SUPPLEMENTAL MATERIAL

Data S1

Supplemental Methods

We identified public PCI-capable hospitals through the Directorate of Health Services and private PCI-capable hospitals by collating information from local physician bodies in each district, private teaching hospitals, medical device manufacturing and distributing companies, and the from the updated CSI-K list of PCI-capable hospitals. Detailed demographic data, risk factors, procedural details, and post-procedure complications were entered prospectively by clinical staff members at each hospital.

Data elements were entered by pre-designated patient care team members at specific points along the chain of STEMI care using an internet-based standardized electronic case report form. Data were recorded in real-time or as soon as the patient was transferred out of a hospital location. A supplementary paper-based case report form was utilized in select areas or wards, where internet access was not available. Research nurses/data abstracters visited the participating hospitals once a month and audited data accuracy against source documents. Also, they reviewed patient medical records to determine if any in-hospital adverse outcomes were left undocumented or misclassified. Follow-up information was also prospectively obtained, during these monthly site visits, from the medical records, or by telephonic interviews with patients. Coronary angiography and PPCI images were reviewed. We followed-up patients at pre-defined time intervals of 30 days and one year.

Patients who were thrombolyzed, either at the referring hospital or at the STEMI receiving center, were excluded irrespective of the dose of the lytic therapy. Patients presenting initially with unstable angina

or non-ST elevation myocardial infarction and subsequently developing STEMI in-hospital were excluded. Diagnostic ST- elevation, in the absence of LV hypertrophy or left bundle branch block, was defined as new ST- elevation at the J-point in at least two contiguous leads measuring >2 mm in men or >1.5 mm in women involving leads V2-V3 and/or ≥1 mm in other contiguous chest leads or limb leads. We first established the upper reference limit for cardiac biomarkers at each hospital and then documented cardiac biomarker elevation as a categorical variable. All recruited patients had at least one biomarker elevation, but for 23 patients. In these 23 patients, the steering committee reviewed the ECG and coronary angiogram findings to confirm that the diagnosis is consistent with acute STEMI. We defined total ischemic time as the time interval between onset of chest pain and first balloon inflation during primary PCI. Door-to-balloon time was defined as the time interval between arrival at the PCI-capable hospital to first inflation of balloon during primary PCI. Annual PPCI volumes for each hospital was calculated as the total number of PPCI patients in a hospital after first enrollment times 4 divided by the total number of quarters the hospital has been reporting data after first enrollment.

Table S1. Hospital characteristics.

Hospital characteristics	Total cohort	Hospitals categorized according to hospital-level annual primary PCI volume			p-value
		Low-volume	Medium-volume	High volume	
Patients treated in academic hospitals, n (%)	2444/5560 (44)	115 (11.6)	135 (14.7)	2194 (60)	0.01
Patients treated in hospitals with surgical back-up, n (%)	4543/5560 (81.7)	628 (63.4)	471 (41.5)	3444 (94.2)	0.01
Patients treated in hospitals with 24x7 primary PCI, n (%)	5441/5560 (97.8)	871 (88)	915 (100)	3655 (100)	0.01
Patients treated in hospitals with trainees/fellows performing primary PCI, n (%)	1705/5560 (30.7)	89 (9)	0 (0)	1616 (44.2)	0.01
Number of hospitals	42	24	8	10	
Number of interventionists per hospital, median (IQR)	3 (2-4)	2 (2-4)	3 (2-5)	4 (3-4)	
Number of Academic/teaching hospitals, n (%)	8 (19)	2 (8.30)	1 (12.5)	5 (50)	
Number of hospitals with on-site surgical back up available, n (%)	26 (61.9)	12 (50)	5 (62.5)	9 (90)	
Number of hospitals with 24x7 primary PCI available, n (%)	36 (85.7)	18 (75)	8 (100)	10 (100)	
Number of hospitals with fellows/trainees performing primary PCI as first operators, n (%)	5 (11.9)	1 (4.2)	0 (0)	4 (50)	

Table S2. Private- versus public- hospitals: baseline characteristics.

	Total	Private hospitals	Public hospitals	p-value
Number of patients, n(%)	5560	3932 (70.7)	1628 (29.3)	
Age, mean (SD) years	58.5 (11.45)	58.4 (11.6)	58.7 (11.2)	0.89
<40 years, n (%)	245 (4.4)	182 (4.6)	63 (3.9)	0.21
≥75 years, n (%)	521 (9.4)	373 (9.5)	148 (9.1)	0.65
Women, n (%)	1026 (18.5)	689 (17.5)	337 (20.7)	0.01
Below poverty level, n (%)	2009 (36.1)	913 (23.2)	1096 (67.3)	0.01
Self-paid, n (%)	3625 (65.2)	3190 (81.1)	435 (26.7)	0.01
Anterior STEMI, n(%)	2752 (49.5)	1907 (48.5)	845 (51.9)	0.02
LBBB, n(%)	118 (2.1)	91 (2.3)	27 (1.7)	0.12
Hypertension, n (%)	2294 (41.3)	1734 (44.1)	560 (34.4)	0.01
Diabetes, n (%)	2383 (42.8)	1778 (45.2)	605 (37.2)	0.01
Total cholesterol, mean±SD (mg/dl)	194.1 ± 59.6	196.1 ± 63.4	188 ± 48.0	0.01
LDL, mean±SD (mg/dl)	125.8±47.8	126.2±46.2	124±53.4	0.31
HDL, mean±SD (mg/dl)	41.8±11.7	41.8±11.9	41.6±11.1	0.65

Chronic kidney disease, n (%)	160 (2.9)	116 (2.9)	44 (2.7)	0.61
COPD, n (%)	329 (5.9)	265 (6.7)	64 (3.9)	0.01
BMI, mean (SD) Kg/m^2	24.0±3.1	23.9±3.3	24.1±2.5	0.18
Overweight, n (%)	1674 (31.6)	1160 (31.1)	514 (32.8)	0.22
Obesity, n (%)	179 (3.4)	158 (4.2)	21 (1.3)	0.01
Current smoker, n (%)	1972 (35.5)	1308 (33.3)	664 (40.8)	0.01
Family history of premature CAD, n (%)	1100 (19.8)	908 (23.1)	192 (11.8)	0.01
CVA, n (%)	116 (2.1)	98 (2.5)	18 (1.1)	0.01
History of effort angina, n(%)	863 (15.5)	701 (17.8)	162 (9.9)	0.01
Prior myocardial infarction, n (%)	277 (5.0)	213 (5.4)	64 (3.9)	0.02
Prior heart failure, n (%)	44 (0.8)	34 (0.8)	10 (0.6)	0.34
Aspirin use prior to MI, n (%)	274 (4.9)	192 (4.9)	82 (5.1)	0.80
Prior coronary revascularization	126 (2.3)	99 (2.5)	27 (1.7)	0.05
TIMI risk score, median (IQR)	3 (2-5)	3 (2-5)	3 (2.-4)	0.01

Table S3. Private- versus public-high-volume hospitals: process metrics and outcomes.

	High-volume hospitals (>200 PPCI per year)	Private high-volume	Public high-volume	p-value
Total ischemic time, median (IQR) hours	4.2 (2.8-6.3)	3.9 (2.8-6.2)	4.3 (2.9-6.4)	0.03
ECG to balloon time, median (IQR) hours	2 (1.2-3.1)	1.8 (1.1-2.9)	2.2 (1.2-3.4)	0.01
Door to balloon time, median (IQR) hours	1.1 (0.8-1.6)	1.1 (0.8-1.5)	1.2 (0.8-1.75)	0.05
Symptom onset to first medical contact, median (IQR) hours	1.5 (0.8-3.0)	1.6 (0.8-3.1)	1.5 (1.0-3.0)	0.28
Radial access, n(%)	2311 (63.2)	1457 (71.9)	854 (52.5)	0.001
Aspiration thrombectomy use, n(%)	1271 (34.8)	792 (39.1)	479 (29.4)	0.001
Post-dilatation, n(%)	2187 (61.3)	1391 (69.3)	796 (51.1)	0.001
TIMI flow III final, n(%)	3425 (93.7)	1892 (93.3)	1533 (94.2)	0.31
Aspirin, n(%)	3472 (98.9)	1958 (99.1)	1514 (98.8)	0.42

Clopidogrel , n(%)	2567 (73.13)	1244 (62.9)	1323 (86.3)	0.001
Ticagrelor, n(%)	492 (14.1)	437 (22.2)	55 (3.6)	0.001
Prasugrel, n(%)	438 (12.5)	286 (14.5)	152 (10.0)	0.001
High intensity statin, n(%)	3433 (97.9)	1937 (98.1)	1496 (97.7)	0.384
Beta-blocker, n(%)	2283 (65.1)	1327 (67.2)	956 (62.4)	0.003
ACEI or ARB in patients with documented LV systolic dysfunction, n(%)	1058 (61.2)	634 (65.7)	424 (55.4)	0.001
Stent thrombosis, n(%)	85 (2.3)	53 (2.6)	32 (2.0)	0.20
Definite stent thrombosis, n(%)	30 (0.8)	22 (1.1)	8 (0.5)	0.015
Mortality at 1 year, n(%)	315 (8.6)	150 (7.4)	165 (10.1)	0.003

Figure S1. Hospital level annual primary percutaneous coronary intervention volumes.

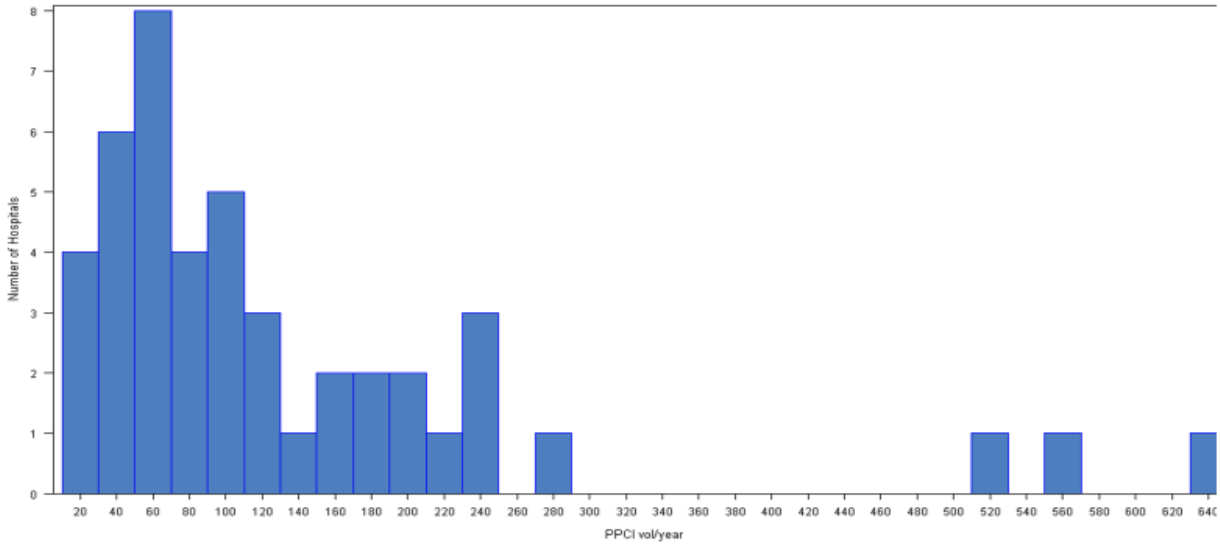
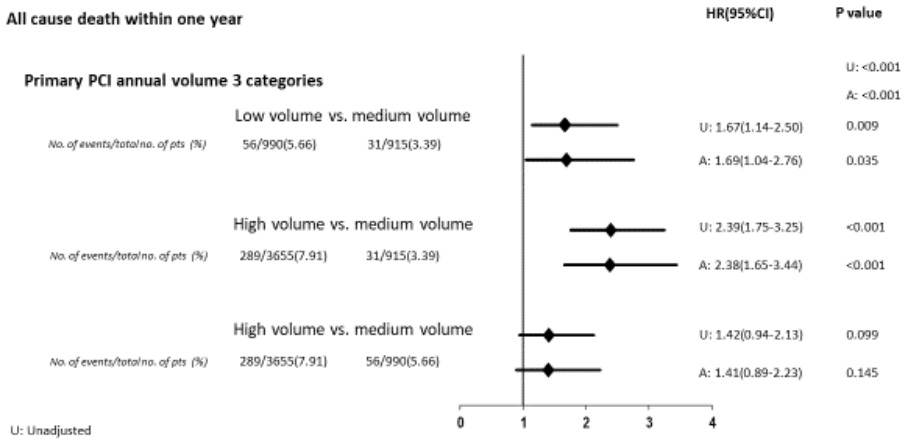


Figure S2. Sensitivity analysis adjusted for components of TIMI risk score.



U: Unadjusted

A: Adjusted for sex, age, diabetes, hypertension, angina, systolic blood pressure, heart rate, weight, killip class, anterior MI, total ischemic time, insurance coverage, below poverty line, family history, smoking status, culprit lesion in proximal LAD, number of years catheterization lab was performing PCI, and year of enrollment.