Attain the blood pressure goal around 120/80. (In select patients with multiple medical conditions, a blood pressure tailored to the patient is best.)
- Attaining proteinuria goal of <500 mg daily (RAAS: Renin Angiotensin Aldosterone System – blockade: Ace Inhibitors, Angiotensin receptor blockers, (can also use non-dihydropyridine CCB Calcium channel blockers (Verapamil, Cardizem) MRA( mineralocorticoid receptor blockers)
- Diabetes control to HbA1c of 7% (equivalent to an average blood glucose of 155 mg/dL) Consider SGLT2
- Correction of metabolic acidosis to serum bicarb of about 22 (get a venous/arterial blood gas at least once prior to initiating therapy) in established CKD patients.
- Referral to a nephrologist at CKD stage 3b (eGFR <45 mL/min/1.73m<sup>2</sup>) or if proteinuria is >300mg daily, for co-managed care.
- Age-appropriate vaccinations and cancer screening.
- Have lab calculate eGFR for your patients and obtain a renal panel once a year.
- Diet modifications for salt restriction 2gm daily, and based on kidney function by stage potassium and phosphorous restriction. In late stages of chronic kidney disease you consider protein restriction to 0.8 mg per kg per day.
- Smoking cessation/tobacco advice and referral for management
- Medication reconciliation for dose adjustment if needed based on kidney function and avoidance of medications such as NSAIDs that could cause further loss of kidney function and/or acute exacerbations of kidney injury.  
Include a statin if indicated. Consider SGLT2 inhibitor use early.

# KNOW YOUR KIDNEY NUMBER POSTER: ARKANSAS DATA

## KNOW YOUR KIDNEY NUMBER... eGFR\*

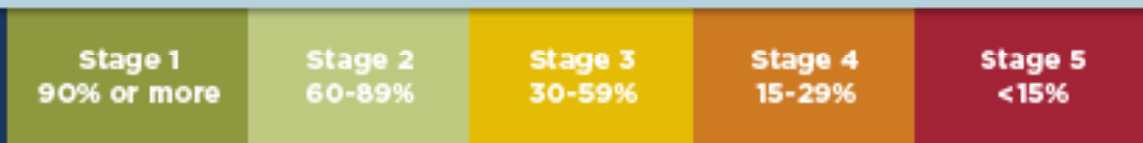
\*estimated Glomerular Filtration Rate



- Almost 350,000 adult Arkansans have Chronic Kidney Disease (CKD).
- And over 312,000 of them (9 out of 10) don't know they have it!
- A common lab test (eGFR) shows how much (%) of your kidneys are working.
- CKD related damage starts long before you have symptoms.
- Getting better is possible!

Learn what to do to protect your kidneys and slow CKD progression.

### % of Normal Kidney Function



Could Be Normal For Age

There are no specific symptoms, but kidney function can slowly decline.

Kidney function is very low and treatment for kidney failure may be needed soon.

Kidneys can no longer keep up with removing waste products and extra water. This is called kidney failure. Although there is no cure, treatment options are available.

## Talk with your health care team:

If you have Diabetes or High Blood Pressure ask about your kidneys.

Ask what's my kidney number (eGFR\*).

Ask what you can do to help your kidneys get better.





# KNOW YOUR KIDNEY NUMBER POSTER: NATIONAL DATA

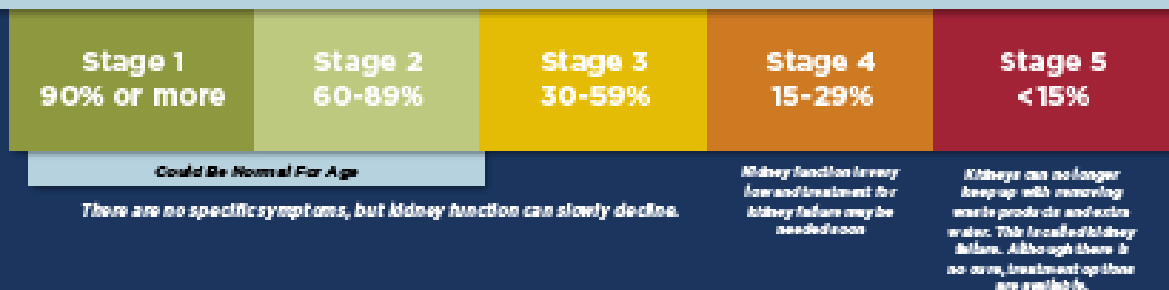
## KNOW YOUR KIDNEY NUMBER... eGFR\*

\*estimated Glomerular Filtration Rate

- Over 38 million adults in the US have Chronic Kidney Disease (CKD).
- And over 34 million of them (9 out of 10) don't know they have it!
- A common lab test (eGFR) shows how much (%) of your kidneys are working.
- CKD related damage starts long before you have symptoms.
- Getting better is possible!

Learn what to do to protect your kidneys and slow CKD progression.

### % of Normal Kidney Function



### Talk with your health care team:

If you have Diabetes or High Blood Pressure ask about your kidneys.

Ask what's my kidney number (eGFR\*).

Ask what you can do to help your kidneys get better.



# KNOW YOUR KIDNEY NUMBER POSTER: GENERIC DATA

## KNOW YOUR KIDNEY NUMBER... eGFR



### What is my "kidney number"?

- Your kidney number tells you how well your kidneys are **working**. Your kidney number is your eGFR (estimated Glomerular Filtration Rate).
- Think of your eGFR as the percent (%) of waste your kidneys are able to filter.
- If your kidneys are filtering well, your kidney number (eGFR) will be 60% or more.
- **If your eGFR is less than 60% for 3 months, you may have chronic kidney disease (CKD) .**

### Why does my kidney number matter?

- It's an early sign that you may have **chronic kidney disease (CKD)**. Most people with CKD don't have any signs until late in the disease.
- **Diabetes or high blood pressure can cause CKD**, if you have one or both of these, it's important to know if your kidneys are being damaged.
- If you make positive changes, you can protect your kidneys and improve how they work.

### How do I find out what my kidney number (eGFR) is?

- First, you will need a blood test to check your creatinine. The lab will use your creatinine levels along with your age, race, and sex to estimate your eGFR.
- Ask your provider or check your lab results to find your eGFR.

### What should I do if my kidney number is less than 60?

- Talk to your provider about why your kidney number (eGFR) is low.
- Ask them what you can do to slow down or improve your CKD.
- CKD education classes are available to help you learn about CKD, how to protect your kidneys and what your options are.

**60% and Above**

*Could be normal depending on age.*

**30-59%**

*There are no specific symptoms, but kidney function can slowly decline.*

**15-29%**

*Kidney functions very low and treatment for kidney failure may be needed soon*

**<15%**

*Kidneys can no longer keep up with removing waste products and extra water. This is called kidney failure. Although there is no cure, treatment options are available.*



# ASN/NKF LETTER REGARDING CHANGES IN EGFR EQUATION



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## Removing Race from Estimates of Kidney Function: What Happens Next?

**Washington, DC (April 9, 2021)** — The American Society of Nephrology (ASN) and the National Kidney Foundation (NKF) announce the concurrent publication of "Special Article: Reassessing the Inclusion of Race in Diagnosing Kidney Diseases: An Interim Report from the NKF-ASN Task Force" in the [Journal of the American Society of Nephrology \(JASN\)](#) and the [American Journal of Kidney Diseases \(AJKD\)](#).

The publication in JASN and AJKD provides an essential review of the many challenges relative to identifying and implementing alternative methods to diagnosing kidney diseases. Last month, [ASN and NKF asserted that race modifiers](#) should not be included in equations used to estimate kidney function. ASN and NKF also stated that current race-based equations should be replaced by a substitute that is accurate, representative, unbiased, and provides a standardized approach to diagnosing kidney diseases.

In its final report, the task force will recommend the best approach to replace the existing equations for estimating kidney function. As a result, the interim report is the second in a three-step process: 1) agree to replace race-based equations; 2) review the many challenges relative to identifying and implementing alternative methods; and 3) recommend the best approach for replacing existing equations) to accomplishing the goal NKF and ASN established in July 2020 "to examine the inclusion of race in the estimation of GFR and its implications for the diagnosis and subsequent management of patients with, or at risk for, kidney diseases."

NKF and ASN urge institutions not to make any changes to how they estimate kidney function until the task force provides its recommendation for the best approach to replace the existing equations for estimating kidney function. The task force plans to include these recommendations in its final report, which is currently being drafted based on considerable input from patients, trainees, health professionals, and other stakeholders. ASN and NKF commend the task force for its thoughtfulness, thoroughness, time, and effort. Both the interim and final reports will guide the kidney community in developing an evidence-based guideline for practice.

# END STATE RENAL DISEASE FORM

## A Unifying Approach for GFR Estimation: Recommendations of the NKF-ASN Task Force on Reassessing the Inclusion of Race in Diagnosing Kidney Disease



**Recommend immediate implementation of the *CKD-EPI creatinine equation refit without the race variable* in all laboratories in the U.S.**

*The equation refit excludes race in the calculation and reporting, includes diversity in its development, is immediately available to all labs in the U.S., and has acceptable performance characteristics and potential consequences that do not disproportionately affect any one group of individuals.*



**Recommend national efforts to facilitate increased, routine, and timely use of cystatin C, especially to confirm eGFR in clinical decision-making**



**Encourage and fund research on GFR estimation with new endogenous filtration markers and on interventions to eliminate racial and ethnic disparities**



**The Task Force gathered input from diverse stakeholders and carefully reviewed the evidence to create these recommendations**

Cynthia Delgado, Múta Bawaja, Deidra C. Crews, et al. A Unifying Approach for GFR Estimation: Recommendations of the NKF-ASN Task Force on Reassessing the Inclusion of Race in Diagnosing Kidney Disease. *AJKD* DOI: 10.1053/j.ajkd.2021.08.033, *JASN* DOI: 10.1681/ASN.2021070988

Visual Graphic by Edgar Lema, MD, FASN



Prognosis of CKD by GFR and albuminuria categories: KDIGO 2012

				Persistent albuminuria categories		
				Description and range		
				A1	A2	A3
				Normal to mildly increased < 30 mg/g < 3 mg/mmol	Moderately increased 30-300 mg/g 3-30 mg/mmol	Severely increased > 300 mg/g > 30 mg/mmol
GFR categories (ml/min/1.73 m <sup>2</sup> ) Description and range	G1	Normal or high	≥ 90			
	G2	Mildly decreased	60-89			
	G3a	Mildly to moderately decreased	45-59			
	G3b	Moderately to severely decreased	30-44			
	G4	Severely decreased	15-29			
	G5	Kidney failure	< 15			

**Green, low risk (if no other markers of kidney disease, no CKD); yellow, moderately increased risk; orange, high risk; red, very high risk.**



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