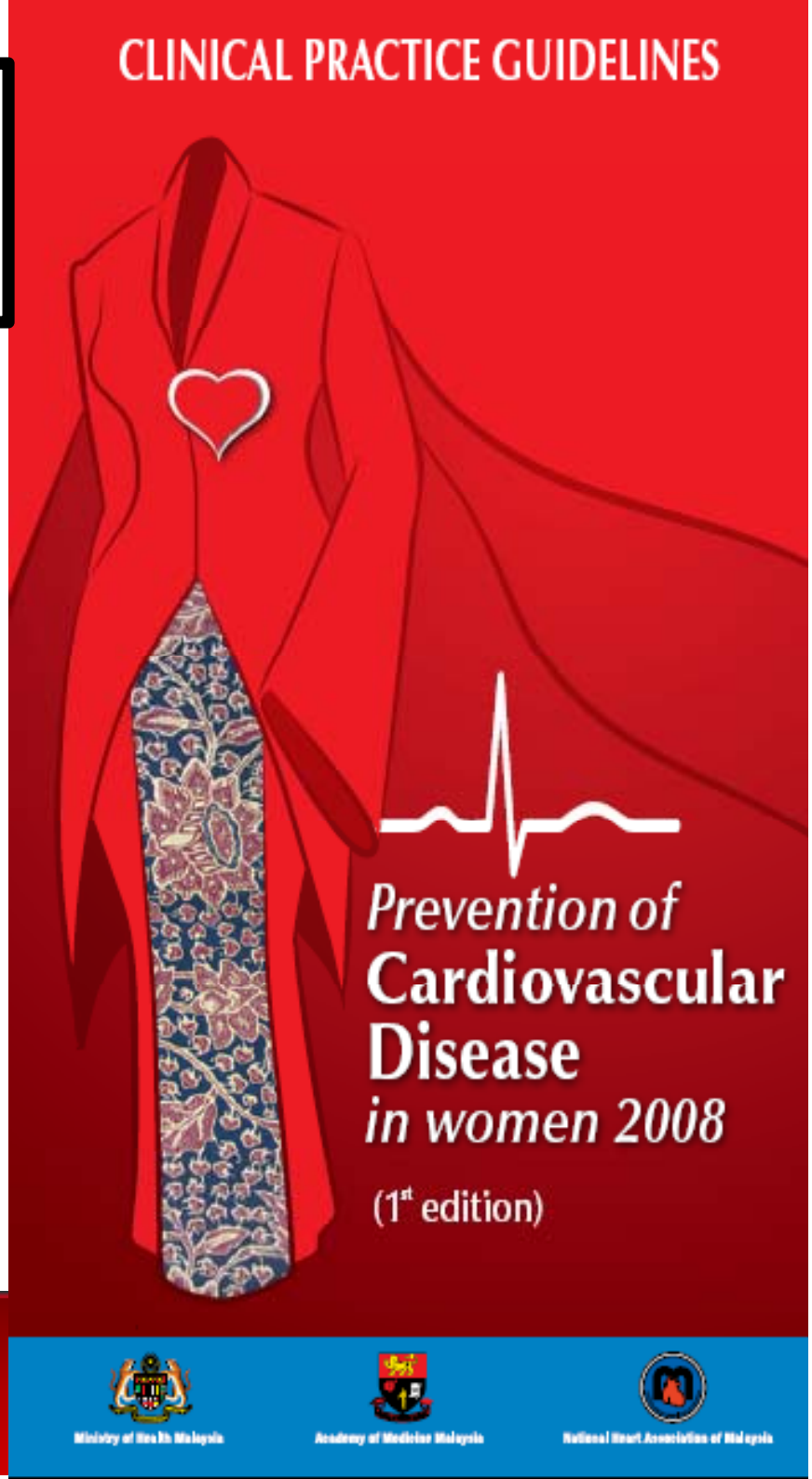
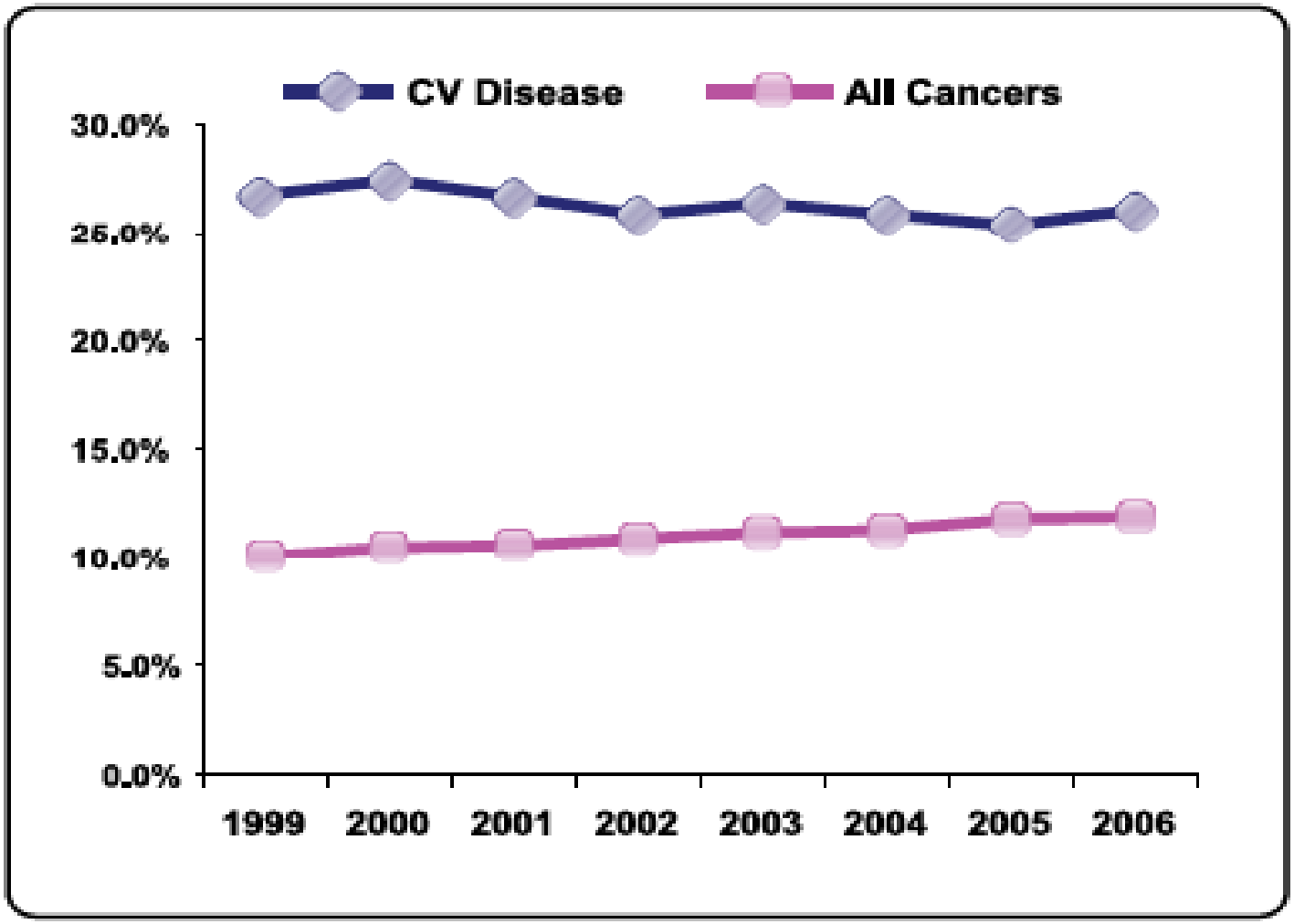
PCI in Women: Specific Issues Faced

For TCTAP 2013

Women's Heart Health Organization
WH²O



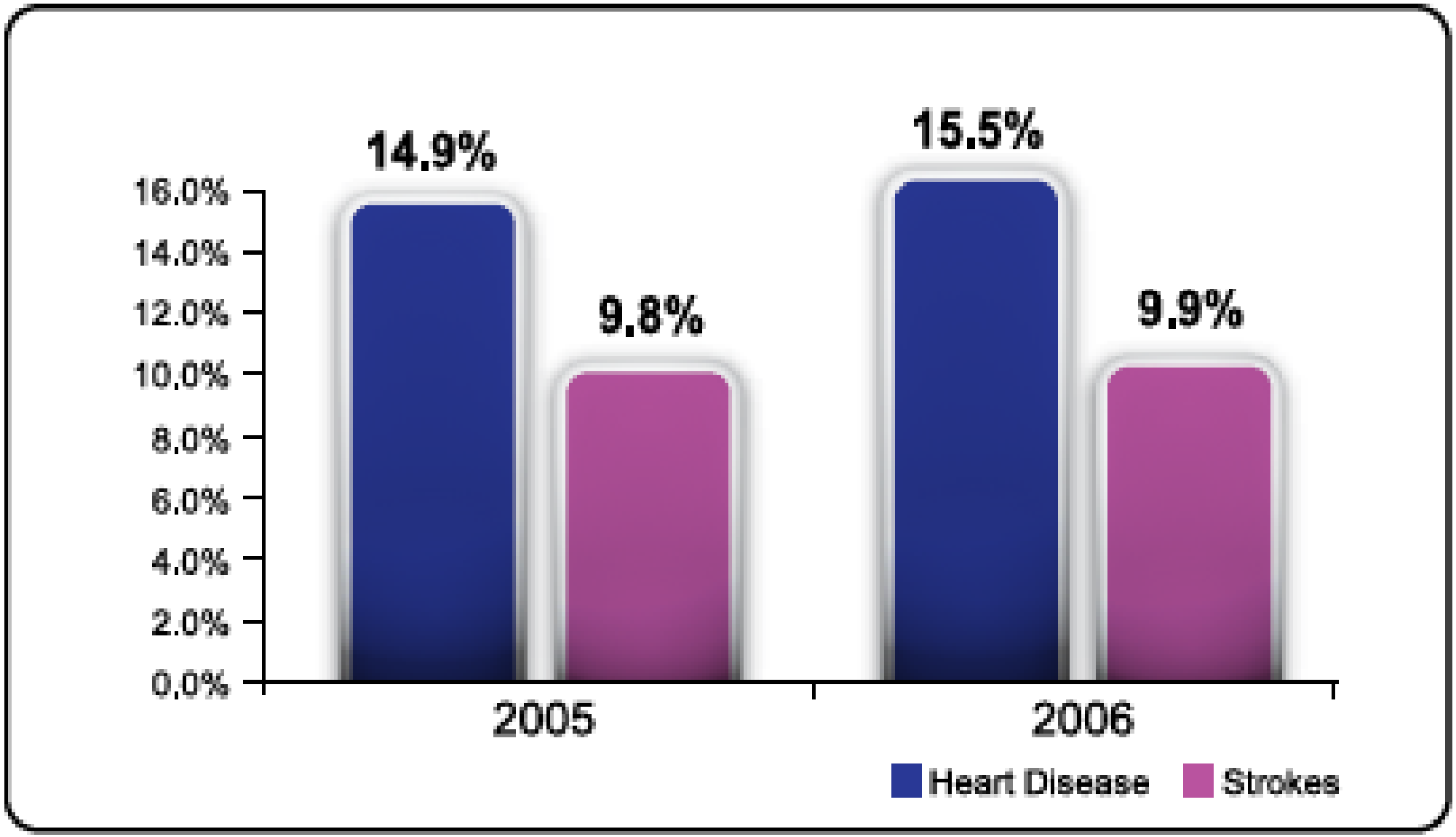
Death Among Women due to Cardiovascular Disease & all Cancers Combined in Malaysia (1999 – 2005)



CV Disease	26.8%	27.5%	26.7%	25.9%	26.4%	25.9%	25.4%	26.1%
All Cancers	10.1%	10.5%	10.6%	10.9%	11.4%	11.3%	11.8%	11.9%

** expressed as % of total female deaths*
*** deaths in government hospitals only*

Death Among Women due to Heart Disease & Strokes in Malaysia



** *deaths in government hospitals only*

PCI in Women: Specific Issues Faced

Gender differences in Coronary Artery Disease
The Malaysian National Cardiovascular Disease Database–Percutaneous Coronary Intervention (NCVD-PCI) Registry

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MOH/S/CRC/01.09(AR)

National Cardiovascular Disease Database

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

Editors:
Wan Azman Wan Ahmad
Sim Kui-Hian

MOH/S/CRC/20.11 (AR)

National Cardiovascular Disease Database

ANNUAL REPORT OF THE NCVD - PCI REGISTRY *year 2007-2009*

Editors:
Wan Azman Wan Ahmad
Sim Kui-Hian

Baseline Characteristics & Clinical Presentation by Gender	Female N=1,965	Male N=8,637	All N=10,602	*p*-value
Age, mean (SD), years	61.2 (9.7)	56.0 (10.0)	57.0 (10.2)	< 0.001
Smoking status, n (%)				
Former	52 (2.7)	2,969 (34.4)	3,021 (28.5)	< 0.001
Current	44 (2.2)	1,930 (22.4)	2,974 (18.6)	
BMI, n (%)				
Overweight & Obese	1,369 (69.7)	5,963 (69.0)	7,332 (69.2)	0.245
Premature Heart Disease, n (%)	350 (17.8)	1,670 (19.3)	2,020 (19.1)	0.350
Clinical History, n (%)				
Diabetes	1,238 (63.0)	3,656 (42.3)	4,894 (46.2)	< 0.001
Hypertension	1,685 (85.8)	6,116 (70.8)	7,801 (73.6)	< 0.001
Chronic Renal Failure	183 (9.3)	517 (6.0)	700 (6.6)	< 0.001
New onset angina (<2 weeks)	519 (26.4)	2,082 (24.1)	2,601 (24.5)	0.007
Congestive Heart Failure (>2wks)	90 (4.6)	333 (3.9)	423 (4.0)	0.011
Myocardial Infarct History	606 (30.8)	3,791 (43.9)	4,397 (41.5)	< 0.001
Dyslipidaemia	1,462 (74.4)	6,318 (73.2)	7,780 (73.4)	0.487
Documented Coronary Artery Disease	1,081 (55.0)	4,910 (56.9)	5,991 (56.5)	0.352

BASELINE CHARACTERISTICS & CLINICAL PRESENTATION BY GENDER

Baseline Characteristics & Clinical Presentation by Gender	Female N=1,965	Male N=8,637	All N=10,602	*p*-value
Clinical Presentation				
Heart Rate, mean (SD), beats/min	73.8 (16.1)	71.1 (15.4)	71.6 (15.6)	< 0.001
Systolic Blood Pressure, mean (SD), mmHg	149.0 (28.8)	135.7 (24.8)	138.2 (26.1)	< 0.001
Diastolic Blood Pressure, mean (SD), mmHg	75.6 (13.2)	77.1 (13.0)	76.8 (13.0)	< 0.001
Killip Class (STEMI only), n (%)				
I & II	198 (58.4)	1,386 (60.5)	1,584 (60.3)	0.047
III & IV	27 (7.9)	121 (5.3)	148 (5.6)	

IN-PATIENT CLINICAL TREATMENT BY GENDER

In-Patient Clinical Treatment by Gender	Female N=1,965	Male N=8,637	All N=10,602	*p*-value
PCI Status				
Elective	1,911 (90.3)	8,452 (90.1)	10,363 (90.1)	
NSTEMI / UA	106 (5.0)	420 (4.5)	526 (4.6)	
STEMI	95 (4.5)	484 (5.2)	579 (5.0)	
(Rescue PCI	35 (36.8)	229 (47.3)	264 (45.6)	0.035
Thrombolytics Given Prior to PCI Procedure in STEMI, n (%)				
< 12 hrs	42 (28.9)	95 (20.9)	112 (21.8)	< 0.001

ADJUNCTIVE PHARMACOTHERAPY BY GENDER

Adjunctive Pharmacotherapy by Gender	Female N=1,965	Male N=8,637	All N=10,602	*p*-value
n (%)				
IIb/IIIa Blockade	118 (5.6)	571 (6.1)	689 (6.0)	0.286
Heparin	1,960 (92.6)	8,605 (91.7)	10,565 (91.9)	0.298
Aspirin	2,037 (96.2)	9,1110 (97.1)	11,14 (97.0)	0.055
Clopidogrel	2,075 (98.0)	9,203 (98.1)	11,278 (98.1)	0.778

DISEASE SEVERITY BY GENDER

Disease Severity	Female N=1,965	Male N=8,637	All N=10,602	*p*-value
Coronary Disease, n (%)				
Single Vessel Disease	983 (46.4)	4,318 (46.0)	5,301 (46.1)	0.370
Multiple Vessel Disease	1,119 (52.9)	4,991 (53.2)	6,110 (53.1)	0-401
Graft	17 (0.8)	113 (1.2)	130 (1.1)	0.036
Left Main Stem	27 (1.3)	55 (0.6)	82 (0.7)	0.003
Lesion Type, n (%)				
A & B1	1,156 (39.3)	4,984 (38.5)	6,140 (38.7)	0.248
B2 & C	1,701 (57.9)	7,556 (58.4)	9,257 (58.4)	0.337

DISEASE SEVERITY BY GENDER

Disease Severity by Gender	Female N=1,965	Male N=8,637	All N=10,602	*p*-value
Lesion Length, n (%), mm				
< 20	1,218 (41.5)	5,232 (40.5)	6,450 (40.7)	
> 20	1,719 (58.5)	7,669 (59.5)	9,418 (59.4)	0.200
Lesion Diameter, n (%), mm				
< 3.0	1,337 (45.5)	4,503 (34.8)	5,840 (36.8)	< 0.001
≥3.0	1,600 (54.5)	8,428 (65.2)	10,028 (63.2)	< 0.001
Type of Stent Used, n (%)				
Drug-eluting Stent	339 (39.8)	2,289 (54.5)	2,628 (52.0)	
Bare Metal Stent	383 (45.0)	1,514 (36.0)	1,897 (37.5)	
Others	130 (15.2)	399 (9.5)	529 (10.5)	< 0.001

RISK OF MORTALITY AT DISCHARGE

Risk of Mortality At Discharge by Gender	Event Rates		Odds Ratio (95% Confidence Interval)	
	Women	Men	Crude	Adjusted
All PCI	39/1961 (1.99)	84/8593 (0.98)	2.06 (1.40, 3.01)	1.71 (0.96, 3.06)
STEMI	19/307 (6.19)	59/2050 (2.88)	2.23 (1.31, 3.79)	1.06 (0.37, 3.03)
NSTEMI	10/345 (2.90)	11/1393 (0.79)	3.75 (1.58, 8.90)	2.70 (0.68, 10.73)
Unstable Angina	2/112 (1.79)	1/341 (0.29)	6.18 (0.56,68.83)	4.25 (0.21, 84.29)

Odds ratio of female vs male and 95% CI obtained through logistic regression including the covariates: age, smoking, DM, HPT, new onset angina, prior history heart failure, renal failure

RISK OF MORTALITY AT 30 DAYS

Risk of Mortality At 30 days by Gender	Event Rates		Odds Ratio (95% Confidence Interval)	
	Women	Men	Crude	Adjusted
All PCI	9/1,330 (0.68)	24/6,175 (0.39)	1.75 (0.81, 3.77)	1.08 (0.40,2.90)
STEMI	3/222 (1.35)	6/1,558 (0.39)	3.54 (0.88, 14.27)	1.70 (0.30, 9.51)
NSTEMI	4/260 (1.54)	5/1,106 (0.45)	3.44 (0.92, 12.90)	7.51 (0.94, 60.21)
Unstable Angina	0/82 (0.00)	1/250 (0.40)	-	-

Odds ratio of female vs male and 95% CI obtained through logistic regression including the covariates: age, smoking, DM, HPT, new onset angina, prior history heart failure, renal failure

RISK OF MORTALITY AT 6 MONTHS

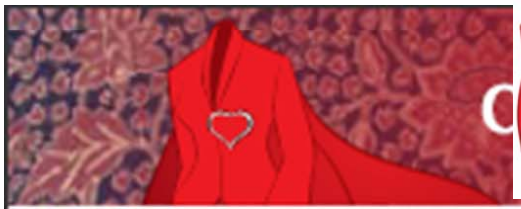
Risk of Mortality At 6 months by Gender	Event Rates		Odds Ratio (95% Confidence Interval)	
	Women	Men	Crude	Adjusted
All PCI	19/987 (1.93)	19/4,508 (0.42)	4.64 (2.54, 8.79)	2.18 (0.97, 4.90)
STEMI	3/169 (1.78)	5/1,169 (0.43)	4.21 (1.00, 17.77)	2.68 (0.37, 19.61)
NSTEMI	5/202 (2.48)	5/1842 (0.59)	4.25 (1.22, 14.82)	2.66 (0.73, 9.69)
Unstable Angina	1/59 (1.69)	0/188 (0.00)	-	-

Odds ratio of female vs male and 95% CI obtained through logistic regression including the covariates: age, smoking, DM, HPT, new onset angina, prior history heart failure, renal failure

Gender Differences in Mortality Following PCI

	Outcome, No. (%)	Outcome at discharge		30-day		6-month		12-months	
		Male	Female	Male	Female	Male	Female	Male	Female
2007	Death	29 (1)	10 (1)	36 (2)	10 (3)	39 (3)	13 (6)	48 (5)	13 (7)
	Alive	2907 (99)	672 (98)	1431 (95)	292 (95)	1090 (95)	210 (94)	940 (92)	177 (92)
	Lost to follow up	-	-	43 (3)	6 (2)	23 (2)	1 (0)	36 (3)	3 (1)
2008	Death	26 (1)	17 (3)	32 (1)	21 (4)	39 (2)	28 (7)	44 (3)	32 (10)
	Alive	2742 (99)	589 (97)	2196 (96)	469 (93)	1456 (91)	337 (87)	1243 (91)	283 (86)
	Lost to follow up	-	-	67 (3)	17 (3)	99 (7)	22 (6)	80 (6)	15 (4)
2009	Death	29 (1)	12 (2)	40 (1)	17 (3)	49 (2)	26 (6)	56 (3)	28 (7)
	Alive	2904 (99)	665 (98)	2602 (94)	573 (91)	1988 (95)	426 (91)	1618 (94)	341 (90)
	Lost to follow up	-	-	115 (5)	37 (6)	49 (3)	17 (3)	50 (3)	12 (3)

Higher in Women



WH2O
WOMEN'S HEART HEALTH ORGANISATION

PCI in Women: Specific Issues Faced

Baseline Characteristics & Clinical Presentation

Women were older at time of presentation

Similar to Grace Registry:

- Women had higher rates of Diabetes, Hypertension, prior angina and Heart Failure
- Less likely to smoke tobacco or have history of Myocardial Infarction

Unlike Grace Registry:

- Registry showed higher rate of Chronic Renal Failure

PCI in Women: Specific Issues Faced

<u>STEMI Cohort</u>

- Women had longer Door-to-Balloon time & transfer time

Possible reasons:

- Culture
- Lack of knowledge
- Inertia of physicians to transfer to PCI centres

PCI in Women: Specific Issues Faced

Use of PCI Adjunctive Therapy

- Women received similar rates of adjunctive pharmacotherapy

Angiographic Disease Severity

- Women had comparable rates of single-vessel and multivessel disease
- But, had higher rates of LMS disease
- And, smaller vessel diameter.

Use of DES

- Women received less DES

PCI in Women: Specific Issues Faced

Mortality

- Women had significantly higher unadjusted mortality rates for All PCI, STEMI and NSTEMI.
- Remained higher even after multivariate adjustments [for age, smoking, hypertension, diabetes mellitus, new onset angina, recent history of heart failure, renal failure and Killip class (in STEMI Cohort)]

PCI in Women: Specific Issues Faced

Mortality

Possible explanation from the NCVD-PCI for the higher mortality:

- More LMS disease
- Smaller vessels
- Longer door-to-balloon time
- Longer transfer time

PCI in Women: Specific Issues Faced

NCVD-PCI Strengths and Limitations:

Strengths:

- 'Real world'
- Multi-ethnic, Multi-cultural population
- Outcome data adjusted for risk factors and co-morbidities

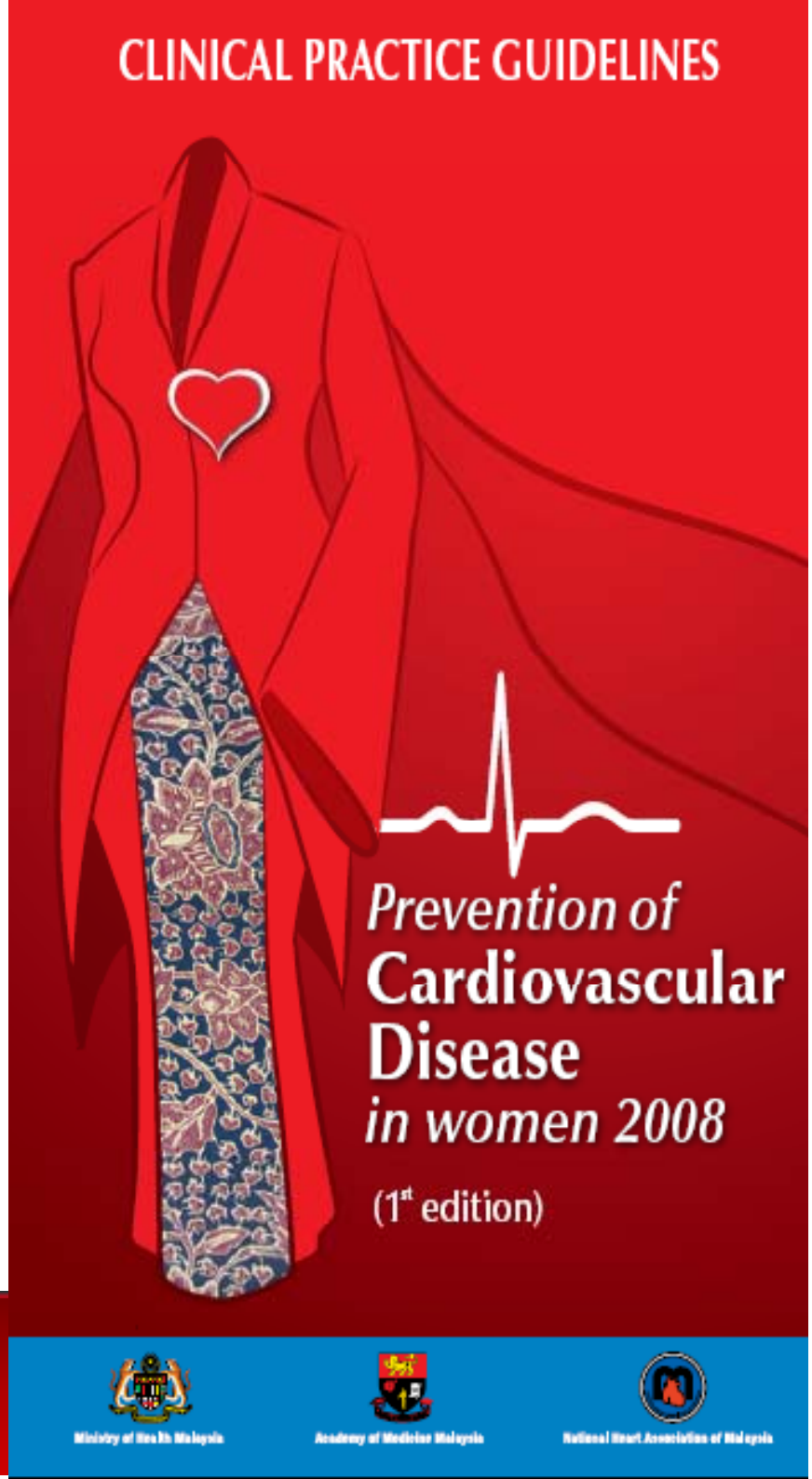
Limitations:

- Non-randomized, Observational
- 'Lost to Follow-up':
  minimized by cross-checking with National Registration Department
- Angiographic interpretation was semi-quantitative clinical report

What Have We Done for Women Heart Disease

Clinical Practice Guidelines

Prevention of Cardiovascular Disease in Women 2008



Women's Heart Health Organization WH²O

Established in January 2011, under the National Heart Association of Malaysia.

Aim: to educate women about CVD risk and to promote a healthy lifestyle in keeping with its slogan "Healthy Hearts, Happy Woman".

The objectives of the Women's Heart Health Organisation (WH²O):

- increase awareness of the public and health care providers about the prevalence and presentation of heart disease and stroke in women
- develop a preventive strategy against heart attacks and strokes in women, and
- provide continuous medical education to health care providers and the public