Supplemental Material

Data S1.

Details regarding determination of influenza season

The timing and duration of the influenza season was determined by consulting the Centers for Disease Control and Prevention FluView website (https://www.cdc.gov/flu/pastseasons/1112season.htm). The 2011-2012 influenza season was markedly atypical: the intensity was mild, and the peak, which occurred during approximately 1 week in March, was the shortest time ever recorded above baseline and the smallest peak ever recorded. For modeling purposes, we did not explicitly consider this year to have had a demonstrable influenza season. In contrast, for the 2012-2013 season, the infection rate increased above baseline starting in early December 2012 and remained elevated for 15 consecutive weeks until the latter part of March. Thus, for modeling purposes, the influenza season was considered to be December 2012-March 2013.

Data S2.

Supplemental Statistical Methods

Since the analysis was hospitalization-based (as opposed to patient-based) and patients could contribute multiple admissions, correlation among hospitalizations from the same patient could have implications for model fitting. SAS Proc LOGISTIC can fit a multinomial logistic model for RR, but it cannot incorporate correlations among records. In contrast, Proc GENMOD can incorporate correlation, but it cannot fit a multinomial logistic model for RR. We therefore performed the following: first, we fit a simple logistic model (one outcome) with cumulative logit as the link function with/without considering the correlation among hospitalizations from the same patients; second, for each variable in the model, we compared the estimate of coefficients, the corresponding standard error, 95% confidence intervals, and P values from models with and without consideration of the correlations. These results were nearly identical, likely due to the large size of the dataset. Third, we made a decision to perform the multinomial logistic modeling with log RR as the link function using Proc LOGISTIC without consideration of the potential correlations. The multinomial models included the patient-level and hospitalization-level characteristics described in the main text as potential factors.

Table S1. Codes used to determine reasons for CVD-related admissions.

Index conditions	ICD-9-CM Diagnosis Codes
Acute coronary syndrome	410, 411
Arrhythmia	426, 427
Cardiomyopathy and heart failure	276.6, 425, 428
Stroke	430, 431, 433, 434, 436
Other CVD	394, 395, 396, 397, 402, 402.01, 402.11, 402.91, 403, 404, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, , 413, 414, 415, 416, 417, 420, 421.9, 422.90, 422.99, 423, 424 ,429, 437, 438, 440, 441, 442, 443, 444, 445, 447, 451, 453, 459, 557

CVD, cardiovascular disease; ICD-9-CM, International Classification of Diseases, Clinical

Modification.

Table S2. Outcome events following discharge from index hospitalization, within 10 or 30 days, by dialysis modality.

	Event		
Hospitalizations, $n = 142{,}210$	All-Cause Readmission	Cardiovascular Readmission	Death, no Readmission
30-day outcomes, %			
Hemodialysis	34.2	14.9	1.8
Peritoneal dialysis	33.8	11.9	1.8
10-day outcomes, %			
Hemodialysis	15.6	6.7	0.9
Peritoneal dialysis	15.3	5.5	0.9

Table S3. Outcome events following discharge from index hospitalization, by region, within 10 or 30 days.

| | Outcomes, 10 Days, % | | | | | | Outcomes, 30 Days, % | | | | | |
| | Readmission | | Death | | | Other | Readmission | | Death | | | Other |
Region (CMS)	All-Cause	CV	Without Readmission	With Readmission	Regardless of Readmission	ED Visit/ Obs. Stay	All-Cause	CV	Without Readmission	With Readmission	Regardless of Readmission	ED Visit/ Obs. Stay
1: CT, MA, ME, NH, RI, VT	16.4	7.0	1.0	0.7	1.7	12.9	34.7	15.3	2.2	3.2	5.3	27.4
2: NJ, NY, PR, USVI	17.0	7.6	0.9	0.7	1.6	8.5	36.1	16.5	1.8	2.7	4.5	18.6
3: DC, DE, MD, PA, VA, WV	16.1	7.1	1.0	0.6	1.5	10.7	35.4	15.6	2.0	2.7	4.6	23.2
4: AL, FL, GA, KY, MS, NC, SC, TN	15.2	6.6	0.8	0.6	1.4	12.4	33.7	14.8	1.8	2.5	4.2	25.9
5: IL, IN, MI, MN, OH, WI	16.3	6.7	1.0	0.7	1.6	11.8	36.0	15.1	1.9	2.9	4.8	25.6
6: AR, LA, NM, OK, TX	14.0	6.0	0.8	0.4	1.2	12.7	31.6	13.4	1.6	2.4	4.0	26.9
7: IA, KS, MO, NE	15.4	6.3	1.0	0.6	1.7	12.7	33.2	13.8	2.3	3.1	5.4	26.4
8: CO, MT, ND, SD, UT, WY	13.0	4.7	1.4	0.7	2.0	11.8	30.0	10.2	3.1	2.5	5.5	25.9
9: AS, AZ, CA, Guam, HI, NMI, NV	15.3	6.4	0.8	0.5	1.4	9.9	33.7	14.2	1.5	2.4	4.0	21.3
10: AK, ID, OR, WA	15.6	6.2	1.7	0.7	2.4	16.6	32.8	12.9	2.8	3.5	6.2	32.7
Overall rate	15.6	6.6	0.9	0.6	1.5	11.6	34.2	14.7	1.8	2.6	4.5	24.6

CMS, Centers for Medicare & Medicaid Services; CV, cardiovascular; ED, emergency department; Obs., observation.

Figure S1. Map of Centers for Medicare & Medicaid Services regions.