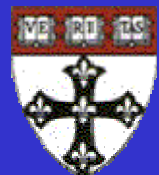


Outcomes Following Primary Percutaneous Coronary Intervention: A Comparison Between Hospitals With and Without Cardiac Surgery On-Site

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Disclosures

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- **There are no relevant RWI to disclose. However, four of the authors (Anis, Mauri, Patel, Jacobs) perform primary PCI at hospitals with cardiac surgery on-site.**

Background

- **Primary percutaneous coronary intervention (PCI) for patients with ST-segment elevation myocardial infarction (STEMI) is the preferred reperfusion strategy. It is an ACC/AHA guidelines Class I indication if the procedure can be performed with a door-to-balloon time of within 90 minutes.**
- **The majority of STEMI patients present to hospitals without primary PCI capability. In many states including Massachusetts, the performance of PCI is not allowed in Cardiac Catheterization Laboratories within hospitals without cardiac surgery on-site.**
- **To increase the number of STEMI patients with timely access to primary PCI, in 1997 the Massachusetts Department of Health approved a pilot program for primary PCI at hospitals without cardiac surgery on-site.**

Aim

- **To determine the safety and effectiveness of primary PCI for STEMI performed at hospitals with in comparison to without cardiac surgery on-site (SOS) in Massachusetts**

Methods

Massachusetts residents with STEMI treated with primary PCI
1/1/05 – 9/30/07

Patient, Clinical, Angiographic, Procedural factors collected
within ACC NCDR instrument

Data reported to **Massachusetts Data Analysis Center (Mass-DAC)**,
state DPH mandated and physician-audited database

Mortality: Hospital Record, MA Registry of Vital Records &
Statistics, National Death Index, Social Security website

Myocardial Infarction and Revascularization: Mass-DAC PCI
and Mass-DAC CABG registries merged with hospital billing

Statistical Methods

- Propensity score matching:
 - ✓ Logistic regression to predict treatment at No SOS Hospital (versus SOS Hospital) by demographic, clinical, and angiographic variables
 - ✓ Caliper matching of **1** No SOS patient to **2** SOS patients
- Primary outcomes presented as hazard ratios at 30-days and at one-year for:
 - ✓ All-cause mortality
 - ✓ Myocardial infarction (MI)
 - ✓ Repeat revascularization (RR)
 - ✓ Target vessel revascularization (TVR)

Requirements for Primary PCI at No SOS Hospitals

- **Signed Collaboration Agreement with Tertiary Hospital (24/7 back-up support, accept transfers)**
- **Training**
 - **CPORT team training of all staff**
 - **Ongoing training by Tertiary Hospital**
- **Procedural Volume**
 - **Hospital perform minimum 300 diagnostic procedures in each of previous 2 years**
 - **36 primary PCI procedures/year**
 - **Physicians perform minimum 75 PCI procedures/year**
- **Data Collection**
- **Joint Quality Assurance Committee**

PRIMARY PCI in MASSACHUSETTS

N=6139 STEMI Patients Undergoing PCI
January 1, 2005- September 30, 2007
Complete 1 year follow-up

269 (53 No SOS) patients not
linked to billing data

N=5870 Patients

288 (31 No SOS) patients no
unique identifier

412 (3 No SOS) patients not
primary PCI

N=5170 Patients

2152 (39 No SOS)
transferred for primary PCI

N=3018 Patients

N=977 (32.3%) No SOS

N=2041 SOS

Exclusions

Differences in Characteristics Before Match

	No SOS (n 977)	SOS (n=2041)	% Stand Diff
Race (%)			
White	90.28	86.92	10.58
Black	1.02	3.67	- 17.57
Hispanic	1.54	3.87	- 14.43
Insurance (%)			
Commercial	14.84	18.72	- 10.38
HMO	41.66	32.97	18.02

Differences in Characteristics Before Match

	No SOS (n=977)	SOS (n=2041)	% Stand Diff
Hypertension (%)	56.19	61.98	- 11.79
Triple vessel Disease (%)	26.9	21.6	12.41
II/b/IIIa platelet antagonist (%)*	92.43	84.57	24.81

* Not included in propensity score model

Patient Characteristics After Match

	No SOS (n=781)	SOS (n=1562)	% Stand Diff*
Mean age (yrs)	62.7	63.0	- 0.02
Female (%)	30.57	29.65	2.01
Insurance (%)			
Commercial	17.17	16.17	2.70
Government	40.80	40.89	- 0.17
HMO	36.78	38.20	- 2.93
None	5.24	4.62	2.86

* % Stand Diff = Percent Standardized Difference
Values <10% reflect well-matched characteristics

Patient Characteristics After Match

	No SOS (n=781)	SOS (n=1562)	% Stand Diff*
Race (%)			
White	91.72	91.14	2.08
Black	1.22	1.06	1.48
Hispanic	1.83	1.75	0.60
Other	5.24	6.05	- 3.54

** % Stand Diff = Percent Standardized Difference
Values <10% reflect well-matched characteristics*

Clinical Characteristics After Match

	No SOS (n=781)	SOS (n=1562)	% Stand Diff*
Diabetes (%)	19.73	19.48	0.65
Hypertension (%)	58.59	59.11	- 1.07
Current Smoker (%)	37.76	35.77	4.13
Prior MI (%)	15.59	17.17	- 4.26
Prior PCI (%)	13.89	14.17	- 0.82
Prior CABG (%)	3.65	4.24	- 3.03

** % Stand Diff = Percent Standardized Difference
Values <10% reflect well-matched characteristics*

Clinical Characteristics After Match

	No SOS (n=781)	SOS (n=1562)	% Stand Diff*
Symptoms < 6 hours (%)	85.87	86.27	- 1.14
CHF (%)	4.39	5.06	- 3.16
Cerebrovasc Disease (%)	6.70	6.93	- 0.91
PVD (%)	9.14	9.30	- 0.57
Renal Failure (%)	3.17	3.37	- 1.15
Shock (%)	5.24	5.68	- 1.95

** % Stand Diff = Percent Standardized Difference
Values <10% reflect well-matched characteristics*

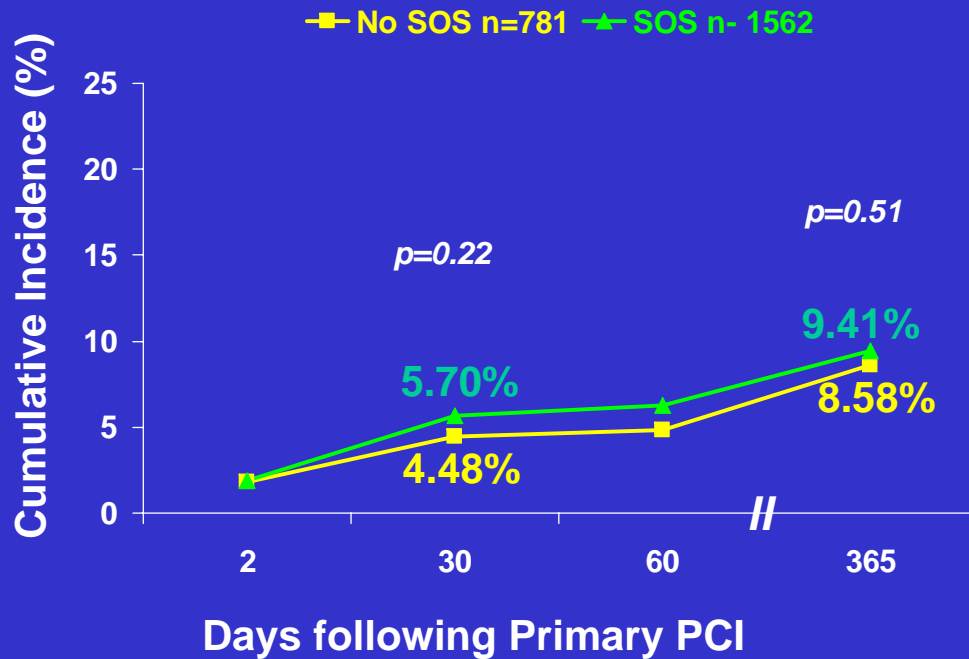
Angiographic and Procedural Characteristics After Match

	No SOS (n=781)	SOS (n=1562)	% Stand Diff
Triple vessel Disease (%)	24.24	23.91	0.77
Left Main Disease (%)	3.65	4.74	- 5.43
Target Lesion LAD (%)	38.61	37.58	2.13
Target Lesion SVG (%)	2.44	2.31	- 0.83

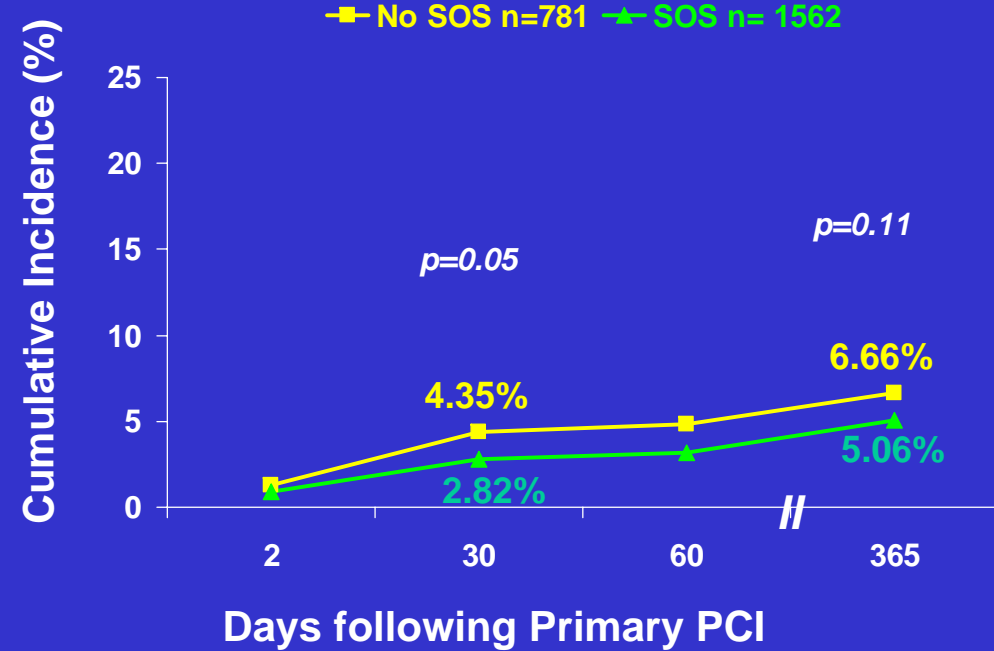
** % Stand Diff = Percent Standardized Difference
Values <10% reflect well-matched characteristics*

Death and MI at 30-Days and 1-Year

Death

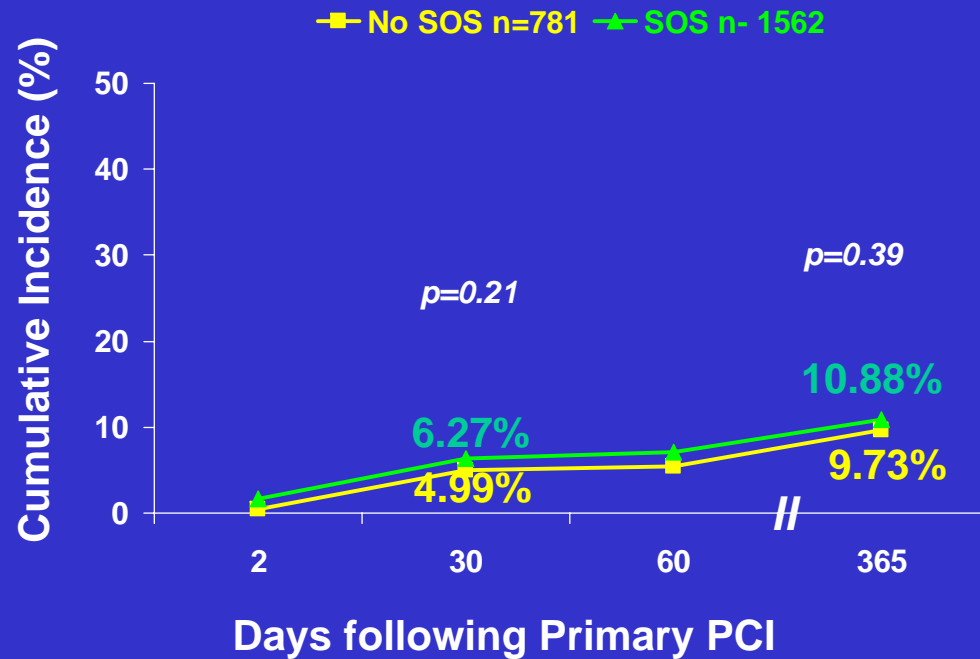


Myocardial Infarction

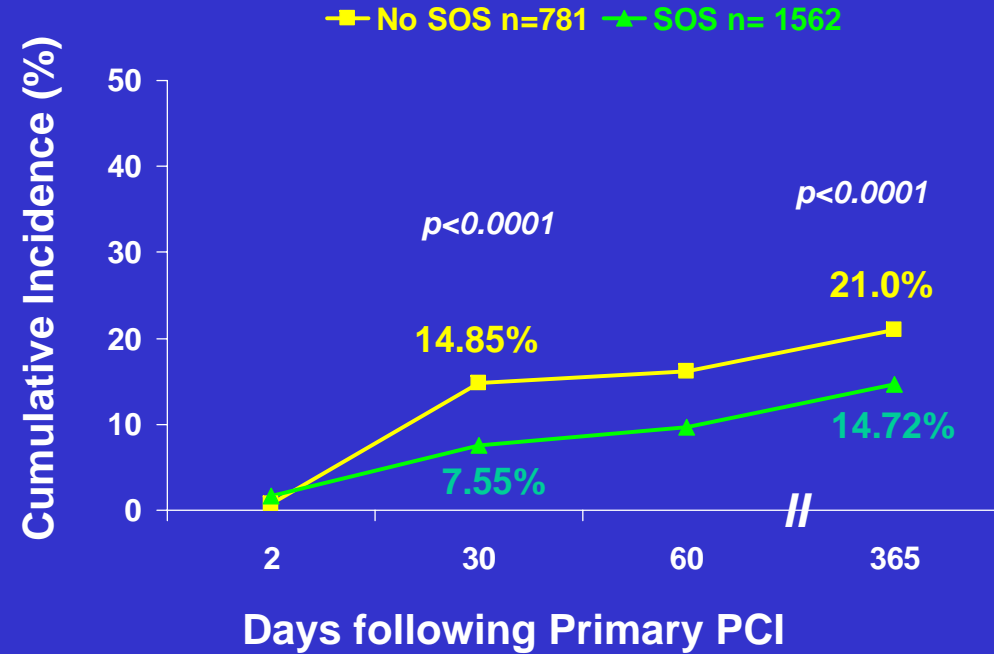


Revascularization at 30-Days and 1-Year

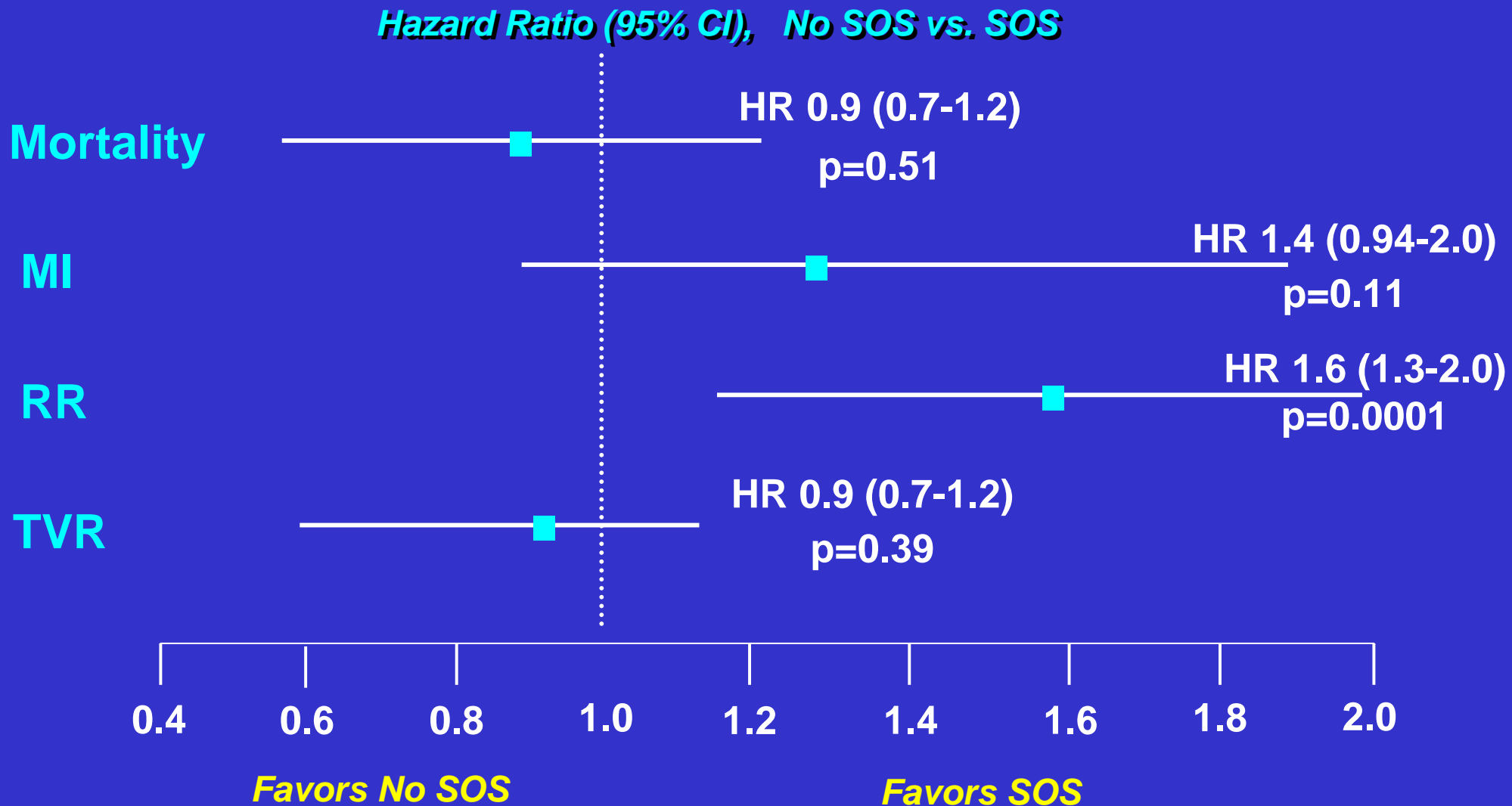
Target Vessel Revascularization



Repeat Revascularization



Hazard Ratios for the Primary Outcomes at 1 Year



Conclusions

In STEMI patients treated with primary PCI in No SOS compared to SOS Hospitals in Massachusetts:

- **There is no difference in mortality at 30-days and 1-year.**
- **There is no difference in the incidence of MI at 1-year.**
- **There is a significant increase in the rate of repeat revascularization at 30-days and 1-year in No SOS Hospitals.**
- **There is no difference in the incidence of TVR at 30-days and 1-year.**