

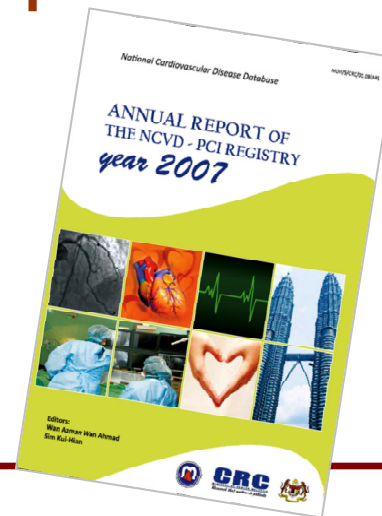


National Cardiovascular Disease Database (NCVD)

July 2009

NCVD-PCI Registry Report 2007: Highlights

**NCVD-PCI Registry
proudly presents the
inaugural Annual Report
of the NCVD-PCI Registry
Year 2007.**



"I wish to express my gratitude for every involvements, participation and sacrifices."
(Dato' Seri Dr Robaayah Zambahari; Co-chair of NCVD Governance Board)

"...look forward to 100% participation nationwide for it to be a truly "national" cardiovascular database and following the establishment of this registry I hope to see many more publications in the years ahead. "

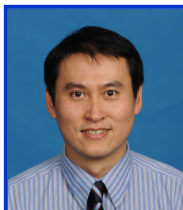
(Prof Dr Sim Kui-Hian; Co-chair of NCVD Governance Board)



"We realised the importance of having our own national data. With it we can calculate the number of PCI procedures performed in the country, the different types of devices used, the complexity of the cases and importantly, the outcome of the procedures."
(Dato' Dr Rosli Mohd Ali; Chairman of NCVD-PCI Registry)

"We believe that the Annual report of the NCVD-PCI registry 2007 together with the CPG-PCI will provide valuable information of the gap lies in between 'real' practice and guidelines for further improvement."

(Prof Dr Wan Azman Wan Ahmad; NCVD Medical Writing and Publication Committee)



"This report is the "beginning of the beginnings"; to share the findings from our collaboration among the main Malaysian PCI centres in the first year of this registry."
(Dr Liew Hiong Bang; Secretary of NCVD-PCI Registry Steering Committee)

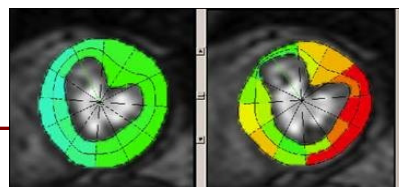
"This is one continuous journey; we are just at the beginning of it.
The success of NCVD is in OUR holding hands. Thanks a lot Mira & Mima!"
(Ms Gunavathy Selvaraj; Registry Manager of NCVD)



List of Contributors

Prof Dr Sim Kui-Hian, Dato' Seri Dr Robaayah Zambahari, Dato' Dr Rosli Mohd Ali, Dato' Dr Omar Ismail, Prof Dr Wan Azman Wan Ahmad, Dr Lim Teck Onn, Dr Liew Hiong Bang, Dr Chee Kok Han, Dr Alan Fong Yean Yip, Dr Lu Hou Tee, Dr Azmee Mohd Ghazi, Dr Syahidah Syed Tamin, Ms S Gunavathy Selvaraj, Ms Hamimatunnisa Johar, Ms Noor Amirah Muhamad

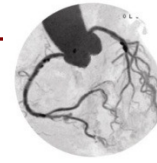
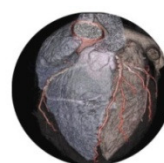
Down memory lane.....



- The first coronary angiogram in Malaysia was performed by Dr Nik Zainal in Hospital Kuala Lumpur in 1982 and the first coronary artery bypass graft surgery by Dr Rozali Wathooth in September 1982.
- The first PCI in Malaysia was performed by Dr Singham and Dr Anuar Masduki in University Hospital in 1983.
- The development of Percutaneous Coronary Intervention (PCI) in Malaysia covers different centres including Hospital Kuala Lumpur, Institut Jantung Negara (IJN), other Ministry of Health Hospitals, University Malaya Medical Centre and Private Hospitals.
- The decentralisation policy was carried out by establishing Ministry of Health Heart centres at various states all over Malaysia.

The establishment of Percutaneous Coronary Intervention (PCI) in Malaysia

- The NCVD-PCI registry was initiated on the 13th January 2007.
- PCI registry is established to fulfill the need, for a large scale national level, multi-centre, collaborative group; to ensure uniform data collection and clinical follow-up.
- The eventual goal of NCVD-PCI Registry is to provide a contemporary appraisal of Malaysian interventional cardiology practice, and to improve short-term and long-term outcomes of coronary artery disease.
- The standardised data abstraction form and dataset definitions were adopted with kind permission from those of the Melbourne Interventional Group (MIG) Interventional Cardiology Group¹.



Steering committee of PCI Registry

Dato' Dr Rosli Mohd Ali (**Chairman**)

Dato' Seri Dr Robaayah Zambahari

Prof Dr Sim Kui Hian

Dato' Dr Omar Ismail

Prof Dr Wan Azman Wan Ahmad

Dr Abdul Kahar Abdul Ghapar

Dr Liew Houg Bang

AP Dr Oteh Maskon

Dr Lee Chuey Yan

Dr Choo Gim Hooi

Dr Lu Hou Tee

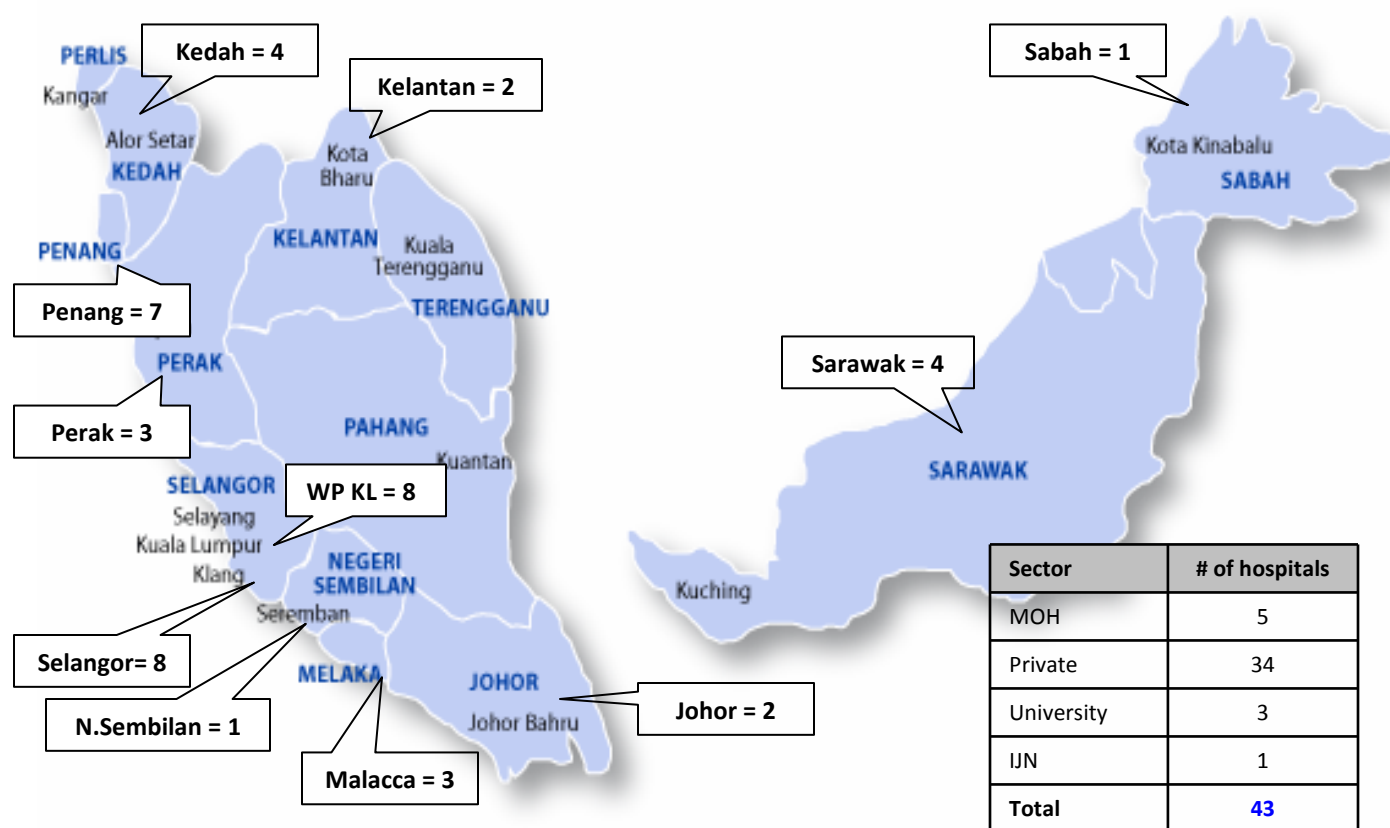
Dr Nik Halmey Nik Zainal Abidin

Dr A Sri Ranga

Dr Noorfaizan Saaidin

Dr Muhammad Ali Sheikh Abdul Kader

Number of PCI Catheterisation Laboratories Available in Malaysia



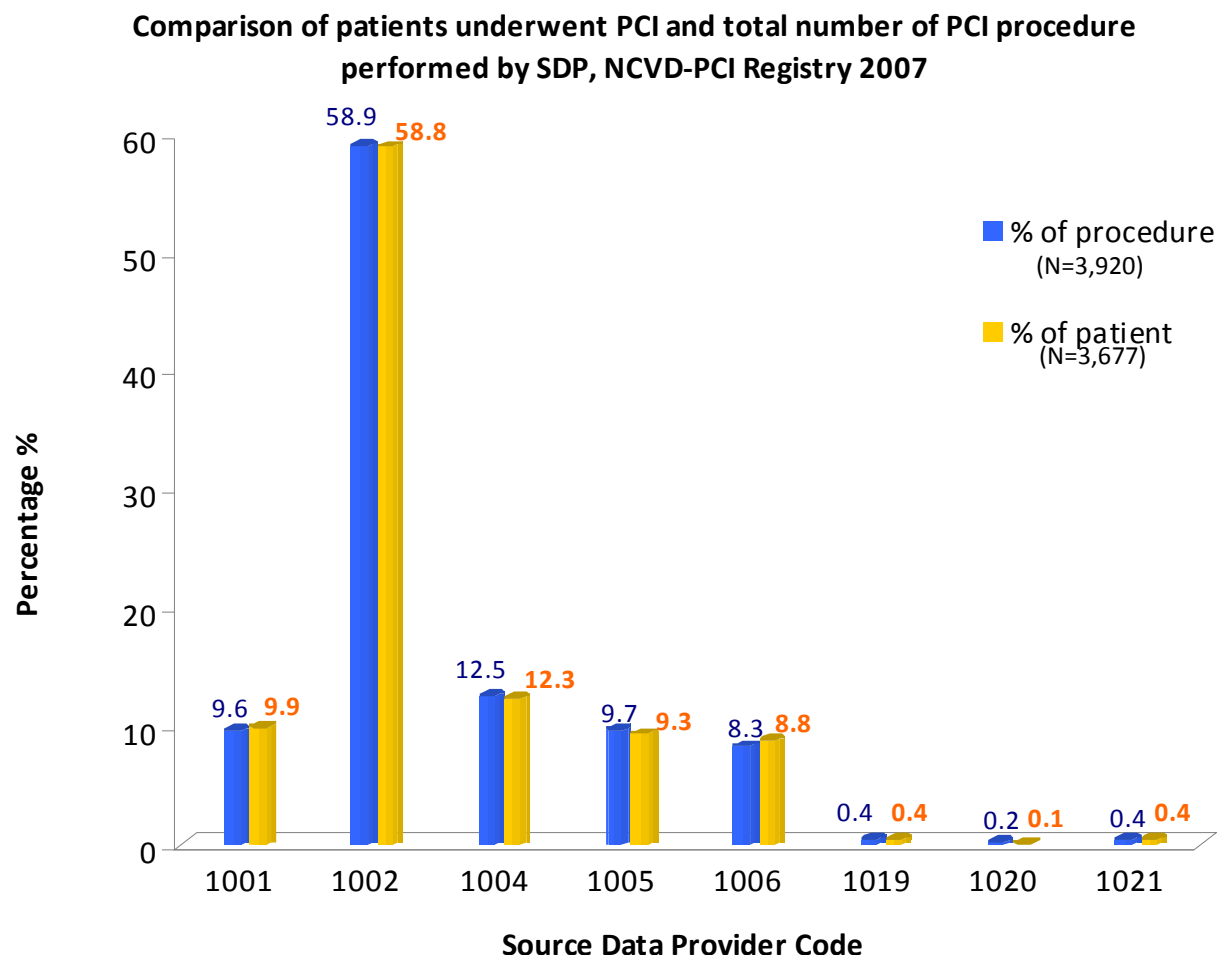
Source: ICL Survey 'Cardiology Cath Lab Services Procedures Information for Year 2007 & 2008' conducted from June 2009 – July 2009, with participation from 43 hospitals.²

Hospitals with PCI Catheterisation Laboratory Services Available:

JOHOR: KPJ Johor Specialist Hospital, Sultanah Aminah Hospital **KEDAH:** Pantai Utara Hospital, Kedah Medical Centre, Metro Specialist Hospital, Sultanah Bahiyah Hospital **KELANTAN:** Perdana Specialist Hospital, Universiti Sains Malaysia Hospital **MALACCA:** Pantai Hospital Ayer Keroh, Mahkota Medical Centre, Putra Specialist Hospital **NEGERI SEMBILAN:** Seremban Specialist Hospital **PERAK:** Fatimah Hospital, KPJ Ipoh Specialist Hospital, Pantai-Putri Hospital **PENANG:** Gleneagles Medical Centre, Island Hospital, Lam Wah Ee Hospital, Loh Guan Lye Specialists Centre, Pantai Hospital Penang, Penang Adventist Hospital, Penang Hospital **SABAH:** Sabah Medical Centre **SARAWAK:** Kuching Specialist Hospital, Normah Medical Specialist Centre, Sarawak General Hospital, Timberland Medical Centre **SELANGOR:** Assunta Hospital, KPJ Ampang Puteri Specialist Hospital, KPJ Damansara Specialist Hospital, KPJ Selangor Specialist Hospital, Serdang Hospital, Sri Kota Specialist Medical Centre, Sime Darby Medical Centre Subang Jaya, Sunway Medical Centre, Tropicana Medical Centre **WP KUALA LUMPUR:** Gleneagles Intan Medical Centre, Institut Jantung Negara (IJN), Pantai Medical Centre, Pusrawi Hospital Sdn.Bhd., Universiti Kebangsaan Malaysia Hospital, University Malaya Medical Centre, Prince Court Medical Centre, HSC Medical Center (KL) Sdn Bhd

Distribution of patients

In 2007, 3677 patients underwent PCI procedures registered in NCVD-PCI Registry with 3920 procedures performed: 3442 patients had one PCI performed, 227 patients had two PCIs performed, and eight patients had three PCIs performed.



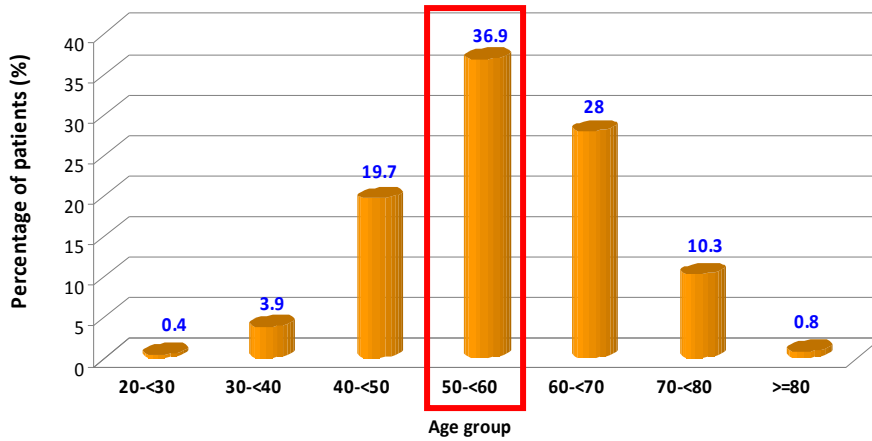
List of Source Data Providers (SDP) for NCVD-PCI Registry 2007

1. KPJ Selangor Specialist Hospital, Selangor
2. Institut Jantung Negara (IJN), Kuala Lumpur
3. Penang Hospital, Penang
4. Sarawak General Hospital, Sarawak
5. Serdang Hospital, Selangor
6. Sultanah Aminah Hospital, Johor
7. University Malaya Medical Centre, Kuala Lumpur
8. Universiti Kebangsaan Malaysia Hospital, Kuala Lumpur

(Note: The List of SDP is by alphabetical order. It DOES NOT reflect the order of centre codes in the graph above)

Patient Characteristics in PCI Registry

Age group (years) distribution for patients who underwent PCI, NCVD-PCI Registry 2007

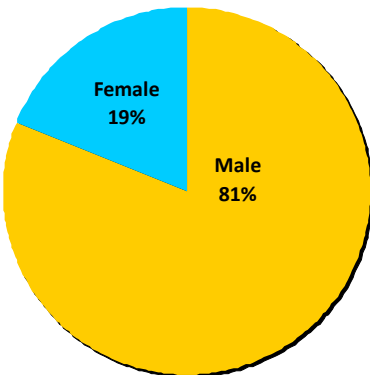


- Mean age = 56.7 years old
- Age Range = 23-90 years old

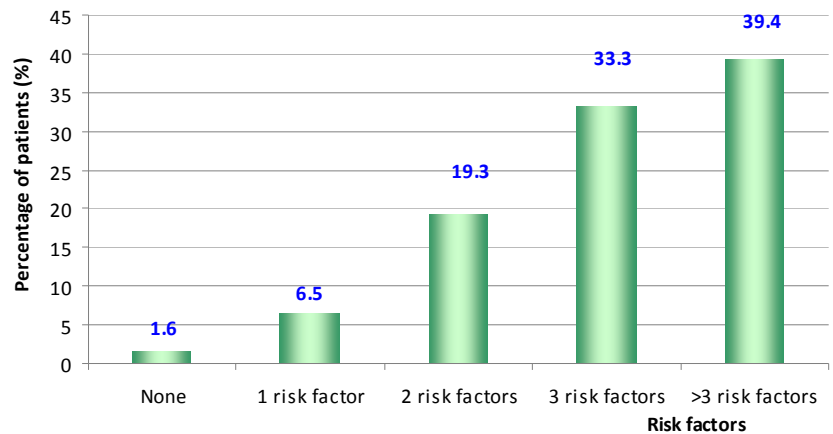


- Our patients are younger (56.7 in NCVD-PCI vs. 65.7 in SCAAR³ vs. 62.3 in Ontario⁴, [mean age in years])
- A higher proportion of male patients (81.2% in NCVD-PCI vs. 71.7% in SCAAR³ vs. 72.2% in Ontario⁴)

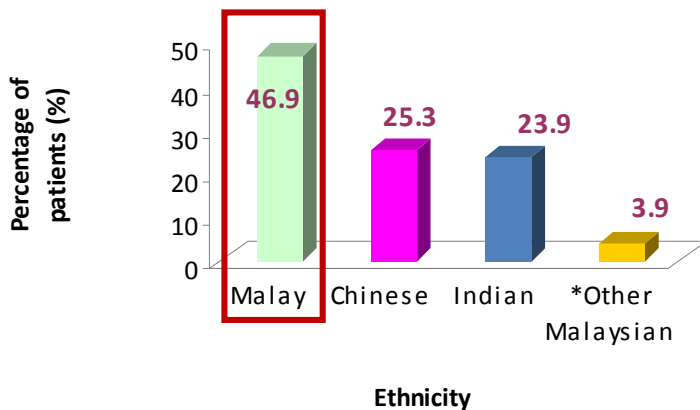
Distribution of patients underwent PCI by gender, NCVD-PCI Registry 2007



Presence of cumulative risk factors



Distribution of patients who underwent PCI based on ethnicity, NCVD-PCI Registry 2007



- 75.3% of patients had a history of dyslipidaemia
- 74.2% of them had hypertension
- 45.6% of patients had diabetes
- 98.4% of patients undergoing PCI had at least one established cardiovascular risk factor



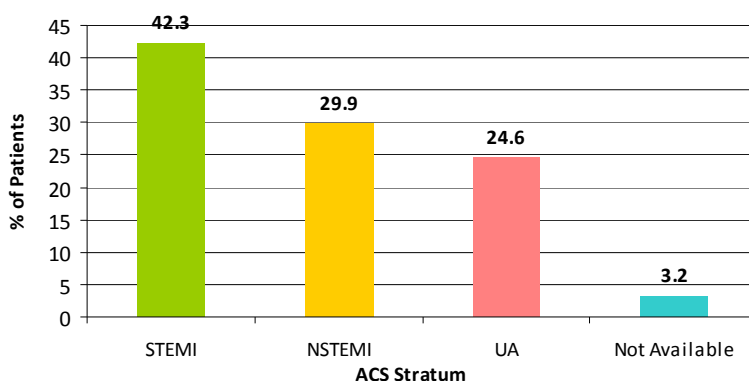
*Other Malaysian includes Punjabi, Iban, Kadazan Dusun, Melanau, Bidayuh, Other Sabahan and Other Sarawakian

Cardiovascular risk factor (CVRf) comprise of: smoking status, dyslipidaemia, hypertension, diabetes, family history of premature cardiovascular disease (CVD) and a known history of myocardial infarction (MI)

Clinical presentation...

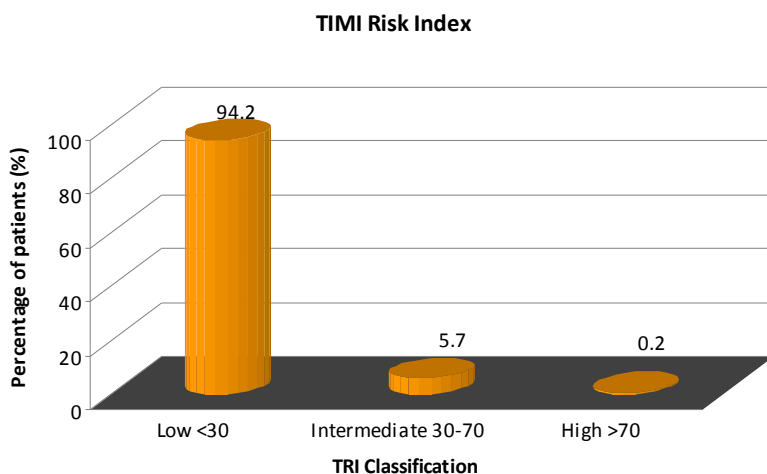
- Chronic stable angina was noted in 57% of cases, with majority in CCS class I-II
- Majority of patients (94%) have low TIMI risk index
- Acute coronary syndrome comprise of 20% of cases

Distribution of ACS Stratum, NCVD-PCI Registry 2007



Note:

STEMI=ST segment Elevation Myocardial Infarction,
NSTEMI=Non ST segment Elevation Myocardial Infarction,
UA=Unstable Angina

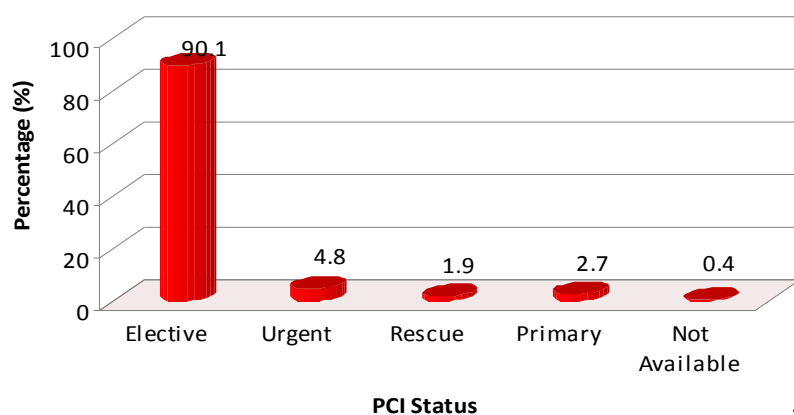


TIMI Risk Index (TRI) = $\frac{\text{Heart Rate (age/10)}^2}{\text{Systolic Blood Pressure}}$

It provides important information about mortality in patients across the spectrum of MI, STEMI and NSTEMI^{5,6}

Procedural setting

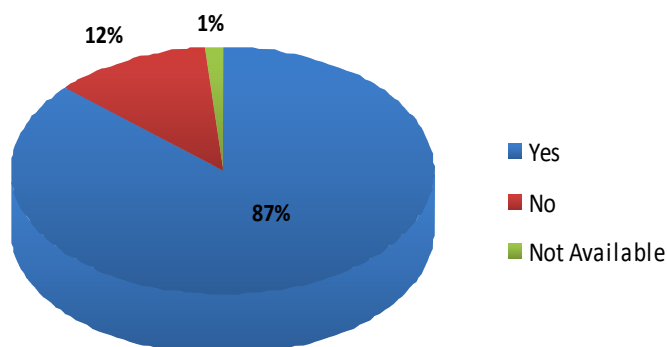
PCI Status for patients who underwent PCI, NCVD-PCI Registry 2007



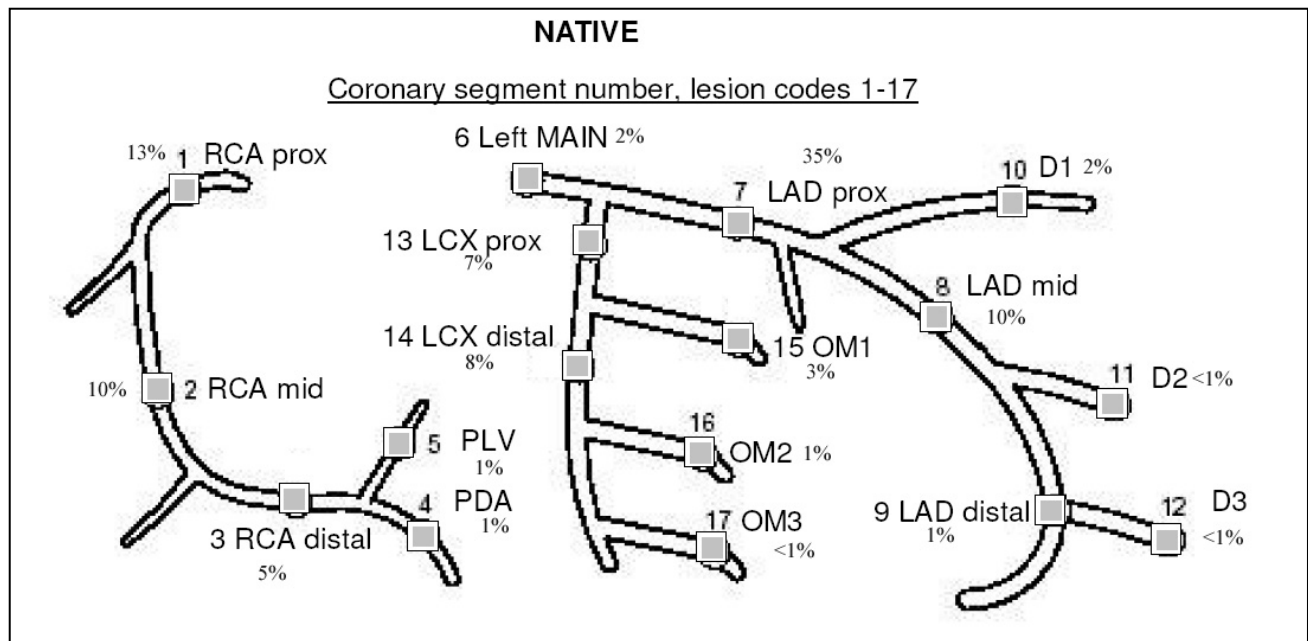
- 55.3% of PCI were performed in multiple vessels disease
- 73.9% (n=2897) of patients had a size 6 French
- Aspirin and Clopidogrel are the two most common choice of antiplatelet therapy used in PCI

- Majority of PCI performed in Malaysia in 2007 were elective cases
- In most cases PCI were performed as ad hoc
- Femoral access remains the common percutaneous entry

Ad hoc PCI

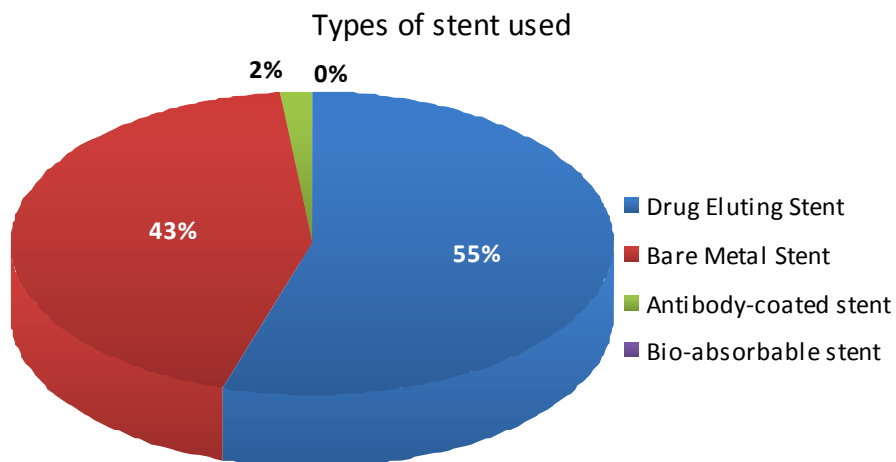
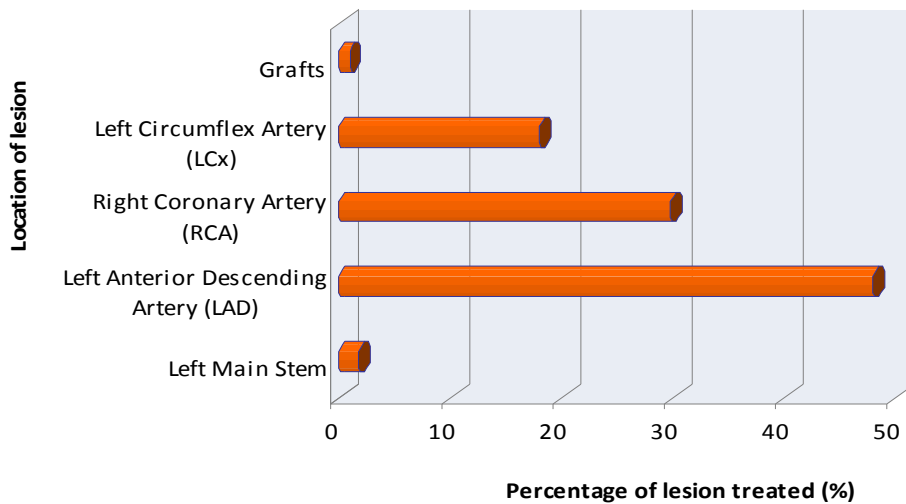


Lesion characteristics



Anatomical location of lesions treated with Percutaneous Coronary Intervention

Summary of location of lesion treated with PCI



- Total lesion treated = 5512
- Proximal left anterior descending artery is the commonest lesion location (34.5%)
- The majority of the lesions treated in the registry are de novo (92.8%)
- Mean lesion length = 24.40 mm (15.18mm)
- An average of 1.23 stents was used per lesion treated
- Most of the lesions were of type C (44.2%)
- Most of the lesions (90.9%) achieved TIMI 3 flow after the intervention

Outcome

- In-hospital mortality was 1.1 % and 30-day mortality rate was 1.8 %
- Follow-up data was not available for 41% of patients
- Mortality rates among patients who presented with shock were high (28%)
- High rate of mortality in patients with poor TIMI flow post-PCI
- Poor prognostic factors were Killip Class IV and poor TIMI flow post PCI (0-2)
- Half of re-admissions were due to staged/planned PCI (54%)
- High mortality rate was seen among patients who developed shock during or post PCI
- Low number of deaths seen in elective cases

Overall outcome for patients who underwent PCI, NCVD-PCI Registry 2007

Outcome*	At discharge, n (%)	30-days, n (%)
Alive	3637 (98.9 %)	1457 (41.3%)
Death	40 (1.1%)	**64 (1.8%)
Follow up Not Available		2006 (56.0%)

*The outcome status data was derived based on data matching with the National Death Register 2007 & 2008

** Included patients who died at discharge

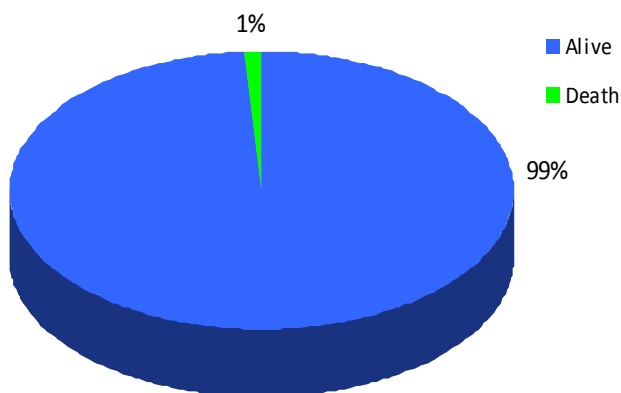
In-hospital outcome for patients who underwent PCI by age groups, NCVD-PCI Registry 2007

OUTCOME*	Age group ⁺					
	Young		Middle-age		Elderly	
	N	%	N	%	N	%
Alive	158	99.4	2065	99.3	1414	98.3
Death	1	0.6	15	0.7	24	1.7

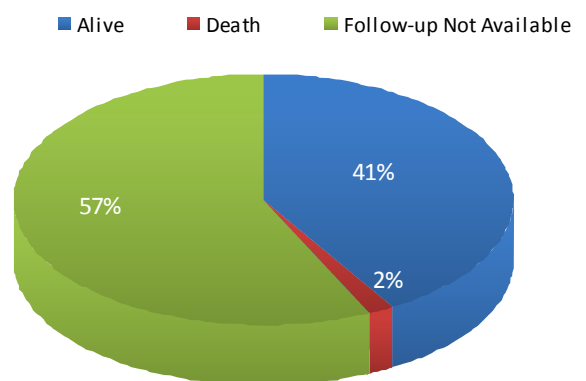
*The outcome data was derived based on data matching with the National Death Register

⁺ Young is defined as age from 20 to <40 years, middle-age is defined as age 40 to <60 years and elderly is defined as ≥60 years old

Outcome at discharge



Outcome at 30-days follow-up



Acknowledgment

National Cardiovascular Disease Database (NCVD) - PCI Registry

Dr Kannan Pasamanikam,
A/P Dr Zurkurnai Yusoff,
Haniff, Dr Jaya Purany, Madam Celine
Tan Pei Ting, Lim Jie Ying, Sebastian Thoo,
Lay Ling, Norhafizah Abd. Manan, Dr Hoo Ling
S Gunavathy Selvaraj, Noor Amirah Muhamad,
Dato' Seri Dr.Robaayah Zambahari , Dato' Dr. Rosli
Soon Ping, Dato' Dr. Hj Azhari Rosman, Datuk Dr. Mohd
Ariff Nuruddin, Dr. Lam Kai Huat, Dr. Azlan Hussin ,
Dato' Dr. K Balachandran , Dr. Emily Tan Lay Koon,
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Abu Bakar, Nurzaliza bt Radzali, Nur Fazila bt Sulaiman, Jacqueline Lucy DeCosta, Nor'aini bt Kaimi. Sarawak General
Hospital, Prof Dr Sim Kui Hian, Dr Ang Choon Kiat, Dr Chin Sze Piau, Dr Alan Fong Yean Yip, Dr Chan Wei Ling, Dr Ong
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Yusrina Abdullah, S/N Mas Ayu Bt Romeli, Nor Izzat B Che Harun, Salawati Saedin, Dr Lee
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S/N Sharipah Hamid, S/N Zaiton Ghazali, Thevamaral Kannadason, Dr Saravanan Krishnan,
Dr Tan Vern Hsen, Dr Benjamin Leo, Dr Liew Chee Koon, S/N Fauziah Mohd Tahir,
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Faizura, Dr Masliza Mahmood,
Dr Ting Chih Kuan

National ... Database

Will be available soon at
www.acrm.org.my/ncvd

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



Editors:
Wan Azman Wan Ahmad
Sim Kui-Hian



CRC
MINISTRY OF HEALTH MALAYSIA
Quality that matters to patients





The National Cardiovascular Disease Database (NCVD) is accessible online at www.acrm.org.my/ncvd/

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NCVD
The National Cardiovascular Disease Database (NCVD) is a service supported by the Ministry of Health (MOH) to collect information about cardiovascular disease in Malaysia, which will enable us to know the incidence of cardiovascular disease, and to evaluate its risk factors and treatment in the country. This information is useful in assisting the MOH, Non-Governmental Organizations, private healthcare providers and industry in program planning and evaluation, leading to cardiovascular disease prevention and control.

JOIN NCVD!

LATEST UPDATES
HIGHLIGHTS
1. *NCVD ACS Annual Report*
The first NCVD ACS Annual Report Summary in charts and tables.

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national cardiovascular disease database

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PUBLICATIONS
Annual Reports of National Cardiovascular Disease Database (NCVD)

No.	Title
1.	1st Report of the National Cardiovascular Disease Database (NCVD) Annual Report of the NCVD-ACS Registry 2006 NCVD ACS Annual Report 2006 (Charts and Tables only)

Journal Articles

No.	Title
1.	Acute Coronary Syndrome (ACS) Registry - Leading the Charge for National Cardiovascular Disease (NCVD) Database S P Chin, S Jeyalindran, R Azhari, W A Wan Azman, I Omar, Z Robaayah, K H Sim Medical Journal of Malaysia (MJM) Supplement
2.	The Foundation of NCVD PCI Registry: The Malaysia's First Multi-Centre Interventional Cardiology Project H B Liew, M A Rosli, W A W Azman, Z Robaayah, K H Sim, on behalf of the NCVD PCI Investigators Medical Journal of Malaysia (MJM) Supplement

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ABOUT NCVD
National Cardiovascular Disease Database
Cardiovascular disease database refers to the ongoing systematic collection, analysis and interpretation of cardiovascular disease data essential to the planning, implementation and evaluation of clinical and public health services, closely integrated with dissemination of these data to those who need to know. The final link in the chain is the application of these data to the treatment, prevention and control of cardiovascular disease. A database system includes a functional capacity for data collection, analysis and dissemination linked to clinical and public health programs.

Malaysia has several cardiovascular disease databases in tertiary MOH hospitals and private providers in Kuala Lumpur, Sarawak, Penang, Johore and National Heart Institute (Institut Jantung Negara). The National Cardiovascular Disease Database (NCVD) is established to integrate various databases and other data source to achieve nation-wide cardiovascular database.

The NCVD is sponsored by the **Ministry of Health Malaysia** by the following organizations as:

- Cardiology and Medical Departments, MOH
- Clinical Research Centre, Kuala Lumpur Hospital

Co-sponsored by:

- National Heart Association of Malaysia (NHAM)

The CRC of the MOH will provide technical support in the form of clinical epidemiology expertise, biostatistical and ICT services.

A **Governance Board** was established in year 2006 to oversee the operations of the NCVD. The MOH, Universities, professional bodies, NGOs and private healthcare providers are present in this committee to ensure that the NCVD stays focused on its objectives, continuing relevance and justification.

Purpose of the NCVD
The objectives of the NCVD are to:

1. Determine the number and the time trend of acute coronary syndromes in Malaysia.
2. Determine the socio demographic profiles of these patients to better identify the high-risk group in our Malaysian population.
3. Determine the efficiency of, and adherence to current guidelines of treatment guidelines
4. Determine the number, evaluate and monitor the outcomes of percutaneous coronary intervention (PCI) based on selected performance indicators.
5. Determine the cost to the nation by cardiovascular disease and the cost-effectiveness of treatment and prevention programs
6. Stimulate and facilitate research of cardiovascular disease using this database.

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July 2009

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Publisher:

Jointly published by the National Cardiovascular Disease Database (NCVD) and the Clinical Research Centre (CRC), Ministry of Health Malaysia

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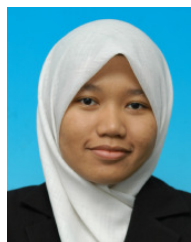
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Funded by:

Ministry of Health Malaysia (MOH)

National Heart Association of Malaysia (NHAM)



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1. Ajani A.E., Szto G., Duffy S.J. et al. The Foundation and Launch of the Melbourne Interventional Group: A Collaborative Interventional Cardiology Project. Heart, Lung and Circulation. 2006. 15-1; 44-47
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This highlight report is based on:

W.A Wan Ahmad, K.H Sim. (Eds).

Annual Report of the NCVD-PCI Registry, Year 2007. Kuala Lumpur, Malaysia: National Cardiovascular Disease Database; 2009