



Malaysian Live Section at TCTAP 2014



Malaysian National Cardiovascular Database Registry on PCI

Wan Azman Wan Ahmad

FRCP, FAMM, FNHAM, FAsCC, FAPSIC, FESC, FSCAI, FACC

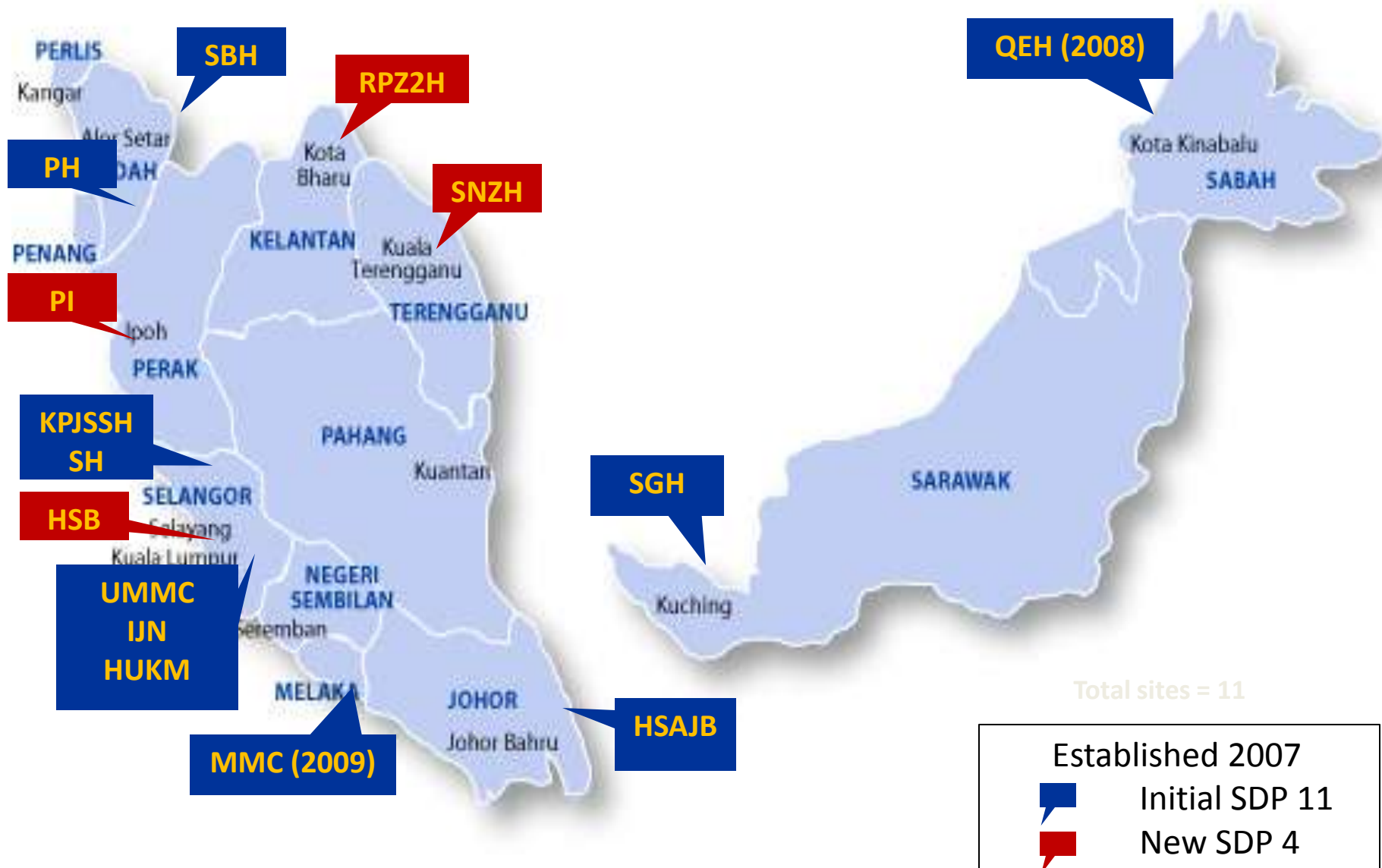
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Kuala Lumpur, Malaysia

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NCVD-PCI Registry Data Source Provider (SDP)



Report Published



MOH/S/CRC/DL09(AR)

National Cardiovascular Disease Database

ANNUAL REPORT OF THE NCVD - PCI REGISTRY *year 2007*



Editors:
Wan Azman Wan Ahmad
Sim Kul-Hian



CRC
CENTRE FOR RESEARCH IN CARDIOVASCULAR DISEASES
Research that matters to patients



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The journey of Malaysian NCVD–PCI (National Cardiovascular Disease Database–Percutaneous Coronary Intervention) Registry: A summary of three years report[☆]

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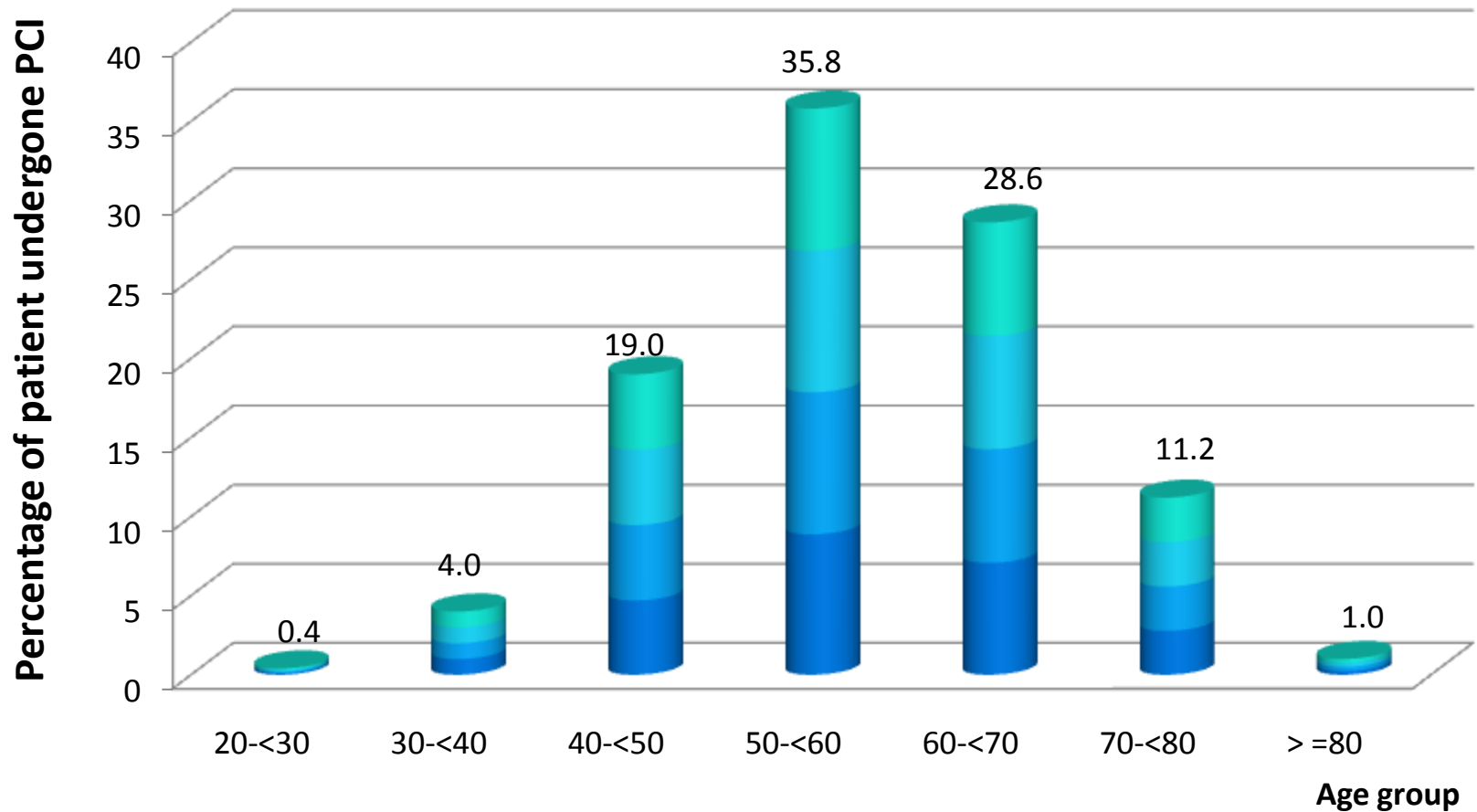
NCVD-PCI Registry, 2007-2012

	2007	2008	2009	2010	2011	2012	Total
Total number of patients	3,626	3,375	3,708	4,157	4,487	5,106	24,459
Total number of PCI procedures performed	3,939	3,657	4,025	4,462	4,887	5,513	26,483
Total number of lesions treated	5,499	5,022	5,327	6,088	5,977	6,960	34,873
Total number of stents used	7,124	6,377	6,679	7,661	7,558	8,440	43,839

Patient Characteristics

- Age
- Gender
- Ethnicity
- Coronary Risk Factors
- Comorbidities

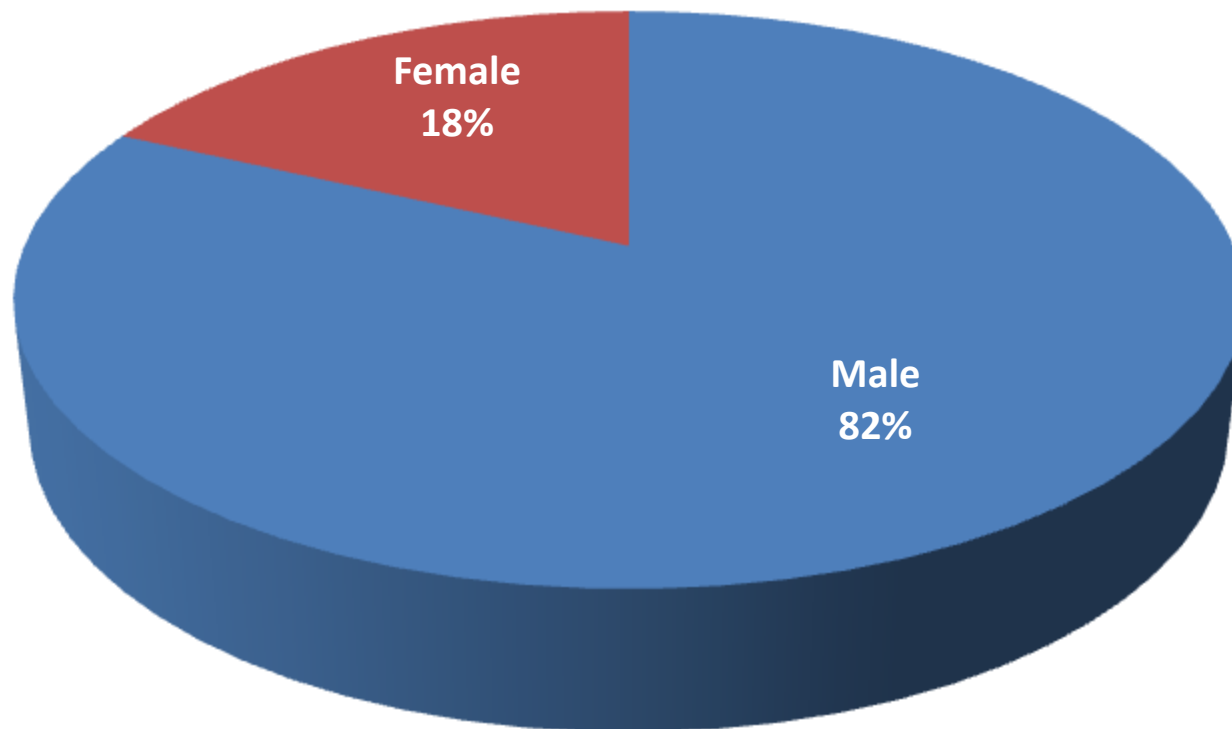
Age group of patients who underwent PCI, NCVD-PCI Registry, 2007-2012



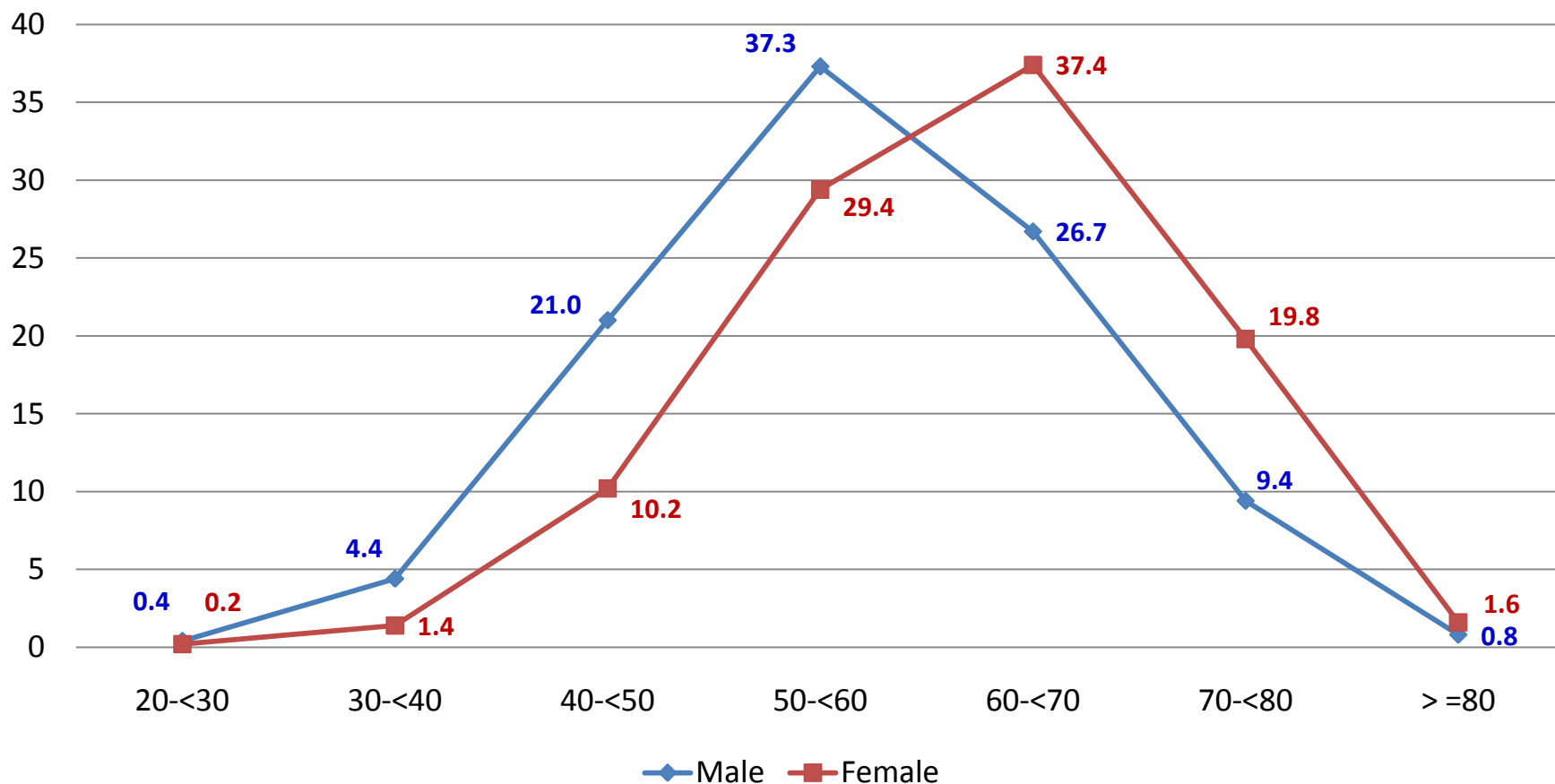
Mean age = 57.4 (SD 10.3) years

Min, Max of age = 21.1, 97.7 years

**Gender of patients who underwent PCI, NCVD-PCI
Registry, 2007-2012**



Age-gender distribution of patients who underwent PCI, NCVD-PCI Registry, 2007-2012



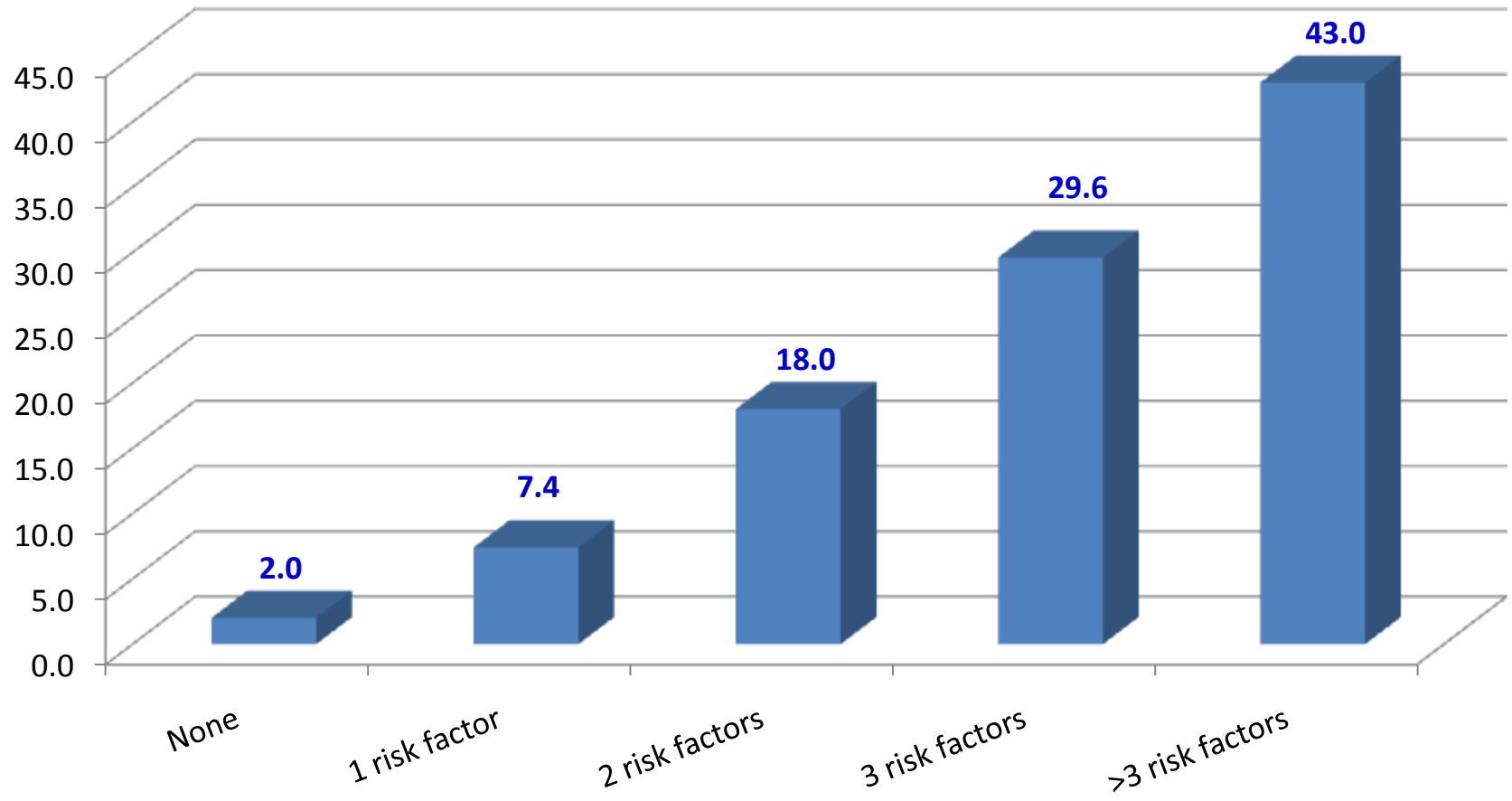
Clinical Background and CV Risk Factors

Medical history (%)	2007 (n=3626)	2008 (n=3375)	2009 (n=3708)	2010 (n=4157)	2011 (n=4487)	2012 (n=5106)	2007- 2012 (n=24459)
Dyslipidaemia	76.6	70.4	72.6	77.0	75.9	63.1	72.6
Hypertension	74.2	71.8	74.0	74.3	75.0	71.5	73.5
Diabetes	45.6	45.2	47.4	48.4	45.8	43.5	46.0
Smoking status							
Former (<i>quit > 30 days</i>)	28.4	25.4	30.6	30.8	28.5	24.7	28.0
Current (<i>any tobacco use within last 30 days</i>)	16.4	20.6	19.8	20.8	22.4	25.1	21.1
Family history of CVD	16.2	15.2	25.0	19.1	15.2	12.6	17.0
History of heart failure	3.3	3.3	5.4	4.4	3.8	2.4	3.6
Chronic renal failure (<i>include all pts with creatinine >200micromol/l</i>)	6.0	6.1	7.6	6.9	5.2	4.2	6.0

Clinical Background and CV Risk Factors

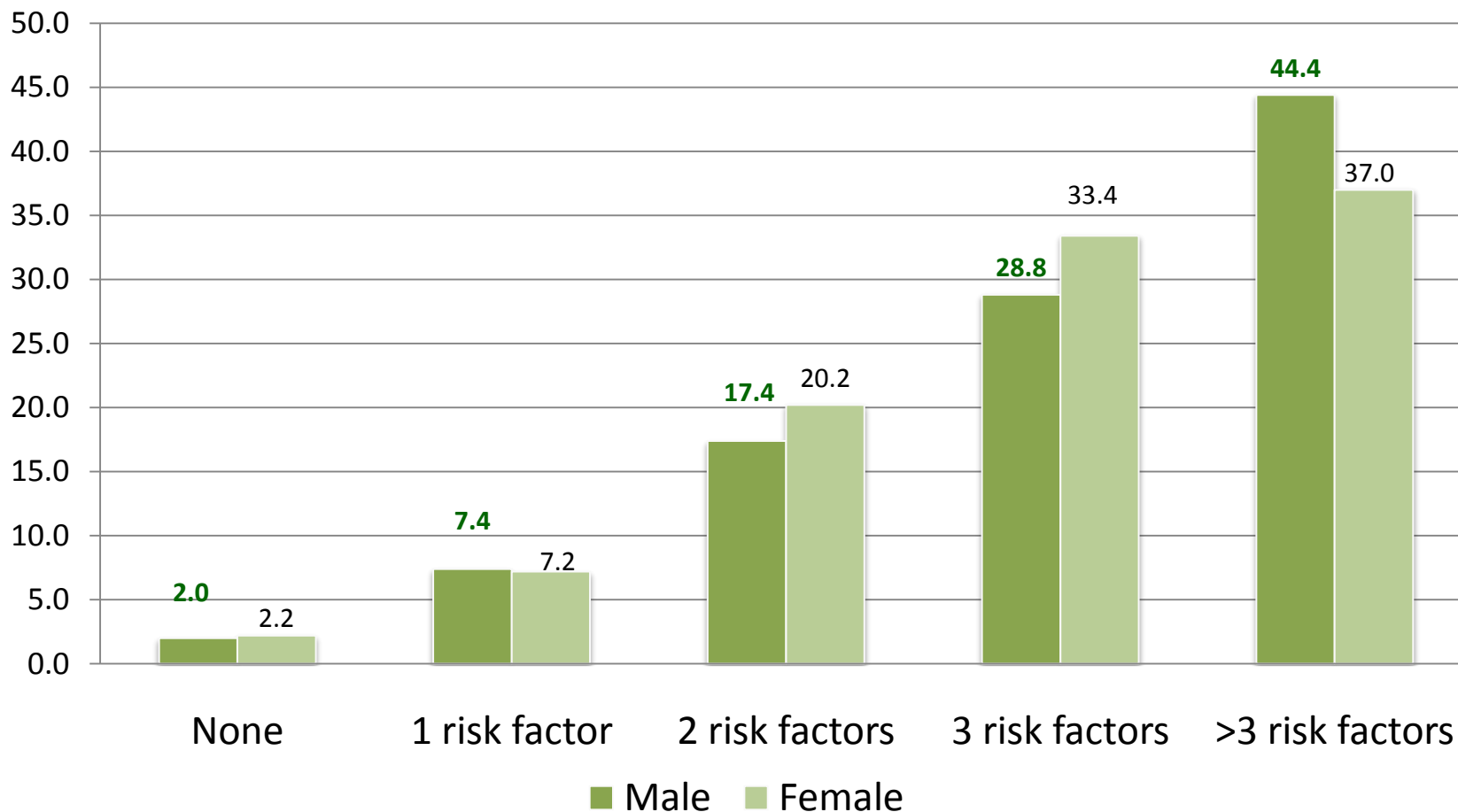
Medical history (%)	2007 (n=3626)	2008 (n=3375)	2009 (n=3708)	2010 (n=4157)	2011 (n=4487)	2012 (n=5106)	2007- 2012 (n=24459)
Body Mass Index							
N	2695	2586	3197	3538	3636	3954	19606
Mean (SD)	26.4 (4.2)	26.4 (4.3)	26.7 (4.3)	26.9 (4.4)	26.5 (4.4)	26.5 (4.4)	26.6 (4.3)
Categories							
<18.5	1.0	1.2	1.0	1.1	1.2	1.4	1.2
18.5-23	14.3	14.0	14.2	14.0	14.8	14.0	14.2
>23-<25	14.6	15.2	16.4	14.6	15.6	15.0	15.2
25-<30	31.2	31.7	37.8	37.6	33.8	32.0	34.0
30-<35	10.9	11.6	13.2	13.8	12.2	12.0	12.3
35-<40	2.0	2.3	3.0	3.0	2.6	2.4	2.6
≥40	0.4	0.6	0.6	1.1	0.8	0.6	0.7
Missing	25.6	23.4	13.8	14.8	19.0	22.6	19.8

Presence of cumulative risk factors, NCVD-PCI Registry, 2007-2012



72.6% has 3 or more CV risk factors

Presence of cumulative risk factors by gender, NCVD-PCI Registry, 2007-2012



Both gender have very high prevalent of CV risk factors

Patient Characteristics : Summary Points

- Patient characteristics remained similar between the 2007-2009 and 2010-2012 period.
- The mean age of patients who underwent PCI in Malaysia was 57.4 years (SD 10.3) which were **much younger than those in western registries**. More than 1 in 5 patients were under the age of 50 years.
- Nearly all patients had **at least one known cardiovascular risk factor (98.0%)**; therefore to improve outcomes of PCI, patients should have optimal treatment of these risk factors post-procedure.
- Comparing against other published data from the region, Malaysian patients were more likely to have **hypertension and diabetes**.

Clinical Presentations & Investigations

- Previous interventions
- Baseline investigations,
- NYHA and Killip class,
- Canadian Cardiovascular Score
- IABP use at PCI procedure.
- An analysis of STEMI time-to-treatment time

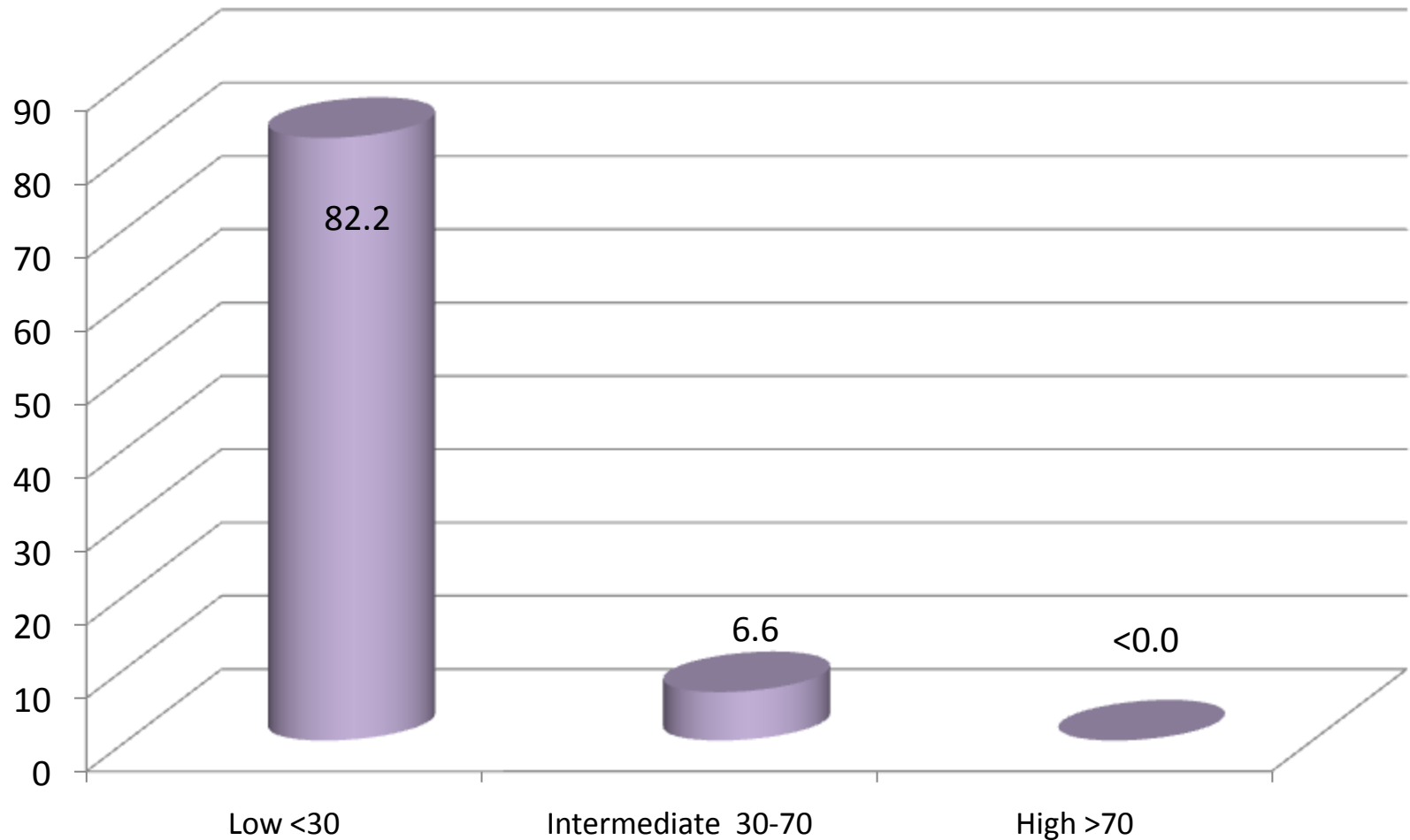


Previous Revascularization by Year, NCVD-PCI Registry, 2007-2012

Previous revascularization (%)	2007 (n=3626)	2008 (n=3375)	2009 (n=3708)	2010 (n=4157)	2011 (n=4487)	2012 (n=5106)	2007-2012 (n=24459)
Previous PCI	19.7	19.5	22.2	22.2	19.4	19.6	20.3
Previous CABG	3.6	4.8	3.8	5.0	3.4	3.6	4.0

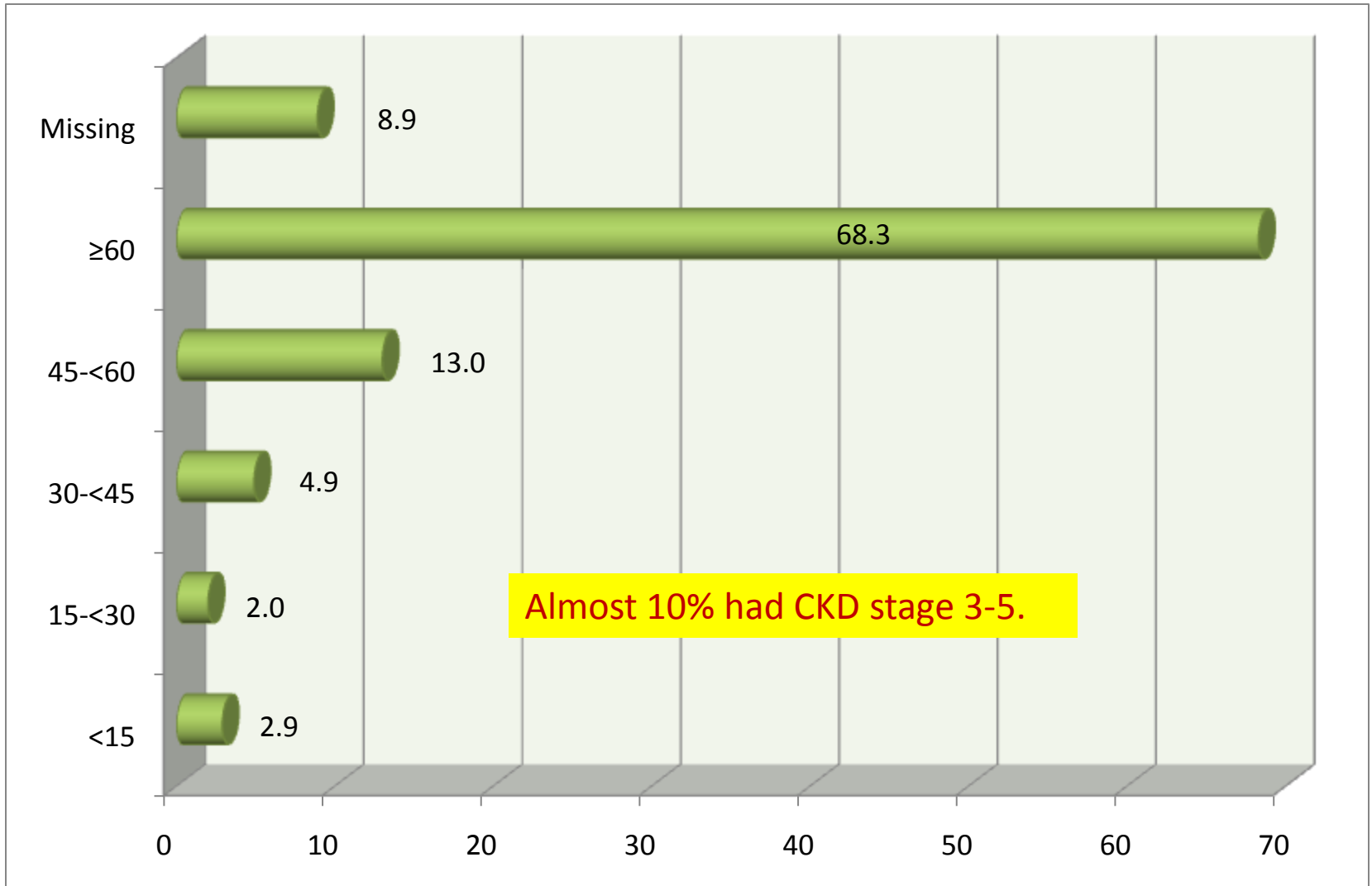
24.3% have previous revascularization procedure

TIMI Risk Index (TRI) Classification, NCVD-PCI Registry, 2007-2012

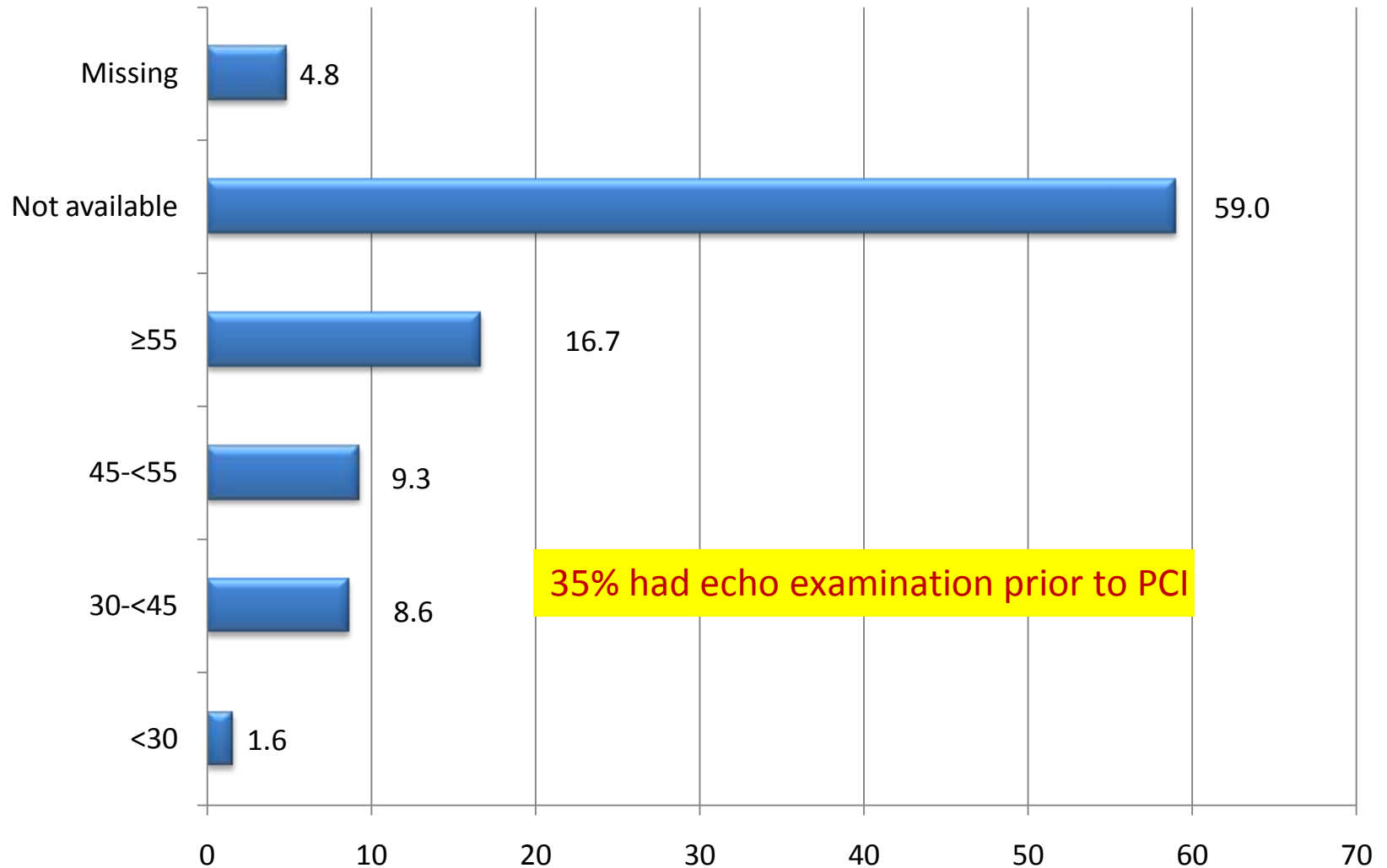


TRI is derived from age, heart rate and systolic BP.
This provides information about mortality in patient with ACS

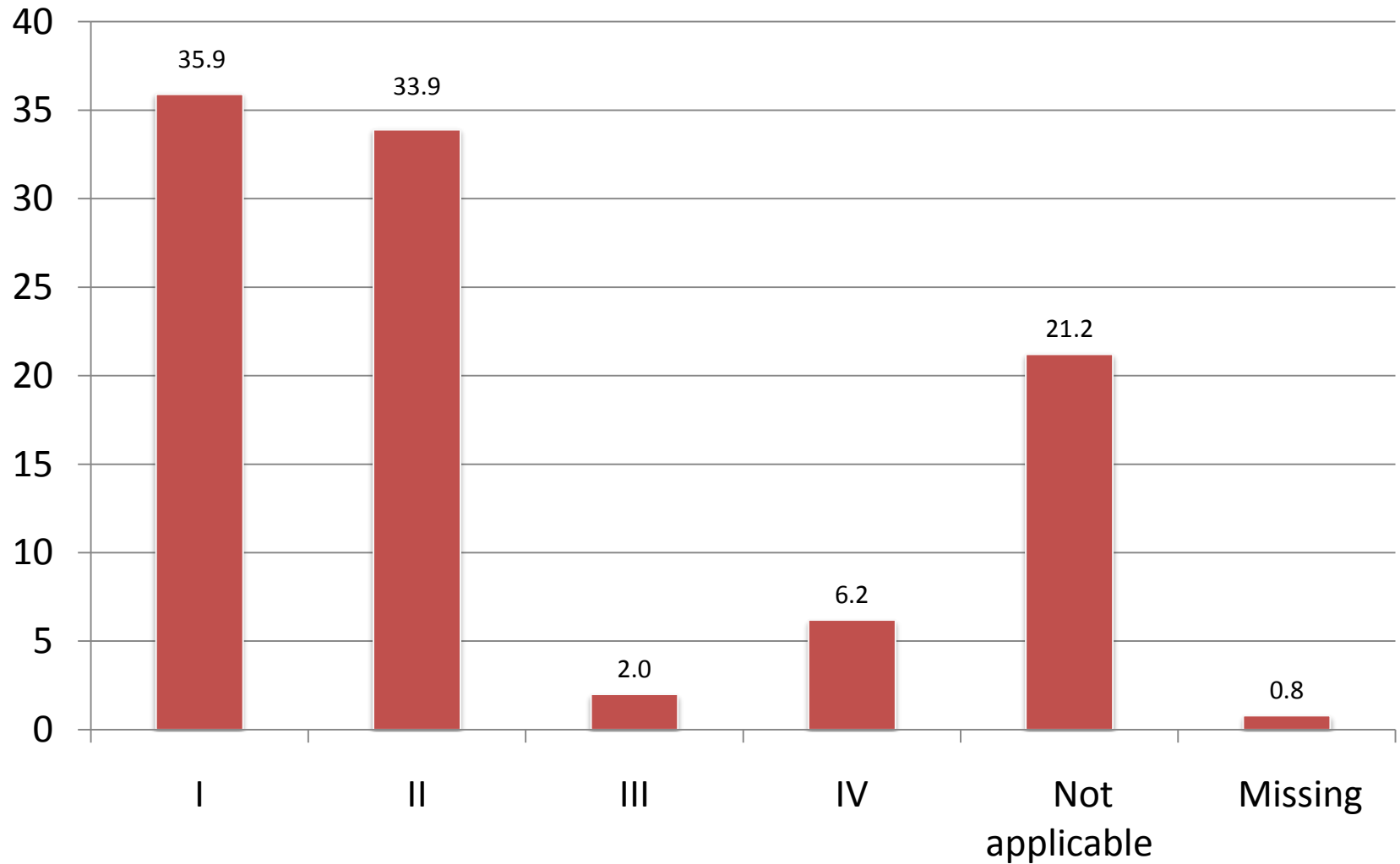
Glomerular filtration rate (GFR), MDRD, NCVD-PCI Registry, 2007-2012



Ejection Fraction (EF) Status, NCVD-PCI Registry, 2007-2012



Killip Classification Among STEMI patients, NCVD-PCI Registry, 2007-2012



Door to Balloon Time, NCVD-PCI Registry, 2007-2012

	2007	2008	2009	2010	2011	2012
N	88	93	141	113	84	147
Median, min	99.5	90.0	86.0	90.0	93.5	88.0

The median door to balloon time is 90 min

Clinical Presentation : Summary Points

- About 24% of the patients who underwent PCI had previous history of revascularization.
- The majority of patients who underwent PCI had normal eGFR, However, almost 10% had CKD stage 3-5.
- Only 35% of patient has echo examination prior to PCI. There is a low percentage of ischemic testing done prior to PCI of elective patients.
- About 40% of all cases had a history of ACS, and 59.6% of these were STEMI.
- The median door-to-balloon time for Primary PCI in STEMI was consistent at 90 minutes from the years 2007-2012, however symptom-to-door and transfer time remain high.

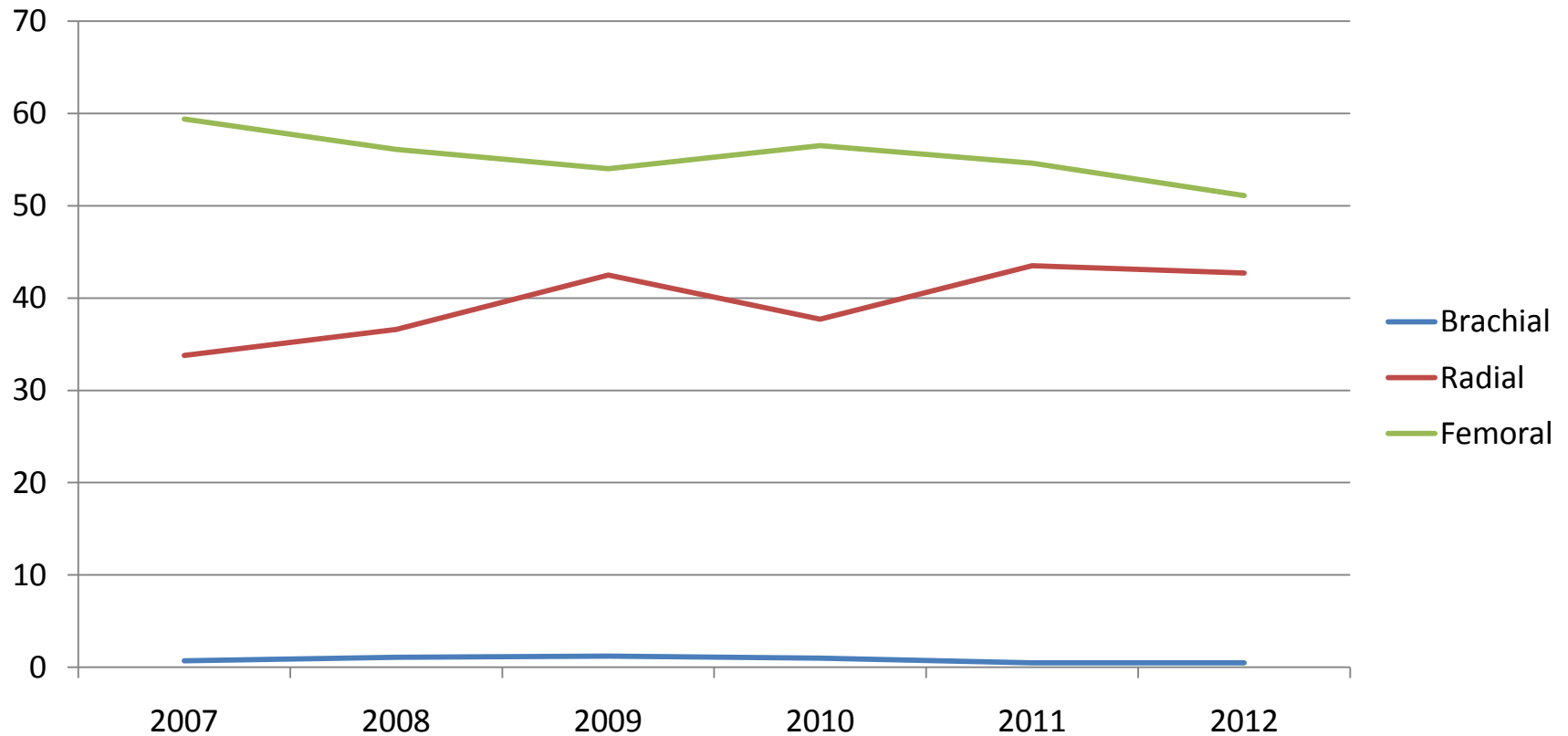
Procedural Details

- PCI Procedural Settings
- Lesion Characteristics
- Access Site
- Location and Lesion Type
- Stent Types
- Complications

PCI status by Year, NCVD-PCI Registry, 2007-2012

PCI status (%)	2007 (n=3939)	2008 (n=3657)	2009 (n=4025)	2010 (n=4462)	2011 (n=4887)	2012 (n=5513)
Elective	90.0	90.9	89.5	88.3	85.5	80.7
NSTEMI/UA	4.8	4.7	4.0	5.9	5.5	6.2
AMI	4.6	4.3	6.1	5.8	9.0	13.1
Primary PCI	2.7	2.2	3.2	2.6	2.3	3.9

# Percutaneous entry (%)	2007 (n=3939)	2008 (n=3657)	2009 (n=4025)	2010 (n=4462)	2011 (n=4887)	2012 (n=5513)
Brachial	0.7	1.1	1.2	1.0	0.5	0.5
Radial	33.8	36.6	42.5	37.7	43.5	42.7
Femoral	59.4	56.1	54.0	56.5	54.6	51.1



Patients are allowed to have more than one type of category

Extent of Coronary Disease

# Extent of coronary disease (%)	2007 (n=3939)	2008 (n=3657)	2009 (n=4025)	2010 (n=4462)	2011 (n=4887)	2012 (n=5513)
Single vessel disease	43.3	44.5	49.6	52.6	48.1	39.4
Multiple vessel disease	55.1	55.2	49.7	45.3	32.8	45.5
*Graft	1.0	1.3	1.1	1.5	0.5	1.3
*Left Main	0.9	0.8	0.4	0.7	0.3	0.8

** Graft and Left Main were under reported whenever PCI involves MVD.*

Patients are allowed to have more than one type of category

Adjunctive Pharmacotherapy Prior/During PCI

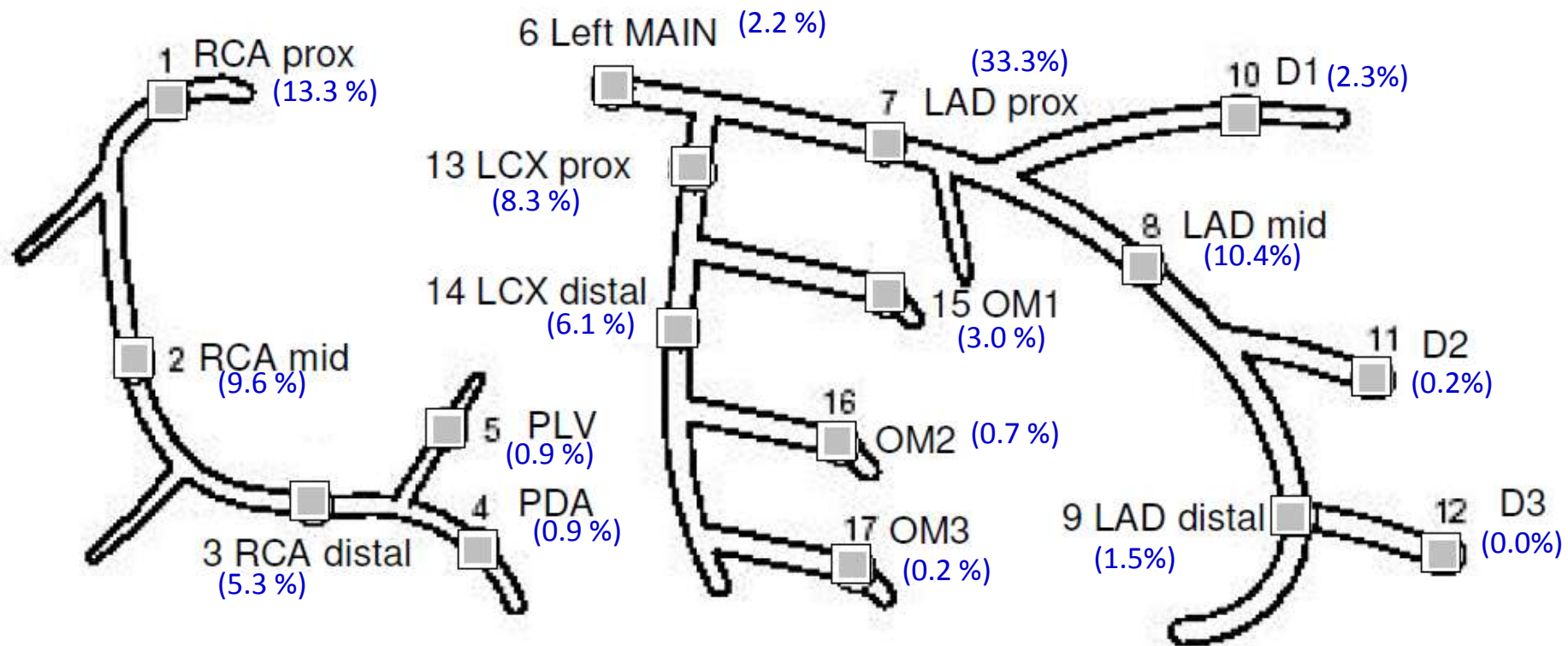


Medication (%)	2007 (n=3939)	2008 (n=3657)	2009 (n=4025)	2010 (n=4462)	2011 (n=4887)	2012 (n=5513)
Thrombolytics (in STEMI patients)	19.5 (n=662)	22.9 (n=693)	17.7 (n=1277)	15.1 (n=956)	22.2 (n=1157)	35.2 (n=968)
IIb/ IIIa Blockade	6.3	6.2	5.4	3.4	4.3	4.1
Heparin	89.6	89.4	96.2	98.6	97.4	97.4
LMWH	5.3	4.2	3.7	2.3	2.5	2.9
Ticlopidine	3.9	2.7	2.5	2.0	1.0	1.0
Aspirin	95.2	97.4	98.0	96.4	98.5	98.3
Clopidogrel	97.2	98.1	98.7	97.3	98.1	98.1
Fondaparinux	-	-	-	2.2	3.3	5.9

Procedure Settings : Summary Points

- Majority of PCI performed in Malaysia from 2007-2012 were performed as Elective case (87.3 %).
- Femoral access remains the most common percutaneous entry; however, radial approach is becoming more popular (37.7% from 2007-2009 to 46.9% from 2010-2012).
- 46.5 % of PCI were performed in multi-vessel disease and 46.1 % in single vessel disease.
- In 2009-2012, the overall usage of GP IIb/IIIa blocker has decline from 5.9% (n=691) to 3.9% (n=584) of patients

Location of Lesions Treated with PCI, NCVD-PCI Registry, 2007-2012

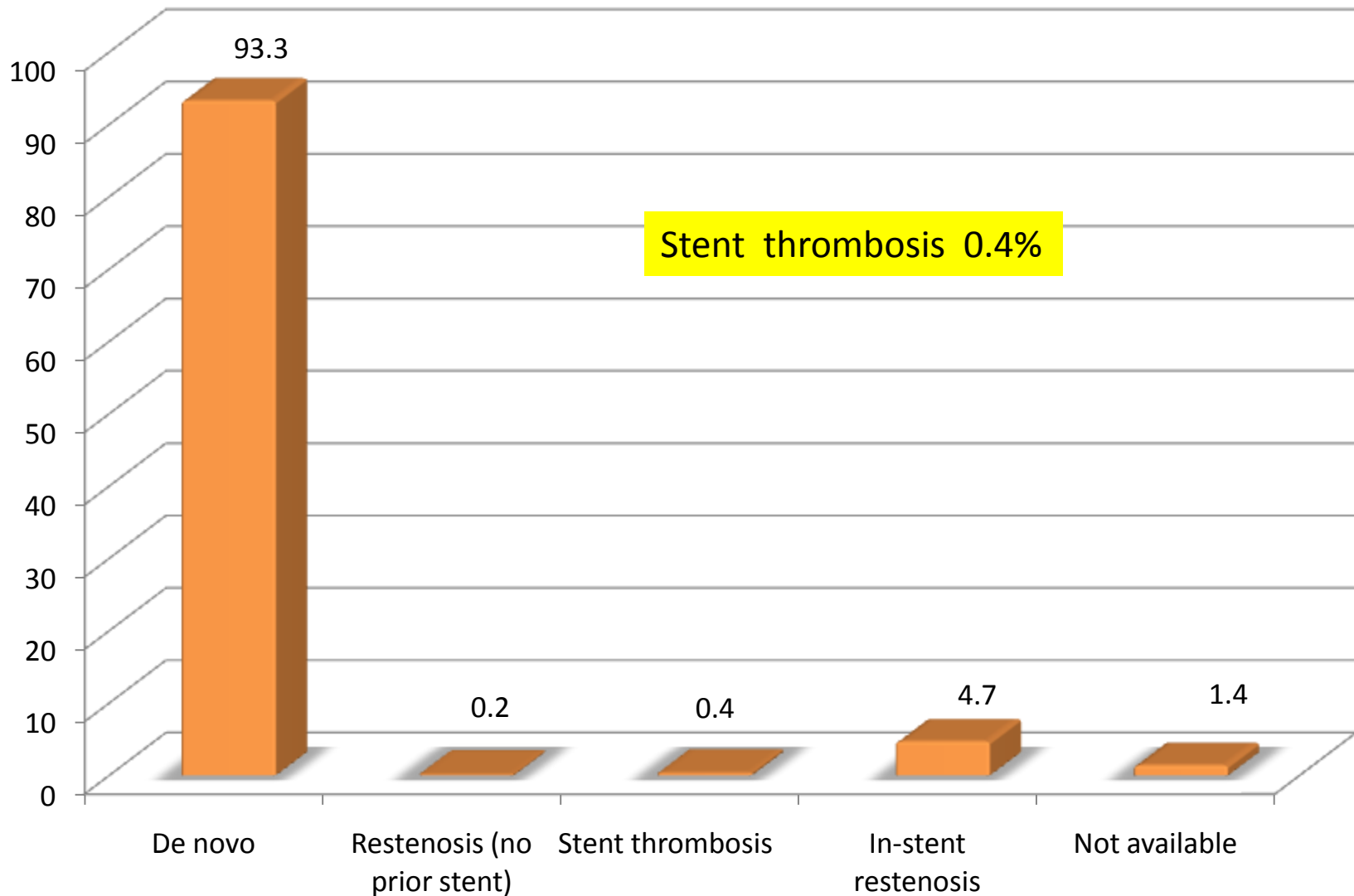


Graft: SVG (1.2%), LIMA (0.1%), RA & RIMA (<0.0)%

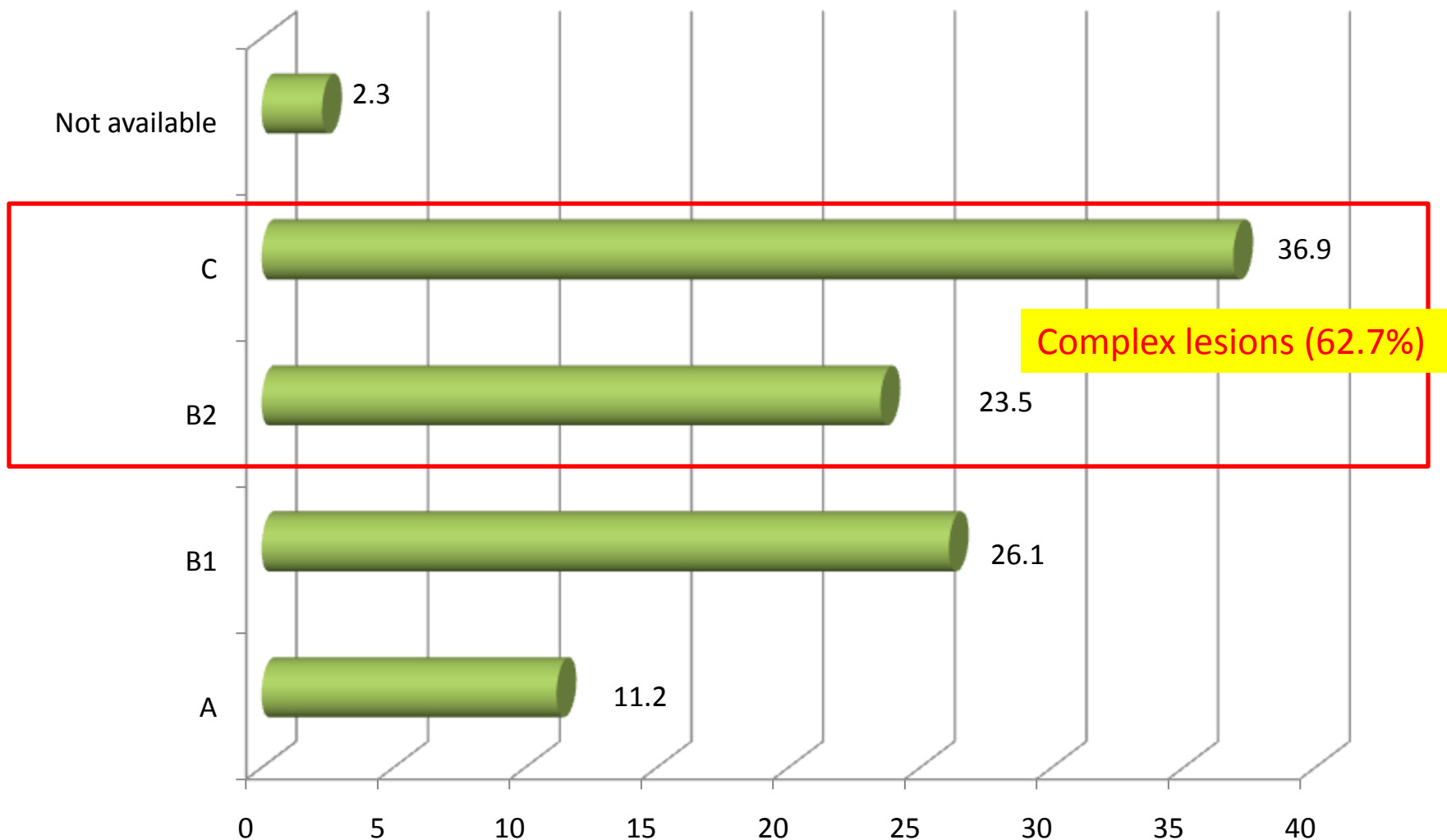
Summary of Location of Lesions Treated with PCI, NCVD-PCI Registry, 2007-2012

Location of lesion	2007 (n=5499)	2008 (n=5022)	2009 (n=5327)	2010 (n=6088)	2011 (n=5977)	2012 (n=6960)
LMS	1.8	1.9	1.8	2.5	2.5	2.4
LAD	48.1	47.9	47.6	47.4	48.0	47.2
RCA	30.2	28.5	30.1	29.6	30.2	31.2
LCx	18.1	18.5	18.4	18.9	17.9	17.9
Graft	1.1	1.7	1.1	1.6	1.3	1.3

Characteristics of Lesions Treated by PCI, NCVD-PCI Registry, 2007-2012



Prevalence of Lesions According to American College of Cardiology (ACC) Classifications, NCVD-PCI Registry, 2007-2012



Prevalence of High Risk Lesion Types, NCVD-PCI Registry, 2007-2012

* Types of lesions (%)	2007 -2012 (Total no. of lesions = 34,873)
Ostial	6.8
Bifurcation	9.4
Total occlusion	4.6
CTO>3mo	7.5
Thrombus	3.1

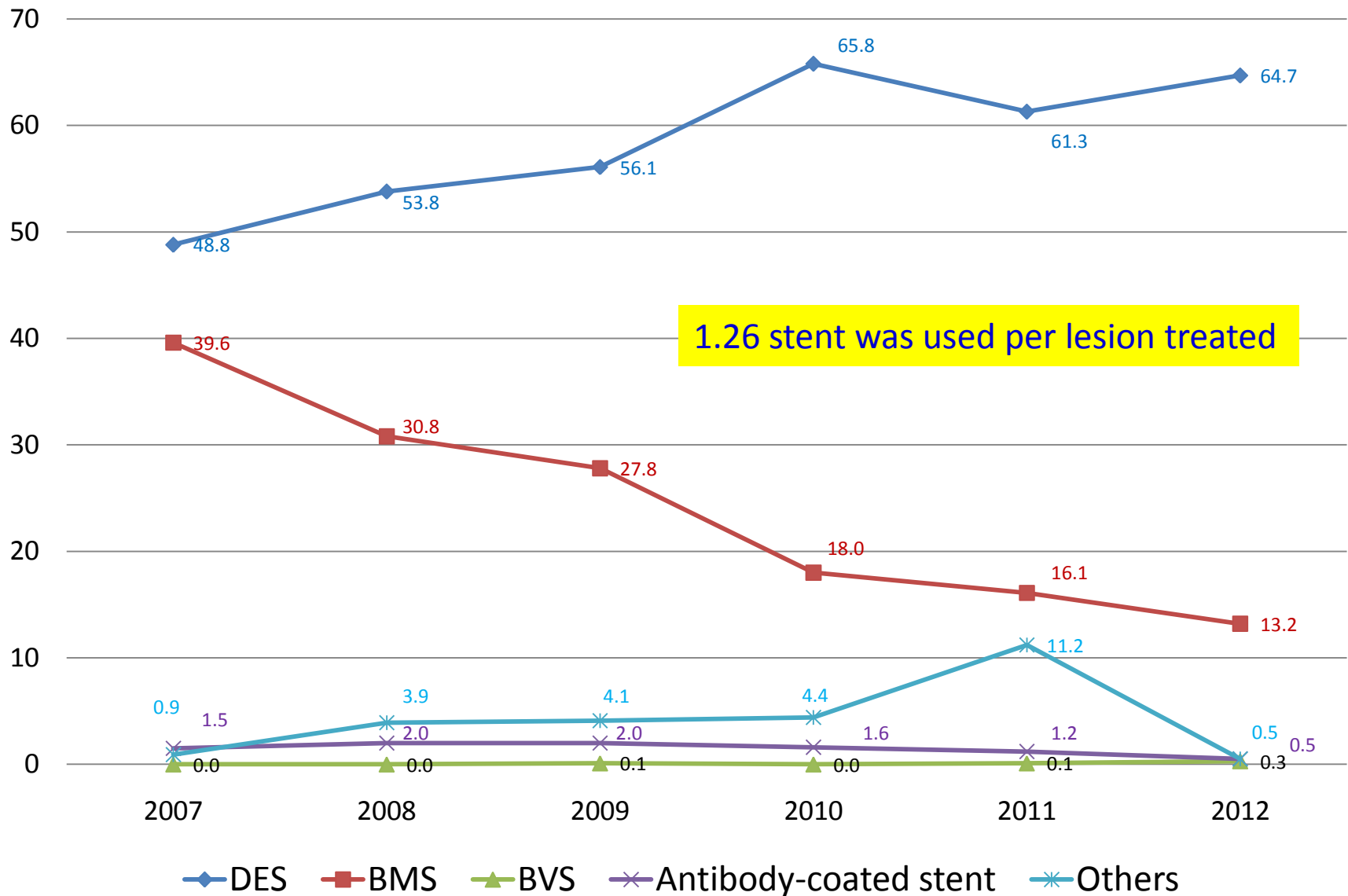
** Patients are allowed to have more than one type of category*

Stent Length and Diameter

	2007 (n=5499)	2008 (n=5022)	2009 (n=5327)	2010 (n=6088)	2011 (n=5977)	2012 (n=6960)
Estimated lesion length (mm) Mean (SD)	24.5 (15.2)	23.7 (14.4)	22.3 (12.7)	24.1 (14.7)	24.0 (14.3)	23.2 (13.9)
Stent length (mm) Mean (SD)	30.4 (17.6)	29.2 (16.6)	28.8 (16.6)	30.0 (17.0)	29.7 (16.9)	28.3 (15.5)
Stent diameter (mm) Mean (SD)	3.0 (0.4)	3.0 (0.4)	3.0 (0.5)	3.0 (0.4)	3.0 (0.4)	3.0 (0.4)
Maximum balloon size used, mm Mean (SD)	3.1 (0.6)	3.1 (0.6)	3.1 (0.6)	3.1 (0.6)	3.1 (0.6)	3.1 (0.5)
Maximum stent/balloon deploy pressure (atm) Mean (SD)	15.7 (3.7)	15.8 (3.9)	15.4 (4.0)	15.7 (4.0)	15.9 (4.2)	15.7 (4.1)

Lesion length relatively long
Mean stent length almost 30 mm

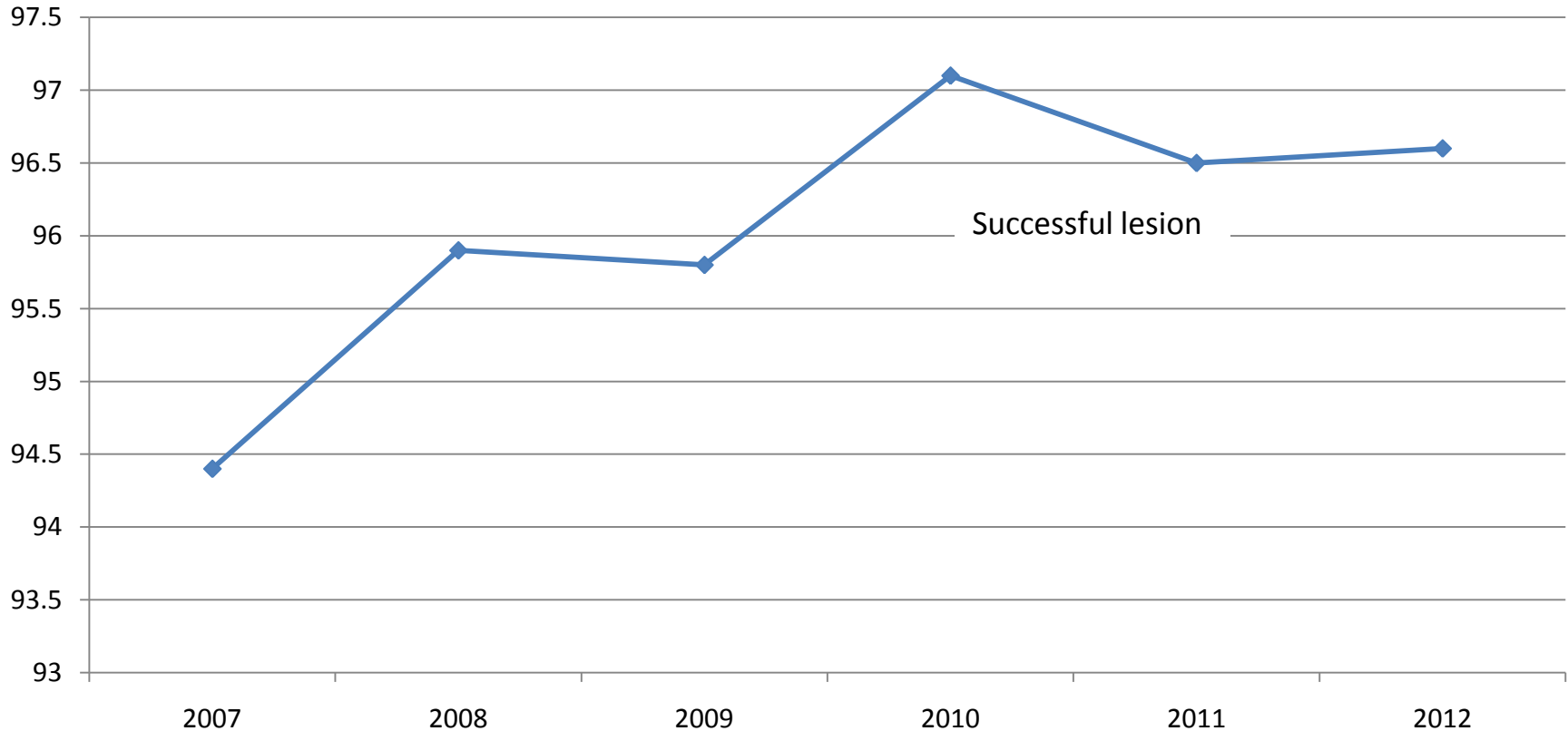
Types of Stents Used, NCVD-PCI Registry, 2007-2012



Others = New stents available in the market but not listed in the database

Procedure Success

	2007 (n=5499)	2008 (n=5022)	2009 (n=5327)	2010 (n=6088)	2011 (n=5977)	2012 (n=6960)
Lesion result (%)						
Successful	94.4	95.9	95.8	97.1	96.5	96.6
Unsuccessful	3.8	2.5	3.1	2.8	3.4	3.2





Intracoronary Devices Used

Intracoronary Devices (%)	2007 (n=5499)	2008 (n=5022)	2009 (n=5327)	2010 (n=6088)	2011 (n=5977)	2012 (n=6960)
Aspiration	-	-	-	2.0	2.9	3.2
Balloon only	8.1	7.8	8.3	7.8	6.1	5.3
Drug Eluting Balloon	0.8	3.6	4.7	5.8	5.9	7.0
Cutting Balloon	2.0	2.4	1.9	2.0	1.7	1.3
IVUS	2.5	4.7	4.4	3.9	3.2	3.1
Flowire	-	0.0	0.0	0.3	0.4	0.4
Rotablator	0.7	1.0	0.9	1.1	0.9	0.8
Drug Eluting Stent (DES)	43.6	50.4	53.4	64.6	63.6	69.9
Bare Metal Stent (BMS)	42.7	36.3	32.7	20.9	21.8	17.6
Distal Embolic Protection	0.2	0.7	0.3	0.2	0.4	0.6

Patients are allowed to have more than one type of category

- DEB is gaining popular
- IVUS use is low (3.6%)

Lesion Characteristics : Summary Points

- Both in stent restenosis (ISR) and stent thrombosis were uncommon; **ISR constituted 4.7%** of all lesions treated. The incidence of **stent thrombosis was only 0.4%**.
- **Most(62.7%) of the lesions treated were type B2 or type C.**
31.4% of the lesions had high risk characteristics.
- There was a trend of increasing use of drug eluting stents (DES). In this registry, **DES comprised 64.0% of all stents.**
- A high procedural success rate was observed (96.1%).

Lesion Characteristics : Specific Lesion

- Among all patients with **ISR**, 44.9% of the lesions were in DES, followed by 35.8% in BMS.
- An increase in number of **LMS interventions** (749 lesions) were noted. Usage of IVUS and IABP were less common in LMS interventions.
- There is an **increasing trend of graft PCI** in the recent years and majority were on SVG.
- Large majority of **CTO lesions** were de-novo lesions, and they were treated more often with femoral approach and 6 French size sheath. DES usage was higher in CTO lesions. **Overall success rate was 80.2%.**

Outcome

- The overall in-hospital, all-cause mortality
- post procedural complications
- follow-up (30-days, 6 months and 1-year)

* In order to evaluate the status of alive or deceased, individual patients were matched against the status provided by the **Malaysian National Registration Department (NRD)**. Patients were considered as alive at the time of follow-up if the death date was not provided in the NRD dataset.



Target Vessel Complications

Type of complication (%)	2007 (n=5499)	2008 (n=5022)	2009 (n=5327)	2010 (n=6088)	2011 (n=5977)	2012 (n=6960)
Acute closure	0.4	0.3	0.3	0.3	0.2	0.1
Dissection post-procedure	4.0	4.2	4.8	3.9	1.5	1.2
Perforation	0.3	0.3	0.4	0.4	0.2	0.1
Persistent no reflow	0.4	0.2	0.3	0.2	0.2	0.2
Transient no reflow	0.9	0.8	0.8	0.8	0.6	0.8



Procedural Complications

Complication (%)	2007 (n=3939)	2008 (n=3657)	2009 (n=4025)	2010 (n=4462)	2011 (n=4887)	2012 (n=5513)
Periprocedural MI	0.5	0.3	0.5	0.2	0.7	0.3
Emergency Re-intervention	0.4	0.1	0.2	0.2	0.4	0.3
Bail-out CABG	0.0	0.1	0.1	0	0.0	0
Cardiogenic shock (post procedure)	0.5	0.7	0.5	0.2	0.3	0.4
Arrhythmia (VT/VF/Brady)	0.5	0.8	0.4	0.4	0.4	0.8
TIA/ Stroke	0.1	0.1	0.0	0	0.0	0.1
Tamponade	0.1	0	0.0	0	0.0	0.1
Contrast reaction	0.1	0.1	0.0	0.0	0.0	0.1
New renal impairment	0.2	0.2	0.1	0.0	0.3	0.3
New onset/worsened heart failure	0.2	0.0	0.1	0.0	0	0.1

Vascular Complications

Vascular Complication (%)	2007 (n=3939)	2008 (n=3657)	2009 (n=4025)	2010 (n=4462)	2011 (n=4887)	2012 (n=5513)
Bleeding	0.9	0.8	0.3	0.3	0.3	0.5
Access site occlusion	0	0.2	0.1	0	0.0	0
Loss distal pulse	0	0.1	0	0	0	0
Dissection	0.2	0.4	0.1	0.0	0.1	0.0
Pseudoaneurysm	0.1	0.1	0.0	0.0	0.0	0.1

Outcome of Patients Who Underwent PCI, NCVD-PCI Registry, 2007-2012

Year	*Outcome	Overall outcome							
		Outcome at discharge		**30-day		6-month		1-year	
		No.	%	No.	%	No.	%	No.	%
2007-2009 Total no. of patients = 10709	Death	123	1.1	186	1.7	294	2.7	409	3.8
	Alive	10586	98.9	10523	98.3	10415	97.3	10300	96.2
	Total	10709	100	10709	100	10709	100	10709	100
2010 Total no. of patients = 4157	Death	48	1.2	78	1.9	151	3.6	237	5.7
	Alive	4109	98.8	4079	98.1	4006	96.4	3920	94.3
	Total	4157	100	4157	100	4157	100	4157	100
2011 Total no. of patients = 4487	Death	90	2.0	111	2.5	138	3.1	162	3.6
	Alive	4397	98.0	4376	97.5	4349	96.9	4325	96.4
	Total	4487	100	4487	100	4487	100	4487	100
2012 Total no. of patients = 5106	Death	110	2.2	124	2.4	132	2.6	140	2.7
	Alive	4996	97.8	4982	97.6	4974	97.4	4966	97.3
	Total	5106	100	5106	100	5106	100	5106	100
2010-2012 Total no. of patients = 13750	Death	248	1.8	313	2.3	421	3.1	539	3.9
	Alive	13502	98.2	13437	97.7	13329	96.9	13211	96.1
	Total	13750	100	13750	100	13750	100	13750	100
2007-2012 Total no. of patients = 24459	Death	371	1.5	499	2.0	715	2.9	948	3.9
	Alive	24088	98.5	23960	98.0	23744	97.1	23511	96.1
	Total	24459	100	24459	100	24459	100	24459	100

*The outcome data has been derived based on data matching with National Death Register data

** Including patients who died in hospital

Outcome for Patients Who Underwent PCI, by Age Group (Years), NCVD-PCI Registry, 2007-2012

Year	*Outcome	Outcome at discharge						**30-day					
		Young		Middle-aged		Elderly		Young		Middle-aged		Elderly	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2007-2009 Total no. of patients = 10709	Death	2	0.4	45	0.7	76	1.8	7	1.6	63	1.0	116	2.7
	Alive	448	99.6	5970	99.3	4168	98.2	443	98.4	5952	99.0	4128	97.3
	Total	450	100	6015	100	4244	100	450	100	6015	100	4244	100
2010-2012 Total no. of patients = 13750	Death	3	0.5	103	1.4	142	2.5	3	0.5	133	1.8	177	3.1
	Alive	589	99.5	7310	98.6	5603	97.5	589	99.5	7280	98.2	5568	96.9
	Total	592	100	7413	100	5745	100	592	100	7413	100	5745	100
2007-2012 Total no. of patients = 24459	Death	5	0.5	148	1.1	218	2.2	10	1.0	196	1.5	293	2.9
	Alive	1037	99.5	13280	98.9	9771	97.8	1032	99.0	13232	98.5	9696	97.1
	Total	1042	100	13428	100	9989	100	1042	100	13428	100	9989	100

*The outcome data has been derived based on data matching with National Death Register data

** Including patients who died in hospital

Outcome of Patients Who Underwent PCI, by Gender, NCVD-PCI Registry, 2007-2012

Year	*Outcome	Outcome at discharge				**30-day			
		Male		Female		Male		Female	
		No.	%	No.	%	No.	%	No.	%
2007-2009 Total no. of patients = 10709	Death	87	1.0	36	1.8	128	1.5	58	2.9
	Alive	8644	99.0	1942	98.2	8603	98.5	1920	97.1
	Total	8731	100	1978	100	8731	100	1978	100
2010-2012 Total no. of patients = 13750	Death	194	1.7	54	2.2	242	2.1	71	2.9
	Alive	11148	98.3	2354	97.8	11100	97.9	2337	97.1
	Total	11342	100	2408	100	11342	100	2408	100
2007-2012 Total no. of patients = 24459	Death	281	1.4	90	2.1	370	1.8	129	2.9
	Alive	19792	98.6	4296	97.9	19703	98.2	4257	97.1
	Total	20073	100	4386	100	20073	100	4386	100

*The outcome data has been derived based on data matching with National Death Register data

** Including patients who died in hospital

Outcome of Patients Who Underwent PCI, by Pre-morbid Diabetes, NCVD-PCI Registry, 2007-2012

Year	*Outcome	Outcome at discharge						**30-day					
		Diabetic		Non-diabetic		Not known		Diabetic		Non-diabetic		Not known	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2007-2009 Total no. of patients = 10709	Death	76	1.5	38	0.7	8	3.8	115	2.3	60	1.1	10	4.8
	Alive	4862	98.5	5502	99.3	201	96.2	4823	97.7	5480	98.9	199	95.2
	Total	4938	100	5540	100	209	100	4938	100	5540	100	209	100
2010-2012 Total no. of patients = 13750	Death	113	1.8	91	1.3	44	10.8	153	2.5	115	1.6	45	11.1
	Alive	6119	98.2	7020	98.7	363	89.2	6079	97.5	6996	98.4	362	88.9
	Total	6232	100	7111	100	407	100	6232	100	7111	100	407	100
2007-2012 Total no. of patients = 24459	Death	189	1.7	129	1.0	52	8.4	268	2.4	175	1.4	55	8.9
	Alive	10981	98.3	12522	99.0	564	91.6	10902	97.6	12476	98.6	561	91.1
	Total	11170	100	12651	100	616	100	11170	100	12651	100	616	100

*The outcome data has been derived based on data matching with National Death Register data

** Including patients who died in hospital

Outcome of Patients Who Underwent PCI, by Acute Coronary Syndrome, NCVD-PCI Registry, 2007-2012

Year	*Outcome	Outcome at discharge						**30-day					
		STEMI		NSTEMI		UA		STEMI		NSTEMI		UA	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2007-2009 Total no. of ACS patients = 4629	Death	75	3.2	21	1.2	4	0.9	92	3.9	34	1.9	5	1.1
	Alive	2304	96.8	1739	98.8	451	99.1	2287	96.1	1726	98.1	450	98.9
	Total	2379	100	1760	100	455	100	2379	100	1760	100	455	100
2010-2012 Total no. of ACS patients = 4787	Death	168	5.9	28	2.2	8	1.3	185	6.5	36	2.8	11	1.9
	Alive	2700	94.1	1250	97.8	585	98.7	2683	93.5	1242	97.2	582	98.1
	Total	2868	100	1278	100	593	100	2868	100	1278	100	593	100
2007-2012 Total no. of ACS patients = 9416	Death	243	4.6	49	1.6	12	1.1	277	5.3	70	2.3	16	1.5
	Alive	5004	95.4	2989	98.4	1036	98.9	4970	94.7	2968	97.7	1032	98.5
	Total	5247	100	3038	100	1048	100	5247	100	3038	100	1048	100

*The outcome data has been derived based on data matching with National Death Register data

** Including patients who died in hospital

Outcome at Discharge of Patients Who Developed Cardiogenic Shock Peri-procedure, NCVD-PCI Registry, 2007-2012

Year	*Outcome	Cardiogenic shock peri-procedure			
		Yes		No	
		No.	%	No.	%
2007-2009 Total no. of patients = 10709	Death	40	64.5	82	0.8
	Alive	22	35.5	10487	99.2
	Total	62	100	10569	100
2010-2012 Total no. of patients = 13750	Death	35	76.1	213	1.6
	Alive	11	23.9	13480	98.4
	Total	46	100	13693	100
2007-2012 Total no. of patients = 24459	Death	75	69.4	295	1.2
	Alive	33	30.6	23967	98.8
	Total	108	100	24262	100

**The outcome data has been derived based on data matching with National Death Register data*

Prognostic Factors for In-hospital Mortality among Patients Who Underwent PCI, NCVD-PCI Registry, 2007-2012 (Multivariable Analysis)

Factor	2007 – 2012 Total no. of patients = 23,843				
	N	Hazard Ratio	95% CI		*p-value
PCI status					
Elective (ref)	20801	1.00			
NSTEMI/UA	1227	2.13	0.88	5.18	0.096
AMI	1780	3.98	2.02	7.85	<0.001
Killip class					
I (ref)	6234	1.00			
II	2936	2.36	1.13	4.93	0.022
III	200	2.41	0.87	6.67	0.090
IV	393	3.63	1.58	8.32	0.002
Left ventricular ejection fraction					
<30	386	2.77	1.11	6.93	0.029
30-50	3549	1.37	0.61	3.09	0.448
>50 (ref)	4649	1.00			

*using Cox regression with backward stepwise variable selection

** "No" category in these variables included "Not known" category

Continues...

Factor	2007 – 2012 Total no. of patients = 23,843				
	N	Hazard Ratio	95% CI		*p-value
**Hypertension					
No (ref)	6383	1.00			
Yes	17443	0.59	0.35	0.99	0.047
NYHA dyspnoea ≥3 or congestive heart failure					
No (ref)	22265	1.00			
Yes	1557	2.01	1.18	3.43	0.010
IABP					
No (ref)	22902	1.00			
Yes	604	2.53	1.27	5.05	0.009
Serum creatinine >200µmol/L					
No (ref)	20590	1.00			
Yes	1116	1.88	1.06	3.34	0.032
Cardiogenic shock					
No (ref)	23683	1.00			
Yes	105	4.80	2.40	9.63	<0.001

*using Cox regression with backward stepwise variable selection

** "No" category in these variables included "Not known" category

Summary

- The overall mortality rate for PCI is comparable to other registries.
- There were low Incidences of periprocedural complications
- Mortality prognosticators were similar ie
 - Increasing Age,
 - Clinical Presentation & Status of PCI
 - Diabetics
 - Female
 - Hypertensive

2013 Asian Pacific Congress of Cardiology
Pattaya, Thailand

ASia Pacific Evaluation of Cardiovascular Therapies Collaboration (ASPECT)

Prof Christopher Reid on behalf of the ASPECT Collaboration
Director, CCRE Therapeutics
School of Public Health & Preventive Medicine
Monash University

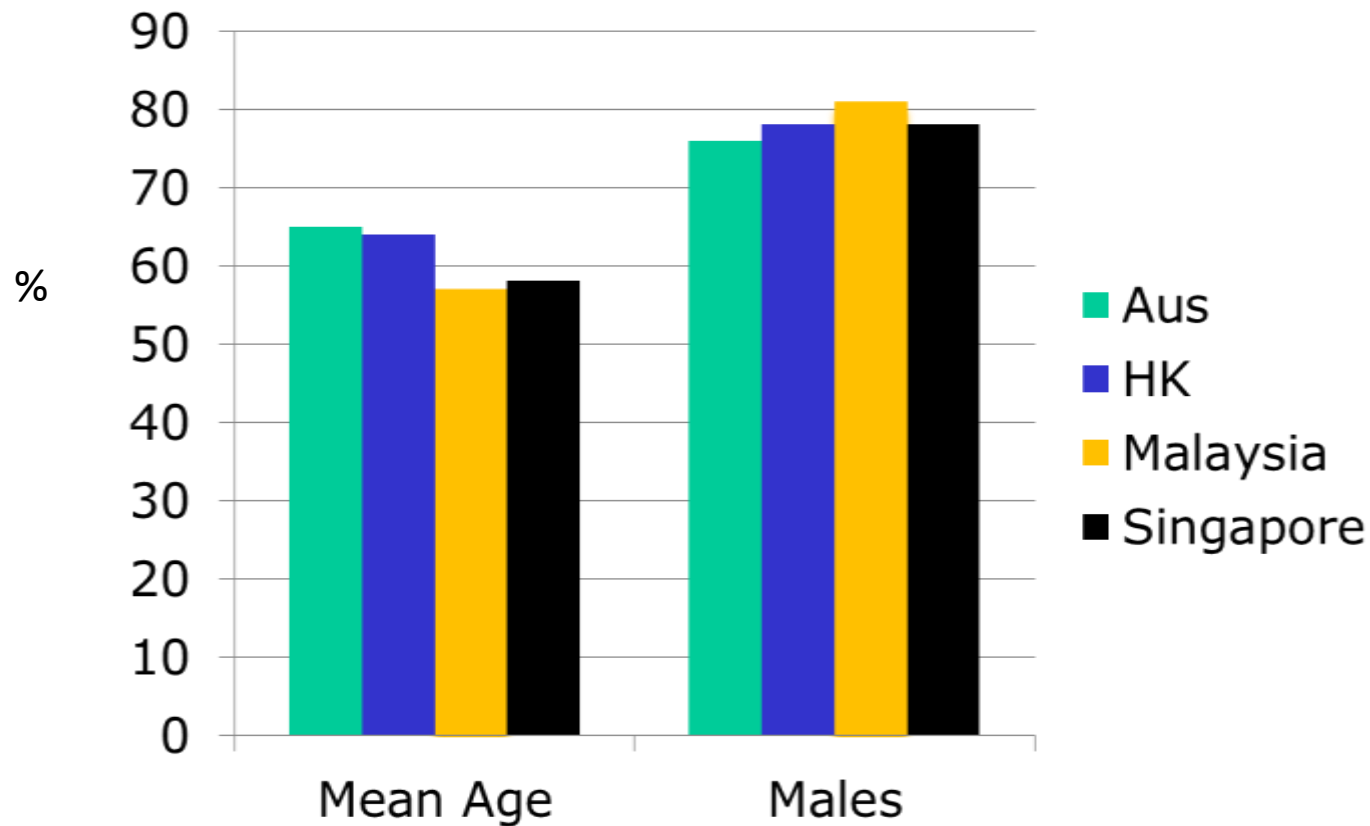


International Journal of Cardiology 14 Dec 2013

Participating Sites

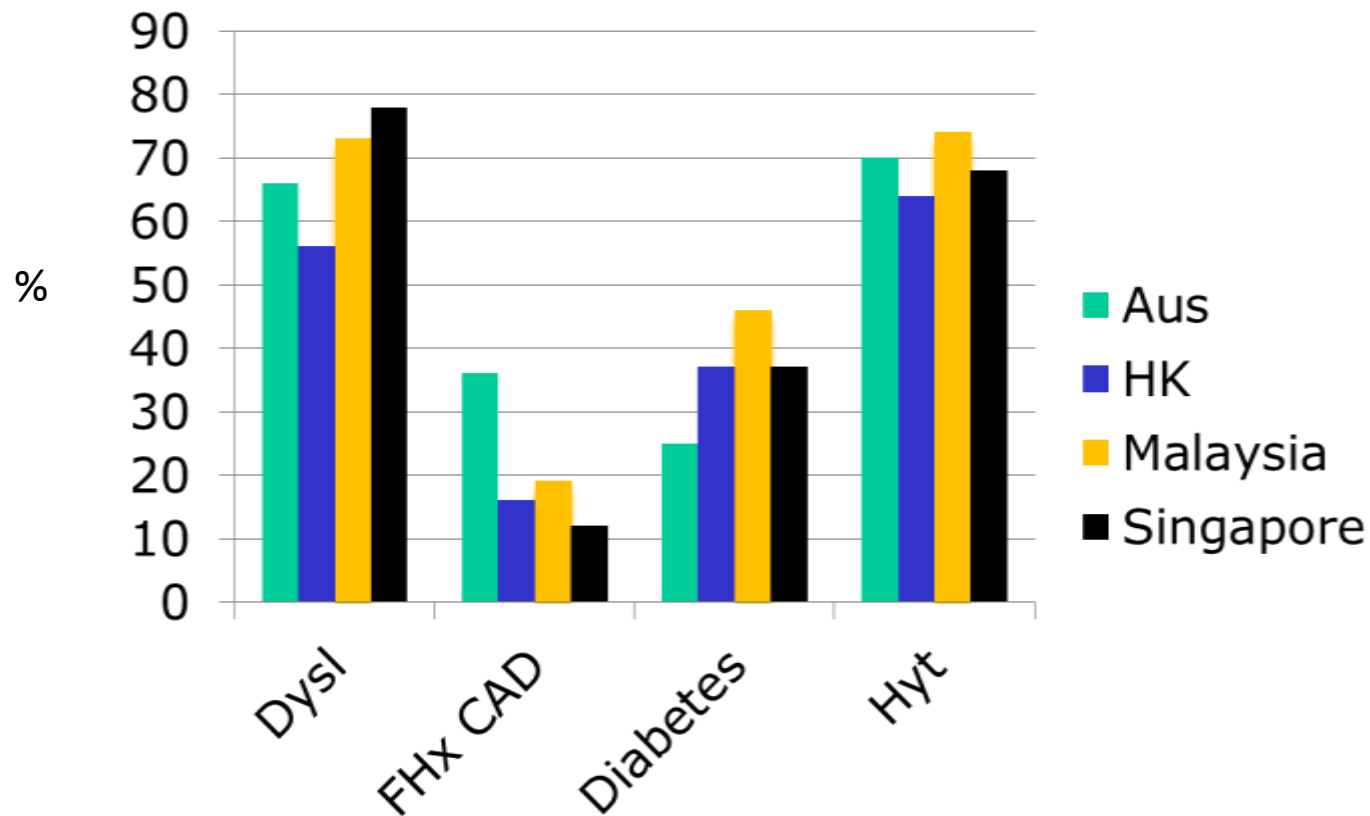
<u>Country</u>	<u>Sites</u>	<u>Established</u>	<u>Cases</u>
Australia	8	2004	19,555
Hong Kong	1	2009	2,500
Malaysia	14	2007	25,472
Singapore	6	2000	7,884

Patient Demographics



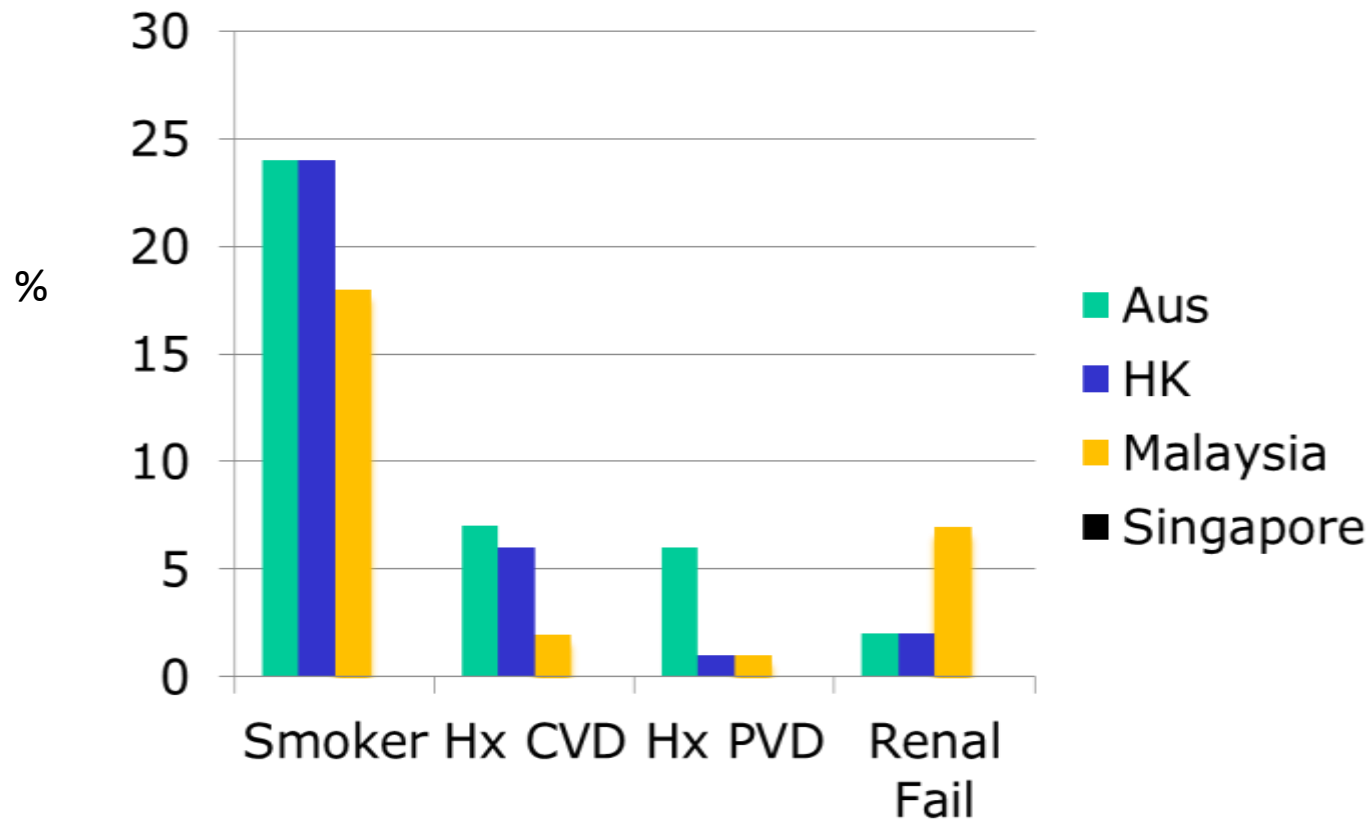
Malaysian patients are younger and have more male preponderance

Patient Demographics



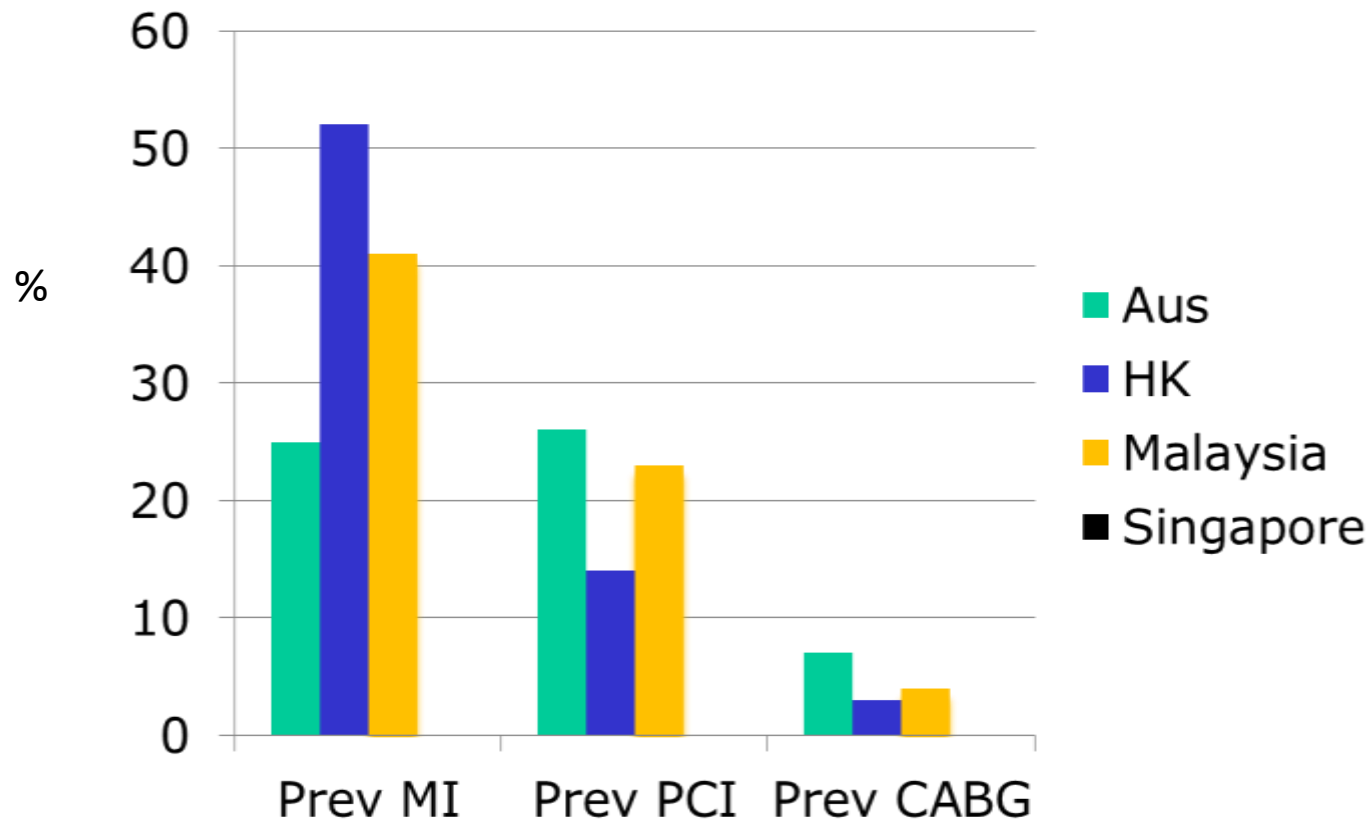
Malaysian patients have more diabetes and hypertension

Patient Demographics



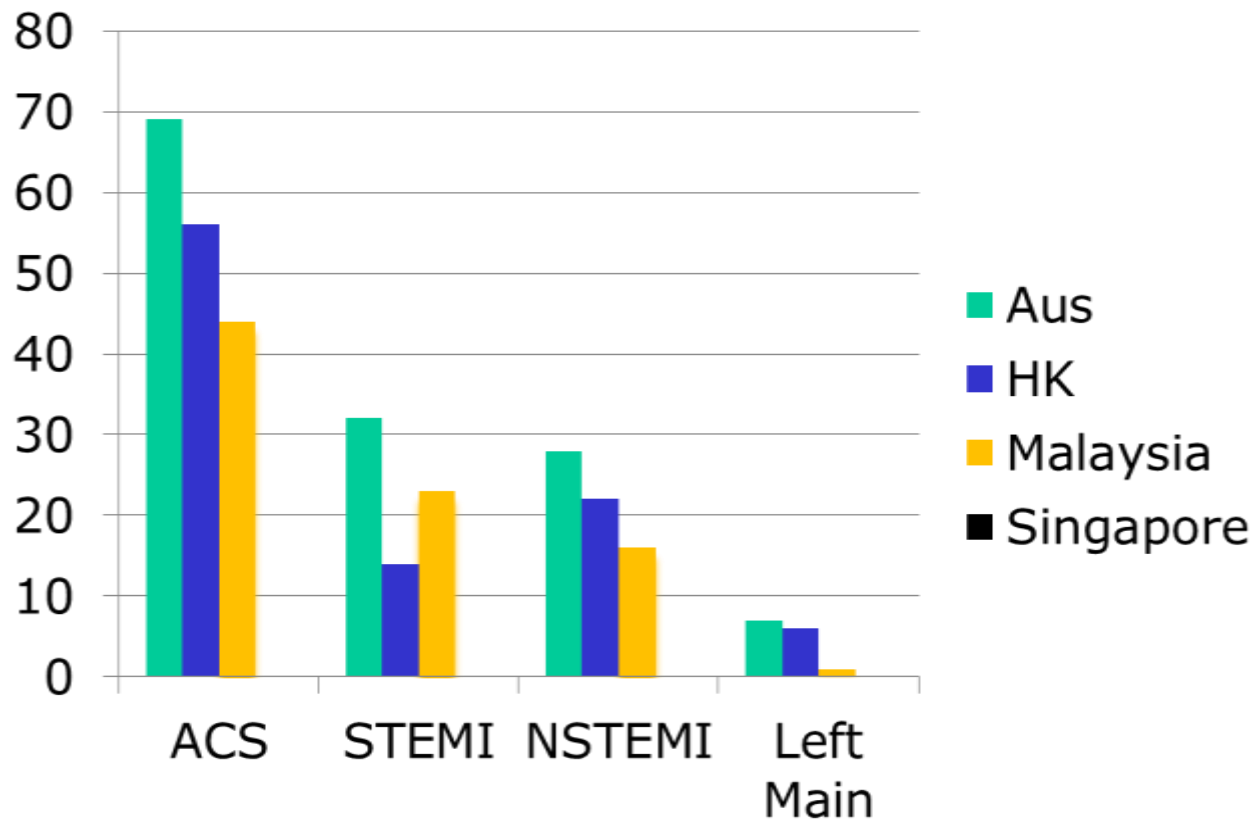
Malaysian patients have more renal disease

Patient Demographics



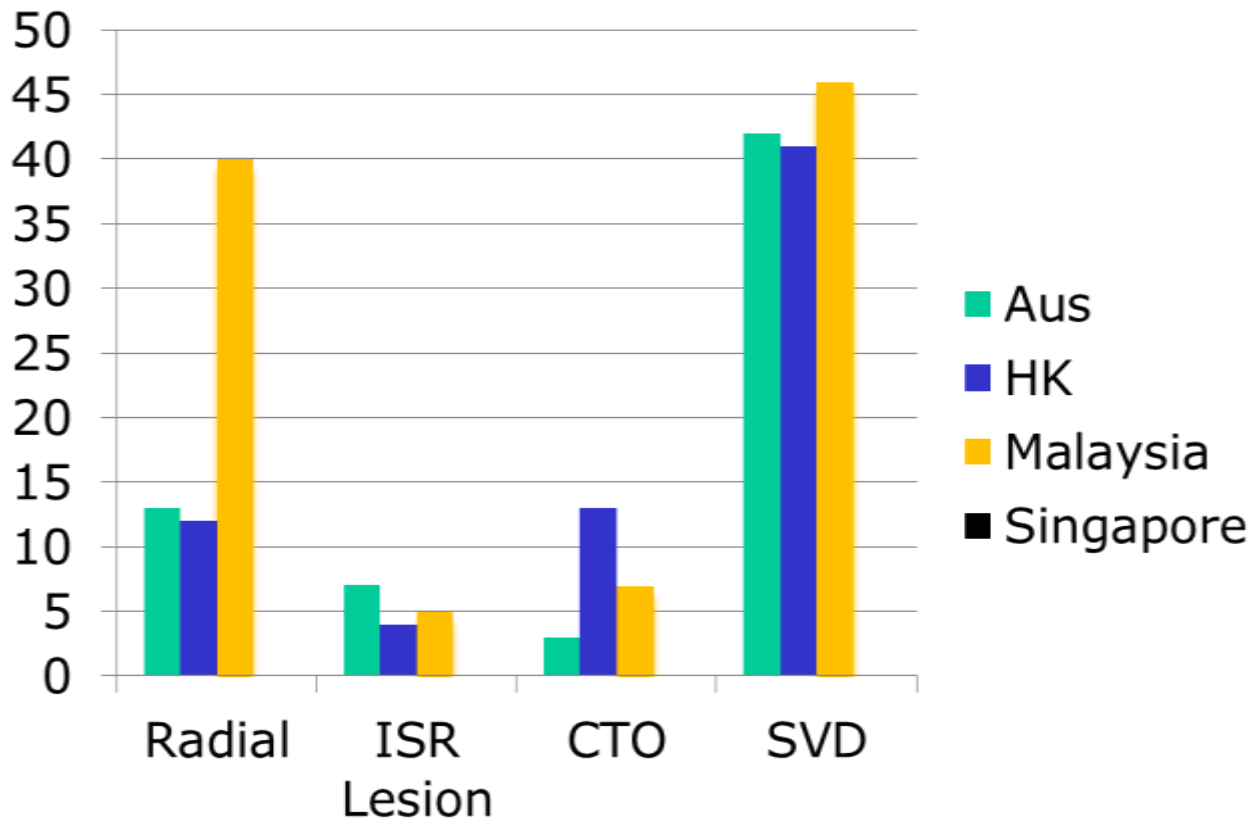
Malaysian patients have more past history of MI compared to Australia

Patient Presentation at PCI



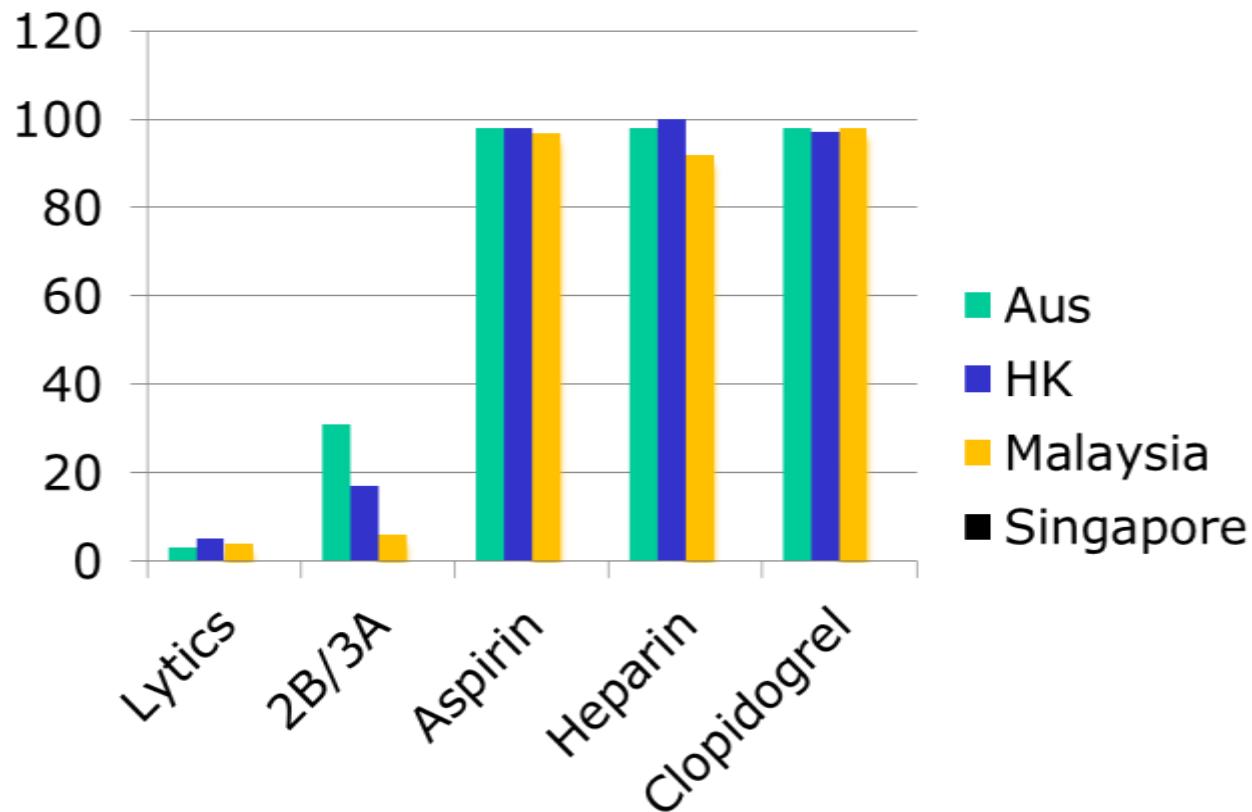
Malaysian patients have lower presentation of ACS at PCI

Procedural Details



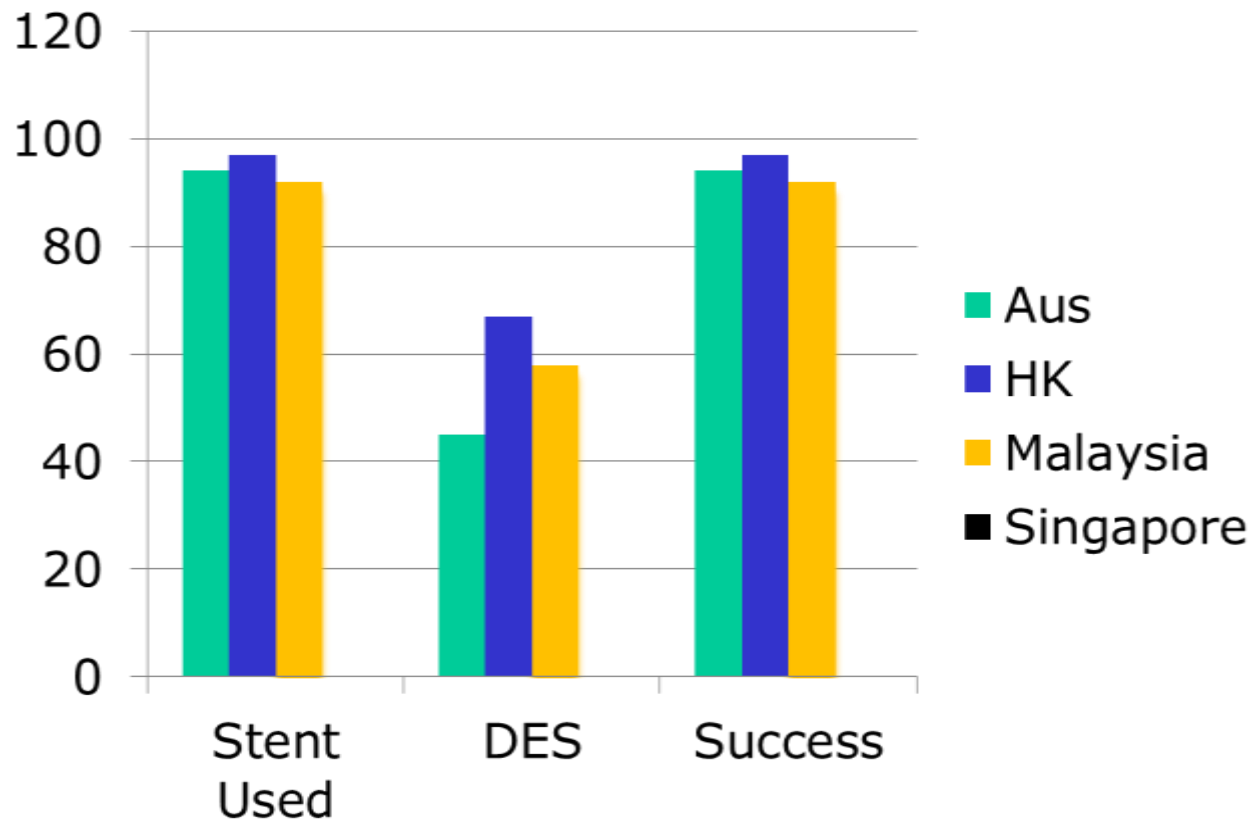
Radial approach is more popular among Malaysian patients

Drug Use



Malaysian patients have lower usage of 2B/3A inhibitors

Procedural Outcomes



Procedural outcomes in Malaysian patients are equivalent

ASPECT Collaboration

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Ms Angela Brennan, Prof Chris Reid

Hong Kong: A/Prof Bryan Yan

Malaysia: Dr Liew Hounq Bang, Dr Wan Azman Wan Ahmad,
Dr Alan Fong, Dr Sim Kui Hian

Singapore: A/Prof Terrance Chua, Dr KK Yeo, Dr Chin Chee Tang,
Dr Gerard Leong



Thank You

*National Cardiovascular Disease Database (NCVD)
Percutaneous Coronary Intervention (PCI) Registry, MALAYSIA
c/o National Heart Association of Malaysia*