

Online Table 1. Procedural Costs Based on Medicare Payment Rates											
		Medicare National Payment Rates by Year									
Year	Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nuclear SPECT (HCPCS code 78451, 78452)	Myocardial perfusion imaging, tomographic (SPECT) (including attenuation correction, qualitative or quantitative wall motion, ejection fraction by first pass or gated technique, additional quantification, when performed); single study, at rest or stress (exercise or pharmacologic)	\$760	\$760	\$760	\$760	\$673	\$680	\$1,154	\$1,141	\$1,108	\$1,139
CT Angiography (HCPCS code 75572, 75574)	Computed tomography, heart, with contrast material, for evaluation of cardiac structure and morphology (including 3D image post-processing, assessment of cardiac function, and evaluation of venous structures, if performed)	\$257	\$257	\$257	\$257	\$262	\$267	\$222	\$216	\$237	\$265

Stress Echocardiography (HCPCS code 93350, 93351)	Echocardiography rest and CV during stress test with interpretation and report; increased electrocardiographic monitoring, with physician supervision	\$562	\$562	\$562	\$562	\$579	\$559	\$594	\$594	\$417	\$450
Exercise Stress Test (HCPCS code 93017)	Cardiovascular stress test using maximal or submaximal treadmill or bicycle exercise, continuous electrocardiographic monitoring, and/or pharmacological stress; tracing only, without interpretation and report	\$178	\$178	\$178	\$178	\$178	\$177	\$244	\$238	\$220	\$232
Stress CMR (HCPCS code 75563)	Cardiac magnetic resonance imaging for morphology and function without contrast material(s), followed by contrast material(s) and further sequences; with stress imaging	\$534	\$534	\$534	\$534	\$534	\$549	\$1,154	\$1,141	\$1,108	\$657

Diagnostic Angiography (HCPCS code 93458)	X-ray coronary angiography with left heart catheterization (XCA)	\$1,055	\$1,055	\$1,055	\$1,055	\$1,098	\$1,112	\$1,084	\$1,094	\$1,092	\$1,025
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Online Table 2. Characteristics of Participating Centers in the SPINS Registry														
	All Sites	Brigham and Women's Hospital	San Antonio Military Medical Center	University of Chicago	University of Kentucky	Ohio State University	Revere Health	University of Minnesota	New York Presbyterian-Brooklyn Methodist Hospital	Houston Methodist DeBakey Heart and Vascular Center	University of Illinois at Chicago	Sharon Regional Health System	Scripps Clinic	NHLBI/NIH
City, State		Boston, Massachusetts	San Antonio, Texas	Chicago, Illinois	Lexington, Kentucky	Columbus, Ohio	Provo, Utah	Minneapolis, Minnesota	Brooklyn, New York	Houston, Texas	Chicago, Illinois	Sharon, Pennsylvania	San Diego, California	Bethesda, Maryland
Total Enrolled (N, %)	2,349	362	114	121	100	122	497	113	179	100	101	285	113	142
Practice Setting		University Hospital	Military Hospital	University Hospital	University Hospital	University Hospital	Multi-specialty Group Practice	University Hospital	Cardiovascular Group Practice	University Hospital	University Hospital	Cardiovascular Group Practice	Multi-specialty Group Practice	Government Hospital

Mean Age (mean, SD)	63 ± 11	62 ± 11	62 ± 12	58 ± 11	57 ± 10	57 ± 11	66 ± 10	63 ± 12	65 ± 11	61 ± 10	63 ± 12	63 ± 12	65 ± 11	59 ± 10
Female (N, %)	1,104 (47)	130 (36)	51 (45)	58 (48)	49 (49)	76 (62)	218 (44)	52 (46)	92 (51)	43 (43)	56 (55)	167 (59)	42 (37)	70 (49)
History of MI (N, %)	358 (15)	67 (19)	19 (17)	13 (11)	32 (32)	25 (20)	87 (18)	18 (16)	17 (10)	23 (23)	14 (14)	9 (3)	17 (15)	17 (12)
History of PCI (N, %)	538 (23)	75 (21)	30 (26)	14 (12)	36 (36)	39 (32)	148 (30)	28 (25)	30 (17)	25 (25)	18 (18)	46 (16)	23 (20)	26 (18)
Coronary Risk Factors, median (IQR)	3 (2)	3 (2)	4 (1)	3 (1)	4 (2)	4 (1)	3 (2)	3 (2)	3 (2)	4 (2)	3 (2)	3 (2)	3 (2)	3 (2)
History of HTN (N, %)	1842 (78)	276 (76)	102 (89)	87 (72)	87 (87)	104 (85)	370 (74)	91 (81)	146 (82)	83 (83)	83 (82)	225 (79)	70 (62)	118 (83)
History of hypercholesterolemia (N, %)	1647 (70)	244 (67)	97 (85)	84 (69)	81 (81)	100 (82)	318 (64)	81 (72)	117 (65)	72 (73)	71 (70)	189 (67)	85 (75)	108 (76)
History of Diabetes mellitus (N, %)	664 (28)	93 (26)	40 (35)	37 (31)	36 (36)	37 (30)	122 (25)	36 (32)	72 (40)	36 (36)	32 (32)	66 (23)	14 (12)	43 (30)
History of smoking (N, %)	756 (32)	89 (25)	38 (33)	53 (45)	49 (49)	67 (55)	54 (11)	62 (55)	33 (18)	42 (43)	44 (44)	123 (43)	46 (41)	56 (40)
Family history of premature CAD (N, %)	761 (34)	91 (27)	32 (28)	77 (64)	35 (38)	72 (64)	109 (22)	35 (31)	29 (16)	70 (71)	12 (12)	112 (43)	36 (40)	51 (37.5)
Symptoms leading to CMR (CP or dyspnea)	1825 (78)	247 (68)	102 (89)	76 (63)	99 (99)	110 (90)	371 (75)	76 (67)	113 (63)	69 (69)	100 (99)	250 (88)	76 (67)	136 (96)

LVEF (%), median (IQR)	63 (16)	60 (24)	67 (17)	60 (12)	63 (13)	64 (11)	68 (12)	61 (12)	58 (18)	63 (28)	70 (17)	61 (12)	58 (11)	62 (11)
1.5-T or 3-T	1.5-T 65%, 3-T 35%	1.5-T 6%, 3-T 94%	1.5-T 96%, 3-T 4%	1.5-T 100%	1.5-T 93%, 3-T 7%	1.5-T 100%	1.5-T 39%, 3-T 61%	1.5-T 100%	1.5-T 100%	1.5-T 43%, 3-T 57%	3-T 100%	1.5-T 100%	1.5-T 100%	1.5-T 100%
MRI Vendor	Siemens 69%, GE 22%, Philips 9%	Siemens 96%, GE 4%	Siemens 100%	Philips 99%, GE 1%	Siemens 100%	Siemens 100%	GE 100%	Siemens 100%	Siemens 100%	Siemens 100%	Philips 100%	Siemens 100%	Siemens 100%	Siemens 100%
Typical Stress Perfusion Method (type, segmental model)*	FLASH 58%, EPI 36%, SSFP 6%	FLASH, 17-segment, 100%	FLASH, 16-segment, 100%	EPI, 17-segment, 100%	FLASH, 17-segment, 100%	EPI, 17-segment, 100%	EPI, 16-segment, 100%	FLASH, 16-segment, 100%	FLASH, 16-segment, 100%	EPI, 17-segment, 100%	FLASH, 17-segment, 100%	FLASH, 16-segment, 100%	FLASH, 17-segment, 100%	SSFP, 16-segment, 100%
Typical LGE Method (type, segmental model)**	IR-GRE 100%	IR-GRE, 17-segment	IR-GRE, 17-segment	IR-GRE, 17-segment	IR-GRE, 17-segment	IR-GRE, 17-segment	IR-GRE, 17-segment	IR-GRE, 17-segment	IR-GRE, 17-segment	IR-GRE, 17-segment	IR-GRE, 17-segment	IR-GRE, 17-segment	IR-GRE, 17-segment	IR-GRE, 17-segment
Contrast Used (type)	Magnevist 62%, Omniscan 17%, Multihance 10%, Optima 6%,	Magnevist 77%, Multihance 23%	Magnevist 99%, Omniscan 1%	Omniscan 89%, Multihance 11%	Magnevist 100%	Magnevist 64%, Multihance 36%	Magnevist 100%	Magnevist 58%, Multihance 42%	Optima 67%, Omniscan 31%, Magnevist 2%	Magnevist 69%, Optima 31%	Prohance 89%, Omniscan 11%	Omniscan 79%, Multihance 21%	Magnevist 97%, Gado 3%	Magnevist 100%

	Others 5%													
Pharmacologic Stress Used	Regadenoson 72%, Adenosine 27%, Dipyridamole 1%	Regadenoson 84%, Adenosine 16%	Regadenoson 54%, Adenosine 46%	Regadenoson 96%, Adenosine 4%	Regadenoson 88%, Dipyridamole 12%	Regadenoson 48%, Adenosine 52%	Regadenoson 20%, Adenosine 80%	Regadenoson 100%	Regadenoson 98%, Dipyridamole 2%	Regadenoson 100%	Regadenoson 100%	Regadenoson 81%, Adenosine 19%	Regadenoson 98%, Adenosine 2%	Regadenoson 97%, Dipyridamole 3%
Average Study Follow-up in years (IQR)	5.4 (2.2)	5.4 (2.8)	5.7 (2.3)	6.1 (1.7)	5.0 (1.2)	6.2 (2.4)	6.7 (2.3)	4.9 (0.7)	5.8 (1.7)	4.8 (1.6)	5.0 (0.4)	4.6 (0.7)	5.1 (0.9)	6.5 (2.2)
*FLASH = Fast low angle single-shot, EPI = Echo-planar imaging, SSFP = steady-state free precession														
**IR-GRE = Inversion recovery prepared gradient-echo														

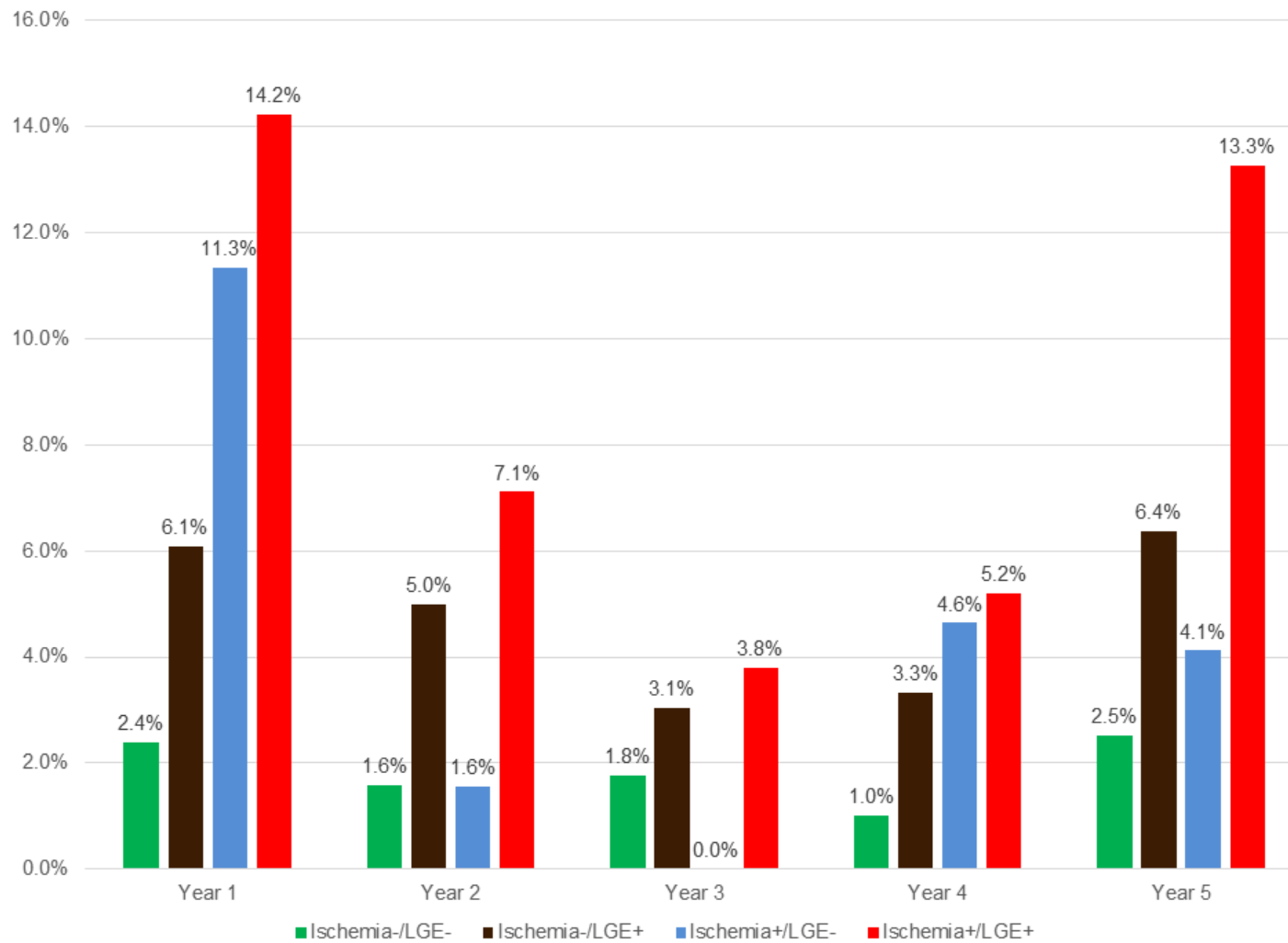
Online Figure legend

Online Figure 1: Secondary outcome over years of follow-up. Occurrence of secondary outcome across different years of study follow-up, stratified by presence/absence of ischemia and LGE.

Online Figure 2: Costs of ischemia testing in the first year after CMR. Costs of downstream cardiac tests incurred during first year of follow-up, stratified by stress CMR findings and practice type. Costs are in dollars spent per patient.

#For patients with Ischemia+/LGE+, costs spending was higher in Government/Military hospitals than the other 3 practice types ($p < 0.01$). *For patients with Ischemia+/LGE-, costs spending at Government/Military and Multi-specialty group were higher than university hospitals ($p < 0.05$).

Online Figure 1



Online Figure 2

