Diabetes and Time Course of Adverse Events in Patients with Acute Coronary Syndromes undergoing Percutaneous Coronary Intervention

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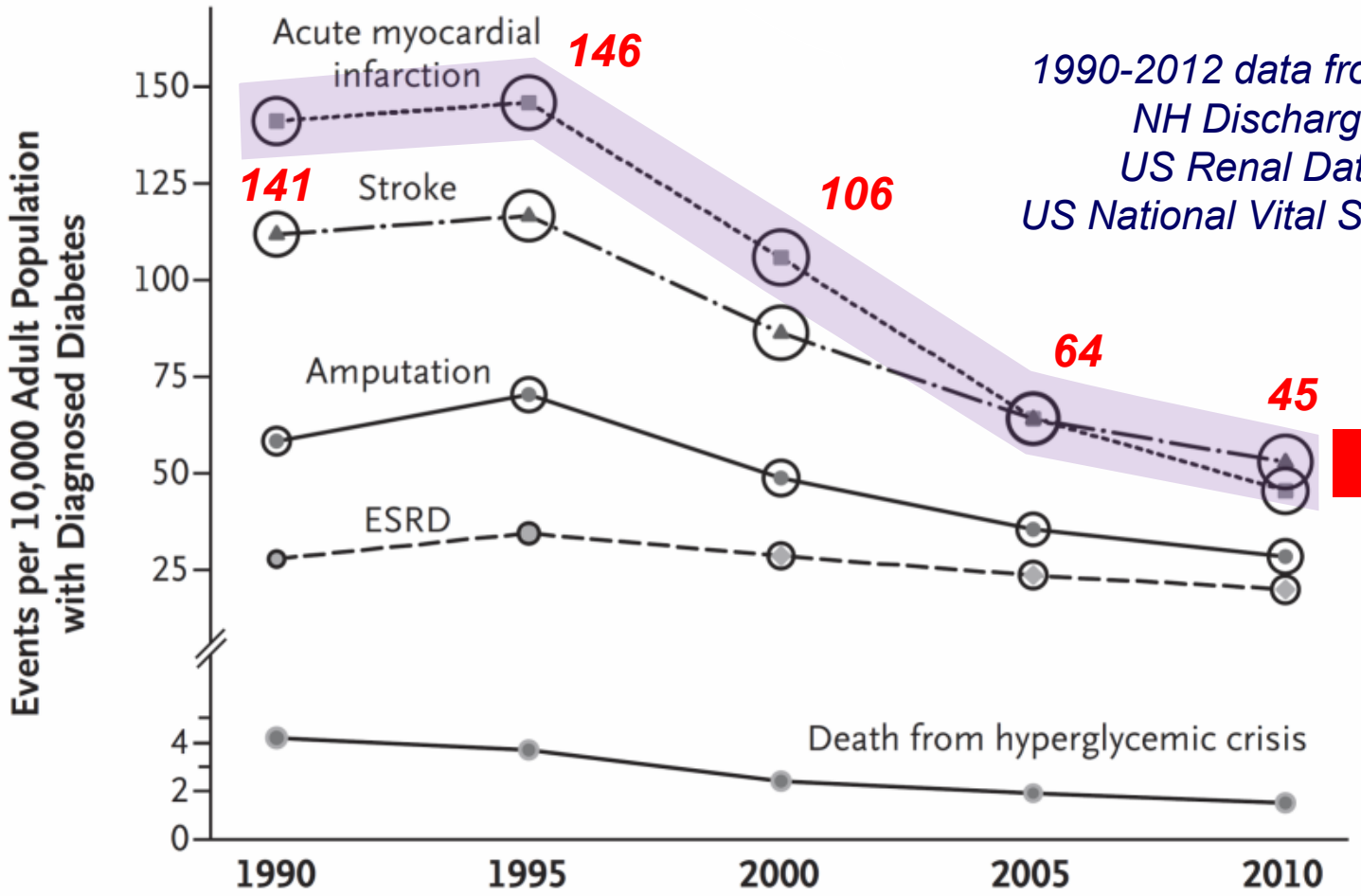
Declaration of Interest

- I have nothing to declare

Changes in Diabetes-Related Complications

Gregg EW et al. *NEJM* 2014:370:1514-23



1990-2012 data from NHI Survey,
NH Discharge Survey,
US Renal Data System,
US National Vital Statistics System

Changes in AMI

Absolute:
- ***-95.6/100,000***
- ***-4,379***

Relative:
- ***-67.8%***

No. Diabetics	***6,536,163***	***7,862,661***	***11,799,201***	***16,066,108***	***20,676,427***
No. AMI	***140,122***	***183,605***	***191,011***	***158,616***	***135,743***

Prognosis of Patients With Acute Coronary Syndromes

Savonitto S et al. *JAMA* 1999;281:707-13

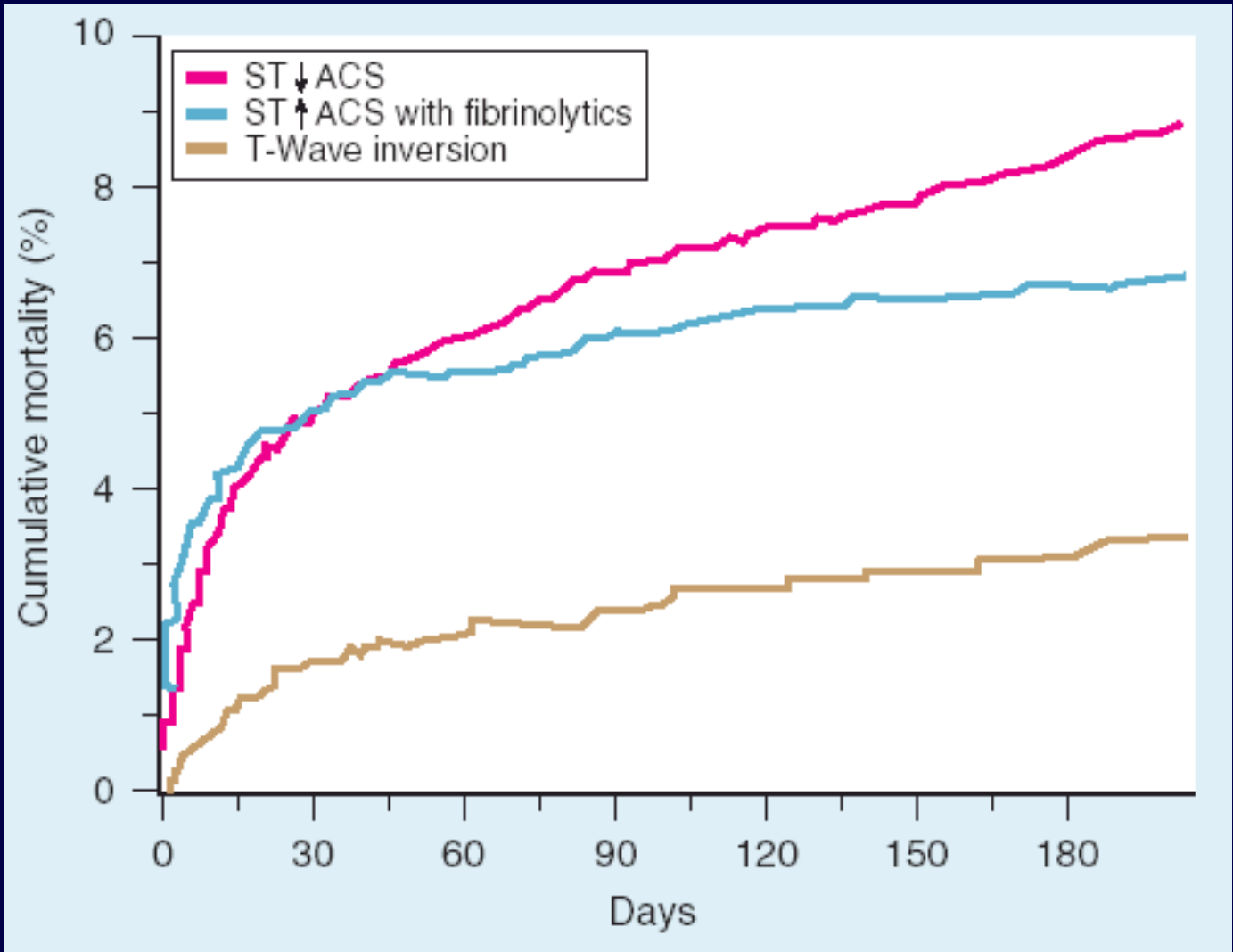
GUSTO IIb

12 142 patients

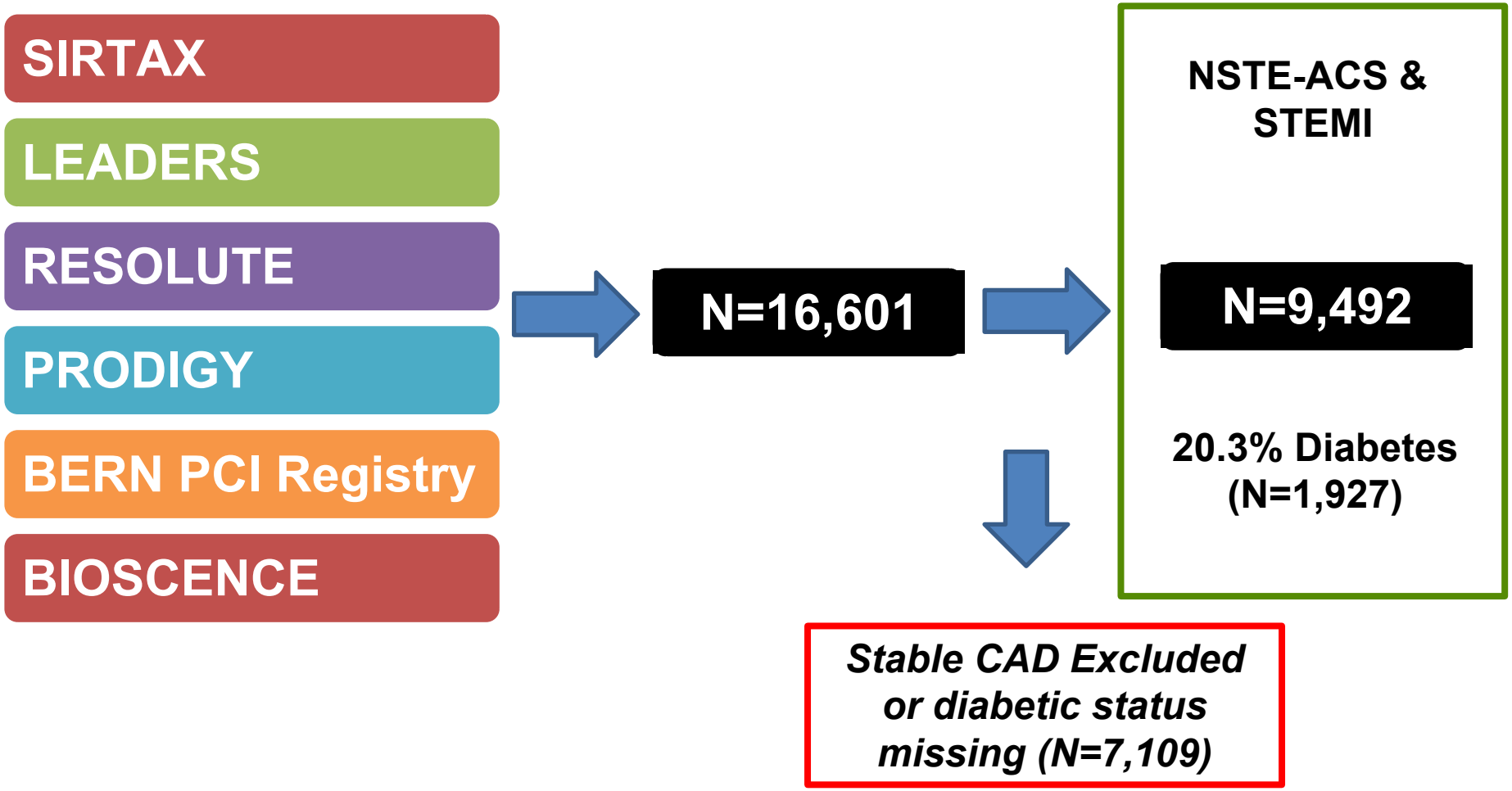
-28% ST-elevation

-35% ST-depression

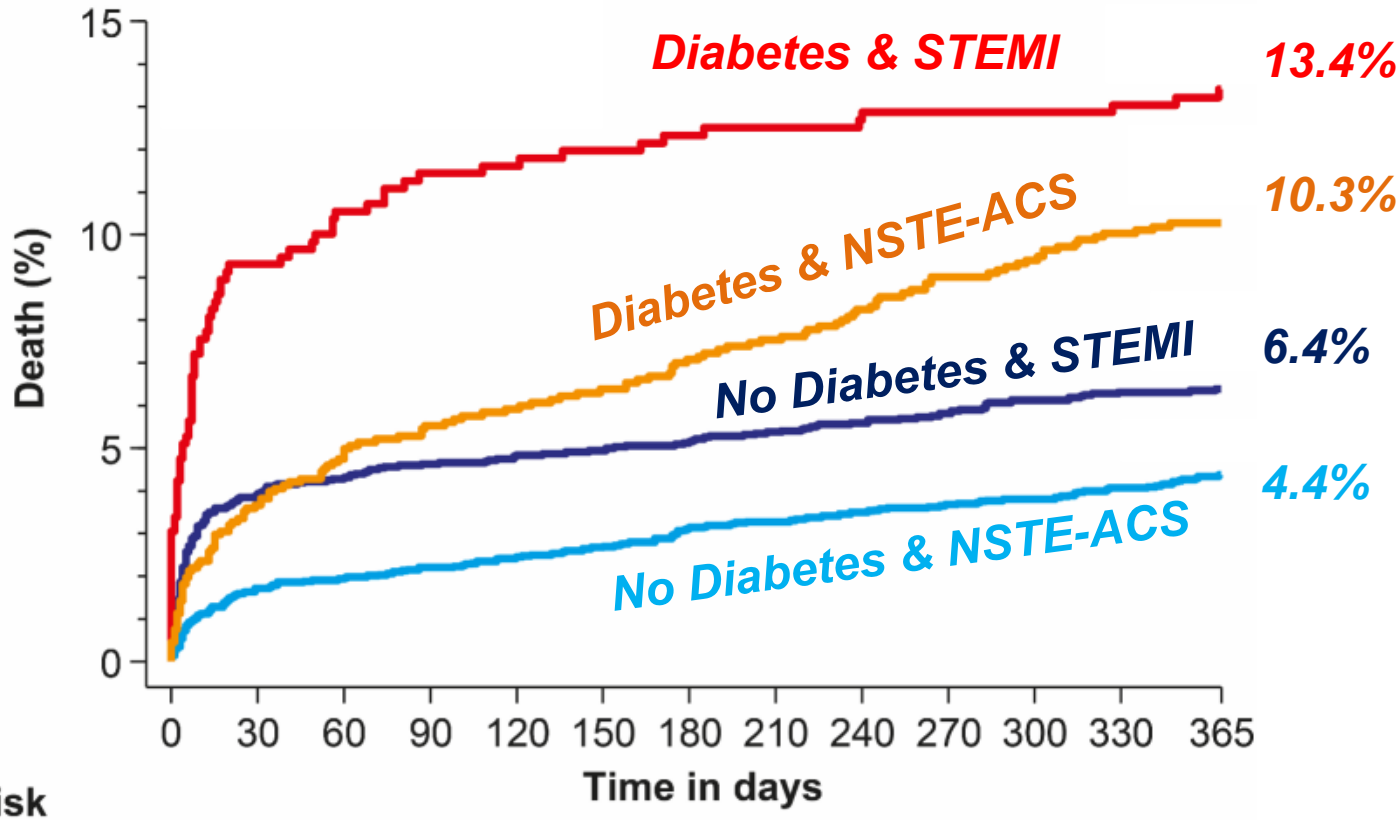
-22% T-wave inversion



METHODS


SIRTAX
LEADERS
RESOLUTE
PRODIGY
BERN PCI Registry
BIOSCENCE
N=16,601
NSTE-ACS & STEMI
N=9,492
20.3% Diabetes (N=1,927)
Stable CAD Excluded or diabetic status missing (N=7,109)

Mortality Stratified By Diabetes and Type of ACS

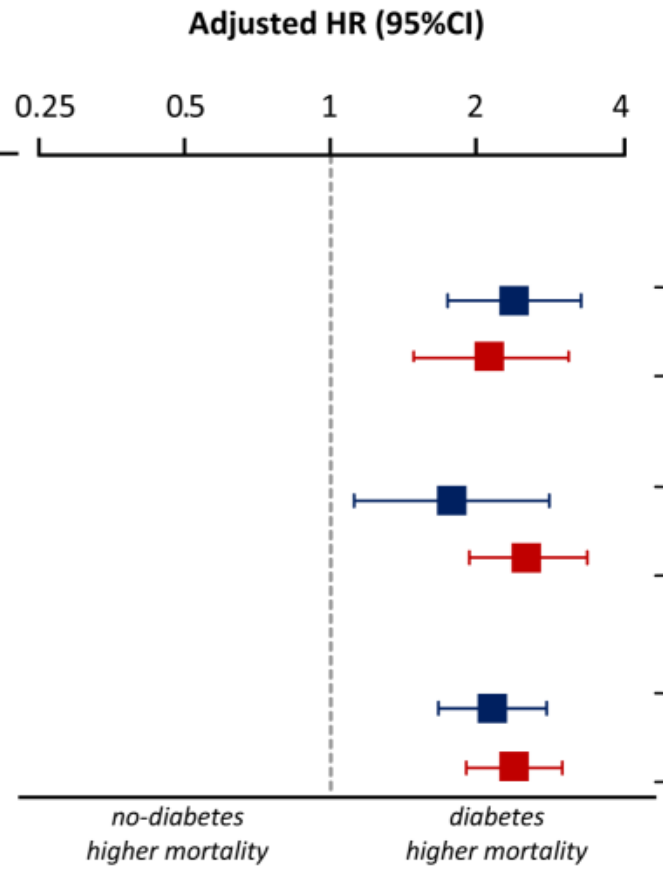


Number at risk

No diabetes, STEMI	3339	3092	3068	3054	3046	3041	3034	3022	3013	3006	2996	2987	2843
No diabetes, NSTE-ACS	4226	4027	4007	3996	3986	3976	3955	3941	3929	3922	3916	3901	3747
Diabetes, STEMI	591	514	504	498	497	495	491	490	489	488	488	486	462
Diabetes, NSTE-ACS	1336	1247	1229	1219	1213	1207	1197	1190	1181	1169	1163	1153	1100

Impact of Diabetes and Type of ACS On 1-Year Mortality After PCI

	HR_{adj} (95%CI)	p-value	p-value for interaction
Early mortality (≤30 days)			
STEMI	2.39 (1.74-3.28)	<0.001	0.65
NSTE-ACS	2.15 (1.49-3.11)	<0.001	
Late mortality (31-365 days)			
STEMI	1.78 (1.12-2.84)	0.015	0.22
NSTE-ACS	2.55 (1.92-3.40)	<0.001	
Overall mortality (0-365 days)			
STEMI	2.17 (1.67-2.80)	<0.001	0.65
NSTE-ACS	2.39 (1.91-3.00)	<0.001	



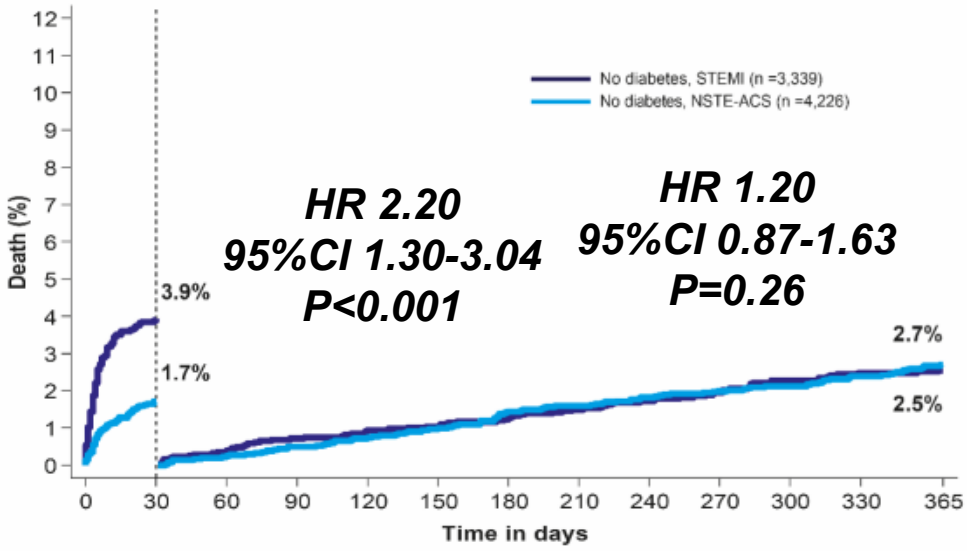
HR from Cox-regression adjusted for age, gender, BMI, hypertension, dyslipidemia, smoker, family CAD history, prior MI

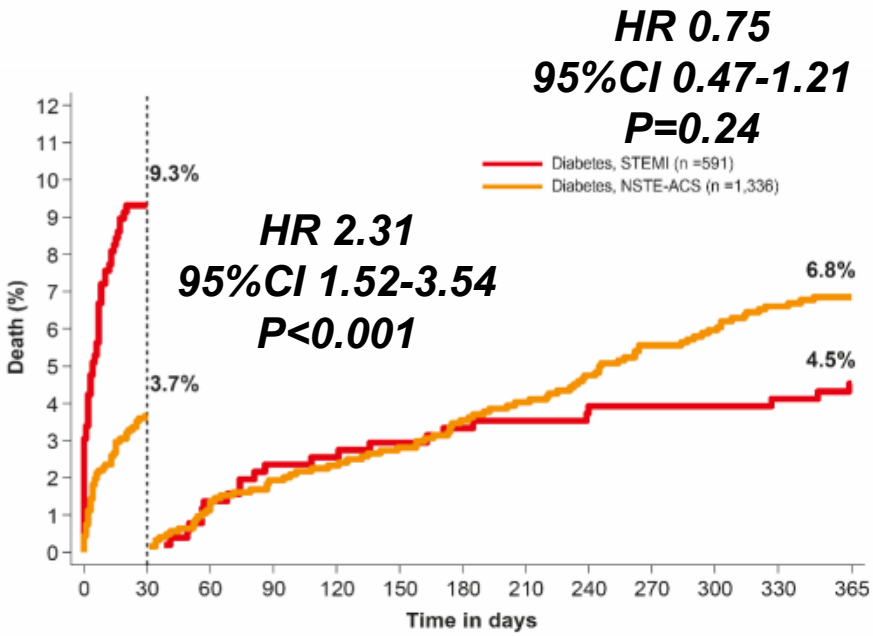
Early Vs. Late Mortality Stratified By Diabetes and Type of ACS

No Diabetes

P for interaction 0.93

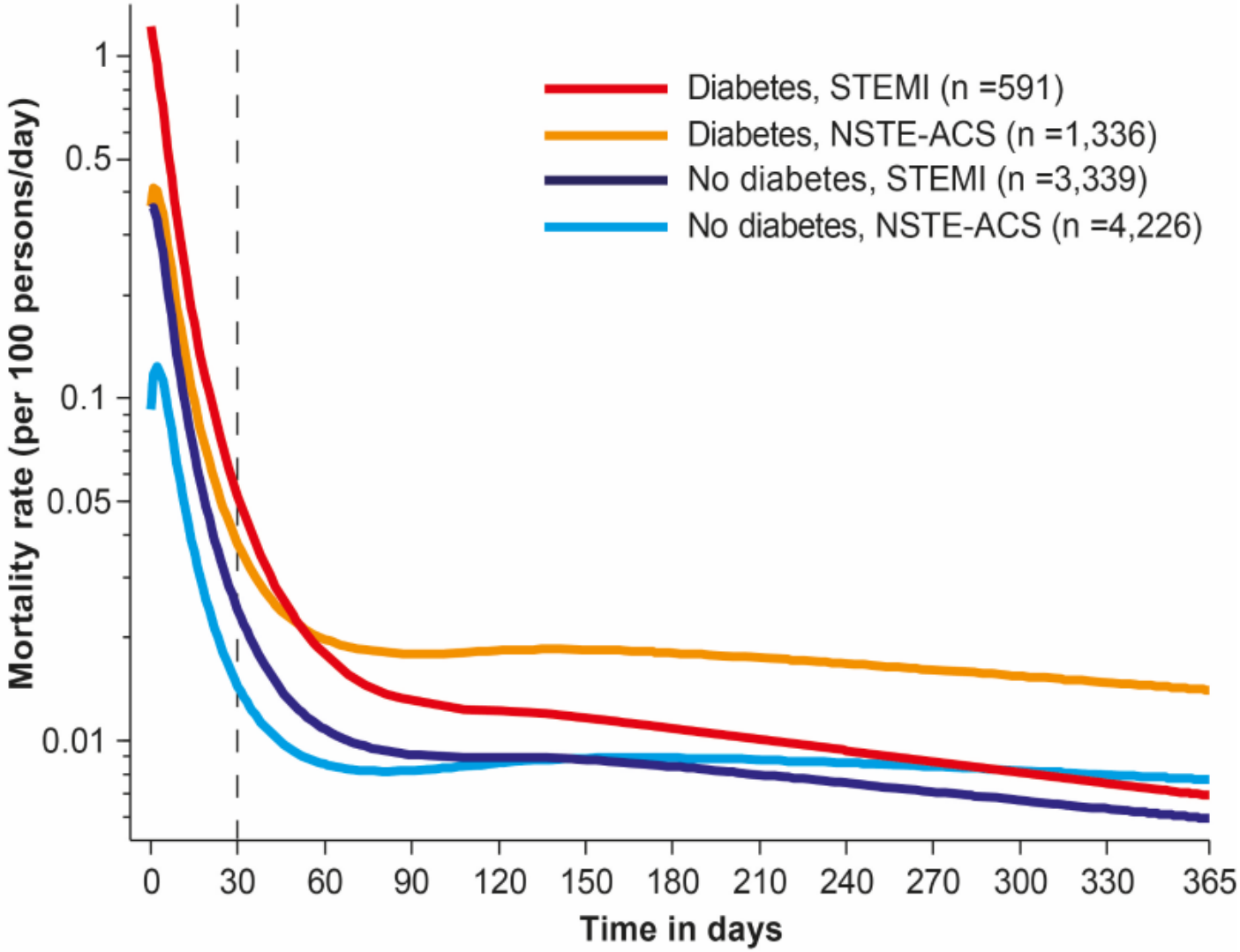
Diabetes





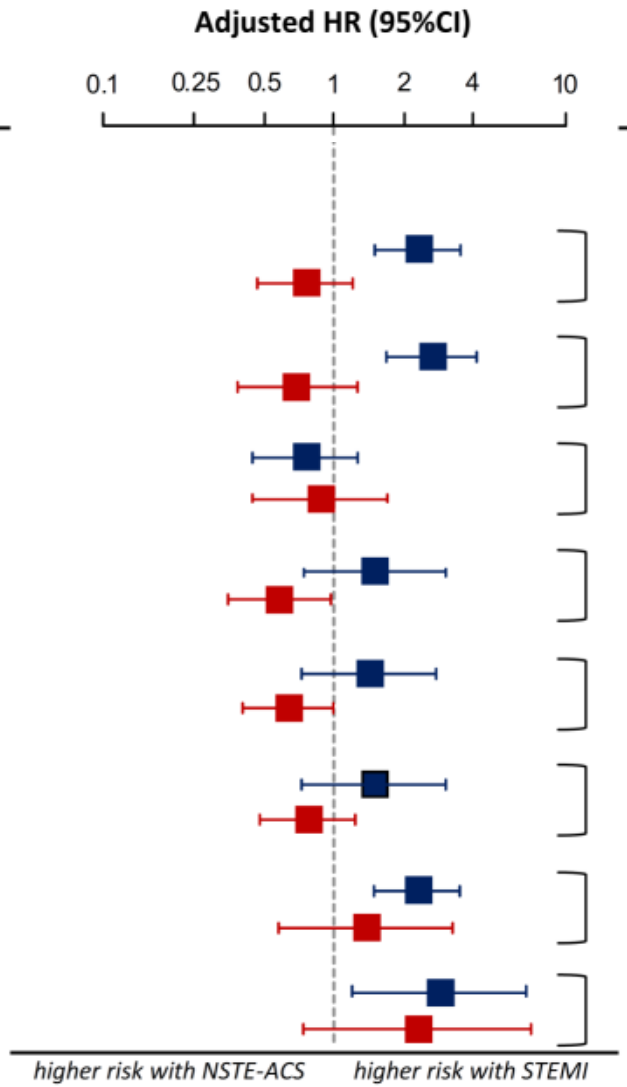
P for interaction 0.12

Instantaneous Risk of Death By Type of ACS and Diabetes



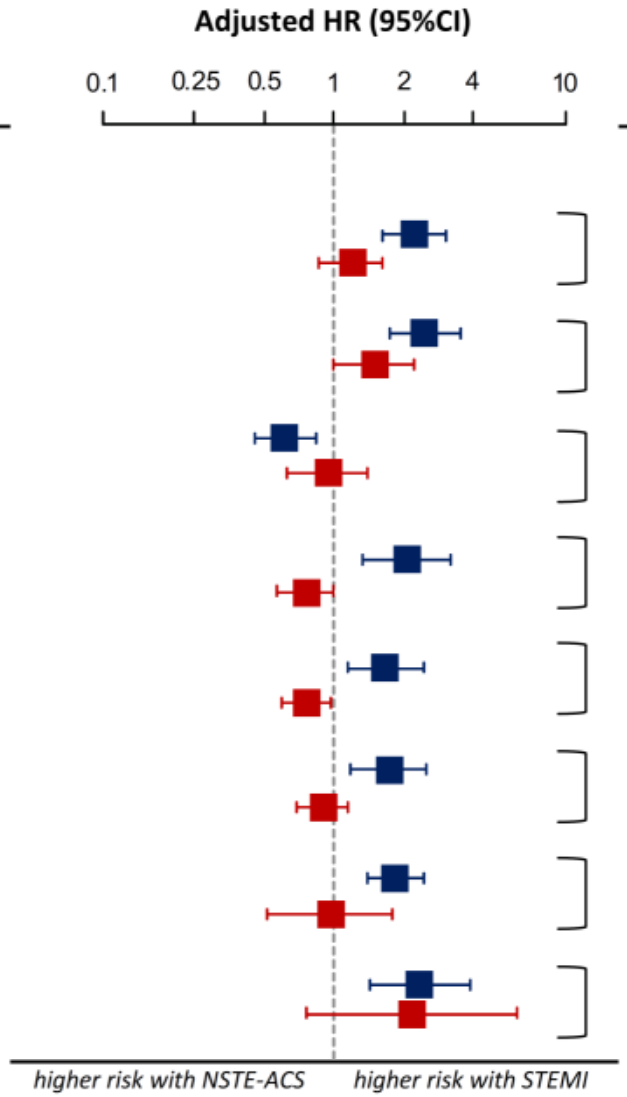
Early Vs. Late Outcomes By Type Of ACS in Diabetic Patients

	HR_{adj} (95%CI)	p-value for interaction
Diabetes		
Death		
0-30 days	2.31 (1.52-3.54)	<0.001
31-365 days	0.75 (0.47-1.21)	
Cardiac death		
0-30 days	2.68 (1.71-4.22)	<0.001
31-365 days	0.69 (0.38-1.26)	
Myocardial infarction		
0-30 days	0.75 (0.45-1.26)	0.82
31-365 days	0.88 (0.45-1.69)	
Target-lesion revascularization		
0-30 days	1.51 (0.74-3.06)	0.009
31-365 days	0.58 (0.35-0.96)	
Target-vessel revascularization		
0-30 days	1.43 (0.73-2.80)	0.019
31-365 days	0.64 (0.40-1.00)	
Any revascularization		
0-30 days	1.49 (0.72-3.07)	0.14
31-365 days	0.77 (0.48-1.24)	
Definite or probable stent thrombosis		
0-30 days	2.25 (1.48-3.44)	0.16
31-365 days	1.35 (0.57-3.21)	
Definite stent thrombosis		
0-30 days	2.81 (1.17-6.77)	0.36
31-365 days	2.25 (0.72-7.04)	



Early Vs. Late Outcomes By Type Of ACS in Patients Without Diabetes

	HR_{adj} (95%CI)	p-value for interaction
No diabetes		
Death		
0-30 days	2.20 (1.60-3.04)	<0.001
31-365 days	1.20 (0.87-1.63)	
Cardiac death		
0-30 days	2.47 (1.73-3.52)	0.002
31-365 days	1.49 (1.00-2.21)	
Myocardial infarction		
0-30 days	0.61 (0.46-0.83)	0.20
31-365 days	0.94 (0.62-1.41)	
Target-lesion revascularization		
0-30 days	2.07 (1.35-3.18)	<0.001
31-365 days	0.76 (0.57-1.00)	
Target-vessel revascularization		
0-30 days	1.67 (1.14-2.45)	<0.001
31-365 days	0.75 (0.59-0.96)	
Any revascularization		
0-30 days	1.72 (1.18-2.52)	0.002
31-365 days	0.89 (0.69-1.15)	
Definite or probable stent thrombosis		
0-30 days	1.84 (1.39-2.43)	0.03
31-365 days	0.96 (0.52-1.77)	
Definite stent thrombosis		
0-30 days	2.35 (1.42-3.88)	0.66
31-365 days	2.18 (0.76-6.23)	



CONCLUSIONS

- **Patients with diabetes have a 2-fold increased risk of mortality compared with non-diabetic patients in the setting of STEMI and NSTE-ACS at 1-year of follow-up;**

- **STEMI is associated with impaired early outcomes increasing the risk of mortality 2-fold within the first 30 days in both diabetic and non-diabetic patients. STEMI patients, irrespective of their diabetic status, have a higher risk of definite stent thrombosis and repeat revascularization compared with NSTE-ACS patients;**

- **Diabetes did not have an impact on the temporal distribution of adverse events related to the type of ACS during the early, late and overall follow-up period.**