Supplemental Materials

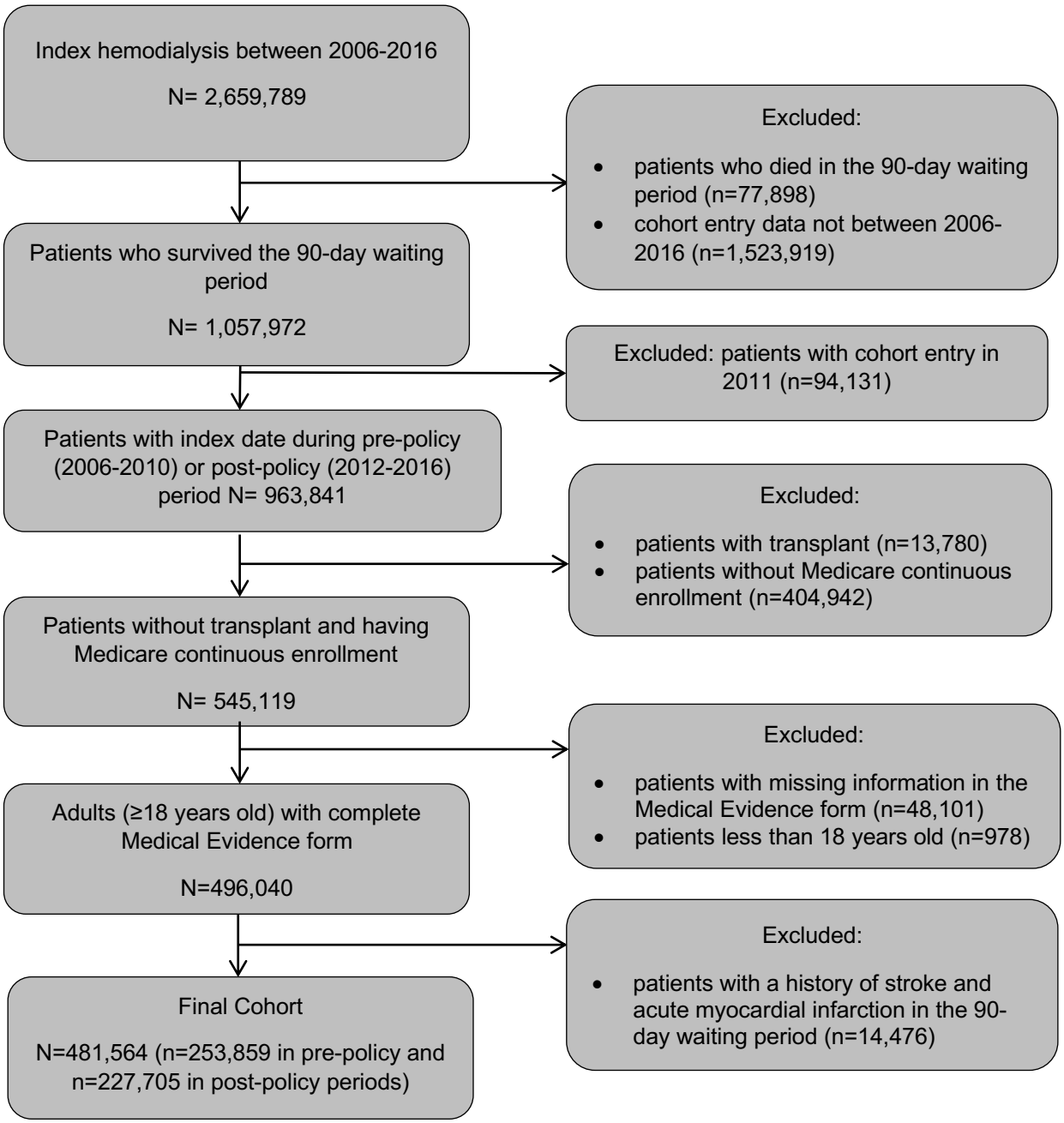
Supplemental Figure 1. Flow chart of the cohort creation

Supplemental Figure 2. Adjusted incidence rate of MACE by cohort entrance quarterly (2006-2015) among incident hemodialysis patients

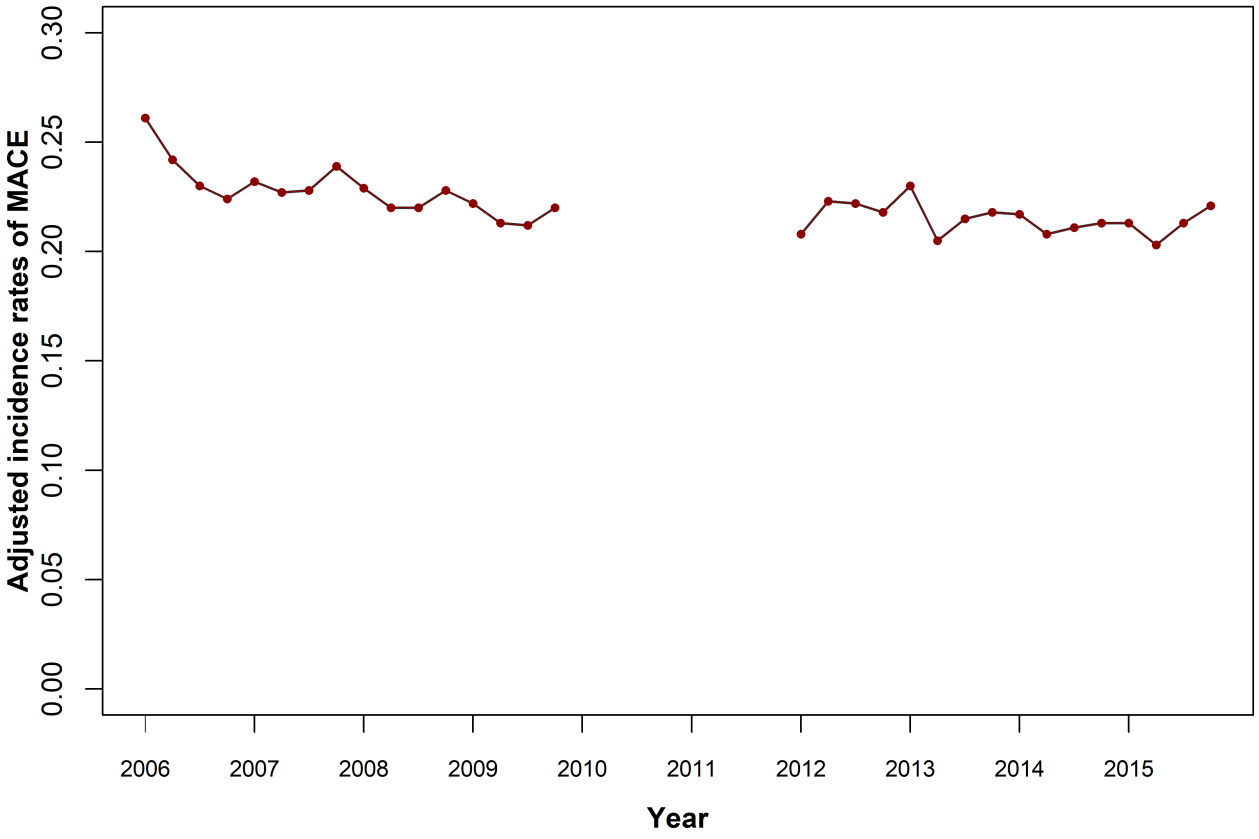
Supplemental Table 1. Codes used to identify claims of ESA, intravenous iron, and blood transfusion

Supplemental Table 2. Risk for major adverse cardiovascular event, mortality, and heart failure before and after bundle policy changes among incident hemodialysis patients in sensitivity analysis using the initiation date of hemodialysis as index date

Supplemental Figure 1. Flow chart of the cohort creation



Supplemental Figure 2. Adjusted incidence rate of MACE by cohort entrance quarterly (2006-2015) among incident hemodialysis patients



Zero-inflated Poisson regression modeling was used to estimate the adjusted incidence rate after controlling for age, sex, race/ethnicity, geographic region, serum albumin level, body mass index (kg/m^2), baseline hemoglobin level (g/dL), tobacco use, primary reason for end-stage renal disease, arteriovenous fistula**,** arteriovenous graft, and comorbidities including, atherosclerotic heart disease, hypertension, heart failure, cerebrovascular disease, peripheral artery disease, cancer, chronic obstructive pulmonary disease, and diabetes mellitus.

Supplemental Table 1. Codes Used to Identify Claims of ESA, Intravenous Iron, and Blood Transfusion

	Relevant codes	Reference
Anemia care		
Use of ESA	Any HCPCS code of J0885, J0886, Q4081, J0881, J0882, J0887, Q9972, Q9973 in physician/supplier claims dataset (2006-2016) or revenue center code of 0634, 0635 or 0636 in institutional details claims datasets (2006-2007) or revenue center details (2008-2016). The revenue code 0636 should have one of the above HCPCS codes with the claim	USRDS, ESRD Analytical Methods, Volume 2[1]
Use of intravenous iron	Any HCPCS code of J2915, J2916, J1750, J1751, J1752, J1760, J1755, J1756, J1439, Q990, Q0139 in physician/supplier claims dataset (2006-2016) or institutional details claims datasets (2006-2007) or revenue center details (2008-2016)	USRDS, ESRD Analytical Methods, Volume 2[1]
Use of blood transfusion	1. HCPCS code of P9010, P9011, P9016, P9021, P9022, P9038, P9039, P9040, P9051, P9054, P9056, P9057, P9058 2. *CPT* code of 36430 3. I*CD-9* code: 99.03 – 99.04 in institutional details claims datasets (2006-2012) and revenue code: 0381, 0382 in revenue center details (2008-2012); or the above HCPCS or *CPT* codes in physician/supplier claims dataset (2006-2012). 4. *ICD-10* code: 30233P1, 30243N1, 30243P1, 30253N1, 30253P1, 30263N1, 30263P1, 30233H1, 30243H1,30253H1,30263H1 in institutional details claims datasets (2013-2016); 0381, 0382 in the revenue center details (2013-2016); or the above *CPT* or HCPCS codes in physician/supplier claims dataset (2013-2016)	USRDS, ESRD Analytical Methods, Volume 2[1]
Acute MI	410 (*ICD-9-CM*), I21 (*ICD-10-CM*) in the first or second position of hospital discharges.	Wang et al. (2016)[2], McCormick et al. (2014)[3], Patorno E et al (2021)[4]
Stroke	430, 431, 433.x1, 434.x1, 436 (*ICD-9-CM*) or I60, I61, I63, I64 (*ICD-10-CM*) in the first position of hospital discharge.	Patorno E et al (2021)[4], McCormick et al. (2015)[5]
Hospitalized heart failure	428.x (*ICD-9-CM*) or I50.x (*ICD-10-CM*) in the first position of hospital discharge.	Patorno E et al (2021)[4], Quach et al. (2010)[6]

CPT, *Current Procedural Terminology*; ESA = erythropoiesis-stimulating agent; ESRD = end-stage renal disease; HCPCS = Healthcare Common Procedure Coding System; *ICD = International Statistical Classification of Diseases; ICD-9 = ICD, Ninth Revision*; *ICD-10 = ICD, Tenth Revision; ICD-9-CM = ICD-9-Clinical Modification;* MI, myocardial infarction; USRDS = U.S. Renal Data System.

Supplemental Table 2. Risk for Major Adverse Cardiovascular Event, Mortality, and Heart Failure Before and After Bundle Policy Changes Among Incident Hemodialysis Patients in Sensitivity Analysis Using the Initiation Date of Hemodialysis as Index Date

Outcome	Pre-policy change (n = 173,680) 1 January 2006 to 31 December 2010			Post-policy change (n = 165,880) 1 January 1 to 31 December 2016			Adjusted hazard ratio (95% CI)*
	No. of events	Person-time (years)	Incidence rate per 1,000 person-years	No. of events	Person-time (years)	Incidence rate per 1,000 person-years	
Major adverse cardiovascular event							
1-year follow-up	45,336	130,560	347.25	38,766	124,966	310.22	0.94 (0.93, 0.96)
3-year follow-up	74,955	235,039	318.91	65,095	228,243	285.21	0.94 (0.93, 0.95)
End of follow-up	80,592	254,909	316.16	70,407	248,693	283.11	0.94 (0.93, 0.95)
Stroke							
1-year follow-up	4,288	133,684	32.08	3,415	128,645	26.55	0.86 (0.81, 0.91)
3-year follow-up	6,978	245,686	28.41	5,633	240,175	23.46	0.85 (0.81, 0.89)
End of follow-up	7,501	267,993	27.99	6,044	263,364	22.95	0.84 (0.81, 0.88)
Acute myocardial infarction							
1-year follow-up	9,505	132,057	71.98	9,946	126,201	78.82	1.14 (1.10, 1.18)
3-year follow-up	16,243	239,806	67.74	16,380	232,267	70.53	1.08 (1.05, 1.11)
End of follow-up	17,588	260,657	67.48	17,708	253,608	69.83	1.07 (1.04, 1.10)
All-cause mortality							
1-year follow-up	37,559	135,273	277.66	30,708	129,978	236.26	0.90 (0.89, 0.92)
3-year follow-up	65,563	250,972	261.24	55,171	244,689	225.48	0.91 (0.90, 0.92)
End of follow-up	71,476	274,449	260.44	60,744	268,958	225.85	0.91 (0.90, 0.93)
Cardiovascular mortality							
1-year follow-up	13973	135,273	103.3	10,337	129,978	79.53	0.82 (0.80, 0.85)
3-year follow-up	24865	250,972	99.08	18,933	244,689	77.38	0.82 (0.81, 0.84)
End of follow-up	27273	274,449	99.38	21,000	268,958	78.08	0.83 (0.81, 0.84)
Hospitalized heart failure							
1-year follow-up	10915	109549	99.64	11,551	118,176	97.75	0.99 (0.95, 1.03)
3-year follow-up	17671	198719	88.93	17,646	216,984	81.33	0.96 (0.93, 0.99)
End of follow-up	18974	215818	87.92	18,685	236,875	78.89	0.92 (0.90, 0.94)

*Multivariable Cox proportional hazards regression models were used to estimate adjusted hazard ratio after controlling for age, sex, race/ethnicity, geographic region, serum albumin level, body mass index (kg/m^2), baseline hemoglobin level (g/dL), tobacco use, primary reason for end-stage renal disease, arteriovenous fistula**,** arteriovenous graft, and comorbidities including, atherosclerotic heart disease, hypertension, heart failure, cerebrovascular disease, peripheral artery disease, cancer, chronic obstructive pulmonary disease, and diabetes mellitus.

Supplemental References

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