Lessons learned From The National PCI Registry
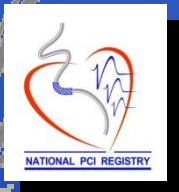
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On Behalf of

*The Publication Committee of the National PCI Registry*

Objectives & Anticipated Achievements

- To determine the epidemiology of patients who undergo PCI

- To determine safety and effectiveness of PCI in Thailand (short- and long-term)

  - To benchmark with the rest of the world

  - To determine factors that influence outcomes

  - To compare with other treatment modalities

- To monitor rapidly evolving trends of PCI practice

  - Effects of new devices or medication

  - Effects of new public health policy

- To monitor and evaluate (new) cath labs performances

- To create the culture of multicenter collaboration

national PCI Registry

27 = PCI Registry sites
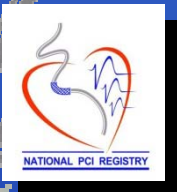
2 = Not in PCI Registry
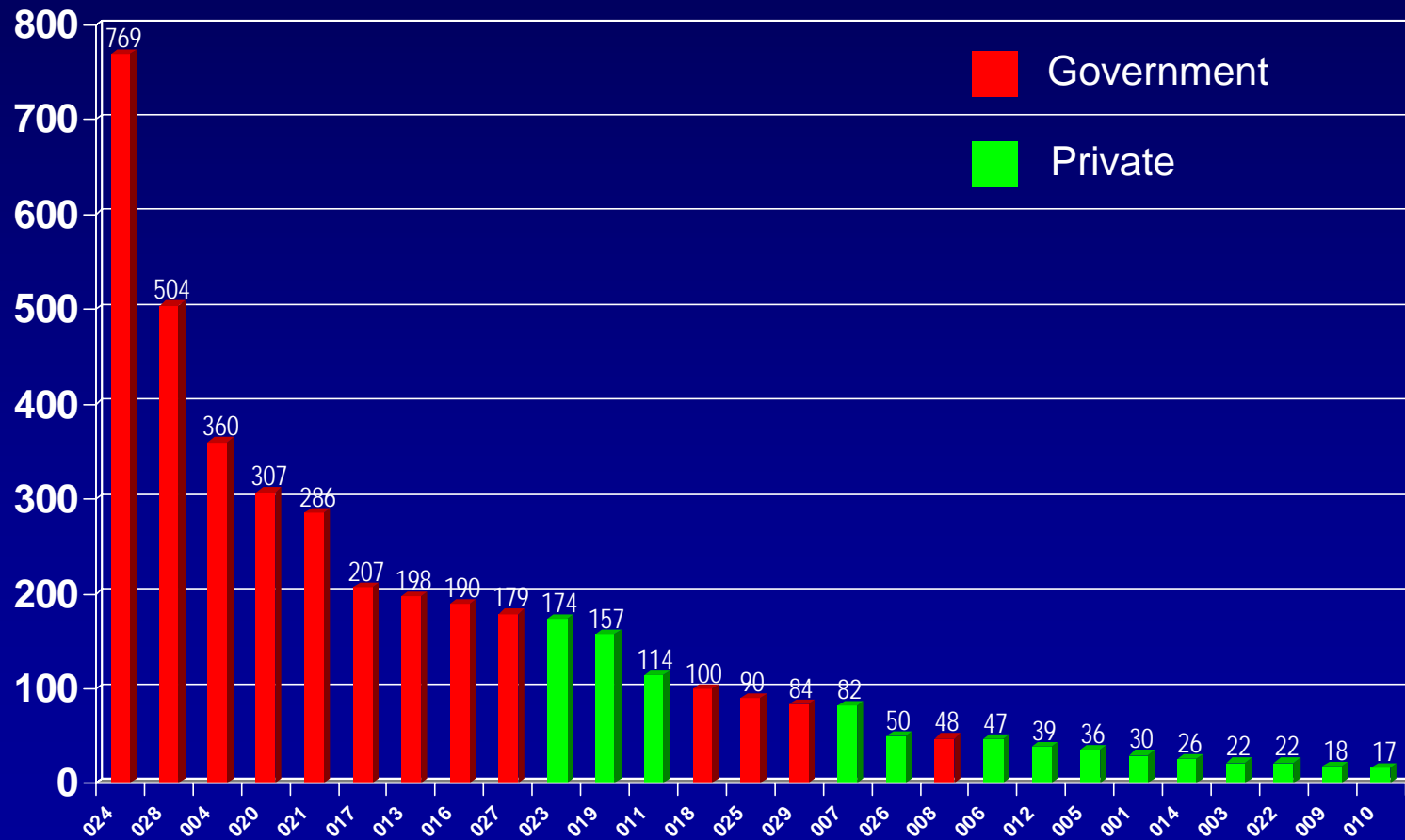
12 = New cath lab since 2006
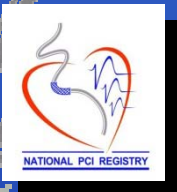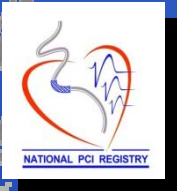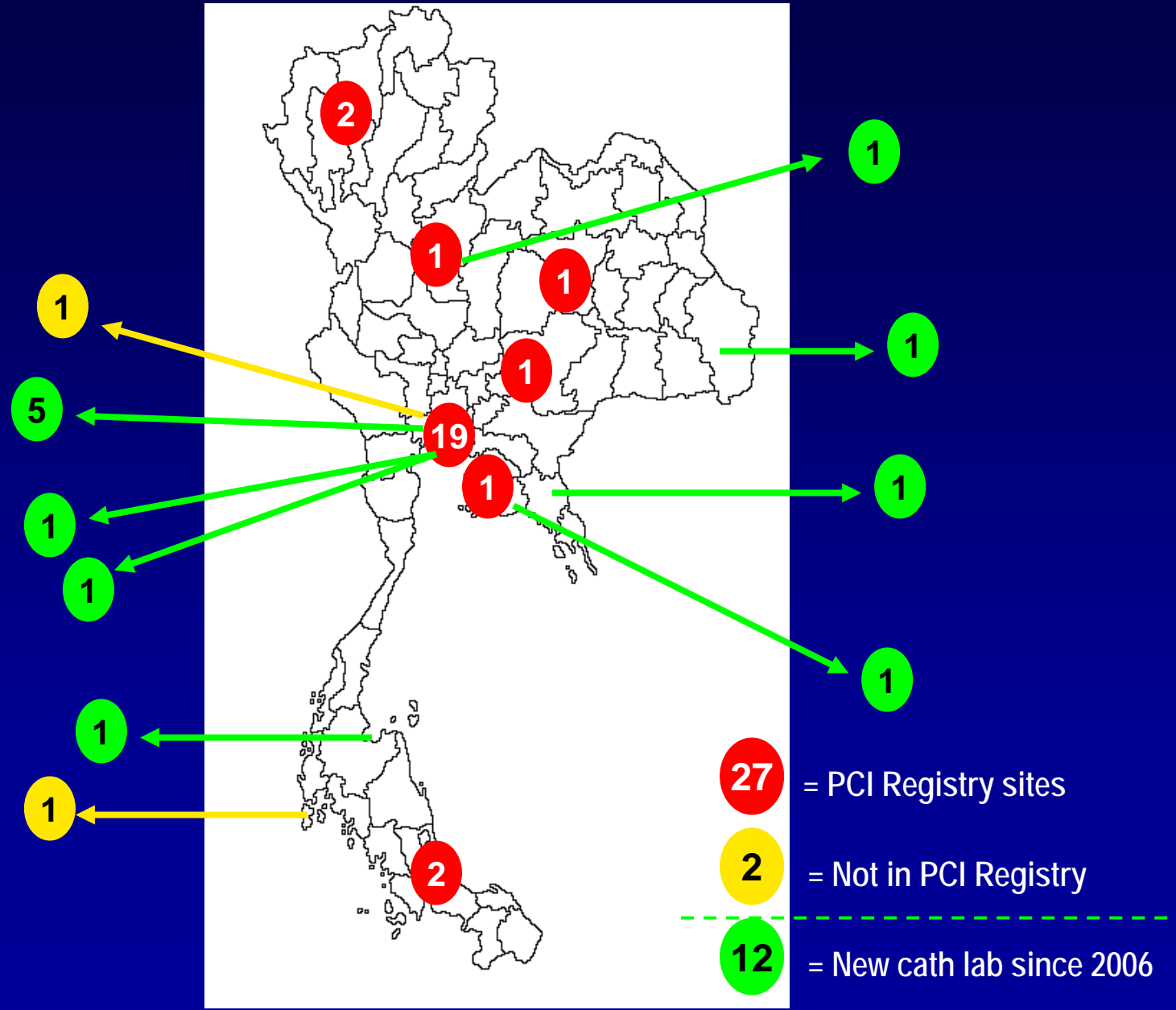
Results

- From May 1st – October 31st, 2006 (6 month period):
    - 4,146 PCI procedures were performed in 27 participating sites
    - 6,114 lesions attempted from 4,146 procedures

national PCI Registry

Number of PCI performed in each center (6-month period)

N = 4,146 from 27 sites

Baseline Characteristics

Clinical characteristics	N=4,146
Mean age (yrs)	63.0 $\pm$ 11.0
Women (%)	30.8
Mean BMI (kg/m^2)	25.0
Diabetes mellitus (%)	37.7
Hypertension (%)	69.8
Dyslipidemia (%)	77.2
Current smoking (%)	33.9
Chronic renal failure (%)	6.7
Previous MI (%)	29.1
Previous PCI %)	24.4
Previous CABG (%)	3.9
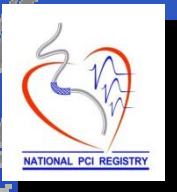
Indications for PCI
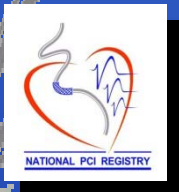
Indications for PCI	N = 4,146
STEMI	14.0 %
- Primary PCI	- 60.1 %
- Rescue PCI	- 4.8 %
NSTEMI	11.6 %
Unstable angina	25.4 %
Stable angina	29.0 %
Asymptomatic CAD	5.5 %
PCI as staged procedure	5.8 %

ACS = 51 %

Reimbursement Status

Company paid (1%)

Social security (4%)

National health care (24%) ?

Government civil servant (46%)

Private insurance (3%)

Self paid (22%)
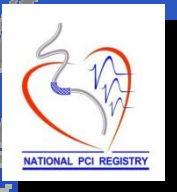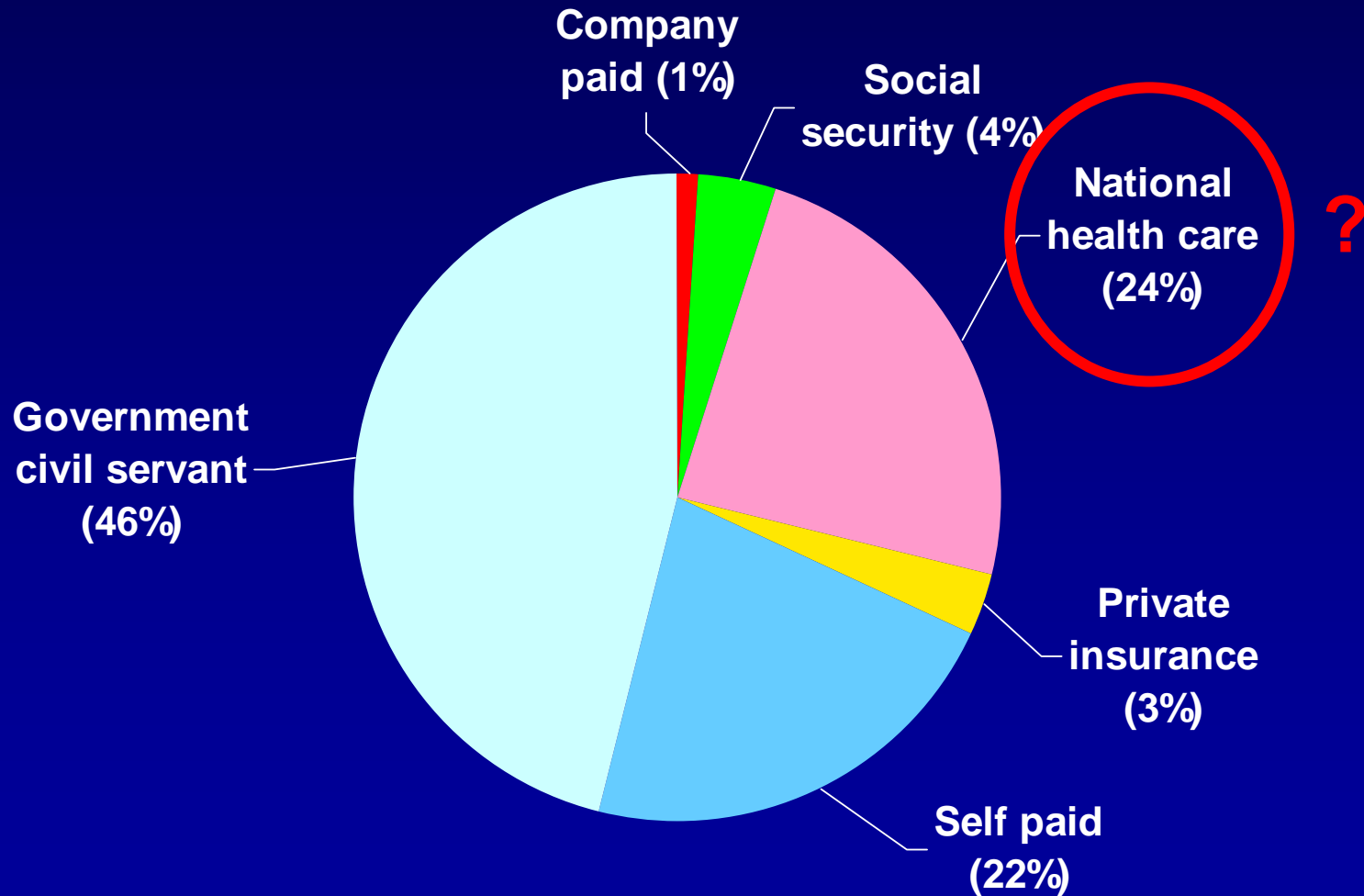
Angiographic Characteristics

Angiographic characteristics	%
Extent of CAD (%): 1 vessel	35.2
2 vessel	33.3
3 vessel	31.5
Left main stenosis > 50%	4.6
Location of lesion (%): LAD	45.5
LCX	20.6
RCA	32.5
Left main	1.5
Bypass graft	1.0
Previously treated lesions (%)	6.9
ACC/AHA lesion classification: Type B2 / C (%)	70.4
Bifurcation (%)	18.9
CTO (%)	9.2

Procedures

## Procedure characteristics

Single vessel PCI (%)	78.1
Multi vessel PCI (%)	21.9
Average number of lesions attempted per procedure (lesion)	1.5
$\geq$ 2 lesions attempted in the same procedure (%)	35.4
Intravascular ultrasound (%)	7.1
Rotational atherectomy (%)	1.8
Average amount of contrast used (ml)	155.5 $\pm$ 69.9

Stent Usage

Procedure characteristics (stent usage)

Balloon angioplasty only (%)	11.8
Stent placement (%)	84.5
- Bare metal stent (BMS) (%)	37.2
- Average number of BMS / procedure (stent)	1.42
- Drug eluting stent (DES) (%)	61.6
- Average number of DES / procedure (stent)	1.82
Average number of stents <u>per lesion</u> (stent)	1.20
Direct stenting (%)	20.3

Stent Usage

OTHERS
(4%)

DES + BMS
(1%)

Balloon
only (12%)

BMS (31%)

DES (52%)
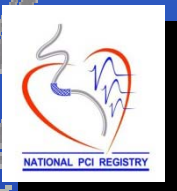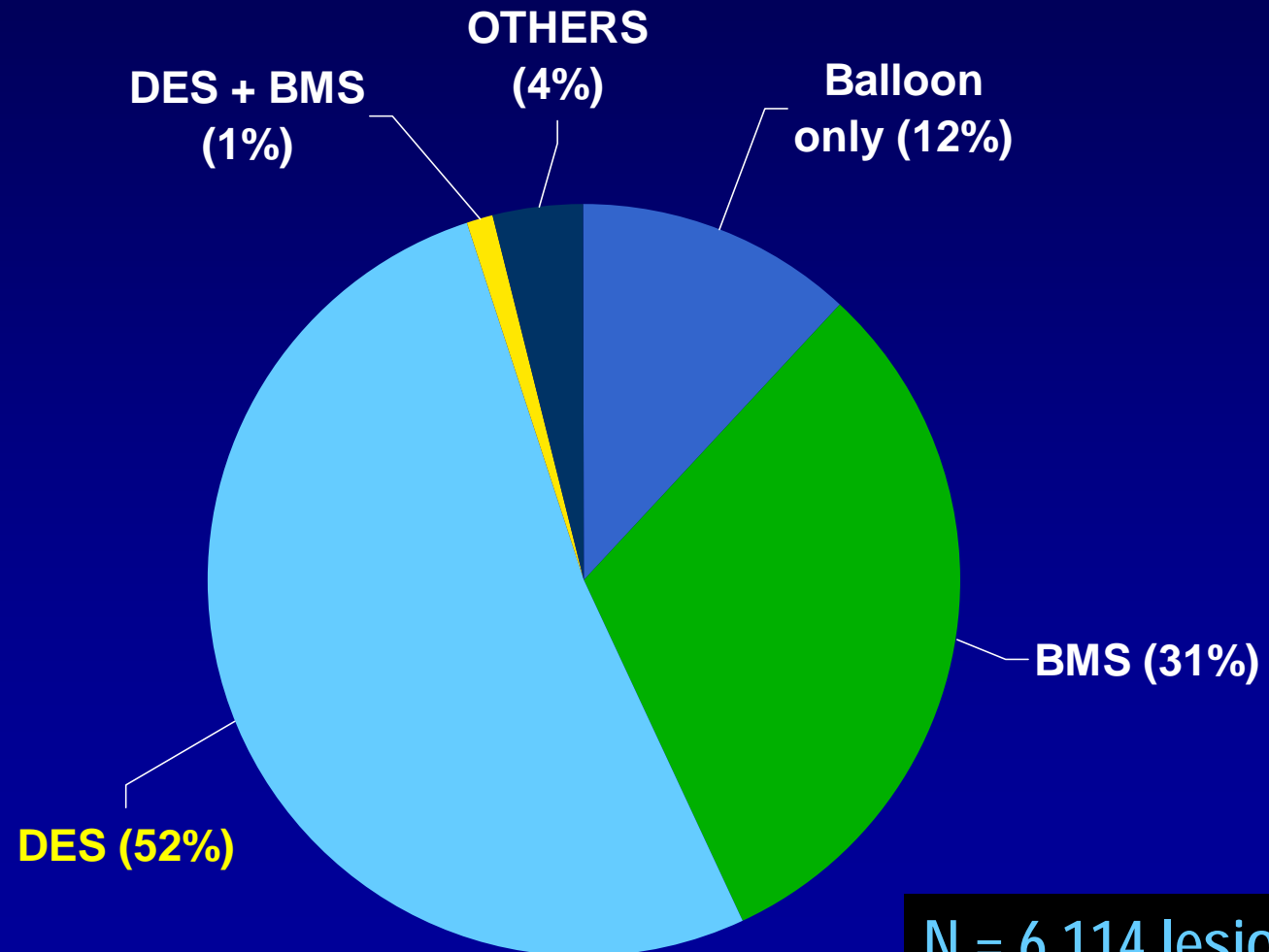
N = 6,114 lesions
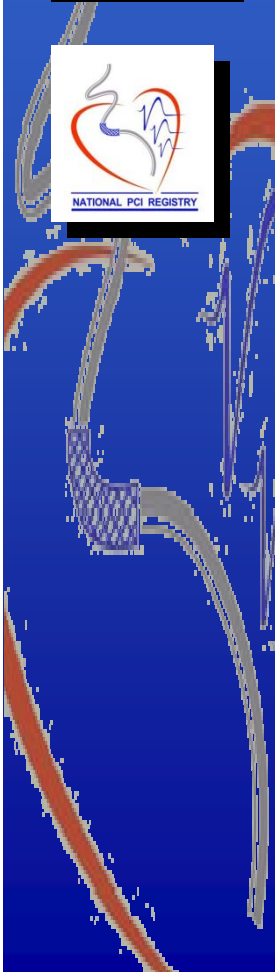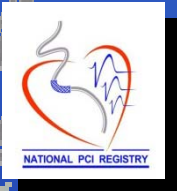
Success Rate

Angiographic success*   94.2 %

Procedural success**   90.1 %

* = Diameter stenosis < 50% with TIMI 2-3 flow

** = Angiographic success without MACE
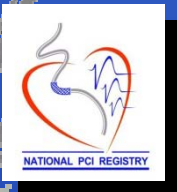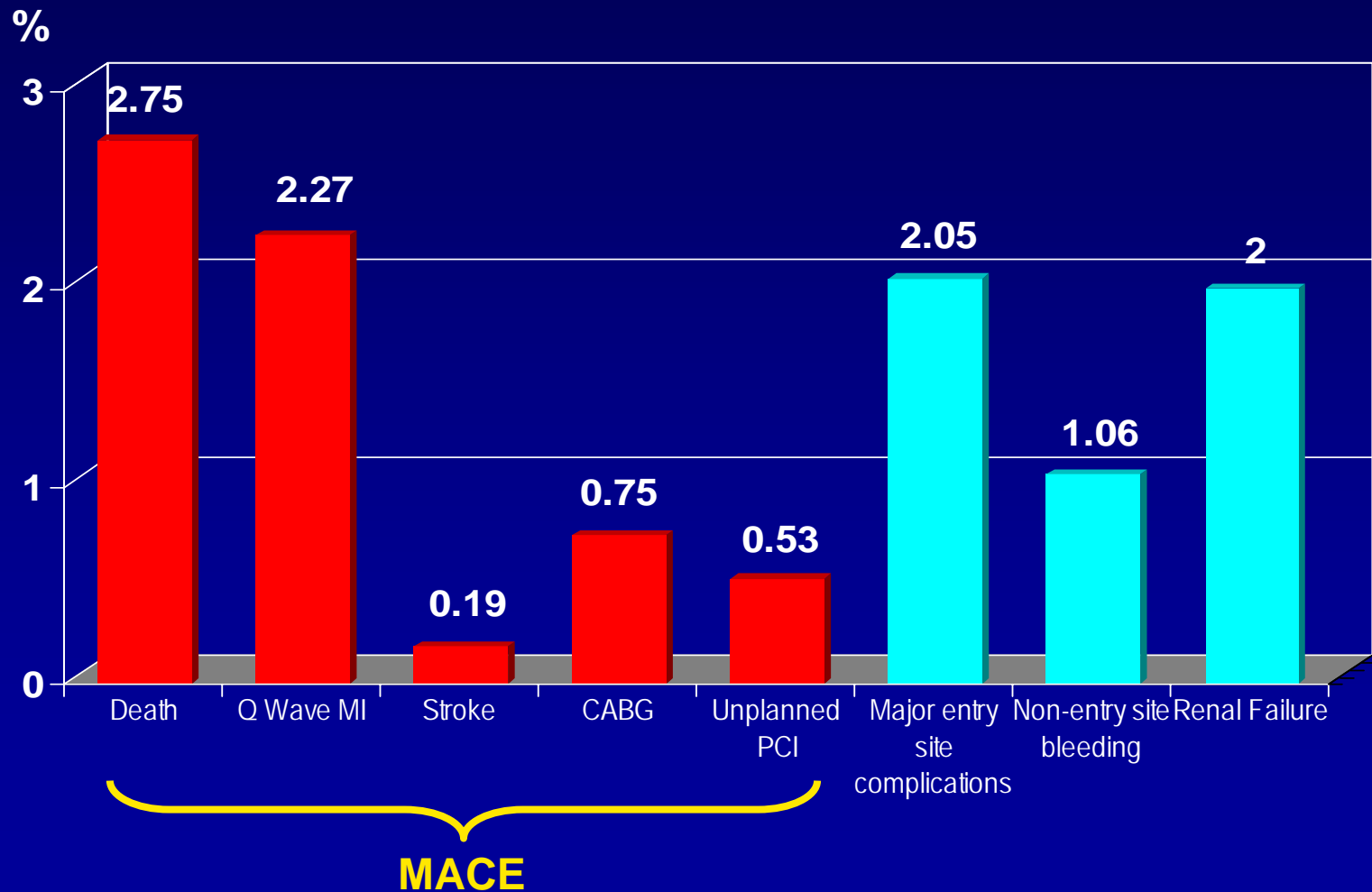
Logistic regression for factors predicting in-hospital "MACE"
(Death, MI, stroke, unplanned PCI or urgent/emergent CABG)

Variables	Adjusted OR (95%CI)	p-value
STEMI	6.8 (4.79-9.53)	<0.001
CHF within 2 wks	3.7 (2.64-5.16)	<0.001
Age > 75	1.9 (1.28-2.67)	0.001
GP IIbIIIa inhibitors	1.8 (1.25-2.55)	0.001
Female	1.5 (1.10-2.08)	0.010
Mulitvessel CAD	1.5 (1.03-2.06)	0.035
EF < 40%	1.2 (1.08-1.35)	0.001
B2 and C lesion	1.2 (0.76-1.95)	0.403
DM	1.2 (0.84-1.59)	0.369
Chronic renal failure	1.2 (0.85-1.64)	0.315
Previous MI	1.1 (0.72-1.53)	0.795
Multivessel PCI	1.1 (0.74-1.58)	0.689
Use of stent	0.4 (0.26-0.54)	<0.001

DES vs BMS
Baseline Clinical Characteristics

Variables	BMS(%) (N = 1,387)	DES(%) (N = 2,090)	P-value
Age (mean + SD)	61.6 + 11.7	63.5 + 10.9	<0.001
Male	67.5	69.3	0.251
Smoking	48.7	38.3	<0.001
Hypertension	64.0	73.4	<0.001
Dyslipidemia	70.0	81.8	<0.001
Diabetes Mellitus	33.9	40.4	<0.001
- Insulin treated DM	13.6	15.7	0.319
Family history of CAD	9.3	14.2	<0.001
Previous MI	33.0	27.2	<0.001
Previous PCI	14.5	28.0	<0.001
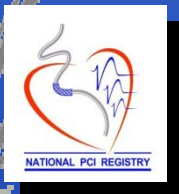
DES vs BMS
Indications

Variables	BMS(%) (N = 1,387)	DES(%) (N = 2,090)	P-value
STEMI	22.5	7.4	<0.001
- Primary PCI	58.7	57.1	0.756
- Rescue PCI	6.7	3.3	0.123
UA/NSTEMI	39.4	36.9	0.141
Stable angina	21.4	33.6	<0.001
Asymptomatic CAD	2.9	6.9	<0.001

DES vs BMS
Reimbursment Status

Variable (% in all PCI procedure)	BMS(%) (N = 1,387)	DES(%) (N = 2,090)	P-value
Government official ***(46%)	18.7	65.9	<0.001
Healthcare : 30 baht (24%)	51.8	4.8	<0.001
Self paid (22%)	18.3	23.1	<0.001
Social security (4%)	7.9	1.9	<0.001
Private insurance (3%)	2.5	3.4	0.123
Company paid (1%)	0.8	0.9	0.829

*** DES is fully reimbursed for government officials
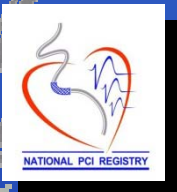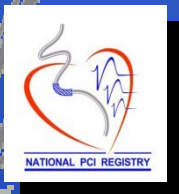
DES vs BMS
Procedural Characteristics

Variable	BMS(%) (1,387)	DES(%) (2,090)	P-value
Coronary disease extent			
- 1 vessel	41.8	33.0	
- 2 vessel	34.0	32.9	<0.001
- 3 vessel	23.9	33.9	
- Left main > 50 % stenosis	0.3	0.2	
Average number of lesions attempted per procedure	1.4	1.5	-
≥ 2 lesions attempted in the same procedure	29.0	38.9	<0.001

DES vs BMS
Procedural Characteristics

Variable	BMS (%) (N = 1927)	DES (%) (N = 3183)	P-value
Total number of stent(s) used	2210 stents	3806 stents	-
Average number of stent(s) per patient	1.7	2.0	-
Average number of stent(s) per procedure	1.6	1.8	-
Direct stenting	24.3	18.0	<0.001
Intravascular ultrasound usage	3.6	10.0	<0.001
Adjunctive rotational atherectomy	0.4	2.5	<0.001
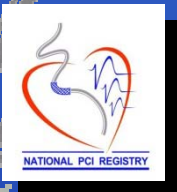
DES vs BMS
6-month Outcomes

Variable	BMS (%) (N = 1,182)	DES (%) (N = 1,773)	P-value
Death	9.0	2.5	<0.001
MI	3.7	1.6	<0.001
Stent thrombosis	1.4	1.3	0.895
Repeat PCI of previously treated lesion (TLR)	3.1	2.5	0.408
CABG	0.7	0.3	0.090
Repeat revascularization	3.8	2.9	0.099
Stroke	0.4	0.3	0.367

Conclusions: wave 1
Clinical, angiographic, procedural characteristics & immediate outcomes of PCI in Thailand

- Over 6 month period, there were 4,146 PCI performed in 27 centers

- (Projected national number of PCI / yr ≈ 10,000 procedures)

- Significant proportion of "high-risk" patients undergoing PCI
  - DM
  - Previous MI
  - Multi-vessel CAD
  - ACS (esp. STEMI)
  - Complex lesion types

Conclusions: wave 1
Clinical, angiographic, procedural characteristics & immediate outcomes of PCI in Thailand

- Stent usage was associated with lower in-hospital MACE

- Stent utilization rate is high (85%), but DES usage was rather limited (62%) compared to western countries

- Relatively small proportion of the patients were under government universal health care system. Of these patients, only 10% received DES (selection of DES was heavily influenced by reimbursement status).

- DES was used in more often in DM, restenotic lesion, multivessel CAD and complex lesion types

Conclusions: wave 1
Clinical, angiographic, procedural characteristics & immediate outcomes of PCI in Thailand

- 6 month outcomes showed lower all-cause mortality and MI in DES treated patients

- However, TLR and repeated revascularization is not differed between DES and BMS

- The reason for the above findings is not yet explored.