

Early versus Late Revascularization in Patients Hospitalized with Non ST-Segment Elevation Myocardial Infarction: The Atherosclerosis Risk in Communities (ARIC) Surveillance Study

Sameer Arora MD; Kunihiro Matsushita MD, PhD; Arman Qamar MD; R. Brandon Stacey MD, MS; Melissa C. Caughey, PhD



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



Disclosures

None



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



Background

- **Current guidelines recommend early invasive strategy (<24 hours) for high risk patients with NSTEMI and consider a delayed invasive strategy (24-72 hours) to be reasonable for low risk patients.**
- **Early intervention has the potential to prevent ischemic events during the waiting time from event to revascularization .**
- **Evidence for this strategy is based on clinical trials with selected patients, using composite endpoints**



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



Objective & Design

- **We analyzed the real-world effectiveness of early vs. late revascularization in patients with NSTEMI**
- **Mortality at 28-days and 1-year were outcomes of interest**
- **Revascularization- PCI, CABG and Thrombolytics**
- **Subgroup analysis with PCI only patients was conducted**



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



ARIC Community Surveillance



- Ongoing, hospital surveillance since 1987
- 4 US areas
- 21 hospitals
- Hospitalizations sampled within strata of age, race, sex, ICD-9 code, and geographic location



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



Revascularization

- **“Early” revascularization <24 hours after symptom onset**
- **“Late” revascularization \geq 24 hours**
- **“Low risk” = TIMI score of 2-4**
- **“High risk” = TIMI score of 5-7, or presence of cardiogenic shock, cardiac arrest, or ventricular fibrillation**
- **Mortality within 28 days or 1 year of hospital admission**
- **From National Death Index**



ADVANCING CARE TO SAVE & ENHANCE LIVES
SCAI 2017
NEW ORLEANS | MAY 10-13, 2017

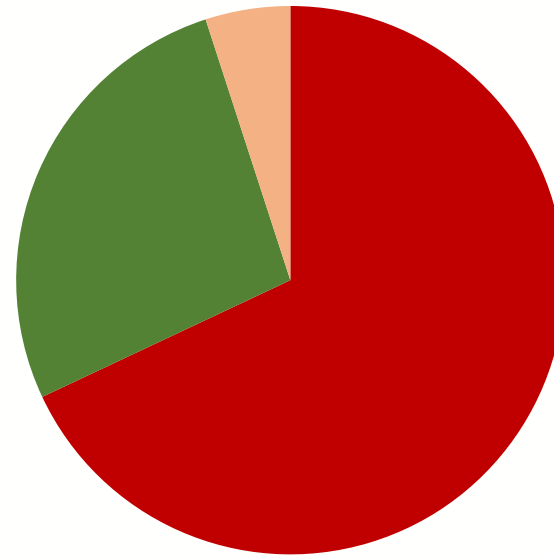
40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



Study Population

- From 1987-2012, 9,960 patients hospitalized with NSTEMI underwent revascularization
 - 68% by PCI
 - 27% by CABG
 - 5% by thrombolytics alone



- PCI
- CABG
- Thrombolytics



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

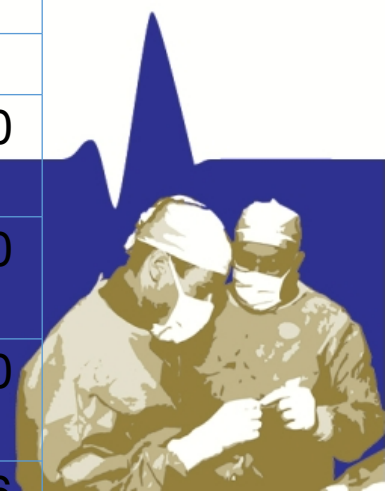
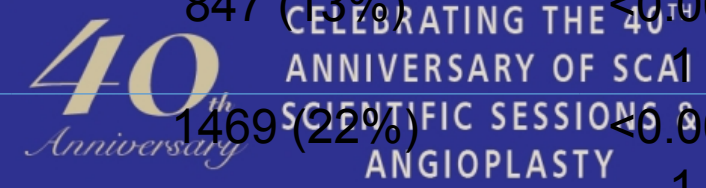
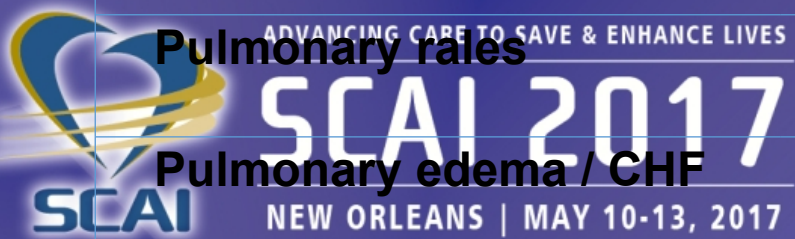
NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

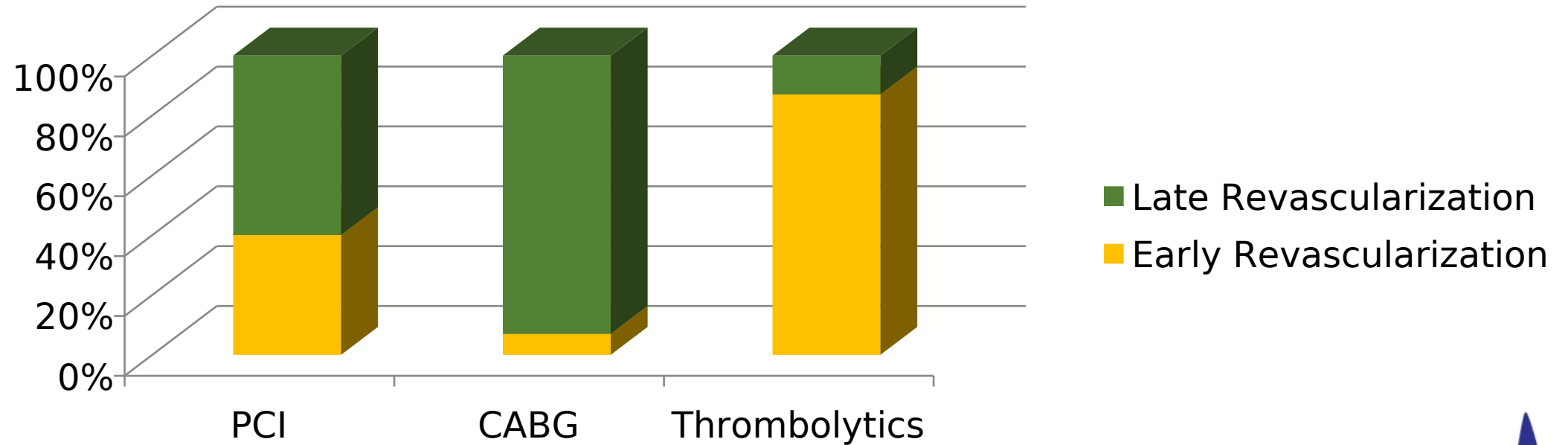
CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



Characteristic	Early Revascularization N=3,338	Late Revascularization N=6,629	
	Mean ± SD or No. (%)	Mean ± SD or No. (%)	P*
Demographics			
Male	2748 (82%)	5327 (80%)	0.02
White	2392 (72%)	4511 (68%)	0.0002
Age (years)	60 ± 11	62 ± 10	<0.0001
Medical History			
Hypertension	2026 (99.8%)	4608 (99.9%)	0.6
Diabetes	750 (22%)	1866 (28%)	<0.0001
Current Smoker	1124 (34%)	1941 (29%)	<0.0001
Prior Revascularization†	933 (28%)	1783 (27%)	0.3
Hospital Visit			
TIMI score	4.4 ± 0.9	4.3 ± 1.0	<0.0001
Pulmonary rales	253 (8%)	847 (13%)	<0.0001
Pulmonary edema / CHF	460 (14%)	1469 (22%)	<0.0001
Cardiogenic shock	111 (4%)	100 (2%)	0.0006



Revascularization Time



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

NEW ORLEANS | MAY 10-13, 2017

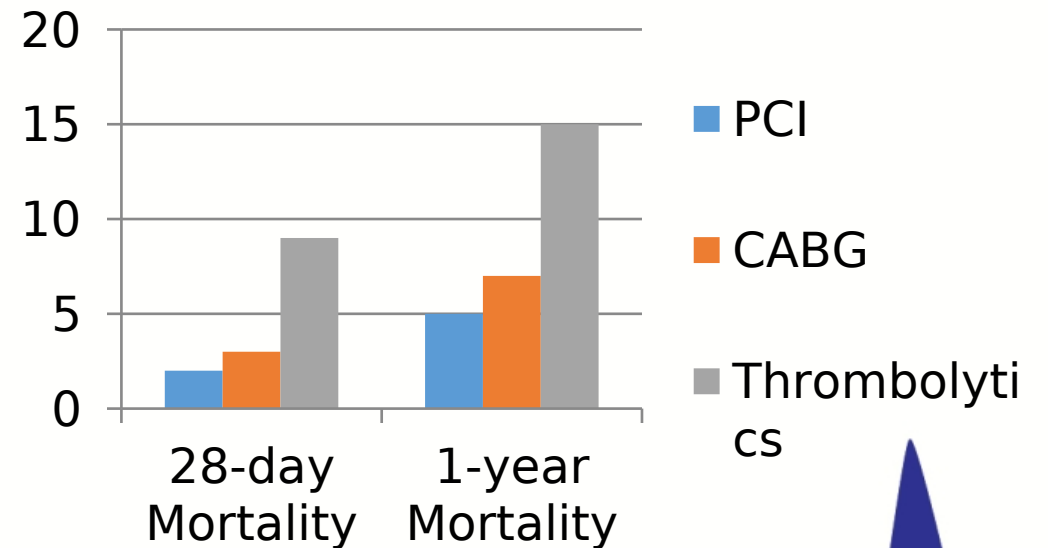
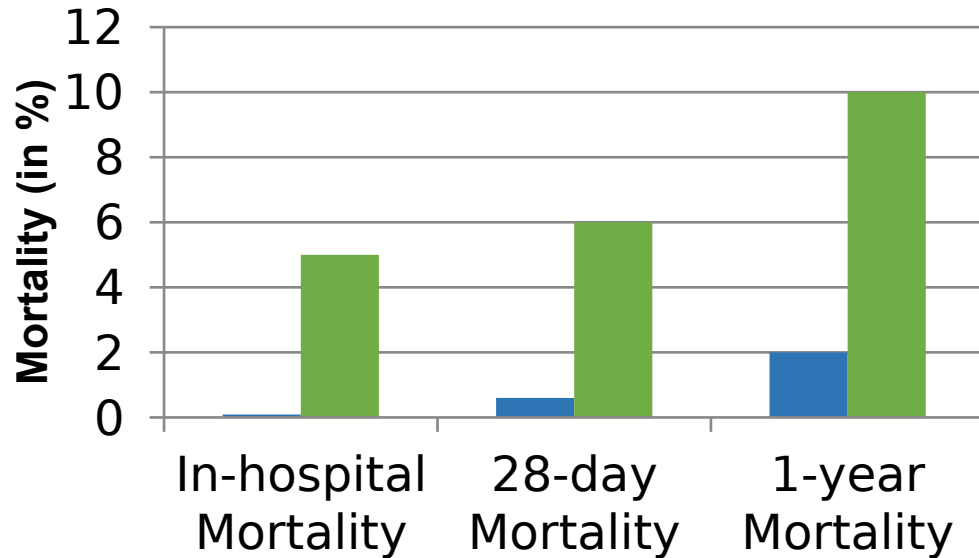
40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



Mortality

- 247 (2%) in-hospital deaths; 310 (3%) deaths within 28 days; 569 (6%) died within 1 year
- 54% were classified as low risk



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



Adjusted Mortality Odds Ratios

Model	N	Early Revascularization	Deaths	Odds Ratio (95% CI)	P-value
28-Day Mortality					
Low risk patients	5390	1758 (33%)	30	0.13 (0.02 – 0.93)	0.04
High risk patients	4569	1581 (35%)	275	0.62 (0.40 – 0.94)	0.04
1-Year Mortality					
Low risk patients	5390	1758 (33%)	128	1.06 (0.60 – 1.86)	0.8
High risk patients	4569	1581 (35%)	436	1.07 (0.82 – 1.40)	0.5



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



Characteristic	Early PCI N=2,376	Late PCI N=4,370	
	Mean ± SD or No. (%)	Mean ± SD or No. (%)	P*
Demographics			
Male	1930 (80%)	3416 (78%)	0.003
White	1711 (72%)	2903 (66%)	<0.0001
Age (years)	60 ± 11	61 ± 11	<0.0001
Medical History			
Hypertension	1437 (99.8%)	3018 (99.9%)	0.6
Diabetes	571 (24%)	1230 (28%)	0.0003
Current Smoker	856 (36%)	1442 (33%)	<0.0001
Pulmonary edema / CHF	280 (12%)	662 (15%)	0.0001
Cardiogenic shock	100 (4%)	110 (3%)	0.0001
Prior Revascularization†	735 (31%)	1312 (30%)	0.4
TIMI risk score	4.4 ± 0.9	4.3 ± 1.0	<0.0001
Pulmonary rales	132 (6%)	380 (9%)	<0.0001
ST-segment deviation	1748 (74%)	2756 (63%)	<0.0001



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

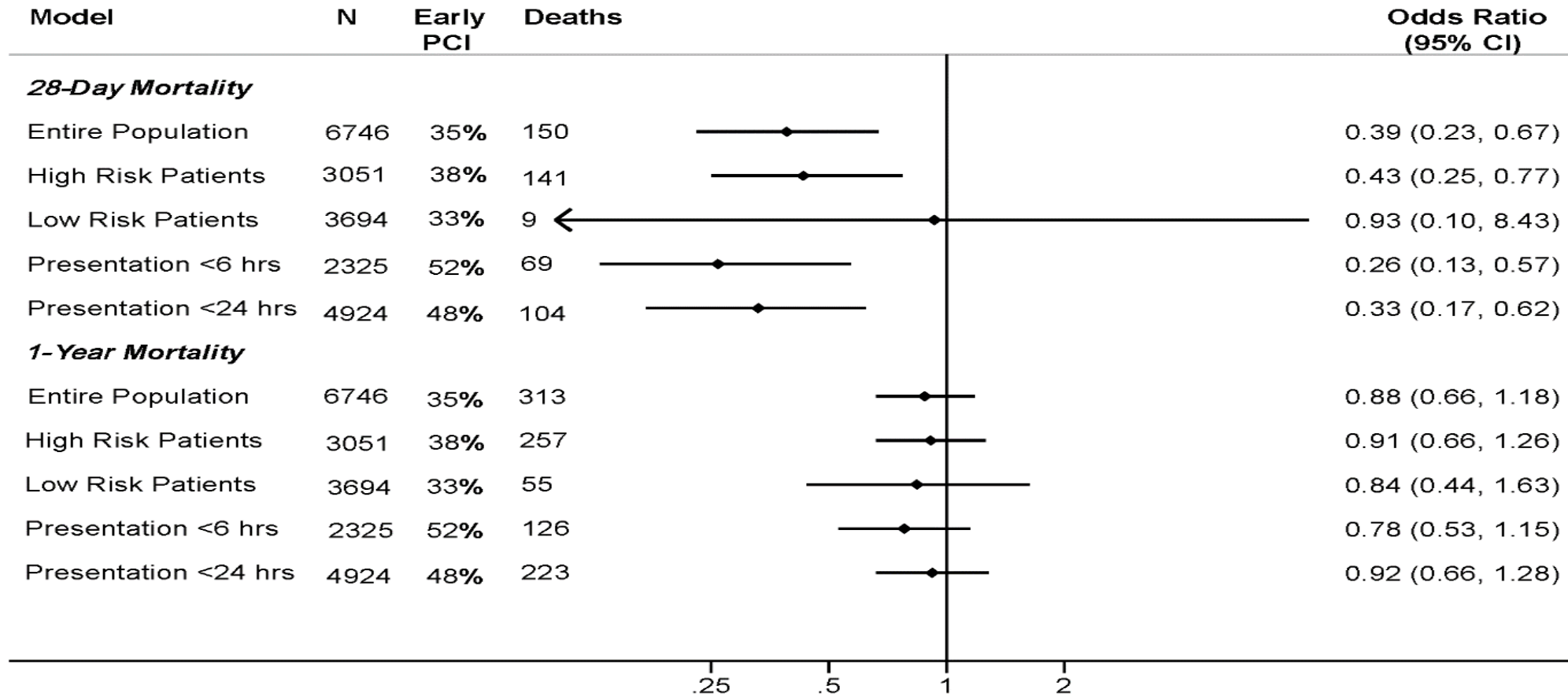
NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



PCI Sub-Analysis 1987-2012



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

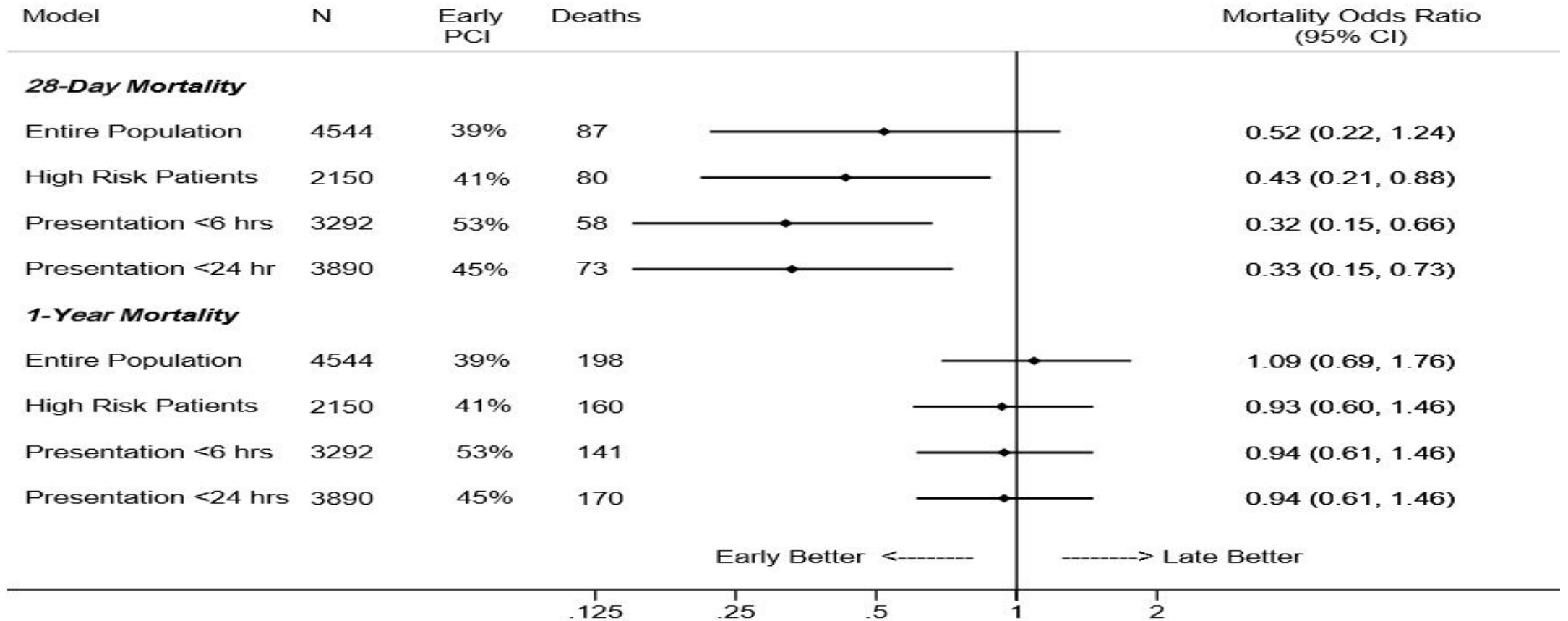
NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



PCI Sub-Analysis 2000-2012



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



Summary

- **In hospitalized NSTEMI patients in the community, early PCI was associated with improved 28-day survival**
- **A large clinical trial investigating early vs. late revascularization in patients at low/intermediate risk of clinical events may be warranted**



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY



Acknowledgements

- The Atherosclerosis Risk in Communities Study is carried out as a collaborative study supported by National Heart, Lung, and Blood Institute contracts (HHSN268201100005C, HHSN268201100006C, HHSN268201100007C, HHSN268201100008C, HHSN268201100009C, HHSN268201100010C, HHSN268201100011C, and HHSN268201100012C).
- The authors thank the staff and participants of the ARIC study for their important contributions.



ADVANCING CARE TO SAVE & ENHANCE LIVES

SCAI 2017

NEW ORLEANS | MAY 10-13, 2017

40th
Anniversary

CELEBRATING THE 40TH
ANNIVERSARY OF SCAI
SCIENTIFIC SESSIONS &
ANGIOPLASTY

