The French ACS registries

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Disclosures

Funding of the registries:

- USIK 1995 was funded by Laboratoire Roussel, France
- USIC 2000 was funded by Laboratoire Aventis-France
- FAST-MI 2005 and 2010 are registries of the French Society of Cardiology, funded by unrestricted grants from
  - 2005: Pfizer and Servier (additional grant from the French National Health insurance system)
  - 2010: Merck, the Daiichi-Sankyo/Eli-Lilly alliance, AstraZeneca, GSK, Novartis, sanofi-aventis

Dr Steg's disclosures

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- **Speaker/consultant:** Amarin**,** AstraZeneca, Bayer, Boehringer-Ingelheim, BMS, Daiichi/sankyo, GSK, Lilly, Medtronic, MSD, Novartis, Otsuka, Pfizer, Roche, Sanofi, Servier, The Medicines Company, Vivus

Background

- The mortality decline in STEMI patients over the past 10 to 15 years is usually attributed to increased use and improved delivery of reperfusion therapy, in particular primary PCI.

- We hypothesized that, beyond primary PCI, other factors such as temporal changes in patient population characteristics might account for part of the observed reduction.

Aim

To assess changes in 30-day mortality of STEMI patients participating in four one-month surveys carried out 5 years apart, from 1995 to 2010, in France, in relation to changes in patient characteristics and early management.

Inclusion criteria

- 4 Nationwide French registries included consecutive adult patients with acute myocardial infarction (STEMI and NSTEMI) with symptom onset ≤ 48 hours, admitted alive to a coronary care unit (CCU) or an intensive care unit (ICU) within 48 hours of symptom onset, over a 1-month period.

- STEMI defined as persistent ST-segment elevation in at least 2 contiguous leads, or development of a new Q wave

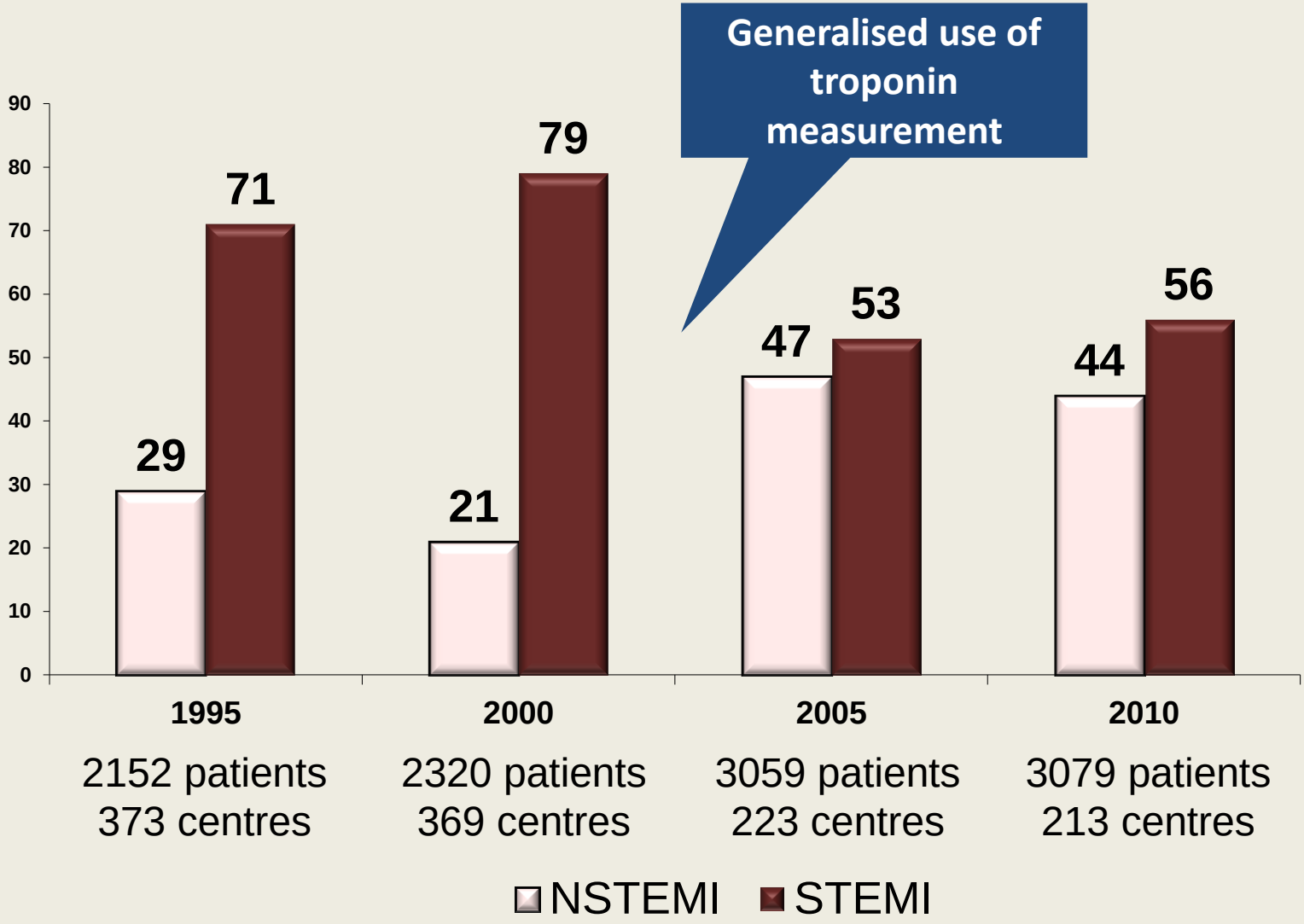
- Exclusion of iatrogenic AMIs

- All type of institutions: academic teaching hospitals, community and regional hospitals, private clinics (for profit and not-for-profit) and army hospitals.

- Compliance with GCP, patient consent and compliance with French law, including the law on data protection.

STEMI

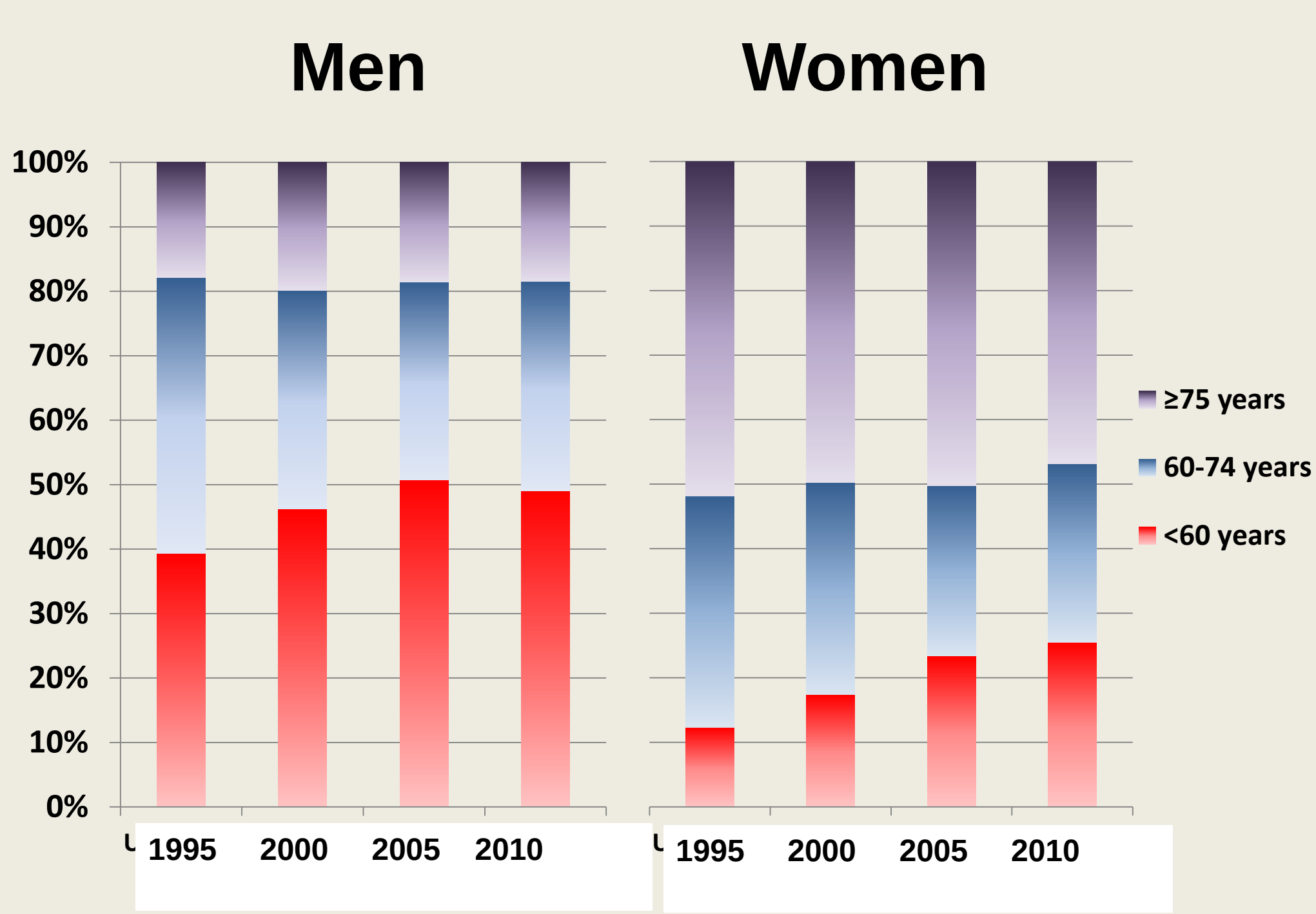
Proportion of STEMI patients from 1995 to 2010



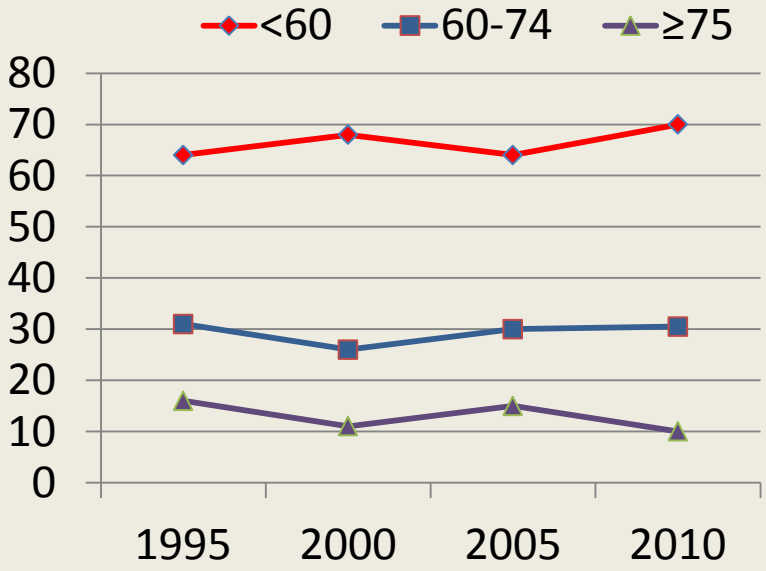
Patient profile

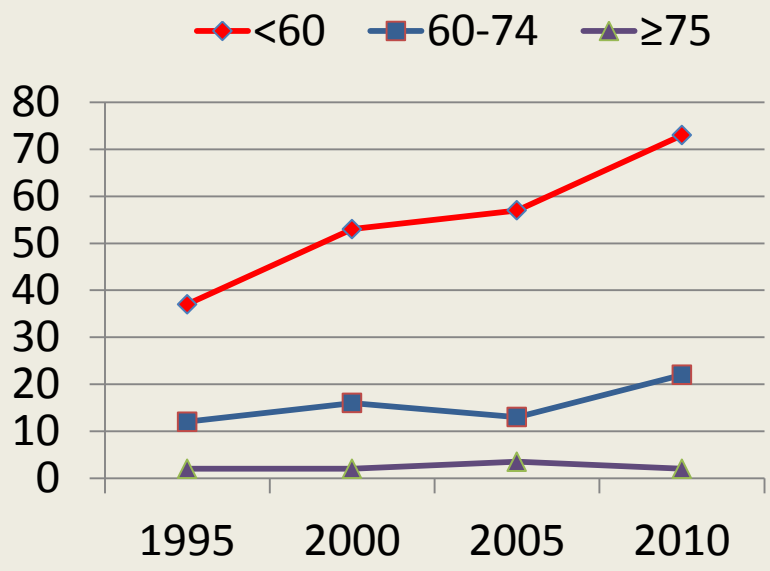
Changes in Baseline Characteristics from 1995 to 2010

	1995	2000	2005	2010	P value
Age (years)	66.2±14.0	64.5±14.6	64.0±14.7	63.3±14.5	<0.001
Sex (% W)	28.1	27.1	28.4	24.7	0.06
Risk factors					
Hypertension	43.8	43.6	49.2	47.0	0.006
Hypercholesterolemia	34.8	39.0	43.4	39.3	0.001
Diabetes mellitus	15.8	19.7	18.7	16.5	0.92
Current smoking	32.0	35.3	37.2	40.9	<0.001
Obesity	14.3	16.3	20.8	20.1	<0.001
Cardiovascular history					
Previous MI	14.6	15.0	11.2	10.9	<0.001
Previous PCI	-	7.5	8.7	10.2	<0.001
Previous CABG	-	2.7	2.1	5.6	<0.001
Stroke or TIA	6.2	4.2	5.6	4.0	<0.001
Peripheral artery disease	9.7	7.9	5.3	4.8	<0.001
History of heart failure	6.4	4.6	3.5	2.4	<0.001
Co-morbidities					
Chronic kidney disease	-	3.6	3.1	2.4	0.05

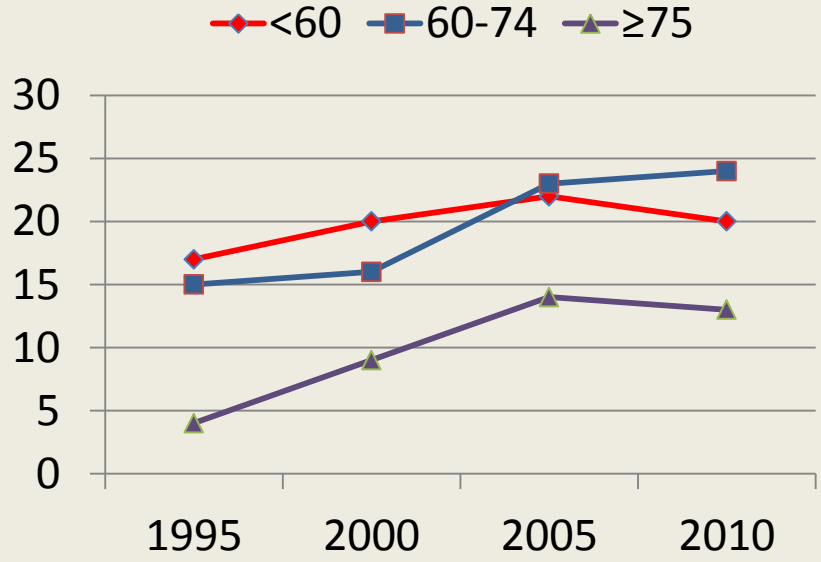

Men
Women
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1995
2000
2005
2010
1995
2000
2005
2010
≥75 years
60-74 years
<60 years

Current smoking

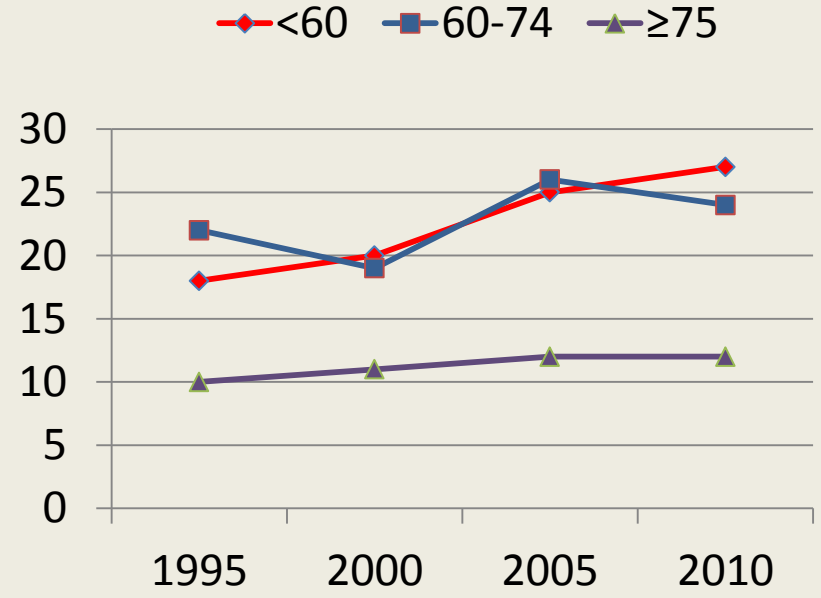




Obesity



Men



Women

STEMI population: Temporal changes in clinical presentation on admission

	1995	2000	2005	2010	P value
Location of STEMI • Anterior	636 (41)	746 (41)	647 (40)	657 (38)	0.07
Initial Killip class • I • II • III • IV	- - - -	79.7 13.1 4.3 2.8	81.9 11.5 4.5 2.1	84.6 9.9 3.1 2.3	0.001
Admission heart rate	-	78 ± 19	78 ± 19	78 ± 21	0.90
Admission SBP	-	132 ± 27	135 ± 28	141 ± 28	<0.001
EMMACE risk score	-	0.188	0.176	0.156	<0.001
2010 risk score	0.053	0.048	0.048	0.045	<0.001

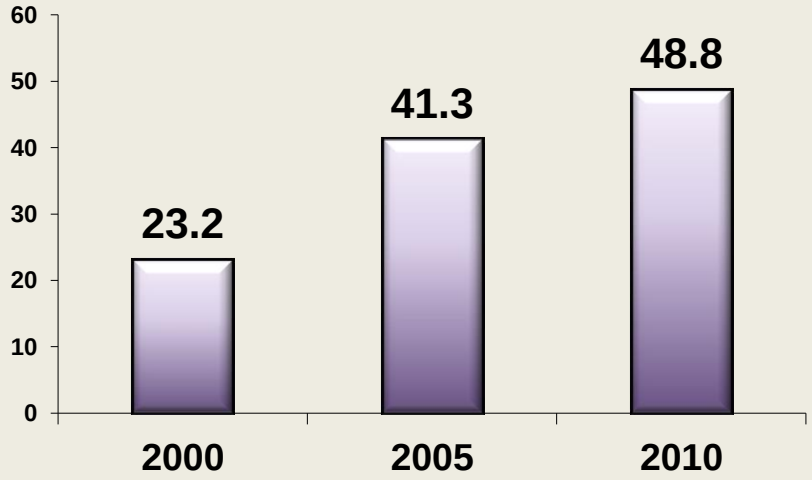
Changes in patient behaviour

Changes in patient behaviour 2000-2010

Time from onset to first call/contact

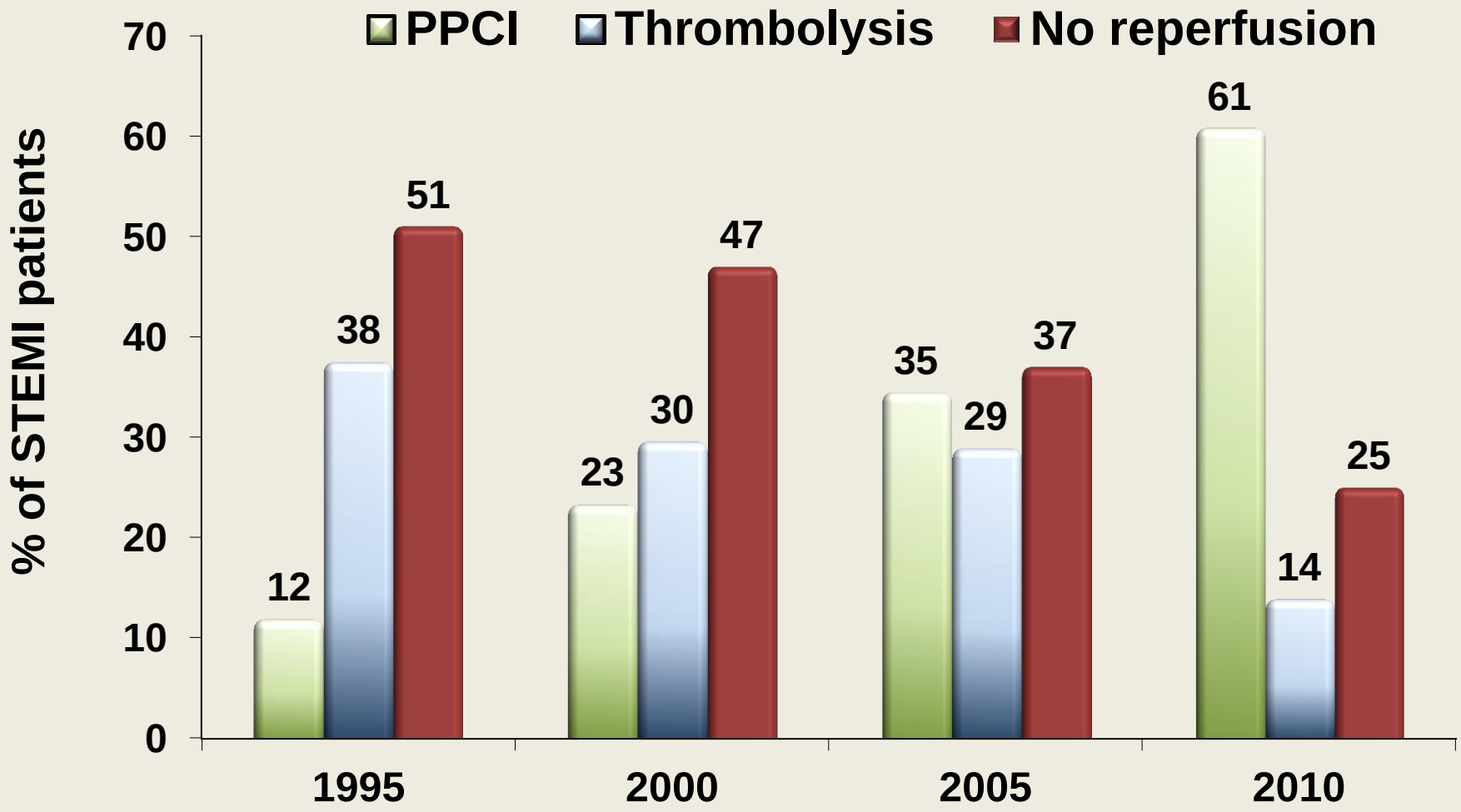
	2000	2005	2010
Median	120	90	74
25^{th}; 75^{th} percentiles	41; 360	30; 295	30; 240

Direct MICU call and transportation



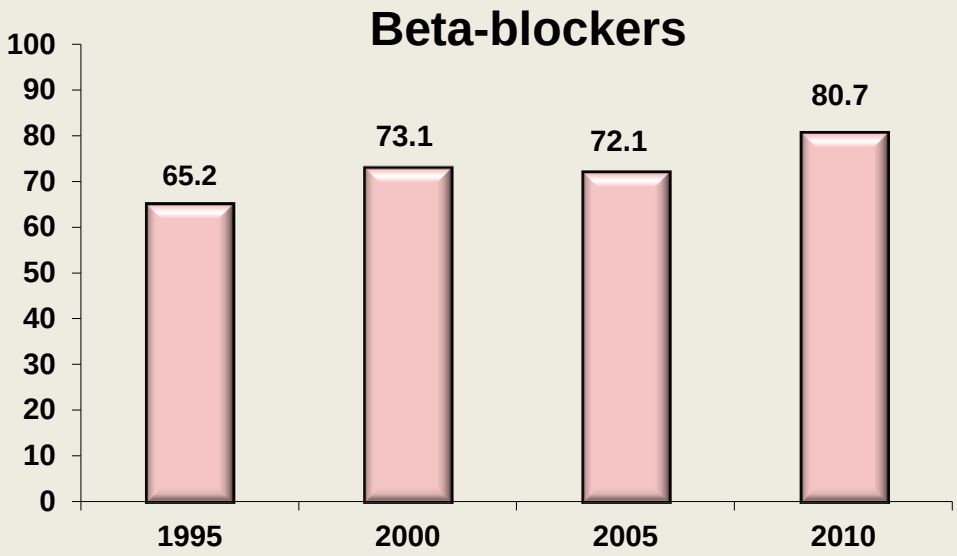
Changes in management

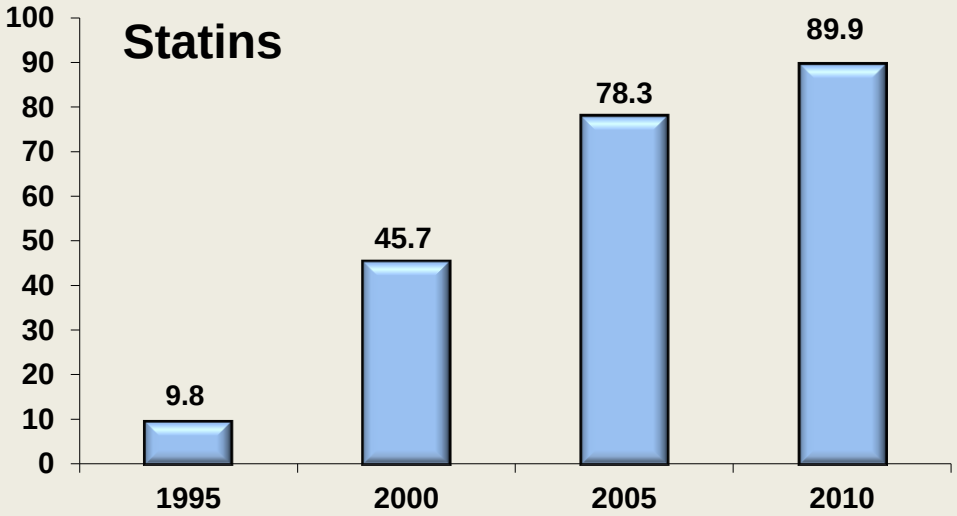
Reperfusion therapy in STEMI patients

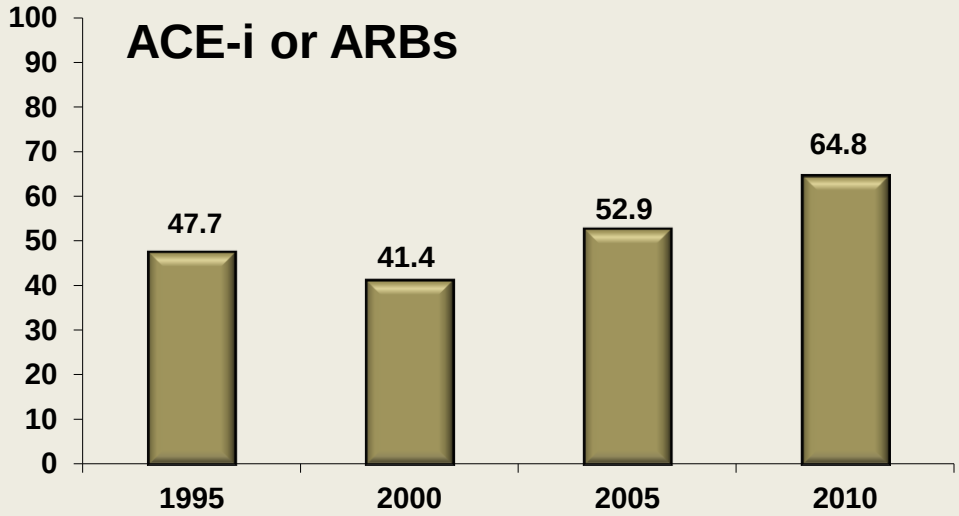


	1995	2000	2005	2010
Early/Rescue PCI:	9.9%	24%	58%	55%
Any PCI after lysis:	15%	60%	84%	87%

Medications used in first 48 hours

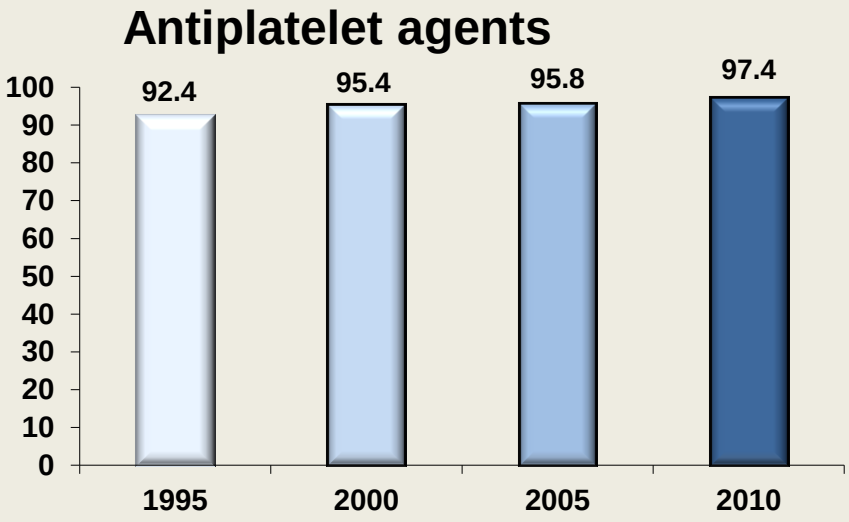


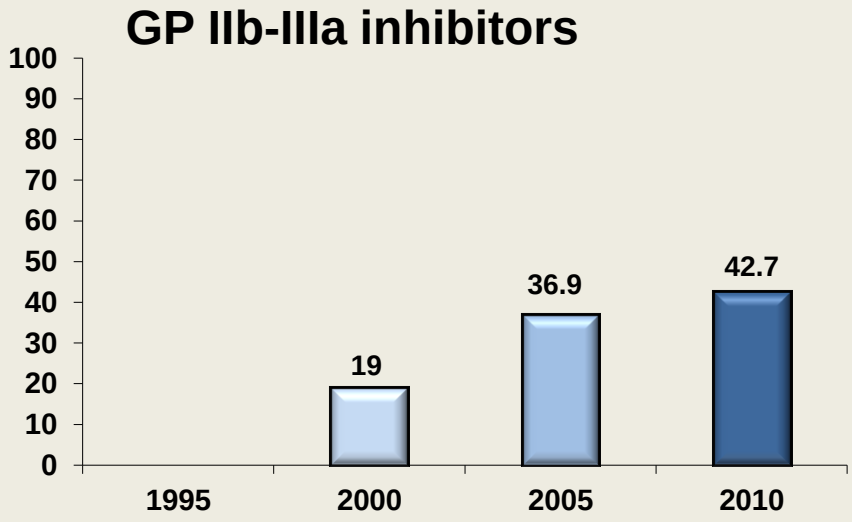


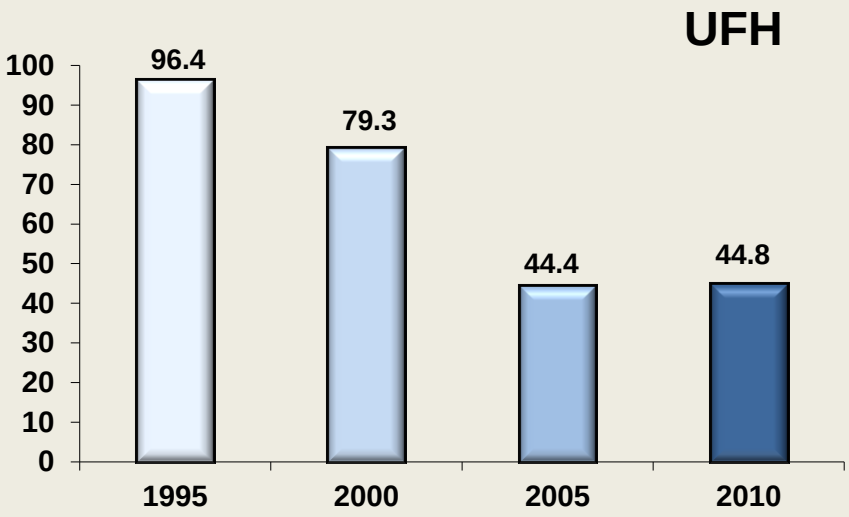


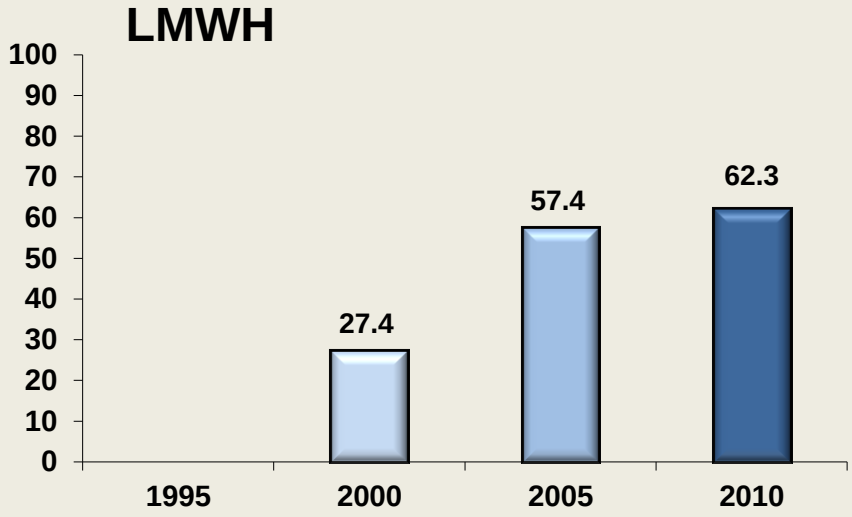
All P values <0.001

Antithrombotic medications used in first 48 hours

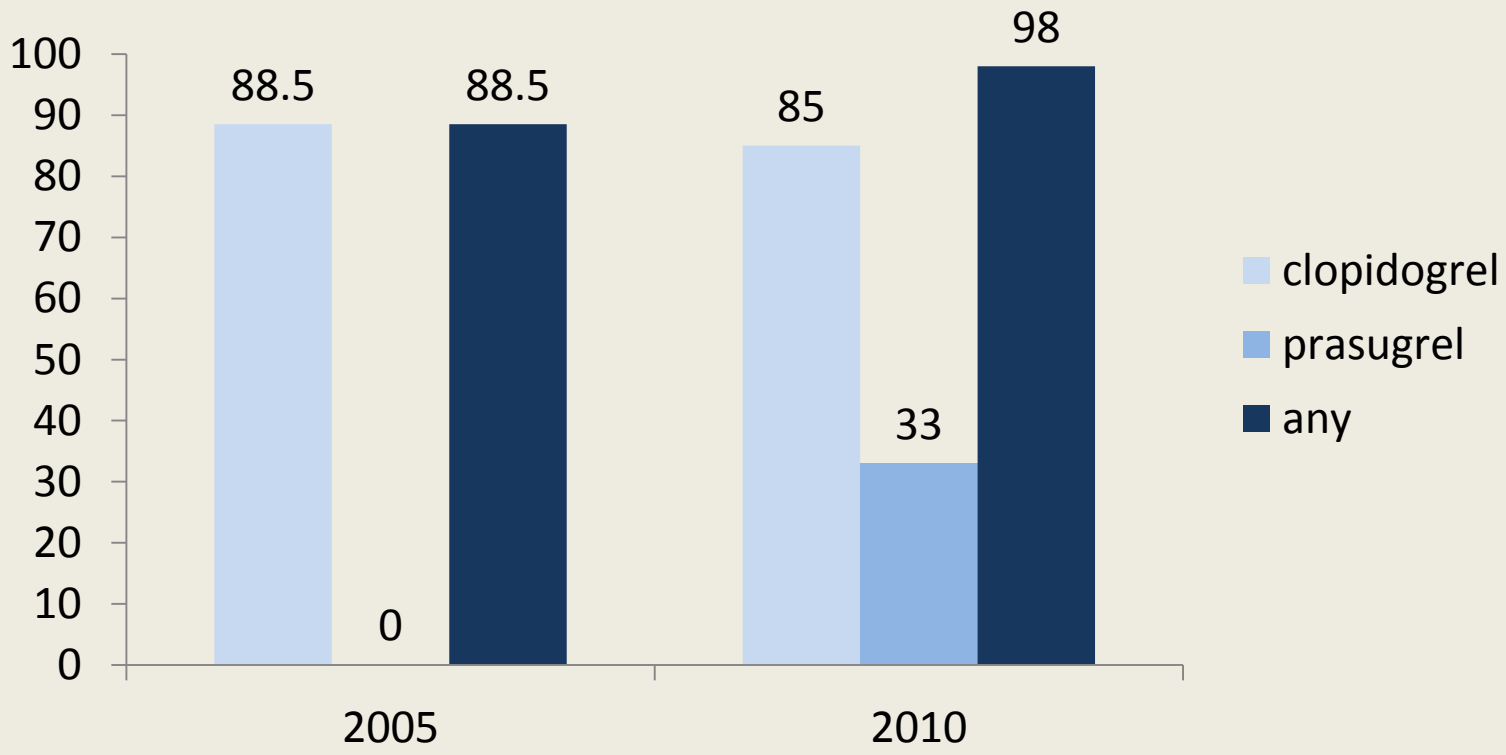






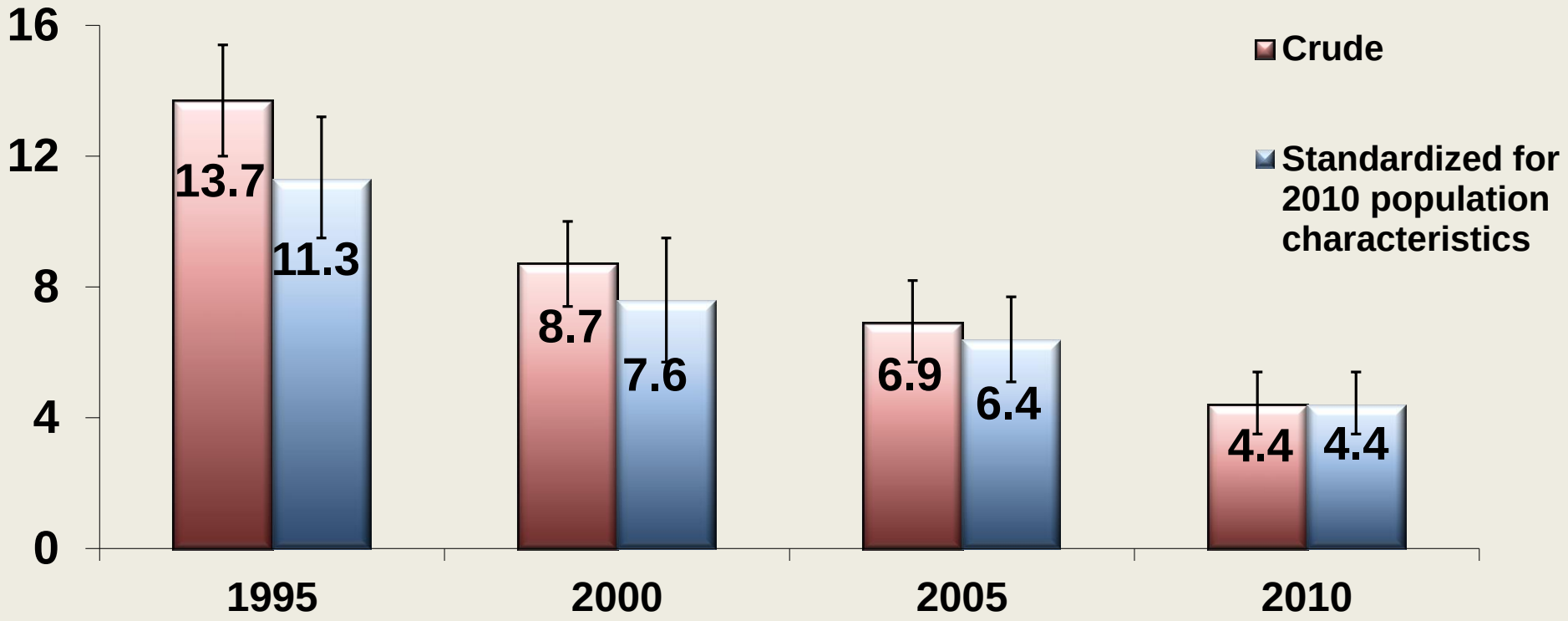


Use of P2Y12 inhibitors
FAST-MI 2005 & 2010

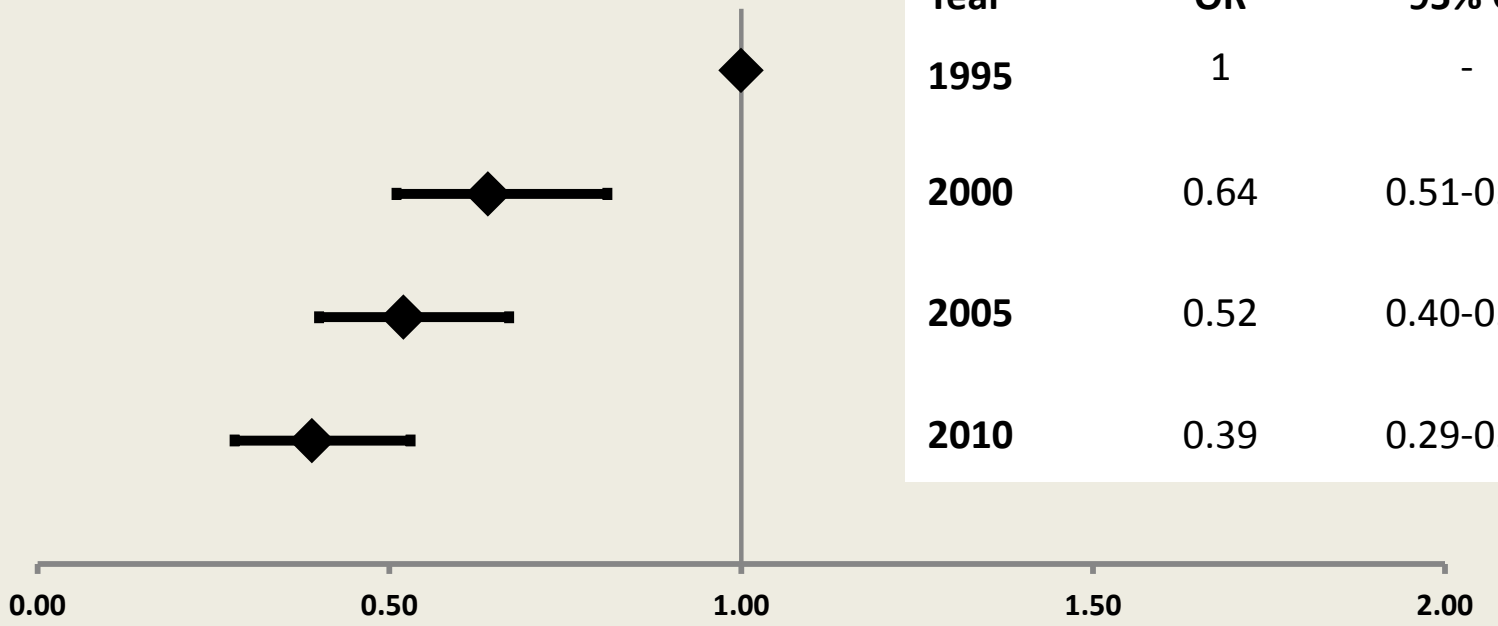


Changes in outcomes

Evolution of 30-day mortality



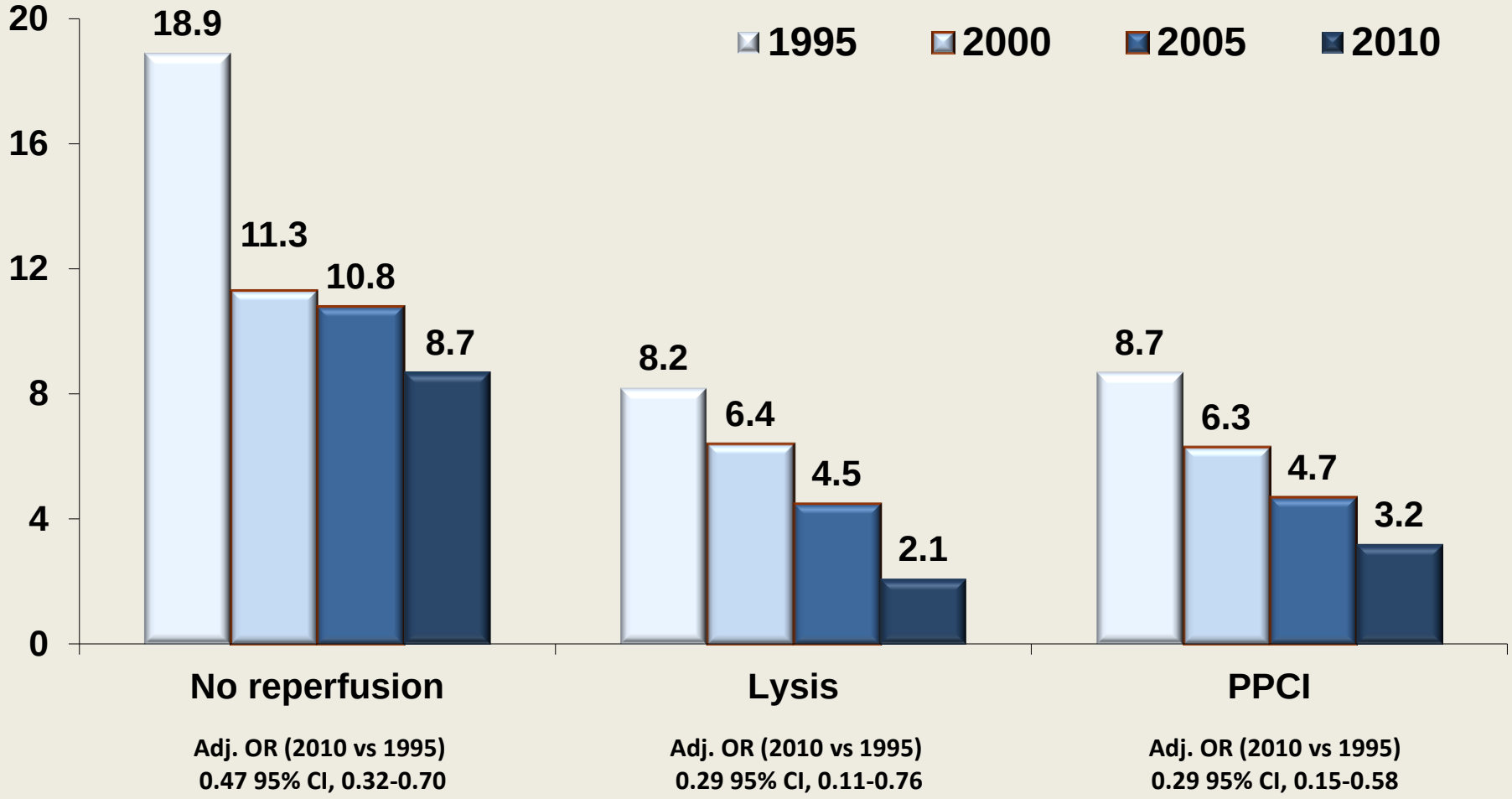
Multivariable-adjusted risk of 30 day-mortality



Year	OR	95% CI	*P* value
1995	1	-	-
2000	0.64	0.51-0.81	<0.001
2005	0.52	0.40-0.68	<0.001
2010	0.39	0.29-0.53	<0.001

Adjusted for age, sex, BMI, risk factors, previous history, and use and type of reperfusion therapy

Evolution of 30-day mortality according to use and type of reperfusion therapy



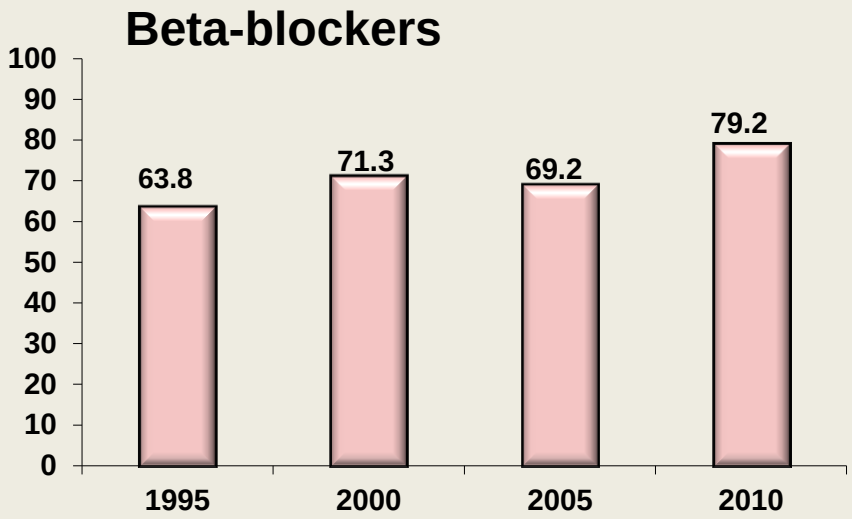
Puymirat E, et al. ***JAMA***. 2012;308:998-1006

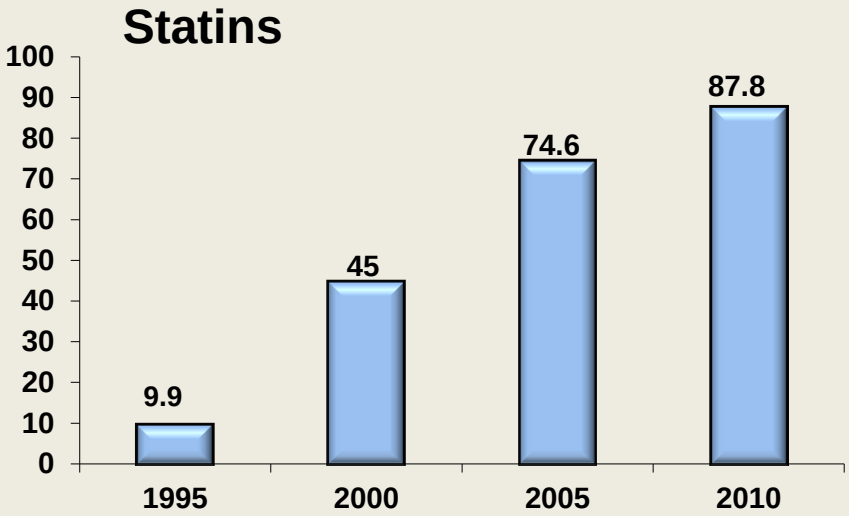
NSTEMI

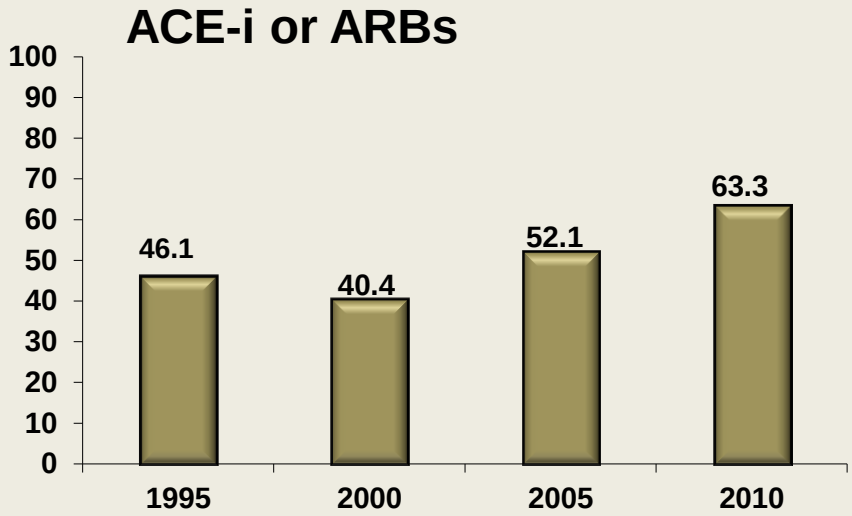
Changing populations: NSTEMI

	1995	2000	2005	2010	P value
Age (years)	68.5 ± 14.2	68.9 ± 13.5	70.2 ± 13.4	68.6 ± 13.6	0.71
Sex (% women)	30.5	27	35	30	0.75
Diabetes mellitus	20.1	25.8	29.1	27.1	0.002
Current smoking	26	21.9	22.2	24.5	0.74
Obesity	13.4	22.5	21	23.9	<0.001
Previous MI	27.4	28.4	23.8	22.8	0.006
Peripheral artery disease	12	14.7	13.6	11.8	0.57

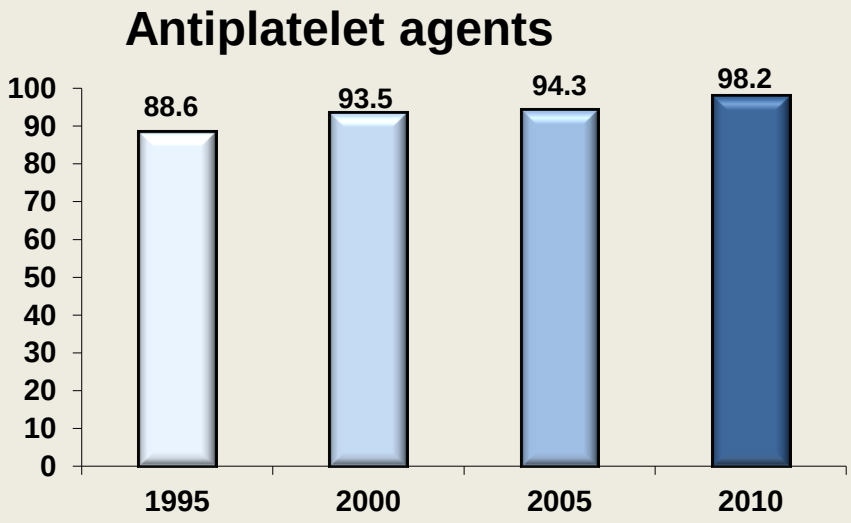
Medications used in first 48 hours

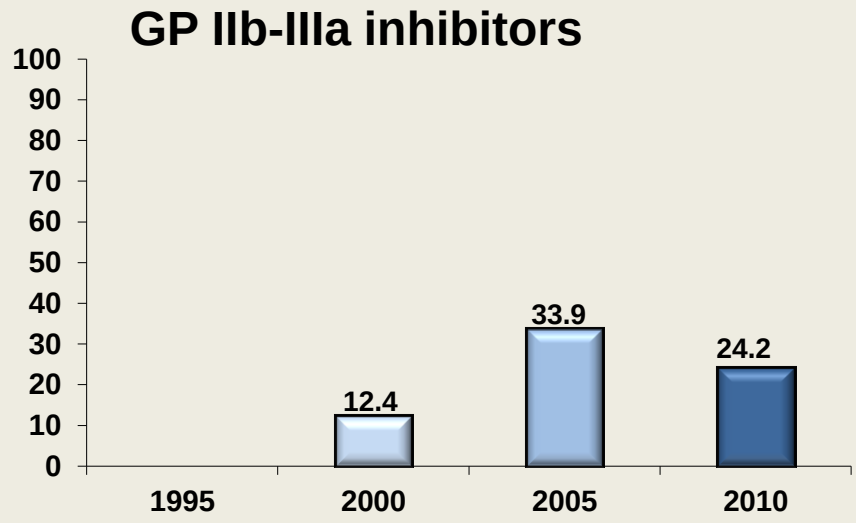


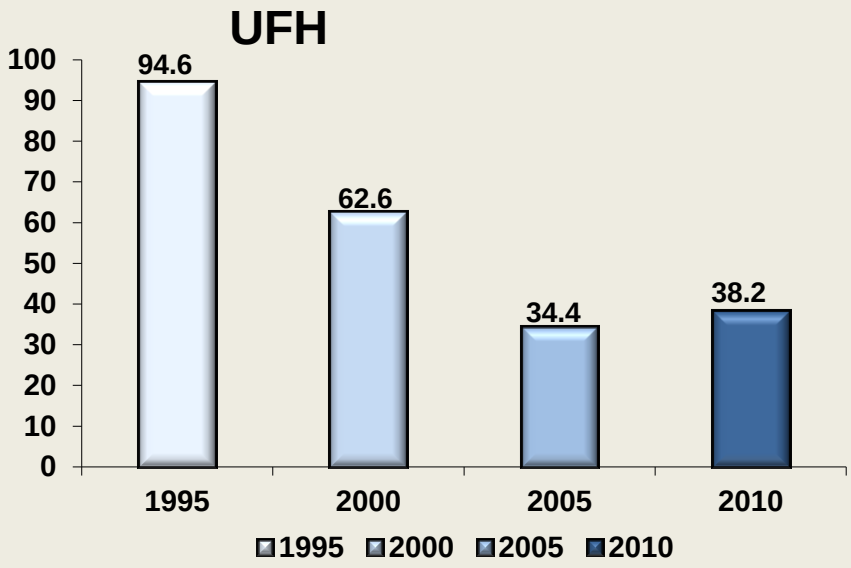


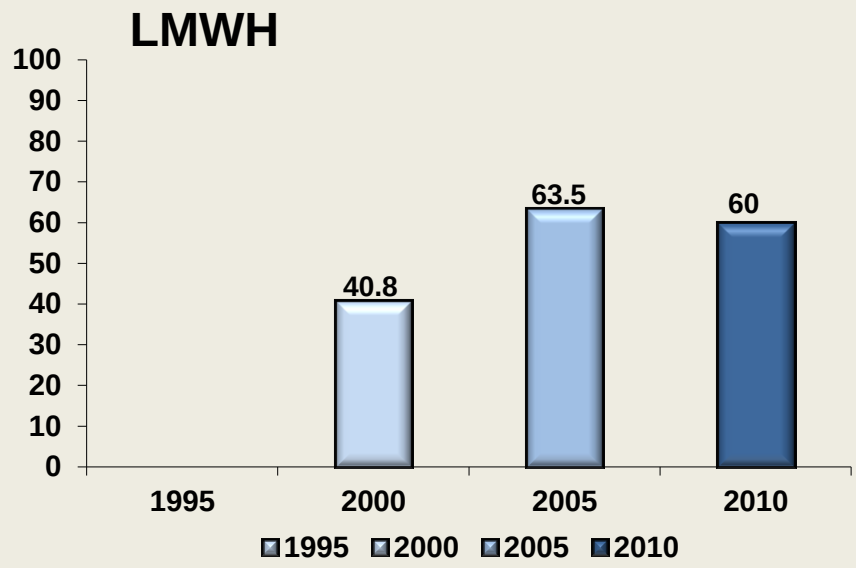


Antithrombotic medications used in first 48 hours for NSTEMI patients

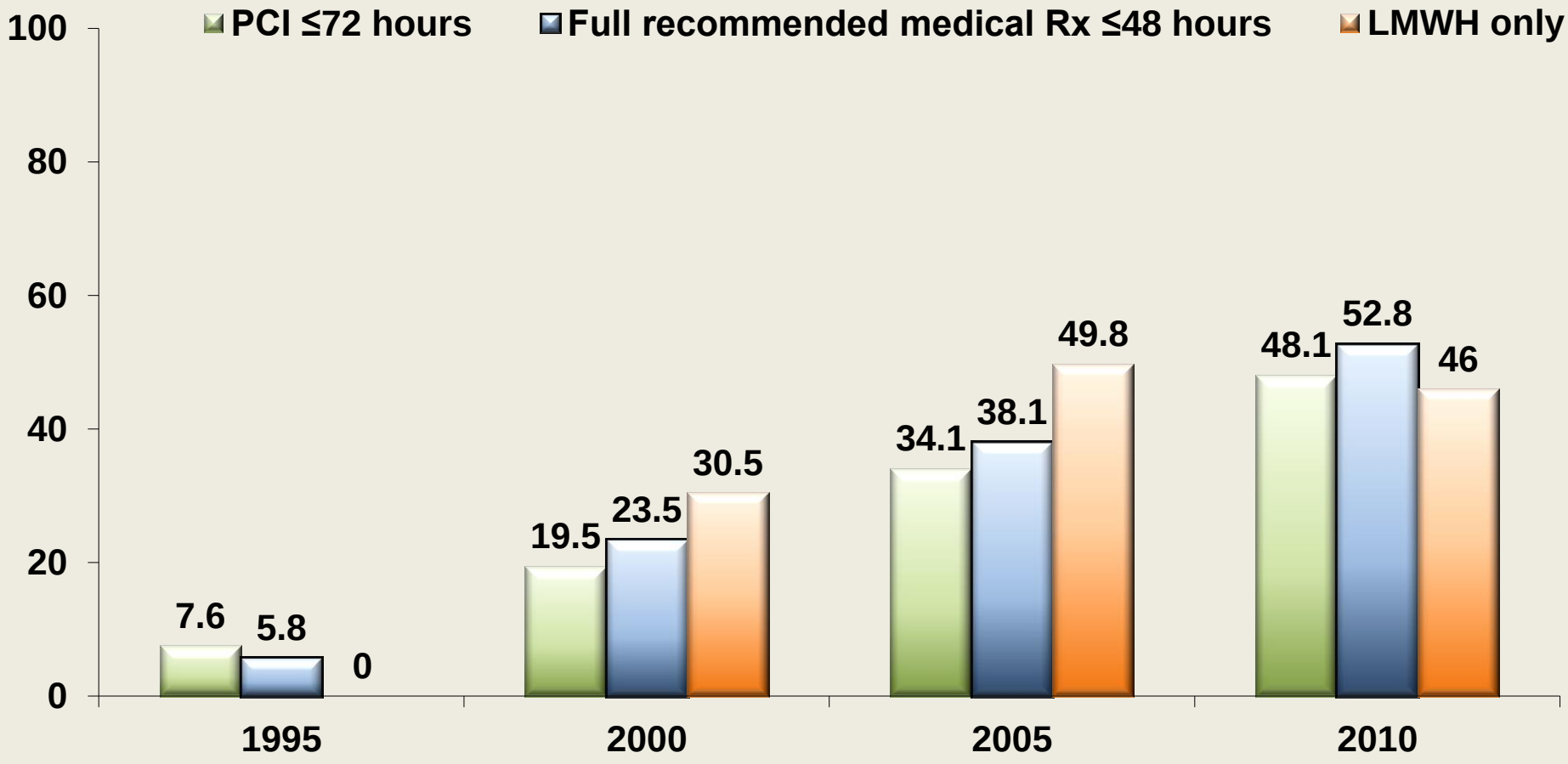




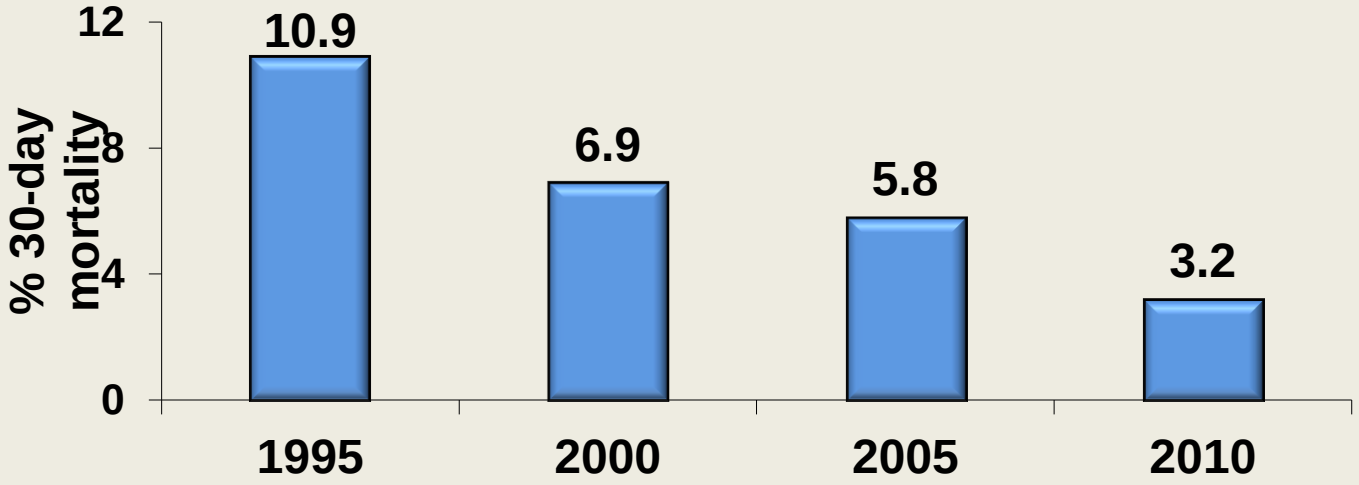




Early use of PCI, recommended medical therapy, and low molecular weight heparin



30-day mortality: NSTEMI

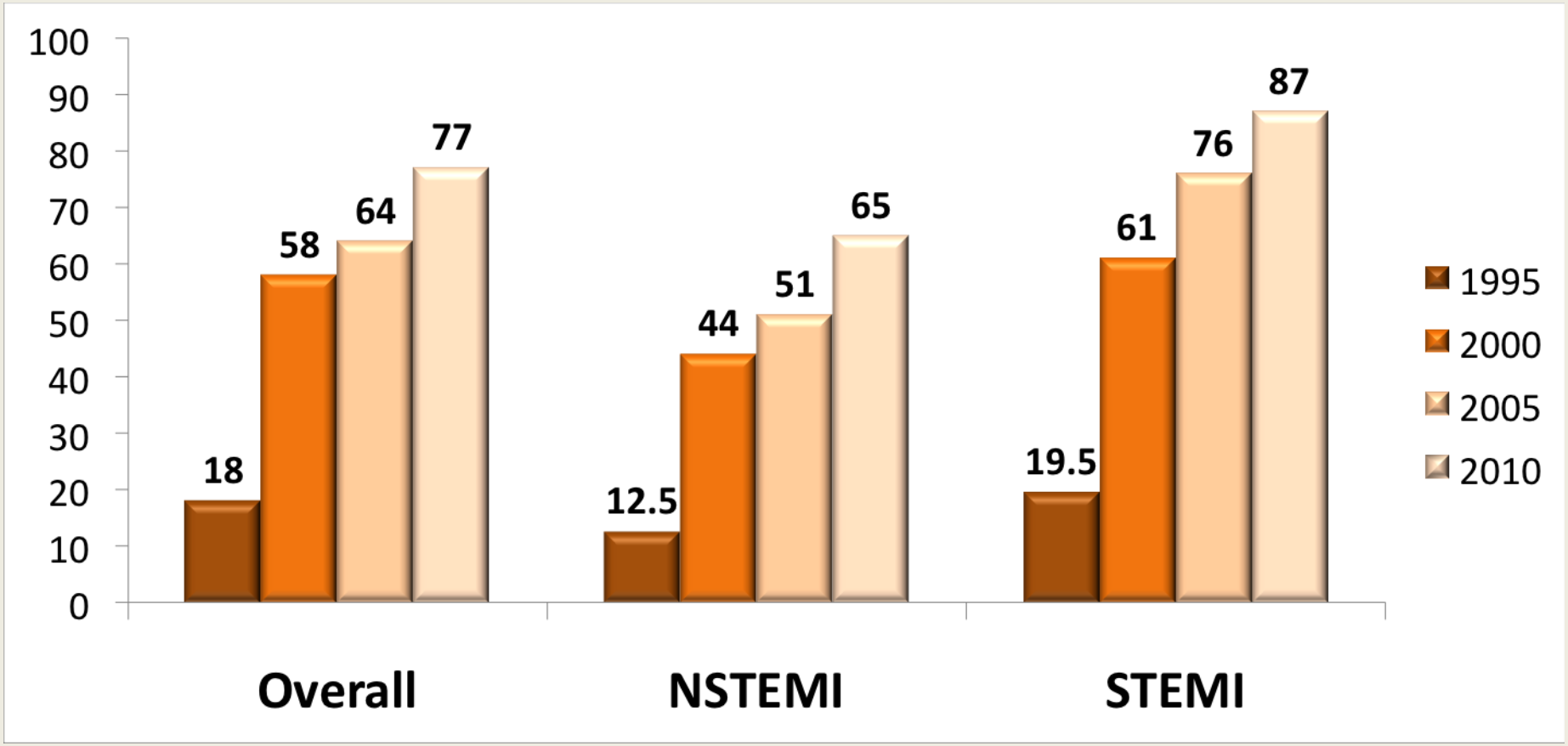


Correlates of 30-day mortality in the NSTEMI population

	Model 1 (without PCI)	Model 2 (with PCI)
Year: • 1995 • 2000 • 2005 • 2010	 1.00 0.43 (0.24-0.77) 0.51 (0.34-0.77) 0.23 (0.14-0.38)	 1.00 0.53 (0.29-0.95) 0.67 (0.44-1.02) 0.35 (0.21-0.58)
Age	1.05 (1.04-1.07)	1.05 (1.03-1.06)
Diabetes	1.51 (1.06-2.16)	1.43 (1.00-2.05)
Hx of stroke	2.00 (1.28-3.12)	2.03 (1.29-3.17)
Hx of CHF	1.99 (1.33-2.98)	1.81 (1.21-2.70)
BMI	0.96 (0.92-1.00)	--
PCI during stay		0.37 (0.24-0.57)

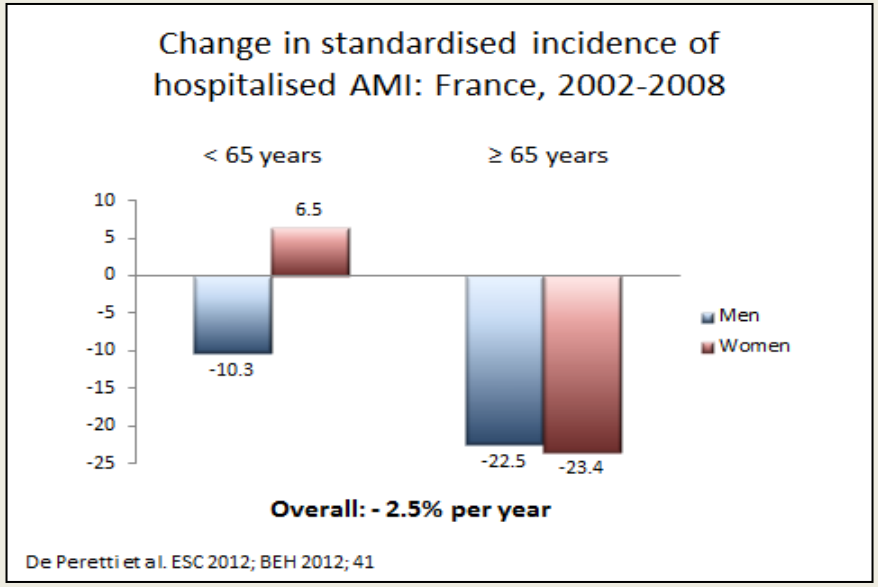
Model 1: survey year, age, gender, risk factors, past medial history, type of AMI
Model 2: same variables + PCI performed during hospital stay

Use of PCI during hospital stay: 1995 to 2010



Conclusion

- In STEMI patients:
  - The profile of patients hospitalised for STEMI has changed in the past 15 years with a higher prevalence of younger patients without comorbidities or previous CHD history.
  - In particular, there is a preoccupying increase in the population of younger women, in whom smoking and, to a lesser extent, obesity, have considerably increased.



Conclusion

- In STEMI patients :
  - There have been important changes in patient behaviour, and in medical management, both in terms of invasive strategy and medications used at an early stage.
  - In parallel, early mortality has decreased by about two-thirds over the past 15 years.
  - This decrease in early mortality is therefore related to multiple factors including public information, general organisation of care (closure of smaller institutions), increased use of SAMU, increased use of reperfusion therapy, and increased early use of recommended medications.

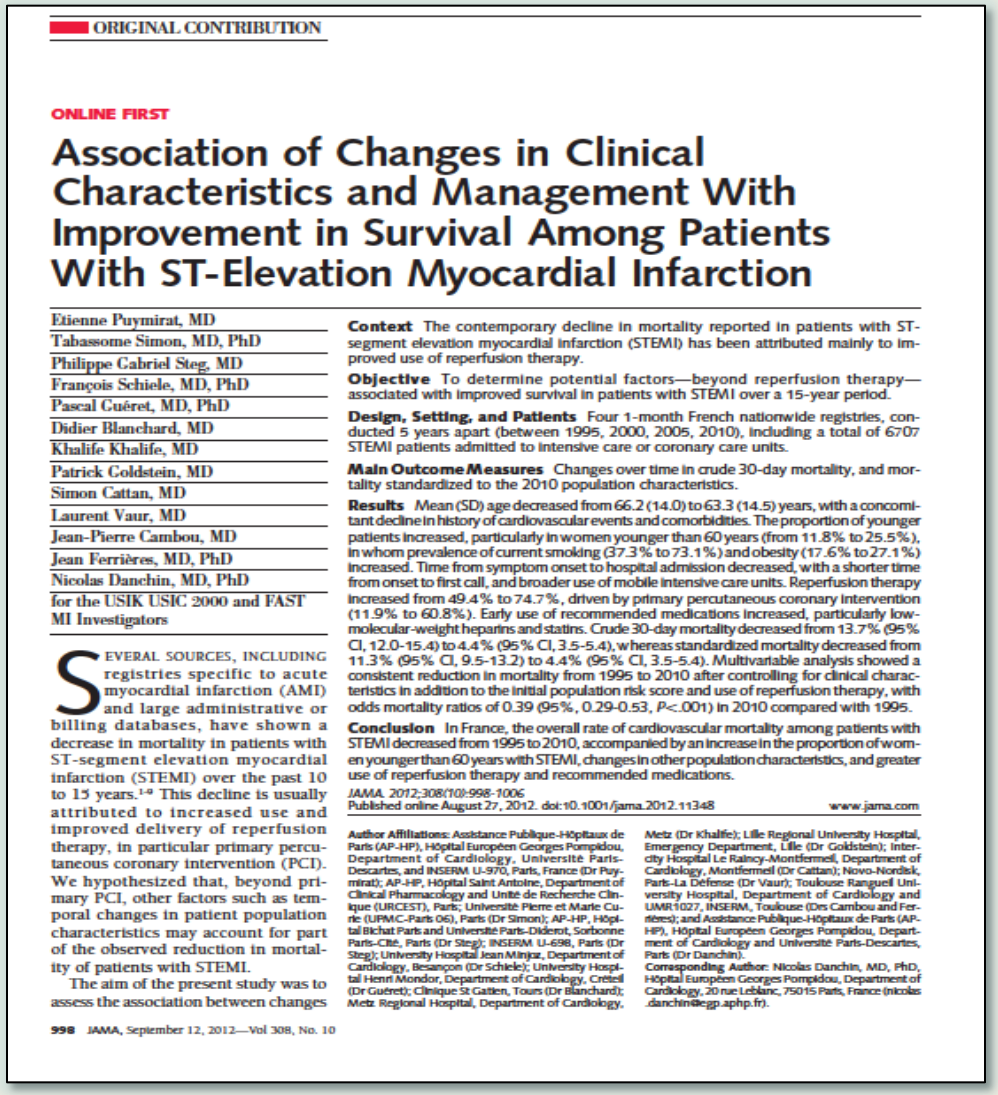
Conclusion

- In NSTEMI patients :
  - Early organisation of care is less crucial.
  - Early mortality has decreased by about two-thirds over the past 15 years.
  - This decrease parallels the increased use of early PCI, statins and recommended medications, and low molecular weight heparin or newer anticoagulants in place of unfractionated heparin.

Thank you

Nicolas DANCHIN

Tabassome SIMON



ORIGINAL CONTRIBUTION

ONLINE FIRST

Association of Changes in Clinical Characteristics and Management With Improvement in Survival Among Patients With ST-Elevation Myocardial Infarction

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Context The contemporary decline in mortality reported in patients with ST-segment elevation myocardial infarction (STEMI) has been attributed mainly to improved use of reperfusion therapy.

Objective To determine potential factors—beyond reperfusion therapy—associated with improved survival in patients with STEMI over a 15-year period.

Design, Setting, and Patients Four 1-month French nationwide registries, conducted 5 years apart (between 1995, 2000, 2005, 2010), including a total of 6707 STEMI patients admitted to intensive care or coronary care units.

Main Outcome Measures Changes over time in crude 30-day mortality, and mortality standardized to the 2010 population characteristics.

Results Mean (SD) age decreased from 66.2 (14.0) to 63.3 (14.5) years, with a concomitant decline in history of cardiovascular events and comorbidities. The proportion of younger patients increased, particularly in women younger than 60 years (from 11.8% to 25.5%), in whom prevalence of current smoking (37.3% to 73.1%) and obesity (17.6% to 27.1%) increased. Time from symptom onset to hospital admission decreased, with a shorter time from onset to first call, and broader use of mobile intensive care units. Reperfusion therapy increased from 49.4% to 74.7%, driven by primary percutaneous coronary intervention (11.9% to 60.8%). Early use of recommended medications increased, particularly low-molecular-weight heparins and statins. Crude 30-day mortality decreased from 13.7% (95% CI, 12.0-15.4) to 4.4% (95% CI, 3.5-5.4), whereas standardized mortality decreased from 11.3% (95% CI, 9.5-13.2) to 4.4% (95% CI, 3.5-5.4). Multivariable analysis showed a consistent reduction in mortality from 1995 to 2010 after controlling for clinical characteristics in addition to the initial population risk score and use of reperfusion therapy, with odds mortality ratios of 0.39 (95%, 0.29-0.53, $P<.001$) in 2010 compared with 1995.

Conclusion In France, the overall rate of cardiovascular mortality among patients with STEMI decreased from 1995 to 2010, accompanied by an increase in the proportion of women younger than 60 years with STEMI, changes in other population characteristics, and greater use of reperfusion therapy and recommended medications.

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