Supplemental Material

Supplemental Table 1: List of antidepressant medication have been used for alternative diagnosis for depression

Antidepressants
AMITRIPTYLINE
BUPROPION
CITALOPRAM
CLOMIPRAMINE
CYMBALTA
DESIPRAMINE
DESVENLAFAXINE
DOXEPIN
DULOXETINE
FLUOXETINE
FLUVOXAMINE
IMIPRAMINE
LEXAPRO
MIRTAZAPINE
NEFAZODONE
NORTRIPTYLINE
PAROXETINE
PHENELZINE
PROTRIPTYLINE
SERTRALINE
TRAZODONE
TRIMIPRAMINE
VENLAFAXINE

Supplemental Table 2: Proportion of missing baseline patient characteristics

	Total	Missing data N (%)
	(N = 45,076)	N/A
Age (years)	72±11	0
Sex (male; %)	95	0
Race (African-American; %)	23	66 (0)
Marital status (married; %)	58	0
Body mass index (kg/m^2)	29.9±6.6	22,699 (50)
Vascular access type (catheter; %)	78	3,475 (8)
Comorbid Conditions (%)		
Myocardial infarction	29	0
Congestive heart failure	58	0
Peripheral vascular disease	40	0
Cerebrovascular disease	32	0
Dementia	3	0
Chronic obstructive pulmonary disease	45	0
Rheumatic disease	5	0
Peptic ulcer disease	8	0
Hemiplegia	4	0
HIV/AIDS	<1	0
Diabetes mellitus	66	0
Liver disease	12	0
Cancer	26	0
Hypertension	45	0
Medications (%)		
ACEIs/ARBs	35	0
Antidepressants	20	0
β-blockers	53	0
Calcium channel blockers	47	0

Diuretics	56	0
Statins	47	0
Vasodilators	3	0
Vitamin D analogs	22	0
ESAs	17	0
Laboratory parameters		
Serum albumin (g/dL)	3.3±0.6	10,759 (24)
Serum AST (U/L)	26±39	26,966 (60)
Serum ALT (U/L)	24±34	26,661 (59)
Serum BUN (mg/dL)	61±23	25,256 (56)
Serum creatinine (mg/dL)	4.6±2.4	24,605 (55)
First eGFR (mL/min/1.73m^2) in the cohort	44±24	15,117 (66)
Last eGFR (mL/min/1.73m^2) before ESRD	23±19	15,378 (66)
Serum phosphorus (mg/dL)	5.1±1.3	34,931 (77)
Serum calcium (mg/dL)	8.8±0.7	25,918 (57)
Alkaline phosphatase (IU/L)	98±66	27,351 (61)
Blood hemoglobin (g/dL)	10.3±1.5	7,189 (16)
Serum bicarbonate (mg/dL)	23±4	25,789 (57)
Cholesterol (mg/dL)	155±50	29,456 (65)
Serum potassium (mEq/L)	4.5±0.6	24,971 (55)
WBC (10^9/L)	8±3	26,581 (59)

Data are presented as number (percentage) or mean ± standard deviation. All laboratory results averaged over the 6-months pre-dialysis period.
Abbreviations: ACEI, angiotensin-converting enzyme inhibitor; AIDS: Acquired Immunodeficiency Syndrome; ARB, angiotensin receptor blocker; AST, aspartate aminotransferase; ALT, alanine aminotransferase; BUN, blood urea nitrogen; eGFR, estimated glomerular filtration rate; ESA, erythropoietin stimulating agent; ESRD: End Stage Renal Disease; HIV: Human Immunodeficiency Virus; N/A: not applicable; WBC, white blood cell.

Supplemental Table 3: Adjusted hazard ratios (95% CIs) for all-cause mortality in the first 12 months after dialysis initiation using different definitions of depression

	Definition of depression						
	Based on algorithm (main model)		*Based on algorithm and/or antidepressant medication*		*Based on algorithm and/or antidepressant medication*		
	Absence of depression	Presence of depression	Absence of depression	Presence of depression	Absence of depression	Depression with absence of pharmacotherapy	Depression treated with pharmacotherapy
Patients	34,622	10,454	31,135	13,941	31,135	5,000	8,941
Events	10,220 (30)	2,995 (29)	9,025 (29)	4,190 (30)	9,025 (29)	2,768 (55)	1,422 (16)
Crude incident rate	358 (351-365)	344 (332-357)	350 (343-357)	365 (354-376)	350 (343-357)	378 (364-393)	341 (324-360)
Unadjusted	1	0.96	1	1.03	1	0.98	1.06
(N=41,582)	[reference]	(0.92–0.99)	[reference]	(0.99-1.07)	[reference]	(0.93-1.04)	(1.02-1.11)
Model 1 (N=41,582)	1	1.15	1	1.21	1	1.14	1.26
	[reference]	(1.11–1.20)	[reference]	(1.17-1.26)	[reference]	(1.08-1.21)	(1.21-1.32)
Model 2 (N=41,582)	1	1.00	1	1.04	1	1.01	1.06
	[reference]	(0.95–1.05)	[reference]	(0.99-1.08)	[reference]	(0.95-1.07)	(1.01-1.11)
Model 3 (N=41,582)	1	1.02	1	1.08	1	1.00	1.14
	[reference]	(0.98–1.07)	[reference]	(1.04-1.13)	[reference]	(0.94-1.06)	(1.08-1.19)
Model 4 (N=20,542)	1	1.03	1	1.08	1	1.01	1.11
	[reference]	(0.96–1.09)	[reference]	(1.02-1.14)	[reference]	(0.92-1.11)	(1.04-1.18)

Data are presented as number (percentage) or hazard ratio (95% CI) unless otherwise specified. The crude incident rate presented in "per 1000 patient-years".

Models are as follows:
Unadjusted model: only exposure variable included
Model 1 adjusted for age, sex, race/ethnicity, and marital status;

Model 2 additionally accounted for comorbidities (dementia, myocardial infarction, congestive heart failure, peripheral vascular disease, connective tissue disease, lung disease, peptic ulcer disease, HIV, diabetes mellitus, stroke/paraplegia, liver disease, malignancy, hypertension), type of vascular access (arteriovenous fistula, arteriovenous graft, or catheter), estimated glomerular filtration rate slope before ESRD initiation, PTSD, substance abuse and number of mental health care and number of emergency department visits.

Model 3 additionally accounted for medications (phosphorous binder, active vitamin D, angiotensin-converting enzyme inhibitors/angiotensin receptor blockers, bicarbonate, β-blockers, calcium channel blockers, vasodilators, diuretics, statins, and erythropoietin stimulating agents),

Model 4 additionally accounted for blood hemoglobin, serum albumin, income and cardiovascular medication adherence

Abbreviations: CI: Confidence Interval; ESRD: End Stage Renal Disease; ICD-9-CM: International Classification of Diseases, Ninth Revision, Clinical Modification; HIV: Human Immunodeficiency Virus; PTSD: Post-Traumatic Stress Disorder

Supplemental Table 4: Adjusted hazard ratios (95% CIs) for all-cause mortality in the first 3 months after dialysis initiation using different definitions of depression

	Definition of depression						
	Based on algorithm (main model)		*Based on algorithm and/or antidepressant medication*		*Based on algorithm and/or antidepressant medication*		
	Absence of depression	Presence of depression	Absence of depression	Presence of depression	Absence of depression	Depression with absence of pharmacotherapy	Depression treated with pharmacotherapy
Patients	34,622	10,454	31,135	13,941	31,135	5,000	8,941
Events	3,814 (11)	1,131 (11)	3,373 (11)	1,572 (11)	9,373 (11)	525 (11)	1,047 (12)
Crude incident rate	466 (451-481)	458 (432-485)	458 (442-473)	479 (455-503)	458 (442-473)	443 (407-483)	498 (469-529)
Unadjusted (N=41,582)	1 [reference]	0.98 (0.91–1.04)	1 [reference]	1.03 (0.97-1.10)	1 [reference]	0.97 (0.88-1.06)	1.07 (0.99-1.15)
Model 1 (N=41,582)	1 [reference]	1.19 (1.11–1.27)	1 [reference]	1.22 (1.15-1.30)	1 [reference]	1.13 (1.03-1.24)	1.29 (1.20-1.38)
Model 2 (N=41,582)	1 [reference]	1.02 (0.95–1.10)	1 [reference]	1.05 (0.98-1.12)	1 [reference]	0.99 (0.90-1.09)	1.08 (1.01-1.17)
Model 3 (N=41,582)	1 [reference]	1.05 (0.97–1.13)	1 [reference]	1.09 (1.02-1.16)	1 [reference]	0.98 (0.90-1.00)	1.16 (1.07-1.25)
Model 4 (N=20,542)	1 [reference]	1.09 (0.98–1.21)	1 [reference]	1.10 (1.00-1.21)	1 [reference]	1.01 (0.87-1.18)	1.14 (1.03-1.26)

Data are presented as number (percentage) or hazard ratio (95% CI) unless otherwise specified. The crude incident rate presented in "per 1000 patient-years".

Models are as follows:
Unadjusted model: only exposure variable included
Model 1 adjusted for age, sex, race/ethnicity, and marital status;
Model 2 additionally accounted for comorbidities (dementia, myocardial infarction, congestive heart failure, peripheral vascular disease, connective tissue disease, lung disease, peptic ulcer disease, HIV, diabetes mellitus, stroke/paraplegia, liver disease,

malignancy, hypertension), type of vascular access (arteriovenous fistula, arteriovenous graft, or catheter), estimated glomerular filtration rate slope before ESRD initiation, PTSD, substance abuse and number of mental health care and number of emergency department visits.
Model 3 additionally accounted for medications (phosphorous binder, active vitamin D, angiotensin-converting enzyme inhibitors/angiotensin receptor blockers, bicarbonate, β-blockers, calcium channel blockers, vasodilators, diuretics, statins, and erythropoietin stimulating agents),
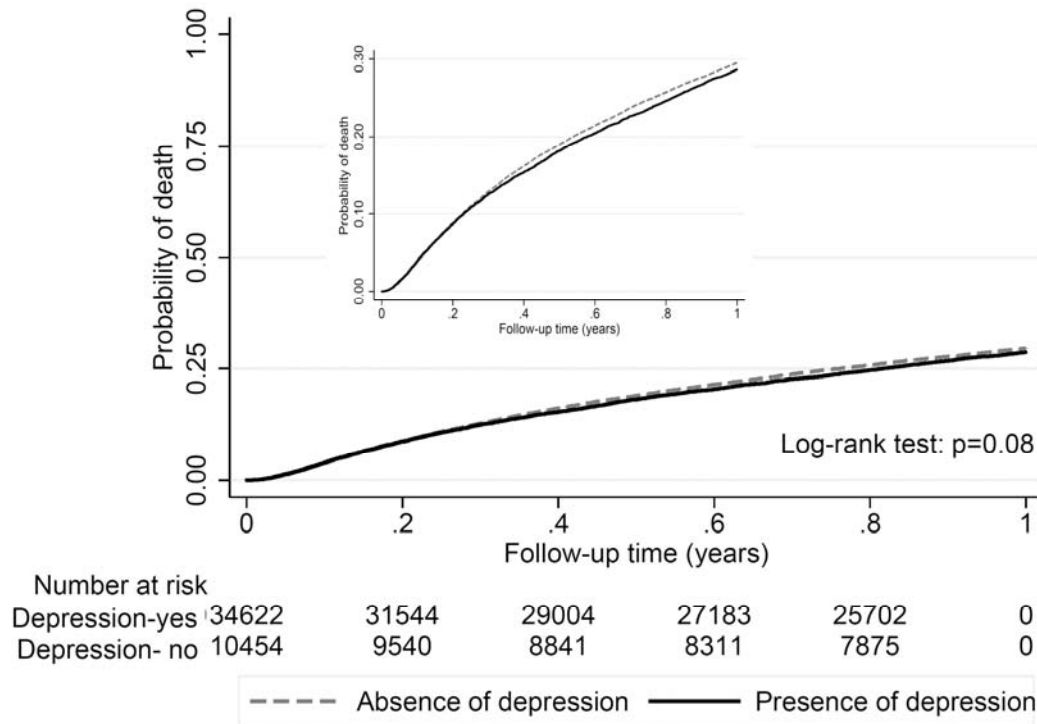Model 4 additionally accounted for blood hemoglobin, serum albumin, income and cardiovascular medication adherence

Abbreviations: CI: Confidence Interval; ESRD: End Stage Renal Disease; ICD-9-CM: International Classification of Diseases, Ninth Revision, Clinical Modification; HIV: Human Immunodeficiency Virus; PTSD: Post-Traumatic Stress Disorder

Supplemental Table 5: Adjusted hazard ratios (95% CIs) for all-cause mortality in the first 6 months after dialysis initiation using different definitions of depression

	Definition of depression						
	Based on algorithm (main model)		*Based on algorithm and/or antidepressant medication*		*Based on algorithm and/or antidepressant medication*		
	Absence of depression	Presence of depression	Absence of depression	Presence of depression	Absence of depression	Depression with absence of pharmacotherapy	Depression treated with pharmacotherapy
Patients	34,622	10,454	31,135	13,941	31,135	5,000	8,941
Events	6,576 (19)	1,900 (18)	5,827 (19)	2,649 (19)	5,827 (19)	918 (18)	1,731 (19)
Crude incident rate	424 (414-435)	405 (387-423)	417 (407-428)	425 (410-442)	417 (407-428)	409 (383-436)	435 (415-456)
Unadjusted	1	0.95	1	1.01	1	0.98	1.02
(N=41,582)	[reference]	(0.90–0.99)	[reference]	(0.96-1.06)	[reference]	(0.91-1.05)	(0.97-1.08)
Model 1 (N=41,582)	1	1.15	1	1.19	1	1.14	1.22
	[reference]	(1.09–1.21)	[reference]	(1.13-1.25)	[reference]	(1.06-1.23)	(1.15-1.29)
Model 2 (N=41,582)	1	0.98	1	1.01	1	1.00	1.02
	[reference]	(0.93–1.04)	[reference]	(0.96-1.07)	[reference]	(0.93-1.07)	(0.97-1.09)
Model 3 (N=41,582)	1	1.01	1	1.05	1	0.99	1.10
	[reference]	(0.95–1.07)	[reference]	(1.00-1.11)	[reference]	(0.92-1.07)	(1.03-1.17)
Model 4 (N=20,542)	1	1.03	1	1.07	1	1.00	1.09
	[reference]	(0.95–1.12)	[reference]	(0.99-1.15)	[reference]	(0.90-1.13)	(1.01-1.18)

Data are presented as number (percentage) or hazard ratio (95% CI) unless otherwise specified. The crude incident rate presented in "per 1000 patient-years".

Models are as follows:
Unadjusted model: only exposure variable included
Model 1 adjusted for age, sex, race/ethnicity, and marital status;
Model 2 additionally accounted for comorbidities (dementia, myocardial infarction, congestive heart failure, peripheral vascular disease, connective tissue disease, lung disease, peptic ulcer disease, HIV, diabetes mellitus, stroke/paraplegia, liver disease,

malignancy, hypertension), type of vascular access (arteriovenous fistula, arteriovenous graft, or catheter), estimated glomerular filtration rate slope before ESRD initiation, PTSD, substance abuse and number of mental health care and number of emergency department visits.

Model 3 additionally accounted for medications (phosphorous binder, active vitamin D, angiotensin-converting enzyme inhibitors/angiotensin receptor blockers, bicarbonate, β-blockers, calcium channel blockers, vasodilators, diuretics, statins, and erythropoietin stimulating agents),

Model 4 additionally accounted for blood hemoglobin, serum albumin, income and cardiovascular medication adherence

Abbreviations: CI: Confidence Interval; ESRD: End Stage Renal Disease; ICD-9-CM: International Classification of Diseases, Ninth Revision, Clinical Modification; HIV: Human Immunodeficiency Virus; PTSD: Post-Traumatic Stress Disorder
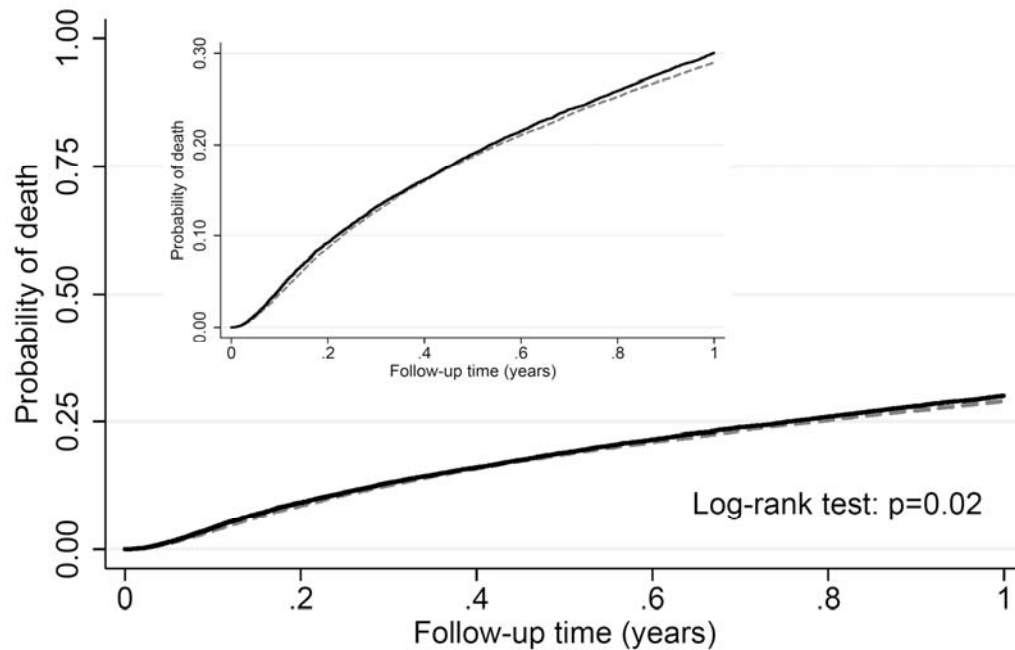
SUPPLEMENTAL FIGURE LEGENDS

Supplemental Figure 1: Probability of all-cause mortality of patients with and without depression in the first 12 months after dialysis initiation using different definitions of depression: Panel A shows the definition based on only ICD-9-CM code; Panel B shows definition based on ICD-9-CM code and/or antidepressant medication and Panel C shows definition based on ICD-9-CM code and/or antidepressant medication separated by treatment
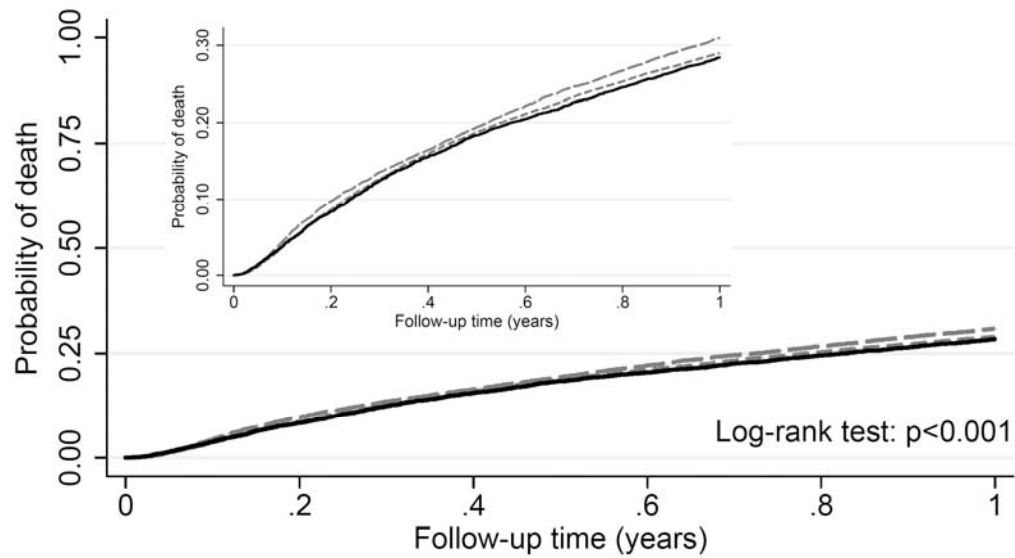
Supplemental Figure 1 Panel A:

Supplemental Figure 1 Panel B:

Supplemental Figure 1 Panel C:

Number at risk						
Depression-yes	31135	28432	26157	24560	23254	0
Depr. on meds	8941	8071	7468	6958	6551	0
Depr. no meds	5000	4581	4220	3976	3772	0