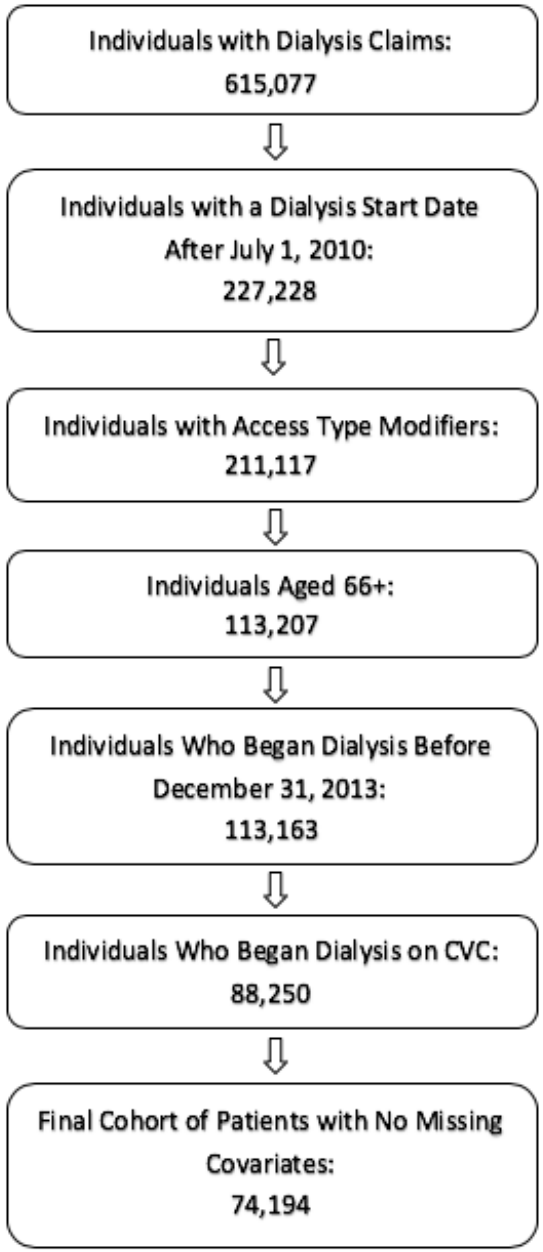
SUPPLEMENTAL MATERIAL TABLE OF CONTENTS

Supplemental Figure 1. Cohort creation.



Supplemental Table 1. Mean and median number of days to transition off central venous catheter (CVC) stratified by the presence or absence of a maturing AVF or AVG at the time of hemodialysis (HD) initiation.

Category	Access Status at HD Initiation	N	Mean Days on CVC	Std Dev	Median Days on CVC
White	No maturing access	36671	213.9	209.4	154
	AVF maturing	10235	196.2	217.4	122
	AVG maturing	1268	179.2	217.3	95
Black	No maturing access	10940	246.8	229.9	177
	AVF maturing	3227	235.6	250.2	143
	AVG maturing	728.	222.7	252.2	114
Hispanic	No maturing access	5539	240.3	220.4	176
	AVF maturing	1581	233.0	249.4	142
	AVG maturing	240	203.1	246.4	106
Other Race	No maturing access	2672	237.3	224.2	171
	AVF maturing	929	220.8	246.4	134
	AVG maturing	164	199.5	266.8	93
Male	No maturing access	29186	215.7	210.2	156
	AVF maturing	8864	200.5	226.8	121
	AVG maturing	1082	189.3	223.5	102
Female	No maturing access	26636	233.4	221.5	168
	AVF maturing	7108	220.2	233.5	138
	AVG maturing	1318	201.8	244.9	100
Overall	No maturing access	55822	224.1	215.8	162
	AVF maturing	15972	209.3	230.0	128
	AVG maturing	2400	196.2	235.5	100

Supplemental Table 2. Complete competing risks models reporting all covariates.

	Overall						Male						Female					
	Fistula		Graft		Fistula or Graft		Fistula		Graft		Fistula or Graft		Fistula		Graft		Fistula or Graft	
Parameter	**HR**	**P-value**	**HR**	**P-value**	**HR**	**P-value**	**HR**	**P-value**	**HR**	**P-value**	**HR**	**P-value**	**HR**	**P-value**	**HR**	**P-value**	**HR**	**P-value**
Race (Reference: White)																		
Black	0.88	<0.01	1.80	<0.01	1.13	<0.01	0.88	<0.01	1.97	<0.01	1.10	<0.01	0.89	<0.01	1.69	<0.01	1.16	<0.01
Hispanic	1.17	<0.01	1.06	0.19	1.15	<0.01	1.17	<0.01	1.01	0.85	1.14	<0.01	1.17	<0.01	1.09	0.13	1.16	<0.01
Other Race	1.23	<0.01	1.39	<0.01	1.33	<0.01	1.18	<0.01	1.61	<0.01	1.32	<0.01	1.29	<0.01	1.25	0.00	1.34	<0.01
Female (Reference: Male)	0.81	<0.01	1.48	<0.01	0.96	<0.01												
BMI (Reference: Normal)																		
Underweight	0.84	<0.01	1.00	0.98	0.88	<0.01	0.85	0.00	1.07	0.41	0.89	0.00	0.84	0.00	0.99	0.85	0.87	0.00
Overweight	1.10	<0.01	0.97	0.21	1.07	<0.01	1.12	<0.01	0.89	0.00	1.06	0.00	1.08	0.00	1.05	0.18	1.08	0.00
Obese	1.17	<0.01	0.95	0.04	1.11	<0.01	1.19	<0.01	0.87	0.00	1.12	<0.01	1.13	<0.01	1.01	0.87	1.10	<0.01
Age (Reference: 66-70)																		
Age 71-75	0.96	0.01	1.06	0.05	0.99	0.38	0.97	0.11	1.10	0.04	1.00	0.89	0.95	0.03	1.04	0.31	0.97	0.22
Age 76-80	0.91	<0.01	1.13	<0.01	0.97	0.03	0.92	0.00	1.21	0.00	0.98	0.34	0.89	<0.01	1.10	0.03	0.95	0.03
Age 81+	0.77	<0.01	1.15	<0.01	0.86	<0.01	0.78	<0.01	1.35	<0.01	0.89	<0.01	0.76	<0.01	1.04	0.38	0.83	<0.01
Peripheral Vascular Disease (Reference: No)	0.94	0.00	1.04	0.24	0.96	0.00	0.95	0.01	1.08	0.09	0.97	0.15	0.93	0.01	1.01	0.86	0.94	0.01
Atherosclerotic Heart Disease (Reference: No)	1.02	0.23	0.98	0.39	1.01	0.48	1.03	0.20	0.97	0.38	1.01	0.43	1.01	0.68	0.99	0.75	1.00	0.88
Congestive Heart Failure (Reference: No)	0.91	<0.01	0.96	0.10	0.91	<0.01	0.91	<0.01	0.95	0.15	0.91	<0.01	0.92	<0.01	0.97	0.36	0.92	<0.01
Other Cardiac Disease (Reference: No)	0.93	<0.01	0.98	0.34	0.93	<0.01	0.93	<0.01	0.99	0.73	0.93	<0.01	0.94	0.00	0.97	0.39	0.94	0.00

Diabetes (Reference: No)	1.06	<0.01	1.04	0.07	1.07	<0.01	1.04	0.01	1.03	0.48	1.05	0.00	1.09	<0.01	1.05	0.08	1.10	<0.01
Serum Creatinine (Reference: Normal)	0.99	0.01	1.00	0.21	0.99	0.01	0.98	0.00	1.01	0.30	0.99	0.01	0.99	0.22	1.00	0.91	0.99	0.11
Glomerular Filtration Rate (Reference: Normal)	0.98	<0.01	0.99	0.00	0.98	<0.01	0.97	<0.01	1.00	0.31	0.98	<0.01	0.99	<0.01	0.99	0.00	0.99	<0.01
Needs Assistance With ADLs (Reference: No)	0.80	<0.01	0.99	0.72	0.84	<0.01	0.78	<0.01	0.95	0.08	0.80	<0.01	0.83	<0.01	1.01	0.81	0.87	<0.01
Hospitalized in the Past Year (Reference: No)	0.92	<0.01	1.05	0.03	0.94	<0.01	0.95	0.00	1.04	0.01	0.96	0.00	0.89	<0.01	1.06	0.07	0.93	<0.01
Institutionalized (Reference: No)	0.67	<0.01	0.91	0.00	0.70	<0.01	0.68	<0.01	0.91	0.87	0.70	<0.01	0.65	<0.01	0.90	0.02	0.70	<0.01
Received Pre-ESRD Nephrology Care (Reference: No)	1.31	<0.01	1.17	<0.01	1.34	<0.01	1.31	<0.01	1.16	0.00	1.33	<0.01	1.32	<0.01	1.18	<0.01	1.34	<0.01
Income (Reference: Highest, Quartile 4)																		
(Lowest Income) Quartile 1	0.95	0.01	0.98	0.55	0.95	0.00	0.93	0.01	1.02	0.77	0.94	0.01	0.96	0.19	0.96	0.40	0.95	0.03
Quartile 2	0.99	0.58	0.96	0.26	0.98	0.12	1.02	0.41	0.88	0.01	0.98	0.33	0.95	0.07	1.03	0.55	0.97	0.20
Quartile 3	0.99	0.68	0.97	0.36	0.98	0.24	1.00	0.97	0.96	0.36	0.99	0.48	0.98	0.42	0.98	0.69	0.98	0.30
Medicaid (Reference: No)	1.01	0.37	1.10	0.00	1.05	0.00	1.05	0.04	1.12	0.01	1.08	0.00	0.98	0.43	1.09	0.01	1.02	0.23
USRDS Network (Reference: 18)																		
	1.09	0.03	0.88	0.07	1.03	0.36	1.08	0.15	0.89	0.29	1.03	0.50	1.16	0.02	0.81	0.04	1.04	0.41
	1.00	0.96	0.76	<0.01	0.90	0.00	1.02	0.59	0.70	<0.01	0.92	0.04	1.00	0.99	0.78	0.00	0.90	0.01
	1.02	0.59	0.93	0.28	0.99	0.78	1.08	0.09	0.85	0.08	1.02	0.64	0.98	0.77	0.97	0.68	0.97	0.52
	0.94	0.09	1.01	0.91	0.95	0.12	0.96	0.45	0.91	0.32	0.94	0.15	0.94	0.33	1.04	0.66	0.98	0.61

	0.91	0.01	0.93	0.28	0.89	0.00	0.92	0.11	0.84	0.07	0.88	0.00	0.92	0.16	0.98	0.82	0.93	0.11
	1.04	0.31	1.04	0.49	1.06	0.07	1.06	0.18	0.95	0.57	1.04	0.31	1.04	0.49	1.07	0.38	1.08	0.08
	0.93	0.06	0.96	0.55	0.93	0.03	0.98	0.63	0.91	0.29	0.95	0.26	0.89	0.05	1.00	0.95	0.92	0.06
	1.03	0.39	1.11	0.11	1.08	0.03	1.10	0.05	1.04	0.67	1.11	0.02	1.01	0.93	1.10	0.27	1.06	0.25
	0.98	0.61	0.99	0.86	0.98	0.46	0.98	0.71	0.98	0.78	0.98	0.55	1.02	0.75	0.96	0.59	0.99	0.85
	0.94	0.13	1.04	0.62	0.96	0.25	0.97	0.59	0.97	0.76	0.96	0.45	0.94	0.30	1.04	0.66	0.97	0.52
	1.16	<0.01	0.98	0.70	1.12	<0.01	1.16	0.00	0.93	0.39	1.11	0.01	1.19	0.00	0.99	0.92	1.15	0.00
	1.09	0.03	0.97	0.72	1.07	0.06	1.12	0.03	0.90	0.35	1.08	0.13	1.09	0.17	1.00	0.99	1.07	0.19
	1.00	0.93	0.93	0.31	0.96	0.26	1.03	0.55	0.85	0.13	0.97	0.58	1.00	0.96	0.95	0.57	0.96	0.42
	1.01	0.82	1.18	0.00	1.08	0.01	1.04	0.37	1.12	0.16	1.07	0.06	1.03	0.61	1.15	0.04	1.09	0.02
	1.06	0.16	0.87	0.06	1.00	0.92	1.11	0.05	0.80	0.06	1.03	0.57	1.02	0.72	0.89	0.27	0.98	0.70
	1.10	0.04	0.83	0.04	1.04	0.39	1.19	0.00	0.79	0.07	1.10	0.07	1.02	0.74	0.85	0.17	0.97	0.62
	1.00	0.95	1.08	0.23	1.03	0.44	1.04	0.49	0.99	0.93	1.02	0.63	0.99	0.85	1.12	0.20	1.04	0.45
Rurality (Reference: Most urban, 1)																		
2	0.97	0.11	0.92	0.00	0.94	<0.01	0.97	0.20	0.93	0.13	0.95	0.01	0.98	0.39	0.90	0.01	0.93	0.00
3	1.02	0.42	0.90	0.01	0.98	0.34	0.99	0.68	0.92	0.17	0.97	0.19	1.06	0.08	0.88	0.02	1.00	0.95
4	1.02	0.56	0.96	0.41	0.99	0.73	0.99	0.87	0.95	0.46	0.97	0.41	1.04	0.30	0.97	0.64	1.01	0.74
5	1.07	0.23	0.82	0.08	1.00	0.95	1.04	0.60	0.61	0.01	0.93	0.34	1.11	0.21	0.96	0.75	1.07	0.35
6	1.01	0.55	0.90	0.01	0.97	0.17	1.00	0.96	0.88	0.04	0.96	0.16	1.04	0.28	0.91	0.06	0.99	0.70
7	1.05	0.10	0.71	<0.01	0.93	0.00	1.00	1.00	0.71	0.00	0.91	0.02	1.13	0.01	0.70	<0.01	0.94	0.13
8	0.99	0.72	0.95	0.34	0.97	0.29	0.94	0.17	0.97	0.71	0.94	0.11	1.06	0.25	0.92	0.31	1.01	0.84
(Least urban) 9	0.99	0.71	0.76	<0.01	0.90	0.00	0.98	0.67	0.68	0.00	0.88	0.00	0.99	0.91	0.81	0.02	0.91	0.04

Exponentiated coefficients; 95% confidence intervals in brackets.
Covariates included age. race/ethnicity, gender, BMI, peripheral arterial disease, congestive heart failure, atherosclerotic heart disease, other cardiac disease, diabetes, creatinine, GFR, pre-ESRD nephrology care, functional status, hospitalization within the past year, institutionalization, income, USRDS network, rurality, Medicaid enrollment.
GFR and Serum Cr reported as continuous variables, thus the HR is associated with an increase of 1 whole unit (mg/mL) in each of the variables.

Abbreviations: Activities of Daily Living (ADL); Body Mass Index (BMI); End-Stage Renal Disease (ESRD); Glomerular Filtration Rate (GFR); United States Renal Data System (USRDS).

Supplemental Table 3a & 3b. Selected results of competing risks regression model for transition from central venous catheter (CVC) to death among the study population.

Table 3a.

Overall	**Death**
N	74,194
Race/Ethnicity (Reference: White)	
Black	0.71*** [0.68,0.74]
Hispanic	0.67*** [0.65,0.73]
Other Race	0.54*** [0.49,0.58]
Gender (Reference: Male)	
Female	0.94 *** [0.91,0.96]
Exponentiated coefficients; 95% confidence intervals in brackets. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$	

Table 3b.

	No Maturing Permanent Access												Maturing Permanent Access											
Transition to:	AVF			AVG			AVF/AVF			DEATH			AVF			AVG			AVF/AVG			DEATH		
Parameter	sHR	95% CI		sHR	95% CI		sHR	95% CI		sHR	95% CI		sHR	95% CI		sHR	95% CI		sHR	95% CI		sHR	95% CI	
Race/Ethnicity (Reference: White)																								
Black	0.90	0.86	0.93	1.82	1.71	1.94	1.17	1.13	1.22	0.72	0.69	0.75	0.80	0.76	0.85	1.71	1.54	1.90	0.98	0.94	1.03	0.72	0.65	0.80
Hispanic	1.28	1.22	1.36	1.06	0.97	1.17	1.24	1.18	1.30	0.67	0.63	0.71	0.96	0.89	1.04	1.04	0.88	1.22	0.96	0.90	1.03	0.80	0.70	0.93
Other Race	1.30	1.21	1.39	1.39	1.25	1.56	1.38	1.30	1.47	0.55	0.50	0.60	0.99	0.90	1.08	1.38	1.15	1.65	1.09	1.01	1.19	0.57	0.47	0.70
Female Gender (Reference: Male)	0.80	0.78	0.83	1.49	1.41	1.56	0.96	0.94	0.99	0.93	0.90	0.96	0.83	0.80	0.87	1.47	1.35	1.60	0.95	0.91	0.98	0.94	0.87	1.01

BMI (Reference: Normal)																								
underweight	0.81	0.75	0.88	0.98	0.87	1.09	0.85	0.79	0.90	1.19	1.12	1.27	0.97	0.86	1.09	1.12	0.92	1.36	1.01	0.92	1.12	1.10	0.93	1.31
overweight	1.10	1.06	1.14	0.99	0.93	1.05	1.07	1.04	1.11	0.91	0.88	0.95	1.09	1.04	1.15	0.91	0.82	1.01	1.05	1.00	1.10	0.82	0.75	0.89
obese	1.18	1.13	1.22	0.99	0.93	1.06	1.13	1.10	1.17	0.84	0.81	0.87	1.12	1.06	1.18	0.83	0.75	0.92	1.04	0.99	1.09	0.82	0.75	0.90
Age (Reference: 66-60)																								
Age 71-75	0.94	0.91	0.98	1.07	0.99	1.14	0.98	0.95	1.02	1.16	1.11	1.22	0.99	0.93	1.04	1.05	0.94	1.18	1.01	0.96	1.06	1.13	1.02	1.25
Age 76-80	0.88	0.85	0.92	1.15	1.07	1.24	0.96	0.92	0.99	1.28	1.23	1.34	0.97	0.92	1.03	1.10	0.97	1.23	1.00	0.95	1.06	1.23	1.11	1.37
Age 81+	0.75	0.72	0.78	1.13	1.06	1.21	0.85	0.82	0.88	1.56	1.49	1.62	0.88	0.83	0.94	1.22	1.09	1.38	0.97	0.92	1.02	1.52	1.37	1.68
Needs Assistance With ADLs (Reference: No)	0.78	0.75	0.82	0.95	0.89	1.02	0.81	0.78	0.84	1.27	1.22	1.31	0.89	0.84	0.95	1.11	0.99	1.24	0.94	0.89	1.00	1.30	1.18	1.43
Hospitalized in the Past Year (Reference: No)	0.91	0.88	0.94	1.03	0.97	1.08	0.93	0.91	0.96	1.13	1.10	1.17	0.98	0.94	1.03	1.11	1.02	1.21	1.02	0.98	1.06	1.20	1.11	1.29
Institutionalized (Reference: No)	0.65	0.62	0.69	0.88	0.81	0.95	0.69	0.66	0.72	1.51	1.45	1.57	0.75	0.70	0.81	1.04	0.91	1.19	0.78	0.73	0.84	1.63	1.47	1.81
Received Pre-ESRD Nephrology Care (Reference: No)	1.18	1.14	1.22	1.23	1.16	1.30	1.24	1.20	1.27	0.79	0.76	0.81	1.16	1.10	1.23	0.98	0.88	1.09	1.13	1.08	1.19	0.76	0.70	0.83

Exponentiated coefficients.

Covariates included age. race/ethnicity, gender, BMI, peripheral arterial disease, congestive heart failure, atherosclerotic heart disease, other cardiac disease, diabetes, creatinine, GFR, pre-ESRD nephrology care, functional status, hospitalization within the past year, institutionalization, income, USRDS network, rurality, Medicaid enrollment.

Abbreviations: Arteriovenous Fistula (AVF); Arteriovenous Graft (AVG); Body Mass Index (BMI); End-Stage Renal Disease (ESRD); United States Renal Data System (USRDS).