

Appendix

Supplementary Table I. Patient comorbidities

Comorbidity	1999*	2000	2004	2005	2009	2010
Congestive heart failure, n (%)	29,886 (15.7)	32,256 (16.3)	33,910 (16.3)	32,458 (16.2)	26,009 (15.3)	25,610 (15.1)
Myocardial infarction, n (%)	9045 (4.7)	9785 (4.9)	10,711 (5.2)	9887 (4.9)	8626 (5.1)	8555 (5.0)
Unstable angina, n (%)	12,361 (6.5)	12,139 (6.1)	9504 (4.6)	8420 (4.2)	5707 (3.4)	5272 (3.1)
Atrial fibrillation, n (%)	14,365 (7.5)	15,610 (7.9)	17,266 (8.3)	17,152 (8.6)	14,159 (8.3)	13,922 (8.2)
DVT/PE, n (%)	602 (0.3)	637 (0.3)	837 (0.4)	835 (0.4)	866 (0.5)	885 (0.5)
Mitral valve prolapse, n (%)	2701 (1.4)	2870 (1.5)	3329 (1.6)	3132 (1.6)	3307 (2.0)	3442 (2.0)
Atherosclerosis, n (%)	130,343 (68.3)	138,158 (69.8)	152,343 (73.4)	147,186 (73.6)	125,652 (74.0)	125,929 (74.1)
Respiratory failure, n (%)	4798 (2.5)	5333 (2.7)	6029 (2.9)	6049 (3.0)	8126 (4.8)	8466 (5.0)
Hypertension, n (%)	101,361 (53.1)	108,999 (55.1)	124,539 (60.0)	120,195 (60.1)	112,716 (66.4)	113,563 (66.9)
Stroke, n (%)	4111 (2.2)	4264 (2.2)	4022 (1.9)	3827 (1.9)	3092 (1.8)	3139 (1.8)
Cerebrovascular disease, n (%)	10,887 (5.7)	11,274 (5.7)	10,112 (4.9)	9365 (4.7)	7366 (4.3)	7021 (4.1)
Renal failure, n (%)	8049 (4.2)	9335 (4.7)	13,988 (6.7)	14,767 (7.4)	21,803 (12.8)	22,986 (13.5)
COPD, n (%)	43,034 (22.6)	45,198 (22.8)	50,645 (24.4)	50,266 (25.1)	34,458 (20.3)	34,332 (20.2)
Pneumonia, n (%)	22,838 (12.0)	25,050 (12.7)	29,297 (14.1)	29,682 (14.8)	26,355 (15.5)	25,312 (14.9)
Malnutrition, n (%)	4221 (2.2)	4401 (2.2)	5812 (2.8)	5957 (3.0)	7954 (4.7)	8248 (4.9)
Dementia, n (%)	16,956 (8.9)	18,643 (9.4)	22,203 (10.7)	21,621 (10.8)	19,131 (11.3)	19,134 (11.3)
Functional disability, n (%)	4958 (2.6)	5314 (2.7)	5230 (2.5)	4702 (2.3)	4441 (2.6)	4319 (2.5)
PVD, n (%)	11,850 (6.2)	12,900 (6.5)	14,589 (7.0)	14,175 (7.1)	12,152 (7.2)	11,381 (6.7)
Cancer, n (%)	11,668 (6.1)	12,341 (6.2)	13,467 (6.5)	13,095 (6.5)	11,279 (6.6)	11,103 (6.5)
Trauma, n (%)	9650 (5.1)	10,370 (5.2)	12,928 (6.2)	12,631 (6.3)	10,420 (6.1)	9905 (5.8)
Psychiatric disease, n (%)	3660 (1.9)	3783 (1.9)	3947 (1.9)	3615 (1.8)	3536 (2.1)	3569 (2.1)
Liver disease, n (%)	900 (0.5)	993 (0.5)	1293 (0.6)	1266 (0.6)	1093 (0.6)	1144 (0.7)
Depression, n (%)	7907 (4.1)	9229 (4.7)	11,600 (5.6)	11,046 (5.5)	9324 (5.5)	9172 (5.4)
Diabetes, n (%)	58,200 (30.5)	60,679 (30.7)	65,700 (31.6)	63,495 (31.7)	53,930 (31.8)	54,486 (32.1)

COPD = chronic obstructive pulmonary disease; DVT/PE = deep vein thrombosis/pulmonary embolism; PVD = peripheral vascular disease.

* For display purposes, we report data from 1999, 2000, 2004, 2005, 2009, and 2010.

Supplementary Table II. Risk-adjusted annual trends for ischemic stroke after AMI by subgroups

Hazard ratio	95% Confidence interval		Subgroup
0.977	0.972	0.982	Treatment: PCI only
0.985	0.977	0.994	Treatment: CABG only
0.995	0.966	1.026	Treatment: PCI and CABG
0.976	0.973	0.979	Treatment: non-reperfusion
0.970	0.966	0.974	Race-sex: White male
0.976	0.973	0.980	Race-sex: White female
0.979	0.966	0.991	Race-sex: Black male
0.979	0.969	0.989	Race-sex: Black female
0.953	0.937	0.970	Race-sex: other race male
0.972	0.957	0.988	Race-Sex: other race female
0.975	0.971	0.980	Age (yrs): 65-74
0.971	0.967	0.975	Age (yrs): 75-84
0.977	0.972	0.981	Age (yrs): ≥85

CABG = coronary artery bypass graft surgery; PCI = percutaneous coronary intervention

Supplementary Table III. Risk-adjusted annual trends for hemorrhagic stroke after AMI by subgroups

Hazard ratio	95% Confidence interval		Subgroup
1.014	0.997	1.032	Treatment: PCI only
1.013	0.982	1.046	Treatment: CABG only
0.998	0.888	1.122	Treatment: PCI and CABG
1.001	0.990	1.011	Treatment: non-reperfusion
1.003	0.989	1.017	Race-sex: White male
0.991	0.978	1.003	Race-sex: White female
1.027	0.982	1.074	Race-sex: Black male
1.034	0.999	1.069	Race-sex: Black female
1.014	0.964	1.067	Race-sex: other race male
1.047	0.998	1.099	Race-sex: other race female
1.012	0.997	1.028	Age (yrs): 65-74
0.994	0.981	1.007	Age (yrs): 75-84
1.008	0.991	1.025	Age (yrs): ≥85

CABG = coronary artery bypass graft surgery; PCI = percutaneous coronary intervention.

Supplementary Table IV. Thirty-day and 1-year mortality rates for ischemic stroke after AMI

	1999*	2000	2004	2005	2009	2010
Total	5528	5721	5073	4717	3905	3803
Thirty-day ischemic stroke mortality						
Deaths	1100	1144	959	958	742	696
Overall mortality	19.9 (18.8-20.9)	20.0 (19.0-21.1)	18.9 (17.9-20.0)	20.3 (19.1-21.4)	19.0 (17.8-20.2)	18.3 (17.1-19.6)
By age group (yrs)						
65-74	13.1 (11.5-14.8)	12.5 (11.0-14.2)	10.5 (9.10-12.2)	11.7 (10.1-13.5)	9.7 (8.15-11.5)	9.8 (8.27-11.6)
75-84	16.9 (15.4-18.5)	19.3 (17.8-20.9)	17.5 (15.9-19.2)	18.3 (16.7-20.1)	16.2 (14.3-18.2)	14.8 (12.9-16.7)
≥85	33.1 (30.7-35.7)	30.1 (27.7-32.5)	31.9 (29.3-34.5)	33.4 (30.8-36.1)	33.3 (30.6-36.1)	33.3 (30.5-36.2)
By race-sex group						
White female	23.3 (21.7-25.0)	22.5 (21.0-24.2)	23.5 (21.7-25.3)	23.5 (21.7-25.4)	22.9 (20.9-24.9)	21.1 (19.2-23.1)
White male	15.4 (14.0-17.0)	17.2 (15.7-18.8)	14.4 (12.9-16.0)	16.3 (14.7-18.0)	16.8 (15.0-18.8)	15.4 (13.6-17.2)
Black female	20.7 (16.5-25.5)	20.6 (16.5-25.1)	21.1 (17.0-25.8)	22.0 (17.7-26.8)	16.0 (11.7-21.1)	19.5 (14.7-25.1)
Black male	23.4 (17.3-30.5)	24.1 (18.1-30.8)	13.2 (8.81-18.7)	20.5 (14.3-28.0)	10.5 (6.23-16.3)	15.5 (10.1-22.4)
Other race female	21.6 (15.0-29.6)	19.5 (12.9-27.6)	14.6 (9.61-21.0)	22.1 (14.6-31.3)	13.2 (7.56-20.8)	15.9 (8.72-25.6)
Other race male	19.0 (12.0-27.9)	11.8 (6.45-19.4)	21.0 (14.2-29.2)	19.2 (12.0-28.3)	11.7 (5.99-20.0)	22.2 (13.3-33.6)
By history of revascularization						
PCI	11.1 (9.2-13.2)	9.6 (7.8-11.5)	9.2 (7.8-10.9)	10.9 (9.3-12.7)	10.2 (8.6-12.0)	10.2 (8.6-11.9)
CABG	7.0 (4.9-9.7)	8.3 (6.10-11.1)	5.1 (3.31-7.5)	8.1 (5.64-11.1)	6.3 (3.86-9.5)	6.1 (3.7-9.3)
Both PCI and CABG	2.8 (0.1-14.5)	6.5 (0.8-21.4)	9.5 (2.7-22.6)	14.3 (4.0-32.7)	5.4 (0.7-18.2)	9.1 (1.9-24.3)
Non-reperfusion	23.6 (22.3-25.0)	24.2 (22.9-25.5)	25.5 (24.0-27.0)	26.3 (24.7-27.9)	25.8 (24.0-27.7)	25.2 (23.4-27.1)
One-year ischemic stroke mortality						
Deaths	2090	2197	1867	1778	1382	1342
Overall mortality	37.8 (36.5-39.1)	38.4 (37.2-39.7)	36.8 (35.5-38.2)	37.7 (36.3-39.1)	35.4 (33.9-36.9)	35.3 (33.8-36.8)
By age group						
65-74	26.0 (23.9-28.1)	25.2 (23.1-27.3)	25.2 (23.1-27.4)	24.7 (22.5-27.0)	22.7 (20.5-25.1)	22.6 (20.4-25.0)
75-84	34.8 (32.9-36.8)	38.0 (36.2-40.0)	34.7 (32.7-36.8)	35.3 (33.2-37.5)	31.7 (29.4-34.2)	30.3 (27.9-32.8)
≥85	57.2 (54.6-59.8)	54.5 (51.9-57.1)	54.9 (52.2-57.7)	56.7 (53.9-59.5)	54.7 (51.8-57.7)	57.2 (54.2-60.2)
By race-sex group						
White female	41.2 (39.3-43.1)	41.3 (39.4-43.2)	40.6 (38.5-42.7)	41.8 (39.7-43.9)	39.1 (36.8-41.4)	38.6 (36.3-41.0)
White male	32.1 (30.1-34.0)	33.4 (31.5-35.4)	30.7 (28.7-32.8)	31.3 (29.2-33.4)	31.0 (28.7-33.4)	30.3 (28.0-32.7)
Black female	45.1 (39.7-50.7)	47.2 (42.0-52.5)	48.3 (42.9-53.7)	46.9 (41.5-52.4)	39.8 (33.8-46.1)	40.2 (34.0-46.7)
Black male	47.4 (39.7-55.1)	41.7 (34.6-49.1)	39.1 (32.2-46.3)	43.8 (35.6-52.3)	34.6 (27.3-42.4)	38.5 (30.6-46.9)
Other race female	42.5 (34.0-51.4)	45.5 (36.5-54.8)	34.1 (26.9-42.0)	42.3 (32.7-52.4)	38.6 (29.6-48.2)	37.8 (27.3-49.2)
Other race male	33.3 (24.4-43.2)	30.0 (21.6-39.5)	37.1 (28.6-46.2)	31.3 (22.4-41.4)	23.4 (15.3-33.3)	37.5 (26.4-49.7)
By history of revascularization						
PCI	22.0 (19.4-24.8)	20.5 (18.1-23.1)	21.7 (19.6-24.0)	22.1 (19.9-24.4)	21.9 (19.7-24.3)	20.9 (18.7-23.2)
CABG	14.8 (11.8-18.3)	17.2 (14.1-20.8)	14.5 (11.4-18.0)	15.9 (12.5-19.7)	12.5 (9.08-16.6)	12.7 (9.26-16.9)
Both PCI and CABG	5.6 (0.68-18.7)	12.9 (3.63-29.8)	14.3 (5.43-28.5)	21.4 (8.30-41.0)	13.5 (4.54-28.8)	15.2 (5.11-31.9)
Non-reperfusion	44.6 (43.0-46.1)	45.7 (44.2-47.2)	47.2 (45.5-49.0)	48.1 (46.3-49.9)	46.4 (44.3-48.5)	47.7 (45.5-49.8)

CABG = coronary artery bypass graft surgery; PCI = percutaneous coronary intervention.

*For display purposes, we report data from 1999, 2000, 2004, 2005, 2009, and 2010. Total = total hospitalizations for ischemic stroke after AMI.

Supplementary Table V. Thirty-day and 1-year mortality rates for hemorrhagic stroke after AMI

	1999*	2000	2004	2005	2009	2010
Total	356	400	451	435	423	335
Thirty-day hemorrhagic stroke mortality						
Deaths	172	212	241	212	202	153
Overall mortality	48.3 (43.0-53.6)	53.0 (48.0-58.0)	53.4 (48.7-58.1)	48.7 (44.0-53.5)	47.8 (42.9-52.6)	45.7 (40.3-51.2)
By age group						
65-74	41.8 (31.5-52.6)	46.5 (37.1-56.1)	44.9 (36.1-54.0)	46.5 (38.2-55.0)	45.7 (36.8-54.7)	41.0 (32.2-50.3)
75-84	48.3 (40.8-55.9)	50.5 (43.1-57.9)	55.5 (48.3-62.5)	46.6 (39.0-54.3)	46.8 (39.5-54.2)	40.5 (31.5-50.0)
≥85	55.3 (44.1-66.1)	65.0 (54.8-74.3)	58.9 (49.7-67.6)	54.7 (45.2-63.9)	51.9 (42.0-61.6)	57.7 (47.3-67.7)
By race-sex group						
White female	48.1 (40.7-55.6)	52.9 (45.5-60.1)	58.1 (51.2-64.7)	52.2 (45.2-59.1)	51.3 (44.0-58.6)	52.4 (43.9-60.9)
White male	53.1 (44.1-61.9)	53.9 (45.7-62.1)	49.7 (41.9-57.5)	46.4 (38.6-54.3)	46.3 (38.4-54.3)	40.2 (31.6-49.2)
Black female	38.9 (17.3-64.3)	54.5 (32.2-75.6)	43.5 (23.2-65.5)	46.7 (28.3-65.7)	33.3 (18.0-51.8)	40.0 (21.1-61.3)
Black male	30.0 (6.7-65.3)	46.2 (19.2-74.9)	37.5 (15.2-64.6)	42.9 (17.7-71.1)	28.6 (8.4-58.1)	21.4 (4.7-50.8)
Other race female	25.0 (0.6-80.6)	38.5 (13.9-68.4)	63.2 (38.4-83.7)	25.0 (0.6-80.6)	50.0 (21.1-78.9)	75.0 (42.8-94.5)
Other race male	36.4 (10.9-69.2)	66.7 (29.9-92.5)	42.9 (9.9-81.6)	41.7 (15.2-72.3)	66.7 (38.4-88.2)	35.7 (12.8-64.9)
By history of revascularization						
PCI	39.1 (25.1-54.6)	51.9 (37.8-65.7)	59.5 (50.4-68.2)	47.8 (39.3-56.5)	46.2 (37.5-55.1)	39.8 (30.7-49.5)
CABG	34.6 (17.2-55.7)	41.0 (25.6-57.9)	30.6 (16.4-48.1)	40.7 (22.4-61.2)	29.0 (14.2-48.0)	25.0 (10.7-44.9)
Both PCI and CABG	0.0 (0.0-84.2)	33.3 (0.8-90.6)	NA	50.0 (6.8-93.2)	100 (15.8-0.0)	50.0 (1.3-98.7)
Non-reperfusion	51.4 (45.4-57.4)	54.9 (49.2-60.6)	53.6 (47.7-59.5)	50.0 (43.8-56.2)	50.4 (44.1-56.7)	52.1 (44.8-59.3)
One-year hemorrhagic stroke mortality						
Deaths	23,710	27,000	29,901	27,884	26,311	20,301
Overall mortality	66.6 (61.4-71.5)	67.5 (62.7-72.1)	66.3 (61.7-70.7)	64.1 (59.4-68.7)	62.2 (57.4-66.8)	60.6 (55.1-65.9)
By age group						
65-74	57.1 (46.3-67.5)	64.0 (54.5-72.8)	52.8 (43.7-61.7)	59.0 (50.5-67.1)	55.1 (46.0-64.0)	50.0 (40.8-59.2)
75-84	67.2 (59.9-74.0)	66.1 (58.8-72.9)	71.0 (64.2-77.2)	63.8 (56.2-70.9)	60.1 (52.7-67.2)	58.6 (49.1-67.7)
≥85	75.3 (64.8-84.0)	74.0 (64.3-82.3)	72.6 (63.9-80.2)	70.9 (61.8-79.0)	74.1 (64.8-82.0)	76.3 (66.6-84.3)
By race-sex group						
White female	63.4 (56.0-70.4)	67.0 (59.9-73.6)	68.7 (62.0-74.8)	67.5 (60.7-73.8)	62.4 (55.1-69.4)	67.1 (58.8-74.8)
White male	70.8 (62.2-78.4)	67.1 (59.0-74.5)	63.9 (56.2-71.1)	61.4 (53.6-68.9)	61.3 (53.2-68.8)	55.1 (46.0-64.0)
Black female	83.3 (58.6-96.4)	77.3 (54.6-92.2)	60.9 (38.5-80.3)	66.7 (47.2-82.7)	45.5 (28.1-63.7)	60.0 (38.7-78.9)
Black male	70.0 (34.8-93.3)	53.8 (25.1-80.8)	56.3 (29.9-80.3)	64.3 (35.1-87.2)	64.3 (35.1-87.2)	42.9 (17.7-71.1)
Other race female	50.0 (6.8-93.2)	69.2 (38.6-90.9)	78.9 (54.4-94.0)	25.0 (0.63-80.6)	75.0 (42.8-94.5)	75.0 (42.8-94.5)
Other race male	45.5 (16.8-76.6)	77.8 (40.0-97.2)	57.1 (18.4-90.1)	50.0 (21.1-78.9)	93.3 (68.1-99.8)	50.0 (23.0-77.0)
By history of revascularization						
PCI	56.5 (41.1-71.1)	59.3 (45.0-72.4)	71.4 (62.7-79.1)	58.7 (50.0-67.0)	58.3 (49.4-66.9)	51.3 (41.7-60.8)
CABG	38.5 (20.2-59.4)	53.8 (37.2-69.9)	44.4 (27.9-61.9)	55.6 (35.3-74.5)	41.9 (24.6-60.9)	35.7 (18.6-55.9)
Both PCI and CABG	0.0 (0.0-84.2)	33.3 (0.8-90.6)	NA	75.0 (19.4-99.4)	100 (15.8-0.0)	50.0 (1.3-98.7)
Non-reperfusion	71.3 (65.6-76.5)	71.1 (65.6-76.1)	66.8 (61.0-72.2)	67.7 (61.7-73.3)	66.3 (60.2-72.0)	69.8 (62.8-76.2)

Total= total hospitalizations for hemorrhagic stroke after AMI.

AMI=acute myocardial infarction; CABG=coronary artery bypass graft surgery; PCI=percutaneous coronary intervention

*For display purposes, we report data from 1999, 2000, 2004, 2005, 2009, and 2010.