

Supplementary Information for

Psychiatric Illness and Mortality in Hospitalized ESKD Dialysis Patients

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Supplemental Table 1. ICD-9-CM codes for psychiatric diagnosis

Psychiatric illness	ICD-9-CM codes
Depression and affective disorders	296.XX, 298.0, 300.4, 301.12, 309.0, 309.1, 311, V79.0
Organic disorders and dementias	290.XX, 293.XX, 294.XX, 310.XX, 331.0, 331.1X, 331.2, 797
Alcohol-related disorders	291.XX, 303.XX, 305.0X, 571.0, 571.1, 571.2, 571.3, 790.3, V11.3, V79.1
Drug disorders not alcohol related	292.XX, 304.XX, 305.XX (excluded 305.0X)
Schizophrenic disorders	295.XX, V11.0
Other psychoses	297.X, 298.X (excluded 298.0), 299.XX
Anxiety and personality disorders	300.XX (excluded 300.4), 301.XX (excluded 301.12), 307.4X, 307.8X, 308.X, 309.81, 312.3X, 316, V11.1, V11.2
Other mental disorders (not psychoses)	278.0X, 302.XX, 306.XX, 307.XX (excluded 307.4X and 307.8X), 309.XX (excluded 309.0, 309.1, 309.81), 312.XX (excluded 312.3X), 313.XX, 314.XX, 315.XX, 317, 318.X, 319, 780.1, 783.0, 783.6, 799.2X, V11.8, V11.9, V15.4X, V40.XX, V66.3, V67.3, V70.1, V70.2, V79.2, V79.3

X = 0 to 9 inclusive.

ICD-9-CM = International Classification of Diseases, Ninth Revision, Clinical Modification.

Supplemental Table 2. Demographic characteristics of pediatric ESRD patients with and without hospitalization with a psychiatric diagnosis, 1996–2013

Characteristics	Total N=9,196	No Hospitalization N=3,251	Non-psychiatric diagnosis N=4,434	Psychiatric diagnosis N=1,511	P value*
Year of ESRD initiation					<0.001
1996–1998	1,575	42%	49%	9%	
1999–2001	1,565	37%	50%	13%	
2002–2004	1,659	35%	49%	16%	
2005–2007	1,597	35%	49%	16%	
2008–2010	1,573	31%	49%	20%	
2011–2013	1,227	32%	42%	26%	
Gender					<0.001
Male	4,957	38%	46%	16%	
Female	4,239	32%	51%	17%	
Race					0.05
White	5,499	36%	48%	16%	
Black	3,202	34%	48%	18%	
Other	495	39%	49%	13%	
Residential area					<0.001
Large metro	4,678	38%	47%	15%	
Medium/small metro	2,875	33%	49%	18%	
Rural	1,636	33%	50%	18%	
Dual status in Medicare and Medicaid					<0.001
No	1,220	53%	36%	10%	
Yes	7,976	33%	50%	17%	
First modality					<0.001
Hemodialysis	5,909	36%	46%	19%	
Peritoneal dialysis	2,558	33%	54%	13%	
Transplant	702	40%	51%	10%	

ESRD = end-stage renal disease.

Supplemental Table 3. Demographic characteristics of adult ESRD patients with and without hospitalization with a psychiatric diagnosis, 1996–2013

Characteristics	Total N=398,418	No Hospitalization N=134,197	Non-psychiatric diagnosis N=155,912	Psychiatric diagnosis N=108,309	P value*
Year of ESRD initiation					<0.001
1996–1998	57,398	35%	47%	19%	
1999–2001	61,123	33%	45%	22%	
2002–2004	66,968	32%	43%	26%	
2005–2007	70,546	32%	43%	25%	
2008–2010	71,285	33%	38%	29%	
2011–2013	71,098	37%	23%	40%	
Gender					<0.001
Male	227,062	36%	38%	26%	
Female	171,356	31%	41%	29%	
Race					<0.001
White	223,069	33%	40%	28%	
Black	154,718	34%	38%	28%	
Other	20,631	42%	42%	17%	
Residential area					<0.001
Large metro	200,914	34%	39%	27%	
Medium/small metro	123,753	33%	39%	28%	
Rural	73,323	33%	40%	27%	
Dual status in Medicare and Medicaid					<0.001
No	143,556	38%	40%	22%	
Yes	254,862	31%	39%	30%	
First modality					<0.001
Hemodialysis	362,478	33%	39%	28%	
Peritoneal dialysis	29,834	41%	39%	20%	
Transplant	4,901	30%	50%	20%	

ESRD = end-stage renal disease.

Supplemental Table 4. Demographic characteristics of elderly adult ESRD patients with and without hospitalization with a psychiatric diagnosis, 1996–2013

Characteristics	Total N=626,344	No Hospitalization N=148,214	Non-psychiatric diagnosis N=335,728	Psychiatric diagnosis N=142,402	P value*
Year of ESRD initiation					<0.001
1996–1998	90,618	23%	60%	17%	
1999–2001	101,694	23%	58%	20%	
2002–2004	114,893	22%	57%	21%	
2005–2007	111,265	23%	59%	18%	
2008–2010	106,382	25%	53%	23%	
2011–2013	101,492	28%	34%	39%	
Gender					<0.001
Male	328,883	26%	54%	21%	
Female	297,461	22%	53%	25%	
Race					<0.001
White	473,569	23%	54%	23%	
Black	128,275	24%	52%	24%	
Other	24,500	27%	57%	17%	
Residential area					<0.001
Large metro	308,112	23%	54%	23%	
Medium/small metro	196,251	24%	53%	23%	
Rural	120,885	25%	53%	22%	
Dual status in Medicare and Medicaid					<0.001
No	459,175	25%	54%	21%	
Yes	167,169	20%	52%	28%	
First modality					<0.001
Hemodialysis	585,966	23%	54%	23%	
Peritoneal dialysis	34,611	34%	49%	17%	
Transplant	3,456	17%	64%	19%	

ESRD = end-stage renal disease.

Supplemental Table 5. Adjusted associations between hospitalization with psychiatric diagnosis and death within the first year in adult dialysis patients with hospitalization during 1-year observation period

Hospitalizations	Number of patients	Number of death	Odds Ratio * (95% CI)
Adults 22-64 years			
Non-psychiatric hospitalization	139,311	12,472 (9%)	1.00
Primary psychiatric hospitalization	7,867	896 (11%)	1.14 (1.06 —1.23)
Secondary psychiatric hospitalization	91,056	9,047 (10%)	0.98 (0.95 —1.01)
Elderly adults 65 years and above			
Non-psychiatric hospitalization	266,572	61,634 (23%)	1.00
Primary psychiatric hospitalization	7,609	2,138 (28%)	1.25 (1.19 —1.32)
Secondary psychiatric hospitalization	109,544	28,965 (26%)	1.13 (1.11 —1.15)
All adults			
Non-psychiatric hospitalization	405,883	74,106 (18%)	1.00
Primary psychiatric hospitalization	15,476	3,034 (20%)	1.23 (1.18 —1.28)
Secondary psychiatric hospitalization	200,600	38,012 (19%)	1.09 (1.08 —1.11)

*Logistic regression model adjusted for gender, race, ethnicity, age, residential area, dual eligibility status, cause of ESRD, Charlson score, and comorbid conditions (congestive heart failure, peripheral vascular disease, cerebrovascular disease, atherosclerotic heart disease, chronic obstructive pulmonary disease, and cancer) at ESRD initiation.

ESRD = end-stage renal disease.

Supplemental Figure 1. Percentage of ESRD incident adult patients hospitalized with psychiatric diagnosis during a 1-year observation period, by year of ESRD initiation

