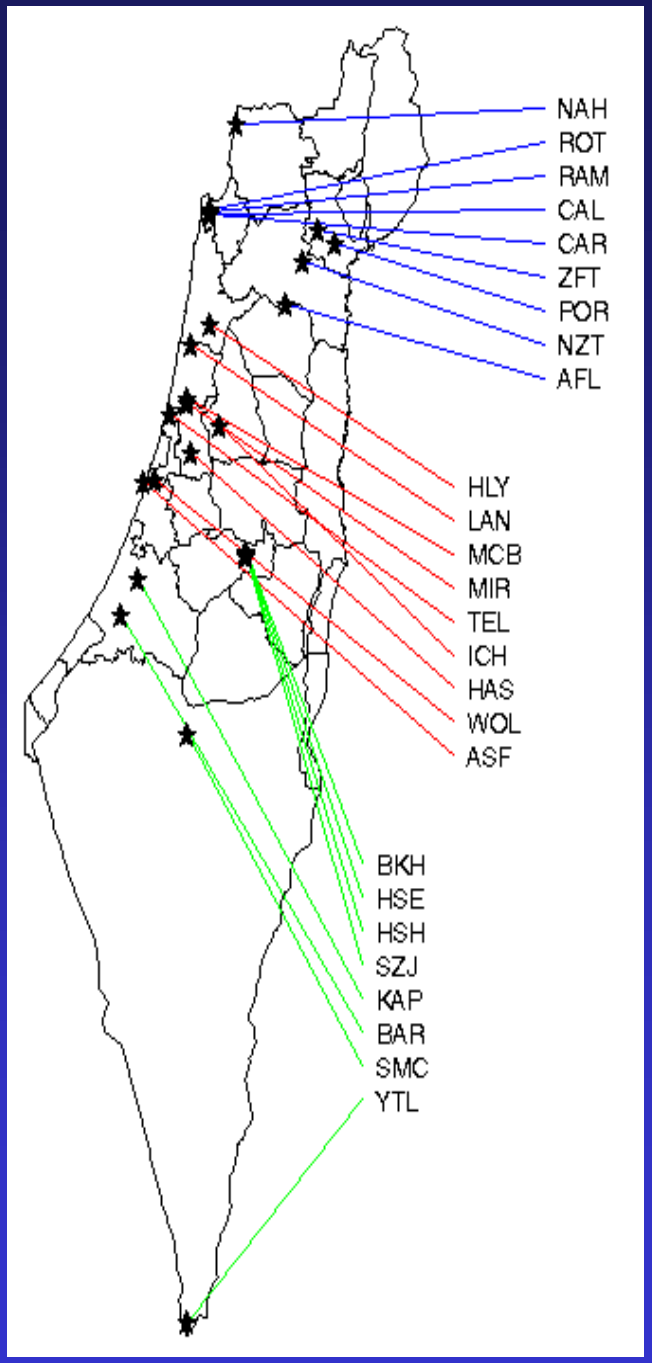
ACSIS 2000-2010

(Acute Coronary Syndrome Israeli Survey)

Shmuel Gottlieb, MD

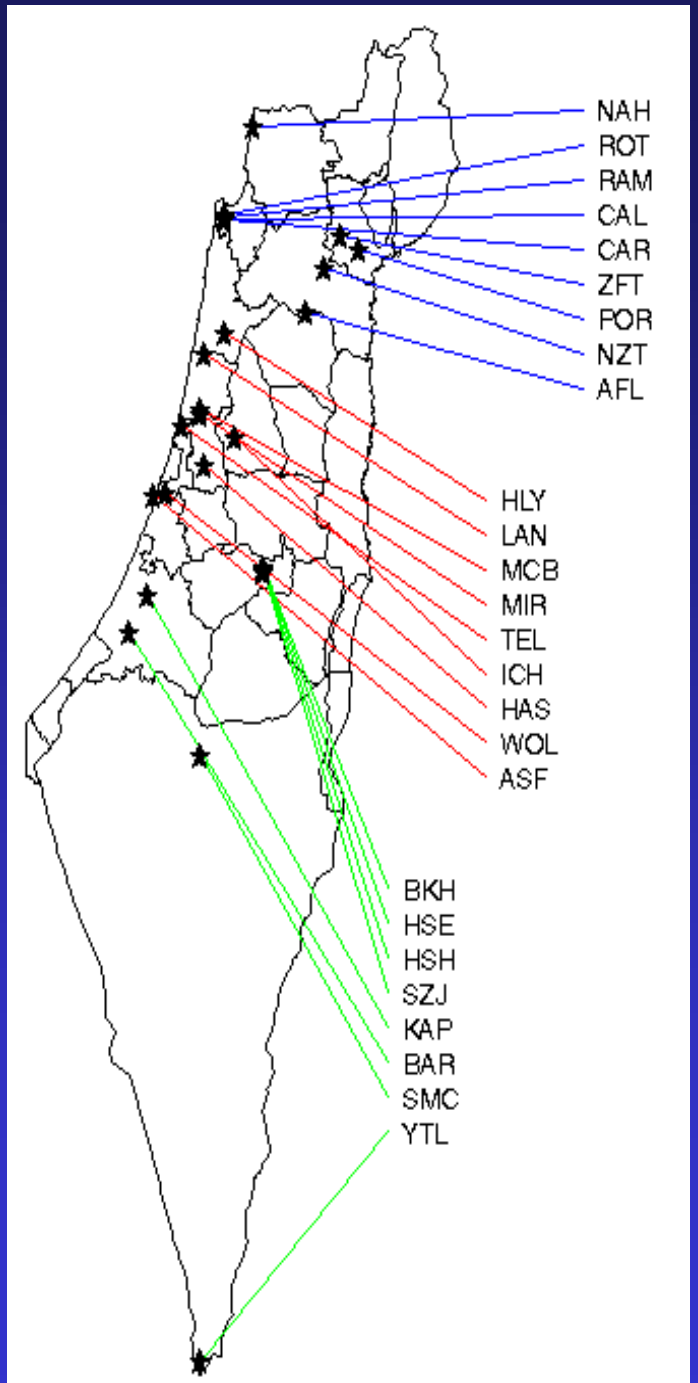
Shaare Zedek Medical Center, Bikur Cholim Campus, Jerusalem,

and Neufeld Cardiac Research Institute, Tel-Hashomer, Israel



ACSIS

ACSIS is a 2-month biennial nationwide ACS survey which documents all ACS pts who were admitted to each of the 26 cardiac departments in Israel.



ACSIS

26 Participating Centers

23 with Cath. Lab. Facilities

10 with Cardiac Surgery Departments

ACSIS - OBJECTIVES

1. To assess the characteristics, management and outcome of patients with ACS in Israel.

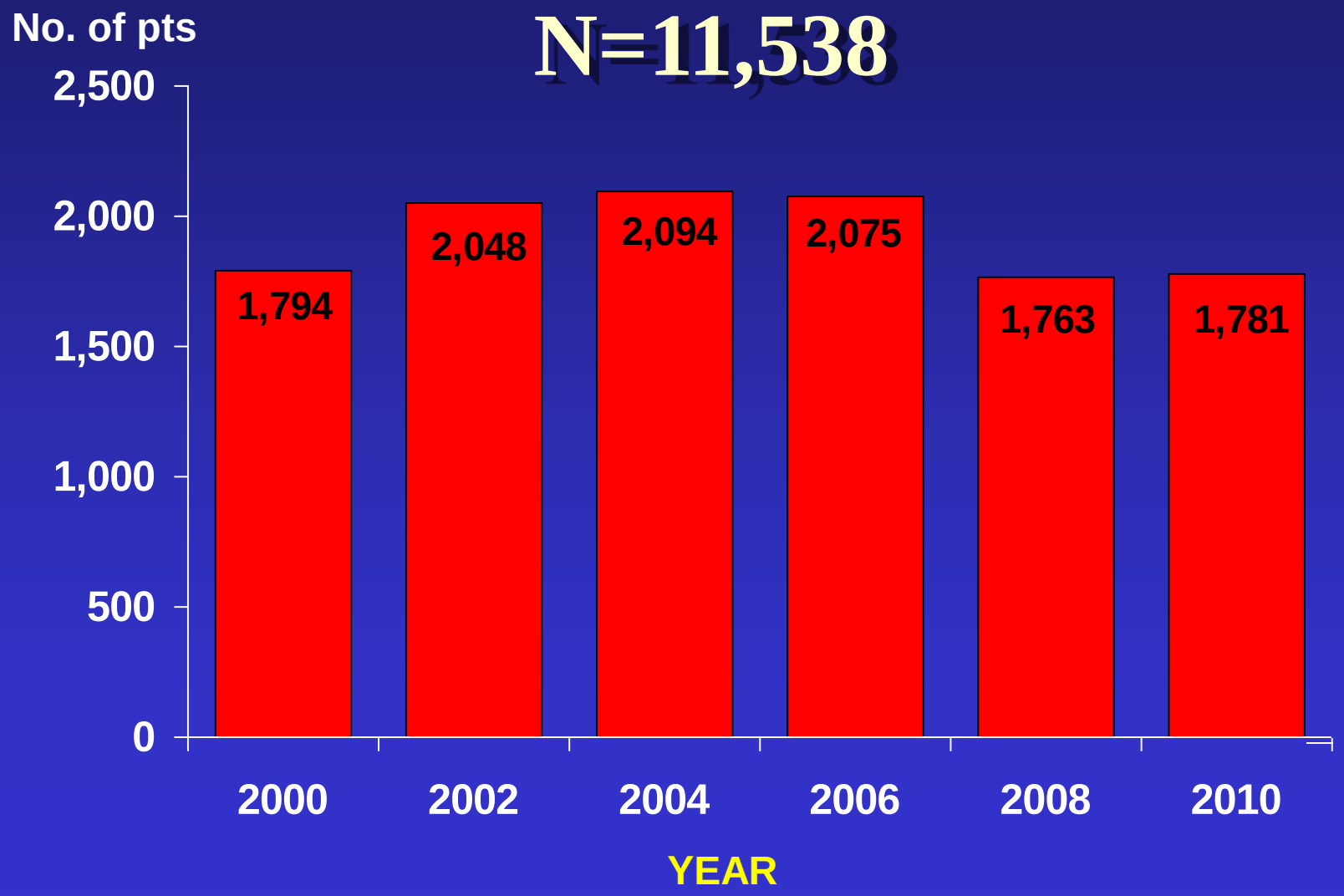
2. To assess guidelines implementation in daily practice ("real world").

3. To compare the present practice of ACS with data from previous surveys (Trends).

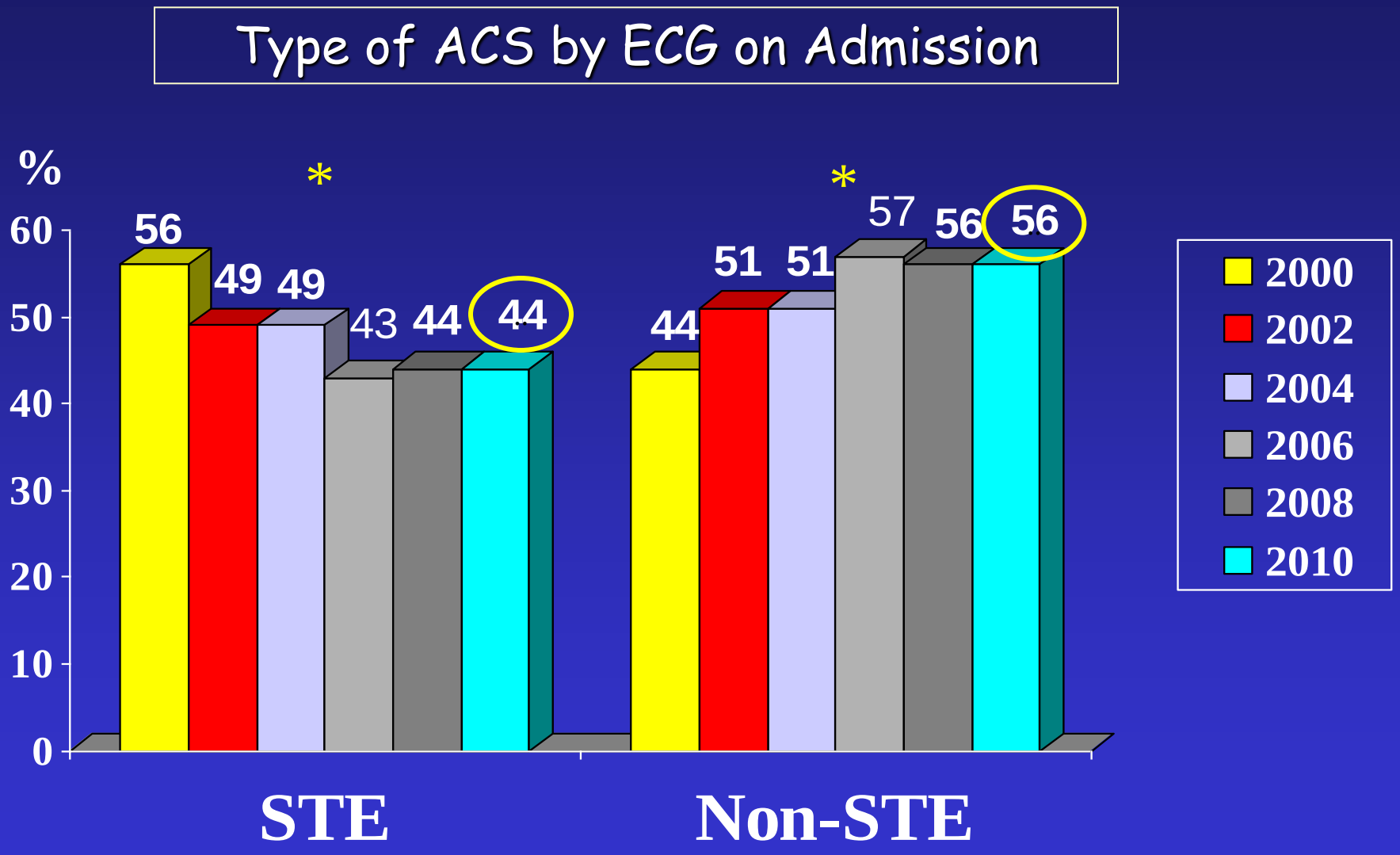
4

ACSIS 2000-2010

Number of Patients with ACS in each Survey

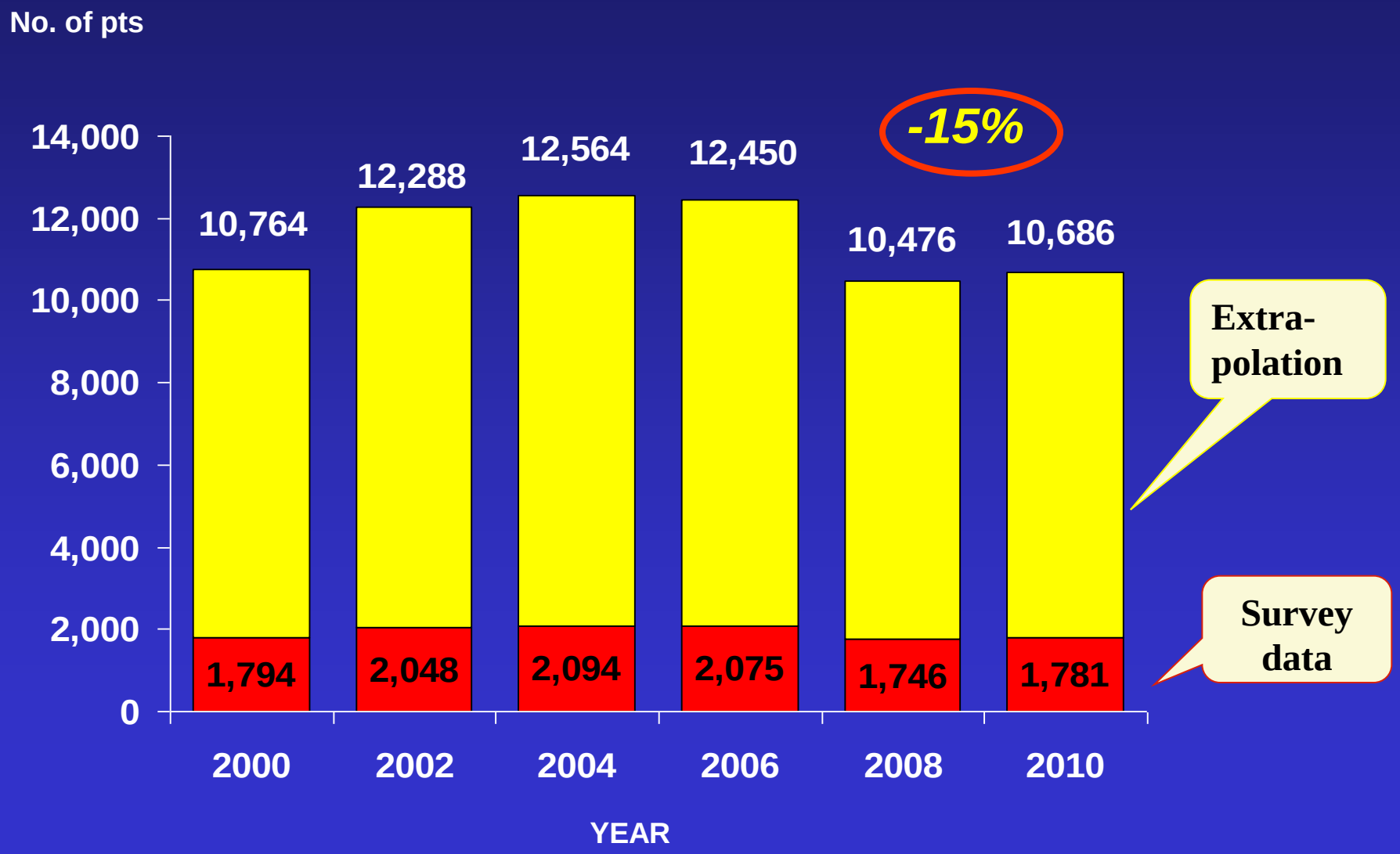


ACSIS 2000-2010: STE



*P for trend significant

Estimated Number of Patients with ACS Hospitalized in Cardiology Departments per Year
ACSIS 2000-2010



Incidence of ACS per 100,000 Population

ACSIS 2000–2010

ACSIS 2000-2010

Demographics

YEAR # of pts.	2000 (n=1794) %	2002 (n=2048) %	2004 (n=2094) %	2006 (n=2075) %	2008 (n=1746) %	2010 (n=1781) %
Men	75	76	74	77	79	78*
Age (m±SD)	64±13	64±13	64±13	63±13	63±13	64±13
<50	15	14	14	15	15	13
50-65	38	40	39	41	44	44 #
66-75	24	25	24	23	22	23
>75	23	22	23	21	19	20

*P for trend = 0.002

p for trend = 0.06

ACSIS 2000-2010

Clinical Characteristics

YEAR # of pts.	2000 (n=1794) %	2002 (n=2048) %	2004 (n=2094) %	2006 (n=2075) %	2008 (n=1746) %	2010 (n=1781) %
Hypertension	48	51	57	60	59	66*
Diabetes	32	32	32	33	37	38*
Dyslipidemia	52	54	49	66	75	75*
Cur. Smoking	35	33	34	38	39	38*
Family Hx	21	19	10	27	27	31*

*P for trend significant

ACSIS 2000-2010

Clinical Characteristics

YEAR # of pts.	2000 (n=1794) %	2002 (n=2048) %	2004 (n=2094) %	2006 (n=2075) %	2008 (n=1746) %	2010 (n=1781) %
Past MI	30	27	28	30	31	32*
Past PCI	19	19	21	28	34	34*
Past CABG	9	10	11	11	10	10
CHF	8	7	7	9	8	8
Ch. Kidney D.	8	8	10	13	12	12*

*P for trend significant

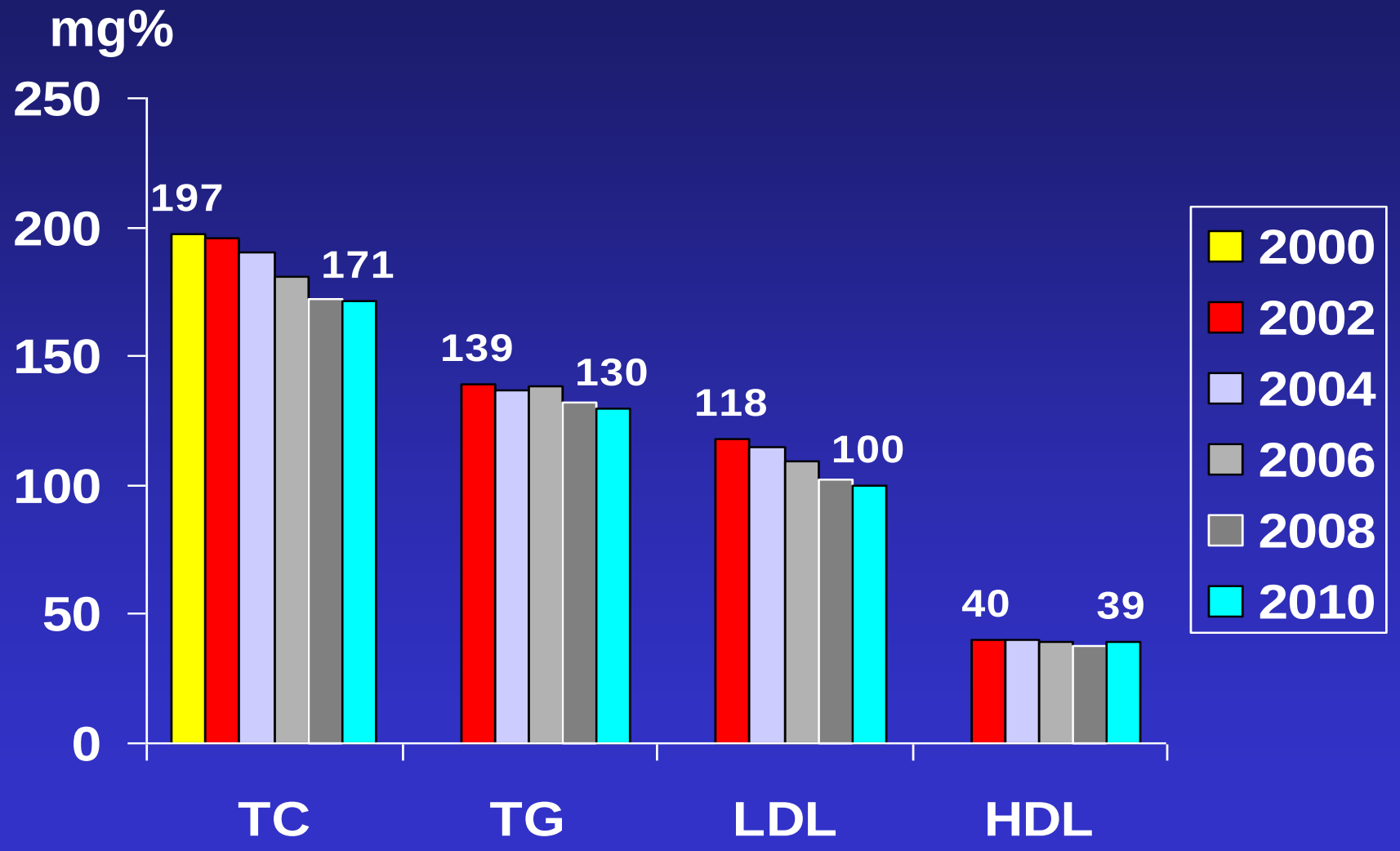
ACSIS 2002-2010

Treatment Prior to the Index Event

YEAR # of pts.	2002 (n=2048) %	2004 (n=2094) %	2006 (n=2075) %	2008 (n=1746) %	2010 (n=1781) %
Aspirin	43	45	50	50	50*
Clopidogrel	3	4	8	12	13*
ACE-I/ARB	29	32	40	39	42*
B-blockers	29	37	37	38	39*
Statins	28	33	46	50	53*

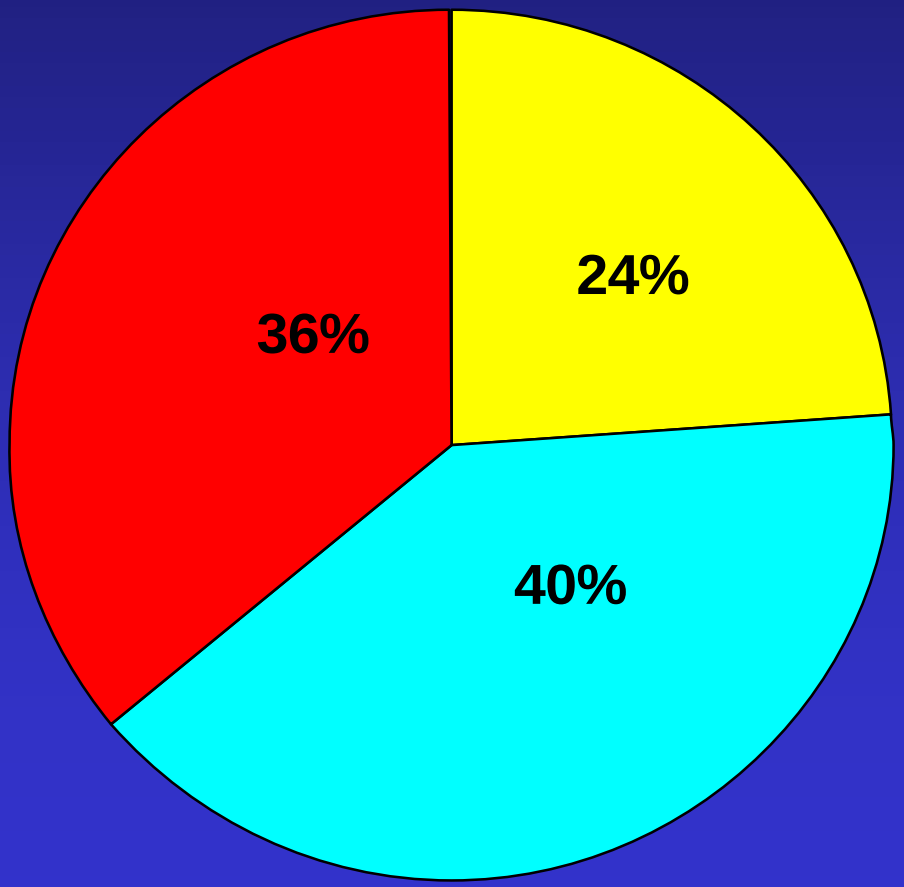
*P for trend significant

Change in Lipid Profile
ACSIS 2000-2010



*P for trend significant

Admission LIPID PROFILE levels among ACS pts on chronic LLD Rx prior to hospitalization



LDL-C

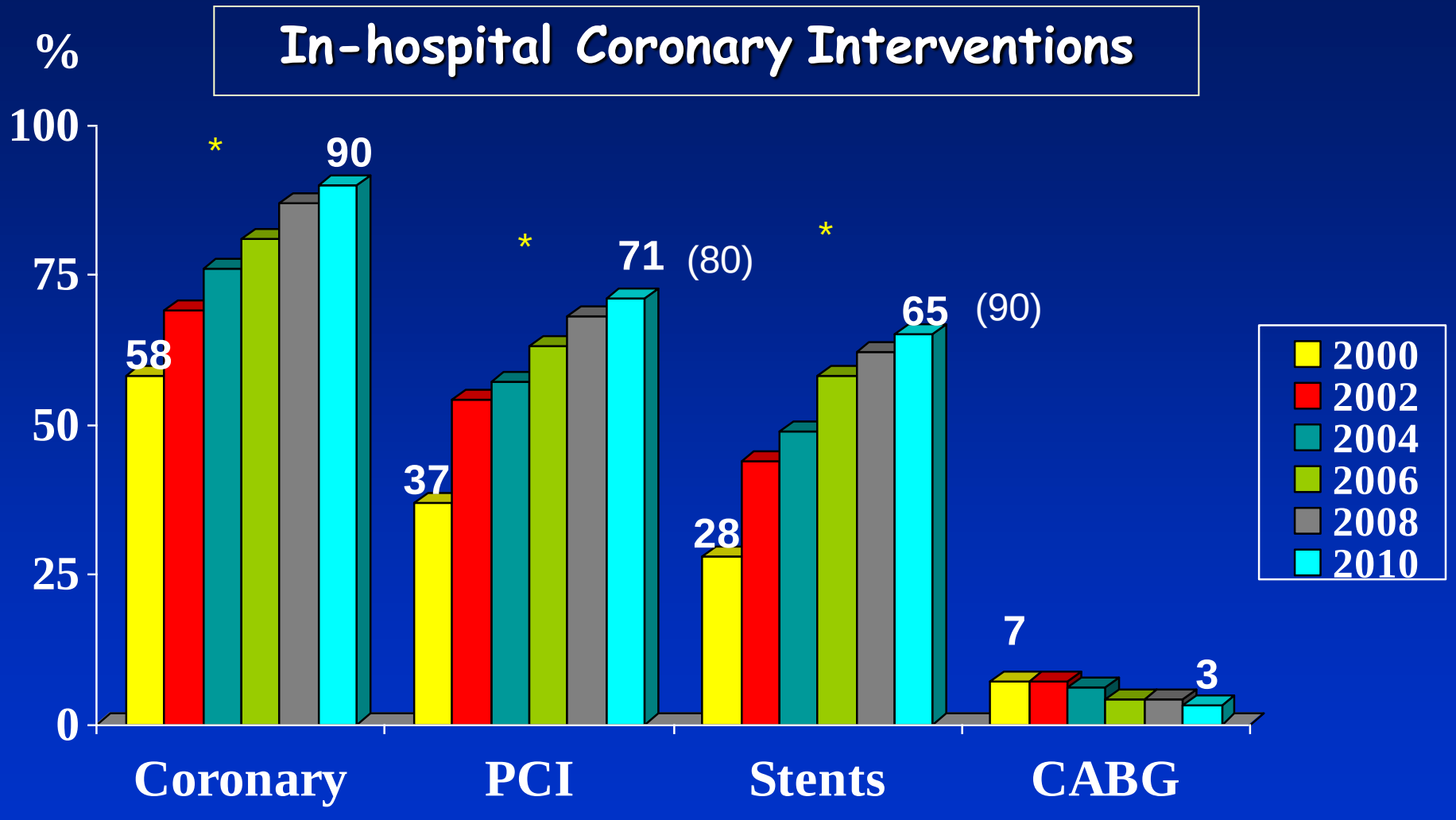
- < 70 mg/dl
- 70-100 mg/dl
- >100 mg/dl

Selected Hospital Findings
ACSIS 2000-2010

YEAR # of pts.	2000 (n=1794) %	2002 (n=2048) %	2004 (n=2094) %	2006 (n=2075) %	2008 (n=1746) %	2010 (n=1781) %
1st Hosp. ward Cardiol.	83	81	84	80	89	89*
Killip ≥ I (%)	18	21	22	18	12	13*
Troponin use in NSTE	21	45	62	62	70	72*

*P for trend significant

ACSIS 2000-2010

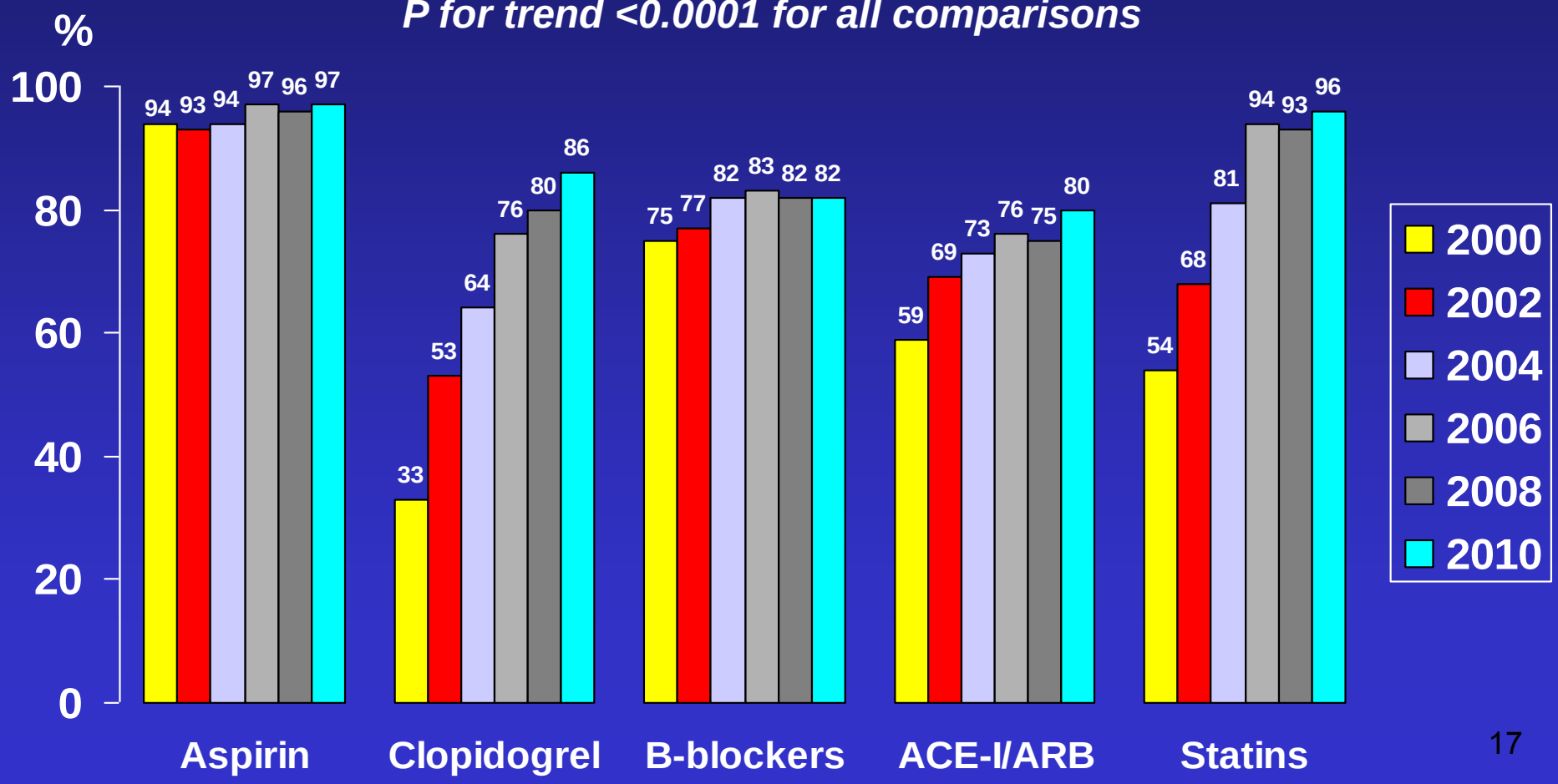


Use of DES: 2006 - 15%
2008 - 24%
2010 - 34%; #1.4 stents/pt

*P for trend <0.0001

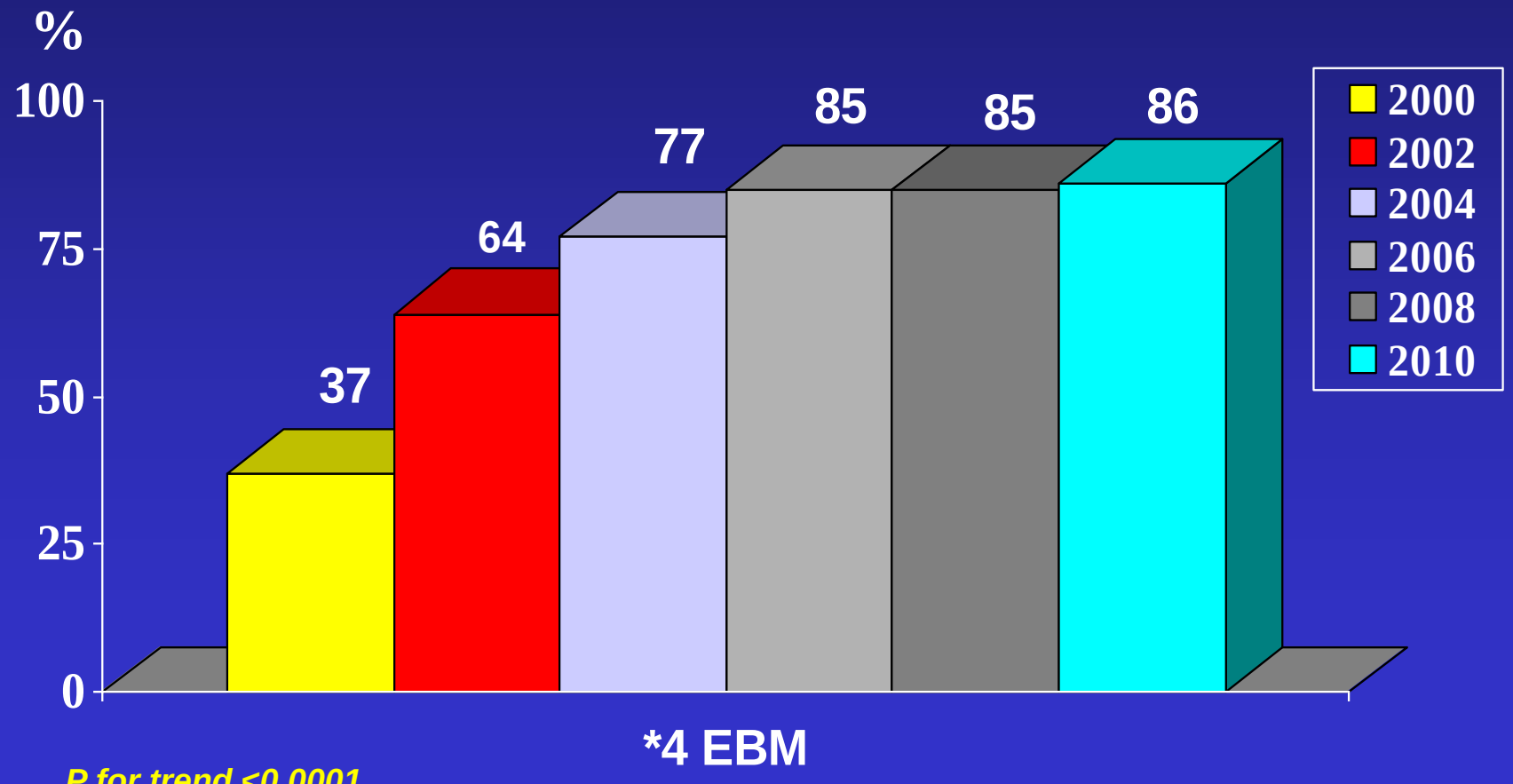
ACSIS 2000-2010

Treatment at Discharge



ACSIS 2000-2010

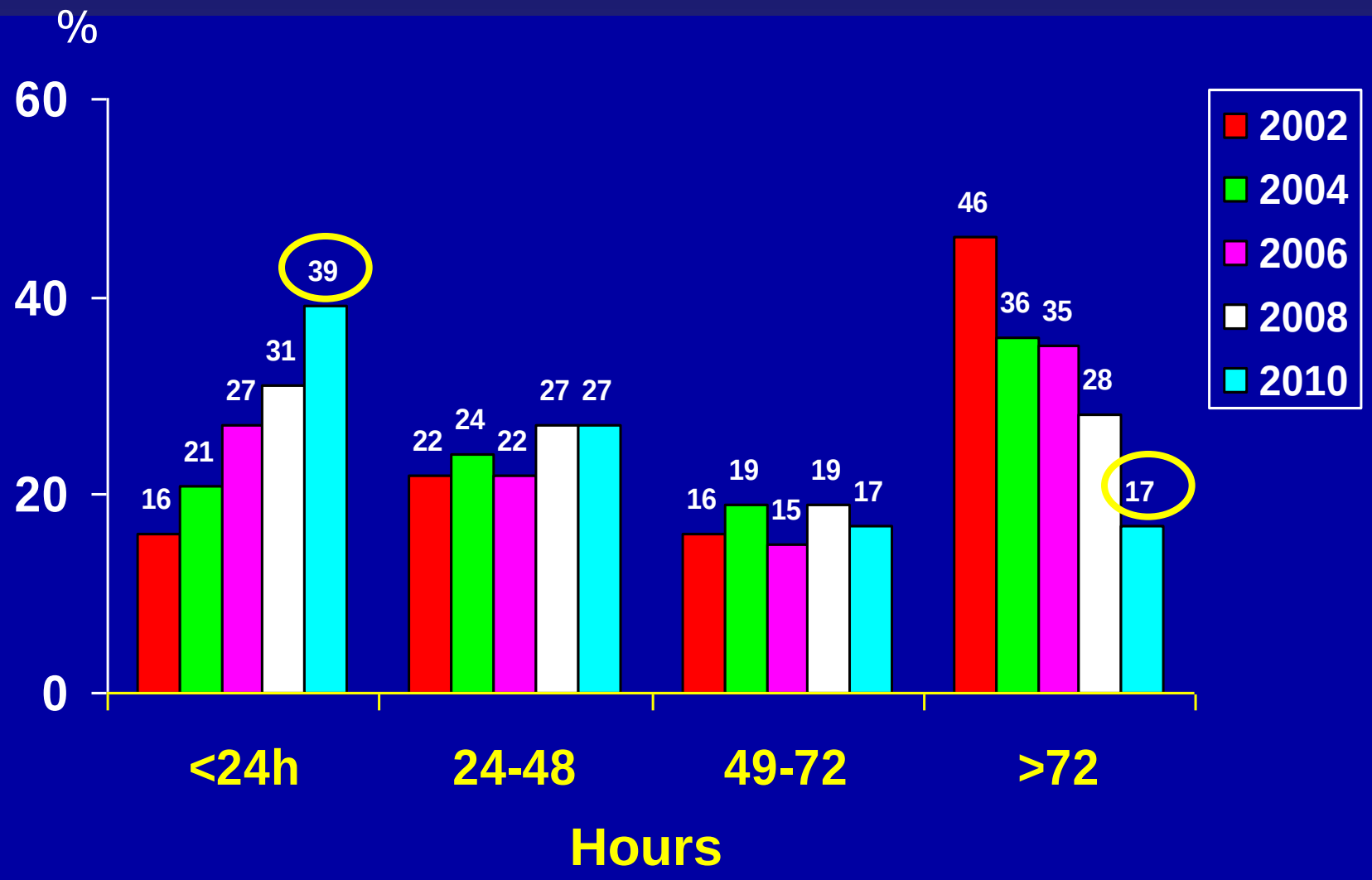
Treatment at Discharge with 4 of 5 Evidence-Based Medications (EBM)*



P for trend <0.0001

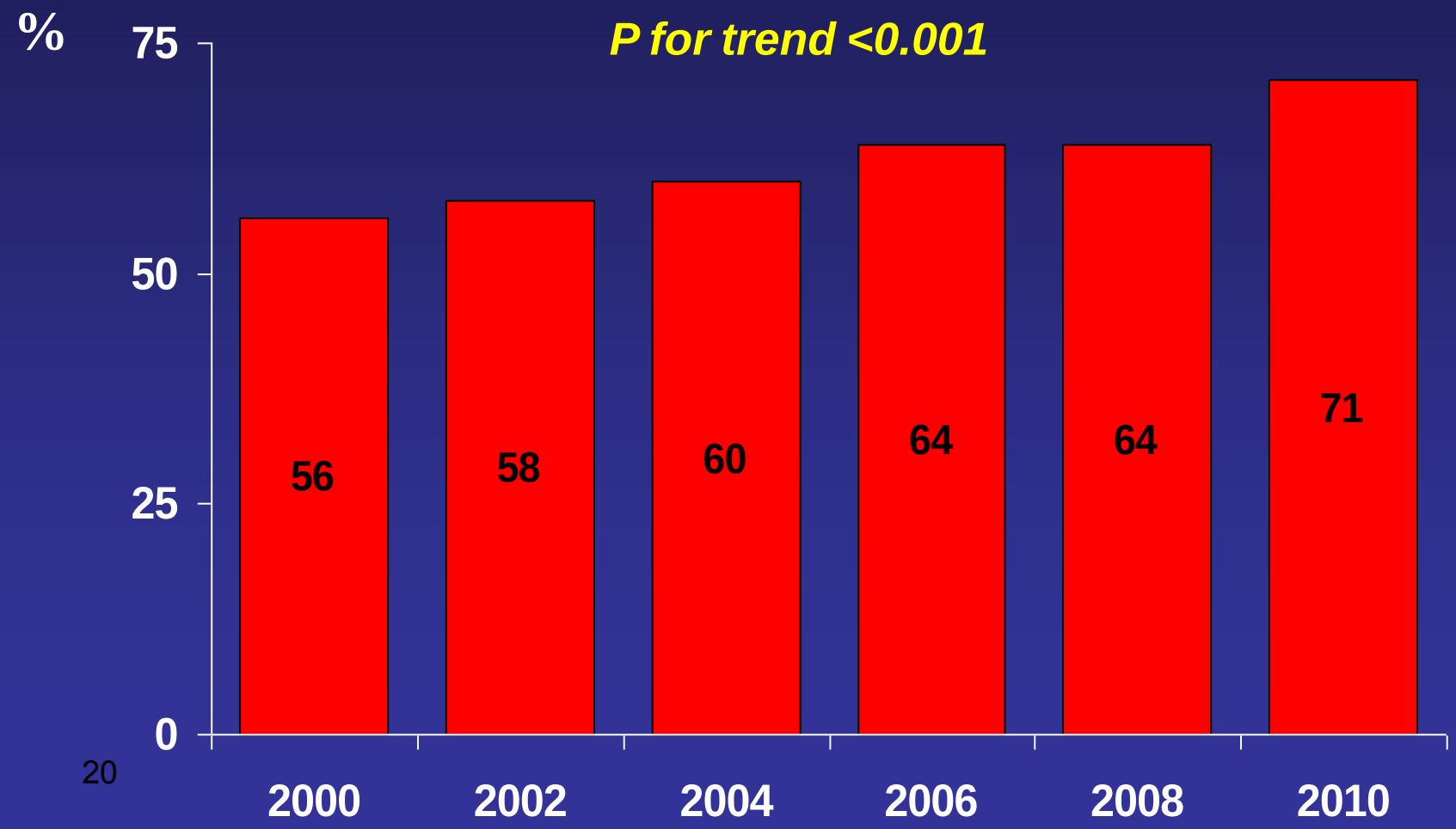
**EBM: Either Aspirin, ß-blockers, ACE-I/ARB, Statins, or Clopidogrel*

Time to Coronary Angio
NSTE-ACS: ACSIS 2000-2010



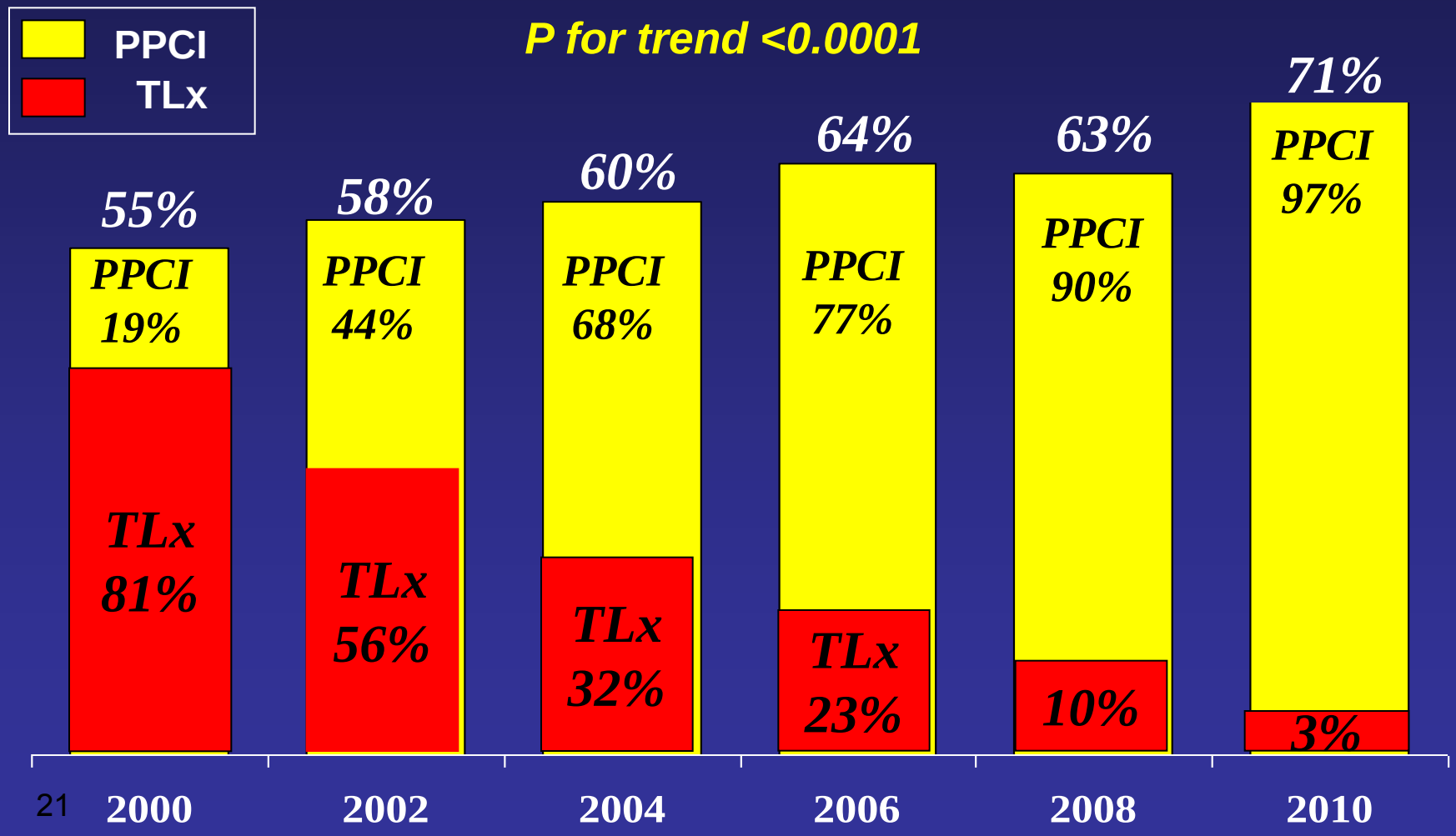
ACSIS 2000-2010: STEMI

Primary Reperfusion (PPCI or TLx)



ACSIS 2000-2008: STEMI

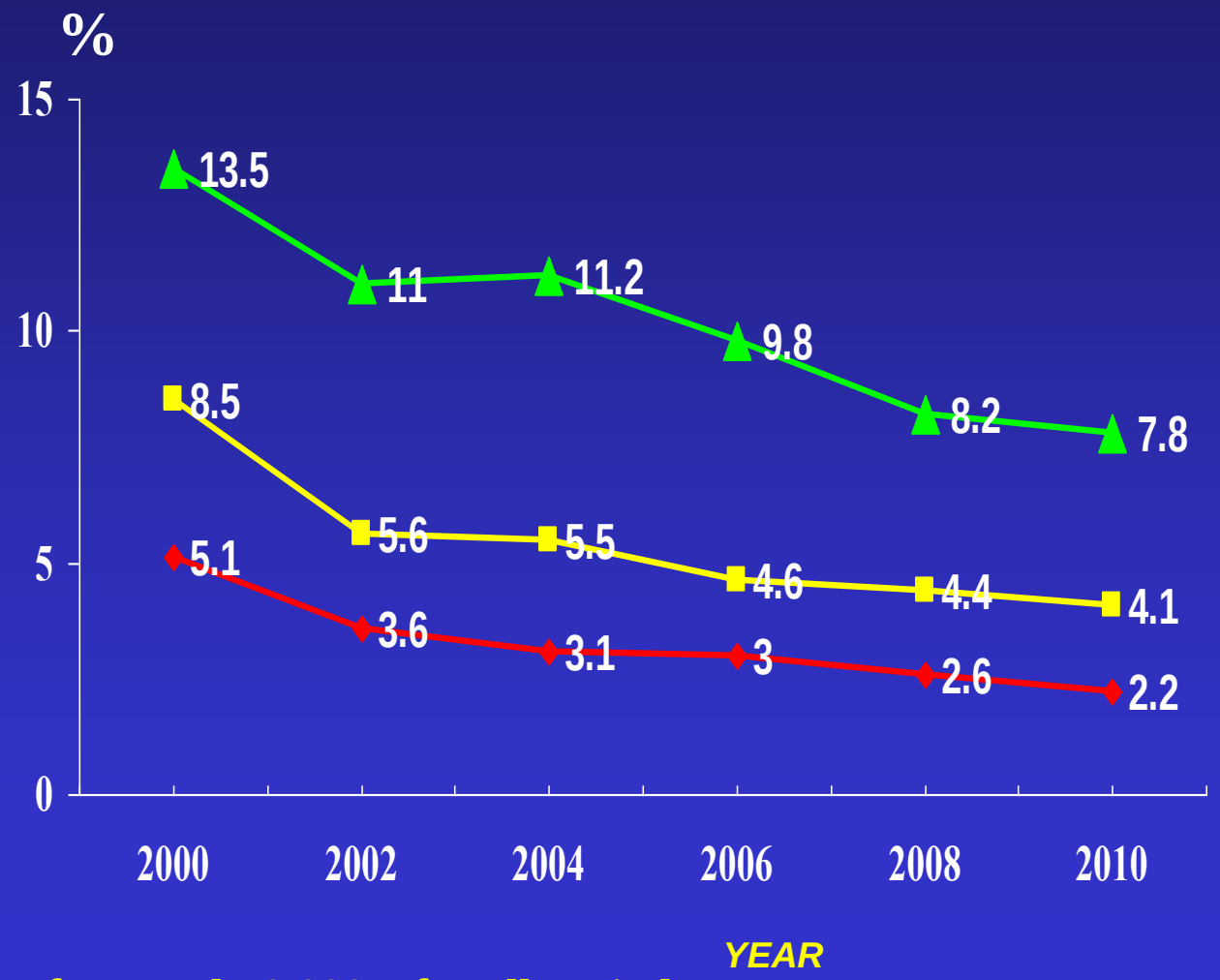
Mode of Primary Reperfusion



ACSIS 2010
Other Interventions

	N=1781 %
Echo	79.8
Ventilation	4.9
IABP	4.6
CPR	3.5
DC Shock	3.9
AICD	0.6
Temporary Pacemaker	1.7
Permanent Pacemaker	0.5
External Hypothermia	0.3

Temporal Mortality Trends
ACSIS 2000-2010



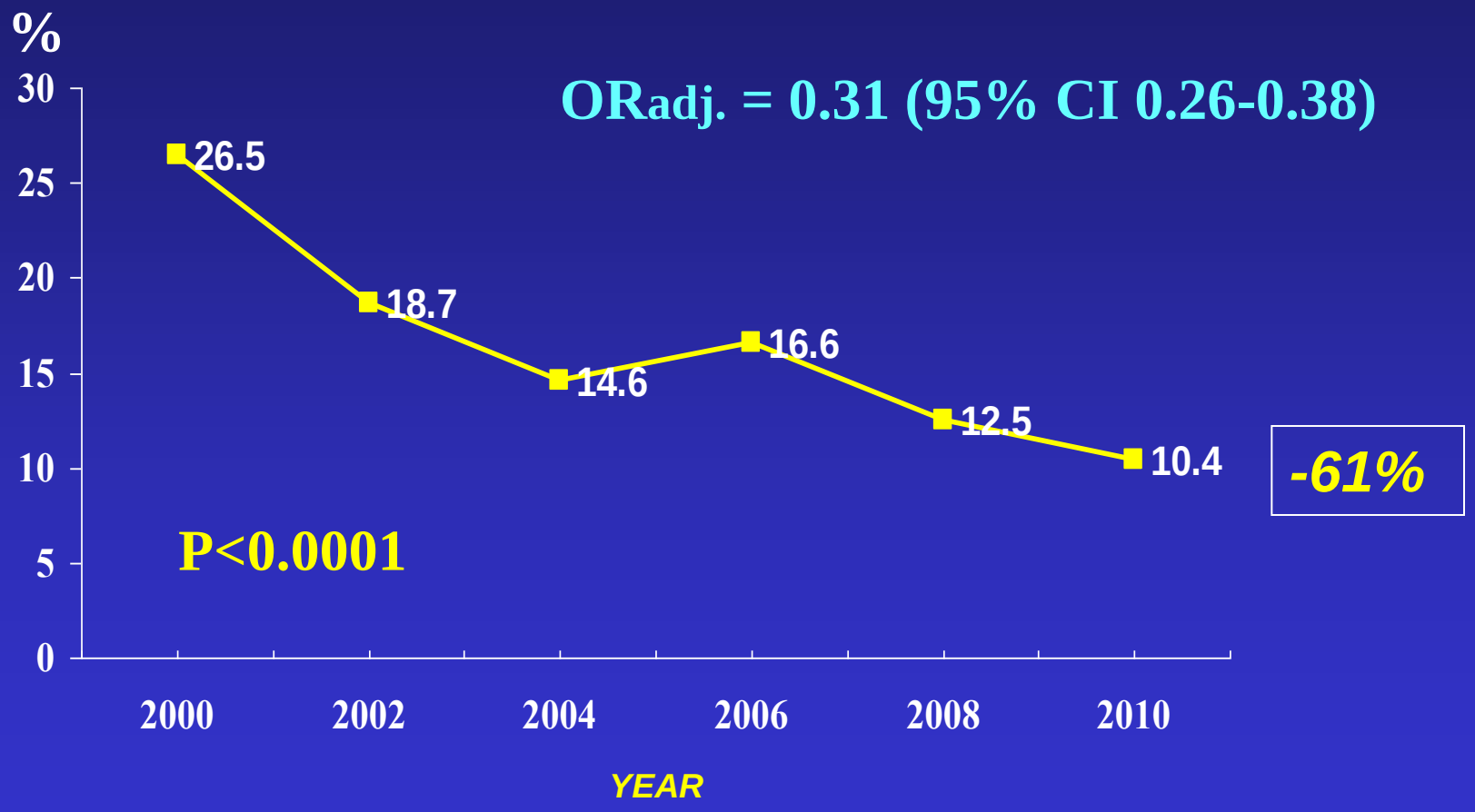
***1-year (-39%)**
ORadj.=0.52 (0.42-0.65)

***30-day (-52%)**
ORadj.=0.44 (0.32-0.61)

***7-day (-57%)**
ORadj.=0.40 (0.26-0.61)

P for trend <0.0001, for all periods

Temporal Trends: 30 day MACE*
ACSIS 2000–2010



* Death, Re. MI/Ischemia/UAP, Stroke, Stent thrombosis

ACSIS 2000-2010

Complications

	2000 (n=1794) %	2002 (n=2048) %	2004 (n=2094) %	2006 (n=2075) %	2008 (n=1746 %	2010 (n=1781 %
Mild-mod. HF	19	10	7	13	8	8*
Pul. Edema	11	9	7	9	7	5*
Cardio. Shock	5	4	3	4	3	3*
Ac. Renal failure	8	9	7	5	4	6*
Re. MI/ Isch	14	7	6	6	4	2*
Re.MI/Isch @30d	29	26	11	11	18	6*
Major bleeding	1.2	1.0	0.5	1.1	1.5	2.4*
Stroke / TIA	1.1	0.9	0.7	1.0	0.8	0.6

**P for trend significant*

ACSIS 2000-2010

Other End-points

YEAR # of pts.	2000 (n=1794) %	2002 (n=2048) %	2004 (n=2094) %	2006 (n=2075) %	2008 (n=1746 %	2010 (n=1781 %
LOS (days) median (Q1, Q3)	7 (5, 9)	6 (4, 8)	5 (4, 7)	5 (4, 8)	5 (3, 6)	4* (3, 6)
LVEF<40%	38	35	31	26	22	25*
Q-wave MI	49	43	42	35	29	27*

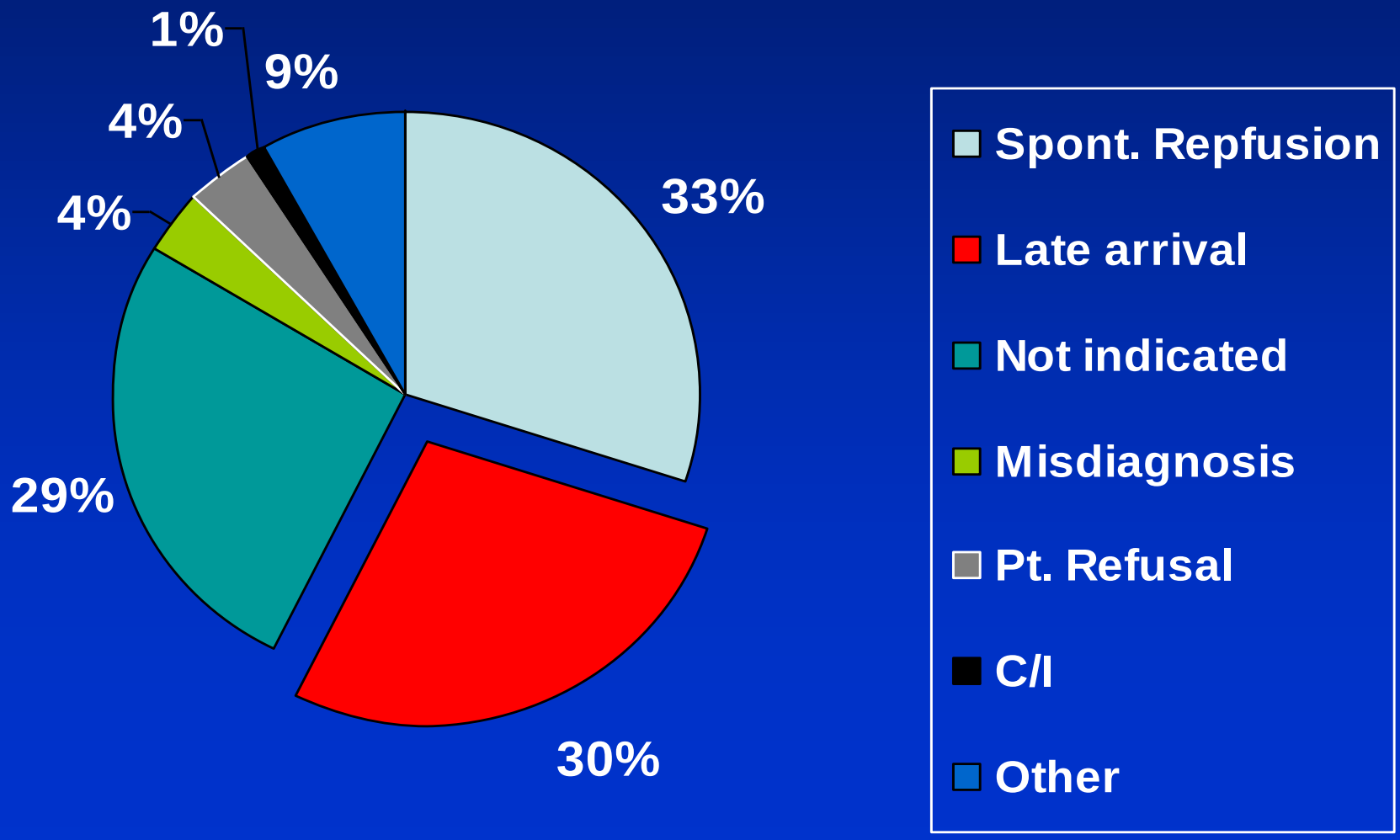
LOS – Length of stay

**P for trend significant*

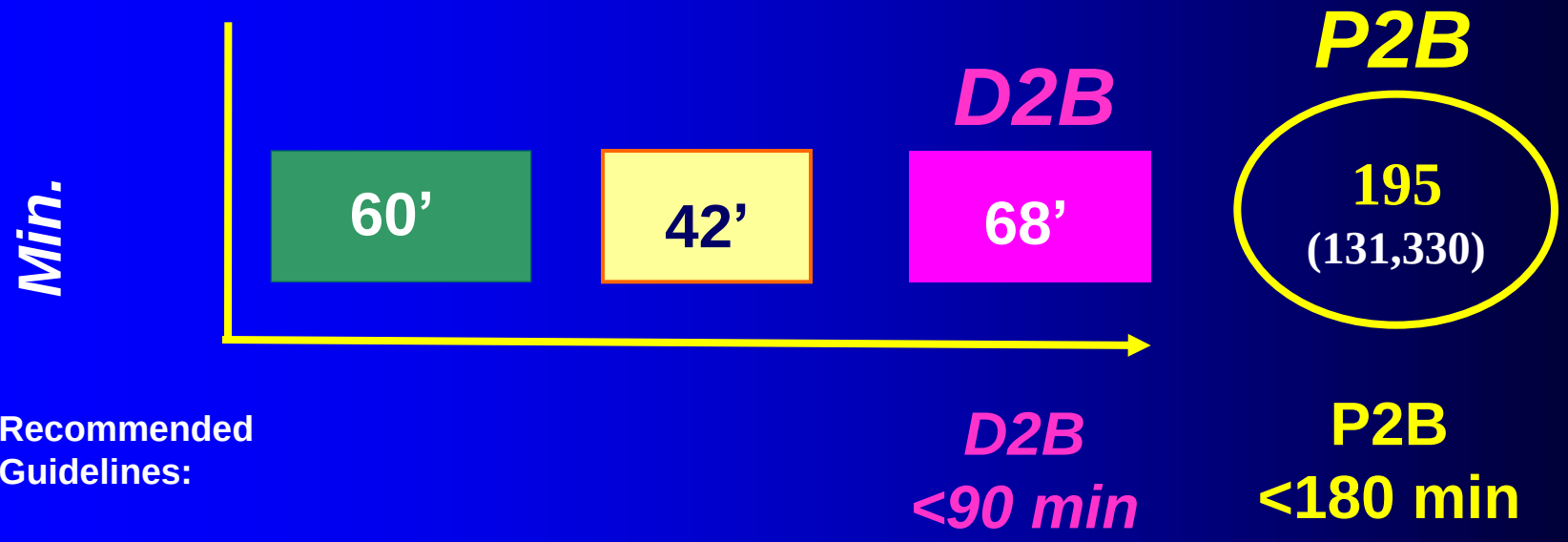
Is everything perfect and going in the right direction?

ACSIS 2010: STE

Reasons Not Performing Primary Reperfusion (N=221, 29%)



Time Delays (Median: 25%, 75%): STE ACSIS 2010



- From symptom onset to seeking help (call)
- From call to ER arrival
- From arrival to primary PCI (D2B)

ACSIS 2000-2010: STEMI
Reperfused patients

Time Intervals (min.) [Median, Q1, Q3]

	2000	2002	2004	2006	2008	2010
Onset to ER	105 (60,192)	107 (65,191)	119 (74,210)	118 (71,231)	114 (70,210)	115 (70,216)
D2B	75 (37,120)	83 (50,138)	70 (40,104)	70 (42,106)	68 (40,108)	68 (40,111)
Door to TLx	59 (36,85)	53 (37,74)	51 (34,75)	51 (32,74)	35 (31,50)	50* (31,72)

**P for trend significant*

ACSIS 2000-2010: STE

Adherence to Reperfusion Guidelines

Guidelines: D2B <90’ in >75% of cases

	2000	2002	2004	2006	2008	2010
Pain onset to Reperfusion ≤ 3 h	63%	55%	55%	50%	52%	43%*
D2B ≤90’	62%	54%	68%	67%	67%	66%

**P for trend significant*

ACSIS 2010: STE

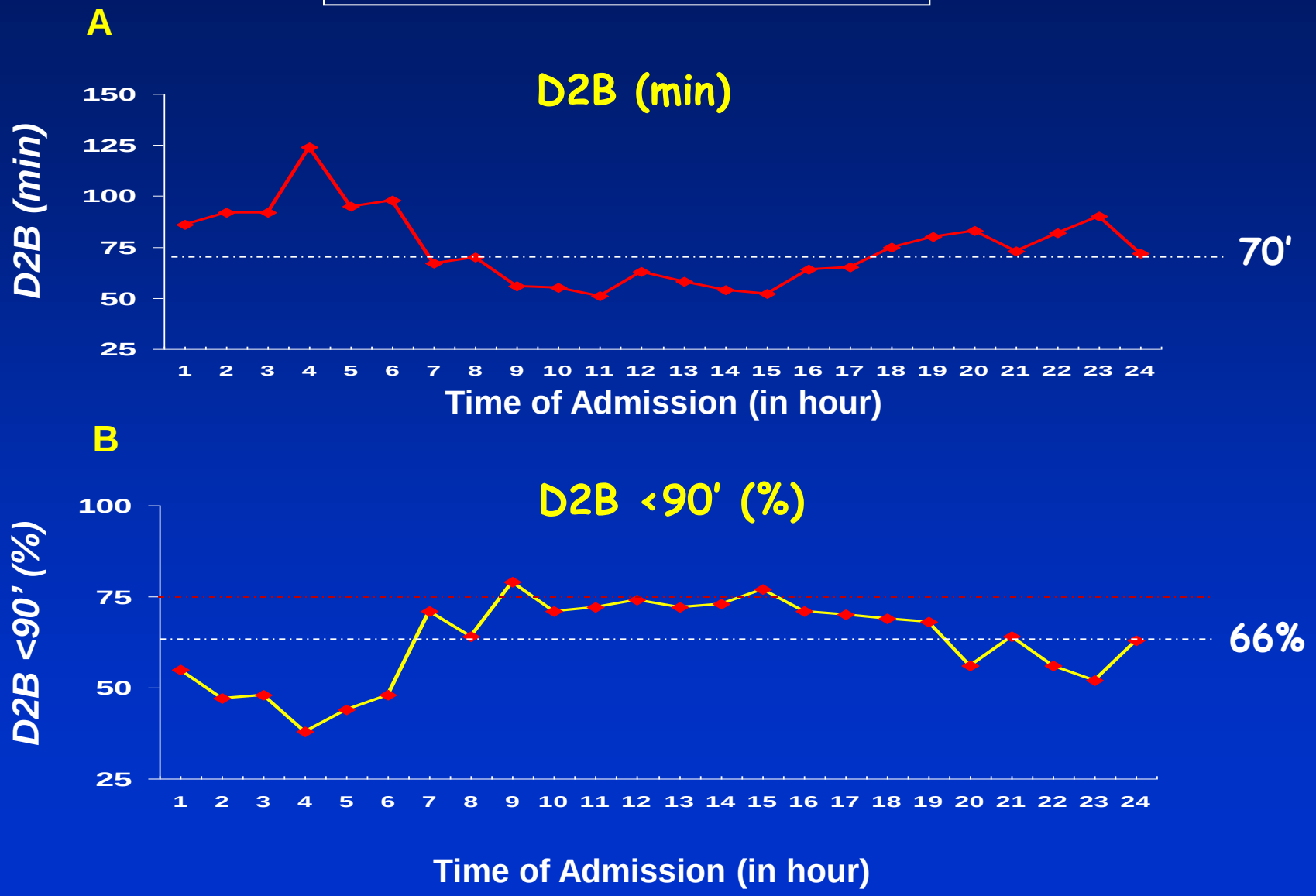
Time Intervals (min.) [Median, Q1, Q3]

Bypassing the ER shortens D2B Time

1st Dept.	ALL (n=493)	Cath Lab (n=49) 10%	CCU (n=123) 25%	ER (n=319) 65%
D2B (min.)	68 (40,110)	29’ (15,52)	48’ (26,75)	85’ (51,135)
D2B <90’	66%	88%	83%	53%

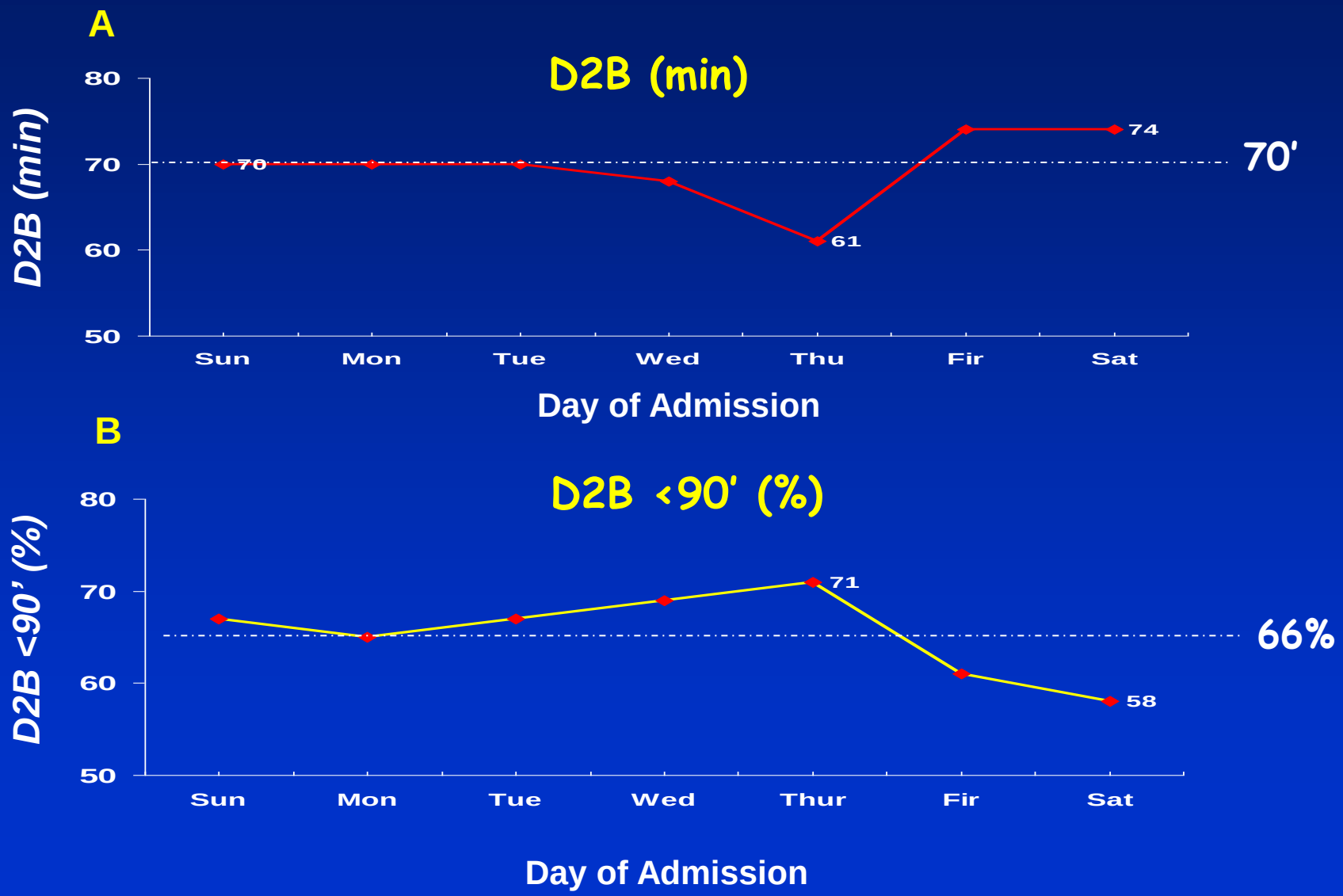
STE: ACSIS 2000-2010

D2B - Diurnal Variation



STE: ACSIS 2000-2010

D2B - Weekly Variation



Mode of Transportation for STE Patients

ACSIS 2010

776 Patients

In-hospital (n=65)

711 Patients

MICU

(56%)

REGULAR AMBULANCE

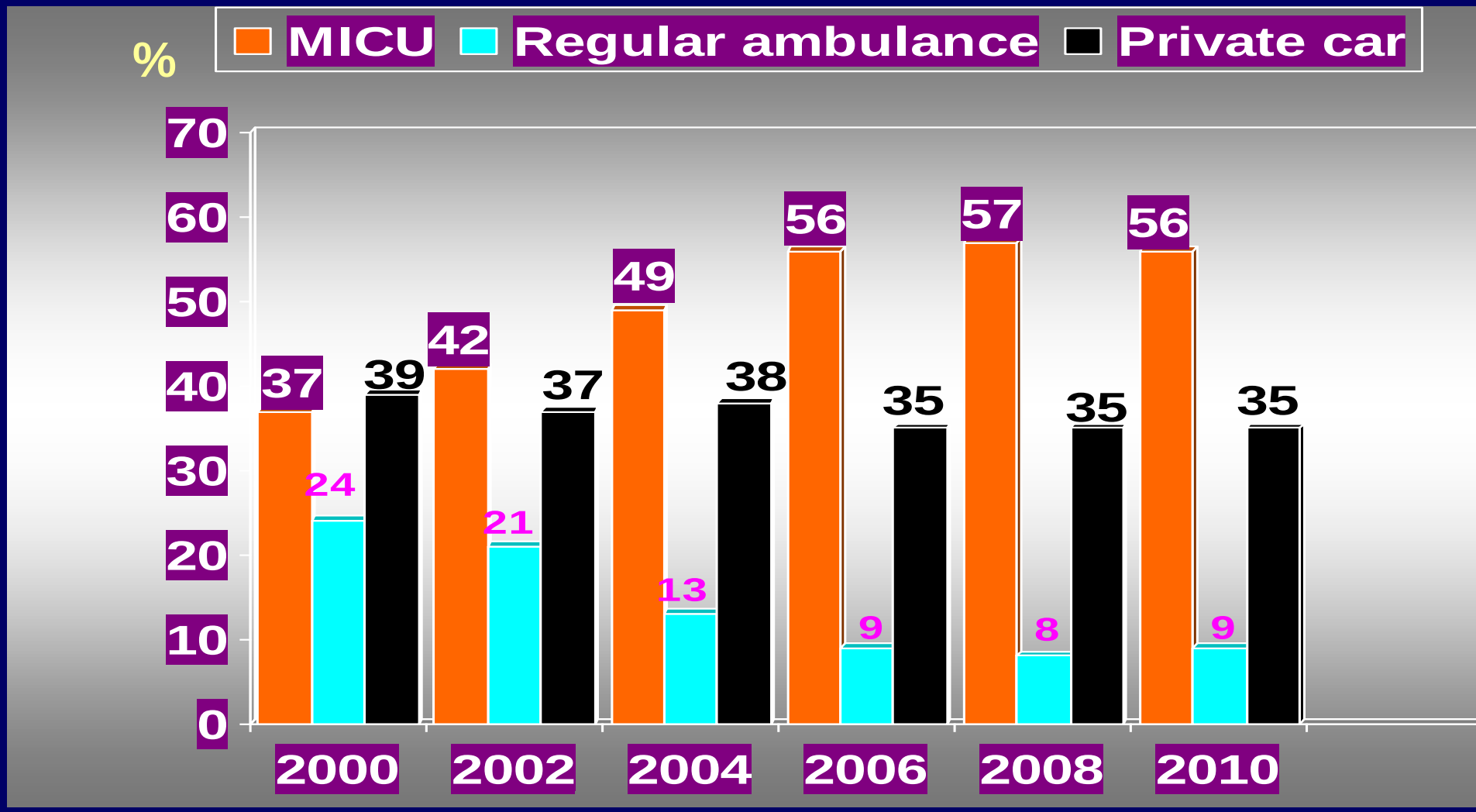
(9%)

PRIVATE CAR / INDEP.

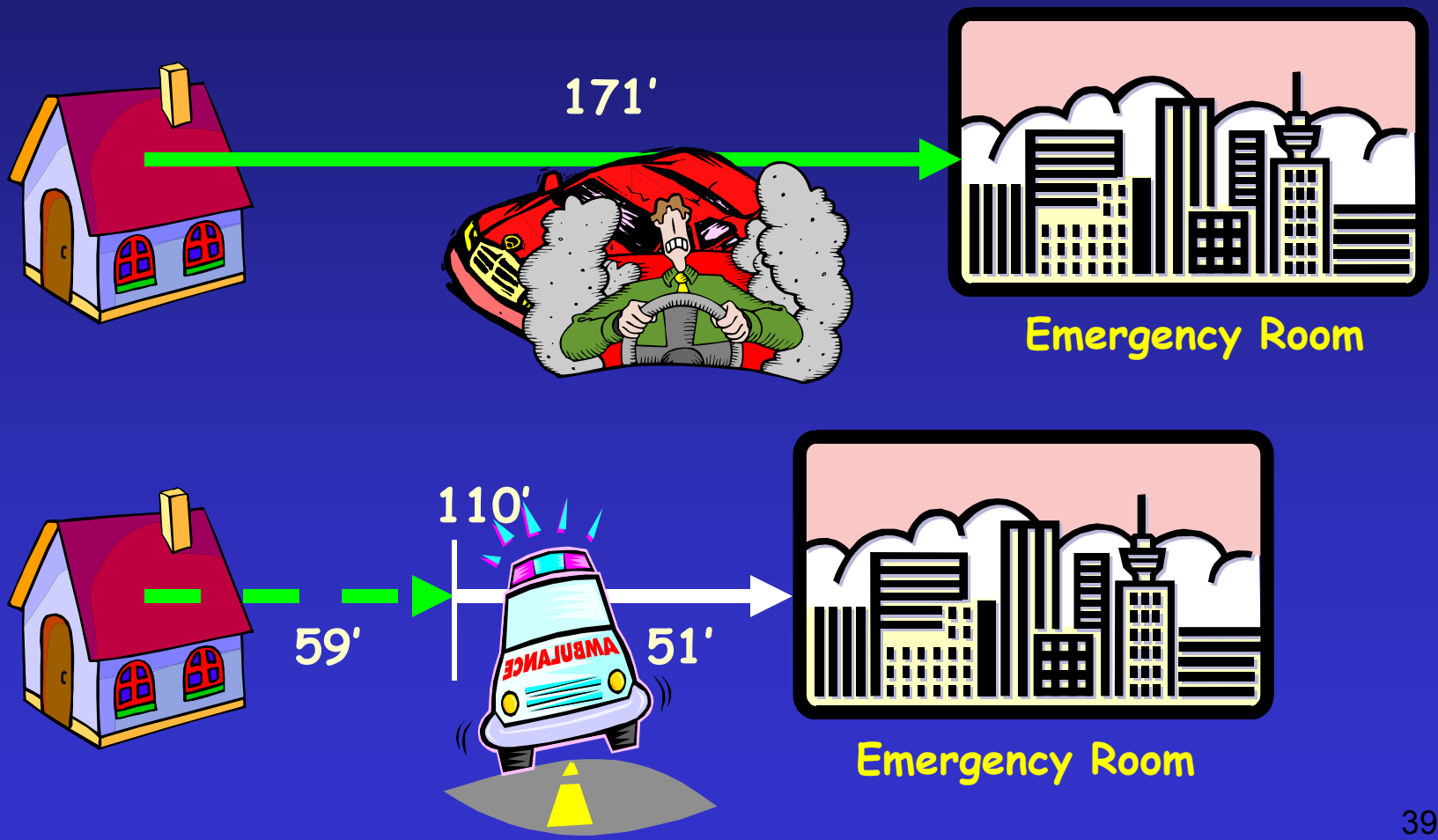
(35%)

ACSIS 2000-2010: STE

Trends in Mode of Transportation to the Hospital



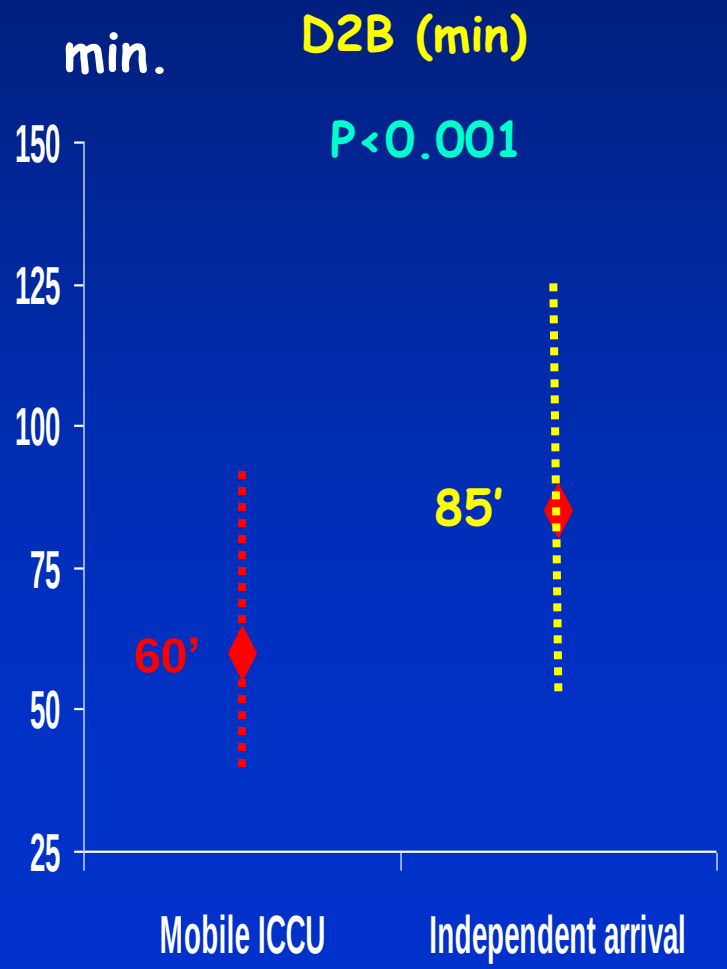
TIME to MEDICAL ATTENTION shorter with mobile CCU

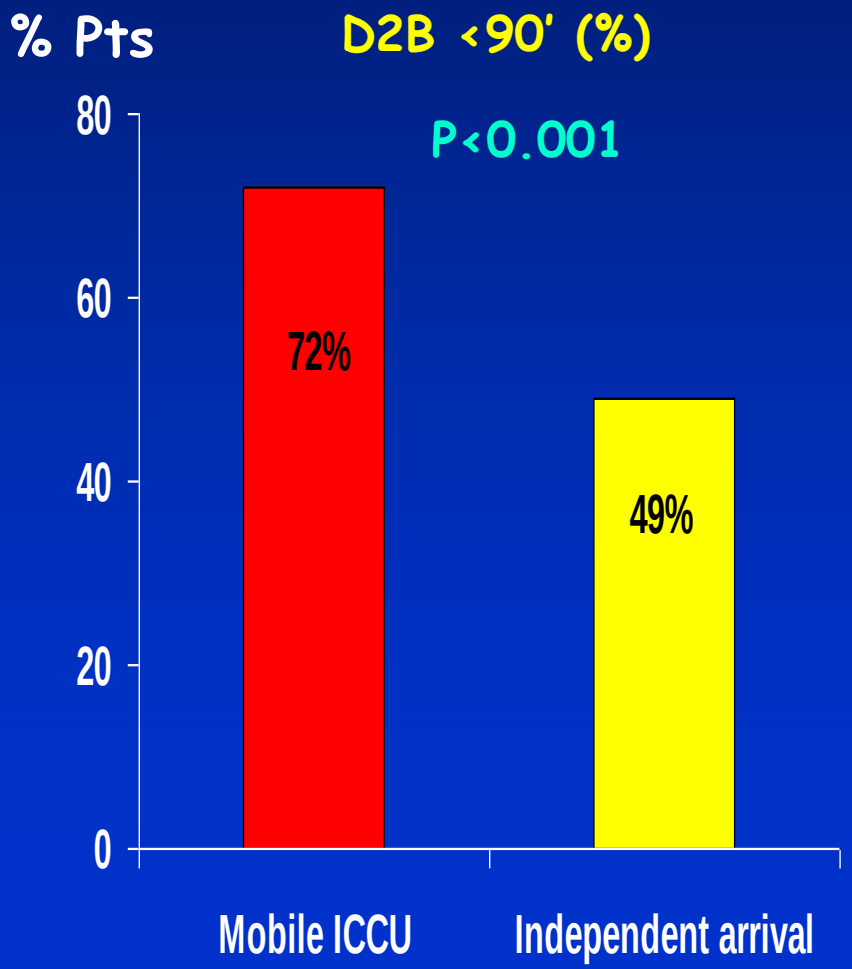


ACSIS 2010: STE

D2B Time – Mode of Transportation

Mobile CCU Transportation significantly shortens D2B Time





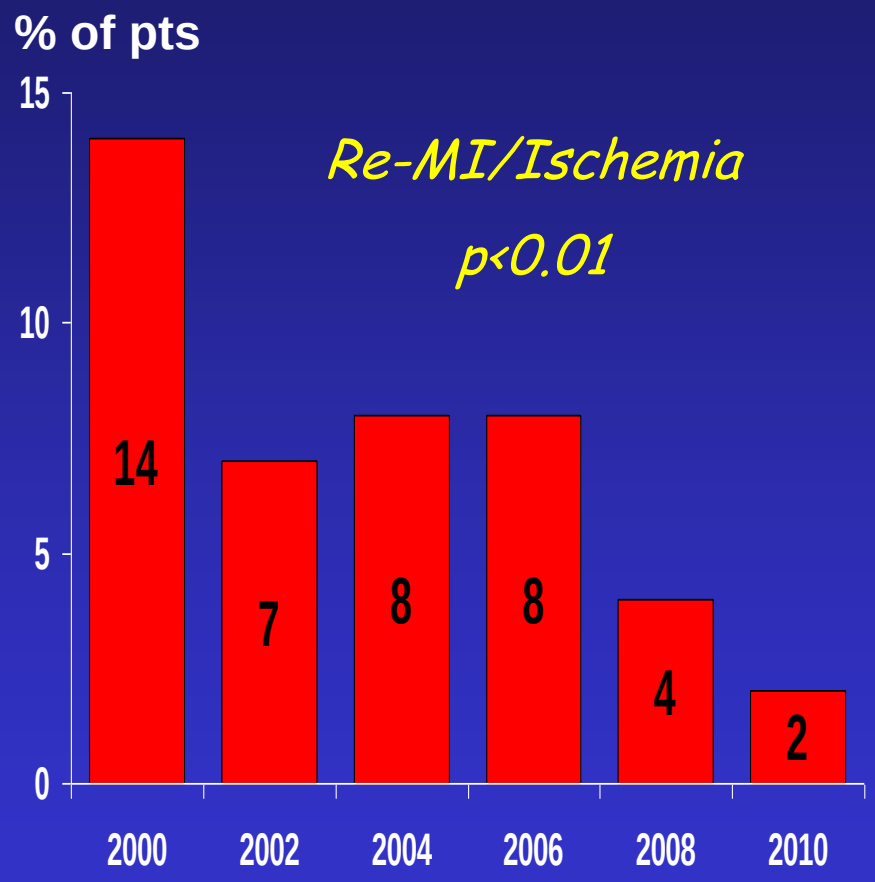
ACSIS 2004-2010: STE

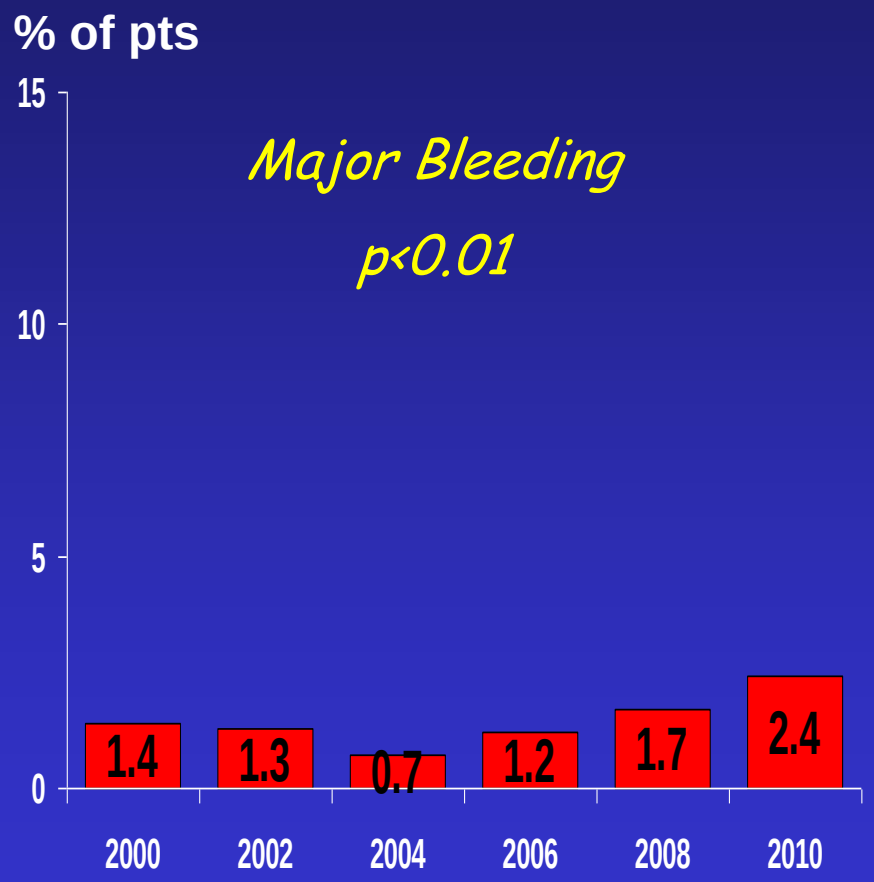
Variables associated with D2B Time <90 min

	OR (95% CI)	P-value
Direct Admission ICCU / Cath Lab	3.27 (2.34-4.60)	<0.0001
Age <65 (vs. >75) yr.	2.02 (1.41-2.91)	0.0002
Mobile ICCU transport.	1.74 (1.32-2.30)	0.03
Arrival at night	0.46 (0.36-0.58)	<0.0001
Past Angina	0.64 (0.48-0.85)	0.002
Weekend	0.74 (0.56-0.97)	0.03
Females	0.70 (0.51-0.96)	0.02

C=0.720

ACSIS 2000-2010
Clinical Outcome (In hospital)

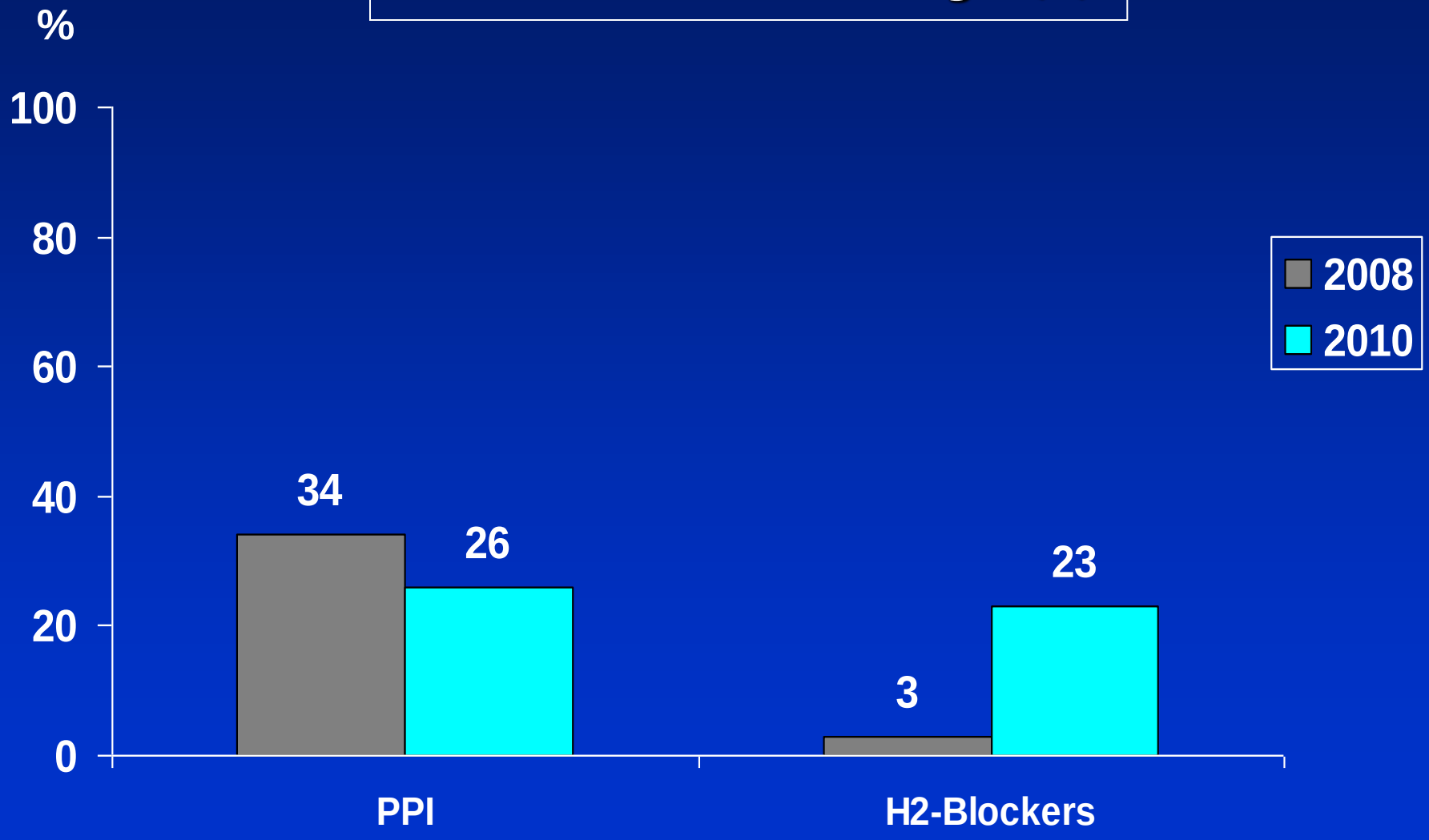




YEAR

ACSIS 2000-2010

Treatment at Discharge (2)



P for trend <0.0001 for all comparisons

Radial Approach
ACSIS-PCI 2010

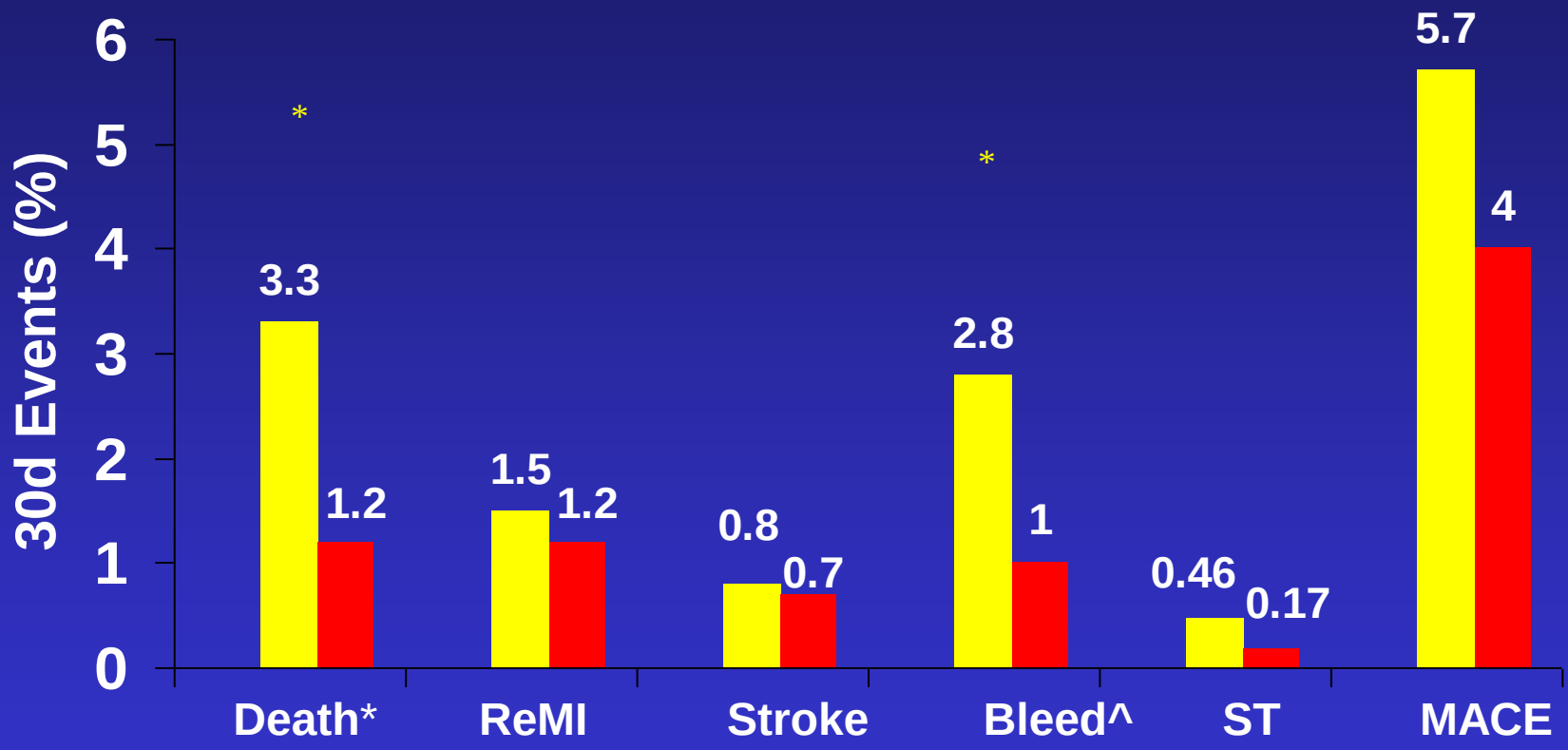
N= 613/1815 (34%); 27% - Among STEMI pts
Younger, no prior CABG, better killip class, better LVEF, NSTEMI

Predictors of Radial Approach use:

Predictor	OR (CI)	P-value
Prior CABG	0.17 (0.08-0.33)	<0.001
NSTEMI vs STEMI	1.74 (1.35-2.24)	<0.001
LVEF> 40%	1.76 (1.28-2.40)	<0.001
Prior PCI	1.42 (1.07-1.87)	0.014
Age < 75	1.15 (0.88-1.75)	0.22

Fefer P, et al

30-day MACE
ACSIS-PCI 2010



*P=0.01

Femoral Radial

Fefer P, et al

Radial Approach
ACSIS-PCI 2010

Conclusions:

- Use of TRI seems to be associated with improved outcome in high-risk ACS pts.
- Our data suggest that in a real world setting this approach is underutilized.
- A more widespread adoption of TRI may reduce major bleeding events and improve outcomes in high-risk ACS patients.

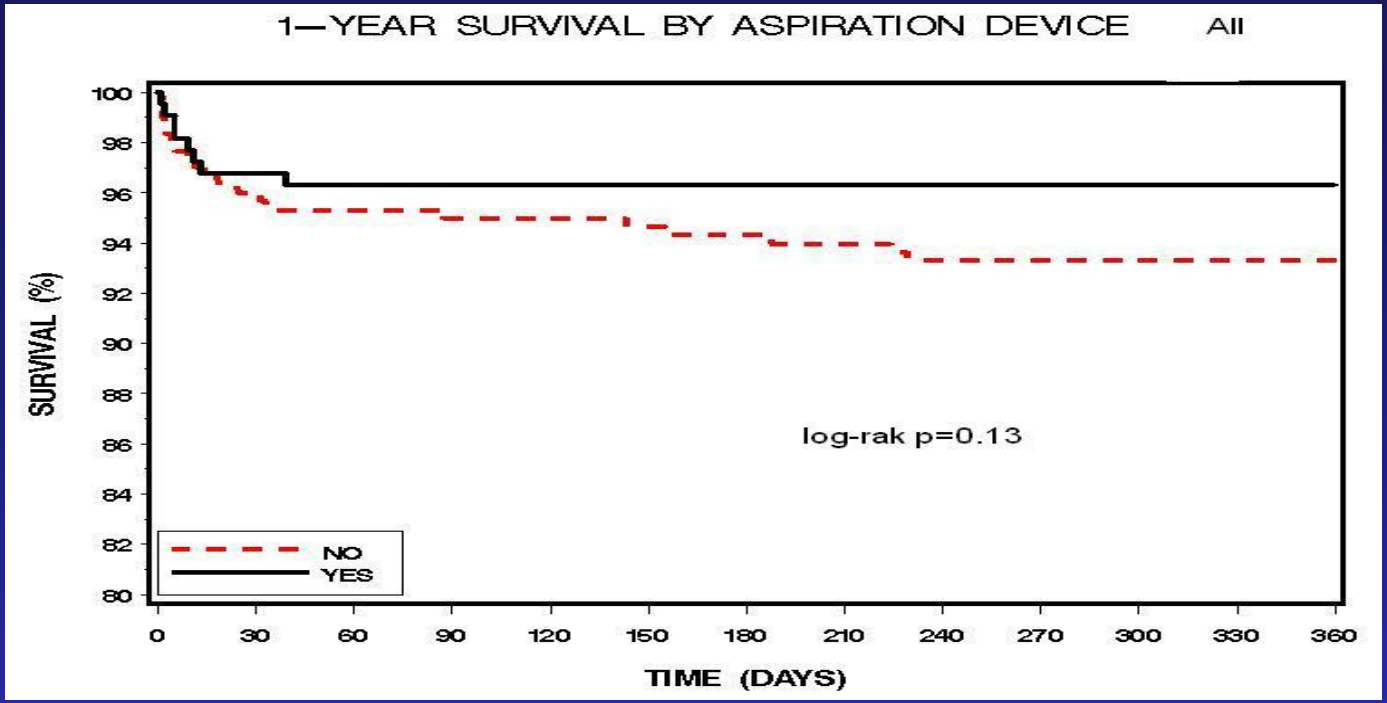
Fefer P, et al

The Impact of Thrombus Aspiration on 1-year Mortality in Primary PCI for STEMI,

ACSIS-PCI 2010 Experience

Patients who underwent TA-PPCI (217, 42%) vs. conventional (C)-PPCI were of similar age and had similar risk factors and history of coronary disease

Moriel M, et al, ACC 2012



3.7%7

6.7%

Predictors of 1-year mortality

	HR (95% CI)	p
Killip Class ≥2	13.89 (4.52-42.71)	<0.0001
MBG<3	3.47 (1.25-9.65)	0.017
Age	1.1 (1.05-1.155)	<0.0001
Use of Aspiration	**0.31 (0.1-0.9)**	**0.042**

The Impact of Thrombus Aspiration

ACSIS-PCI 2010 Experience

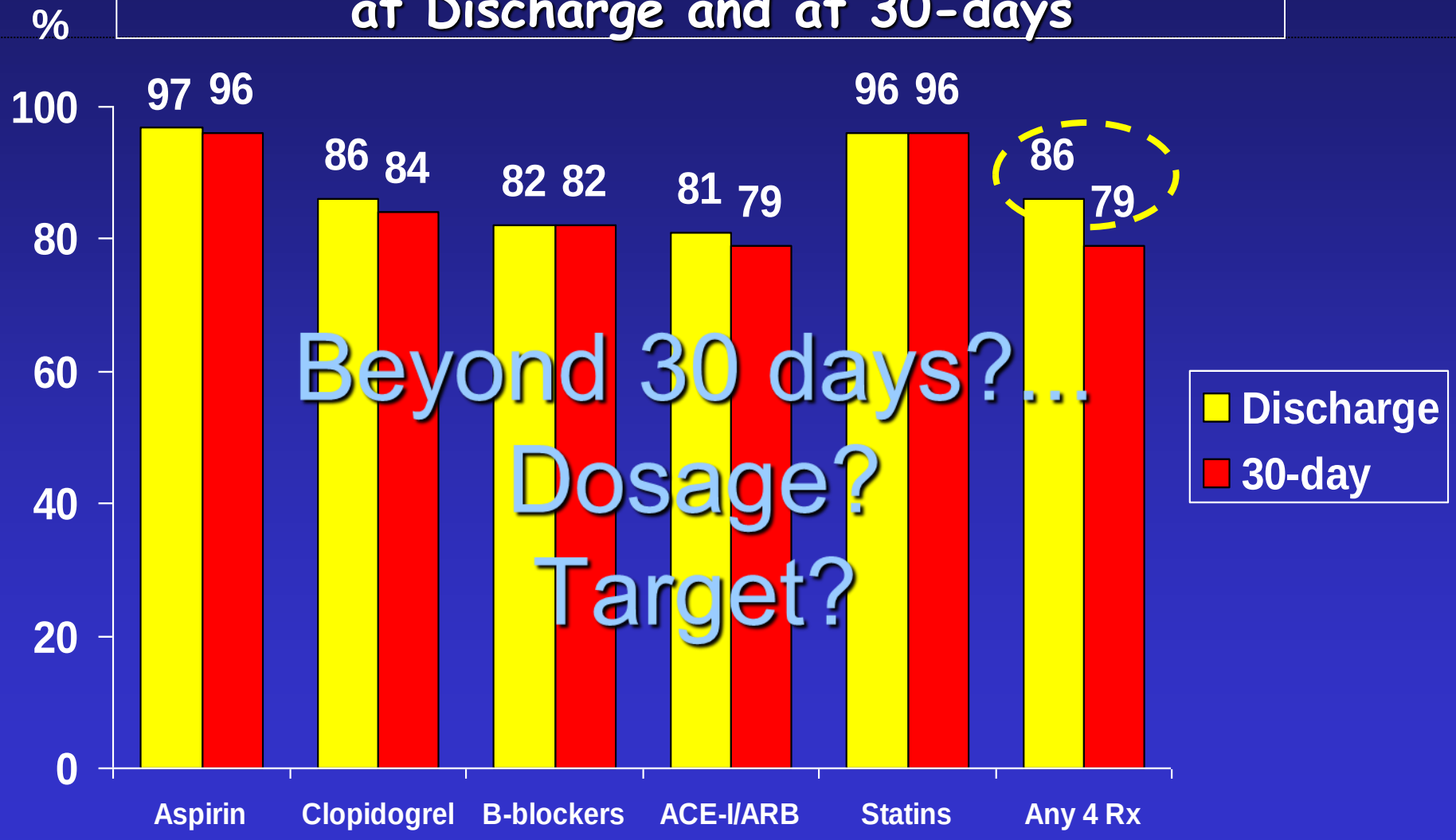
Conclusions

In the "real-world," practice use of TA in STEMI patients undergoing P-PPCI is associated with improved 1-year mortality

Moriel M, et al, ACC 2012

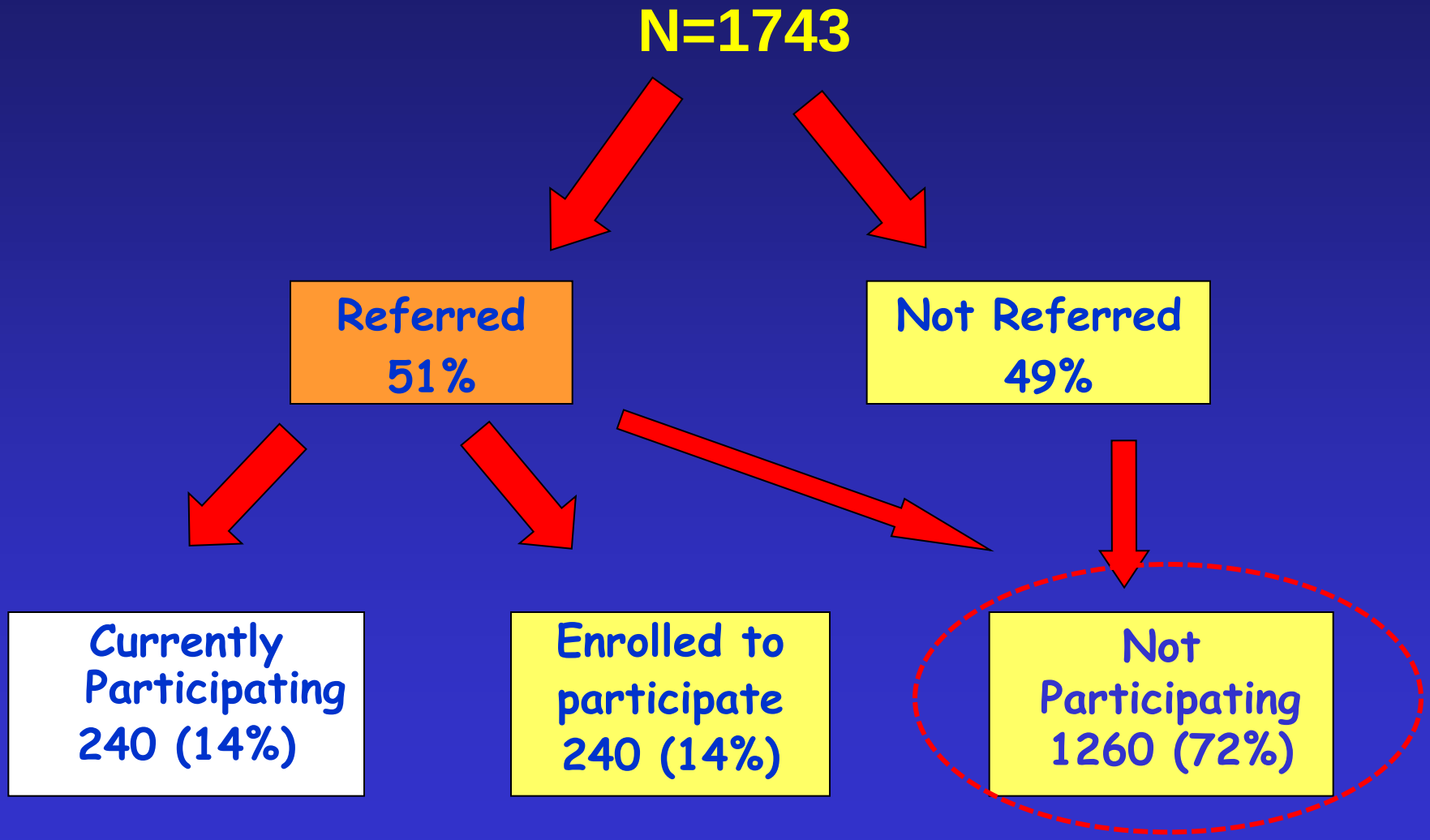
ACSIS 2010

Adherence to Treatment Guidelines at Discharge and at 30-days



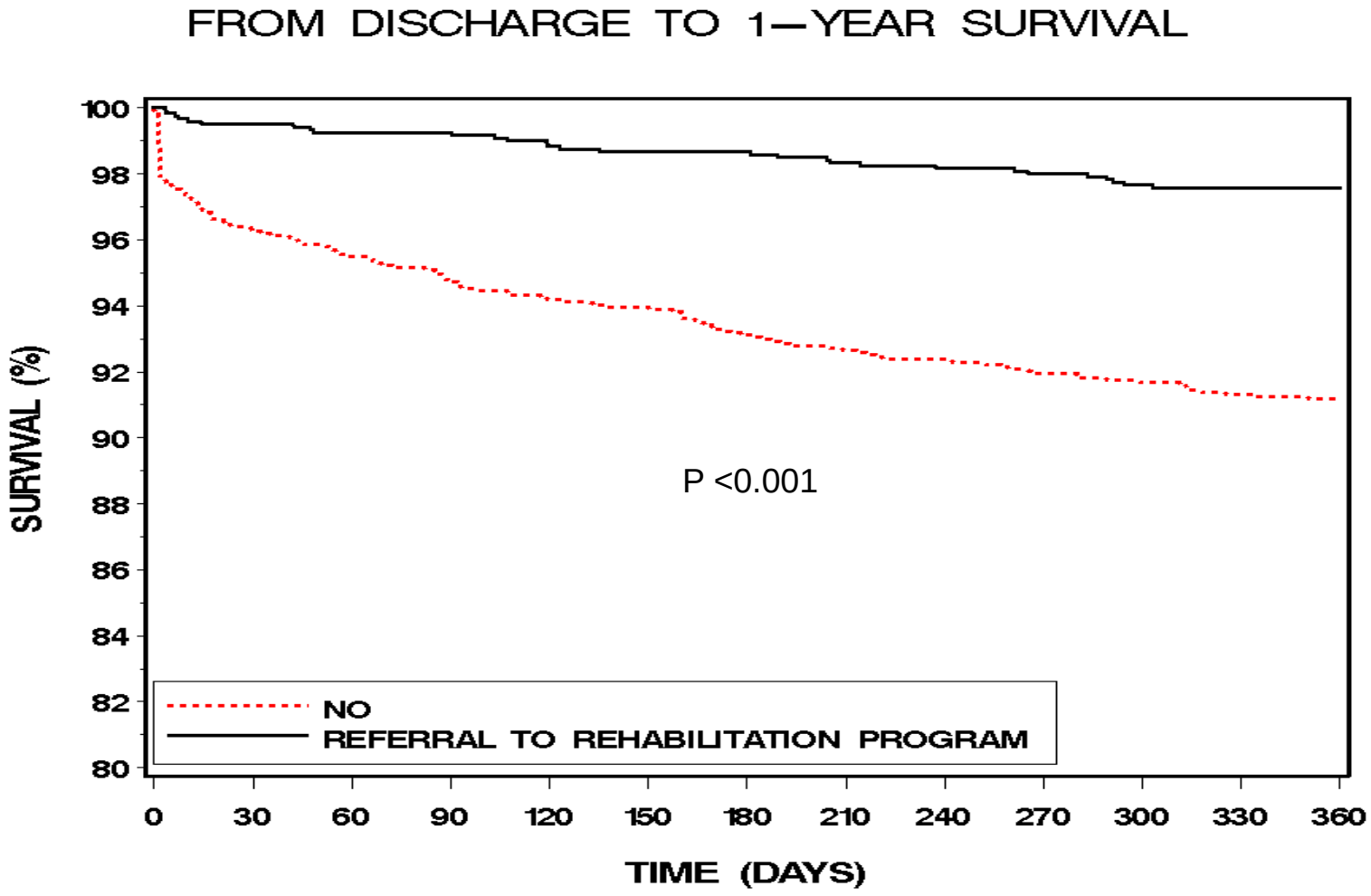
ACSIS 2010

Referral for Rehabilitation Program @30 Days

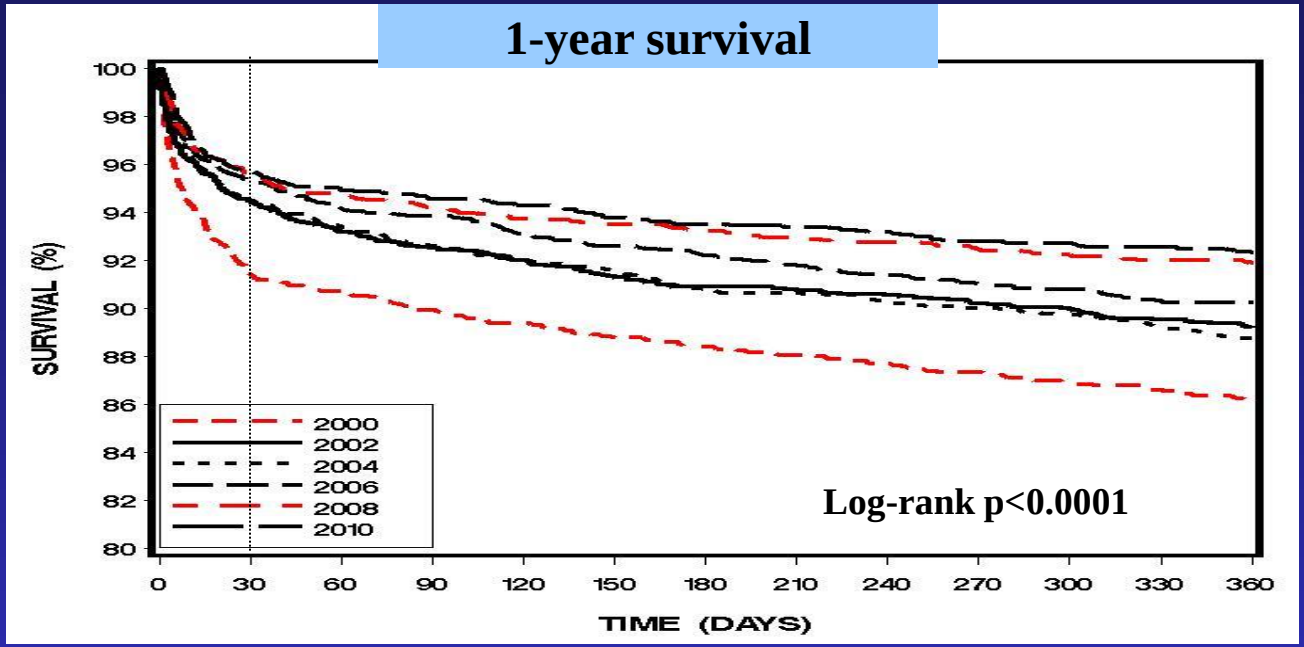


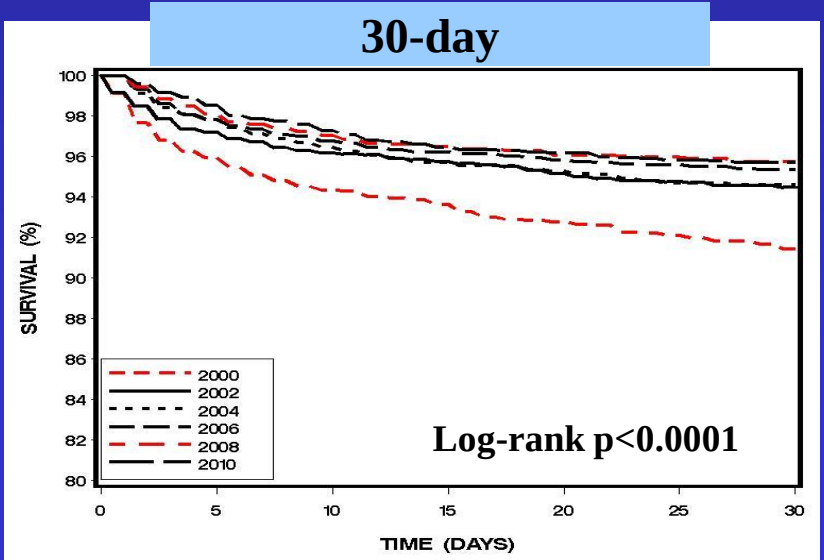
Referral to Rehabilitation Program and 1-Year Mortality

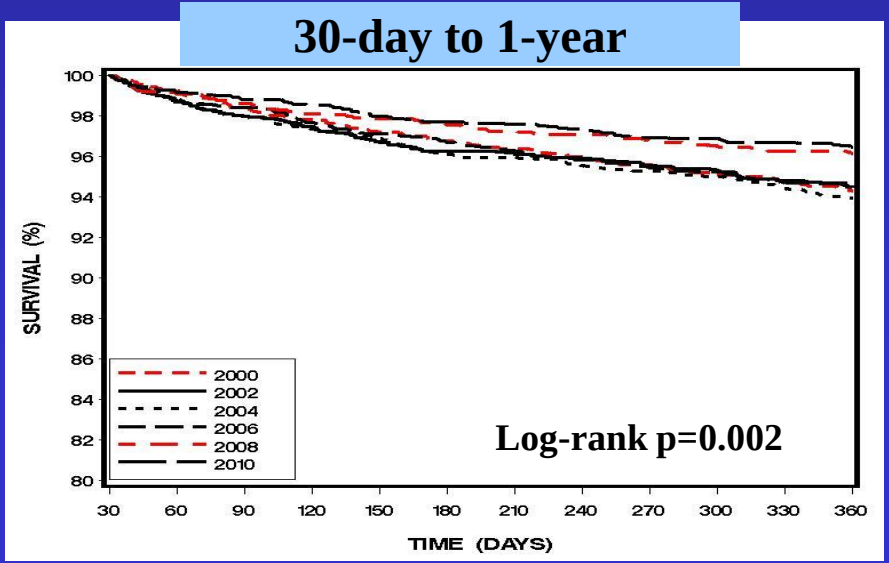
ACSIS 2006-2010



1-Year KM Survival, Landmark Analysis
ACSIS 2000-2010

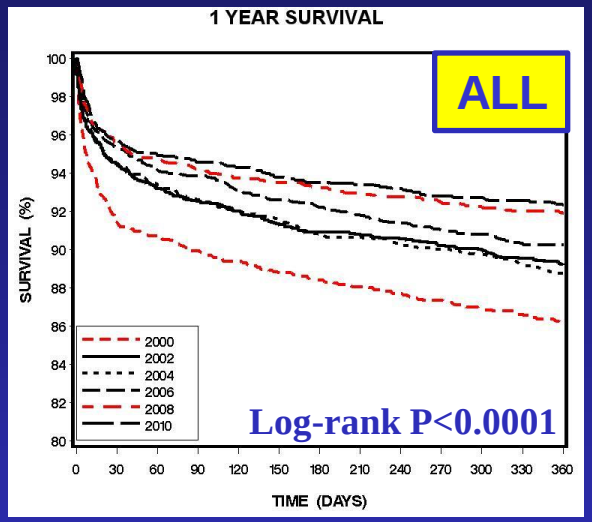


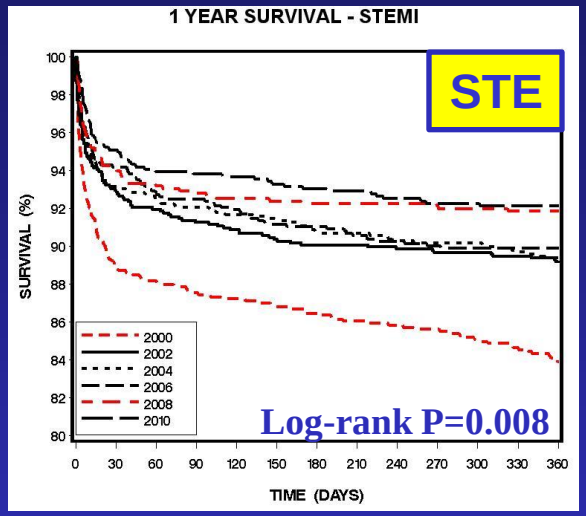


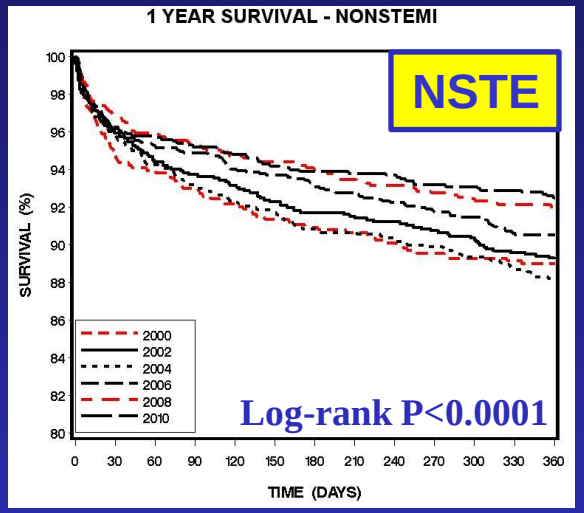


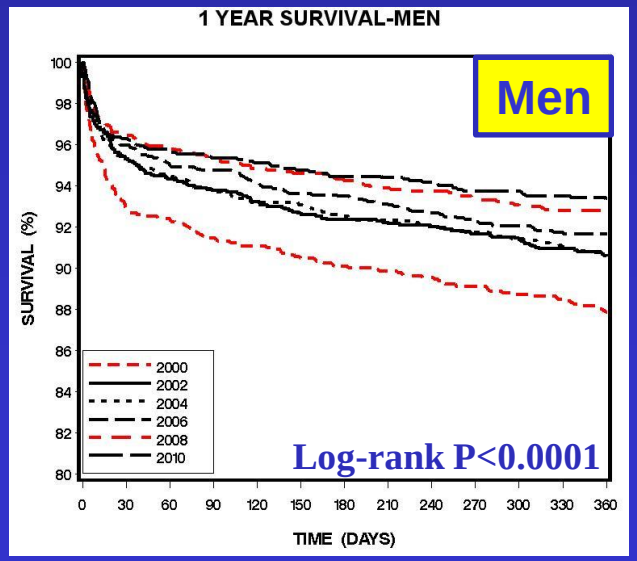
1-year KM survival curves

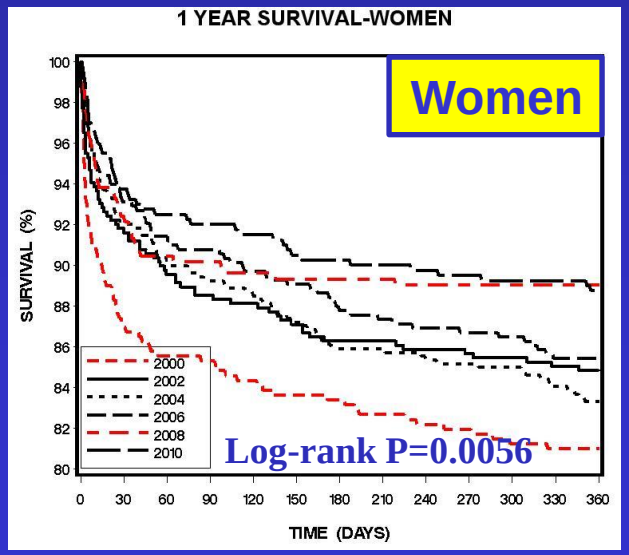
ACSIS 2000-2010







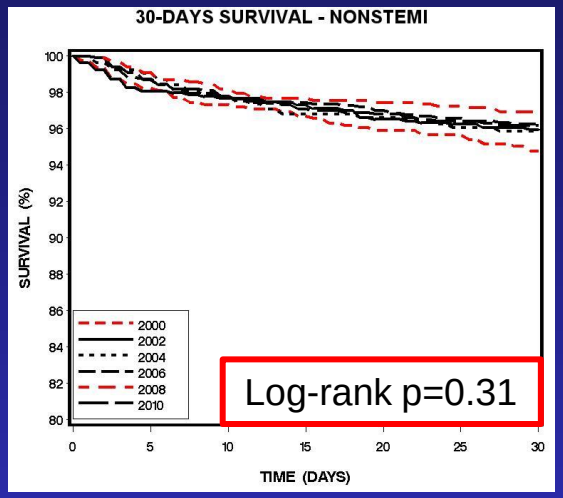


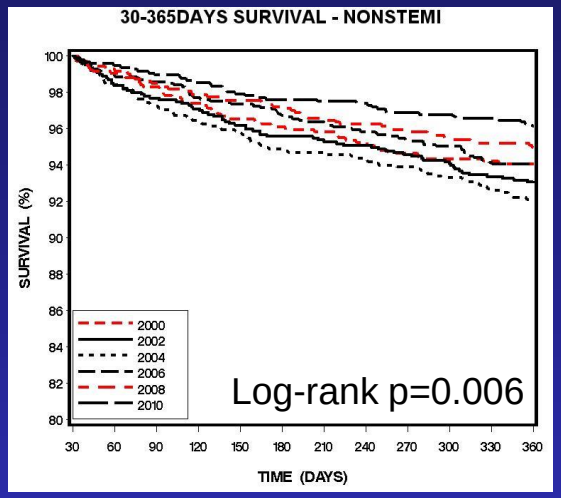


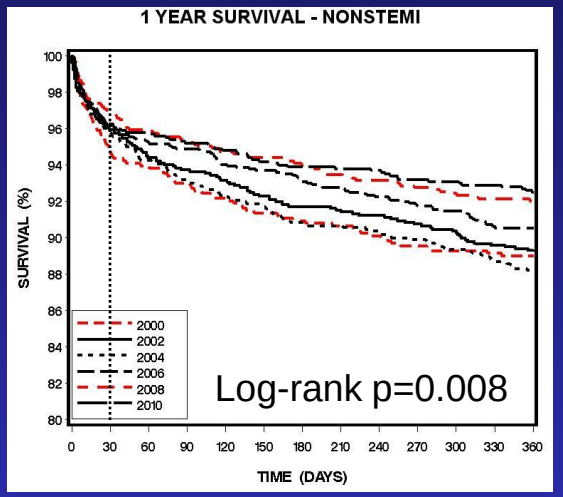
Temporal 1-Year Mortality Trends STE vs. NSTE: ACSIS 2000–2010

1-Year Survival, Landmark Analysis
NSTE vs. STE, ACSIS 2000–2010

NSTE

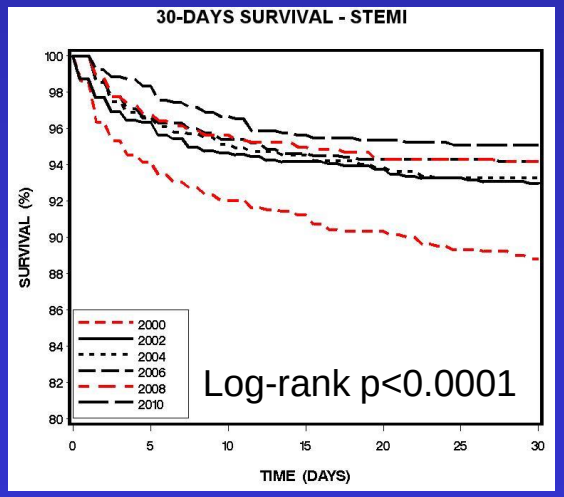


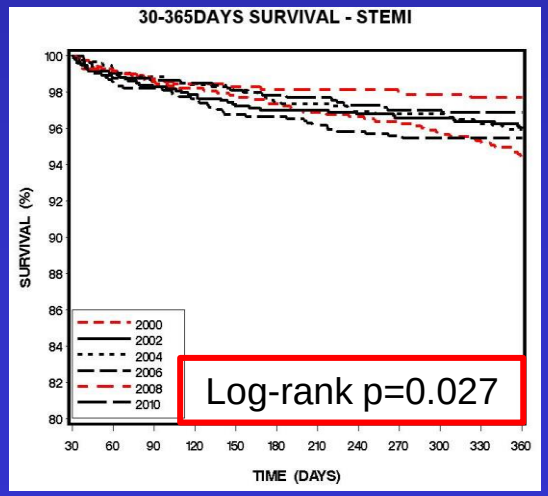


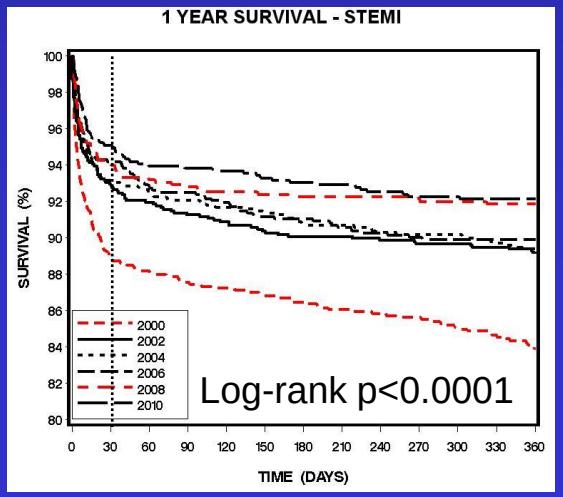


30-days | 30-365 days | 1 year

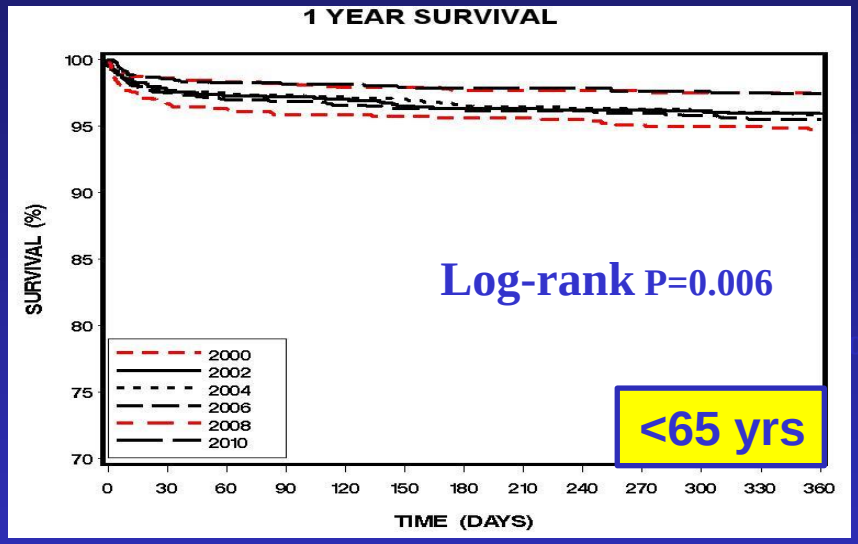
STE

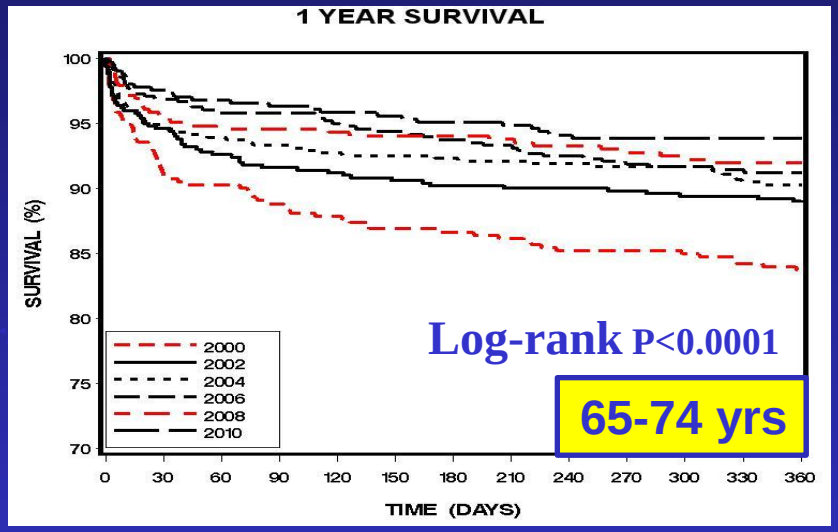


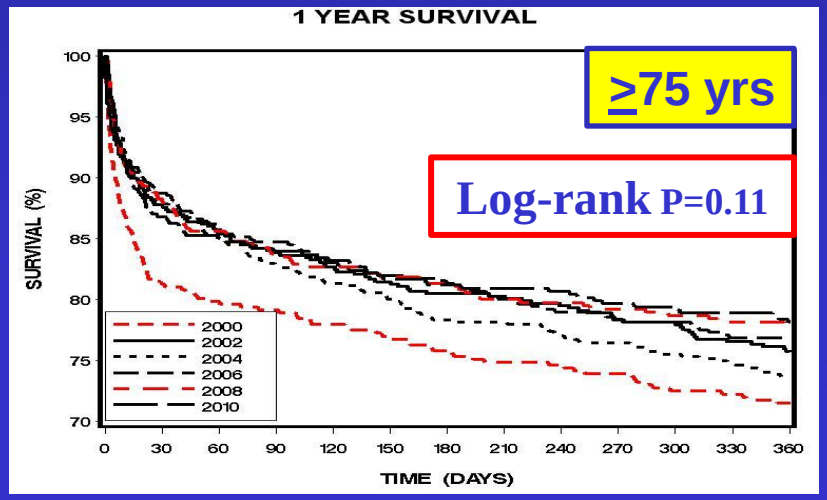




1-year KM survival curves By Age Subgroups ACSIS 2000-2010







CONCLUSIONS

- ACSIS plays a major role in the assessment and improvement of quality of care provided to ACS patients in Israel.

- The high degree of implementation and adherence to recommended guidelines in recent years, was associated with a significant decline in early and late mortality, early complications, shorter length of stay, and a better LV function.

Are we Happy with these findings?

Can we further Improve our performance?

Yes !

Window cleaners, floor 101

Shanghai, World Trade and Financial Center,
101-floors, 492-meter (1,614 foot) height, wedge-shaped tower

How?

- Improve community care (primary and secondary prevention) with HMO providers
- Public campaign to shorten pre-hospital time delay
- Increase EMS use and improve triage
- Improve individual center quality
- Better triage and management of high risk NSTE-ACS pts and elderly
- Implementation of new medications and technologies
- Rehab. program
- Blood Samples (PK, PD, Genetics)

Thank
you