Table e-1. Definitions of covariates.

Variable	Defined by:
Low-income subsidy	State reported dual eligible status code of 01-08 or state buy-in (value of 'C') from the entitlement variable for any month during the look-back period
Atrial fibrillation	History of 1 or more inpatient or physician evaluation or management outpatient claims containing ICD-9 diagnoses 427.31 during the 365-day look back period. This will NOT include the index hospitalization
Hypertension	At least 2 outpatient physician evaluation and management claims, on separate days, with ICD-9 diagnoses of 401.x (malignant, benign or unspecified essential hypertension) during the look-back period
Hyperlipidemia	At least 2 claims in any file type on separate calendar days with ICD-9 diagnoses (any position) of 272.1, 272.2, or 272.4
Diabetes	At least 1 inpatient or 2 outpatient visits (on separate calendar days) with a primary or secondary diagnosis of T2DM (ICD-9 CM 250.x0 or 250.x2)
Coronary heart disease (CHD)	If claim codes have any of the following: (a) myocardial infarction: 1 or more inpatient or physician evaluation or management outpatient claims containing ICD-9 diagnoses 410.x or 412.x, (b) revascularization: 1 or more inpatient or outpatient claim containing ICD-9 procedure codes 00.66, 36.01-36.09 or 36.10-36.19, or CPT codes 92980-92996, 33510-33536, or 1 or more inpatient or outpatient claim containing ICD-9 diagnosis codes V45.81 or V45.82, (c) other ischemic disease: 1 or more inpatient or physician evaluation or management outpatient claim with 411, 413, or 414 codes
Heart failure	At least 1 inpatient, Hospital Outpatient Payment (HOP) or Carrier claim with one of the following ICD-9 codes during the look back period: 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, or 428.x
Dementia	ICD-9 code of 331.0, 331.1, 331.2, 331.7, 290.0, 290.1, 290.11, 290.12, 290.13, 290.20, 290.21, 290.3, 290.40, 290.41, 290.42, 290.43, 294.0, 294.1, 294.8, 797

Depression	At least 1 inpatient claim with discharge ICD-9 diagnoses (any position) of '29013', '29021', '29043', '29284', '29383', '29570', '29571', '29572', '29573', '29574', '29575', '29620', '29621', '29622', '29623', '29624', '29625', '29626', '29630', '29631', '29632', '29633', '29634', '29635', '29636', '29650', '29651', '29652', '29653', '29654', '29655', '29656','29660', '29661', '29662', '29663', '29664', '29665', '29666', '29680', '29682', '29689', '29690', '29699', '30110', '30112', '30113', '2967', '2980', '3004 ', '3005', '3090', '3091', '311' or at least 2 carrier claim, carrier line or outpatient claims with ICD-9 diagnoses (any position) of '29013', '29021', '29043', '29284', '29383', '29570', '29571', '29572', '29573', '29574', '29575', '29620', '29621', '29622', '29623', '29624', '29625', '29626', '29630', '29631', '29632', '29633', '29634', '29635', '29636', '29650', '29651', '29652', '29653', '29654', '29655', '29656','29660', '29661', '29662', '29663', '29664', '29665', '29666', '29680', '29682', '29689', '29690', '29699', '30110', '30112', '30113', '2967', '2980', '3004 ', '3005', '3090', '3091', '311'
Chronic kidney disease (CKD)	If any of the following claim codes are present: 016.0, 095.4, 189.0, 189.9, 223.0, 236.91, 250.4, 271.4, 274.1, 283.11, 403.x1, 403.x0, 404.x2, 404.x3, 404.x0, 404.x1, 440.1, 442.1, 447.3, 572.4, 580–588, 591, 642.1, 646.2, 753.12–753.17, 753.19, 753.2, 794.4. Additionally, if the flag ESRD_IND in the Master beneficiary summary file is checked then the participant will be categorized as having a history of CKD.

Table e-2. Incidence rates and hazard ratios for 1-year recurrent ischemic stroke in black compared to white Medicare beneficiaries, restricted to those with a primary diagnosis code for ischemic stroke.

	1999-2013 (all years)		1999-2001		2002-2006		2007-2013	
	Whites **n=114,453**	**Blacks** **n=14,336**	**Whites** **n=24,164**	**Blacks** **n=3,014**	**Whites** **n=42,012**	**Blacks** **n=5,423**	**Whites** **n=48,277**	**Blacks** **n=5,899**
Number of recurrent ischemic strokes/number at risk	6,980	1,234	1,650	289	2,653	458	2,677	487
Incidence rates (95% CI) for recurrent ischemic stroke	84* (82-86)	119* (113-126)	91 (87-95)	128 (114-143)	85 (82-88)	113 (103-124)	80 (77-83)	120 (109-131)
Hazard ratio (95% CI) [†]	**1 (ref)**	1.38** (1.29-1.47)	**1 (ref)**	1.37 (1.21-1.56)	**1 (ref)**	1.30 (1.18-1.44)	**1 (ref)**	1.46 (1.32-1.61)

Abbreviations: CI, confidence interval. Values are expressed as counts, incidence rates (per 1,000 person-years), and hazard ratios with 95% confidence intervals. [†]Adjusted for age, sex, low income subsidy, Charlson score, history of atrial fibrillation, history of hypertension, history of hyperlipidemia, history of diabetes, history of coronary heart disease, history of heart failure, history of chronic kidney disease, history of dementia, history of depression, hospitalization for any cause during baseline period, length of stay, discharged home following index hospitalization, and skilled nursing facility stay following index hospitalization, accounting for the competing risk of death.

[*]Recurrent ischemic stroke rates decreased over the calendar periods for whites (p for trend<0.001), but not blacks (p for trend=0.0692).

[**]The black-white hazard ratio did not change over the calendar periods (p for interaction=0.3055).

Table e-3. Incidence rates and hazard ratios for 1-year recurrent ischemic stroke in black compared to white Medicare beneficiaries, restricted to those with a 2-year look-back period.

	2001-2013 (all years)		2001		2002-2006		2007-2013	
	Whites **n=94,562**	**Blacks** **n=11,312**	**Whites** **n=8,938**	**Blacks** **n=1,106**	**Whites** **n=39,823**	**Blacks** **n=4,971**	**Whites** **n=45,801**	**Blacks** **n=5,235**
Number of recurrent ischemic strokes/number at risk	7,178	1,215	751	138	3,202	535	3,225	542
Incidence rates (95% CI) for recurrent ischemic stroke	107* (104-109)	152* (143-161)	114 (106-122)	175 (146-204)	109 (106-113)	146 (134-158)	103 (99-106)	153 (140-166)
Hazard ratio (95% CI) [†]	**1 (ref)**	1.36** (1.28-1.45)	**1 (ref)**	1.45 (1.20-1.74)	**1 (ref)**	1.29 (1.17-1.41)	**1 (ref)**	1.41 (1.29-1.55)

Abbreviations: CI, confidence interval. Values are expressed as counts, incidence rates (per 1,000 person-years), and hazard ratios with 95% confidence intervals. [†]Adjusted for age, sex, low income subsidy, Charlson score, history of atrial fibrillation, history of hypertension, history of hyperlipidemia, history of diabetes, history of coronary heart disease, history of heart failure, history of chronic kidney disease, history of dementia, history of depression, hospitalization for any cause during baseline period, length of stay, discharged home following index hospitalization, and skilled nursing facility stay following index hospitalization, accounting for the competing risk of death.

[*]Recurrent ischemic stroke rates decreased over the calendar periods for whites (p for trend<0.0001), but not blacks (p for

trend=0.1096).

[**]The black-white hazard ratio did not change over the calendar periods (p for interaction=0.4376).

Table e-4. Incidence rate of 1-year recurrent ischemic stroke among black and white Medicare beneficiaries at risk, by subgroup,

accounting for competing risk of mortality (1999 to 2013).

Subgroup	Number of events / Number at risk		Incidence rate (95% CI)	
	White n=114,453	Black n=14,336	White n=114,453	Black n=14,336
Overall	8,876	1,574	108 (106-111)	154 (147-162)
Age category				
66-74 years	2,419/29,478	656/5,629	102 (98-106)	151 (139-162)
≥75 years	6,457/84,975	918/8,707	111 (108-113)	157 (147-167)
Sex				
Women	5,377/68,626	1,012/9,115	111 (108-114)	156 (146-165)
Men	3,499/45,827	562/5,221	104 (101-108)	152 (139-164)
Low-income subsidy				
Yes	1,338/16,006	683/6,143	127 (120-133)	161 (149-173)
No	7,538/98,447	891/8,193	106 (103-108)	150 (140-159)
Charlson score category				
0-1	3,252/44,085	507/4,912	94 (91-97)	132 (121-144)
2-3	2,291/28,944	344/3,161	108 (104-112)	144 (129-160)
≥4	3,333/41,424	723/6,263	128 (123-132)	181 (168-194)

Subgroup	Number of events / Number at risk		Incidence rate (95% CI)	
	White n=114,453	**Black n=14,336**	**White n=114,453**	**Black n=14,336**
History of atrial fibrillation				
Yes	1,750/22,140	181/1,492	126 (120-132)	195 (167-224)
No	7,126/92,313	1,393/12,844	105 (102-107)	150 (142-158)
History of hypertension				
Yes	4,283/53,110	933/8,229	115 (112-119)	162 (152-173)
No	4,593/61,343	641/6,107	102 (100-105)	144 (133-155)
History of hyperlipidemia				
Yes	891/11,178	141/1,220	111 (104-118)	165 (137-192)
No	7,985/103,275	1,433/13,116	108 (106-110)	153 (145-161)
History of diabetes				
Yes	2,061/22,292	565/4,520	134 (128-140)	182 (167-197)
No	6,815/92,161	1,009/9,816	102 (100-105)	142 (133-151)
History of coronary heart disease				
Yes	2,754/33,823	428/3,532	118 (113-122)	180 (163-198)
No	6,122/80,630	1,146/10,804	105 (102-107)	146 (138-155)
History of heart failure				
Yes	1,272/14,937	268/2,180	147 (139-155)	207 (182-231)

Subgroup	Number of events / Number at risk		Incidence rate (95% CI)	
	White n=114,453	Black n=14,336	White n=114,453	Black n=14,336
No	7,604/99,516	1,306/12,156	104 (101-106)	147 (139-154)
History of chronic kidney disease				
Yes	1,021/13,104	312/2,682	128 (120-136)	192 (170-213)
No	7,855/101,349	1,262/11,654	106 (104-108)	147 (139-155)
History of dementia				
Yes	917/14,385	209/2,296	113.3 (106-121)	154 (133-175)
No	7,959/100,068	1,365/12,040	108 (105-110)	154 (146-162)
History of depression				
Yes	467/6,214	58/570	119 (108-130)	163 (121-205)
No	8,409/108,239	1,516/13,766	108 (105-110)	154 (146-162)
Hospitalization for any cause in the year prior to the index stroke				
Yes	2,377/28,842	472/4,033	132 (127-138)	189 (172-206)
No	6,499/85,611	1,102/10,303	101 (99-104)	143 (134-151)
Length of stay category				
0-5	3,714/49,826	547/4,856	98 (95-101)	147 (135-159)
6-10	2,656/32,702	493/4,290	122 (117-127)	166 (152-181)

Subgroup	Number of events / Number at risk		Incidence rate (95% CI)	
	White n=114,453	Black n=14,336	White n=114,453	Black n=14,336
>=10	2,506/31,925	534/5,190	113 (108-117)	151 (139-164)
Discharged home				
Yes	4,900/61,961	915/8,224	94 (92-97)	139 (130-148)
No	3,976/52,492	659/6,112	133 (129-137)	182 (168-196)
Have evidence of a skilled nursing facility stay following hospital discharge				
Yes	3,220/39,140	552/4,714	131 (126-136)	186 (170-202)
No	5,656/75,313	1,022/9,622	99 (96-101)	141 (132-150)

Abbreviations: CI, confidence interval. Values are expressed as counts and incidence rates with 95% confidence intervals.

Table e-5. Rate and relative risk of 30-day case fatality following recurrent ischemic stroke among black compared to white Medicare beneficiaries with recurrent ischemic stroke as compared to their white counterparts, fully adjusted, restricted to those with a primary diagnosis code for ischemic stroke.

	1999-2013 (all years)		1999-2001		2002-2006		2007-2013	
	Whites n=6,980	Blacks n=1,234	Whites n=1,650	Blacks n=289	Whites n=2,653	Blacks n=458	Whites n=2,677	Blacks n=487
Number of deaths within 30 days of recurrent ischemic stroke	1,301	162	298	52	521	50	482	60
Case fatality rate (95% CI) among those with recurrent ischemic stroke	0.19* (0.18-0.20)	0.13* (0.11-0.15)	0.18 (0.16-0.20)	0.18 (0.14-0.23)	0.20 (0.18-0.21)	0.11 (0.08-0.14)	0.18 (0.17-0.20)	0.12 (0.10-0.16)
Adjusted black-white RR (95% CI) [†]	**1 (ref)**	0.79** (0.67-0.92)	**1 (ref)**	1.04 (0.80-1.37)	**1 (ref)**	0.62 (0.47-0.82)	**1 (ref)**	0.80 (0.62-1.02)

Abbreviations: CI, confidence interval; RR, relative risk. Values are expressed as counts and relative risk with 95% confidence intervals. [†]Adjusted for age, sex, low-income subsidy, Charlson score, history of atrial fibrillation, history of hypertension, history of hyperlipidemia, history of diabetes, history of coronary heart disease, history of heart failure, history of chronic kidney disease, history of dementia, history of depression, hospitalization for any cause during baseline period, length of stay, discharged home after index hospitalization, and skilled nursing facility stay after index hospitalization.

[*]Case fatality did not decline over the calendar periods for whites (p for trend=0.6223) or blacks (p for trend=0.0922).

[**]The black-white risk ratio did not change over calendar period (p for interaction=0.3697).

Table e-6. Rate and relative risk of 30-day case fatality following recurrent ischemic stroke among black compared to white Medicare

beneficiaries with recurrent ischemic stroke as compared to their white counterparts, fully adjusted, restricted to those with a 2-year

look-back period.

	2001-2013 (all years)		2001		2002-2006		2007-2013	
	Whites n=7,178	Blacks n=1,215	Whites n=751	Blacks n=138	Whites n=3,202	Blacks n=535	Whites n=3,225	Blacks n=542
Number of deaths within 30 days of recurrent ischemic stroke	1,579	201	160	27	730	86	689	88
Case fatality rate (95% CI) among those with recurrent ischemic stroke	0.22* (0.21-0.23)	0.17* (0.15-0.19)	0.21 (0.19-0.24)	0.20 (0.14-0.27)	0.23 (0.21-0.24)	0.16 (0.13-0.19)	0.21 (0.20-0.23)	0.16 (0.13-0.20)
Adjusted black-white RR (95% CI) [†]	**1 (ref)**	0.80** (0.69-0.91)	**1 (ref)**	0.92 (0.65-1.31)	**1 (ref)**	0.74 (0.60-0.91)	**1 (ref)**	0.82 (0.67-1.00)

Abbreviations: CI, confidence interval; RR, relative risk. Values are expressed as counts and relative risk with 95% confidence

intervals. [†]Adjusted for age, sex, low-income subsidy, Charlson score, history of atrial fibrillation, history of hypertension, history of

hyperlipidemia, history of diabetes, history of coronary heart disease, history of heart failure, history of chronic kidney disease, history

of dementia, history of depression, hospitalization for any cause during baseline period, length of stay, discharged home after index

hospitalization, and skilled nursing facility stay after index hospitalization.

[*]Case fatality did not decline over the calendar periods for whites (p for trend=0.6105) or blacks (p for trend=0.3676).

[**]The black-white risk ratio did not change over calendar period (p for interaction=0.9298).

Table e-7. Thirty-day case fatality among black and white Medicare beneficiaries who experienced a recurrent ischemic stroke within 1-year of index stroke, by subgroup (1999 to 2013).

Subgroup	Number of events / Number at risk		Case fatality rate (95% CI)	
	White n=8,876	Black n=1,574	White n=8,876	Black n=1,574
Overall	1,900	256	0.21 (0.21-0.22)	0.16 (0.15-0.18)
Age				
66-74	331/2,419	72/656	0.14 (0.12-0.15)	0.11 (0.09-0.14)
>=75	1,569/6,457	184/918	0.24 (0.23-0.25)	0.20 (0.18-0.23)
Sex				
Female	1,213/5,377	161/1,012	0.23 (0.21-0.24)	0.16 (0.14-0.18)
Male	687/3,499	95/562	0.20 (0.18-0.21)	0.17 (0.14-0.20)
State Buy in				
Yes	292/1,338	112/683	0.22 (0.20-0.24)	0.16 (0.14-0.19)
No	1,608/7,538	144/891	0.21 (0.20-0.22)	0.16 (0.14-0.19)
Charlson score				
0-1	552/3,252	86/507	0.17 (0.16-0.18)	0.17 (0.14-0.20)
2-3	449/2,291	37/344	0.20 (0.18-0.21)	0.11 (0.08-0.15)
>=4	899/3,333	133/723	0.27 (0.25-0.29)	0.18 (0.16-0.21)

Subgroup	Number of events / Number at risk		Case fatality rate (95% CI)	
	White n=8,876	Black n=1,574	White n=8,876	Black n=1,574
History of atrial fibrillation				
Yes	497/1,750	35/181	0.28 (0.26-0.31)	0.19 (0.14-0.26)
No	1,403/7,126	221/1,393	0.20 (0.19-0.21)	0.16 (0.14-0.18)
History of hypertension				
Yes	954/4,283	133/933	0.22 (0.21-0.24)	0.14 (0.12-0.17)
No	946/4,593	123/641	0.21 (0.19-0.22)	0.19 (0.16-0.22)
History of hyperlipidemia				
Yes	174/891	14/141	0.20 (0.17-0.22)	0.10 (0.06-0.16)
No	1,726/7,985	242/1,433	0.22 (0.21-0.23)	0.17 (0.15-0.19)
History of diabetes				
Yes	421/2,061	85/565	0.20 (0.19-0.22)	0.15 (0.12-0.18)
No	1,479/6,815	171/1,009	0.22 (0.21-0.23)	0.17 (0.15-0.19)
History of coronary heart disease				
Yes	612/2,754	67/428	0.22 (0.21-0.24)	0.16 (0.13-0.19)
No	1,288/6,122	189/1,146	0.21 (0.20-0.22)	0.16 (0.14-0.19)
History of heart failure				
Yes	364/1,272	49/268	0.29 (0.26-0.31)	0.18 (0.14-0.23)

Subgroup	Number of events / Number at risk		Case fatality rate (95% CI)	
	White n=8,876	**Black n=1,574**	**White n=8,876**	**Black n=1,574**
No	1,536/7,604	207/1,306	0.20 (0.19-0.21)	0.16 (0.14-0.18)
History of chronic kidney disease				
Yes	267/1,021	68/312	0.26 (0.24-0.29)	0.22 (0.18-0.27)
No	1,633/7,855	188/1,262	0.21 (0.20-0.22)	0.15 (0.13-0.17)
History of dementia				
Yes	291/917	34/209	0.32 (0.29-0.35)	0.16 (0.12-0.22)
No	1,609/7,959	222/1,365	0.20 (0.19-0.21)	0.16 (0.14-0.18)
History of depression				
Yes	119/467	8/58	0.25 (0.22-0.30)	0.14 (0.07-0.25)
No	1,781/8,409	248/1,516	0.21 (0.20-0.22)	0.16 (0.15-0.18)
Hospitalization for any cause in the year prior to the index stroke				
Yes	607/2,377	87/472	0.26 (0.24-0.27)	0.18 (0.15-0.22)
No	1,293/6,499	169/1,102	0.20 (0.19-0.21)	0.15 (0.13-0.18)
Length of stay >5days				
0-5	659/3,714	73/547	0.18 (0.17-0.19)	0.13 (0.11-0.16)
6-10	670/2,656	86/493	0.25 (0.24-0.27)	0.17 (0.14-0.21)

Subgroup	Number of events / Number at risk		Case fatality rate (95% CI)	
	White n=8,876	Black n=1,574	White n=8,876	Black n=1,574
>=10	571/2,506	97/534	0.23 (0.21-0.24)	0.18 (0.15-0.22)
Discharged home				
Yes	795/4,900	107/915	0.16 (0.15-0.17)	0.12 (0.10-0.14)
No	1,105/3,976	149/659	0.28 (0.26-0.29)	0.23 (0.20-0.26)
Have evidence of a skilled nursing facility stay following hospital discharge				
Yes	927/3,220	120/552	0.29 (0.27-0.30)	0.22 (0.18-0.25)
No	973/5,656	136/1,022	0.17 (0.16-0.18)	0.13 (0.11-0.16)

Abbreviations: CI, confidence interval. Values are expressed as counts and case fatality rates with 95% confidence intervals.

Figure e-1. Three calendar periods used to evaluate recurrent stroke event and case-fatality rates: 1999-2001, 2002-2006, and 2007-2013.