

## Supplemental Figures and Tables

**Supplemental Table 1.** Characteristics of patients by cardiac rehabilitation referral 2007-12.

	<b>Overall</b>	<b>Not Referred</b>	<b>Referred</b>
	(n = 301247)	(n = 67327)	(n = 233920)
Age, years (median)	62	64	61
Female, %	32	37	31
Race/Ethnicity, %			
White	83	77	85
Black	10	13	9
Asian	1	2	1
Hispanic	4	6	4
Other	1	1	1
Insurance, %			
HMO/Private	58	54	59
Medicare	23	27	22
Medicaid	4	5	4
Self/None	12	12	12
<u>Clinical History</u>			
BMI, kg/m <sup>2</sup> (median)	29	28	29
Current Smoker, %	38	34	40
Hypertension, %	70	74	69
Dyslipidemia, %	59	60	59
Diabetes Mellitus, %	29	33	28

On Dialysis, %	3	3	1
Prior Heart Failure, %	9	14	8
Prior PCI, %	24	26	23

Hospitalization

STEMI on admission, %	42	31	45
Catheterization, %	92	83	95
PCI (NSTEMI) , %	55	41	61
CABG, %	9	4	10
Ejection Fraction , %			
≥ 50%, Normal	58	59	58
40-49%, Mild	22	20	23
25-39%, Moderate	16	15	16
<25%, Severe	4	4	3
Length of Stay, days (median)	3	3	3

Hospital Characteristics

Region, %			
West	13	17	12
Northeast	8	11	7
Midwest	32	20	35
South	47	52	46
Academic, %	25	28	25
Bed size, number of beds (median)	407	402	407

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Values presented as column % or median.  $p < 0.0001$  for all characteristics by Wilcoxon rank sum test for continuous variables and Mantel-Haenszel chi-square test for categorical variables. For multi-level categorical variables, significance at the overall group level. Abbreviations: HMO: health maintenance organization; BMI: body mass index; PCI: percutaneous coronary intervention; CABG: coronary artery bypass graft; STEMI: ST elevation myocardial infarction; NSTEMI: non-ST elevation myocardial infarction.

**Supplemental Table 2.** Multivariate predictors of referral to cardiac rehabilitation in 2007 – 12.

<b>Predictor</b>	<b>X<sup>2</sup></b>	<b>Adjusted OR (95%CI)</b>	<b>p value</b>
CABG in the hospital	312	4.82 (4.05, 5.74)	<0.0001
PCI in the hospital	285	2.41 (2.17, 2.67)	<0.0001
Catheterization in the hospital	86	1.62 (1.47, 1.80)	<0.0001
LV ejection fraction (vs. $\geq 50$ %)	44		<0.0001
40-49% (mildly reduced)		1.08 (1.02, 1.14)	0.005
25-39% (moderately reduced)		1.05 (0.99, 1.11)	0.12
< 25% (severely reduced)		1.01 (0.92, 1.11)	0.81
Missing or not evaluated		0.76 (0.69, 0.84)	<0.0001
STEMI on admission	39	1.33 (1.22, 1.45)	<0.0001
Hospital Region (vs. West)	37		<0.0001
Northeast		1.18 (0.58, 2.41)	0.65
Midwest		2.94 (1.97, 4.37)	<0.0001
South		1.34 (0.90, 2.00)	0.15
Race/Ethnicity (vs. White)	31		<0.0001
Black		0.75 (0.65, 0.87)	0.0001
Asian		0.81 (0.64, 1.03)	0.08
Hispanic		0.64 (0.52, 0.79)	<0.0001
Other		0.79 (0.60, 1.03)	0.08
On Dialysis	28	0.77 (0.70, 0.85)	<0.0001
Female gender	21	0.95 (0.93, 0.97)	<0.0001
Age (per 5 year increase)	18		<0.0001

Patients $\leq$ 60		1.01 (0.99, 1.02)	0.41
Patients $>$ 60		0.97 (0.96, 0.99)	$<$ 0.0001
Prior PCI	14	0.92 (0.88, 0.96)	0.0002
Length of stay (per 1 day increase)	14		0.001
Patients with LOS $\leq$ 3 days		1.10 (1.04, 1.17)	0.002
Patients with LOS $>$ 3 days		0.99 (0.98, 1.01)	0.30
Hospital size (per 50 bed increase)	11		0.004
Hospitals with $\leq$ 500 beds		1.12 (1.04, 1.20)	0.001
Hospitals with $>$ 500 beds		1.00 (1.00, 1.00)	0.49
BMI (per 5 kg/m <sup>2</sup> increase)	8		0.02
Patients with BMI $\leq$ 30		1.03 (1.01, 1.05)	0.005
Patients with BMI $>$ 30		1.00 (1.00, 1.00)	0.51
Academic hospital	7	0.57 (0.38, 0.87)	0.009
Dyslipidemia	7	1.09 (1.02, 1.16)	0.01
Diabetes Mellitus	6	0.96 (0.94, 0.99)	0.01

Adjusted for all variables in table. Abbreviations: BMI: body mass index; CABG: coronary artery bypass graft; PCI: percutaneous coronary intervention; LV: left ventricular; STEMI: ST elevation myocardial infarction; LOS: length of stay.

**Supplemental Table 3.** Referral to cardiac rehabilitation among selected subgroups in 2007 vs. 2011.

	<b>2007</b>	<b>2011</b>	<b>4-year</b>	<b>P-value for</b>
	<b>% referred*</b>	<b>% referred*</b>	<b>increase†</b>	<b>interaction</b>

	(N = 39525)	(N = 74163)	(%)	with time
Overall	73	79	6	
Gender				0.71
Male	75	80	6	
Female	69	76	7	
Race/Ethnicity				0.28
White	75	81	6	
Black	63	71	8	
Asian	67	75	8	
Hispanic	57	68	11	
Other	71	81	10	
Region				<0.0001
West	65	76	11	
Northeast	59	76	16	
Midwest	83	88	6	
South	71	75	3	
Hospital Quality				<0.0001
Quartile I (lowest 25%)	54	64	10	
Quartile II	64	70	6	
Quartile III	76	81	5	
Quartile IV (highest 25%)	87	87	0	

\* p-value <0.0001 for differences within categories.

† 4-year increase may differ from subtraction of displayed values due to rounding.

Abbreviations: BMI: body mass index; PCI: percutaneous coronary intervention; CABG: coronary artery bypass graft; STEMI: ST elevation myocardial infarction; NSTEMI: non-ST elevation myocardial infarction.

## **Supplemental Figure Legend**

### **Supplemental Figure 1.**

**Inclusion and exclusion of participants in study population.**



