

# ANNUAL REPORT OF THE NCVD-ACS REGISTRY 2007 & 2008

EDITORS:  
WAN AZMAN WAN AHMAD  
SIM KUI-HIAN



MOH/S/CRC/11.10 (AR)

## **NATIONAL CARDIOVASCULAR DISEASE DATABASE (NCVD)**

### **Annual Report of the Acute Coronary Syndrome (ACS) Registry**

**2007 & 2008**

**Editors:**

**Wan Azman Wan Ahmad  
Sim Kui-Hian**

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We would especially like to thank the following:

- Ministry of Health Malaysia
- National Institutes of Health (NIH), Malaysia
- National Heart Association of Malaysia (NHAM)
- Clinical Research Centre (CRC), Malaysia
- The members of various expert panels
- Our source data providers
- Participating hospitals in the Coronary Care Service Survey



### MESSAGE FROM THE AMERICAN COLLEGE OF CARDIOLOGY

Heart House, 2400 N Street NW, Washington DC, 20037

On behalf of the American College of Cardiology, we extend our sincerest congratulations for the 2007 & 2008 report of the Malaysian NCVD Acute Coronary Syndrome Registry. This is a tremendous accomplishment offering valuable patient data of 6,500 additional Malaysian patients entered since your landmark 2006 inaugural report.

There have been tremendous advances in ACS treatment over the last 25 years. Despite these advances, however, it is clear that evidence is unevenly translated into clinical practice. In virtually all countries and practice settings where it has been measured, there are significant gaps between guideline recommendations and actual clinical care. In the United States, the Institute of Medicine has said there is a "quality chasm" in healthcare, and has strongly advocated the need to make healthcare delivery more effective, safe, equitable, timely, efficient, and patient-centered.

To achieve these aims of higher quality of care, a critical first step is to measure how care is currently being delivered. Only in this way, can gaps in care delivery be identified and targeted quality improvement interventions be implemented. In this way, quality improvement itself becomes "evidence-based", and is more likely to lead to substantive improvements in patient outcomes.

With this context, the Malaysian Acute Coronary Syndrome Registry continues to be a tremendous accomplishment. This is a world-leading effort demonstrating the importance of clinical registries as a facilitator of improving quality of care and patient outcomes. The data reported here should lead to targeted local and national quality improvement efforts for ACS care in Malaysia. The ongoing existence of the registry will allow tracking of the impact of these quality improvement efforts on processes of care and patient outcomes. If you do not measure it, you cannot manage it!

The American College of Cardiology National Cardiovascular Data Registry (NCDR) currently includes an ACS registry as well as four other quality improvement registry programs in the United States. The mission of the NCDR is to improve the quality of cardiovascular patient care by providing information, knowledge and tools, implementing quality initiatives; and supporting research that improves patient care and outcomes.

This is clearly a shared mission with the Malaysian Acute Coronary Syndrome Registry/NCVD. As such, I hope that we can work collaboratively to show the world how to optimally measure and improve the quality of care and outcomes of patients with cardiovascular disease.

Sincerely,

**Ralph G. Brindis, MD MPH FACC**

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## PREFACE

The National Cardiovascular Disease Database is in its fourth year and, is going strong a solid database on acute coronary syndrome for the nation. Despite various constraints, the database continues to expand to include more contributing sites.

Therefore, we, on behalf of the NCVD board of governance are very proud to bring you this publication; i.e. our 2<sup>nd</sup> Annual Report of NCVD-ACS registry which comprise of datasets from year 2007 and 2008. This annual report shows our continued commitment to evidence-based practice as this effort has generated useful data for monitoring the trends, progress and outcomes of ACS patients.

Clearly, the data and trends of ACS patients in our hospitals as depicted in this report are cause for concern. But as knowledge is power, we hope that researchers will utilise this information for the development and improvement of cardiovascular disease management in our country.

The NCVD also created an opportunity for collaborative work with regional and international countries. We were able to compare and contrast data of our patients with patient data of our partnering countries. We have presented this data in various scientific publications; both local and international.

As of this year (2010), the National Cardiovascular Disease Database (NCVD) is under administration and sponsorship of the National Heart Association of Malaysia (NHAM). We do hope for continuous support from the Ministry of Health Malaysia in sustaining this registry, especially in terms of maintaining the infrastructure and facility of each MOH's participating sites.

We would like to express our gratitude to the Director General of Health, National institutes of Health and the Clinical Research Centre, Ministry of Health Malaysia; the members of the ACS registry steering committee and also the writing committee for their valuable contributions in the preparation of this report.

We wish to thank all of our source data providers for their collaboration and contribution of data to the National Cardiovascular Disease Database (NCVD) over the years. We look forward to a continued 100% participation.

Thank you

**Prof Dr Sim Kui-Hian**  
Chairman  
NCVD Governance Board  
President  
National Heart Association of Malaysia

**Tan Sri Dato' Seri Dr Robaayah Zambahari**  
Co-chairman  
NCVD Governance Board

## FOREWORD

As Co-Chairs of the NCVD Acute Coronary Syndrome (ACS) database, Dato' Dr. Jeyaindran Sinnadurai (HKL) and I are pleased to bring you the second report of the NCVD ACS registry.

We present findings from data collected in the year 2007 and 2008, and have compared these with the findings from year 2006. Over the three years, the number of hospitals involved in the registry has increased and now we are a family of 16 hospitals. The quality of data has also improved although in some centres, we still see some fluctuations over the years due to logistic problems.

As an important cornerstone of any medical service, registries enable benchmarking and international comparison of the quality of medical care. The hallmark of a developed medical system represents the excellence of this registry. Over the years we have initiated this process and it has progressively evolved to provide comprehensive information on the number one killer disease in our country. The disease trend is alarming and the continuous survival of this registry is vital. However, in order to sustain the registry and to continually improve its quality and database, funding is needed. To this end, we are grateful to the Ministry of Health Malaysia for providing us with the funds and support to continue.

Over the three years, between 2006 and 2008, we found consistent trends among our patient that suggests areas for improvement in the management of Acute Coronary Syndromes. Improvement in data quality, particularly the reduction of incomplete information from the medical history, will inevitably provide us with better insight into the profile of patients presenting with ACS in our country. We believe this registry will enable us to plan for improved changes in treating ACS patients in our hospitals nationwide.

We would like to take this opportunity to thank Prof Dr Wan Azman, chairman of the Writing Committee and his team for their tireless efforts over the weekends to accomplish this report. On behalf of the NCVD ACS committee, we also would like to extend our sincere thanks to those who have worked hard in maintaining this registry, in particular the staff in the various hospitals and the Ministry of Health.

We congratulate everyone involved for their excellent work and hope that we can continue to do this over the coming years.

Thank you

**Dato' Dr Hj Azhari Rosman**  
Chairman  
NCVD-ACS Registry

**Dato' Dr Jeyaindran Tan Sri Sinnadurai**  
Co-Chairman  
NCVD-ACS Registry

### NOTE FROM THE WRITING COMMITTEE CHAIRMAN

Encouraged by the publication of the first NCVD-ACS annual report in 2006 which unraveled a lot of new information, the writing committee continued its effort to come up with the report for year 2007 and 2008. We have registered 3,422 patients into registry, 3,645 in 2007 and, 2,848 in 2008. The reduction in number of patients for 2008 was due to under reporting by some centres due to logistic problems.

From 2006 to 2008, we cleaned up data of 9,915 patients that were registered in our database. This establishes us as the biggest database for ACS in Malaysia; another milestone in the history of cardiovascular disease research in Malaysia. While going through the registry's data, we discovered more convincing results as the data from 2007 and 2008 strengthened most of the findings reported in the 2006 annual report.

The report provides information of our current medical practices and compares our situation with that of other published registries. There are still a lot of room for improvement in terms of management and outcome. Particularly, we have to plan a strategy to improve symptom to needle time for thrombolytic therapy and symptom to balloon time for primary PCI. In addition, more facilities and resources should be made available so that patients can be treated according to guideline.

The data generated here has provided numerous opportunities for publication. We have presented seven abstracts in the NHAM Scientific Meeting 2010 and have many more publications and presentations in the horizon. We may even be able to come up with our own risk score to determine outcomes for our ACS patients.

Let me take this opportunity to welcome new centres that have registered to participate in this registry. I would also like to acknowledge all the members of the writing committee for sacrificing their Saturdays and being away from their loved ones to make this report possible.

We would like to express our deepest heartfelt gratitude to the many who were involved in making the registry go live. These efforts and contributions would definitely bring a great impact on the future management of cardiovascular disease in this nation.

We welcome any comments and contribution from all NHAM members, friends and colleagues, policymakers, industry personnel and other healthcare providers for the betterment of this registry and report publication in the future.

Thank you

**Prof Dr Wan Azman Wan Ahmad**  
Chairman  
NCVD Medical Writing and Publication Committee

## ABBREVIATIONS

<b>ACE</b>	Angiotensin Converting Enzyme
<b>ACS</b>	Acute Coronary Syndrome
<b>BMI</b>	Body Mass Index
<b>CABG</b>	Coronary Artery Bypass Graft
<b>CAD</b>	Coronary Artery Disease
<b>CCU</b>	Coronary Care Unit
<b>CK</b>	Creatinine Kinase
<b>CK-MB</b>	Creatinine Kinase, Muscle and Brain
<b>CRC</b>	Clinical Research Centre
<b>CRF</b>	Case Report Form
<b>CVD</b>	Cardiovascular Disease
<b>DBMS</b>	Database Management System
<b>EDC</b>	Electronic Data Capture
<b>GP</b>	Glycoprotein
<b>HDL</b>	High Density Lipoprotein
<b>HDU</b>	High Dependency Unit
<b>ICT</b>	Information and Communication Technology
<b>ICU</b>	Intensive Care Unit
<b>IJN</b>	Institut Jantung Negara
<b>IT/IS</b>	Information Technology and Information System
<b>JPN</b>	Jabatan Pendaftaran Negara
<b>LDL</b>	Low Density Lipoprotein
<b>LVEF</b>	Left Ventricular Ejection Fraction
<b>MOH</b>	Ministry of Health
<b>NCVD</b>	National Cardiovascular Disease Database
<b>NHAM</b>	National Heart Association of Malaysia
<b>NSTEMI</b>	Non ST- Elevation Myocardial Infarction
<b>PMP</b>	Per Million Population
<b>RCC</b>	Registry Coordinating Centre
<b>SAP</b>	Statistical Analysis Plan
<b>SD</b>	Standard Deviation
<b>SDP</b>	Source Data Provider
<b>STEMI</b>	ST- Elevation Myocardial Infarction
<b>TIMI</b>	Thrombolysis In Myocardial Infarction
<b>Tnl</b>	Troponin I
<b>TnT</b>	Troponin T
<b>UA</b>	Unstable Angina

## NCVD-ACUTE CORONARY SYNDROME (ACS) REGISTRY

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                  Dr Azmee Mohd Ghazi  
                  Dr Mehrunnissa Khanom

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**Registry Associate** : Ms Noor Amirah Muhamad

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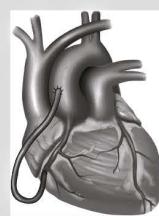
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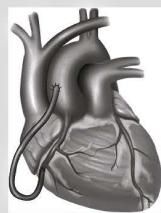
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## **CHAPTER 1: PROVISION OF CORONARY CARE SERVICES IN MALAYSIA (RESERVED)**





## CHAPTER 2: PATIENT CHARACTERISTICS

Alan Fong Yean Yip, Chang Boon Cheng, Ong Tiong Kiam, Sim Kui-Hian

Department of Cardiology, Sarawak General Hospital



## **Summary**

1. Baseline characteristics in patients presenting with Acute Coronary Syndrome (ACS) in Malaysia were consistent throughout years 2006 to 2008.
2. More than 90% of patients had at least one cardiovascular risk factor, and many of these were modifiable.
3. In comparison to findings from the Global Registry of Acute Coronary Events (GRACE), it was clear that Malaysian patients presented with ACS at a much younger age (age less than 50 years old).
4. A high proportion of patients had diabetes mellitus (about 40%).
5. A higher proportion of Indian males was in the youngest patient groups (<50 years old).

Characteristics of patients admitted with ACS were obtained and analysed from 11 Source Data Providers (SDP) in 2006, which grew to, 15 SDPs in 2008; in addition, comparisons were made between years 2006, 2007 and 2008.

In total, 3422, 3651 and 2851 patients were admitted with ACS in 2006, 2007 and 2008, respectively. In 2006, 42% were admitted with ST-Elevated Myocardial Infarction (STEMI), 33% with Non ST-Elevated Myocardial Infarction (NSTEMI) and 25% with Unstable Angina (UA). In 2007, 46%, 27% and 26% were admitted with STEMI, NSTEMI and UA, respectively. In 2008, 54%, 23% and 23% were admitted with STEMI, NSTEMI and UA, respectively. In each year, STEMI was the most common type of ACS presentation in Malaysia. [Table 2.6]

### **Patient demographics**

The mean (SD) age of patients presenting with ACS was 59 years (12 years) and this was consistent for all three years. Between 23% and 24% of patients from each ethnic groups were aged below 50 years and males accounted for 75% of all patients admitted with ACS. This finding was similar for all three years. There was no major change in ethnic distribution over the 3 years period. [Table 2.1]

### **Coronary risk factors**

There was a high prevalence of established cardiovascular risk factors in our ACS patients. Around 33% - 34% were active smokers, 9% - 13% had positive family history of premature cardiovascular disease, 31% - 35% had dyslipidaemia, 56% - 63% had hypertension and 39% - 44% had diabetes.

Between 13% and 18% of patients presenting with ACS had a prior history of MI and 15% - 18% had previously documented CAD with >50% stenosis. Between 8% and 15% had a history of chronic stable angina, 45% - 53% had a history of new onset angina, and 5% - 8% had a history of heart failure.

Majority of patients were overweight. The mean Body Mass Index (BMI) was 25.6 (4.3) kg/m<sup>2</sup>, and 73% - 75% of patients had a BMI above 23 kg/m<sup>2</sup>, which is the criterion for obesity by Asian standards. Between 42% and 50% of males had a waist circumference more than 90cm, while 74% - 80% of females had a waist circumference of more than 80cm, which are the criteria for metabolic syndrome. [Table 2.1] More than 90% of patients had at least one established cardiovascular risk factor. [Table 2.5]

#### **Socio-demographics**

In general, SDPs in the Klang Valley and the East Coast of Semenanjung Malaysia had a high proportion of the Malay ethnic group. Exceptions were Pusat Perubatan Universiti Malaya in Kuala Lumpur, which reported up to 38% - 42% of cases were Indian; and Hospital Umum Sarawak and Hospital Pulau Pinang which each reported up to 40% of cases Chinese patients. This may be a reflection of the demographics of the local population served by the hospital. At nearly all the SDPs, 88% of patients who presented with ACS were male, although for Hospital Tuanku Ja'afar, Negeri Sembilan, up to 57% of its ACS presentations were females. [Table 2.2.2 & 2.2.3] There were also a much higher percentage of females (74%) below the age of 50.

The 50-60 years age group had the highest percentage of Malay and Indian males with ACS. While the 60-70 years age group had the highest percentage of Chinese males. This was consistent for 2007 and 2008. The 60 -70 years age group had the highest percentage of Malay and Indian females while the 70-80 years age group had the highest percentage of Chinese. Exception, the data for 2007 showed the highest percentage of Indian females in the 50-60 years age group. [Table 2.4]

#### **Analysis according to ACS subtypes**

In each year between 2006 and 2008, STEMI was the most common of the three ACS subtypes. The mean age of those presenting with STEMI was 57 years, approximately four years younger than those presenting with NSTEMI and UA. Approximately 85% of patients presenting with STEMI were male, and this was similar for years 2006 to 2008. The NSTEMI and UA demographics were similar, with approximately 69% male. [Table 2.7]

Approximately 50% of patients presenting with STEMI were active smokers. There were fewer STEMI patients with history of dyslipidaemia compared to NSTEMI and UA subgroups, (23% and 40% respectively). Prevalence of other pre-morbid cardiovascular risk factors were similar across the spectrum of ACS. [Table 2.7]

**Table 2.1 Summary of characteristics for patients with ACS, NCVD-ACS Registry, 2006-2008**

<b>Year</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>Total</b>
<b>Total</b>	<b>3422</b>	<b>3646</b>	<b>2851</b>	<b>9919</b>
<b>DEMOGRAPHICS</b>				
Age, years				
N	3422	3646	2851	9919
Mean (SD)	59 (12)	59 (12)	59 (12)	59 (12)
Median (min, max)	59 (21, 100)	59 (25, 95)	59 (21, 94)	59 (21, 100)
IQR	17	17	17	17
Age group, No. (%)				
20 - <30	23 (1)	20 (1)	19 (1)	62 (1)
30 - <40	143 (4)	161 (4)	149 (5)	453 (5)
40 - <50	621 (18)	681 (19)	489 (17)	1791 (18)
50 - <60	1054 (31)	1118 (31)	856 (30)	3028 (31)
60 - <70	881 (26)	961 (26)	769 (27)	2611 (26)
70 - <80	571 (17)	592 (16)	469 (16)	1632 (16)
≥ 80	129 (4)	113 (3)	100 (4)	342 (3)
Gender, No. (%)				
Male	2569 (75)	2797 (77)	2147 (75)	7513 (76)
Female	853 (25)	849 (23)	704 (25)	2406 (24)
Ethnic group, No. (%)				
Malay	1684 (49)	1740 (48)	1426 (50)	4850 (49)
Chinese	786 (23)	853 (23)	660 (23)	2299 (23)
Indian	799 (23)	847 (23)	601 (21)	2247 (23)
Orang Asli	0 (0)	2 (0)	0 (0)	2 (0)
Kadazan	2 (0)	26 (1)	9 (0)	37 (0)
Melanau	0 (0)	0 (0)	2 (0)	2 (0)
Bajau	1 (0)	28 (1)	24 (1)	53 (1)
Bidayuh	28 (1)	12 (0)	15 (1)	55 (1)
Iban	48 (1)	41 (1)	31 (1)	120 (1)
Sikh	1 (0)	4 (0)	4 (0)	9 (0)
Other Malaysian	36 (1)	46 (1)	26 (1)	108 (1)
Foreigner	37 (1)	43 (1)	45 (2)	125 (1)
Not Available	0 (0)	4 (0)	8 (0)	12 (0)

**Table 2.1 Summary of characteristics for patients with ACS, NCVD-ACS Registry, 2006-2008**

<b>Year</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>Total</b>
<b>Total</b>	<b>3422</b>	<b>3646</b>	<b>2851</b>	<b>9919</b>
<b>OTHER CORONARY RISK FACTORS</b>				
<b>Smoking, No. (%)</b>				
Never	1370 (40)	1358 (37)	1013 (36)	3741 (38)
Former (quit >30 days)	805 (24)	818 (22)	555 (19)	2178 (22)
Current (any tobacco use within last 30 days)	1138 (33)	1250 (34)	971 (34)	3359 (34)
Unknown	109 (3)	220 (6)	312 (11)	641 (6)
<b>Family history of Premature Cardiovascular Disease, No. (%)</b>				
Yes	404 (12)	478 (13)	260 (9)	1142 (12)
No	1684 (49)	2201 (60)	1693 (59)	5578 (56)
Unknown	1334 (39)	967 (27)	898 (31)	3199 (32)
<b>ANTHROPOMETRIC</b>				
<b>BMI</b>				
N	1926	1929	1604	5459
Mean (SD)	25.8 (4.4)	25.7 (4.2)	25.3 (4.1)	25.6 (4.3)
Median (min, max)	25.2 (13.2, 60.4)	25.2 (13.3, 51.9)	24.8 (13.9, 50.9)	25.1 (13.2, 60.4)
IQR	4.9	5	4.8	4.9
<b>BMI, kg/m<sup>2</sup>, No. (%)</b>				
<18.5	58 (3)	32 (2)	57 (4)	147 (3)
18.5 - 23	426 (22)	465 (24)	378 (24)	1269 (23)
>23	1442 (75)	1432 (74)	1169 (73)	4043 (74)
<b>WHR</b>				
N	1394	1572	1303	4269
Mean (SD)	0.97 (.09)	1.02 (2.42)	0.95 (.08)	0.98 (1.47)
Median (min, max)	0.96 (0.46, 1.85)	0.96 (0.36, 97.02)	0.95 (0.38, 1.57)	0.96 (0.36, 97.02)
IQR	0.09	0.07	0.07	0.07
<b>WHR, No. (%)</b>				
Men	1091	1250	1026	3367
≤1.0	786 (72)	977 (78)	827 (81)	2590 (77)
>1.0	305 (28)	273 (22)	199 (19)	777 (23)

**Table 2.1 Summary of characteristics for patients with ACS, NCVD-ACS Registry, 2006-2008**

<b>Year</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>Overall</b>
<b>Total</b>	<b>3422</b>	<b>3646</b>	<b>2851</b>	<b>9919</b>
Women	303	322	277	902
≤0.85	35 (12)	40 (12)	33 (12)	108 (12)
>0.85	268 (88)	282 (88)	244 (88)	794 (88)
Waist circumference, cm				
N	1502	1676	1357	4535
Mean (SD)	89.7 (14.4)	88.1 (15.4)	87.8 (13.7)	88.5 (14.6)
Median (min, max)	90 (36, 160)	89 (36, 162)	88 (36, 153)	89 (36, 162)
IQR	13	15	15	15
Waist circumference, cm, No. (%)				
Men	1162	1323	1065	3550
≤90	586 (50)	718 (54)	617 (58)	1921 (54)
>90	576 (50)	605 (46)	448 (42)	1629 (46)
Women	340	353	292	985
≤80	68 (20)	91 (26)	77 (26)	236 (24)
>80	272 (80)	262 (74)	215 (74)	749 (76)
CO-MORBIDITY				
Dyslipidaemia, No. (%)				
Yes	1131 (33)	1291 (35)	883 (31)	3305 (33)
No	902 (26)	1185 (33)	996 (35)	3083 (31)
Unknown	1389 (41)	1170 (32)	972 (34)	3531 (36)
Hypertension, No. (%)				
Yes	2084 (61)	2279 (63)	1602 (56)	5965 (60)
No	786 (23)	930 (26)	768 (27)	2484 (25)
Unknown	552 (16)	437 (12)	481 (17)	1470 (15)
Diabetes, No. (%)				
Yes	1497 (44)	1599 (44)	1098 (39)	4194 (42)
No	1226 (36)	1526 (42)	1207 (42)	3959 (40)
Unknown	699 (20)	521 (14)	546 (19)	1766 (18)
Fasting blood glucose, mmol/L				
N	2561	2717	1901	7179
Mean (SD)	8.2 (4)	8 (3.7)	7.9 (3.7)	8 (3.8)
Median (min, max)	6.8 (3, 29.9)	6.7 (3, 28.5)	6.6 (3, 29.8)	6.7 (3, 29.9)
IQR	3.9	3.7	3.2	3.7

**Table 2.1 Summary of characteristics for patients with ACS, NCVD-ACS Registry, 2006-2008**

<b>Year</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>Overall</b>
<b>Total</b>	<b>3422</b>	<b>3646</b>	<b>2851</b>	<b>9919</b>
<b>Myocardial infarction history, No. (%)</b>				
Yes	562 (16)	656 (18)	375 (13)	1593 (16)
No	1847 (54)	2423 (66)	1845 (65)	6115 (62)
Unknown	1013 (30)	567 (16)	631 (22)	2211 (22)
<b>Documented CAD&gt;50% stenosis, No. (%)</b>				
Yes	508 (15)	661 (18)	417 (15)	1586 (16)
No	1734 (51)	2241 (61)	1557 (55)	5532 (56)
Unknown	1180 (34)	744 (20)	877 (31)	2801 (28)
<b>Chronic angina (onset more than 2 weeks ago), No. (%)</b>				
Yes	502 (15)	403 (11)	242 (8)	1147 (12)
No	2012 (59)	2689 (74)	1973 (69)	6674 (67)
Unknown	908 (27)	554 (15)	636 (22)	2098 (21)
<b>New onset angina (less than 2 weeks ago), No. (%)</b>				
Yes	1532 (45)	1944 (53)	1362 (48)	4838 (49)
No	1160 (34)	1274 (35)	970 (34)	3404 (34)
Unknown	730 (21)	428 (12)	519 (18)	1677 (17)
<b>Heart failure, No. (%)</b>				
Yes	284 (8)	248 (7)	141 (5)	673 (7)
No	2289 (67)	2872 (79)	2124 (75)	7285 (73)
Unknown	849 (25)	526 (14)	586 (21)	1961 (20)
<b>Chronic lung disease, No. (%)</b>				
Yes	130 (4)	103 (3)	91 (3)	324 (3)
No	2431 (71)	3027 (83)	2148 (75)	7606 (77)
Unknown	861 (25)	516 (14)	612 (21)	1989 (20)
<b>Renal disease, No. (%)</b>				
Yes	253 (7)	236 (6)	155 (5)	644 (6)
No	2305 (67)	2890 (79)	2085 (73)	7280 (73)
Unknown	864 (25)	520 (14)	611 (21)	1995 (20)

**Table 2.1 Summary of characteristics for patients with ACS, NCVD-ACS Registry, 2006-2008**

<b>Year</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>Overall</b>
<b>Total</b>	<b>3422</b>	<b>3646</b>	<b>2851</b>	<b>9919</b>
Cerebrovascular disease, No. (%)				
Yes	149 (4)	127 (3)	83 (3)	359 (4)
No	2420 (71)	3012 (83)	2149 (75)	7581 (76)
Unknown	853 (25)	507 (14)	619 (22)	1979 (20)
Peripheral vascular disease, No. (%)				
Yes	37 (1)	25 (1)	18 (1)	80 (1)
No	2492 (73)	3066 (84)	2191 (77)	7749 (78)
Unknown	893 (26)	555 (15)	642 (23)	2090 (21)
None of the above, No. (%)				
Yes	52 (2)	71 (2)	112 (4)	235 (2)
No	3089 (90)	3306 (91)	2350 (82)	8745 (88)
Unknown	281 (8)	269 (7)	389 (14)	939 (9)
Coronary artery disease, No. (%)**				
Yes	2199 (64)	2500 (69)	1676 (59)	6375 (64)
No	532 (16)	697 (19)	619 (22)	1848 (19)
Unknown	691 (20)	449 (12)	556 (20)	1696 (17)

\* 'Unknown' includes patients who do not know their co-morbidities and missing data

\*\* Coronary artery disease is defined as "Yes" to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

Note: Percentage is to the nearest decimal point

**Table 2.2.1 Distribution of patients with ACS by SDP, NCVD-ACS Registry, 2006-2008**

<b>Year</b>	<b>2006</b>		<b>2007</b>		<b>2008</b>		<b>Overall</b>	
<b>Source Data Provider</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
Pusat Perubatan Universiti Malaya	802	23	623	17	337	12	1762	18
Hospital Pulau Pinang	482	14	605	17	483	17	1570	16
Hospital Kuala Lumpur	413	12	374	10	334	12	1121	11
Institut Jantung Negara	456	13	401	11	264	9	1121	11
Hospital Umum Sarawak	375	11	284	8	277	10	936	9
Hospital Tengku Ampuan Afzan	152	4	370	10	277	10	799	8
Hospital Sultanah Aminah	242	7	231	6	260	9	733	7
Hospital Tuanku Ja'afar	146	4	245	7	194	7	585	6
Hospital Raja Perempuan Zainab II	141	4	135	4	82	3	358	4
Hospital Melaka	-	-	113	3	146	5	259	3
Hospital Tuanku Fauziah	53	2	71	2	101	4	225	2
Hospital Sultanah Bahiyah	160	5	49	1	4	0	213	2
Hospital Queen Elizabeth	-	-	92	3	82	3	174	2
Hospital Raja Permaisuri Bainun	-	-	53	1	-	-	53	1
Hospital Tengku Ampuan Rahimah	-	-	-	-	10	0	10	0
<b>TOTAL</b>	<b>3422</b>	<b>100</b>	<b>3646</b>	<b>100</b>	<b>2851</b>	<b>100</b>	<b>9919</b>	<b>100</b>

\*Each SDP started to contribute data at different time period

Note: Percentage is to the nearest decimal point

**Table 2.2.2 SDP-ethnicity distribution of patients with ACS, NCVD-ACS Registry, 2006-2008  
(row percentage)**

Source Data Provider	Ethnic Group												
	Malay		Chinese		Indian		Others*		NA <sup>+</sup>		Total		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
2006	Pusat Perubatan Universiti Malaya	264	33	180	22	335	42	23	3			802	100
	Institut Jantung Negara	216	47	85	19	141	31	14	3			456	100
	Hospital Kuala Lumpur	223	54	74	18	91	22	25	6			413	100
	Hospital Pulau Pinang	190	39	172	36	113	23	7	1			482	100
	Hospital Umum Sarawak	141	38	151	40	4	1	79	21			375	100
	Hospital Sultanah Aminah	128	53	66	27	46	19	2	1			242	100
	Hospital Sultanah Bahiyah	145	91	7	4	7	4	1	1			160	100
	Hospital Tuanku Ja'afar	71	49	23	16	52	36	0	0			146	100
	Hospital Tuanku Fauziah	49	92	1	2	2	4	1	2			53	100
	Hospital Raja Perempuan Zainab II	134	95	7	5	0	0	0	0			141	100
2007	Hospital Tengku Ampuan Afzan	123	81	20	13	8	5	1	1			152	100
	Pusat Perubatan Universiti Malaya	220	35	150	24	236	38	16	3	1	0	623	100
	Institut Jantung Negara	179	45	88	22	123	31	11	3	0	0	401	100
	Hospital Kuala Lumpur	175	47	48	13	126	34	25	7	0	0	374	100
	Hospital Pulau Pinang	217	36	215	36	163	27	8	1	2	0	605	100
	Hospital Umum Sarawak	96	34	128	45	5	2	54	19	1	0	284	100
	Hospital Sultanah Aminah	114	49	57	25	50	22	10	4	0	0	231	100
	Hospital Sultanah Bahiyah	42	86	6	12	1	2	0	0	0	0	49	100
	Hospital Tuanku Ja'afar	101	41	53	22	85	35	6	2	0	0	245	100
	Hospital Tuanku Fauziah	61	86	5	7	3	4	2	3	0	0	71	100
	Hospital Raja Permaisuri Bainun	30	57	8	15	13	25	2	4	0	0	53	100
	Hospital Raja Perempuan Zainab II	133	99	1	1	0	0	1	1	0	0	135	100
	Hospital Queen Elizabeth	9	10	16	17	3	3	64	70	0	0	92	100
	Hospital Tengku Ampuan Afzan	294	79	54	15	20	5	2	1	0	0	370	100
	Hospital Melaka	69	61	24	21	19	17	1	1	0	0	113	100
2008	Pusat Perubatan Universiti Malaya	114	34	76	23	128	38	17	5	2	1	337	100
	Institut Jantung Negara	103	39	52	20	99	38	10	4	0	0	264	100
	Hospital Kuala Lumpur	170	51	47	14	96	29	21	6	0	0	334	100
	Hospital Pulau Pinang	177	37	194	40	107	22	3	1	2	0	483	100
	Hospital Umum Sarawak	129	47	96	35	1	0	50	18	1	0	277	100
	Hospital Sultanah Aminah	143	55	52	20	57	22	8	3	0	0	260	100
	Hospital Sultanah Bahiyah	4	100	0	0	0	0	0	0	0	0	4	100
	Hospital Tuanku Ja'afar	93	48	36	19	64	33	1	1	0	0	194	100
	Hospital Tuanku Fauziah	90	89	7	7	1	1	2	2	1	1	101	100
	Hospital Raja Perempuan Zainab II	79	96	2	2	0	0	1	1	0	0	82	100
	Hospital Queen Elizabeth	9	11	29	35	4	5	39	48	1	1	82	100
	Hospital Tengku Ampuan Afzan	210	76	46	17	17	6	4	1	0	0	277	100
	Hospital Melaka	102	70	22	15	21	14	0	0	1	1	146	100
	Hospital Tengku	3	30	1	10	6	60	0	0	0	0	10	100

\*'Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and Foreigner

<sup>+</sup> NA = Not Available

Note: Percentage is to the nearest decimal point

**Table 2.2.3 SDP-gender distribution of patients with ACS, NCVD-ACS Registry, 2006-2008 (row percentage)**

Source Data Provider	Gender										2008									
	2006					2007					2008									
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	No.	%	No.	%	No.	%	No.	%
Pusat Perubatan Universiti Malaya	588	73	214	27	802	100	424	68	199	32	623	100	231	69	106	31	337	100		
Institut Jantung Negara	357	78	99	22	456	100	306	76	95	24	401	100	202	77	62	23	264	100		
Hospital Kuala Lumpur	329	80	84	20	413	100	308	82	66	18	374	100	273	82	61	18	334	100		
Hospital Pulau Pinang	366	76	116	24	482	100	433	72	172	28	605	100	360	75	123	25	483	100		
Hospital Umum Sarawak	263	70	112	30	375	100	211	74	73	26	284	100	213	77	64	23	277	100		
Hospital Sultanah Aminah	212	88	30	12	242	100	210	91	21	9	231	100	230	88	30	12	260	100		
Hospital Sultanah Bahiyah	103	64	57	36	160	100	36	73	13	27	49	100	4	100	0	0	4	100		
Hospital Tuanku Ja'afar	77	53	69	47	146	100	167	68	78	32	245	100	84	43	110	57	194	100		
Hospital Tuanku Fauziah	45	85	8	15	53	100	67	94	4	6	71	100	86	85	15	15	101	100		
Hospital Raja Perempuan Zainab II	109	77	32	23	141	100	116	86	19	14	135	100	73	89	9	11	82	100		
Hospital Tengku Ampuan Afzan	120	79	32	21	152	100	301	81	69	19	370	100	203	73	74	27	277	100		
Hospital Raja Permaisuri Bainun							46	87	7	13	53	100								
Hospital Queen Elizabeth							81	88	11	12	92	100	67	82	15	18	82	100		
Hospital Melaka							91	81	22	19	113	100	113	77	33	23	146	100		
Hospital Tengku Ampuan Rahimah											8	80	2	20	10	10	100			

Note: Percentage is to the nearest decimal point

**Table 2.3 Age-gender distribution of patients with ACS, NCVD-ACS Registry, 2006-2008**

	Age	Gender					
		Male		Female		Total	
		No.	%	No.	%	No.	%
2006	20 - <30	22	1	1	0	23	1
	30 - <40	131	5	12	1	143	4
	40 - <50	541	21	80	9	621	18
	50 - <60	888	35	166	19	1054	31
	60 - <70	616	24	265	31	881	26
	70 - <80	306	12	265	31	571	17
	≥80	65	3	64	8	129	4
	Total	2569	100	853	100	3422	100
2007	20 - <30	18	1	2	0	20	1
	30 - <40	147	5	14	2	161	4
	40 - <50	589	21	92	11	681	19
	50 - <60	929	33	189	22	1118	31
	60 - <70	704	25	257	30	961	26
	70 - <80	348	12	244	29	592	16
	≥80	62	2	51	6	113	3
	Total	2797	100	849	100	3646	100
2008	20 - <30	19	1	0	0	19	1
	30 - <40	135	6	14	2	149	5
	40 - <50	432	20	57	8	489	17
	50 - <60	704	33	152	22	856	30
	60 - <70	547	25	222	32	769	27
	70 - <80	259	12	210	30	469	16
	≥80	51	2	49	7	100	4
	Total	2147	100	704	100	2851	100
Overall	20 - <30	59	1	3	0	62	1
	30 - <40	413	5	40	2	453	5
	40 - <50	1562	21	229	10	1791	18
	50 - <60	2521	34	507	21	3028	31
	60 - <70	1867	25	744	31	2611	26
	70 - <80	913	12	719	30	1632	16
	≥80	178	2	164	7	342	3
	Total	7513	100	2406	100	9919	100

Note: Percentage is to the nearest decimal point

**Table 2.4.1 Age-gender distribution of patients with ACS by ethnic group, NCVD-ACS Registry, 2006-2008**

Year	Gender	Age group	Ethnic groups									
			Malay		Chinese		Indian		Others*		Not Available	
			No.	%	No.	%	No.	%	No.	%	No.	%
2006	Male	20 - <30	10	1	5	1	5	1	2	2		
		30 - <40	67	5	25	4	28	5	11	9		
		40 - <50	286	22	91	16	133	23	31	26		
		50 - <60	445	34	183	33	227	39	33	28		
		60 - <70	324	25	137	24	130	22	25	21		
		70 - <80	148	11	95	17	48	8	15	13		
		≥80	24	2	25	4	15	3	1	1		
		Total	1304	100	561	100	586	100	118	100		
2006	Female	20 - <30	1	0	0	0	0	0	0	0		
		30 - <40	5	1	3	1	4	2	0	0		
		40 - <50	41	11	7	3	32	15	0	0		
		50 - <60	88	23	28	12	45	21	5	14		
		60 - <70	117	31	68	30	62	29	18	51		
		70 - <80	111	29	91	40	53	25	10	29		
		≥80	17	4	28	12	17	8	2	6		
		Total	380	100	225	100	213	100	35	100		
2007	Male	20 - <30	10	1	3	0	3	1	2	1	0	0
		30 - <40	65	5	21	3	43	7	18	10	0	0
		40 - <50	304	22	94	15	155	26	36	21	0	0
		50 - <60	474	34	186	29	213	36	54	31	2	100
		60 - <70	350	25	203	32	108	18	43	25	0	0
		70 - <80	167	12	111	17	54	9	16	9	0	0
		≥80	25	2	18	3	15	3	4	2	0	0
		Total	1395	100	636	100	591	100	173	100	2	100
2007	Female	20 - <30	1	0	0	0	1	0	0	0	0	0
		30 - <40	2	1	4	2	6	2	2	7	0	0
		40 - <50	39	11	12	6	36	14	5	17	0	0
		50 - <60	74	21	29	13	79	31	7	24	0	0
		60 - <70	124	36	65	30	62	24	6	21	0	0
		70 - <80	90	26	81	37	64	25	7	24	2	100
		≥80	15	4	26	12	8	3	2	7	0	0
		Total	345	100	217	100	256	100	29	100	2	100

\*'Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and Foreigner

**Table 2.4.1 Age-gender distribution of patients with ACS by ethnic group, NCVD-ACS Registry, 2006-2008**

Year	Gender	Age group	Ethnic groups									
			Malay		Chinese		Indian		Others*		Not Available	
			No.	%	No.	%	No.	%	No.	%	No.	%
2008	Male	20 - <30	9	1	3	1	5	1	2	2	0	0
		30 - <40	67	6	17	4	37	9	13	10	1	20
		40 - <50	239	21	54	11	101	24	37	28	1	20
		50 - <60	378	34	130	28	151	35	43	33	2	40
		60 - <70	283	25	163	35	77	18	24	18	0	0
		70 - <80	116	10	88	19	45	11	9	7	1	20
		≥80	23	2	15	3	11	3	2	2	0	0
		Total	1115	100	470	100	427	100	130	100	5	100
2008	Female	20 - <30	0	0	0	0	0	0	0	0	0	0
		30 - <40	7	2	3	2	3	2	1	4	0	0
		40 - <50	31	10	1	1	23	13	2	8	0	0
		50 - <60	76	24	32	17	37	21	7	27	0	0
		60 - <70	93	30	59	31	64	37	5	19	1	33
		70 - <80	89	29	72	38	37	21	11	42	1	33
		≥80	15	5	23	12	10	6	0	0	1	33
		Total	311	100	190	100	174	100	26	100	3	100

\*'Others' includes Orang asli, Kadazan, Melana, Murut, Bajau, Bidayuh, Iban, other Malaysian and Foreigner

**Table 2.4.2 Age-gender distribution of patients with ACS by pre-morbid diabetes, NCVD-ACS Registry, 2006-2008**

Year	Gender	Age group	Pre-morbid diabetes					
			Diabetic		Non-diabetic		Unknown	
			No.	%	No.	%	No.	%
2006	Male	20 - <30	1	0	15	2	6	1
		30 - <40	31	3	60	6	41	7
		40 - <50	193	19	212	22	135	23
		50 - <60	401	39	287	30	191	33
		60 - <70	259	25	225	23	130	22
		70 - <80	115	11	128	13	62	11
		≥80	18	2	32	3	15	3
		Total	1018	100	959	100	580	100
2006	Female	20 - <30	0	0	0	0	1	1
		30 - <40	4	1	3	1	4	4
		40 - <50	45	9	23	9	13	12
		50 - <60	96	20	45	17	23	21
		60 - <70	150	31	82	31	32	29
		70 - <80	156	33	86	33	25	23
		≥80	26	5	25	9	13	12
		Total	477	100	264	100	111	100

**Table 2.4.2 Age-gender distribution of patients with ACS by pre-morbid diabetes, NCVD-ACS Registry, 2006-2008**

Year	Gender	Age group	Pre-morbid diabetes					
			Diabetic		Non-diabetic		Unknown	
			No.	%	No.	%	No.	%
2007	Male	20 - <30	5	0	5	0	8	2
		30 - <40	30	3	84	7	33	8
		40 - <50	198	18	276	22	116	26
		50 - <60	385	35	404	32	140	32
		60 - <70	316	29	307	24	80	18
		70 - <80	142	13	160	13	46	11
		≥80	17	2	30	2	15	3
		Total	1093	100	1266	100	438	100
2008	Female	20 - <30	1	0	1	0	0	0
		30 - <40	5	1	9	3	0	0
		40 - <50	57	11	24	9	11	13
		50 - <60	119	24	50	19	20	24
		60 - <70	155	31	77	30	25	30
		70 - <80	147	29	75	29	22	27
		≥80	22	4	24	9	5	6
		Total	506	100	260	100	83	100
2008	Male	20 - <30	1	0	12	1	6	1
		30 - <40	35	5	66	7	35	8
		40 - <50	116	16	226	23	90	21
		50 - <60	246	34	313	31	143	34
		60 - <70	208	29	243	24	97	23
		70 - <80	104	14	115	12	40	9
		≥80	12	2	25	3	14	3
		Total	722	100	1000	100	425	100
2008	Female	20 - <30	0	0	0	0	0	0
		30 - <40	5	1	7	3	2	2
		40 - <50	34	9	18	9	5	4
		50 - <60	91	24	45	22	16	13
		60 - <70	135	36	53	26	34	28
		70 - <80	93	25	70	34	47	39
		≥80	18	5	14	7	17	14
		Total	376	100	207	100	121	100

**Table 2.4.3 Age-gender distribution of patients with ACS by pre-morbid hypertension, NCVD-ACS Registry, 2006-2008**

Year	Gender	Age group	Pre-morbid hypertension					
			Hypertensive		Non-hypertensive		Unknown	
			No.	%	No.	%	No.	%
2006	Male	20 - <30	2	0	15	2	5	1
		30 - <40	38	3	56	8	38	8
		40 - <50	236	17	177	26	127	27
		50 - <60	508	36	229	34	142	31
		60 - <70	393	28	125	18	96	21
		70 - <80	196	14	63	9	46	10
		≥80	39	3	16	2	10	2
	Female	Total	1412	100	681	100	464	100
		20 - <30	0	0	0	0	1	1
		30 - <40	5	1	3	3	3	4
2007	Male	40 - <50	52	8	14	13	15	19
		50 - <60	128	19	23	22	13	16
		60 - <70	213	32	32	30	19	23
		70 - <80	214	32	27	26	26	32
		≥80	54	8	6	6	4	5
		Total	666	100	105	100	81	100
		20 - <30	7	0	4	0	7	2
	Female	30 - <40	52	3	62	8	33	9
		40 - <50	250	16	234	29	106	28
		50 - <60	556	34	247	31	126	33
	Male	60 - <70	462	29	174	22	67	18
		70 - <80	248	15	73	9	27	7
		≥80	37	2	11	1	14	4
		Total	1612	100	805	100	380	100
		20 - <30	1	0	1	1	0	0
		30 - <40	5	1	8	6	1	2
		40 - <50	62	9	21	17	9	16
		50 - <60	138	21	34	27	17	30
	Female	60 - <70	219	33	22	18	16	28
		70 - <80	204	31	28	22	12	21
		≥80	38	6	11	9	2	4
		Total	667	100	125	100	57	100

**Table 2.4.3 Age-gender distribution of patients with ACS by pre-morbid hypertension, NCVD-ACS Registry, 2006-2008**

Year	Gender	Age group	Pre-morbid hypertension					
			Hypertensive		Non-hypertensive		Unknown	
			No.	%	No.	%	No.	%
2008	Male	20 - <30	5	0	8	1	6	2
		30 - <40	45	4	61	9	30	8
		40 - <50	170	16	179	26	83	22
		50 - <60	343	32	227	33	132	34
		60 - <70	338	31	129	19	81	21
		70 - <80	159	15	60	9	40	10
		≥80	24	2	16	2	11	3
		Total	1084	100	680	100	383	100
2008	Female	20 - <30	0	0	0	0	0	0
		30 - <40	5	1	6	7	3	3
		40 - <50	38	7	12	14	7	7
		50 - <60	118	23	21	24	13	13
		60 - <70	173	33	22	25	27	28
		70 - <80	152	29	24	27	34	35
		≥80	32	6	3	3	14	14
		Total	518	100	88	100	98	100

**Table 2.4.4 Age-gender distribution of patients with ACS by pre-morbid dyslipidaemia, NCVD-ACS Registry, 2006-2008**

Year	Gender	Age group	Pre-morbid dyslipidaemia					
			Yes		No		Unknown	
			No.	%	No.	%	No.	%
2006	Male	20 - <30	2	0	11	2	9	1
		30 - <40	28	4	45	7	59	5
		40 - <50	145	18	152	22	243	23
		50 - <60	267	34	230	33	382	36
		60 - <70	238	30	140	20	236	22
		70 - <80	97	12	92	13	116	11
		≥80	15	2	22	3	28	3
		Total	792	100	692	100	1073	100
2006	Female	20 - <30	0	0	0	0	1	0
		30 - <40	2	1	1	0	8	3
		40 - <50	27	8	24	11	30	10
		50 - <60	65	19	48	22	51	17
		60 - <70	109	33	65	30	90	30
		70 - <80	116	35	55	26	96	32
		≥80	15	4	22	10	27	9
		Total	334	100	215	100	303	100

**Table 2.4.4 Age-gender distribution of patients with ACS by pre-morbid dyslipidaemia, NCVD-ACS Registry, 2006-2008**

Year	Gender	Age group	Pre-morbid dyslipidaemia					
			Yes		No		Unknown	
			No.	%	No.	%	No.	%
2007	Male	20 - <30	7	1	2	0	9	1
		30 - <40	35	4	62	7	50	6
		40 - <50	191	20	179	19	220	24
		50 - <60	327	34	319	34	283	32
		60 - <70	250	26	247	27	206	23
		70 - <80	140	14	98	11	110	12
		≥80	24	2	18	2	20	2
		Total	974	100	925	100	898	100
2008	Female	20 - <30	1	0	1	0	0	0
		30 - <40	5	2	6	2	3	1
		40 - <50	30	9	33	13	29	11
		50 - <60	58	18	59	23	72	26
		60 - <70	109	34	74	28	74	27
		70 - <80	95	30	73	28	76	28
		≥80	19	6	14	5	18	7
		Total	317	100	260	100	272	100
2008	Male	20 - <30	1	0	10	1	8	1
		30 - <40	29	5	50	6	57	8
		40 - <50	106	17	162	20	164	22
		50 - <60	210	34	249	31	243	33
		60 - <70	192	31	194	24	162	22
		70 - <80	74	12	106	13	79	11
		≥80	6	1	27	3	18	2
		Total	618	100	798	100	731	100
2008	Female	20 - <30	0	0	0	0	0	0
		30 - <40	3	1	3	2	8	3
		40 - <50	19	7	24	12	14	6
		50 - <60	56	21	52	26	44	18
		60 - <70	93	35	55	28	74	31
		70 - <80	82	31	52	26	76	32
		≥80	12	5	12	6	25	10
		Total	265	100	198	100	241	100

**Table 2.4.5 Age-gender distribution of patients with ACS by family history of premature cardiovascular disease, NCVD-ACS Registry, 2006-2008**

Year	Gender	Age group	Family history of premature cardiovascular disease					
			Yes		No		Unknown	
			No.	%	No.	%	No.	%
2006	Male	20 - <30	3	1	13	1	6	1
		30 - <40	36	11	56	5	40	4
		40 - <50	94	28	251	20	195	20
		50 - <60	129	38	393	32	357	36
		60 - <70	58	17	309	25	247	25
		70 - <80	14	4	176	14	115	12
		≥80	2	1	37	3	26	3
		Total	336	100	1235	100	986	100
2007	Female	20 - <30	0	0	0	0	1	0
		30 - <40	2	3	2	0	7	2
		40 - <50	22	33	33	7	26	8
		50 - <60	14	21	86	19	64	19
		60 - <70	16	24	156	35	92	27
		70 - <80	12	18	138	31	117	35
		≥80	1	1	35	8	28	8
		Total	67	100	450	100	335	100
2007	Male	20 - <30	2	1	11	1	5	1
		30 - <40	28	7	81	5	38	5
		40 - <50	116	30	319	19	155	21
		50 - <60	128	33	556	33	245	34
		60 - <70	79	20	452	27	172	24
		70 - <80	26	7	227	14	95	13
		≥80	10	3	34	2	18	2
		Total	389	100	1680	100	728	100
2007	Female	20 - <30	0	0	2	0	0	0
		30 - <40	4	4	10	2	0	0
		40 - <50	22	25	52	10	18	8
		50 - <60	22	25	119	23	48	20
		60 - <70	24	27	149	29	84	35
		70 - <80	15	17	155	30	74	31
		≥80	2	2	34	7	15	6
		Total	89	100	521	100	239	100

**Table 2.4.5 Age-gender distribution of patients with ACS by family history of premature cardiovascular disease, NCVD-ACS Registry, 2006-2008**

Year	Gender	Age group	Family history of premature cardiovascular disease					
			Yes		No		Unknown	
			No.	%	No.	%	No.	%
2008	Male	20 - <30	4	2	10	1	5	1
		30 - <40	28	13	67	5	41	6
		40 - <50	71	33	242	19	119	19
		50 - <60	68	32	426	33	208	33
		60 - <70	33	15	357	27	158	25
		70 - <80	10	5	164	13	85	13
		≥80	0	0	34	3	17	3
		Total	214	100	1300	100	633	100
2008	Female	20 - <30	0	0	0	0	0	0
		30 - <40	1	2	10	3	3	1
		40 - <50	7	15	36	9	14	5
		50 - <60	19	41	80	20	53	20
		60 - <70	12	26	128	33	82	31
		70 - <80	6	13	115	29	89	34
		≥80	1	2	24	6	24	9
		Total	46	100	393	100	265	100

**Table 2.4.6 Age-gender distribution of patients with ACS by smoking status, NCVD-ACS Registry, 2006-2008**

Year	Gender	Age group	Smoking status					
			Never		Former (quit more than 30days)		Current (any tobacco used within 30days)	
			No.	%	No.	%	No.	%
2006	Male	20 - <30	2	0	1	0	19	2
		30 - <40	12	2	19	3	98	9
		40 - <50	112	18	103	14	315	28
		50 - <60	203	33	247	33	394	36
		60 - <70	189	31	204	27	198	18
		70 - <80	84	14	135	18	75	7
		≥80	16	3	38	5	9	1
		Total	618	100	747	100	1108	100
2006	Female	20 - <30	0	0	0	0	1	4
		30 - <40	11	1	0	0	0	0
		40 - <50	76	10	2	4	2	7
		50 - <60	146	19	6	12	5	19
		60 - <70	232	31	18	35	10	37
		70 - <80	231	31	17	33	8	30
		≥80	54	7	9	17	1	4
		Total	750	100	52	100	27	100

**Table 2.4.6 Age-gender distribution of patients with ACS by smoking status, NCVD-ACS Registry, 2006-2008**

Year	Gender	Age group	Smoking status							
			Never		Former (quit more than 30days)		Current (any tobacco used within 30days)		Unknown	
			No.	%	No.	%	No.	%	No.	%
2007	Male	20 - <30	4	1	1	0	13	1	0	0
		30 - <40	22	3	28	4	91	7	6	4
		40 - <50	108	17	104	13	361	30	17	11
		50 - <60	220	34	238	31	416	34	55	35
		60 - <70	175	27	256	33	227	19	45	29
		70 - <80	98	15	124	16	99	8	27	17
		≥80	16	2	26	3	14	1	6	4
		Total	643	100	777	100	1221	100	156	100
2008	Female	20 - <30	2	0	0	0	0	0	0	0
		30 - <40	12	2	0	0	2	7	0	0
		40 - <50	83	12	1	2	3	10	5	8
		50 - <60	163	23	8	20	5	17	13	20
		60 - <70	219	31	8	20	8	28	22	34
		70 - <80	194	27	20	49	9	31	21	33
		≥80	42	6	4	10	2	7	3	5
		Total	715	100	41	100	29	100	64	100
2008	Male	20 - <30	2	0	1	0	14	1	2	1
		30 - <40	11	2	16	3	87	9	22	10
		40 - <50	71	16	68	13	264	28	29	13
		50 - <60	139	31	159	31	333	35	71	31
		60 - <70	140	31	167	32	186	20	55	24
		70 - <80	71	16	92	18	56	6	40	18
		≥80	18	4	15	3	9	1	9	4
		Total	452	100	518	100	949	100	228	100
2008	Female	20 - <30	0	0	0	0	0	0	0	0
		30 - <40	13	2	0	0	0	0	1	1
		40 - <50	49	9	1	3	2	9	5	6
		50 - <60	124	22	10	27	4	18	14	17
		60 - <70	180	32	9	24	7	32	26	31
		70 - <80	157	28	17	46	8	36	28	33
		≥80	38	7	0	0	1	5	10	12
		Total	561	100	37	100	22	100	84	100

**Table 2.5 Presence of cumulative risk factors, NCVD-ACS Registry, 2006-2008**

Year	2006		2007		2008		Overall	
Total	3422		3646		2851		9919	
Presence of cumulative risk factors*	No.	%	No.	No.	%	%	No.	%
None	143	4	156	4	183	6	482	5
1 risk factor	634	19	641	18	642	23	1917	19
2 risk factors	987	29	1069	29	810	28	2866	29
3 risk factors	938	27	980	27	713	25	2631	27
>3 risk factors	720	21	800	22	503	18	2023	20

\*Risk factors are defined as presence of dyslipidaemia, hypertension, diabetes, family history of premature cardiovascular disease, smoking and obesity

**Table 2.6 Summary of type of cardiac presentation for patients with ACS, NCVD-ACS Registry, 2006-2008**

Year	2006		2007		2008		Total	
Total	3422		3646		2851		9919	
Acute coronary syndrome stratum	No	%	No	%	No	%	No	%
STEMI	1445	42	1687	46	1534	54	4666	47
NSTEMI	1132	33	1001	27	662	23	2795	28
Unstable Angina (UA)	845	25	958	26	655	23	2458	25

Note: Percentage is to the nearest decimal point

**Table 2.7 Characteristics of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008**

Year	2006				2007				2008				Overall		
	ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA		
Total	1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458			
<b>DEMOGRAPHICS</b>															
Age, years															
N	1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458			
Mean (SD)	56 (12)	62 (11)	60 (11)	57 (12)	61 (11)	61 (12)	57 (12)	63 (11)	61 (12)	57 (12)	62 (11)	61 (12)			
Median (min, max)	56 (21, 93)	63 (23, 100)	60 (32, 92)	56 (25, 95)	61 (26, 89)	61 (27, 91)	56 (21, 94)	63 (22, 90)	61 (24, 90)	56 (21, 95)	62 (22, 10)	61 (24, 10)			
IQR	17	16	17	16	16	17	17	17	17	17	17	16	17		
Age group, No. (%)															
20 - <30	22 (2)	1 (0)	0 (0)	10 (1)	4 (0)	6 (1)	14 (1)	2 (0)	3 (0)	46 (1)	7 (0)	9 (0)			
30 - <40	91 (6)	27 (2)	25 (3)	102 (6)	32 (3)	27 (3)	104 (7)	15 (2)	30 (5)	297 (6)	74 (3)	82 (3)			
40 - <50	343 (24)	139 (12)	139 (16)	404 (24)	129 (13)	148 (15)	337 (22)	75 (11)	77 (12)	1084 (23)	343 (12)	364 (15)			
50 - <60	460 (32)	330 (29)	264 (31)	549 (33)	294 (29)	275 (29)	477 (31)	184 (28)	195 (30)	1486 (32)	808 (29)	734 (30)			
60 - <70	318 (22)	334 (30)	229 (27)	398 (24)	295 (29)	268 (28)	371 (24)	195 (29)	203 (31)	1087 (23)	824 (29)	700 (28)			
70 - <80	180 (12)	244 (22)	147 (17)	186 (11)	206 (21)	200 (21)	189 (12)	158 (24)	122 (19)	555 (12)	608 (22)	469 (19)			
≥80	31 (2)	57 (5)	41 (5)	38 (2)	41 (4)	34 (4)	42 (3)	33 (5)	25 (4)	111 (2)	131 (5)	100 (4)			
Gender, No. (%)															
Male	1230 (85)	779 (69)	560 (66)	1447 (86)	700 (70)	650 (68)	1281 (84)	457 (69)	409 (62)	3958 (85)	1936 (69)	1619 (66)			
Female	215 (15)	353 (31)	285 (34)	240 (14)	301 (30)	308 (32)	253 (16)	205 (31)	246 (38)	708 (15)	859 (31)	839 (34)			

Table 2.7 Characteristics of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year	ACS Stratum	2006			2007			2008			Overall		
		STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total		1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458
Ethnic group, No. (%)													
Malay	780 (54)	514 (45)	390 (46)	893 (53)	457 (46)	390 (41)	852 (56)	310 (47)	264 (40)	2525 (54)	1281 (46)	1044 (42)	
Chinese	301 (21)	265 (23)	220 (26)	356 (21)	243 (24)	254 (27)	301 (20)	177 (27)	182 (28)	958 (21)	685 (25)	656 (27)	
Indian	286 (20)	303 (27)	210 (25)	322 (19)	246 (25)	279 (29)	271 (18)	139 (21)	191 (29)	879 (19)	688 (25)	680 (28)	
Orang Asli	0 (0)	0 (0)	0 (0)	1 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	1 (0)	0 (0)
Kadazan	1 (0)	1 (0)	0 (0)	21 (1)	4 (0)	1 (0)	6 (0)	3 (0)	0 (0)	28 (1)	8 (0)	1 (0)	
Melanau	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	1 (0)	1 (0)	0 (0)	0 (0)	1 (0)
Murut	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Bajau	1 (0)	0 (0)	0 (0)	21 (1)	6 (1)	1 (0)	18 (1)	5 (1)	1 (0)	40 (1)	11 (0)	2 (0)	
Bidayuh	16 (1)	9 (1)	3 (0)	5 (0)	6 (1)	1 (0)	9 (1)	6 (1)	0 (0)	30 (1)	21 (1)	4 (0)	
Iban	21 (1)	19 (2)	8 (1)	16 (1)	15 (1)	10 (1)	18 (1)	12 (2)	1 (0)	55 (1)	46 (2)	19 (1)	
Other Malaysian	12 (1)	14 (1)	11 (1)	2 (0)	1 (0)	1 (0)	4 (0)	0 (0)	0 (0)	6 (0)	1 (0)	2 (0)	
Foreigner	27 (2)	7 (1)	3 (0)	21 (1)	12 (1)	13 (1)	12 (1)	6 (1)	8 (1)	45 (1)	32 (1)	31 (1)	
Not Available	0 (0)	0 (0)	0 (0)	28 (2)	10 (1)	5 (1)	37 (2)	4 (1)	4 (1)	92 (2)	21 (1)	12 (0)	
<b>OTHER CORONARY RISK FACTORS</b>													
Smoking, No. (%)													
Never	417 (29)	551 (49)	402 (48)	480 (28)	424 (42)	454 (47)	438 (29)	292 (44)	283 (43)	1335 (29)	1267 (45)	1139 (46)	
Former (quit >30 days)	272 (19)	295 (26)	238 (28)	303 (18)	236 (24)	279 (29)	269 (18)	145 (22)	141 (22)	844 (18)	676 (24)	658 (27)	
Current (any tobacco use within last 30 days)	723 (50)	259 (23)	156 (18)	824 (49)	263 (26)	163 (17)	712 (46)	149 (23)	110 (17)	2259 (48)	671 (24)	429 (17)	
Unknown	33 (2)	27 (2)	49 (6)	80 (5)	78 (8)	62 (6)	115 (7)	76 (11)	121 (18)	228 (5)	181 (6)	232 (9)	

Table 2.7 Characteristics of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year	ACS Stratum	2006				2007				2008				Overall		
		STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458				
Family history of premature cardiovascular disease, No. (%)																
Yes	168 (12)	127 (11)	109 (13)	207 (12)	136 (14)	135 (14)	160 (10)	59 (9)	41 (6)	535 (11)	322 (12)	285 (12)				
No	742 (51)	550 (49)	392 (46)	1008 (60)	570 (57)	623 (65)	920 (60)	378 (57)	395 (60)	2670 (57)	1498 (54)	1410 (57)				
Unknown	535 (37)	455 (40)	344 (41)	472 (28)	295 (29)	200 (21)	454 (30)	225 (34)	219 (33)	1461 (31)	975 (35)	763 (31)				
Body Mass Index (BMI), kg/m <sup>2</sup>																
N	831	698	397	916	525	488	871	408	325	2618	1631	1210				
Mean (SD)	25.69 (4.27)	25.45 (4.37)	26.46 (4.81)	25.67 (4.15)	25.8 (4.03)	25.78 (4.59)	25.41 (4.04)	24.95 (3.9)	25.47 (4.44)	25.59 (4.15)	25.44 (4.16)	25.92 (4.64)				
Median {min, max}	25.14 (13.15, 60.39)	25.05 (14.87, 59.93)	25.81 (14.87, 45.99)	25.1 (13.68, 44.98)	25.31 (14.67, 44.22)	25.11 (13.28, 51.92)	25.01 (14.67, 50.93)	24.45 (13.85, 42.46)	24.91 (14.53, 40.98)	25.1 (13.15, 60.39)	24.97 (13.85, 59.93)	25.28 (13.28, 51.92)				
IQR																
BMI, kg/m <sup>2</sup> , No. (%)																
<18.5	21 (3)	24 (3)	13 (3)	18 (2)	6 (1)	8 (2)	26 (3)	20 (5)	11 (3)	65 (2)	50 (3)	32 (3)				
18.5-23	181 (22)	174 (25)	71 (18)	211 (23)	130 (25)	124 (25)	200 (23)	102 (25)	76 (23)	592 (23)	406 (25)	271 (22)				
>23	629 (76)	500 (72)	313 (79)	687 (75)	389 (74)	356 (73)	645 (74)	286 (70)	238 (73)	1961 (75)	1175 (72)	907 (75)				

Table 2.7 Characteristics of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year	2006						2007						2008						Overall	
	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI
Total	<b>1445</b>	<b>1132</b>	<b>845</b>	<b>1687</b>	<b>1001</b>	<b>958</b>	<b>1534</b>	<b>662</b>	<b>655</b>	<b>4666</b>	<b>2795</b>	<b>2458</b>								
Waist to Hip Ratio (WHR)																				
N	643	454	297	643	454	297	765	302	236	2212	1147	910								
Mean (SD)	0.97 (0.08)	0.97 (0.09)	0.96 (0.10)	0.97 (0.08)	0.97 (0.09)	0.96 (0.10)	0.96 (0.07)	0.95 (0.06)	0.95 (0.09)	0.97 (0.04)	1 (0.08)	0.96 (0.09)								
Median (min, max)	0.96 (0.54, 1.63)	0.96 (0.67, 1.61)	0.96 (0.46, 1.85)	0.96 (0.54, 1.63)	0.96 (0.67, 1.61)	0.96 (0.67, 1.61)	0.96 (0.46, 1.85)	0.95 (0.38, 1.56)	0.95 (0.70, 1.15)	0.96 (0.70, 1.57)	0.96 (0.70, 1.57)	0.96 (0.38, 1.51)	0.96 (0.36, 1.85)	0.96 (0.36, 1.51)	0.96 (0.36, 1.85)	0.96 (0.36, 1.51)	0.96 (0.36, 1.85)	0.96 (0.36, 1.51)	0.96 (0.36, 1.85)	0.96 (0.36, 1.51)
IQR																				
WHR No. (%)																				
Male	550	329	212	709	288	253	653	218	155	1912	835	620								
≤ 1.0	405 (74)	230 (70)	151 (71)	568 (80)	226 (78)	183 (72)	538 (82)	178 (82)	111 (72)	1511 (79)	634 (76)	445 (72)								
>1.0	145 (26)	99 (30)	61 (29)	141 (20)	62 (22)	62 (28)	70 (28)	115 (18)	40 (18)	44 (28)	401 (21)	201 (24)	175 (28)							
Female	93	125	85	95	103	124	112	84	81	300	312	290								
≤ 0.85	9 (10)	18 (14)	8 (9)	8 (8)	14 (14)	18 (15)	13 (12)	8 (10)	12 (15)	30 (10)	40 (13)	38 (13)								
>0.85	84 (90)	107 (86)	77 (91)	87 (92)	89 (86)	106 (85)	99 (88)	76 (90)	69 (85)	270 (90)	272 (87)	252 (87)								
Waist circumference (WC), cm, No. (%)																				
N	690	494	318	837	417	422	801	314	242	2328	1225	982								
Mean (SD)	88.80 (14.10)	89.60 (14.90)	91.70 (14.10)	88.70 (14.20)	88.10 (14.50)	86.90 (18.20)	87.70 (13.90)	86.60 (12.50)	89.80 (14.30)	88.40 (14.10)	88.30 (14.20)	89.20 (16.20)								
Median (min, max)	90.00 (36.00, 131.00)	90.00 (36.00, 160.00)	92.00 (37.50, 152.00)	89.00 (36.00, 135)	88.00 (36.00, 162.00)	90.00 (36.00, 130.00)	88.00 (36.00, 153.00)	85.50 (36.00, 114.00)	90.00 (38.00, 142.00)	89.00 (36.00, 153.00)	89.00 (36.00, 162.00)	89.00 (36.00, 152.00)								
IQR																				

Table 2.7 Characteristics of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year	ACS Stratum	2006				2007				2008				Overall			
		STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	
Total	<b>1445</b>	<b>1132</b>	<b>845</b>	<b>1687</b>	<b>1001</b>	<b>958</b>	<b>1534</b>	<b>662</b>	<b>655</b>	<b>4666</b>	<b>2795</b>	<b>2458</b>					
Fasting blood glucose, mmol/L																	
N	1149	812	600	1339	681	697	1151	383	367	3639	1876	1664					
Mean (SD)	8.70 (4.00)	8.00 (4.00)	7.40 (3.70)	8.20 (3.80)	8.00 (3.80)	7.60 (3.50)	8.10 (3.80)	7.60 (3.40)	7.30 (3.50)	8.30 (3.80)	7.90 (3.80)	7.50 (3.60)					
Median (min, max)	7.10 (3.20, 29.80)	6.60 (3.00, 27.80)	6.10 (3.10, 29.90)	6.90 (3.00, 25.70)	6.60 (3.00, 28.50)	6.20 (3.10, 27.90)	6.90 (3.10, 29.80)	6.50 (3.20, 24.20)	5.90 (3.00, 23.10)	7.00 (3.00, 29.80)	6.60 (3.00, 28.50)	6.60 (3.00, 29.90)					
IQR																	
Myocardial infarction history, No. (%)																	
Yes	144 (10)	216 (19)	202 (24)	185 (11)	235 (23)	236 (25)	118 (8)	137 (21)	120 (18)	447 (10)	588 (21)	558 (23)					
No	876 (61)	579 (51)	392 (46)	1207 (72)	610 (61)	606 (63)	1079 (70)	390 (59)	376 (57)	3162 (68)	1579 (56)	1374 (56)					
Unknown	425 (29)	337 (30)	251 (30)	295 (17)	156 (16)	116 (12)	337 (22)	135 (20)	159 (24)	1057 (23)	628 (22)	526 (21)					
Documented CAD > 50% stenosis, No. (%)																	
Yes	74 (5)	230 (20)	204 (24)	108 (6)	247 (25)	306 (32)	86 (6)	168 (25)	163 (25)	268 (6)	645 (23)	673 (27)					
No	851 (59)	527 (47)	356 (42)	1171 (69)	564 (56)	506 (53)	966 (63)	323 (49)	268 (41)	2988 (64)	1414 (51)	1130 (46)					
Unknown	520 (36)	375 (33)	285 (34)	408 (24)	190 (19)	146 (15)	482 (31)	171 (26)	224 (34)	1410 (30)	736 (26)	655 (27)					
Chronic angina (onset more than 2 weeks ago), No. (%)																	
Yes	103 (7)	189 (17)	210 (25)	94 (6)	129 (13)	180 (19)	65 (4)	79 (12)	98 (15)	262 (6)	397 (14)	488 (20)					
No	920 (64)	651 (58)	441 (52)	1284 (76)	725 (72)	680 (71)	1113 (73)	463 (70)	397 (61)	3317 (71)	1839 (66)	1518 (62)					
Unknown	422 (29)	292 (26)	194 (23)	309 (18)	147 (15)	98 (10)	356 (23)	120 (18)	160 (24)	1087 (23)	559 (20)	452 (18)					

Table 2.7 Characteristics of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year	2006				2007				2008				Overall		
	Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI
Total	1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458			
WC, cm, No. (%)															
Male	592	350	220	735	306	282	682	225	158	2009	881	660			
≤ 90	307 (52)	184 (53)	95 (43)	390 (53)	174 (57)	154 (55)	393 (58)	145 (64)	79 (50)	1090 (54)	503 (57)	328 (50)			
> 90	285 (48)	166 (47)	125 (57)	345 (47)	132 (43)	128 (45)	289 (42)	80 (36)	79 (50)	919 (46)	378 (43)	332 (50)			
Female	98	144	98	102	111	140	119	89	84	319	344	322			
≤ 80	20 (20)	30 (21)	18 (18)	33 (32)	27 (24)	31 (22)	27 (23)	30 (34)	20 (24)	80 (25)	87 (25)	69 (21)			
> 80	78 (80)	114 (79)	80 (82)	69 (68)	84 (76)	109 (78)	92 (77)	59 (66)	64 (76)	239 (75)	257 (75)	253 (79)			
<b>Co-morbidities</b>															
Dyslipidaemia, No. (%)															
Yes	278 (19)	464 (41)	389 (46)	381 (23)	425 (42)	485 (51)	349 (23)	257 (39)	277 (42)	1008 (22)	1146 (41)	1151 (47)			
No	458 (32)	247 (22)	197 (23)	614 (36)	316 (32)	255 (27)	559 (36)	241 (36)	196 (30)	1631 (35)	804 (29)	648 (26)			
Unknown	709 (49)	421 (37)	259 (31)	692 (41)	260 (26)	218 (23)	626 (41)	164 (25)	182 (28)	2027 (43)	845 (30)	659 (27)			
Hypertension, No. (%)															
Yes	681 (47)	789 (70)	614 (73)	840 (50)	694 (69)	745 (78)	731 (48)	437 (66)	434 (66)	2252 (48)	1920 (69)	1793 (73)			
No	433 (30)	202 (18)	151 (18)	545 (32)	223 (22)	162 (17)	530 (35)	136 (21)	102 (16)	1508 (32)	561 (20)	415 (17)			
Unknown	331 (23)	141 (12)	80 (9)	302 (18)	84 (8)	51 (5)	273 (18)	89 (13)	119 (18)	906 (19)	314 (11)	250 (10)			
Diabetes, No. (%)															
Yes	525 (36)	579 (51)	393 (47)	612 (36)	491 (49)	496 (52)	515 (34)	301 (45)	282 (43)	1652 (35)	1371 (49)	1171 (48)			
No	538 (37)	364 (32)	324 (38)	734 (44)	407 (41)	385 (40)	705 (46)	257 (39)	245 (37)	1977 (42)	1028 (37)	954 (39)			
Unknown	382 (26)	189 (17)	128 (15)	341 (20)	103 (10)	77 (8)	314 (20)	104 (16)	128 (20)	1037 (22)	396 (14)	333 (14)			

Table 2.7 Characteristics of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year	2006				2007				2008				Overall			
	ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458				
New onset angina (less than 2 weeks), No. (%)																
Yes	628 (43)	538 (48)	366 (43)	896 (53)	514 (51)	534 (56)	714 (47)	322 (49)	326 (50)	2238 (48)	1374 (49)	1226 (50)				
No	479 (33)	378 (33)	303 (36)	542 (32)	381 (38)	351 (37)	516 (34)	248 (37)	206 (31)	1537 (33)	1007 (36)	860 (35)				
Unknown	338 (23)	216 (19)	176 (21)	249 (15)	106 (11)	73 (8)	304 (20)	92 (14)	123 (19)	891 (19)	414 (15)	372 (15)				
Heart failure, No. (%)																
Yes	48 (3)	153 (14)	83 (10)	56 (3)	99 (10)	93 (10)	34 (2)	66 (10)	41 (6)	138 (3)	318 (11)	217 (9)				
No	1008 (70)	724 (64)	557 (66)	1338 (79)	771 (77)	763 (80)	1165 (76)	485 (73)	474 (72)	3511 (75)	1980 (71)	1794 (73)				
Unknown	389 (27)	255 (23)	205 (24)	293 (17)	131 (13)	102 (11)	335 (22)	111 (17)	140 (21)	1017 (22)	497 (18)	447 (18)				
Chronic lung disease, No. (%)																
Yes	34 (2)	57 (5)	39 (5)	34 (2)	32 (3)	37 (4)	46 (3)	22 (3)	23 (4)	114 (2)	111 (4)	99 (4)				
No	1016 (70)	810 (72)	605 (72)	1357 (80)	843 (84)	827 (86)	1147 (75)	524 (79)	477 (73)	3520 (75)	2177 (78)	1909 (78)				
Unknown	395 (27)	265 (23)	201 (24)	296 (18)	126 (13)	94 (10)	341 (22)	116 (18)	155 (24)	1032 (22)	507 (18)	450 (18)				
Renal disease, No. (%)																
Yes	58 (4)	142 (13)	53 (6)	47 (3)	109 (11)	80 (8)	46 (3)	72 (11)	37 (6)	151 (3)	323 (12)	170 (7)				
No	989 (68)	729 (64)	587 (69)	1335 (79)	767 (77)	788 (82)	1149 (75)	476 (72)	460 (70)	3473 (74)	1972 (71)	1835 (75)				
Unknown	398 (28)	261 (23)	205 (24)	305 (18)	125 (12)	90 (9)	339 (22)	114 (17)	158 (24)	1042 (22)	500 (18)	453 (18)				
Cerebrovascular disease, No. (%)																
Yes	46 (3)	65 (6)	38 (4)	50 (3)	41 (4)	36 (4)	32 (2)	21 (3)	30 (5)	128 (3)	127 (5)	104 (4)				
No	1011 (70)	806 (71)	603 (71)	1345 (80)	837 (84)	830 (87)	1161 (76)	521 (79)	467 (71)	3517 (75)	2164 (77)	1900 (77)				
Unknown	388 (27)	261 (23)	204 (24)	292 (17)	123 (12)	92 (10)	341 (22)	120 (18)	158 (24)	1021 (22)	504 (18)	454 (18)				

Table 2.7 Characteristics of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year ACS Stratum	2006				2007				2008				Overall			
	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI
Total	1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458				
Peripheral vascular disease, No. (%)																
Yes	4 (0)	25 (2)	8 (1)	7 (0)	12 (1)	6 (1)	3 (0)	5 (1)	10 (2)	14 (0)	42 (2)	24 (1)				
No	1040 (72)	830 (73)	622 (74)	1373 (81)	849 (85)	844 (88)	1184 (77)	527 (80)	480 (73)	3597 (77)	2206 (79)	1946 (79)				
Unknown	401 (28)	277 (24)	215 (25)	307 (18)	140 (14)	108 (11)	347 (23)	130 (20)	165 (25)	1055 (23)	547 (20)	488 (20)				
None of the above, No. (%)																
Yes	125 (9)	36 (3)	18 (2)	52 (3)	13 (1)	6 (1)	89 (6)	13 (2)	10 (2)	266 (6)	62 (2)	34 (1)				
No	1320 (91)	1096 (97)	827 (98)	1449 (86)	936 (94)	921 (96)	1234 (80)	579 (87)	537 (82)	4003 (86)	2611 (93)	2285 (93)				
Unknown	0 (0)	0 (0)	0 (0)	186 (11)	52 (5)	31 (3)	211 (14)	70 (11)	108 (16)	397 (9)	122 (4)	139 (6)				
Coronary artery disease*, No. (%)																
Yes	779 (54)	787 (70)	633 (75)	1033 (61)	703 (70)	764 (80)	798 (52)	426 (64)	452 (69)	2610 (56)	1916 (69)	1849 (75)				
No	306 (21)	146 (13)	80 (9)	374 (22)	195 (19)	128 (13)	403 (26)	136 (21)	80 (12)	1083 (23)	477 (17)	288 (12)				
Unknown	360 (25)	199 (18)	132 (16)	280 (17)	103 (10)	66 (7)	333 (22)	100 (15)	123 (19)	973 (21)	402 (14)	321 (13)				

*\*Unknown' includes patients who do not know their co-morbidities and missing data**\*Coronary artery disease is defined as "Yes" to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)*

Note: Percentage is to the nearest decimal point

**Table 2.8 Age-gender distribution of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008**

	Gender	Age group	ACS stratum					
			STEMI		NSTEMI		UA	
			No.	%	No.	%	No.	%
2006	Male	20 - <30	21	2	1	0	0	0
		30 - <40	87	7	23	3	21	4
		40 - <50	321	26	122	16	98	18
		50 - <60	414	34	274	35	200	36
		60 - <70	256	21	218	28	142	25
		70 - <80	113	9	112	14	81	14
		≥80	18	1	29	4	18	3
		Total	1230	100	779	100	560	100
	Female	20 - <30	1	0	0	0	0	0
		30 - <40	4	2	4	1	4	1
		40 - <50	22	10	17	5	41	14
		50 - <60	46	21	56	16	64	22
		60 - <70	62	29	116	33	87	31
		70 - <80	67	31	132	37	66	23
		≥80	13	6	28	8	23	8
		Total	215	100	353	100	285	100
2007	Male	20 - <30	9	1	4	1	5	1
		30 - <40	95	7	29	4	23	4
		40 - <50	374	26	109	16	106	16
		50 - <60	494	34	231	33	204	31
		60 - <70	327	23	200	29	177	27
		70 - <80	124	9	107	15	117	18
		≥80	24	2	20	3	18	3
		Total	1447	100	700	100	650	100
	Female	20 - <30	1	0	0	0	1	0
		30 - <40	7	3	3	1	4	1
		40 - <50	30	13	20	7	42	14
		50 - <60	55	23	63	21	71	23
		60 - <70	71	30	95	32	91	30
		70 - <80	62	26	99	33	83	27
		≥80	14	6	21	7	16	5
		Total	240	100	301	100	308	100

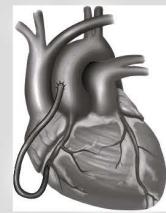
Note: Percentage is to the nearest decimal point

**Table 2.8 Age-gender distribution of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008**

	<b>Gender</b>	<b>Age group</b>	<b>ACS stratum</b>					
			<b>STEMI</b>		<b>NSTEMI</b>		<b>UA</b>	
			<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
2008	Male	20 - <30	14	1	2	0	3	1
		30 - <40	96	7	13	3	26	6
		40 - <50	317	25	63	14	52	13
		50 - <60	424	33	145	32	135	33
		60 - <70	298	23	130	28	119	29
		70 - <80	108	8	89	19	62	15
		≥80	24	2	15	3	12	3
		<b>Total</b>	<b>1281</b>	<b>100</b>	<b>457</b>	<b>100</b>	<b>409</b>	<b>100</b>
	Female	20 - <30	0	0	0	0	0	0
		30 - <40	8	3	2	1	4	2
		40 - <50	20	8	12	6	25	10
		50 - <60	53	21	39	19	60	24
		60 - <70	73	29	65	32	84	34
		70 - <80	81	32	69	34	60	24
		≥80	18	7	18	9	13	5
		<b>Total</b>	<b>253</b>	<b>100</b>	<b>205</b>	<b>100</b>	<b>246</b>	<b>100</b>
Overall	Male	20 - <30	44	1	7	0	8	0
		30 - <40	278	7	65	3	70	4
		40 - <50	1012	26	294	15	256	16
		50 - <60	1332	34	650	34	539	33
		60 - <70	881	22	548	28	438	27
		70 - <80	345	9	308	16	260	16
		≥80	66	2	64	3	48	3
		<b>Total</b>	<b>3958</b>	<b>100</b>	<b>1936</b>	<b>100</b>	<b>1619</b>	<b>100</b>
	Female	20 - <30	2	0	0	0	1	0
		30 - <40	19	3	9	1	12	1
		40 - <50	72	10	49	6	108	13
		50 - <60	154	22	158	18	195	23
		60 - <70	206	29	276	32	262	31
		70 - <80	210	30	300	35	209	25
		≥80	45	6	67	8	52	6
		<b>Total</b>	<b>708</b>	<b>100</b>	<b>859</b>	<b>100</b>	<b>839</b>	<b>100</b>

*Note: Percentage is to the nearest decimal point*





## CHAPTER 3: CLINICAL PRESENTATIONS & INVESTIGATIONS

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## Summary

1. STEMI was more common among the male patients while NSTEMI/UA were more common among female patients.
2. Patients who were elderly, had diabetes or were female had higher systolic blood pressure on presentation.
3. Patients in the younger age group (age 20 to less than 40 years) had higher levels of total cholesterol, triglyceride and LDL-C.
4. Patients who represented with STEMI had higher levels of LDL-C compared to those with NSTEMI and UA.
5. Majority of patients with ACS presented with low TIMI score.

This chapter presents the results of clinical presentation and investigations patients with ACS who were registered in the ACS registry in year 2006, 2007 and 2008.

As discussed in Chapter 2, the past 3 years revealed that ACS was more common in male than female patients. Male patients more commonly presented with STEMI (48-60%), followed by NSTEMI (21-30%) and UA (19-23%). On the other hand, female patients more commonly presented with NSTEMI (29-41%) and UA (33-36%) compared to STEMI (25-36%). Overall, there was higher percentage of male compared to female who presented with STEMI. The similar trend was observed over the 3 years (2006-2008). [Table 3.3]

For STEMI, the mean (SD) systolic blood pressure was 135 (29) mmHg and diastolic blood pressure was 80 (17) mmHg. Mean (SD) pulse pressure was 53 (18) mmHg. Mean (SD) heart rate at presentation was 83 (22) beats per minute. [Table 3.1] Among the age groups and across the ACS spectrum, elderly patients had higher systolic blood pressure on presentation compared to patients in the young and middle age groups. Diastolic blood pressure was similar in all age groups. [Table 3.2]

Female patients had higher systolic blood pressure compared to male patients. Diastolic blood pressure was similar among male and female patients. [Table 3.3] Similarly, diabetic patients had higher systolic blood pressure compared to non-diabetic patients. Diastolic blood pressure was similar among diabetic and non-diabetic patients. [Table 3.4]

For STEMI, 51-56% of patients presented with Killip class I, Killip class II (18-21%), Killip class III (4%) and Killip class IV (5-6%). For NSTEMI, 28-43% of patients presented with Killip class I, Killip class II (16-22%), Killip class III (5-7%) and Killip class IV (3%). For UA, 45-52% of patients presented with Killip class I, Killip class II (10-13%), Killip class III (0-2%) and Killip class IV (around one percent). [Table 3.1]

Approximately 90% of patients had biomarkers CK-MB, CK, Troponin T and Troponin I checked at presentation in each year. [Table 3.1] Across the ACS spectrum, mean (SD) total cholesterol was approximately 5.4 (1.3) mmol/L, mean (SD) HDL-C was 1.1 (0.4) mmol/L and mean (SD) triglyceride was 2.1 (1.3) mmol/L. However, mean (SD) LDL-cholesterol was approximately 3.5 (1.2) mmol/L for STEMI, and 3.1 (1.2) mmol/L for NSTEMI and UA. [Table 3.1]

A similar trend was observed for the lipid profile among different age groups. [Table 3.2] As total cholesterol, triglyceride and LDL-C were higher among the younger age group compared to the older age group, it is important that we look into the relevant contributing factors. On the other hand, male and female patients had similar lipid profiles. [Table 3.3]

Mean (SD) left ventricular ejection fraction (LVEF) was around 45% - 50%. The LVEF was slightly lower among patients presented with STEMI and NSTEMI than patients presented with UA. [Table 3.1] With regards to TIMI risk score, the majority of patients with ACS presented with low TIMI score. [Table 3.5] The most frequent location of ECG abnormality for STEMI was anterior leads (58-60%) followed by inferior leads (44-45%). [Table 3.1]

**Table 3.1 Cardiac presentation of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008**

Year	2006						2007						2008						Overall			
	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	
Total	1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458										
Systolic blood pressure, mmHg																						
N	1428	1116	836	1653	975	937	1497	644	651	4578	2735	2424										
Mean (SD)	134 (28)	145 (30)	146 (28)	136 (29)	143 (30)	145 (27)	135 (28)	140 (30)	143 (26)	135 (29)	143 (30)	145 (27)										
Median (min, max)	130 (60, 230)	142 (66, 230)	142 (60, 224)	133 (60, 230)	140 (66, 230)	142 (60, 230)	132 (60, 228)	137 (64, 226)	141	132	(70, 229)	(60, 230)	140 (64, 230)	142 (60, 230)								
IQR	36	40	36	38	41	39	37	40	36	38	41	37										
Diastolic blood pressure, mmHg																						
N	1402	1087	823	1597	958	930	1444	637	642	4443	2662	2395										
Mean (SD)	80 (17)	82 (17)	82 (15)	81 (17)	82 (17)	82 (15)	80 (17)	80 (16)	82 (14)	80 (17)	82 (17)	82 (15)										
Median (min, max)	80 (26, 120)	82 (19, 120)	82 (34, 120)	81 (22, 120)	81 (20, 120)	81 (36, 120)	80 (22, 120)	80 (32, 120)	80 (32, 120)	80 (22, 120)	80 (32, 120)	80 (22, 120)	81 (19, 120)	81 (32, 120)								
IQR	24	23	20	23	23	20	23	20	23	20	19	23										
Pulse pressure, mmHg																						
N	1392	1080	817	1589	945	925	1438	629	640	4419	2654	2382										
Mean (SD)	52 (17)	61 (22)	62 (21)	53 (18)	60 (21)	63 (21)	53 (17)	59 (22)	61 (20)	53 (18)	60 (22)	62 (21)										
Median (min, max)	50 (6, 119)	59 (8, 154)	60 (18, 140)	50 (2, 126)	58 (11, 142)	60 (12, 144)	50 (6, 133)	56 (13, 133)	58 (2, 139)	50 (2, 133)	58 (8, 154)	58 (2, 144)										
IQR	22	27	27	22	28	28	22	29	27	22	28	28										

Table 3.1 Cardiac presentation of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year	2006				2007				2008				Overall			
	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	UA									
<b>ACS stratum</b>																
<b>Total</b>	<b>1445</b>	<b>1132</b>	<b>845</b>	<b>1687</b>	<b>1001</b>	<b>958</b>	<b>1534</b>	<b>662</b>	<b>655</b>	<b>4666</b>	<b>2795</b>	<b>2458</b>				
Heart rate at presentation, beats/min																
N	1434	1122	838	1656	976	945	1471	650	644	4561	2748	2427				
Mean (SD)	82 (21)	86 (23)	81 (19)	83 (22)	87 (22)	83 (20)	84 (23)	86 (22)	81 (18)	83 (22)	87 (22)	81 (19)				
Median (min, max)	80 (30, 180)	84 (29, 180)	79 (40, 166)	80 (30, 184)	85 (37, 191)	80 (35, 170)	80 (34, 200)	83 (37, 182)	80 (30, 176)	80 (30, 200)	80 (29, 191)	80 (30, 176)				
IQR	27	30	24	27	29	24	29	28	22	28	22	24				
Number of distinct episodes of angina in past 24 hours, No. (%)																
0-2	933 (65)	626 (55)	459 (54)	875 (52)	361 (36)	377 (39)	801 (52)	257 (39)	205 (31)	2609 (56)	1244 (45)	1041 (42)				
>2	68 (5)	74 (7)	93 (11)	33 (2)	29 (3)	57 (6)	38 (2)	19 (3)	28 (4)	139 (3)	122 (4)	178 (7)				
Missing	444 (31)	432 (38)	293 (35)	779 (46)	611 (61)	524 (55)	695 (45)	386 (58)	422 (64)	1918 (41)	1429 (51)	1239 (50)				
Killip classification code, No. (%)																
I	802 (56)	489 (43)	377 (45)	903 (54)	386 (39)	498 (52)	785 (51)	186 (28)	315 (48)	2490 (53)	1061 (38)	1190 (48)				
II	288 (20)	206 (18)	98 (12)	307 (18)	156 (16)	124 (13)	320 (21)	143 (22)	65 (10)	915 (20)	505 (18)	287 (12)				
III	62 (4)	76 (7)	15 (2)	66 (4)	50 (5)	15 (2)	56 (4)	47 (7)	3 (0)	184 (4)	173 (6)	33 (1)				
IV	66 (5)	30 (3)	4 (0)	95 (6)	27 (3)	4 (0)	90 (6)	20 (3)	5 (1)	251 (5)	77 (3)	13 (1)				
Not stated/inadequately described	227 (16)	331 (29)	351 (42)	316 (19)	382 (38)	317 (33)	283 (18)	266 (40)	267 (41)	826 (18)	979 (35)	935 (38)				

Table 3.1 Cardiac presentation of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year	ACS stratum	2006				2007				2008				Overall		
		STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458				
Patients with any cardiac marker measurement done, No. (%)	1402 (97)	1114 (98)	762 (90)	1582 (94)	960 (96)	902 (94)	1341 (87)	586 (89)	518 (79)	4325 (93)	2660 (95)	2182 (89)				
Peak CK-MB, Unit/L, No. (%)	801	874	397	811	713	421	679	435	257	2291	2022	1075				
>25	681 (85)	457 (52)	0 (0)	658 (81)	382 (54)	0 (0)	537 (79)	250 (57)	0 (0)	1876 (82)	1089 (54)	0 (0)				
Peak CK, Unit/L, No. (%)	1325	970	722	1500	818	829	1245	503	429	4070	2291	1980				
>2x reference upper limits	999 (75)	364 (38)	0 (0)	983 (66)	299 (37)	39 (5)	765 (61)	200 (40)	13 (3)	2747 (67)	863 (38)	52 (3)				
Peak TnT, No. (%)	183	446	27	185	371	32	189	234	6	557	1051	65				
Positive or >0.01	181 (99)	436 (98)	0 (0)	161 (87)	329 (89)	0 (0)	176 (93)	222 (95)	0 (0)	518 (93)	987 (94)	0 (0)				
Peak TnI, No. (%)	58	167	55	52	84	47	36	44	73	146	295	175				
Positive or > reference upper limit/0.04	54 (93)	157 (94)	0 (0)	51 (98)	84 (100)	0 (0)	34 (94)	43 (98)	0 (0)	139 (95)	284 (96)	0 (0)				
Total cholesterol, mmol/L																
N	1175	788	508	1333	676	669	1173	395	378	3681	1859	1555				
Mean (SD)	5.42 (1.32)	5.18 (1.32)	5.12 (1.33)	5.45 (1.32)	5.14 (1.27)	5.08 (1.39)	5.44 (1.34)	5.16 (1.32)	5.07 (1.21)	5.44 (1.33)	5.16 (1.3)	5.09 (1.33)				
Median (min, max)	5.3 (3, 14.3)	5.06 (3, 11)	5 (3, 10.8)	5.32 (3, 14.7)	5 (3, 16.1)	4.83 (3, 10.38)	5.3 (3, 11.11)	5 (3, 11.96)	4.99 (3, 9.5)	5.3 (3, 14.7)	5 (3, 11.96)	4.9 (3, 16.1)				
IQR	1.7	1.82	1.8	1.7	1.78	1.7	1.71	1.7	1.5	1.7	1.78	1.78				

Table 3.1 Cardiac presentation of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year	ACS stratum	2006				2007				2008				Overall		
		STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458				
HDL-C, mmol/L																
N	1155	807	514	1310	695	693	1112	408	382	3577	1910	1589				
Mean (SD)	1.13 (.38)	1.13 (.37)	1.12 (.38)	1.12 (.37)	1.13 (.4)	1.09 (.36)	1.11 (.33)	1.11 (.35)	1.06 (.32)	1.12 (.36)	1.13 (.38)	1.09 (.36)				
Median (min, max)	1.1 (.5, 4.94)	1.1 (.5, 4.24)	1.07 (.5, 4.5)	1.1 (.5, 4.4)	1.06 (.5, 4.2)	1.03 (.5, 4.22)	1.06 (.5, 3.3)	1.04 (.5, 3.3)	1.04 (.5, 3.18)	1.1 (.5, 4.94)	1.1 (.5, 4.94)	1.09 (.5, 4.5)				
IQR	0.4	0.4	0.44	0.38	0.4	0.32	0.39	0.4	0.35	0.4	0.4	0.4	0.37			
LDL-C, mmol/L																
N	1144	793	491	1282	680	668	1098	407	382	3524	1880	1541				
Mean (SD)	3.45 (1.22)	3.16 (1.2)	3.09 (1.19)	3.48 (1.26)	3.14 (1.18)	3.02 (1.14)	3.51 (1.27)	3.21 (1.21)	3.17 (1.1)	3.48 (1.25)	3.16 (1.19)	3.08 (1.15)				
Median (min, max)	3.4 (1.1, 10.1)	3.03 (1, 8.87)	2.99 (1, 8.9)	3.4 (1, 14.6)	3.01 (1, 9.8)	2.81 (1, 10.08)	3.4 (1, 9.3)	3.1 (1, 9.29)	3.1 (1, 7.3)	3.4 (1, 14.6)	3.1 (1, 9.8)	3.06 (1, 10.08)				
IQR	1.54	1.72	1.65	1.6	1.67	1.43	1.7	1.6	1.56	1.6	1.64	1.53				
Triglycerides, mmol/L																
N	1075	687	439	1125	586	587	1010	331	330	3160	1664	1356				
Mean (SD)	2.05 (1.26)	2.06 (1.18)	2.25 (1.54)	2.06 (1.32)	2.05 (1.21)	2.27 (1.46)	2.04 (1.17)	1.97 (1.11)	2.09 (1.28)	2.05 (1.25)	2.04 (1.18)	2.22 (1.45)				
Median (min, max)	1.7 (1, 13.5)	1.7 (1, 11.1)	1.8 (1, 14)	1.7 (1, 15)	1.7 (1, 10.6)	1.83 (1, 11.7)	1.7 (1, 11.2)	1.66 (1, 12.9)	1.61 (1, 10.43)	1.7 (1, 15)	1.7 (1, 12.9)	1.8 (1, 14)				
IQR	1	1	1.3	1	1	1.18	1	1	1	1	1	1.11				
Left ventricular ejection fraction, %																
N	948	569	199	1094	522	256	977	387	164	3019	1478	619				
Mean (SD)	47 (11)	47 (14)	50 (17)	45 (11)	48 (14)	50 (15)	45 (11)	46 (13)	49 (14)	46 (11)	47 (14)	50 (15)				
Median (min, max)	47 (10, 79)	48 (9, 79)	52 (8, 80)	45 (7, 79)	49 (10, 79)	51 (14, 80)	45 (5, 80)	46 (12, 79)	52 (9, 79)	45 (5, 80)	48 (9, 79)	52 (8, 80)				
IQR	15	23	27	13	22	20	15	19	20	13	21	21				

Table 3.1 Cardiac presentation of patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year	ACS stratum	2006						2007						2008						Overall	
		STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA		
Total	1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458									
ECG, No. (%)																					
• Inferior leads	687 (48)			757 (45)			679 (44)			2123 (45)											
• Anterior leads	798 (55)			1011 (60)			887 (58)			2696 (58)											
• Lateral leads	301 (21)			407 (24)			380 (25)			1088 (23)											
• True posterior	145 (10)			152 (9)			144 (9)			441 (9)											
• Right ventricle	131 (9)			128 (8)			130 (8)			389 (8)											
• None	4 (0)			13 (1)			7 (0)			24 (1)											
• Not stated/ inadequately described	12 (1)			11 (1)			8 (1)			31 (1)											
Pain to needle time, min (* symptom to treatment)																					
N	1184			1311			1155			3650											
Mean (SD)	415.9 (388.8)			401.3 (355.5)			389.3 (366.8)			402.2 (370.2)											
Median (min, max)	300 (0, 2200)			300 (0, 2330)			258 (0, 2100)			300 (0, 2330)											
IQR	438			386			385			396											

\*Cardiac marker is defined as any of the following baseline investigations: 1) Peak CK-MB, 2) Peak CK, 3) Peak TnT, 4) Peak TnI whereby status Not Done="False" for all investigations

Note: Not all participating centre performed Troponin T or I tests

Note: Percentage is to the nearest decimal point

**Table 3.2 Cardiac presentation of patients with ACS by age group (years), NCVD-ACS Registry, 2006-2008**

Year	2006			2007			2008			Overall		
	Age group*	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age
Total	166	1675	1581	181	1800	1665	168	1343	1340	515	4818	4586
Acute coronary syndrome stratum, No. (%)												
STEMI	113 (68)	803 (48)	529 (33)	112 (62)	954 (53)	621 (37)	118 (70)	812 (60)	604 (45)	343 (67)	2569 (53)	1754 (38)
NSTEMI	28 (17)	469 (28)	635 (40)	36 (20)	423 (24)	542 (33)	17 (10)	259 (19)	386 (29)	81 (16)	1151 (24)	1563 (34)
UA	25 (15)	403 (24)	417 (26)	33 (18)	423 (24)	502 (30)	33 (20)	272 (20)	350 (26)	91 (18)	1098 (23)	1269 (28)
Systolic blood pressure, mmHg												
N	165	1657	1558	177	1759	1629	163	1320	1309	505	4736	4496
Mean (SD)	133 (25)	139 (28)	143 (31)	139 (28)	137 (28)	144 (30)	129 (26)	137 (28)	140 (29)	134 (27)	138 (28)	142 (30)
Median (min, max)	130 (77, 220)	137 (60, 230)	140 (60, 230)	135 (77, 219)	135 (60, 230)	141 (60, 230)	125 (71, 225)	134 (60, 229)	139 (64, 226)	130 (71, 225)	135 (60, 230)	140 (60, 230)
IQR	33	37	40	42	38	41	30	35	39	35	37	41
Diastolic blood pressure, mmHg												
N	158	1620	1534	163	1716	1606	158	1276	1289	479	4612	4429
Mean (SD)	81 (17)	83 (16)	80 (17)	84 (17)	83 (16)	80 (17)	79 (16)	83 (16)	79 (16)	81 (17)	83 (16)	79 (17)
Median (min, max)	80 (38, 118)	82 (35, 120)	80 (19, 120)	84 (42, 120)	83 (20, 120)	80 (20, 120)	78 (38, 116)	82 (22, 120)	78 (32, 120)	80 (38, 120)	80 (20, 120)	80 (19, 120)
IQR	22	24	21	27	23	20	20	22	22	22	23	21

Table 3.2 Cardiac presentation of patients with ACS by age group (years), NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Age group*	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age
Total	166	1675	1581	181	1800	1665	168	1343	1340	515	4818	4586
Pulse pressure, mmHg												
N	158	1611	1520	163	1703	1593	156	1271	1280	477	4595	4393
Mean (SD)	55 (18)	62 (22)	51 (16)	53 (19)	63 (21)	48 (14)	53 (18)	60 (21)	49 (15)	54 (18)	62 (22)	
Median (min, max)	(6, 135)	60	48	50	60	47	50	58	48	50	60	(2, 154)
IQR	22	23	29	19	23	28	17	21	27	19	23	29
Heart rate at presentation, beats/min												
N	165	1663	1566	178	1773	1626	162	1304	1299	505	4740	4491
Mean (SD)	83 (19)	82 (20)	84 (23)	84 (18)	83 (20)	85 (23)	82 (19)	83 (22)	84 (22)	83 (19)	83 (21)	85 (22)
Median (min, max)	82 (44, 153)	80 (30, 171)	82 (29, 180)	82 (46, 161)	80 (30, 191)	82 (32, 184)	80 (34, 147)	80 (34, 200)	80 (30, 182)	82 (34, 161)	80 (30, 200)	82 (29, 184)
IQR	24	27	31	24	25	29	20	26	30	23	26	30
Number of distinct episodes of angina in past 24 hours, No. (%)												
0-2	116 (70)	1021 (61)	881 (56)	93 (51)	858 (48)	662 (40)	85 (51)	627 (47)	551 (41)	294 (57)	2506 (52)	2094 (46)
>2	9 (5)	118 (7)	108 (7)	3 (2)	56 (3)	60 (4)	5 (3)	43 (3)	37 (3)	17 (3)	217 (5)	205 (4)
Missing	41 (25)	536 (32)	592 (37)	85 (47)	886 (49)	943 (57)	78 (46)	673 (50)	752 (56)	204 (40)	2095 (43)	2287 (50)

Table 3.2 Cardiac presentation of patients with ACS by age group (years), NCVD-ACS Registry, 2006-2008

Year	Age group*	2006			2007			2008			Overall		
		Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total	166	1675	1581	181	1800	1665	168	1343	1340	515	4818	4586	
Killip classification code, No. (%)													
I	121 (73)	900 (54)	647 (41)	107 (59)	969 (54)	711 (43)	92 (55)	672 (50)	522 (39)	320 (62)	2541 (53)	1880 (41)	
II	11 (7)	249 (15)	332 (21)	22 (12)	246 (14)	319 (19)	20 (12)	214 (16)	294 (22)	53 (10)	709 (15)	945 (21)	
III	2 (1)	59 (4)	92 (6)	0 (0)	44 (2)	87 (5)	2 (1)	48 (4)	56 (4)	4 (1)	151 (3)	235 (5)	
IV	4 (2)	47 (3)	49 (3)	2 (1)	59 (3)	65 (4)	4 (2)	51 (4)	60 (4)	10 (2)	157 (3)	174 (4)	
Not stated/inadequately described	28 (17)	420 (25)	461 (29)	50 (28)	482 (27)	483 (29)	50 (30)	358 (27)	408 (30)	128 (25)	1260 (26)	1352 (29)	
Patients with any cardiac marker measurement done**, No (%)	159 (96)	1615 (96)	1504 (95)	172 (95)	1708 (95)	1564 (94)	131 (78)	1168 (87)	1146 (86)	462 (90)	4491 (93)	4214 (92)	
Peak CK-MB, Unit/L, No. (%)	101	994	977	93	956	896	61	646	664	255	2596	2537	
>25	70 (69)	563 (57)	505 (52)	65 (70)	536 (56)	439 (49)	36 (59)	399 (62)	352 (53)	171 (67)	1498 (58)	1296 (51)	
Peak CK, Unit/L, No. (%)	144	1511	1362	156	1569	1422	116	1043	1018	416	4123	3802	
>2x reference upper limits	95 (66)	742 (49)	526 (39)	85 (54)	753 (48)	483 (34)	60 (52)	528 (51)	390 (38)	240 (58)	2023 (49)	1399 (37)	
Peak TnT, No. (%)	23	307	326	22	281	285	16	184	229	61	772	840	
Positive or >0.01	22 (96)	285 (93)	310 (95)	20 (91)	240 (85)	230 (81)	14 (88)	170 (92)	214 (93)	56 (92)	695 (90)	754 (90)	
Peak TnI, No. (%)	17	112	151	10	79	94	11	60	82	38	251	327	
Positive or > reference upper limit/0.04	13 (76)	77 (69)	121 (80)	4 (40)	54 (68)	77 (82)	6 (55)	30 (50)	41 (50)	23 (61)	161 (64)	239 (73)	

Table 3.2 Cardiac presentation of patients with ACS by age group (years), NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Age group*	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age
<b>Total</b>	<b>166</b>	<b>1675</b>	<b>1581</b>	<b>181</b>	<b>1800</b>	<b>1665</b>	<b>168</b>	<b>1343</b>	<b>1340</b>	<b>515</b>	<b>4818</b>	<b>4586</b>
Total cholesterol, mmol/L												
N	143	1257	1071	148	1389	1141	117	973	856	408	3619	3068
Mean (SD)	5.7 (1.7)	5.5 (1.3)	5 (1.2)	5.6 (1.7)	5.5 (1.3)	5 (1.2)	5.6 (1.4)	5.5 (1.3)	5.1 (1.3)	5.6 (1.6)	5.5 (1.3)	5 (1.2)
Median (min, max)	5.4 (3.1, 14.3)	5.4 (3, 10.8)	4.9 (3, 11)	5.4 (3, 14.7)	5.4 (3, 16.1)	4.9 (3, 12.9)	5.4 (3, 10.2)	5.4 (3, 11.1)	4.9 (3, 12)	5.4 (3, 14.7)	5.4 (3, 16.1)	4.9 (3, 12.9)
IQR	2	1.8	1.7	2.1	1.7	1.6	1.5	1.7	1.6	1.9	1.8	1.7
HDL-C, mmol/L												
N	141	1268	1067	145	1393	1160	115	952	835	401	3613	3062
Mean (SD)	1.08 (.4)	1.08 (.35)	1.19 (.4)	.99 (.26)	1.08 (.37)	1.17 (.38)	1.02 (.28)	1.07 (.3)	1.15 (.36)	1.03 (.33)	1.08 (.35)	1.17 (.38)
Median (min, max)	1 (.6, 3.5)	1.01 (.5, 4.94)	1.13 (.5, 4.5)	.97 (.5, 2.23)	1 (.5, 4.5)	1 (.5, 4.2)	1.1 (.57, 1.9)	.98 (.57, 1.9)	1 (.5, 3.3)	1.1 (.5, 4.22)	1 (.5, 3.5)	1 (.5, 4.94)
IQR	0.33	0.33	0.48	0.3	0.33	0.39	0.4	0.3	0.42	0.39	0.32	0.44
LDL-C, mmol/L												
N	141	1218	1069	140	1345	1145	116	938	833	397	3501	3047
Mean (SD)	3.67 (1.5)	3.41 (1.22)	3.08 (1.14)	3.5 (1.4)	3.43 (1.25)	3.07 (1.14)	3.64 (1.33)	3.53 (1.25)	3.16 (1.18)	3.6 (1.42)	3.45 (1.24)	3.1 (1.15)
Median (min, max)	3.46 (1.5, 10.1)	3.4 (1, 9.3)	3 (1, 8.87)	3.35 (1, 8.22)	3.35 (1, 14.6)	2.9 (1, 10.08)	3.4 (1, 125, 8.2)	3.42 (1, 104, 9.3)	3 (1, 9.29)	3.4 (1, 10.1)	3.4 (1, 14.6)	2.98 (1, 10.08)
IQR	1.54	1.67	1.59	1.79	1.6	1.47	1.7	1.7	1.6	1.7	1.63	1.56

Table 3.2 Cardiac presentation of patients with ACS by age group (years), NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total	166	1675	1581	181	1800	1665	168	1343	1340	515	4818	4586
Triglycerides, mmol/L												
N	132	1154	865	133	1259	906	109	866	696	374	3279	2467
Mean (SD)	2.39 (1.47)	2.24 (1.36)	1.85 (1.14)	2.56 (1.73)	2.25 (1.48)	1.85 (.97)	2.39 (1.12)	2.18 (1.34)	1.81 (.91)	2.45 (1.48)	2.23 (1.4)	1.84 (1.02)
Median (min, max)	2.1 (1, 13.5)	1.9 (1, 13)	1.56 (1, 14)	2.05 (1, 11.7)	1.8 (1, 15)	1.6 (1, 11)	2.2 (1, 7.9)	2.2 (1, 12.9)	1.8 (1, 8.8)	1.53 (1, 13.5)	2.1 (1, 15)	1.8 (1, 14)
IQR	1.06	1.2	0.9	1.6	1.15	0.86	1.31	1.1	0.8	1.39	1.14	0.85
Left ventricular ejection fraction, %												
N	96	863	757	100	974	798	105	746	677	301	2583	2232
Mean (SD)	51 (12)	48 (13)	46 (13)	47 (11)	47 (12)	46 (13)	47 (10)	46 (12)	45 (12)	48 (11)	47 (12)	46 (13)
Median (min, max)	50 (12, 75)	50 (8, 80)	45 (10, 80)	48 (24, 72)	47 (7, 80)	45 (10, 79)	45 (19, 69)	47 (5, 76)	45 (9, 80)	49 (12, 75)	47 (5, 80)	45 (9, 80)
IQR	16	18	17	15	15	19	13	17	18	15	15	18
ECG, No. (%) (STEMI only)												
• Inferior leads	50 (30)	380 (23)	257 (16)	44 (24)	435 (24)	278 (17)	43 (26)	366 (27)	270 (20)	137 (27)	1181 (25)	805 (18)
• Anterior leads	68 (41)	453 (27)	277 (18)	67 (37)	572 (32)	372 (22)	65 (39)	477 (36)	345 (26)	200 (39)	1502 (31)	994 (22)
• Lateral leads	29 (17)	156 (9)	116 (7)	25 (14)	227 (13)	155 (9)	33 (20)	206 (15)	141 (11)	87 (17)	589 (12)	412 (9)
• True posterior	12 (7)	78 (5)	55 (3)	7 (4)	90 (5)	55 (3)	10 (6)	72 (5)	62 (5)	29 (6)	240 (5)	172 (4)
• Right ventricle	10 (6)	75 (4)	46 (3)	6 (3)	79 (4)	43 (3)	6 (4)	74 (6)	50 (4)	22 (4)	228 (5)	139 (3)
• None	0 (0)	1 (0)	3 (0)	0 (0)	9 (1)	4 (0)	1 (1)	1 (0)	5 (0)	1 (0)	11 (0)	12 (0)
• Not stated/ inadequately described		1 (1)	5 (0)	6 (0)	1 (1)	6 (0)	4 (0)	0 (0)	3 (0)	5 (0)	2 (0)	14 (0)
												15 (0)

Table 3.2 Cardiac presentation of patients with ACS by age group (years), NCVD-ACS Registry, 2006-2008

Year	Age group*	2006			2007			2008			Overall		
		Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
Total	166	1675	1581	181	1800	1665	168	1343	1340	515	4918	4586	
Pain to needle time, min (* symptom to treatment) (STEMI only)													
N	95	674	415	90	770	451	95	630	430	280	2074	1296	
Mean (SD)	436.9 (452.3)	394.6 (378.4)	445.7 (388.6)	389.4 (384.2)	383.6 (339)	433.8 (375.2)	358.9 (282.1)	385.4 (376)	401.8 (369.8)	395.2 (379.3)	387.7 (363.4)	427 (377.9)	
Median (min, max)	300 (7, 1950)	270 (0, 2100)	320 (0, 2200)	210.5 (0, 1630)	287.5 (0, 1855)	319 (0, 2330)	300 (22, 1750)	241 (0, 2040)	300 (0, 2100)	264 (0, 1950)	255 (0, 2100)	310 (0, 2330)	
IQR	365	386	460	426	370	419	349	400	355	380	385	430	

\*Young is defined as age from 20 to less than 40 years, middle-age is defined as age between 40 to less than 60 years and elderly is defined as 60 years and above

\*\*Cardiac marker is defined as any of the following baseline investigations: 1) Peak CK-MB, 2) Peak CK, 3) Peak TnT, 4) Peak TnI whereby status Not Done= "False" for all investigations

Note: Not all participating centre performed Troponin T or Troponin I tests

Note: Percentage is to the nearest decimal point

**Table 3.3 Cardiac presentation of patients with ACS by gender, NCVD-ACS Registry, 2006-2008**

Year	2006		2007		2008		Overall	
Gender	Male	Female	Male	Female	Male	Female	Male	Female
<b>Total</b>	<b>2569</b>	<b>853</b>	<b>2797</b>	<b>849</b>	<b>2147</b>	<b>704</b>	<b>7513</b>	<b>2406</b>
Acute coronary syndrome stratum, No. (%)								
STEMI	1230 (48)	215 (25)	1447 (52)	240 (28)	1281 (60)	253 (36)	3958 (53)	708 (29)
NSTEMI	779 (30)	353 (41)	700 (25)	301 (35)	457 (21)	205 (29)	1936 (26)	859 (36)
UA	560 (22)	285 (33)	650 (23)	308 (36)	409 (19)	246 (35)	1619 (22)	839 (35)
Systolic blood pressure, mmHg								
N	2542	838	2726	839	2099	693	7367	2370
Mean (SD)	138 (28)	147 (31)	138 (29)	147 (31)	137 (28)	142 (29)	138 (28)	146 (31)
Median (min, max)	136 (60, 230)	144 (60, 229)	136 (60, 230)	145 (60, 230)	134 (60, 229)	140 (65, 226)	135 (60, 230)	143 (60, 230)
IQR	37	40	39	42	36	43	38	42
Diastolic blood pressure, mmHg								
N	2484	828	2659	826	2042	681	7185	2335
Mean (SD)	82 (17)	80 (17)	82 (16)	80 (17)	81 (17)	79 (16)	82 (16)	80 (16)
Median (min, max)	80 (30, 120)	80 (19, 120)	81 (22, 120)	80 (20, 120)	80 (22, 120)	79 (32, 120)	81 (22, 120)	80 (19, 120)
IQR	23	20	23	22	22	20	23	20
Pulse Pressure, mmHg								
N	2471	818	2639	820	2032	675	7142	2313
Mean (SD)	55 (18)	66 (23)	55 (19)	65 (23)	54 (18)	62 (22)	55 (18)	65 (23)
Median (min, max)	52 (6, 154)	64 (12, 145)	53 (2, 142)	63 (10, 144)	51 (2, 133)	60 (12, 139)	52 (2, 154)	62 (10, 145)
IQR	24	30	25	31	23	30	24	31

Table 3.3 Cardiac presentation of patients with ACS by gender, NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Gender	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Total	2569	853	2797	849	2147	704	7513	2406				
Heart rate at presentation, beats/min												
N	2548	846	2744	833	2079	686	7371	2365				
Mean (SD)	82 (21)	88 (22)	83 (21)	89 (22)	82 (22)	87 (21)	82 (21)	88 (21)				
Median (min, max)	80 (30, 180)	86 (29, 166)	80 (30, 191)	86 (33, 184)	80 (30, 200)	84 (37, 176)	80 (30, 200)	85 (29, 184)				
IQR	27	28	27	29	28	28	27	29				
Number of distinct episodes of angina in past 24 hours, No. (%)												
0-2	1564 (61)	454 (53)	1292 (46)	321 (38)	995 (46)	268 (38)	3851 (51)	1043 (43)				
>2	176 (7)	59 (7)	93 (3)	26 (3)	62 (3)	23 (3)	331 (4)	108 (4)				
Missing	829 (32)	340 (40)	1412 (50)	502 (59)	1090 (51)	413 (59)	3331 (44)	1255 (52)				
Killip classification code, No. (%)												
I	1319 (51)	349 (41)	1436 (51)	351 (41)	998 (46)	288 (41)	3753 (50)	988 (41)				
II	429 (17)	163 (19)	424 (15)	163 (19)	397 (18)	131 (19)	1250 (17)	457 (19)				
III	107 (4)	46 (5)	87 (3)	44 (5)	77 (4)	29 (4)	271 (4)	119 (5)				
IV	79 (3)	21 (2)	95 (3)	31 (4)	89 (4)	26 (4)	263 (4)	78 (3)				
Not stated/inadequately described	635 (25)	274 (32)	755 (27)	260 (31)	586 (27)	230 (33)	1976 (26)	764 (32)				
Patients with any cardiac marker measurement done*, No (%)												
	2473 (96)	805 (94)	2643 (94)	801 (94)	1846 (86)	599 (85)	6962 (93)	2205 (92)				
Peak CK-MB, Unit/L, No. (%)												
>25	1541	531	1457	488	1010	361	4008	1380				
	908 (59)	230 (43)	859 (59)	181 (37)	636 (63)	151 (42)	2403 (60)	562 (41)				
Peak CK, Unit/L, No. (%)												
>2x reference upper limits	2311	706	2432	715	1697	480	6440	1901				
	1147 (50)	216 (31)	1146 (47)	175 (24)	804 (47)	174 (36)	3097 (48)	565 (30)				

**Table 3.3 Cardiac presentation of patients with ACS by gender, NCVD-ACS Registry, 2006-2008**

Year	2006				2007				2008				Overall	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<b>Gender</b>														
<b>Total</b>	<b>2569</b>	<b>853</b>	<b>2797</b>	<b>849</b>	<b>2147</b>	<b>704</b>	<b>7513</b>	<b>2406</b>						
Peak TnT, No. (%)	491	165	433	155	321	108	1245	428						
Positive or >0.01	464 (95)	153 (93)	365 (84)	125 (81)	298 (93)	100 (93)	1127 (91)	378 (88)						
Peak TnI, No. (%)	180	100	124	59	70	83	374	242						
Positive or > reference upper limit/0.04	134 (74)	77 (77)	87 (70)	48 (81)	40 (57)	37 (45)	261 (70)	162 (67)						
Total cholesterol, mmol/L														
N	1907	564	2075	603	1524	422	5506	1589						
Mean (SD)	5.3 (1.3)	5.3 (1.4)	5.3 (1.3)	5.3 (1.4)	5.3 (1.3)	5.4 (1.4)	5.3 (1.3)	5.3 (1.4)						
Median (min, max)	5.1 (3, 14.3)	5.2 (3, 11)	5.2 (3, 16.1)	5.1 (3, 12.9)	5.2 (3, 11.1)	5.2 (3, 12)	5.2 (3, 16.1)	5.2 (3, 12.9)						
IQR	1.7	1.9	1.7	1.8	1.6	1.7	1.7	1.8						
HDL-C, mmol/L														
N	1907	564	2093	605	1483	419	5480	1596						
Mean (SD)	5.3 (1.3)	5.3 (1.4)	5.1 (.37)	5.18 (.38)	5.08 (.32)	5.2 (.36)	5.09 (.36)	5.12 (.38)						
Median (min, max)	5.1 (3, 14.3)	5.2 (3, 11)	5.02 (.5, 4.5)	5.1 (.5, 4.2)	5.1 (5, 3.3)	5.17 (.5, 4.22)	5.02 (.5, 4.94)	5.15 (.5, 4.24)						
IQR	1.7	1.9	0.32	0.38	0.32	0.41	0.33	0.44						
LDL-C, mmol/L														
N	1904	572	2039	591	1470	417	5366	1579						
Mean (SD)	1.1 (.37)	1.22 (.4)	3.28 (1.21)	3.27 (1.26)	3.38 (1.22)	3.36 (1.29)	3.31 (1.21)	3.27 (1.28)						
Median (min, max)	1.06 (.5, 4.94)	1.2 (.5, 4.24)	3.2 (1, 14.6)	3.08 (1, 10.08)	3.3 (1, 9.3)	3.2 (1, 9.29)	3.2 (1, 14.6)	3.1 (1, 10.08)						
IQR	0.36	0.44	1.6	1.55	1.6	1.7	1.62	1.63						

Table 3.3 Cardiac presentation of patients with ACS by gender, NCVD-ACS Registry, 2006-2008

Year	2006				2007				2008				Overall	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Total	2406
<b>Gender</b>														
<b>Total</b>	<b>2569</b>	<b>853</b>	<b>2797</b>	<b>849</b>	<b>2147</b>	<b>704</b>	<b>7513</b>	<b>2406</b>						
<b>Triglycerides, mmol/L</b>														
<b>N</b>	<b>1857</b>	<b>571</b>	<b>1786</b>	<b>512</b>	<b>1303</b>	<b>368</b>	<b>4750</b>	<b>1370</b>						
<b>Mean (SD)</b>	<b>3.3 (1.2)</b>	<b>3.21 (1.28)</b>	<b>2.12 (1.37)</b>	<b>2.08 (1.2)</b>	<b>2.05 (1.21)</b>	<b>1.99 (1.09)</b>	<b>2.1 (1.31)</b>	<b>2.03 (1.19)</b>						
<b>Median (min, max)</b>	<b>3.24 (1, 10.1)</b>	<b>3.04 (1, 8.9)</b>	<b>1.7 (1, 15)</b>	<b>1.7 (1, 9.8)</b>	<b>1.7 (1, 12.9)</b>	<b>1.6 (1, 8.9)</b>	<b>1.7 (1, 15)</b>	<b>1.7 (1, 14)</b>						
<b>IQR</b>	<b>1.59</b>	<b>1.71</b>	<b>1.08</b>	<b>1</b>	<b>1</b>	<b>0.91</b>	<b>1.1</b>	<b>1</b>						
<b>Left ventricular ejection fraction, %</b>														
<b>N</b>	<b>1661</b>	<b>490</b>	<b>1499</b>	<b>373</b>	<b>1207</b>	<b>321</b>	<b>4044</b>	<b>1072</b>						
<b>Mean (SD)</b>	<b>2.12 (1.31)</b>	<b>1.99 (1.24)</b>	<b>46 (12)</b>	<b>48 (14)</b>	<b>45 (12)</b>	<b>47 (12)</b>	<b>46 (12)</b>	<b>48 (13)</b>						
<b>Median (min, max)</b>	<b>1.75 (1, 13.5)</b>	<b>1.61 (1, 14)</b>	<b>45 (7, 79)</b>	<b>49 (10, 80)</b>	<b>45 (5, 80)</b>	<b>47 (15, 79)</b>	<b>46 (5, 80)</b>	<b>48 (10, 80)</b>						
<b>IQR</b>	<b>1.1</b>	<b>0.9</b>	<b>17</b>	<b>19</b>	<b>16</b>	<b>18</b>	<b>16</b>	<b>18</b>						
<b>Pain to needle time, min (* symptom to treatment) (STEMI only)</b>														
<b>N</b>	<b>1020</b>	<b>164</b>	<b>1132</b>	<b>179</b>	<b>983</b>	<b>172</b>	<b>3135</b>	<b>515</b>						
<b>Mean (SD)</b>	<b>409.7 (384.1)</b>	<b>454 (415.8)</b>	<b>392.7 (350.9)</b>	<b>455.6 (379.7)</b>	<b>376.9 (363.1)</b>	<b>460.4 (380.4)</b>	<b>393.3 (365.9)</b>	<b>456.7 (391)</b>						
<b>Median (min, max)</b>	<b>300</b>	<b>321.5</b>	<b>300</b>	<b>349</b>	<b>242</b>	<b>323</b>	<b>284</b>	<b>330</b>						
<b>IQR</b>	<b>(0, 2100)</b>	<b>(0, 2200)</b>	<b>(0, 2330)</b>	<b>(0, 2200)</b>	<b>(0, 2100)</b>	<b>(0, 1750)</b>	<b>(0, 2330)</b>	<b>(0, 2200)</b>						
	<b>411</b>	<b>491.5</b>	<b>384</b>	<b>430</b>	<b>374</b>	<b>414</b>	<b>388</b>	<b>420</b>						

\*Cardiac marker is defined as any of the following baseline investigations: 1) Peak CK-MB, 2) Peak CK, 3) Peak TnT, 4) Peak TnI tests  
Note: Not all participating centre performed Troponin T or Troponin I tests

**Table 3.4 Cardiac presentation of patients with ACS by pre-morbid diabetes, NCVD-ACS Registry, 2006-2008**

Year	2006			2007			2008			Overall		
	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown
<b>Pre-morbid diabetes</b>												
STEMI	525 (35)	538 (44)	382 (55)	612 (38)	734 (48)	341 (65)	515 (47)	705 (58)	314 (58)	1652 (39)	1977 (50)	1037 (59)
NSTEMI	579 (39)	364 (30)	189 (27)	491 (31)	407 (27)	103 (20)	301 (27)	257 (21)	104 (19)	1371 (33)	1028 (26)	396 (22)
UA	393 (26)	324 (26)	128 (18)	496 (31)	385 (25)	77 (15)	282 (26)	245 (20)	128 (23)	1171 (28)	954 (24)	333 (19)
<b>Acute coronary syndrome stratum, No. (%)</b>												
N	1475	1215	690	1568	1495	502	1077	1194	521	4120	3904	1713
Mean (SD)	142 (30)	140 (29)	136 (28)	143 (30)	139 (28)	136 (29)	141 (30)	137 (28)	134 (26)	142 (30)	139 (29)	136 (27)
Median (min, max)	140	137	134	140	136	134	139	136	132	140	136	133
IQR	40	39	36	41	38	38	40	34	34	41	38	36
<b>Systolic blood pressure, mmHg</b>												
N	1457	1180	675	1538	1457	490	1059	1151	513	4054	3788	1678
Mean (SD)	81 (16)	81 (17)	81 (16)	82 (17)	81 (17)	81 (16)	81 (17)	79 (16)	81 (16)	81 (17)	81 (17)	80 (17)
Median (min, max)	80	81	80	81	81	80	80	78	80	80	81	80
IQR	22	22	23	22	23	24	21	22	21	22	22	22
<b>Diastolic blood pressure, mmHg</b>												
N	1457	1180	675	1538	1457	490	1059	1151	513	4054	3788	1678
Mean (SD)	81 (16)	81 (17)	81 (16)	82 (17)	81 (17)	81 (16)	81 (17)	79 (16)	81 (16)	81 (17)	81 (17)	80 (17)
Median (min, max)	80	81	80	81	81	80	80	78	80	80	81	80
IQR	22	22	23	22	23	24	21	22	21	22	22	22

Table 3.4 Cardiac presentation of patients with ACS by pre-morbid diabetes, NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall			
	Diabetic	Non-diabetic	Unknown										
Total	1497	1226	699	1599	1526	521	1098	1207	546	4194	3959	1766	
Pulse Pressure, mmHg													
N	1445	1173	671	1521	1450	488	1048	1148	511	4014	3771	1670	
Mean (SD)	60 (21)	53 (18)	60 (21)	56 (19)	54 (19)	59 (21)	54 (18)	55 (18)	60 (21)	56 (19)	54 (18)	54 (18)	
Median (min, max)	58 (6, 154)	54 (6, 135)	50 (2, 144)	58 (10, 142)	53 (11, 137)	51 (6, 139)	57 (6, 139)	50 (11, 124)	51 (11, 124)	58 (2, 145)	52 (2, 154)	51 (6, 137)	51 (6, 137)
IQR	28	26	23	28	24	27	29	29	22	29	24	23	23
Heart rate at presentation, beats/min													
N	1486	1216	692	1573	1503	501	1067	1188	510	4126	3907	1703	
Mean (SD)	86 (21)	80 (21)	81 (22)	87 (21)	81 (21)	82 (21)	87 (21)	81 (22)	82 (22)	87 (21)	81 (21)	82 (22)	
Median (min, max)	85 (29, 180)	78 (35, 171)	79 (39, 171)	86 (33, 191)	79 (30, 177)	80 (30, 180)	86 (34, 162)	78 (30, 200)	79 (39, 170)	85 (29, 191)	78 (30, 200)	80 (30, 180)	
IQR	29	26	28	28	26	26	28	25	26	28	26	27	
Number of distinct episodes of angina in past 24 hours, No. (%)													
0-2	862 (58)	669 (55)	487 (70)	694 (43)	711 (47)	208 (40)	481 (44)	642 (53)	140 (26)	2037 (49)	2072 (51)	835 (47)	
>2	109 (7)	69 (6)	57 (8)	53 (3)	55 (4)	11 (2)	38 (3)	42 (3)	5 (1)	200 (5)	166 (4)	73 (4)	
Missing	526 (35)	488 (40)	155 (22)	852 (53)	760 (50)	302 (58)	579 (53)	523 (43)	401 (73)	1957 (47)	1771 (45)	858 (49)	

Table 3.4 Cardiac presentation of patients with ACS by pre-morbid diabetes, NCVI-D-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown
Pre-morbid diabetes												
Total	1497	1226	699	1599	1526	521	1098	1207	546	4194	3959	1766
Killip classification code, No. (%)												
I	700 (47)	619 (50)	349 (50)	732 (46)	798 (52)	257 (49)	482 (44)	625 (52)	179 (33)	1914 (46)	2042 (52)	785 (44)
II	290 (19)	193 (16)	109 (16)	287 (18)	219 (14)	81 (16)	211 (19)	238 (20)	79 (14)	788 (19)	650 (16)	269 (15)
III	84 (6)	39 (3)	30 (4)	76 (5)	38 (2)	17 (3)	55 (5)	36 (3)	15 (3)	215 (5)	113 (3)	62 (4)
IV	51 (3)	22 (2)	27 (4)	53 (3)	47 (3)	26 (5)	54 (5)	38 (3)	23 (4)	158 (4)	107 (3)	76 (4)
Not stated/inadequately described	372 (25)	353 (29)	184 (26)	451 (28)	424 (28)	140 (27)	296 (27)	270 (22)	250 (46)	1119 (27)	1047 (26)	574 (33)
Patients with any cardiac marker measurement done*, No (%)	1446 (97)	1159 (95)	673 (96)	1528 (96)	1444 (95)	472 (91)	991 (90)	1127 (93)	327 (60)	3955 (95)	3730 (94)	1472 (83)
Peak CK-MB, Unit/L, No. (%)	966	740	366	902	801	242	563	643	165	2431	2184	773
>25	469 (49)	421 (57)	248 (68)	426 (47)	458 (57)	156 (64)	278 (49)	402 (63)	107 (65)	1173 (48)	1281 (59)	511 (66)
Peak CK, Unit/L, No. (%)	1354	1035	628	1403	1320	424	868	1018	291	3625	3373	1343
>2x reference upper limits	526 (39)	489 (47)	348 (55)	482 (34)	619 (47)	220 (52)	338 (39)	502 (49)	138 (47)	1346 (37)	1610 (48)	706 (53)
Peak TnT, No. (%)	333	207	116	287	250	51	201	185	43	821	642	210
Positive or >0.01	312 (94)	193 (93)	112 (97)	242 (84)	207 (83)	41 (80)	189 (94)	170 (92)	39 (91)	743 (90)	570 (89)	192 (91)
Peak TnI, No. (%)	130	92	58	89	64	30	71	58	24	290	214	112
Positive or > reference upper limit/0.04	104 (80)	67 (73)	40 (69)	66 (74)	43 (67)	26 (87)	33 (46)	26 (45)	18 (75)	203 (70)	136 (64)	84 (75)

Table 3.4 Cardiac presentation of patients with ACS by pre-morbid diabetes, NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown
<b>Pre-morbid diabetes</b>												
Total	1497	1226	699	1599	1526	521	1098	1207	546	4194	3959	1766
Total cholesterol, mmol/L												
N	1067	884	520	1160	1137	381	749	925	272	2976	2946	1173
Mean (SD)	5.2 (1.3)	5.3 (1.3)	5.4 (1.3)	5.2 (1.4)	5.3 (1.3)	5.6 (1.4)	5.2 (1.3)	5.4 (1.4)	5.5 (1.3)	5.2 (1.3)	5.3 (1.3)	5.5 (1.3)
Median (min, max)	5 (3, 10.8)	5.3 (3, 14.3)	5.3 (3, 10.4)	5 (3, 16.1)	5 (3, 12.9)	5.2 (3, 14.7)	5 (3, 9.8)	5 (3, 12)	5.2 (3, 11.1)	5 (3, 16.1)	5 (3, 14.3)	5.4 (3, 14.7)
IQR	1.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.3	1.8	1.7	1.7
HDL-C, mmol/L												
N	1076	886	514	1193	1121	384	752	880	270	3021	2887	1168
Mean (SD)	1.1 (0.39)	1.16 (0.39)	1.14 (0.34)	1.1 (0.39)	1.13 (0.36)	1.12 (0.35)	1.09 (0.34)	1.09 (0.34)	1.11 (0.33)	1.13 (0.32)	1.1 (0.38)	1.13 (0.36)
Median (min, max)	1.04 (0.5, 4.9)	1.1 (0.5, 4.94)	1.1 (0.5, 4.2)	1.03 (0.5, 4.2)	1.03 (0.5, 4.2)	1.1 (0.5, 4.2)	1.09 (0.5, 4.1)	1 (0.5, 4.22)	1 (0.5, 4.22)	1.06 (0.5, 3.3)	1.1 (0.5, 2.4)	1.03 (0.5, 4.9)
IQR	0.42	0.4	0.4	0.32	0.32	0.39	0.38	0.39	0.38	0.4	0.37	0.4
LDL-C, mmol/L												
N	1039	880	509	1147	1102	381	744	874	269	2930	2856	1159
Mean (SD)	3.1 (1.22)	3.37 (1.21)	3.48 (1.18)	3.13 (1.18)	3.31 (1.26)	3.6 (1.18)	3.2 (1.19)	3.46 (1.19)	3.46 (1.25)	3.14 (1.25)	3.14 (1.23)	3.38 (1.21)
Median (min, max)	2.95 (1, 9.3)	3.31 (1, 10.1)	3.37 (1, 10.2)	3 (1, 8.2)	3 (1, 14.6)	3 (1, 10.08)	3.19 (1, 7.3)	3.53 (1, 7.22)	3.1 (1, 7.3)	3.34 (1, 10.7)	3 (1, 14.6)	3.3 (1, 10.1)
IQR	1.71	1.54	1.42	1.52	1.54	1.72	1.7	1.72	1.7	1.66	1.47	1.66

Table 3.4 Cardiac presentation of patients with ACS by pre-morbid diabetes, NCVI-D-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown	Diabetic	Non-diabetic	Unknown
Total	1497	1226	699	1599	1526	521	1098	1207	546	4194	3959	1766
Triglycerides, mmol/L												
N	952	745	454	1046	955	297	661	786	224	2659	2486	975
Mean (SD)	2.25 (1.44)	1.96 (1.11)	1.98 (1.23)	2.2 (1.39)	2.02 (1.23)	2.09 (1.43)	2.16 (1.29)	1.96 (1.05)	1.94 (1.25)	2.21 (1.38)	1.99 (1.14)	2.01 (1.3)
Median (min, max)	1.82 (1, 14)	1.67 (1, 12.9)	1.62 (1, 13)	1.8 (1, 11.77)	1.7 (1, 15)	1.7 (1, 13.68)	1.8 (1, 11.2)	1.66 (1, 10.43)	1.6 (1, 12.9)	1.8 (1, 14)	1.67 (1, 15)	1.65 (1, 13.68)
IQR	1.1	0.9	1	1.07	1	1.1	1.11	0.92	0.85	1.1	0.92	1
Left ventricular ejection fraction, %												
N	736	609	371	787	796	289	609	710	209	2132	2115	869
Mean (SD)	46 (13)	49 (13)	48 (13)	46 (13)	47 (13)	45 (12)	44 (12)	47 (12)	46 (13)	46 (13)	48 (12)	46 (13)
Median (min, max)	45 (8, 80)	50 (10, 80)	49 (10, 78)	45 (10, 80)	48 (7, 79)	45 (16, 73)	45 (9, 75)	47 (5, 80)	45 (15, 76)	45 (8, 80)	48 (5, 80)	46 (10, 78)
IQR	17	18	16	17	15	18	18	15	15	18	15	16
EKG, No. (%)												
• Inferior leads	240 (16)	263 (21)	184 (26)	267 (17)	341 (22)	149 (29)	225 (20)	343 (28)	111 (20)	732 (17)	947 (24)	444 (25)
• Anterior leads	304 (20)	287 (23)	207 (30)	362 (23)	435 (29)	214 (41)	301 (27)	419 (35)	167 (31)	967 (23)	1141 (29)	588 (33)
• Lateral leads	112 (7)	104 (8)	85 (12)	123 (8)	188 (12)	96 (18)	136 (12)	178 (15)	66 (12)	371 (9)	470 (12)	247 (14)
• True posterior	41 (3)	57 (5)	47 (7)	57 (4)	61 (4)	34 (7)	31 (3)	80 (7)	33 (6)	129 (3)	198 (5)	114 (6)
• Right ventricle	41 (3)	48 (4)	42 (6)	40 (3)	62 (4)	26 (5)	35 (3)	70 (6)	25 (5)	116 (3)	180 (5)	93 (5)
• None	0 (0)	2 (0)	2 (0)	5 (0)	3 (1)	2 (0)	1 (0)	4 (1)	7 (0)	8 (0)	9 (1)	
• Not stated/ inadequately described	6 (0)	5 (0)	1 (0)	7 (0)	4 (0)	0 (0)	3 (0)	5 (0)	0 (0)	16 (0)	14 (0)	1 (0)

Table 3.4 Cardiac presentation of patients with ACS by pre-morbid diabetes, NCVI-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Pre-morbid diabetes	No-diabetic	Unknown	Pre-morbid diabetes	No-diabetic	Unknown	Pre-morbid diabetes	No-diabetic	Unknown	Diabetic	No-diabetic	Unknown
Total	1497	1226	699	1599	1526	521	1098	1207	546	4194	3959	1766
Pain to needle time, min (* symptom to treatment) (STEMI only)												
N	419	431	334	472	580	259	384	581	190	1275	1592	783
Mean (SD)	451 (409.9)	400.4 (387.7)	391.8 (360)	408.8 (365.2)	394.3 (351.2)	403.3 (348.1)	418.9 (390.3)	371.5 (353.8)	383.9 (354.7)	425.7 (388)	387.6 (362.4)	393.7 (354.4)
Median (min, max)	315 (0, 2200)	270 (0, 2100)	300 (7, 2055)	300 (0, 2200)	300 (0, 2330)	300 (0, 1510)	310 (0, 2040)	242 (0, 2100)	249 (0, 1835)	305 (0, 2200)	270 (0, 2330)	300 (0, 2055)
IQR	490	398	387	389	351	420	422	370	445	456	361.5	406

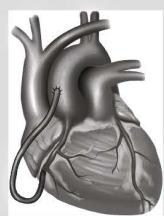
\*Cardiac marker is defined as any of the following baseline investigations: 1) Peak CK-MB, 2) Peak CK, 3) Peak TnT, 4) Peak Tnl whereby status Not Done="False" for all investigations

Note: Not all participating centre performed Troponin T or Troponin I tests

Note: Percentage is to the nearest decimal point

**Table 3.5 TIMI risk score of patients with ACS by ACS Stratum, NCVD-ACS Registry, 2006-2008**

ACS Stratum	2007		2008		Overall	
	STEMI	NSTEMI/UA	STEMI	NSTEMI/UA	STEMI	NSTEMI/UA
Total	1687	1959	1534	1317	4666	5253
TIMI Risk Score, No. (%)	No.	%	No.	%	No.	%
0	27	2	119	6	29	2
1	173	10	381	19	150	10
2	334	20	550	28	297	19
3	315	19	457	23	249	16
4	245	15	300	15	216	14
5	232	14	126	6	225	15
6	124	7	23	1	118	8
7	110	7	3	0	128	8
8	69	4			48	3
9	31	2			37	2
10	21	1			31	2
11	3	0			4	0
12	3	0			1	0
13	0	0			1	0



## CHAPTER 4: TREATMENT

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## **Summary**

1. The median for days spent in hospital by patients admitted with ACS was four to five days which includes two to three days in CCU. The length of stay in hospital increases with age.
2. In STEMI patients only 6-8% of patients received primary angioplasty and 70-75% received thrombolytic therapy.
3. About 17-21% of patients with STEMI were treated with PCI during the same admission.
4. About 13-16% of patients with NSTEMI and 3-9% of patients with UA were treated with PCI on the same admission.
5. More than 90% of patients received aspirin and statin for the treatment of ACS. However, only 60-70% of patients received dual antiplatelet therapy.
6. Malay patients appeared to receive less LMWH and Indian patients received more anti-diabetic medications.

Chapter 4 summarises the treatment of patients admitted with acute coronary syndrome registered in the NCVD ACS registry from January 2006 to December 2008. This chapter is divided into admission days, treatment of STEMI, treatment of NSTEMI/UA and pharmacological treatment of ACS.

### **Admission days**

For each year from January 2006 to December 2008, the total number of admission days is similar in all ACS spectrums. The median for days of admission was 5 days for STEMI and NSTEMI; and 4 days for UA which were consistent between years 2006 and 2008. [Table 4.1] The total number of admission days increases with age and this was observed in all ACS spectrums. [Table 4.2] For STEMI, females tend to stay longer in hospitals (mean of 7 days) compared to 6 days for males (this trend is similar for all 3 years). [Table 4.3] However, in the NSTEMI/UA group, females and males spent equal length of time in hospital. [Table 4.7] There is no-difference in the median number of days spent in hospital in all three ethnic groups after admission with STEMI/NSTEMI/UA. [Table 4.4 & Table 4.8]

There is a similar trend across all ACS spectrums for number of days spent in CCU or ICU/CICU. The median numbers of days spent in CCU or ICU/CICU for STEMI, NSTEMI or UA were two to four days. [Table 4.1] This was observed in each year from 2006 to 2008. There is a trend in each year that the number of days in intensive care wards (CCU, ICU and CICU) increases with age. [Table 4.2]

### Treatment of STEMI

For patients admitted with STEMI, 70-75% of patients received thrombolytic therapy and 6-8% of patients received primary angioplasty. Sixteen percent of all patients with STEMI did not receive any form of revascularization due to delayed presentation or initially wrong diagnosis. Thrombolytic therapy was not given due to contraindication in 4-5% of STEMI patients. [Table 4.1] The younger age group were given thrombolytic therapy more than the elderly group. On the other hand, the elderly group had higher percentage to with primary angioplasty compared to the young and the middle age groups. [Table 4.2]

There is a difference of treatment in terms of gender. Most female patients received less thrombolysis than male. [Table 4.3] Only about 17-21% of patients with STEMI were treated with percutaneous coronary intervention during the same hospital admission. The others were initially treated medically post STEMI. [Table 4.1]

### Treatment of NSTEMI/UA

Majority of the patients admitted with NSTEMI/UA were treated medically. Only 13-16% of patients with NSTEMI and 3-9% of patients with UA were treated with PCI on the same admission. [Table 4.1] The younger patients and male tend to be more treated with PCI compared to those who were middle aged or elderly. [Table 4.6 & Table 4.7] There were no differences in the proportions of patients undergoing PCI among different ethnic groups. [Table 4.8]

### Pharmacological treatment of ACS

During ACS admission, nearly 90% of patients received aspirin and statin. [Table 4.1] In the STEMI group, there were no differences in the use of aspirin and statin in the different age groups, genders and ethnic groups. However in patients admitted with NSTEMI/UA, the use of aspirin was less in the elderly. [Table 4.6] ADP antagonist was given in 60-70% of patients with ACS. The STEMI group received more ADP antagonist (60-73%) compared to the NSTEMI (60-63%) and UA (55-59%) patients. LMWH was given more in the UA and NSTEMI patients than STEMI patients. Generally, the Malays received less LMWH compared to other races. ACE Inhibitor and Beta blockers were used in more than 50% of the patients. The usage of anti diabetic medication was higher among the Indian patients. Glycoprotein IIb/IIIa receptor inhibitor is used in only a small proportion of the patients (<5%) in the ACS spectrum. [Table 4.1]

Around 74-85% of STEMI patients received thrombolysis at centres without cathlab facility compared to 65-69% in centre with cathlab facility. About 11-13% of patients in centre with cathlab facility proceeded directly to primary angioplasty. A higher percentage of STEMI patients underwent PCI at admission (33-34%) compared to NSTEMI (19-26%) and UA (5-13%). [Table 4.9]

**Table 4.1 Summary of treatments for patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008**

Year	2006				2007				2008				Overall		
	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
<b>ACS Stratum</b>															
<b>Total</b>	<b>1445</b>	<b>1132</b>	<b>845</b>	<b>1687</b>	<b>1001</b>	<b>958</b>	<b>1534</b>	<b>662</b>	<b>655</b>	<b>4666</b>	<b>2795</b>	<b>2458</b>			
Total admission days**															
<b>N</b>	<b>1420</b>	<b>1104</b>	<b>830</b>	<b>1570</b>	<b>944</b>	<b>934</b>	<b>1387</b>	<b>607</b>	<b>581</b>	<b>4377</b>	<b>2655</b>	<b>2345</b>			
Mean (SD)	6 (3)	6 (4)	5 (4)	6 (4)	6 (5)	5 (3)	6 (3)	6 (4)	5 (3)	6 (3)	6 (4)	5 (3)			
Median (min, max)	5 (1, 30)	5 (1, 28)	4 (1, 29)	5 (1, 30)	5 (1, 29)	4 (1, 30)	5 (1, 28)	5 (1, 26)	4 (1, 27)	5 (1, 30)	5 (1, 30)	4 (1, 30)			
IQR	3	3	3	3	3	2	2	2	2	3	3	2	3	3	2
Number of days on CCU															
<b>N</b>	<b>1093</b>	<b>450</b>	<b>140</b>	<b>1175</b>	<b>352</b>	<b>129</b>	<b>1109</b>	<b>294</b>	<b>96</b>	<b>3377</b>	<b>1096</b>	<b>365</b>			
Mean (SD)	3 (3)	4 (3)	3 (3)	3 (3)	3 (3)	3 (2)	3 (3)	3 (3)	3 (4)	3 (3)	3 (3)	3 (3)			
Median (min, max)	3 (1, 26)	3 (1, 24)	2 (1, 20)	3 (1, 29)	3 (1, 30)	2 (1, 13)	3 (1, 28)	2 (1, 20)	2 (1, 24)	3 (1, 29)	3 (1, 30)	2 (1, 24)			
IQR	2	2	3	2	3	2	2	2	3	3	2	2	2	2	3
Number of days on ICU/CICU															
<b>N</b>	<b>87</b>	<b>110</b>	<b>27</b>	<b>13</b>	<b>27</b>	<b>8</b>	<b>14</b>	<b>16</b>	<b>7</b>	<b>114</b>	<b>153</b>	<b>42</b>			
Mean (SD)	3 (3)	4 (3)	4 (2)	4 (4)	3 (4)	2 (2)	4 (3)	3 (2)	4 (3)	3 (3)	3 (3)	3 (2)			
Median (min, max)	2 (1, 17)	3 (1, 23)	4 (1, 9)	2 (1, 13)	2 (1, 24)	2 (1, 7)	4 (1, 11)	3 (1, 6)	3 (1, 11)	2 (1, 17)	3 (1, 24)	3 (1, 11)			
IQR	3	2	3	2	2	1	2	2	3	2	2	2	2	2	4
Fibrinolytic therapy, No. (%)															
Given	1018 (70)				1231 (73)			1143 (75)			3392 (73)				
Not given-proceeded directly to primary angioplasty	117 (8)				113 (7)			90 (6)			320 (7)				
Not given-Contraindicated	70 (5)				63 (4)			56 (4)			189 (4)				
Not given-Missed thrombolysis	193 (13)				226 (13)			168 (11)			587 (13)				
Not given-Others***	47 (3)				54 (3)			77 (5)			178 (4)				

Table 4.1 Summary of treatments for patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
ACS Stratum	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458
Cardiac catheterisation, No. (%)												
Yes	298 (21)	251 (22)	106 (13)	351 (21)	272 (27)	110 (11)	299 (19)	149 (23)	36 (5)	948 (20)	672 (24)	252 (10)
No	1108 (77)	858 (76)	727 (86)	1285 (76)	707 (71)	836 (87)	1182 (77)	495 (75)	610 (93)	3575 (77)	2060 (74)	2173 (88)
Number transferred to another centre	39 (3)	23 (2)	12 (1)	51 (3)	22 (2)	12 (1)	53 (3)	18 (3)	9 (1)	143 (3)	63 (2)	33 (1)
Percutaneous Coronary Intervention, No. (%)												
Yes	308 (21)	161 (14)	80 (9)	297 (18)	161 (16)	77 (8)	258 (17)	88 (13)	22 (3)	863 (18)	410 (15)	179 (7)
No	1137 (79)	971 (86)	765 (91)	1390 (82)	840 (84)	881 (92)	1276 (83)	574 (87)	633 (97)	3803 (82)	2385 (85)	2279 (93)
CABG, No. (%)												
Yes	10 (1)	42 (4)	15 (2)	10 (1)	28 (3)	9 (1)	8 (1)	13 (2)	5 (1)	28 (1)	83 (3)	29 (1)
No	1435 (99)	1090 (96)	830 (98)	1677 (99)	973 (97)	949 (99)	1526 (99)	649 (98)	650 (99)	4638 (99)	2712 (97)	2429 (99)
Pre-admission aspirin use, No. (%)												
Yes	227 (16)	465 (41)	372 (44)	370 (22)	452 (45)	520 (54)	277 (18)	272 (41)	332 (51)	874 (19)	1189 (43)	1224 (50)
No	965 (67)	468 (41)	257 (30)	1221 (72)	474 (47)	378 (39)	1133 (74)	317 (48)	209 (32)	3319 (71)	1259 (45)	844 (34)
Unknown	253 (18)	199 (18)	216 (26)	96 (6)	75 (7)	60 (6)	124 (8)	73 (11)	114 (17)	473 (10)	347 (12)	390 (16)

Table 4.1 Summary of treatments for patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008

Year	ACS Stratum	2006			2007			2008			Overall		
		STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA	STEMI	NSTEMI	UA
Total	1445	1132	845	1687	1001	958	1534	662	655	4666	2795	2458	
Pharmacological therapy given during admission, No. (%)													
Aspirin	1368 (95)	1018 (90)	765 (91)	1583 (94)	889 (89)	868 (91)	1386 (90)	555 (84)	501 (76)	4337 (93)	2462 (88)	2134 (87)	
ADP antagonist	868 (60)	719 (64)	422 (50)	1230 (73)	633 (63)	563 (59)	1073 (70)	396 (60)	362 (55)	3171 (68)	1748 (63)	1347 (55)	
GP receptor inhibitor	77 (5)	47 (4)	19 (2)	46 (3)	31 (3)	4 (0)	43 (3)	22 (3)	8 (1)	166 (4)	100 (4)	31 (1)	
Unfractionated heparin	181 (13)	203 (18)	197 (23)	161 (10)	100 (10)	99 (10)	137 (9)	62 (9)	41 (6)	479 (10)	365 (13)	337 (14)	
LMWH	446 (31)	767 (68)	537 (64)	613 (36)	725 (72)	714 (75)	539 (35)	466 (70)	443 (68)	1598 (34)	1958 (70)	1694 (69)	
Beta blocker	951 (66)	737 (65)	587 (69)	1092 (65)	648 (65)	693 (72)	931 (61)	411 (62)	408 (62)	2974 (64)	1796 (64)	1688 (69)	
ACE inhibitor	865 (60)	597 (53)	510 (60)	1025 (61)	558 (56)	657 (69)	761 (50)	312 (47)	354 (54)	2651 (57)	1467 (52)	1521 (62)	
Angiotensin II receptor blocker	66 (5)	131 (12)	70 (8)	67 (4)	95 (9)	91 (9)	88 (6)	74 (11)	55 (8)	221 (5)	300 (11)	216 (9)	
Statins	1333 (92)	1022 (90)	769 (91)	1529 (91)	882 (88)	868 (91)	1322 (86)	524 (79)	517 (79)	4184 (90)	2428 (87)	2154 (88)	
Other lipid lowering agent	54 (4)	79 (7)	54 (6)	54 (3)	65 (6)	49 (5)	83 (5)	45 (7)	29 (4)	191 (4)	189 (7)	132 (5)	
Diuretics	393 (27)	464 (41)	241 (29)	467 (28)	399 (40)	296 (31)	329 (21)	241 (36)	149 (23)	1189 (25)	1104 (39)	686 (28)	
Calcium antagonist	94 (7)	253 (22)	195 (23)	115 (7)	209 (21)	211 (22)	110 (7)	141 (21)	113 (17)	319 (7)	603 (22)	519 (21)	
Oral hypoglycaemic agent	373 (26)	364 (32)	236 (28)	387 (23)	263 (26)	298 (31)	297 (19)	181 (27)	210 (32)	1057 (23)	808 (29)	744 (30)	
Insulin	379 (26)	320 (28)	183 (22)	447 (26)	268 (27)	229 (24)	333 (22)	154 (23)	100 (15)	1159 (25)	742 (27)	512 (21)	
Anti-arrhythmic agent	135 (9)	72 (6)	49 (6)	121 (7)	81 (8)	40 (4)	102 (7)	64 (10)	18 (3)	358 (8)	217 (8)	107 (4)	

\*Total admission days is derived as Outcome date - Admission date + 1

\*\*Not given-Others' includes missing and refusal

**Table 4.2 Treatments for patients with STEMI by age group (years), NCVD-ACS Registry, 2006-2008**

Year	2006			2007			2008			Overall		
Age group*	Young	Middle-age	Elderly									
Total	113	803	529	112	954	621	119	812	603	344	2569	1753
Total admission days**												
N	110	796	514	105	881	584	108	737	542	323	2414	1640
Mean (SD)	5 (2)	6 (3)	7 (4)	5 (2)	6 (3)	6 (4)	6 (3)	6 (3)	6 (4)	5 (2)	6 (3)	6 (4)
Median (min, max)	5 (1, 20)	5 (1, 28)	5 (1, 28)	5 (1, 18)	5 (1, 30)	5 (1, 30)	5 (1, 30)	5 (1, 27)	5 (1, 27)	5 (1, 27)	5 (1, 30)	5 (1, 30)
IQR	2	2	2	1	2	3	2	2	3	2	2	3
Number of days on CCU												
N	86	614	393	78	677	420	81	603	425	245	1894	1238
Mean (SD)	3 (2)	3 (2)	4 (3)	3 (2)	3 (2)	3 (3)	3 (2)	3 (2)	4 (3)	3 (2)	3 (2)	4 (3)
Median (min, max)	3 (1, 10)	3 (1, 21)	3 (1, 26)	3 (1, 17)	3 (1, 29)	3 (1, 26)	3 (1, 11)	3 (1, 28)	3 (1, 28)	3 (1, 17)	3 (1, 29)	3 (1, 28)
IQR	2	2	2	2	2	2	2	2	2	2	2	2
Number of days on ICU/CICU												
N	7	48	32	0	8	5	2	7	5	9	63	42
Mean (SD)	2 (1)	3 (3)	4 (4)	. (.)	3 (2)	6 (5)	4 (1)	4 (3)	5 (4)	2 (1)	3 (3)	4 (4)
Median (min, max)	2 (1, 4)	2 (1, 17)	3 (1, 17)	. (., .)	2 (1, 8)	4 (1, 13)	4 (3, 4)	3 (1, 9)	4 (2, 11)	2 (1, 4)	2 (1, 17)	3 (1, 17)
IQR	1	2	3	.	3	9	1	2	3	1	3	3

\*Young is defined as age from 20 to less than 40 years, middle-age is defined as age between 40 to less than 60 years and elderly is defined as 60 years and above

\*\*Total admission days is derived as Outcome date - Admission date + 1

\*\*\*Not given-Others' includes missing and refusal

Table 4.2 Treatments for patients with STEMI by age group (years), NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Age group*	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age
Total	113	803	529	112	954	621	119	812	603	344	2569	1753
Fibrinolytic therapy, No. (%)												
Given	88 (78)	601 (75)	329 (62)	80 (71)	723 (76)	428 (69)	90 (76)	634 (78)	419 (69)	258 (75)	1958 (76)	1176 (67)
Not given-proceeded directly to primary angioplasty	7 (6)	59 (7)	51 (10)	7 (6)	68 (7)	38 (6)	7 (6)	39 (5)	44 (7)	21 (6)	166 (6)	133 (8)
Not given-Contraindicated	3 (3)	31 (4)	36 (7)	3 (3)	27 (3)	33 (5)	4 (3)	26 (3)	26 (4)	10 (3)	84 (3)	95 (5)
Not given-Missed thrombolysis	10 (9)	94 (12)	89 (17)	20 (18)	107 (11)	99 (16)	10 (8)	80 (10)	78 (13)	40 (12)	281 (11)	266 (15)
Not given-Others***	5 (4)	18 (2)	24 (5)	2 (2)	29 (3)	23 (4)	8 (7)	33 (4)	36 (6)	15 (4)	80 (3)	83 (5)
Cardiac catheterisation, No. (%)												
Yes	27 (24)	171 (21)	100 (19)	26 (23)	215 (23)	110 (18)	29 (24)	158 (19)	112 (19)	82 (24)	544 (21)	322 (18)
No	81 (72)	613 (76)	414 (78)	80 (71)	709 (74)	496 (80)	85 (71)	628 (77)	469 (78)	246 (72)	1950 (76)	1379 (79)
Number transferred to another centre	5 (4)	19 (2)	15 (3)	6 (5)	30 (3)	15 (2)	5 (4)	26 (3)	22 (4)	16 (5)	75 (3)	52 (3)
Percutaneous Coronary Intervention, No. (%)												
Yes	25 (22)	180 (22)	103 (19)	17 (15)	189 (20)	91 (15)	24 (20)	137 (17)	97 (16)	66 (19)	506 (20)	291 (17)
No	88 (78)	623 (78)	426 (81)	95 (85)	765 (80)	530 (85)	95 (80)	675 (83)	506 (84)	278 (81)	2063 (80)	1462 (83)
CABG, No. (%)												
Yes	0 (0)	3 (0)	7 (1)	0 (0)	7 (1)	3 (0)	0 (0)	3 (0)	5 (1)	0 (0)	13 (1)	15 (1)
No	113 (100)	800 (100)	522 (99)	112 (100)	947 (99)	618 (100)	119 (100)	809 (100)	598 (99)	344 (100)	2556 (99)	1738 (99)

Table 4.2 Treatments for patients with STEMI by age group (years), NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly
<b>Total</b>	<b>113</b>	<b>903</b>	<b>529</b>	<b>112</b>	<b>954</b>	<b>621</b>	<b>119</b>	<b>812</b>	<b>603</b>	<b>344</b>	<b>2569</b>	<b>1753</b>
Pre-admission aspirin use, No. (%)												
Yes	10 (9)	111 (14)	106 (20)	19 (17)	210 (22)	141 (23)	16 (13)	139 (17)	122 (20)	45 (13)	460 (18)	369 (21)
No	89 (79)	536 (67)	340 (64)	88 (79)	695 (73)	438 (71)	92 (77)	616 (76)	425 (70)	269 (78)	1847 (72)	1203 (69)
Unknown	14 (12)	156 (19)	83 (16)	5 (4)	49 (5)	42 (7)	11 (9)	57 (7)	56 (9)	30 (9)	262 (10)	181 (10)
Pharmacological therapy given during admission, No. (%)												
Aspirin	110 (97)	760 (95)	498 (94)	108 (96)	901 (94)	574 (92)	104 (87)	743 (92)	539 (89)	322 (94)	2404 (94)	1611 (92)
ADP antagonist	69 (61)	452 (56)	347 (66)	81 (72)	700 (73)	449 (72)	75 (63)	558 (69)	440 (73)	225 (65)	1710 (67)	1236 (71)
GP receptor inhibitor	7 (6)	42 (5)	28 (5)	2 (2)	24 (3)	20 (3)	6 (5)	22 (3)	15 (2)	15 (4)	88 (3)	63 (4)
Unfractionated heparin	10 (9)	105 (13)	66 (12)	15 (13)	86 (9)	60 (10)	12 (10)	72 (9)	53 (9)	37 (11)	263 (10)	179 (10)
LMWH	44 (39)	232 (29)	170 (32)	45 (40)	345 (36)	223 (36)	52 (44)	286 (35)	201 (33)	141 (41)	863 (34)	594 (34)
Beta blocker	86 (76)	555 (69)	310 (59)	79 (71)	656 (69)	357 (57)	71 (60)	523 (64)	337 (56)	236 (69)	1734 (67)	1004 (57)
ACE inhibitor	68 (60)	506 (63)	291 (55)	70 (63)	600 (63)	355 (57)	59 (50)	427 (53)	275 (46)	197 (57)	1533 (60)	921 (53)
Angiotensin II receptor blocker	6 (5)	39 (5)	21 (4)	4 (4)	30 (3)	33 (5)	7 (6)	40 (5)	41 (7)	17 (5)	109 (4)	95 (5)
Statins	105 (93)	750 (93)	478 (90)	101 (90)	874 (92)	554 (89)	99 (83)	706 (87)	517 (86)	305 (89)	2330 (91)	1549 (88)
Other lipid lowering agent	10 (9)	29 (4)	15 (3)	4 (4)	37 (4)	13 (2)	7 (6)	50 (6)	26 (4)	21 (6)	116 (5)	54 (3)
Diuretics	13 (12)	184 (23)	196 (37)	20 (18)	242 (25)	205 (33)	18 (15)	151 (19)	160 (27)	51 (15)	577 (22)	561 (32)
Calcium antagonist	3 (3)	46 (6)	45 (9)	5 (4)	40 (4)	70 (11)	6 (5)	46 (6)	58 (10)	14 (4)	132 (5)	173 (10)
Oral hypoglycaemic agent	22 (19)	229 (29)	122 (23)	16 (14)	249 (26)	122 (20)	21 (18)	164 (20)	112 (19)	59 (17)	642 (25)	356 (20)
Insulin	22 (19)	221 (28)	136 (26)	21 (19)	255 (27)	171 (28)	12 (10)	177 (22)	144 (24)	55 (16)	653 (25)	451 (26)
Anti-arrhythmic agent	7 (6)	71 (9)	57 (11)	5 (4)	61 (6)	55 (9)	5 (4)	48 (6)	49 (8)	17 (5)	180 (7)	161 (9)

**Table 4.3 Treatments for patients with STEMI by gender, NCVD-ACS Registry, 2006-2008**

Year	2006		2007		2008		Overall	
Gender	Male	Female	Male	Female	Male	Female	Male	Female
<b>Total</b>	<b>1230</b>	<b>215</b>	<b>1447</b>	<b>240</b>	<b>1281</b>	<b>253</b>	<b>3958</b>	<b>708</b>
<b>Total admission days*</b>								
<b>N</b>	<b>1211</b>	<b>209</b>	<b>1344</b>	<b>226</b>	<b>1162</b>	<b>225</b>	<b>3717</b>	<b>660</b>
<b>Mean (SD)</b>	<b>6 (3)</b>	<b>7 (4)</b>	<b>6 (3)</b>	<b>7 (5)</b>	<b>6 (3)</b>	<b>7 (4)</b>	<b>6 (3)</b>	<b>7 (4)</b>
<b>Median (min, max)</b>	<b>5 (1, 28)</b>	<b>5 (1, 28)</b>	<b>5 (1, 30)</b>	<b>6 (1, 29)</b>	<b>5 (1, 28)</b>	<b>6 (1, 28)</b>	<b>5 (1, 30)</b>	<b>6 (1, 29)</b>
<b>IQR</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>4</b>
<b>Number of days on CCU</b>								
<b>N</b>	<b>936</b>	<b>157</b>	<b>1022</b>	<b>153</b>	<b>944</b>	<b>165</b>	<b>2902</b>	<b>475</b>
<b>Mean (SD)</b>	<b>3 (3)</b>	<b>4 (3)</b>	<b>3 (3)</b>	<b>3 (3)</b>	<b>3 (2)</b>	<b>4 (3)</b>	<b>3 (3)</b>	<b>4 (3)</b>
<b>Median (min, max)</b>	<b>3 (1, 26)</b>	<b>3 (1, 21)</b>	<b>3 (1, 29)</b>	<b>3 (1, 22)</b>	<b>3 (1, 28)</b>	<b>3 (1, 28)</b>	<b>3 (1, 29)</b>	<b>3 (1, 28)</b>
<b>IQR</b>	<b>2</b>							
<b>Number of days on ICU/CICU</b>								
<b>N</b>	<b>68</b>	<b>19</b>	<b>10</b>	<b>3</b>	<b>12</b>	<b>2</b>	<b>90</b>	<b>24</b>
<b>Mean (SD)</b>	<b>3 (3)</b>	<b>3 (2)</b>	<b>5 (4)</b>	<b>2 (2)</b>	<b>4 (2)</b>	<b>7 (6)</b>	<b>3 (3)</b>	<b>3 (2)</b>
<b>Median (min, max)</b>	<b>2 (1, 17)</b>	<b>2 (1, 7)</b>	<b>3 (1, 13)</b>	<b>2 (1, 4)</b>	<b>4 (1, 9)</b>	<b>7 (2, 11)</b>	<b>2 (1, 17)</b>	<b>2 (1, 11)</b>
<b>IQR</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>2</b>	<b>9</b>	<b>3</b>	<b>2</b>
<b>Fibrinolytic therapy, No. (%)</b>								
<b>Given</b>	<b>875 (71)</b>	<b>143 (67)</b>	<b>1071 (74)</b>	<b>160 (67)</b>	<b>982 (77)</b>	<b>161 (64)</b>	<b>2928 (74)</b>	<b>464 (66)</b>
<b>Not given-proceeded directly to primary angioplasty</b>	<b>99 (8)</b>	<b>18 (8)</b>	<b>99 (7)</b>	<b>14 (6)</b>	<b>77 (6)</b>	<b>13 (5)</b>	<b>275 (7)</b>	<b>45 (6)</b>
<b>Not given-Contraindicated</b>	<b>59 (5)</b>	<b>11 (5)</b>	<b>48 (3)</b>	<b>15 (6)</b>	<b>44 (3)</b>	<b>12 (5)</b>	<b>151 (4)</b>	<b>38 (5)</b>
<b>Not given-Missed thrombolysis</b>	<b>156 (13)</b>	<b>37 (17)</b>	<b>181 (13)</b>	<b>45 (19)</b>	<b>120 (9)</b>	<b>48 (19)</b>	<b>457 (12)</b>	<b>130 (18)</b>
<b>Not given-Others**</b>	<b>41 (3)</b>	<b>6 (3)</b>	<b>48 (3)</b>	<b>6 (3)</b>	<b>58 (5)</b>	<b>19 (8)</b>	<b>147 (4)</b>	<b>31 (4)</b>

**Table 4.3** Treatments for patients with STEMI by gender, NCVD-ACS Registry, 2006-2008

Year	2006		2007		2008		Overall	
Gender	Male	Female	Male	Female	Male	Female	Male	Female
<b>Total</b>	<b>1230</b>	<b>215</b>	<b>1447</b>	<b>240</b>	<b>1281</b>	<b>253</b>	<b>3958</b>	<b>708</b>
Cardiac catheterisation, No. (%)								
Yes	266 (22)	32 (15)	301 (21)	50 (21)	261 (20)	38 (15)	828 (21)	120 (17)
No	931 (76)	177 (82)	1099 (76)	186 (78)	973 (76)	209 (83)	3003 (76)	572 (81)
Number transferred to another centre	33 (3)	6 (3)	47 (3)	4 (2)	47 (4)	6 (2)	127 (3)	16 (2)
Percutaneous Coronary Intervention, No. (%)								
Yes	273 (22)	35 (16)	256 (18)	41 (17)	226 (18)	32 (13)	755 (19)	108 (15)
No	957 (78)	180 (84)	1191 (82)	199 (83)	1055 (82)	221 (87)	3203 (81)	600 (85)
CABG, No. (%)								
Yes	9 (1)	1 (0)	10 (1)	0 (0)	6 (0)	2 (1)	25 (1)	3 (0)
No	1221 (99)	214 (100)	1437 (99)	240 (100)	1275 (100)	251 (99)	3933 (99)	705 (100)
Pre-admission aspirin use, No. (%)								
Yes	189 (15)	38 (18)	306 (21)	64 (27)	226 (18)	51 (20)	721 (18)	153 (22)
No	824 (67)	141 (66)	1066 (74)	155 (65)	959 (75)	174 (69)	2849 (72)	470 (66)
Unknown	217 (18)	36 (17)	75 (5)	21 (9)	96 (7)	28 (11)	388 (10)	85 (12)

Table 4.3 Treatments for patients with STEMI by gender, NCVD-ACS Registry, 2006-2008

Year	2006		2007		2008		Overall	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Gender</b>								
<b>Total</b>	<b>1230</b>	<b>215</b>	<b>1447</b>	<b>240</b>	<b>1281</b>	<b>253</b>	<b>3958</b>	<b>708</b>
<b>Pharmacological therapy given during admission, No. (%)</b>								
Aspirin	1164 (95)	204 (95)	1363 (94)	220 (92)	1163 (91)	223 (88)	3690 (93)	647 (91)
ADP antagonist	726 (59)	142 (66)	1051 (73)	179 (75)	901 (70)	172 (68)	2678 (68)	493 (70)
GP receptor inhibitor	65 (5)	12 (6)	37 (3)	9 (4)	41 (3)	2 (1)	143 (4)	23 (3)
Unfractionated heparin	156 (13)	25 (12)	137 (9)	24 (10)	115 (9)	22 (9)	408 (10)	71 (10)
LMWH	371 (30)	75 (35)	508 (35)	105 (44)	430 (34)	109 (43)	1309 (33)	289 (41)
Beta blocker	812 (66)	139 (65)	945 (65)	147 (61)	790 (62)	141 (56)	2547 (64)	427 (60)
ACE inhibitor	759 (62)	106 (49)	884 (61)	141 (59)	637 (50)	124 (49)	2280 (58)	371 (52)
Angiotensin II receptor blocker	56 (5)	10 (5)	52 (4)	15 (6)	71 (6)	17 (7)	179 (5)	42 (6)
Statin	1136 (92)	197 (92)	1320 (91)	209 (87)	1110 (87)	212 (84)	3566 (90)	618 (87)
Other lipid lowering agent	45 (4)	9 (4)	46 (3)	8 (3)	73 (6)	10 (4)	164 (4)	27 (4)
Diuretics	316 (26)	77 (36)	368 (25)	99 (41)	260 (20)	69 (27)	944 (24)	245 (35)
Calcium antagonist	79 (6)	15 (7)	92 (6)	23 (10)	87 (7)	23 (9)	258 (7)	61 (9)
Oral hypoglycaemic agent	307 (25)	66 (31)	307 (21)	80 (33)	233 (18)	64 (25)	847 (21)	210 (30)
Insulin	290 (24)	89 (41)	334 (23)	113 (47)	240 (19)	93 (37)	864 (22)	295 (42)
Anti-arrhythmic agent	112 (9)	23 (11)	104 (7)	17 (7)	78 (6)	24 (9)	294 (7)	64 (9)

\*Total admission days is derived as Outcome date - Admission date + 1

\*\*Not given-Others' includes missing and refusal

Note: Percentage is to the nearest decimal point

**Table 4.4** Treatments for patients with STEMI by ethnic group, NCVD-ACS Registry, 2006-2008

Year	Ethnic group	2006				2007				2008			
		Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*
Total		780	301	286	78	893	356	322	115	852	301	271	105
Total admission days**													
N		764	294	284	78	845	336	310	78	787	273	239	84
Mean (SD)		6 (3)	6 (4)	5 (3)	6 (4)	6 (4)	6 (4)	6 (4)	6 (4)	6 (3)	6 (3)	6 (3)	6 (4)
Median (min, max)		5 (1, 28)	5 (1, 28)	5 (1, 27)	5 (1, 25)	5 (1, 30)	5 (1, 25)	5 (1, 29)	5 (1, 27)	5 (1, 28)	5 (1, 21)	5 (1, 23)	5 (1, 27)
IQR		2	2	3	2	3	2	1	2	3	2	2	2
Number of days on CCU													
N		614	225	187	67	671	237	201	65	644	219	171	72
Mean (SD)		4 (2)	3 (2)	4 (3)	3 (2)	3 (3)	3 (2)	3 (3)	3 (3)	3 (3)	3 (2)	4 (3)	3 (3)
Median (min, max)		3 (1, 21)	3 (1, 15)	3 (1, 26)	3 (1, 10)	3 (1, 26)	2 (1, 14)	3 (1, 29)	3 (1, 17)	3 (1, 28)	3 (1, 17)	3 (1, 20)	3 (1, 28)
IQR		2	2	2	2	2	3	2	2	2	2	2	2
Number of days on ICU/CICU													
N		43	23	3	18	9	2	2	0	7	4	2	1
Mean (SD)		4 (4)	2 (2)	2 (1)	4 (4)	8 (8)	3 (1)	. (.)	4 (3)	5 (3)	4 (1)	1 (1)	1 (1)
Median (min, max)		2 (1, 17)	2 (1, 8)	2 (1, 2)	2 (1, 4)	2 (1, 11)	8 (2, 13)	3 (2, 4)	. (.)	3 (2, 11)	5 (2, 9)	4 (3, 5)	1 (1, 1)
IQR		3	3	1	1	3	11	2	.	2	4	2	0
Fibrinolytic therapy, No. (%)													
Given		567 (73)	206 (68)	188 (66)	57 (73)	668 (75)	233 (65)	249 (77)	80 (70)	677 (79)	197 (65)	191 (70)	74 (70)
Not given-proceeded directly to primary angioplasty		52 (7)	24 (8)	36 (13)	5 (6)	52 (6)	29 (8)	21 (7)	11 (10)	32 (4)	35 (12)	15 (6)	8 (8)
Not given-Contraindicated		39 (5)	14 (5)	11 (4)	6 (8)	31 (3)	15 (4)	6 (2)	11 (10)	28 (3)	17 (6)	8 (3)	3 (3)
Not given-Missed thrombolysis		99 (13)	43 (14)	42 (15)	9 (12)	109 (12)	68 (19)	38 (12)	11 (10)	81 (10)	35 (12)	42 (15)	9 (9)
Not given-Others***		23 (3)	14 (5)	9 (3)	1 (1)	33 (4)	11 (3)	8 (2)	2 (2)	34 (4)	17 (6)	15 (6)	11 (10)

Table 4.4 Treatments for patients with STEMI by ethnic group, NCVD-ACS Registry, 2006-2008

Year	2006					2007					2008				
	Ethnic group	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Total	
<b>Total</b>	<b>780</b>	<b>301</b>	<b>285</b>	<b>78</b>	<b>893</b>	<b>356</b>	<b>322</b>	<b>115</b>	<b>852</b>	<b>301</b>	<b>271</b>	<b>105</b>	<b>105</b>		
<b>Cardiac catheterisation, No. (%)</b>															
Yes	141 (18)	64 (21)	75 (26)	18 (23)	168 (19)	90 (25)	68 (21)	24 (21)	130 (15)	85 (28)	55 (20)	28 (27)			
No	619 (79)	231 (77)	203 (71)	55 (71)	696 (78)	255 (72)	246 (76)	88 (77)	697 (82)	206 (68)	211 (78)	65 (62)			
<b>Number transferred to another centre</b>	<b>20 (3)</b>	<b>6 (2)</b>	<b>8 (3)</b>	<b>5 (6)</b>	<b>29 (3)</b>	<b>11 (3)</b>	<b>8 (2)</b>	<b>3 (3)</b>	<b>25 (3)</b>	<b>10 (3)</b>	<b>5 (2)</b>	<b>12 (11)</b>			
<b>Percutaneous Coronary Intervention, No. (%)</b>															
Yes	143 (18)	66 (22)	83 (29)	16 (21)	140 (16)	79 (22)	62 (19)	15 (13)	108 (13)	72 (24)	51 (19)	26 (25)			
No	637 (82)	235 (78)	203 (71)	62 (79)	753 (84)	277 (78)	260 (81)	100 (87)	744 (87)	229 (76)	220 (81)	79 (75)			
<b>CABG, No. (%)</b>															
Yes	8 (1)	2 (1)	0 (0)	0 (0)	6 (1)	2 (1)	2 (1)	0 (0)	4 (0)	4 (1)	0 (0)	0 (0)			
No	772 (99)	299 (99)	286 (100)	78 (100)	887 (99)	354 (99)	320 (99)	115 (100)	848 (100)	297 (99)	271 (100)	105 (100)			
<b>Pre-admission aspirin use, No. (%)</b>															
Yes	112 (14)	44 (15)	66 (23)	5 (6)	211 (24)	73 (21)	68 (21)	18 (16)	146 (17)	50 (17)	67 (25)	13 (12)			
No	554 (71)	197 (65)	164 (57)	50 (64)	632 (71)	264 (74)	233 (72)	91 (79)	640 (75)	233 (77)	175 (65)	81 (77)			
Unknown	114 (15)	60 (20)	56 (20)	23 (29)	50 (6)	19 (5)	21 (7)	6 (5)	66 (8)	18 (6)	29 (11)	11 (10)			

Table 4.4 Treatments for patients with STEMI by ethnic group, NCVD-ACS Registry, 2006-2008

Year	Ethnic group	2006			2007			2008					
		Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*
Total		780	301	286	78	893	356	322	115	852	301	271	105
Pharmacological therapy given during admission, No. (%)													
Aspirin	731 (94)	293 (97)	271 (95)	73 (94)	838 (94)	331 (93)	308 (96)	105 (91)	778 (91)	272 (90)	243 (90)	91 (87)	
ADP antagonist	441 (57)	194 (64)	183 (64)	50 (64)	638 (71)	295 (83)	235 (73)	61 (53)	606 (71)	235 (78)	178 (66)	52 (50)	
GP receptor inhibitor	44 (6)	10 (3)	19 (7)	4 (5)	25 (3)	12 (3)	7 (2)	2 (2)	23 (3)	11 (4)	3 (1)	6 (6)	
Unfractionated heparin	120 (15)	21 (7)	38 (13)	2 (3)	97 (11)	23 (6)	34 (11)	7 (6)	69 (8)	27 (9)	30 (11)	11 (10)	
LMWH	218 (28)	96 (32)	104 (36)	28 (36)	303 (34)	129 (36)	135 (42)	46 (40)	271 (32)	103 (34)	113 (42)	52 (50)	
Beta blocker	504 (65)	209 (69)	193 (67)	45 (58)	564 (63)	246 (69)	226 (70)	55 (48)	514 (60)	198 (66)	164 (61)	52 (50)	
ACE inhibitor	478 (61)	165 (55)	184 (64)	38 (49)	549 (61)	209 (59)	211 (66)	56 (49)	453 (53)	137 (46)	131 (48)	38 (36)	
Angiotensin II receptor blocker	30 (4)	14 (5)	18 (6)	4 (5)	33 (4)	18 (5)	11 (3)	5 (4)	44 (5)	18 (6)	17 (6)	9 (9)	
Statin	714 (92)	281 (93)	265 (93)	73 (94)	814 (91)	324 (91)	286 (89)	104 (90)	740 (87)	264 (88)	229 (85)	86 (82)	
Other lipid lowering agent	31 (4)	10 (3)	11 (4)	2 (3)	22 (2)	13 (4)	18 (6)	1 (1)	52 (6)	11 (4)	14 (5)	6 (6)	
Diuretics	234 (30)	64 (21)	80 (28)	15 (19)	262 (29)	80 (22)	93 (29)	32 (28)	178 (21)	64 (21)	64 (24)	23 (22)	
Calcium antagonist	55 (7)	10 (3)	21 (7)	8 (10)	63 (7)	24 (7)	19 (6)	9 (8)	54 (6)	26 (9)	25 (9)	5 (5)	
Oral hypoglycaemic agent	178 (23)	69 (23)	116 (41)	10 (13)	193 (22)	76 (21)	104 (32)	14 (12)	162 (19)	53 (18)	72 (27)	10 (10)	
Insulin	184 (24)	73 (24)	107 (37)	15 (19)	229 (26)	83 (23)	117 (36)	18 (16)	194 (23)	48 (16)	79 (29)	12 (11)	
Anti-arrhythmic agent	65 (8)	37 (12)	25 (9)	8 (10)	65 (7)	30 (8)	15 (5)	11 (10)	50 (6)	17 (6)	23 (8)	11 (10)	

\*Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Total admission days is derived as Outcome date – Admission date + 1

\*\*\*'Not given-Others' includes missing and refusal

**Table 4.4 Treatments for patients with STEMI by ethnic group, NCVD-ACS Registry, 2006-2008**

<b>Year</b>	<b>Overall</b>			
<b>Ethnic group</b>	<b>Malay</b>	<b>Chinese</b>	<b>Indian</b>	<b>Others*</b>
<b>Total</b>	<b>2525</b>	<b>958</b>	<b>879</b>	<b>298</b>
<b>Total admission days**</b>				
N	2396	903	833	240
Mean (SD)	6 (3)	6 (3)	6 (3)	6 (4)
Median (min, max)	5 (1, 30)	5 (1, 28)	5 (1, 29)	5 (1, 27)
IQR	2	2	2	2
<b>Number of days on CCU</b>				
N	1929	681	559	204
Mean (SD)	3 (3)	3 (2)	4 (3)	3 (3)
Median (min, max)	3 (1, 28)	3 (1, 17)	3 (1, 29)	3 (1, 28)
IQR	2	2	2	2
<b>Number of days on ICU/CICU</b>				
N	59	29	7	19
Mean (SD)	4 (4)	3 (3)	3 (1)	2 (1)
Median (min, max)	2 (1, 17)	2 (1, 13)	2 (1, 5)	2 (1, 4)
IQR	3	3	2	2
<b>Fibrinolytic therapy, No. (%)</b>				
Given	1912 (76)	636 (66)	628 (71)	211 (71)
Not given-proceeded directly to primary angioplasty	136 (5)	88 (9)	72 (8)	24 (8)
Not given-Contraindicated	98 (4)	46 (5)	25 (3)	20 (7)
Not given-Missed thrombolysis	289 (11)	146 (15)	122 (14)	29 (10)
Not given-Others***	90 (4)	42 (4)	32 (4)	14 (5)
<b>Cardiac catheterisation, No. (%)</b>				
Yes	439 (17)	239 (25)	198 (23)	70 (23)
No	2012 (80)	692 (72)	660 (75)	208 (70)
<b>Number transferred to another centre</b>	<b>74 (3)</b>	<b>27 (3)</b>	<b>21 (2)</b>	<b>20 (7)</b>
<b>Percutaneous Coronary Intervention, No. (%)</b>				
Yes	391 (15)	217 (23)	196 (22)	57 (19)
No	2134 (85)	741 (77)	683 (78)	241 (81)
<b>CABG, No. (%)</b>				
Yes	18 (1)	8 (1)	2 (0)	0 (0)
No	2507 (99)	950 (99)	877 (100)	298 (100)
<b>Pre-admission aspirin use, No. (%)</b>				
Yes	469 (19)	167 (17)	201 (23)	36 (12)
No	1826 (72)	694 (72)	572 (65)	222 (74)
Unknown	230 (9)	97 (10)	106 (12)	40 (13)

**Table 4.4 Treatments for patients with STEMI by ethnic group, NCVD-ACS Registry, 2006-2008**

Year	Overall			
	Malay	Chinese	Indian	Others*
<b>Total</b>	<b>2525</b>	<b>958</b>	<b>879</b>	<b>298</b>
Pharmacological therapy given during admission, No. (%)				
Aspirin	2347 (93)	896 (94)	822 (94)	269 (90)
ADP antagonist	1685 (67)	724 (76)	596 (68)	163 (55)
GP receptor inhibitor	92 (4)	33 (3)	29 (3)	12 (4)
Unfractionated heparin	286 (11)	71 (7)	102 (12)	20 (7)
LMWH	792 (31)	328 (34)	352 (40)	126 (42)
Beta blocker	1582 (63)	653 (68)	583 (66)	152 (51)
ACE inhibitor	1480 (59)	511 (53)	526 (60)	132 (44)
Angiotensin II receptor blocker	107 (4)	50 (5)	46 (5)	18 (6)
Statin	2268 (90)	869 (91)	780 (89)	263 (88)
Other lipid lowering agent	105 (4)	34 (4)	43 (5)	9 (3)
Diuretics	674 (27)	208 (22)	237 (27)	70 (23)
Calcium antagonist	172 (7)	60 (6)	65 (7)	22 (7)
Oral hypoglycaemic agent	533 (21)	198 (21)	292 (33)	34 (11)
Insulin	607 (24)	204 (21)	303 (34)	45 (15)
Anti-arrhythmic agent	180 (7)	84 (9)	63 (7)	30 (10)

\*‘Others’ includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Total admission days is derived as Outcome date – Admission date + 1

† ‘Not given-Others’ includes missing and refusal

Note: Percentage is to the nearest decimal point

**Table 4.5 Door to needle and balloon time distribution for patients with STEMI by year, NCVD-ACS Registry, 2006-2008**

ACS stratum	STEMI only		
	2006	2007	2008
<b>Door to needle time, min</b>			
N	756	828	798
Mean (SD)	102 (142)	91 (131)	112 (194)
Median (min, max)	60 (2, 1349)	53 (1, 1435)	50 (1, 1440)
IQR	89	70	72
<b>Door to balloon time, min</b>			
N	153	126	99
Mean (SD)	241 (295)	215 (266)	214 (260)
Median (min, max)	133 (35, 1440)	112 (25, 1410)	114 (11, 1195)
IQR	135	154	139

**Table 4.6** Treatments for patients with NSTEMI/UA by age group (years), NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Age group*	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age
<b>Total</b>	<b>53</b>	<b>872</b>	<b>1052</b>	<b>69</b>	<b>846</b>	<b>1044</b>	<b>50</b>	<b>532</b>	<b>735</b>	<b>172</b>	<b>2250</b>	<b>2831</b>
<b>Total admission days**</b>												
<b>N</b>	<b>53</b>	<b>856</b>	<b>1025</b>	<b>67</b>	<b>812</b>	<b>999</b>	<b>43</b>	<b>485</b>	<b>660</b>	<b>163</b>	<b>2153</b>	<b>2684</b>
<b>Mean (SD)</b>	<b>5 (2)</b>	<b>6 (4)</b>	<b>5 (2)</b>	<b>5 (4)</b>	<b>6 (4)</b>	<b>4 (3)</b>	<b>5 (3)</b>	<b>6 (4)</b>	<b>5 (2)</b>	<b>5 (4)</b>	<b>6 (4)</b>	<b>6 (4)</b>
<b>Median (min, max)</b>	<b>4 (2, 15)</b>	<b>4 (1, 27)</b>	<b>5 (1, 30)</b>	<b>4 (2, 17)</b>	<b>4 (1, 30)</b>	<b>5 (1, 29)</b>	<b>4 (2, 13)</b>	<b>4 (1, 27)</b>	<b>5 (1, 26)</b>	<b>4 (2, 17)</b>	<b>4 (1, 30)</b>	<b>5 (1, 30)</b>
<b>IQR</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>
<b>Number of days on CCU</b>												
<b>N</b>	<b>14</b>	<b>246</b>	<b>330</b>	<b>17</b>	<b>209</b>	<b>255</b>	<b>18</b>	<b>149</b>	<b>223</b>	<b>49</b>	<b>604</b>	<b>808</b>
<b>Mean (SD)</b>	<b>2 (1)</b>	<b>3 (3)</b>	<b>3 (3)</b>	<b>2 (1)</b>	<b>3 (2)</b>	<b>4 (4)</b>	<b>3 (3)</b>	<b>3 (3)</b>	<b>4 (3)</b>	<b>2 (2)</b>	<b>3 (3)</b>	<b>4 (3)</b>
<b>Median (min, max)</b>	<b>2 (1, 5)</b>	<b>3 (1, 20)</b>	<b>3 (1, 24)</b>	<b>2 (1, 4)</b>	<b>2 (1, 12)</b>	<b>3 (1, 30)</b>	<b>3 (1, 10)</b>	<b>2 (1, 24)</b>	<b>3 (1, 20)</b>	<b>2 (1, 10)</b>	<b>3 (1, 24)</b>	<b>3 (1, 30)</b>
<b>IQR</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>
<b>Number of days on ICU/CICU</b>												
<b>N</b>	<b>1</b>	<b>62</b>	<b>74</b>	<b>0</b>	<b>13</b>	<b>22</b>	<b>2</b>	<b>6</b>	<b>15</b>	<b>3</b>	<b>81</b>	<b>111</b>
<b>Mean (SD)</b>	<b>1 (1)</b>	<b>4 (3)</b>	<b>4 (3)</b>	<b>(.)</b>	<b>2 (1)</b>	<b>4 (5)</b>	<b>3 (2)</b>	<b>3 (1)</b>	<b>3 (3)</b>	<b>2 (2)</b>	<b>3 (2)</b>	<b>4 (3)</b>
<b>Median (min, max)</b>	<b>1 (1, 1)</b>	<b>3 (1, 12)</b>	<b>3 (1, 23)</b>	<b>(., .)</b>	<b>2 (1, 5)</b>	<b>2 (1, 24)</b>	<b>3 (1, 4)</b>	<b>3 (1, 5)</b>	<b>3 (1, 11)</b>	<b>1 (1, 4)</b>	<b>3 (1, 12)</b>	<b>3 (1, 24)</b>
<b>IQR</b>	<b>0</b>	<b>4</b>	<b>2</b>	<b>.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>

Table 4.6 Treatments for patients with NSTEMI/UA by age group (years), NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Age group*	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age
Total	53	872	1052	69	846	1044	50	532	735	172	2250	2831
Cardiac catheterisation, No. (%)												
Yes	11 (21)	164 (19)	182 (17)	17 (25)	196 (23)	169 (16)	6 (12)	77 (14)	102 (14)	34 (20)	437 (19)	453 (16)
No	42 (79)	695 (80)	848 (81)	52 (75)	635 (75)	856 (82)	43 (86)	445 (84)	617 (84)	137 (80)	1775 (79)	2321 (82)
Number transferred to another centre	0 (0)	13 (1)	22 (2)	0 (0)	15 (2)	19 (2)	1 (2)	10 (2)	16 (2)	1 (1)	38 (2)	57 (2)
Percutaneous Coronary Intervention, No. (%)												
Yes	10 (19)	119 (14)	112 (11)	11 (16)	115 (14)	112 (11)	4 (8)	51 (10)	55 (7)	25 (15)	285 (13)	279 (10)
No	43 (81)	753 (86)	940 (89)	58 (84)	731 (86)	932 (89)	46 (92)	481 (90)	680 (93)	147 (85)	1965 (87)	2552 (90)
CABG, No. (%)												
Yes	0 (0)	25 (3)	32 (3)	0 (0)	15 (2)	22 (2)	1 (2)	4 (1)	13 (2)	1 (1)	44 (2)	67 (2)
No	53 (100)	847 (97)	1020 (97)	69 (100)	831 (98)	1022 (98)	49 (98)	528 (99)	722 (98)	171 (99)	2206 (98)	2764 (98)
Pre-admission aspirin use, No. (%)												
Yes	13 (25)	341 (39)	483 (46)	26 (38)	398 (47)	548 (52)	17 (34)	223 (42)	364 (50)	56 (33)	962 (43)	1395 (49)
No	25 (47)	343 (39)	357 (34)	39 (57)	394 (47)	419 (40)	20 (40)	239 (45)	267 (36)	84 (49)	976 (43)	1043 (37)
Unknown	15 (28)	188 (22)	212 (20)	4 (6)	54 (6)	77 (7)	13 (26)	70 (13)	104 (14)	32 (19)	312 (14)	393 (14)

Table 4.6 Treatments for patients with NSTEMI/UA by age group (years), NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Age group*	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age	Elderly	Young	Middle-age
Total	53	872	1052	69	846	1044	50	532	735	172	2250	2831
Pharmacological therapy given during admission, No. (%)												
Aspirin	50 (94)	801 (92)	932 (89)	64 (93)	777 (92)	916 (88)	38 (76)	422 (79)	596 (81)	152 (88)	2000 (89)	2444 (86)
ADP antagonist	28 (53)	493 (57)	620 (59)	44 (64)	489 (58)	663 (64)	21 (42)	287 (54)	450 (61)	93 (54)	1269 (56)	1733 (61)
GP receptor inhibitor	0 (0)	27 (3)	39 (4)	5 (7)	17 (2)	13 (1)	0 (0)	13 (2)	17 (2)	5 (3)	57 (3)	69 (2)
Unfractionated heparin	14 (26)	200 (23)	186 (18)	6 (9)	94 (11)	99 (9)	7 (14)	50 (9)	46 (6)	27 (16)	344 (15)	331 (12)
LMWH	28 (53)	566 (65)	710 (67)	57 (83)	619 (73)	763 (73)	33 (66)	359 (67)	517 (70)	118 (69)	1544 (69)	1990 (70)
Beta blocker	34 (64)	613 (70)	677 (64)	57 (83)	592 (70)	692 (66)	24 (48)	336 (63)	459 (62)	115 (67)	1541 (68)	1828 (65)
ACE inhibitor	26 (49)	503 (58)	578 (55)	51 (74)	549 (65)	615 (59)	23 (46)	278 (52)	365 (50)	100 (58)	1330 (59)	1558 (55)
Angiotensin II receptor blocker	4 (8)	75 (9)	122 (12)	2 (3)	60 (7)	124 (12)	3 (6)	46 (9)	80 (11)	9 (5)	181 (8)	326 (12)
Statin	48 (91)	804 (92)	939 (89)	62 (90)	765 (90)	923 (88)	38 (76)	422 (79)	581 (79)	148 (86)	1991 (88)	2443 (86)
Other lipid lowering agent	4 (8)	64 (7)	65 (6)	7 (10)	48 (6)	59 (6)	2 (4)	30 (6)	42 (6)	13 (8)	142 (6)	166 (6)
Diuretics	14 (26)	249 (29)	442 (42)	13 (19)	243 (29)	439 (42)	7 (14)	110 (21)	273 (37)	34 (20)	602 (27)	1154 (41)
Calcium antagonist	9 (17)	156 (18)	283 (27)	7 (10)	148 (17)	265 (25)	6 (12)	74 (14)	174 (24)	22 (13)	378 (17)	722 (26)
Oral hypoglycaemic agent	8 (15)	262 (30)	330 (31)	20 (29)	239 (28)	302 (29)	7 (14)	156 (29)	228 (31)	35 (20)	657 (29)	860 (30)
Insulin	12 (23)	218 (25)	273 (26)	8 (12)	216 (26)	273 (26)	3 (6)	94 (18)	157 (21)	23 (13)	528 (23)	703 (25)
Anti-arrhythmic agent	3 (6)	45 (5)	73 (7)	2 (3)	29 (3)	90 (9)	1 (2)	31 (6)	50 (7)	6 (3)	105 (5)	213 (8)

\*Young is defined as age from 20 to less than 40 years, middle-age is defined as age between 40 to less than 60 years and elderly is defined as 60 years and above

\*\*Total admission days is derived as Outcome date - Admission date + 1

Note: Percentage is to the nearest decimal point

**Table 4.7** Treatments for patients with NSTEMI/UA by gender, NCVD-ACS Registry, 2006-2008

Year	2006		2007		2008		Overall	
Gender	Male	Female	Male	Female	Male	Female	Male	Female
<b>Total</b>	<b>1339</b>	<b>638</b>	<b>1350</b>	<b>609</b>	<b>866</b>	<b>451</b>	<b>3555</b>	<b>1698</b>
<b>Total admission days*</b>								
N	1315	619	1296	582	786	402	3397	1603
Mean (SD)	6 (4)	6 (4)	6 (4)	6 (4)	6 (4)	6 (4)	6 (4)	6 (4)
Median (min, max)	4 (1, 29)	5 (1, 30)	4 (1, 30)	5 (1, 29)	4 (1, 27)	4 (1, 25)	4 (1, 30)	5 (1, 30)
IQR	2	3	2	2	2	2	2	2
<b>Number of days on CCU</b>								
N	425	165	355	126	291	99	1071	390
Mean (SD)	3 (3)	4 (3)	3 (2)	3 (4)	3 (3)	4 (4)	3 (3)	4 (4)
Median (min, max)	3 (1, 24)	3 (1, 19)	2 (1, 21)	3 (1, 30)	2 (1, 24)	2 (1, 20)	3 (1, 24)	3 (1, 30)
IQR	2	2	3	3	3	3	3	3
<b>Number of days on ICU/CICU</b>								
N	96	41	30	5	16	7	142	53
Mean (SD)	3 (2)	5 (4)	3 (4)	2 (1)	3 (3)	3 (1)	3 (3)	4 (4)
Median (min, max)	3 (1, 11)	4 (1, 23)	2 (1, 24)	2 (1, 3)	3 (1, 11)	3 (1, 4)	2 (1, 24)	3 (1, 23)
IQR	3	3	3	0	3	3	3	3
<b>Cardiac catheterisation, No. (%)</b>								
Yes	264 (20)	93 (15)	288 (21)	94 (15)	132 (15)	53 (12)	684 (19)	240 (14)
No	1056 (79)	529 (83)	1035 (77)	508 (83)	717 (83)	388 (86)	2808 (79)	1425 (84)
Number transferred to another centre	19 (1)	16 (3)	27 (2)	7 (1)	17 (2)	10 (2)	63 (2)	33 (2)
<b>Percutaneous Coronary Intervention, No. (%)</b>								
Yes	181 (14)	60 (9)	179 (13)	59 (10)	80 (9)	30 (7)	440 (12)	149 (9)
No	1158 (86)	578 (91)	1171 (87)	550 (90)	786 (91)	421 (93)	3115 (88)	1549 (91)

Table 4.7 Treatments for patients with NSTEMI/UA by gender, NCVD-ACS Registry, 2006-2008

Year	2006			2007			2008			Overall		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<b>Gender</b>												
Total	<b>1339</b>	<b>638</b>	<b>1350</b>	<b>609</b>	<b>866</b>	<b>451</b>	<b>3555</b>	<b>1698</b>				
CABG, No. (%)												
Yes	<b>42 (3)</b>	<b>15 (2)</b>	<b>32 (2)</b>	<b>5 (1)</b>	<b>13 (2)</b>	<b>5 (1)</b>	<b>87 (2)</b>	<b>25 (1)</b>				
No	<b>1297 (97)</b>	<b>623 (98)</b>	<b>1318 (98)</b>	<b>604 (99)</b>	<b>853 (98)</b>	<b>446 (99)</b>	<b>3468 (98)</b>	<b>1673 (99)</b>				
Pre-admission aspirin use, No. (%)												
Yes	<b>570 (43)</b>	<b>267 (42)</b>	<b>686 (51)</b>	<b>286 (47)</b>	<b>407 (47)</b>	<b>197 (44)</b>	<b>1663 (47)</b>	<b>750 (44)</b>				
No	<b>471 (35)</b>	<b>254 (40)</b>	<b>571 (42)</b>	<b>281 (46)</b>	<b>337 (39)</b>	<b>189 (42)</b>	<b>1379 (39)</b>	<b>724 (43)</b>				
Unknown	<b>298 (22)</b>	<b>117 (18)</b>	<b>93 (7)</b>	<b>42 (7)</b>	<b>122 (14)</b>	<b>65 (14)</b>	<b>513 (14)</b>	<b>224 (13)</b>				
Pharmacological therapy given during admission, No. (%)												
Aspirin	<b>1224 (91)</b>	<b>559 (88)</b>	<b>1222 (91)</b>	<b>535 (88)</b>	<b>704 (81)</b>	<b>352 (78)</b>	<b>3150 (89)</b>	<b>1446 (85)</b>				
ADP antagonist	<b>813 (61)</b>	<b>328 (51)</b>	<b>839 (62)</b>	<b>357 (59)</b>	<b>501 (58)</b>	<b>257 (57)</b>	<b>2153 (61)</b>	<b>942 (55)</b>				
GP receptor inhibitor	<b>50 (4)</b>	<b>16 (3)</b>	<b>24 (2)</b>	<b>11 (2)</b>	<b>23 (3)</b>	<b>7 (2)</b>	<b>97 (3)</b>	<b>34 (2)</b>				
Unfractionated heparin	<b>283 (21)</b>	<b>117 (18)</b>	<b>136 (10)</b>	<b>63 (10)</b>	<b>68 (8)</b>	<b>35 (8)</b>	<b>487 (14)</b>	<b>215 (13)</b>				
LMWH	<b>878 (66)</b>	<b>426 (67)</b>	<b>984 (73)</b>	<b>455 (75)</b>	<b>583 (67)</b>	<b>326 (72)</b>	<b>2445 (69)</b>	<b>1207 (71)</b>				
Beta blocker	<b>902 (67)</b>	<b>422 (66)</b>	<b>941 (70)</b>	<b>400 (66)</b>	<b>551 (64)</b>	<b>268 (59)</b>	<b>2394 (67)</b>	<b>1090 (64)</b>				
ACE inhibitor	<b>772 (58)</b>	<b>335 (53)</b>	<b>880 (65)</b>	<b>335 (55)</b>	<b>437 (50)</b>	<b>229 (51)</b>	<b>2089 (59)</b>	<b>899 (53)</b>				
Angiotensin II receptor blocker	<b>119 (9)</b>	<b>82 (13)</b>	<b>114 (8)</b>	<b>72 (12)</b>	<b>78 (9)</b>	<b>51 (11)</b>	<b>311 (9)</b>	<b>205 (12)</b>				
Statins	<b>82 (6)</b>	<b>51 (8)</b>	<b>1207 (89)</b>	<b>543 (89)</b>	<b>678 (78)</b>	<b>363 (80)</b>	<b>3110 (87)</b>	<b>1472 (87)</b>				
Other lipid lowering agent	<b>453 (34)</b>	<b>252 (39)</b>	<b>78 (6)</b>	<b>36 (6)</b>	<b>55 (6)</b>	<b>19 (4)</b>	<b>215 (6)</b>	<b>106 (6)</b>				
Diuretics	<b>263 (20)</b>	<b>185 (29)</b>	<b>439 (33)</b>	<b>256 (42)</b>	<b>237 (27)</b>	<b>153 (34)</b>	<b>1129 (32)</b>	<b>661 (39)</b>				
Calcium antagonist	<b>381 (28)</b>	<b>219 (34)</b>	<b>258 (19)</b>	<b>162 (27)</b>	<b>142 (16)</b>	<b>112 (25)</b>	<b>663 (19)</b>	<b>459 (27)</b>				
Oral hypoglycaemic agent	<b>319 (24)</b>	<b>184 (29)</b>	<b>345 (26)</b>	<b>216 (35)</b>	<b>226 (26)</b>	<b>165 (37)</b>	<b>952 (27)</b>	<b>600 (35)</b>				
Insulin	<b>85 (6)</b>	<b>36 (6)</b>	<b>292 (22)</b>	<b>205 (34)</b>	<b>142 (16)</b>	<b>112 (25)</b>	<b>753 (21)</b>	<b>501 (30)</b>				
Anti-arrhythmic agent	<b>1339</b>	<b>638</b>	<b>79 (6)</b>	<b>42 (7)</b>	<b>54 (6)</b>	<b>28 (6)</b>	<b>218 (6)</b>	<b>106 (6)</b>				

**Table 4.8** Treatments for patients with NSTEMI/UA by ethnic group, NCVD-ACS Registry, 2006-2008

Year	2006				2007				2008			
Ethnic group	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*
<b>Total</b>	<b>904</b>	<b>485</b>	<b>513</b>	<b>75</b>	<b>847</b>	<b>497</b>	<b>525</b>	<b>87</b>	<b>574</b>	<b>359</b>	<b>330</b>	<b>51</b>
<b>Total admission days*</b>												
<b>N</b>	<b>879</b>	<b>477</b>	<b>506</b>	<b>72</b>	<b>807</b>	<b>482</b>	<b>515</b>	<b>71</b>	<b>530</b>	<b>324</b>	<b>287</b>	<b>46</b>
<b>Mean (SD)</b>	<b>6 (4)</b>	<b>6 (4)</b>	<b>5 (3)</b>	<b>6 (4)</b>	<b>6 (4)</b>	<b>5 (4)</b>	<b>6 (5)</b>	<b>6 (4)</b>	<b>5 (4)</b>	<b>5 (3)</b>	<b>5 (3)</b>	<b>6 (4)</b>
<b>Median (min, max)</b>	<b>5 (1, 26)</b>	<b>4 (1, 30)</b>	<b>5 (1, 30)</b>	<b>4 (2, 18)</b>	<b>5 (1, 30)</b>	<b>4 (1, 27)</b>	<b>4 (1, 29)</b>	<b>4 (2, 22)</b>	<b>5 (1, 27)</b>	<b>4 (1, 25)</b>	<b>4 (1, 25)</b>	<b>5 (2, 21)</b>
<b>IQR</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>
<b>Number of days on CCU</b>												
<b>N</b>	<b>278</b>	<b>156</b>	<b>115</b>	<b>41</b>	<b>251</b>	<b>122</b>	<b>68</b>	<b>40</b>	<b>204</b>	<b>102</b>	<b>51</b>	<b>33</b>
<b>Mean (SD)</b>	<b>4 (3)</b>	<b>3 (2)</b>	<b>4 (3)</b>	<b>3 (2)</b>	<b>3 (3)</b>	<b>3 (3)</b>	<b>2 (2)</b>	<b>3 (3)</b>	<b>3 (2)</b>	<b>4 (3)</b>	<b>4 (3)</b>	<b>4 (3)</b>
<b>Median (min, max)</b>	<b>3 (1, 24)</b>	<b>2 (1, 17)</b>	<b>3 (1, 14)</b>	<b>3 (1, 9)</b>	<b>3 (1, 30)</b>	<b>2 (1, 24)</b>	<b>3 (1, 21)</b>	<b>2 (1, 9)</b>	<b>2 (1, 24)</b>	<b>2 (1, 17)</b>	<b>3 (1, 18)</b>	<b>2 (1, 14)</b>
<b>IQR</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>
<b>Number of days on ICU/CCU</b>												
<b>N</b>	<b>59</b>	<b>43</b>	<b>17</b>	<b>18</b>	<b>15</b>	<b>13</b>	<b>2</b>	<b>5</b>	<b>15</b>	<b>4</b>	<b>1</b>	<b>3</b>
<b>Mean (SD)</b>	<b>4 (3)</b>	<b>3 (3)</b>	<b>4 (3)</b>	<b>3 (3)</b>	<b>4 (6)</b>	<b>3 (1)</b>	<b>2 (1)</b>	<b>2 (1)</b>	<b>3 (3)</b>	<b>3 (2)</b>	<b>3 (1)</b>	<b>3 (1)</b>
<b>Median (min, max)</b>	<b>3 (1, 23)</b>	<b>3 (1, 11)</b>	<b>3 (1, 12)</b>	<b>2 (1, 10)</b>	<b>2 (1, 24)</b>	<b>2 (1, 5)</b>	<b>2 (1, 2)</b>	<b>2 (1, 3)</b>	<b>2 (1, 11)</b>	<b>3 (1, 6)</b>	<b>3 (3, 3)</b>	<b>3 (2, 4)</b>
<b>IQR</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>2</b>

Table 4.8 Treatments for patients with NSTEMI/UA by ethnic group, NCD-ACS Registry, 2006-2008

Year	2006				2007				2008				
	Ethnic group	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*
Total	904	485	513	75	847	497	525	87	574	359	330	51	
Cardiac catheterisation, No. (%)													
Yes	156 (17)	83 (17)	103 (20)	15 (20)	153 (18)	94 (19)	106 (20)	28 (32)	79 (14)	47 (13)	43 (13)	16 (31)	
No	731 (81)	392 (81)	402 (78)	60 (80)	668 (79)	401 (81)	414 (79)	58 (67)	484 (84)	301 (54)	283 (56)	34 (67)	
Number transferred to another centre	17 (2)	10 (2)	8 (2)	0 (0)	26 (3)	2 (0)	5 (1)	1 (1)	11 (2)	11 (3)	4 (1)	1 (2)	
Percutaneous Coronary Intervention, No. (%)													
Yes	99 (11)	62 (13)	70 (14)	10 (13)	101 (12)	56 (11)	66 (13)	14 (16)	42 (7)	27 (8)	32 (10)	9 (18)	
No	805 (89)	423 (87)	443 (86)	65 (87)	746 (88)	441 (89)	459 (87)	73 (84)	532 (93)	332 (52)	298 (90)	42 (82)	
CABG, No. (%)													
Yes	29 (3)	16 (3)	11 (2)	1 (1)	21 (2)	9 (2)	3 (1)	4 (5)	8 (1)	5 (1)	1 (0)	4 (8)	
No	875 (97)	469 (97)	502 (98)	74 (99)	826 (98)	488 (98)	522 (99)	83 (95)	566 (99)	354 (59)	329 (100)	47 (92)	
Pre-admission aspirin use, No. (%)													
Yes	401 (44)	183 (38)	233 (45)	20 (27)	418 (49)	229 (46)	292 (56)	32 (37)	265 (46)	158 (44)	162 (49)	19 (37)	
No	335 (37)	194 (40)	155 (30)	41 (55)	368 (43)	242 (49)	190 (36)	50 (57)	252 (44)	150 (42)	98 (30)	25 (49)	
Unknown	168 (19)	108 (22)	125 (24)	14 (19)	61 (7)	26 (5)	43 (8)	5 (6)	57 (10)	51 (14)	70 (21)	7 (14)	

Table 4.8 Treatments for patients with NSTEMI/UA by ethnic group, NCVD-ACS Registry, 2006-2008

Year	Ethnic group	2006			2007			2008					
		Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*	Malay	Chinese	Indian	Others*
Total		904	485	513	75	847	497	525	87	574	359	330	51
Pharmacological therapy given during admission, No. (%)													
Aspirin	814 (90)	440 (91)	462 (90)	67 (89)	752 (89)	447 (90)	473 (90)	82 (94)	477 (83)	295 (82)	239 (72)	45 (88)	
ADP antagonist	461 (51)	299 (62)	335 (65)	46 (61)	487 (57)	338 (68)	314 (60)	54 (62)	323 (56)	230 (64)	171 (52)	33 (65)	
GP Receptor inhibitor	27 (3)	20 (4)	15 (3)	4 (5)	9 (1)	12 (2)	12 (2)	2 (2)	12 (2)	10 (3)	8 (2)	0 (0)	
Unfractionated heparin	284 (31)	47 (10)	64 (12)	5 (7)	128 (15)	25 (5)	42 (8)	4 (5)	64 (11)	11 (3)	24 (7)	4 (8)	
LMWH	495 (55)	369 (76)	390 (76)	50 (67)	571 (67)	385 (77)	418 (80)	63 (72)	382 (67)	271 (75)	214 (65)	41 (80)	
Beta blocker	575 (64)	353 (73)	350 (68)	46 (61)	563 (66)	357 (72)	356 (68)	63 (72)	361 (63)	228 (64)	196 (59)	33 (65)	
ACE inhibitor	510 (56)	259 (53)	303 (59)	35 (47)	535 (63)	297 (60)	339 (65)	41 (47)	323 (56)	177 (49)	138 (42)	27 (53)	
Angiotensin II receptor blocker	82 (9)	49 (10)	63 (12)	7 (9)	66 (8)	51 (10)	59 (11)	10 (11)	52 (9)	41 (11)	31 (9)	5 (10)	
Statin	798 (88)	443 (91)	480 (94)	70 (93)	748 (88)	450 (91)	470 (90)	80 (92)	467 (81)	292 (81)	240 (73)	41 (80)	
Other lipid lowering agent	55 (6)	40 (8)	34 (7)	4 (5)	57 (7)	26 (5)	27 (5)	3 (3)	38 (7)	18 (5)	16 (5)	2 (4)	
Diuretics	330 (37)	172 (35)	181 (35)	22 (29)	316 (37)	167 (34)	189 (36)	23 (26)	188 (33)	99 (28)	80 (24)	22 (43)	
Calcium antagonist	190 (21)	104 (21)	135 (26)	19 (25)	184 (22)	105 (21)	118 (22)	13 (15)	118 (21)	59 (16)	68 (21)	9 (18)	
Oral hypoglycaemic agent	227 (25)	140 (29)	218 (42)	15 (20)	209 (25)	120 (24)	210 (40)	22 (25)	166 (29)	93 (26)	122 (37)	10 (20)	
Insulin	195 (22)	107 (22)	188 (37)	13 (17)	200 (24)	103 (21)	174 (33)	20 (23)	111 (19)	63 (18)	76 (23)	4 (8)	
Anti-arrhythmic agent	60 (7)	34 (7)	22 (4)	5 (7)	49 (6)	32 (6)	29 (6)	11 (13)	35 (6)	23 (6)	18 (5)	6 (12)	

\*Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Total admission days is derived as Outcome date – Admission date + 1

Note: Percentage is to the nearest decimal point

**Table 4.8 Treatments for patients with NSTEMI/UA by ethnic group, NCVD-ACS Registry, 2006-2008**

<b>Year</b>	<b>Overall</b>			
<b>Ethnic group</b>	<b>Malay</b>	<b>Chinese</b>	<b>Indian</b>	<b>Others*</b>
<b>Total</b>	<b>2325</b>	<b>1341</b>	<b>1368</b>	<b>213</b>
<b>Total admission days**</b>				
N	2216	1283	1308	189
Mean (SD)	6 (4)	6 (4)	5 (4)	6 (4)
Median (min, max)	5 (1, 30)	4 (1, 30)	4 (1, 30)	4 (2, 22)
IQR	2	3	2	2
<b>Number of days on CCU</b>				
N	733	380	234	114
Mean (SD)	3 (3)	3 (3)	4 (3)	3 (2)
Median (min, max)	3 (1, 30)	2 (1, 24)	3 (1, 21)	2 (1, 14)
IQR	2	3	3	3
<b>Number of days on ICU/CICU</b>				
N	89	60	20	26
Mean (SD)	4 (4)	3 (2)	4 (3)	3 (2)
Median (min, max)	3 (1, 24)	3 (1, 11)	3 (1, 12)	2 (1, 10)
IQR	2	3	4	1
<b>Cardiac catheterisation, No. (%)</b>				
Yes	388 (17)	224 (17)	252 (18)	59 (28)
No	1883 (81)	1094 (82)	1099 (80)	152 (71)
Number transferred to another centre	54 (2)	23 (2)	17 (1)	2 (1)
<b>Percutaneous Coronary Intervention, No. (%)</b>				
Yes	242 (10)	145 (11)	168 (12)	33 (15)
No	2083 (90)	1196 (89)	1200 (88)	180 (85)
<b>CABG, No. (%)</b>				
Yes	58 (2)	30 (2)	15 (1)	9 (4)
No	2267 (98)	1311 (98)	1353 (99)	204 (96)
<b>Pre-admission aspirin use, No. (%)</b>				
Yes	1084 (47)	570 (43)	687 (50)	71 (33)
No	955 (41)	586 (44)	443 (32)	116 (54)
Unknown	286 (12)	185 (14)	238 (17)	26 (12)

**Table 4.8 Treatments for patients with NSTEMI/UA by ethnic group, NCVD-ACS Registry, 2006-2008**

<b>Ethnic group</b>	<b>Malay</b>	<b>Chinese</b>	<b>Indian</b>	<b>Others*</b>
<b>Total</b>	<b>2325</b>	<b>1341</b>	<b>1368</b>	<b>213</b>
Pharmacological therapy given during admission, No. (%)				
Aspirin	2043 (88)	1182 (88)	1174 (86)	194 (91)
ADP antagonist	1271 (55)	867 (65)	820 (60)	133 (62)
GP receptor inhibitor	48 (2)	42 (3)	35 (3)	6 (3)
Unfractionated heparin	476 (20)	83 (6)	130 (10)	13 (6)
LMWH	1448 (62)	1025 (76)	1022 (75)	154 (72)
Beta blocker	1499 (64)	938 (70)	902 (66)	142 (67)
ACE inhibitor	1368 (59)	733 (55)	780 (57)	103 (48)
Angiotensin II receptor blocker	200 (9)	141 (11)	153 (11)	22 (10)
Statin	2013 (87)	1185 (88)	1190 (87)	191 (90)
Other lipid lowering agent	150 (6)	84 (6)	77 (6)	9 (4)
Diuretics	834 (36)	438 (33)	450 (33)	67 (31)
Calcium antagonist	492 (21)	268 (20)	321 (23)	41 (19)
Oral hypoglycaemic agent	602 (26)	353 (26)	550 (40)	47 (22)
Insulin	506 (22)	273 (20)	438 (32)	37 (17)
Anti-arrhythmic agent	144 (6)	89 (7)	69 (5)	22 (10)

\*Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Total admission days is derived as Outcome date – Admission date + 1

Note: Percentage is to the nearest decimal point

**Table 4.9 Treatments for patients with ACS by type of participating centres, NCVD-ACS Registry, 2006-2008**

	2006			2007		
	STEMI = 1445	NSTEMI = 1132	UA = 845	STEMI = 1687	NSTEMI = 1001	UA = 958
<b>N</b>	<b>915</b>	<b>530</b>	<b>814</b>	<b>318</b>	<b>628</b>	<b>217</b>
Fibrinolytic therapy, No. (%)						
Given	628 (69)	390 (74)	NA	NA	NA	NA
Not given – proceeded directly to primary angioplasty	110 (12)	7 (1)	NA	NA	NA	NA
Not given – Contraindicated	36 (4)	34 (6)	NA	NA	NA	NA
Not given – Missed thrombolysis	111 (12)	82 (15)	NA	NA	NA	NA
Not given – Others*	30 (3)	17 (3)	NA	NA	NA	NA
Percutaneous Coronary Intervention, No. (%)						
Yes	308 (34)	0 (0)	161 (20)	0 (0)	80 (13)	0 (0)
No	607 (66)	530 (100)	653 (80)	318 (100)	548 (87)	217 (100)
CABG, No. (%)						
Yes	10 (1)	0 (0)	42 (5)	0 (0)	15 (2)	0 (0)
No	905 (99)	530 (100)	772 (95)	318 (100)	613 (98)	217 (100)

\*Not given-Others' includes missing and refusal

NA – Not Available

Note: Percentage is to the nearest decimal point

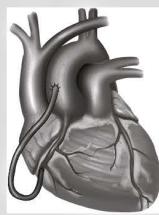
**Table 4.9** Treatments for patients with ACS by type of participating centres, NCVD-ACS Registry, 2006-2008

	2008						Overall			
	STEMI = 1534	NSTEMI = 662	UA = 655	STEMI = 4666	NSTEMI = 2795	UA = 2458	Physician centre	Cardiologist centre	Physician centre	Cardiologist centre
<b>N</b>	<b>792</b>	<b>742</b>	<b>458</b>	<b>204</b>	<b>453</b>	<b>202</b>	<b>2576</b>	<b>2090</b>	<b>1895</b>	<b>900</b>
Fibrinolytic therapy, No. (%)										
Given	512 (65)	631 (85)	NA	NA	NA	NA	1713 (66)	1679 (80)	NA	NA
Not given – proceeded directly to primary angioplasty	87 (11)	3 (0)	NA	NA	NA	NA	306 (12)	14 (1)	NA	NA
Not given – Contraindicated	26 (3)	30 (4)	NA	NA	NA	NA	93 (4)	96 (5)	NA	NA
Not given – Missed thrombolysis	108 (14)	60 (8)	NA	NA	NA	NA	352 (14)	235 (11)	NA	NA
Not given – Others*	59 (7)	18 (2)	NA	NA	NA	NA	112 (4)	66 (3)	NA	NA
Percutaneous Coronary Intervention, No. (%)										
Yes	258 (33)	0 (0)	88 (19)	0 (0)	22 (5)	0 (0)	863 (34)	0 (0)	410 (22)	0 (0)
No	534 (67)	742 (100)	370 (81)	204 (100)	431 (95)	202 (100)	1713 (66)	2090 (100)	1485 (78)	900 (100)
CABG, No. (%)										
Yes	8 (1)	0 (0)	13 (3)	0 (0)	5 (1)	0 (0)	28 (1)	0 (0)	83 (4)	0 (0)
No	784 (99)	742 (100)	445 (97)	204 (100)	448 (99)	202 (100)	2548 (99)	2090 (100)	1812 (96)	900 (100)

\*Not given-'Others' includes missing and refusal

NA – Not Available

Note: Percentage is to the nearest decimal point



## CHAPTER 5: OUTCOME

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## **Summary**

1. The in-hospital mortality rates of ACS patients remained consistent at seven to eight percent over the 3-year period from 2006 to 2008.
2. The in-hospital mortalities rates for STEMI and NSTEMI (7-8%) were higher compared to rates in the GRACE 2<sup>1</sup> (6.2%) registry during the same period.
3. From 2006 to 2008, statistical significant factors of in-hospital death in STEMI were higher Killip class, higher TIMI risk score and pre-morbid diabetes mellitus. For NSTEMI/UA, the statistical significant factors were higher Killip class and heart failure.

### **In-hospital and 30-day outcome**

All three years had similar in-hospital and 30-day mortalities rates for the entire ACS cohort. For in-hospital mortality, the rates were between 7 and 8% while for 30 days mortality, it was between 15 and 24%. [Table 5.1] The in-hospital mortality was highest in STEMI (9-10%), slightly lower in NSTEMI (7-10%), and lowest in UA (2-4%). In contrast, the 30-day mortality of NSTEMI was slightly higher compared to STEMI (19-29% and 15-21% respectively). [Table 5.8]

The mortality rates of our patients were higher than the rates in several global and regional ACS registries within the same period. The expanded Global Registry of Acute Coronary Events (GRACE2)<sup>1</sup> from 2001 to 2007 reported in-hospital mortality rates of 6.2% in STEMI, 2.9% in NSTEMI and 1.7% in unstable angina patients<sup>1</sup>. The Gulf Registry of Acute Coronary Events (Gulf RACE) conducted in 2006 reported in-hospital mortality of just 3% for the entire registry cohort<sup>2</sup>.

### **Outcome by patient characteristics**

The mortality rates according to the patients' demographics and pre-morbid medical conditions in 2007 and 2008 were similar to those noted in 2006. Specifically, higher mortality rates were observed in the elderly, female patients and patients with pre-morbid diabetes mellitus. [Table 5.2, 5.3 & 5.4]

### **Outcome of STEMI by treatment**

Patients who received fibrinolytic therapy had lower in-hospital and 30-day mortality rates compared to those who were not on this therapy. This observation was consistent throughout the 3-year period. [Table 5.9.1]

In STEMI, the percentage of patients who had PCI and CABG at admission were similar in all three years. Mortality rates in patients who had PCI were slightly lower compared to those who did not have PCI. [Table 5.9.2] Although steady increases in mortality rates were noted

in patients who had CABG (0-38% for both in-hospital and 30-day mortality), the absolute numbers of the surgeries and deaths were extremely small. [Table 5.9.3]

#### **Outcome of NSTEMI/UA by treatment**

In NSTEMI and UA, patients who had PCI at admission appeared to have lower in-hospital mortality rates compared to those who did not have PCI. At 30 days, the survival benefit associated with PCI was even more obvious. [Table 5.10.1] The absolute number of patients who underwent CABG was very small. [Table 5.10.2]

#### **Prognostic factors**

From 2006 to 2008, statistical significant associations of in-hospital death in STEMI were higher Killip class, higher TIMI risk score and pre-morbid diabetes mellitus. The other associated factors with an increased risk of in-hospital death were fibrinolytic therapy, former or current cigarette smoking, family history of premature cardiovascular disease, dyslipidaemia, and hypertension. [Table 5.11.1-5.11.3 & Table 5.13.1-5.13.3]

For in-hospital mortality among NSTEMI/UA, the statistical significant associations were higher Killip class and history of heart failure. The other associated factors include former or current cigarette smoking, diabetes mellitus and higher TIMI risk score. [Table 5.12.1-5.12.3 & Table 5.14.1-5.14.3]

#### **References**

1. Goodman SG, Huang W, Yan AT et al; GRACE2 Investigators. The expanded Global Registry of Acute Coronary Events: Baseline characteristics, management practices, and hospital outcomes of patients with acute coronary syndromes. *Am Heart J* 2009;158:193-201.
2. Zabaid M, Rashed WA, Al-Khaja N et al. Clinical presentations and outcomes of acute coronary syndromes in the Gulf registry of Acute Coronary Events (Gulf RACE). *Saudi Med J* 2008;29(2):251-255.

**Table 5.1 Outcomes for patients with ACS by year, NCVD-ACS Registry, 2006-2008**

	*Outcome	Overall outcome					
		Outcome at discharge		30-day**			
		No.	%	No.	%	No.	%
2006	Alive	3169	93	2615	76		
	Death	253	7	807	24		
2007	Alive	3355	92	2920	80		
	Death	291	8	726	20		
2008	Alive	2621	92	2435	85		
	Death	230	8	416	15		
Overall	Alive	9145	92	7970	80		
	Death	774	8	1949	20		

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.2 Overall outcomes for patients with ACS by age group (years), NCVD-ACS Registry, 2006-2008**

	*Outcome	In-hospital						30-day*					
		Young		Middle-age		Elderly		Young		Middle-age		Elderly	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2006	Alive	161	97	1608	96	1400	89	150	90	1424	85	1041	66
	Died	5	3	67	4	181	11	16	10	251	15	540	34
2007	Alive	179	99	1714	95	1451	87	175	97	1645	91	1321	79
	Died	2	1	86	5	214	13	6	3	155	9	344	21
2008	Alive	164	97	1271	95	1182	88	160	95	1241	92	1093	82
	Died	5	3	72	5	157	12	9	5	102	8	246	18
Overall	Alive	505	98	4599	95	4041	88	481	93	4248	88	3241	71
	Died	11	2	220	5	543	12	35	7	571	12	1343	29

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

Note: Young is defined as age from 20 to less than 40 years, middle-aged is defined as age between 40 to less than 60 years and elderly is defined as 60 years and above

**Table 5.3 Overall outcomes for patients with ACS by gender, NCVD-ACS Registry, 2006-2008**

	*Outcome	In-hospital				30-day*			
		Male		Female		Male		Female	
		No.	%	No.	%	No.	%	No.	%
2006	Alive	2393	93	776	91	2009	78	606	71
	Died	176	7	77	9	560	22	247	29
2007	Alive	2595	93	760	90	2293	82	627	74
	Died	202	7	89	10	504	18	222	26
2008	Alive	1988	93	633	90	1864	87	571	81
	Died	159	7	71	10	283	13	133	19
Overall	Alive	6976	93	2169	90	6166	82	1804	75
	Died	537	7	237	10	1347	18	602	25

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.4 Overall outcomes for patients with ACS by pre-morbid diabetes, NCVD-ACS Registry, 2006-2008**

	*Outcome	In-hospital						30-day*					
		Yes		No		Not known		Yes		No		Unknown	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2006	Alive	1379	92	1151	94	639	91	1072	72	986	80	557	80
	Died	118	8	75	6	60	9	425	28	240	20	142	20
2007	Alive	1458	91	1428	94	469	90	1215	76	1274	83	431	83
	Died	141	9	98	6	52	10	384	24	252	17	90	17
2008	Alive	994	91	1129	94	498	91	915	83	1058	88	462	85
	Died	104	9	78	6	48	9	183	17	149	12	84	15
Overall	Alive	3831	91	3708	94	1606	91	3202	76	3318	84	1450	82
	Died	363	9	251	6	160	9	992	24	641	16	316	18

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.5 Overall outcomes for patients with ACS by pre-morbid hypertension, NCVD-ACS Registry, 2006-2008**

	†Outcome	In-hospital						30-day*					
		Yes		No		Not known		Yes		No		Unknown	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2006	Alive	1935	93	728	93	506	92	1537	74	646	82	432	78
	Died	149	7	58	7	46	8	547	26	140	18	120	22
2007	Alive	2083	91	872	94	400	92	1756	77	793	85	371	85
	Died	196	9	58	6	37	8	523	23	137	15	66	15
2008	Alive	1471	92	714	93	436	91	1356	85	678	88	401	83
	Died	131	8	54	7	45	9	246	15	90	12	80	17
Overall	Alive	5489	92	2314	93	1342	91	4649	78	2117	85	1204	82
	Died	476	8	170	7	128	9	1316	22	367	15	266	18

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.6 Overall outcomes for patients with ACS by pre-morbid dyslipidaemia, NCVD-ACS Registry, 2006-2008**

	†Outcome	In-hospital						30-day*					
		Yes		No		Not known		Yes		No		Unknown	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2006	Alive	1069	95	831	92	1269	91	871	77	689	76	1055	76
	Died	62	5	71	8	120	9	260	23	213	24	334	24
2007	Alive	1203	93	1093	92	1059	91	1036	80	953	80	931	80
	Died	88	7	92	8	111	9	255	20	232	20	239	20
2008	Alive	822	93	919	92	880	91	762	86	862	87	811	83
	Died	61	7	77	8	92	9	121	14	134	13	161	17
Overall	Alive	3094	94	2843	92	3208	91	2669	81	2504	81	2797	79
	Died	211	6	240	8	323	9	636	19	579	19	734	21

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.7 Overall outcomes for patients by types of centre, NCVD-ACS Registry, 2007-2008**

	*Outcome	In-hospital				30-day*			
		Physician Centre		Cardiologist Centre		Physician Centre		Cardiologist Centre	
		No.	%	No.	%	No.	%	No.	%
2006	Alive	978	92	2191	93	803	75	1812	77
	Died	87	8	166	7	262	25	545	23
2007	Alive	1350	90	2005	94	1158	77	1762	82
	Died	152	10	139	6	344	23	382	18
2008	Alive	1056	92	1565	92	979	85	1456	85
	Died	92	8	138	8	169	15	247	15
Overall	Alive	3384	91	5761	93	2940	79	5030	81
	Died	331	9	443	7	775	21	1174	19

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.8 Overall outcomes for patients with ACS by ACS stratum, NCVD-ACS Registry, 2006-2008**

	*Outcome	In-hospital						30-day*					
		STEMI		NSTEMI		UA		STEMI		NSTEMI		UA	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2006	Alive	1309	91	1048	93	812	96	1135	79	804	71	676	80
	Died	136	9	84	7	33	4	310	21	328	29	169	20
2007	Alive	1513	90	907	91	935	98	1373	81	745	74	802	84
	Died	174	10	94	9	23	2	314	19	256	26	156	16
2008	Alive	1388	90	598	90	635	97	1307	85	537	81	591	90
	Died	146	10	64	10	20	3	227	15	125	19	64	10
Overall	Alive	4210	90	2553	91	2382	97	3815	82	2086	75	2069	84
	Died	456	10	242	9	76	3	851	18	709	25	389	16

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.9.1 Overall outcomes for patients with STEMI by fibrinolytic therapy, NCVD-ACS Registry, 2006-2008**

	†Outcome	In-hospital				30-day*			
		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%
2006	Alive	941	92	368	86	830	82	305	71
	Died	77	8	59	14	188	18	122	29
2007	Alive	1123	91	390	86	1023	83	350	77
	Died	108	9	66	14	208	17	106	23
2008	Alive	1045	91	343	88	993	87	314	80
	Died	98	9	48	12	150	13	77	20
Overall	Alive	3109	92	1101	86	2846	84	969	76
	Died	283	8	173	14	546	16	305	24

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.9.2 Overall outcomes for patients with STEMI by Percutaneous Coronary Intervention at admission, NCVD-ACS Registry, 2006-2008**

	†Outcome	In-hospital				30-day*			
		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%
2006	Alive	282	92	1027	90	259	84	876	77
	Died	26	8	110	10	49	16	261	23
2007	Alive	270	91	1243	89	253	85	1120	81
	Died	27	9	147	11	44	15	270	19
2008	Alive	233	90	1155	91	218	84	1089	85
	Died	25	10	121	9	40	16	187	15
Overall	Alive	785	91	3425	90	730	85	3085	81
	Died	78	9	378	10	133	15	718	19

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.9.3 Overall outcomes for patients with STEMI by CABG at admission, NCVD-ACS Registry, 2006-2008**

	†Outcome	In-hospital				30-day*			
		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%
2006	Alive	10	100	1299	91	8	80	1127	79
	Died	0	0	136	9	2	20	308	21
2007	Alive	9	90	1504	90	9	90	1364	81
	Died	1	10	173	10	1	10	313	19
2008	Alive	6	75	1382	91	5	63	1302	85
	Died	2	25	144	9	3	38	224	15
Overall	Alive	25	89	4185	90	22	79	3793	82
	Died	3	11	453	10	6	21	845	18

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.9.4 Overall outcomes for patients with STEMI by pre-admission aspirin use, NCVD-ACS Registry, 2006-2008**

	†Outcome	In-hospital						30-day*					
		Yes		No		Not known		Yes		No		Unknown	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2006	Alive	198	87	885	92	226	89	162	71	780	81	193	76
	Died	29	13	80	8	27	11	65	29	185	19	60	24
2007	Alive	321	87	1112	91	80	83	283	76	1016	83	74	77
	Died	49	13	109	9	16	17	87	24	205	17	22	23
2008	Alive	242	87	1032	91	114	92	227	82	974	86	106	85
	Died	35	13	101	9	10	8	50	18	159	14	18	15
Overall	Alive	761	87	3029	91	420	89	672	77	2770	83	373	79
	Died	113	13	290	9	53	11	202	23	549	17	100	21

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.10.1 Overall outcomes for patients with NSTEMI/UA by Percutaneous Coronary Intervention at admission, NCVD-ACS Registry, 2006-2008**

	†Outcome	In-hospital				30-day*			
		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%
2006	Alive	232	96	1628	94	210	87	1270	73
	Died	9	4	108	6	31	13	466	27
2007	Alive	226	95	1616	94	207	87	1340	78
	Died	12	5	105	6	31	13	381	22
2008	Alive	102	93	1131	94	100	91	1028	85
	Died	8	7	76	6	10	9	179	15
Overall	Alive	560	95	4375	94	517	88	3638	78
	Died	29	5	289	6	72	12	1026	22

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.10.2 Overall outcomes for patients with NSTEMI/UA by CABG at admission, NCVD-ACS Registry, 2006-2008**

	†Outcome	In-hospital				30-day*			
		Yes		No		Yes		No	
		No.	%	No.	%	No.	%	No.	%
2006	Alive	49	86	1811	94	42	74	1438	75
	Died	8	14	109	6	15	26	482	25
2007	Alive	37	100	1805	94	35	95	1512	79
	Died	0	0	117	6	2	5	410	21
2008	Alive	12	67	1221	94	12	67	1116	86
	Died	6	33	78	6	6	33	183	14
Overall	Alive	98	88	4837	94	89	79	4066	79
	Died	14	13	304	6	23	21	1075	21

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.10.3 Overall outcomes for patients with NSTEMI/UA by pre-admission aspirin use,  
NCVD-ACS Registry, 2006-2008**

	+Outcome	In-hospital						30-day*					
		Yes		No		Not known		Yes		No		Unknown	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2006	Alive	792	95	681	94	387	93	617	74	555	77	308	74
	Died	45	5	44	6	28	7	220	26	170	23	107	26
2007	Alive	914	94	801	94	127	94	743	76	694	81	110	81
	Died	58	6	51	6	8	6	229	24	158	19	25	19
2008	Alive	566	94	491	93	176	94	513	85	453	86	162	87
	Died	38	6	35	7	11	6	91	15	73	14	25	13
Overall	Alive	2272	94	1973	94	690	94	1873	78	1702	81	580	79
	Died	141	6	130	6	47	6	540	22	401	19	157	21

+ The outcome data is derived based on data matching with the National Death Register

\*Includes patients who died in-hospital

**Table 5.11.1 Prognosis factors for death in hospital among STEMI patients, NCVD-ACS Registry, 2006**

Factors	N	Odds Ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	113	1.00			-
40 - <60	803	0.75	0.24	2.37	0.624
≥60	529	1.56	0.49	5.01	0.454
<b>Gender</b>					
Male (ref)	1230	1.00			-
Female	215	1.22	0.63	2.36	0.549
<b>Ethnic group*</b>					
Malay (ref)	780	1.00			-
Chinese	301	0.98	0.57	1.69	0.950
Indian	286	0.92	0.52	1.63	0.788
Others	78	1.11	0.42	2.90	0.835
<b>Killip classification</b>					
I (ref)	802	1.00			-
II	288	2.29	1.28	4.10	0.005
III	62	4.18	1.88	9.25	<0.001
IV	66	11.16	5.36	23.23	<0.001
Not stated/inadequately described/missing	227	1.42	0.73	2.75	0.303
<b>Percutaneous Coronary Intervention</b>					
Yes	308	0.87	0.36	2.10	0.762
No (ref)	1137	1.00			-
<b>Cardiac catheterisation</b>					
Yes	298	0.92	0.37	2.27	0.858
No (ref)	1147	1.00			-
<b>TIMI risk score</b>					
0-2 (ref)	643	1.00			-
3-4	377	1.16	0.59	2.27	0.659
5-7	337	2.03	1.10	3.76	0.023
>7	88	6.50	3.11	13.57	<0.001
<b>Fibrinolytic therapy</b>					
Given	1018	0.64	0.41	0.99	0.047
Not given (ref)	427	1.00			-

**Table 5.11.1 Prognosis factors for death in hospital among STEMI patients, NCVD-ACS Registry, 2006**

Factors	N	Odds Ratio	95% CI		P-value
<b>Smoking</b>					
Never (ref)	417	1.00			-
Former (quit >30 days)	272	5.18	2.22	12.08	<0.001
Current (any tobacco use within last 30 days)	723	3.85	1.67	8.88	0.002
Unknown	33	2.18	0.73	6.51	0.163
<b>Family history of premature cardiovascular disease</b>					
Yes	168	4.36	1.70	11.19	0.002
No (ref)	742	1.00			-
Unknown	535	0.77	0.42	1.41	0.397
<b>Dyslipidaemia</b>					
Yes	278	2.91	1.21	7.02	0.017
No (ref)	458	1.00			-
Unknown	709	1.24	0.69	2.23	0.471
<b>Hypertension</b>					
Yes	681	5.81	2.54	13.28	<0.001
No (ref)	433	1.00			-
Unknown	331	1.01	0.44	2.30	0.986
<b>Diabetes</b>					
Yes	525	7.02	3.22	15.31	<0.001
No (ref)	538	1.00			-
Unknown	382	1.62	0.76	3.46	0.213
<b>Heart failure</b>					
Yes	48	1.34	0.55	3.30	0.520
No (ref)	1008	1.00			-
Unknown	389	1.28	0.58	2.83	0.535
<b>Coronary artery disease**</b>					
Yes	779	0.97	0.55	1.69	0.901
No (ref)	306	1.00			-
Unknown	360	0.97	0.39	2.40	0.941

\*'Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.11.2 Prognosis factors for death in hospital among STEMI patients, NCVD-ACS Registry, 2007**

Factors	N	Odds Ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	112	1.00			-
40 - <60	954	3.84	0.51	29.19	0.193
≥60	621	7.10	0.93	54.03	0.058
<b>Gender</b>					
Male (ref)	1447	1.00			-
Female	240	0.60	0.35	1.04	0.067
<b>Ethnic group*</b>					
Malay (ref)	893	1.00			-
Chinese	356	0.65	0.40	1.05	0.081
Indian	322	0.74	0.43	1.27	0.280
Others	115	0.64	0.27	1.50	0.306
<b>Killip classification code</b>					
I (ref)	903	1.00			-
II	307	0.95	0.54	1.68	0.867
III	66	4.57	2.24	9.33	<0.001
IV	95	9.26	4.82	17.80	<0.001
Not stated/inadequately described/missing	316	1.38	0.80	2.39	0.249
<b>Percutaneous Coronary Intervention</b>					
Yes	297	1.84	0.55	6.15	0.324
No (ref)	1390	1.00			-
<b>Cardiac catheterisation</b>					
Yes	351	0.42	0.13	1.36	0.148
No (ref)	1336	1.00			-
<b>TIMI risk score</b>					
0-2 (ref)	534	1.00			-
3-4	560	1.21	0.59	2.49	0.599
5-7	466	3.44	1.70	6.97	0.001
>7	127	4.79	2.00	11.44	<0.001
<b>Fibrinolytic therapy</b>					
Given	1231	0.76	0.50	1.14	0.187
Not given (ref)	456	1.00			-

**Table 5.11.2 Prognosis factors for death in hospital among STEMI patients, NCVD-ACS Registry, 2007**

<b>Factors</b>	<b>N</b>	<b>Odds Ratio</b>	<b>95% CI</b>		<b>P-value</b>
<b>Smoking</b>					
Never (ref)	480	1.00			-
Former (quit >30 days)	303	2.09	1.04	4.20	0.038
Current (any tobacco use within last 30 days)	824	1.32	0.67	2.60	0.425
Unknown	80	0.86	0.39	1.88	0.706
<b>Family history of premature cardiovascular disease</b>					
Yes	207	2.46	1.09	5.57	0.030
No (ref)	1008	1.00			-
Unknown	472	0.71	0.42	1.19	0.190
<b>Dyslipidaemia</b>					
Yes	381	3.49	1.73	7.03	<0.001
No (ref)	614	1.00			-
Unknown	692	1.46	0.88	2.42	0.148
<b>Hypertension</b>					
Yes	840	4.01	1.97	8.14	<0.001
No (ref)	545	1.00			-
Unknown	302	0.65	0.27	1.57	0.341
<b>Diabetes</b>					
Yes	612	4.33	2.24	8.40	<0.001
No (ref)	734	1.00			-
Unknown	341	1.34	0.61	2.92	0.465
<b>Heart failure</b>					
Yes	56	2.59	1.21	5.54	0.014
No (ref)	1338	1.00			-
Unknown	293	1.52	0.72	3.20	0.273
<b>Coronary artery disease**</b>					
Yes	1033	0.77	0.47	1.24	0.279
No (ref)	374	1.00			-
Unknown	280	0.61	0.26	1.43	0.255

\*\*Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.11.3 Prognosis factors for death in hospital among STEMI patients, NCVD-ACS Registry, 2008**

Factors	N	Odds Ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	119	1.00			-
40 - <60	812	1.22	0.39	3.80	0.738
≥60	603	1.73	0.55	5.46	0.352
<b>Gender</b>					
Male (ref)	1281	1.00			-
Female	253	1.20	0.68	2.12	0.535
<b>Ethnic group*</b>					
Malay (ref)	852	1.00			-
Chinese	301	1.07	0.64	1.77	0.798
Indian	271	0.85	0.47	1.56	0.604
Others	105	0.87	0.34	2.20	0.764
<b>Killip classification code</b>					
I (ref)	785	1.00			-
II	320	0.77	0.43	1.40	0.398
III	56	1.54	0.66	3.60	0.323
IV	90	6.75	3.53	12.92	<0.001
Not stated/inadequately described/missing	283	1.29	0.69	2.41	0.420
<b>Percutaneous Coronary Intervention</b>					
Yes	258	0.43	0.18	1.02	0.056
No (ref)	1276	1.00			-
<b>Cardiac catheterisation</b>					
Yes	299	2.93	1.34	6.43	0.007
No (ref)	1235	1.00			-
<b>TIMI risk score</b>					
0-2 (ref)	476	1.00			-
3-4	465	1.97	0.83	4.68	0.123
5-7	471	5.04	2.17	11.71	<0.001
>7	122	13.23	5.00	34.98	<0.001
<b>Fibrinolytic therapy</b>					
Given	1143	1.01	0.63	1.63	0.956
Not given (ref)	391	1.00			-

**Table 5.11.3 Prognosis factors for death in hospital among STEMI patients, NCVD-ACS Registry, 2008**

Factors	N	Odds Ratio	95% CI		P-value
<b>Smoking</b>					
Never (ref)	438	1.00			-
Former (quit >30 days)	269	1.67	0.77	3.66	0.196
Current (any tobacco use within last 30 days)	712	1.32	0.62	2.84	0.474
Unknown	115	0.78	0.32	1.89	0.578
<b>Family history of premature cardiovascular disease</b>					
Yes	160	0.75	0.23	2.44	0.628
No (ref)	920	1.00			-
Unknown	454	1.12	0.59	2.12	0.729
<b>Dyslipidaemia</b>					
Yes	349	1.37	0.63	2.97	0.423
No (ref)	559	1.00			-
Unknown	626	1.01	0.56	1.84	0.962
<b>Hypertension</b>					
Yes	731	1.66	0.82	3.38	0.159
No (ref)	530	1.00			-
Unknown	273	1.68	0.66	4.29	0.278
<b>Diabetes</b>					
Yes	515	2.35	1.19	4.63	0.014
No (ref)	705	1.00			-
Unknown	314	0.75	0.30	1.87	0.542
<b>Heart failure</b>					
Yes	34	2.30	0.90	5.87	0.082
No (ref)	1165	1.00			-
Unknown	335	0.69	0.30	1.59	0.389
<b>Coronary artery disease**</b>					
Yes	798	1.16	0.67	2.01	0.600
No (ref)	403	1.00			-
Unknown	333	1.96	0.83	4.67	0.126

\*'Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.11.4 Prognosis factors for death in hospital among STEMI patients, NCVD-ACS Registry, 2006-2008**

Factors	N	Odds Ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	344	1.00			-
40 - <60	2569	1.40	0.68	2.88	0.361
≥60	1753	2.47	1.19	5.10	0.015
<b>Gender</b>					
Male (ref)	3958	1.00			-
Female	708	0.86	0.62	1.19	0.359
<b>Ethnic group*</b>					
Malay (ref)	2525	1.00			-
Chinese	958	0.89	0.67	1.19	0.442
Indian	879	0.83	0.61	1.14	0.256
Others	298	0.81	0.49	1.35	0.430
<b>Killip classification code</b>					
I (ref)	2490	1.00			-
II	915	1.27	0.92	1.75	0.149
III	184	3.07	2.00	4.71	<0.001
IV	251	8.73	6.00	12.70	<0.001
Not stated/inadequately described/missing	826	1.34	0.96	1.88	0.090
<b>Percutaneous Coronary Intervention</b>					
Yes	863	0.83	0.49	1.41	0.490
No (ref)	3803	1.00			-
<b>Cardiac catheterisation</b>					
Yes	948	1.12	0.67	1.86	0.666
No (ref)	3718	1.00			-
<b>TIMI risk score</b>					
0-2 (ref)	1653	1.00			-
3-4	1402	1.31	0.87	1.97	0.200
5-7	1274	3.02	2.05	4.44	<0.001
>7	337	6.44	4.06	10.23	<0.001
<b>Fibrinolytic therapy</b>					
Given	3392	0.76	0.59	0.96	0.024
Not given (ref)	1274	1.00			-

**Table 5.11.4 Prognosis factors for death in hospital among STEMI patients, NCVD-ACS Registry, 2006-2008**

Factors	N	Odds Ratio	95% CI		P-value
<b>Smoking</b>					
Never (ref)	1335	1.00			-
Former (quit >30 days)	844	2.60	1.70	3.99	<0.001
Current (any tobacco use within last 30 days)	2259	1.83	1.20	2.78	0.005
Unknown	228	1.00	0.61	1.63	0.985
<b>Family history of premature cardiovascular disease</b>					
Yes	535	2.07	1.24	3.46	0.006
No (ref)	2670	1.00			-
Unknown	1461	0.82	0.59	1.13	0.227
<b>Dyslipidaemia</b>					
Yes	1008	2.42	1.58	3.72	<0.001
No (ref)	1631	1.00			-
Unknown	2027	1.21	0.89	1.65	0.217
<b>Hypertension</b>					
Yes	2252	3.32	2.20	5.02	<0.001
No (ref)	1508	1.00			-
Unknown	906	1.00	0.61	1.61	0.986
<b>Diabetes</b>					
Yes	1652	4.02	2.72	5.95	<0.001
No (ref)	1977	1.00			-
Unknown	1037	1.25	0.80	1.94	0.330
<b>Heart failure</b>					
Yes	138	1.97	1.23	3.16	0.005
No (ref)	3511	1.00			-
Unknown	1017	1.18	0.76	1.82	0.455
<b>Coronary artery disease**</b>					
Yes	2610	0.92	0.69	1.23	0.570
No (ref)	1083	1.00			-
Unknown	973	0.98	0.61	1.60	0.948

\*'Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.12.1 Prognosis factors for death in hospital among NSTEMI/UA patients, NCVD-ACS Registry, 2006**

Factors	N	Odds ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	53	1.00			-
40 - < 60	872	1.43	0.17	11.96	0.739
≥60	1052	4.00	0.49	32.49	0.195
<b>Gender</b>					
Male (ref)	1339	1.00			-
Female	638	1.16	0.70	1.94	0.559
<b>Ethnic group*</b>					
Malay (ref)	904	1.00			-
Chinese	485	0.50	0.29	0.84	0.010
Indian	513	0.59	0.35	1.02	0.061
Others	75	0.51	0.15	1.77	0.290
<b>Killip classification code</b>					
I (ref)	866	1.00			-
II	304	2.55	1.34	4.85	0.004
III	91	5.80	2.64	12.74	<0.001
IV	34	13.18	5.15	33.76	<0.001
Not stated/ inadequately described	682	1.89	1.05	3.40	0.034
<b>Percutaneous Coronary Intervention</b>					
Yes	241	0.62	0.25	1.55	0.306
No (ref)	1736	1.00			-
<b>Cardiac catheterisation</b>					
Yes	357	1.81	0.86	3.80	0.117
No (ref)	1620	1.00			-
<b>TIMI risk score</b>					
0-2 (ref)	1140	1.00			-
3-4	689	0.72	0.45	1.16	0.182
5-7	148	2.13	1.01	4.48	0.046
<b>Smoking</b>					
Never (ref)	953	1.00			-
Former (quit >30 days)	533	3.01	1.46	6.24	0.003
Current (any tobacco use within last 30 days)	415	2.28	1.00	5.17	0.049
Unknown	76	2.35	0.98	5.65	0.055

**Table 5.12.1 Prognosis factors for death in hospital among NSTEMI/UA patients, NCVD-ACS Registry, 2006**

Factors	N	Odds Ratio	95% CI		P-value
<b>Family history of premature cardiovascular disease</b>					
Yes	236	0.90	0.31	2.65	0.854
No (ref)	942	1.00			-
Unknown	799	1.07	0.63	1.82	0.798
<b>Dyslipidaemia</b>					
Yes	853	1.34	0.63	2.88	0.450
No (ref)	444	1.00			-
Unknown	680	0.73	0.39	1.36	0.327
<b>Hypertension</b>					
Yes	1403	1.43	0.68	3.02	0.349
No (ref)	353	1.00			-
Unknown	221	0.39	0.15	1.00	0.050
<b>Diabetes</b>					
Yes	972	2.42	1.19	4.89	0.014
No (ref)	688	1.00			-
Unknown	317	1.72	0.77	3.82	0.183
<b>Heart failure</b>					
Yes	236	1.97	1.12	3.45	0.018
No (ref)	1281	1.00			-
Unknown	460	1.58	0.79	3.16	0.193
<b>Coronary artery disease**</b>					
Yes	1420	0.97	0.50	1.88	0.924
No (ref)	226	1.00			-
Unknown	331	0.75	0.31	1.85	0.536

\*Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.12.2 Prognosis factors for death in hospital among NSTEMI/UA patients, NCVD-ACS Registry, 2007**

Factors	N	Odds ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	69	1.00			-
40 - < 60	846	1.68	0.22	12.98	0.618
≥60	1044	3.23	0.42	24.61	0.258
<b>Gender</b>					
Male (ref)	1350	1.00			-
Female	609	0.96	0.58	1.60	0.886
<b>Ethnic group*</b>					
Malay (ref)	847	1.00			-
Chinese	497	0.86	0.52	1.41	0.550
Indian	525	0.57	0.32	1.01	0.056
Others	87	0.13	0.02	1.00	0.050
<b>Killip classification code</b>					
I (ref)	884	1.00			-
II	280	2.47	1.32	4.62	0.005
III	65	5.93	2.72	12.93	<0.001
IV	31	29.07	11.53	73.27	<0.001
Not stated/ inadequately described	699	1.99	1.15	3.46	0.014
<b>Percutaneous Coronary Intervention</b>					
Yes	238	1.44	0.53	3.86	0.474
No (ref)	1721	1.00			-
<b>Cardiac catheterisation</b>					
Yes	382	0.99	0.42	2.32	0.977
No (ref)	1577	1.00			-
<b>TIMI risk score</b>					
0-2 (ref)	1050	1.00			-
3-4	757	1.05	0.63	1.75	0.844
5-7	152	3.47	1.58	7.61	0.002
<b>Smoking</b>					
Never (ref)	878	1.00			-
Former (quit >30 days)	515	3.24	1.35	7.80	0.009
Current (any tobacco use within last 30 days)	426	3.40	1.35	8.57	0.009
Unknown	140	1.97	0.93	4.16	0.077

**Table 5.12.2 Prognosis factors for death in hospital among NSTEMI/UA patients, NCVD-ACS Registry, 2007**

Factors	N	Odds Ratio	95% CI		P-value
<b>Family history of premature cardiovascular disease</b>					
Yes	271	2.27	0.88	5.89	0.092
No (ref)	1193	1.00			-
Unknown	495	0.85	0.48	1.49	0.565
<b>Dyslipidaemia</b>					
Yes	910	3.19	1.38	7.33	0.006
No (ref)	571	1.00			-
Unknown	478	0.89	0.46	1.72	0.720
<b>Hypertension</b>					
Yes	1439	4.64	1.94	11.10	0.001
No (ref)	385	1.00			-
Unknown	135	1.72	0.50	5.89	0.391
<b>Diabetes</b>					
Yes	987	5.33	2.36	12.04	<0.001
No (ref)	792	1.00			-
Unknown	180	1.44	0.49	4.23	0.508
<b>Heart failure</b>					
Yes	192	2.73	1.59	4.68	<0.001
No (ref)	1534	1.00			-
Unknown	233	0.87	0.36	2.09	0.751
<b>Coronary artery disease**</b>					
Yes	1467	0.51	0.30	0.88	0.015
No (ref)	323	1.00			-
Unknown	169	0.96	0.38	2.44	0.938

\*\*Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.12.3 Prognosis factors for death in hospital among NSTEMI/UA patients, NCVD-ACS Registry, 2008**

Factors	N	Odds ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	50	1.00			-
40 - < 60	532	512017.00	0.00	-	0.981
≥60	735	1194447.00	0.00	-	0.980
<b>Gender</b>					
Male (ref)	866	1.00			-
Female	451	0.81	0.45	1.46	0.490
<b>Ethnic group*</b>					
Malay (ref)	574	1.00			-
Chinese	359	1.22	0.70	2.16	0.484
Indian	330	0.89	0.44	1.80	0.754
Others	51	1.65	0.56	4.91	0.364
<b>Killip classification code</b>					
I (ref)	501	1.00			-
II	208	2.13	0.93	4.85	0.073
III	50	16.18	6.62	39.53	<0.001
IV	25	18.34	5.88	57.20	<0.001
Not stated/ inadequately described	533	2.18	1.05	4.52	0.036
<b>Percutaneous Coronary Intervention</b>					
Yes	110	0.91	0.32	2.63	0.866
No (ref)	1207	1.00			-
<b>Cardiac catheterisation</b>					
Yes	185	1.90	0.81	4.44	0.139
No (ref)	1132	1.00			-
<b>TIMI risk score</b>					
0-2 (ref)	793	1.00			-
3-4	455	1.03	0.56	1.87	0.932
5-7	69	0.61	0.18	2.04	0.423
<b>Smoking</b>					
Never (ref)	575	1.00			-
Former (quit >30 days)	286	1.06	0.45	2.50	0.887
Current (any tobacco use within last 30 days)	259	1.03	0.41	2.58	0.944
Unknown	197	0.95	0.36	2.54	0.920

**Table 5.12.3 Prognosis factors for death in hospital among NSTEMI/UA patients, NCVD-ACS Registry, 2008**

Factors	N	Odds Ratio	95% CI		P-value
<b>Family history of premature cardiovascular disease</b>					
Yes	100	1.05	0.33	3.27	0.939
No (ref)	773	1.00			-
Unknown	444	1.45	0.74	2.87	0.281
<b>Dyslipidaemia</b>					
Yes	534	1.27	0.58	2.77	0.548
No (ref)	437	1.00			-
Unknown	346	0.51	0.18	1.42	0.197
<b>Hypertension</b>					
Yes	871	1.09	0.42	2.83	0.857
No (ref)	238	1.00			-
Unknown	208	0.96	0.19	4.85	0.963
<b>Diabetes</b>					
Yes	583	1.59	0.70	3.62	0.271
No (ref)	502	1.00			-
Unknown	232	1.36	0.32	5.88	0.678
<b>Heart failure</b>					
Yes	107	3.42	1.71	6.82	<0.001
No (ref)	959	1.00			-
Unknown	251	2.12	0.71	6.29	0.178
<b>Coronary artery disease**</b>					
Yes	878	0.79	0.40	1.59	0.512
No (ref)	216	1.00			-
Unknown	223	0.49	0.12	1.99	0.321

\*\*'Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.12.4 Prognosis factors for death in hospital among NSTEMI/UA patients, NCVD-ACS Registry, 2006-2008**

Factors	N	Odds ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	172	1.00			-
40 - < 60	2250	2.75	0.65	11.60	0.168
≥60	2831	6.10	1.46	25.51	0.013
<b>Gender</b>					
Male (ref)	3555	1.00			-
Female	1698	0.99	0.74	1.34	0.970
<b>Ethnic group*</b>					
Malay (ref)	2325	1.00			-
Chinese	1341	0.75	0.56	1.00	0.048
Indian	1368	0.61	0.43	0.85	0.003
Others	213	0.51	0.25	1.04	0.065
<b>Killip classification code</b>					
I (ref)	2251	1.00			-
II	792	2.41	1.64	3.55	<0.001
III	206	7.47	4.78	11.69	<0.001
IV	90	17.41	10.11	29.97	<0.001
Not stated/ inadequately described	1914	1.99	1.41	2.80	<0.001
<b>Percutaneous Coronary Intervention</b>					
Yes	589	0.89	0.51	1.52	0.661
No (ref)	4664	1.00			-
<b>Cardiac catheterisation</b>					
Yes	924	1.53	0.98	2.39	0.063
No (ref)	4329	1.00			-
<b>TIMI risk score</b>					
0-2 (ref)	2983	1.00			-
3-4	1901	0.94	0.70	1.25	0.664
5-7	369	1.95	1.22	3.12	0.006
<b>Smoking</b>					
Never (ref)	2406	1.00			-
Former (quit >30 days)	1334	2.07	1.33	3.22	0.001
Current (any tobacco use within last 30 days)	1100	1.95	1.21	3.15	0.006
Unknown	413	1.44	0.90	2.28	0.125

**Table 5.12.4 Prognosis factors for death in hospital among NSTEMI/UA patients, NCVD-ACS Registry, 2006-2008**

Factors	N	Odds Ratio	95% CI		P-value
<b>Family history of premature cardiovascular disease</b>					
Yes	607	1.23	0.69	2.19	0.479
No (ref)	2908	1.00			-
Unknown	1738	1.03	0.74	1.43	0.868
<b>Dyslipidaemia</b>					
Yes	2297	1.56	1.01	2.39	0.043
No (ref)	1452	1.00			-
Unknown	1504	0.70	0.47	1.04	0.074
<b>Hypertension</b>					
Yes	3713	1.89	1.20	2.98	0.006
No (ref)	976	1.00			-
Unknown	564	0.71	0.37	1.34	0.292
<b>Diabetes</b>					
Yes	2542	2.60	1.70	3.96	<0.001
No (ref)	1982	1.00			-
Unknown	729	1.64	0.93	2.87	0.086
<b>Heart failure</b>					
Yes	535	2.43	1.75	3.37	<0.001
No (ref)	3774	1.00			-
Unknown	944	1.42	0.89	2.27	0.142
<b>Coronary artery disease**</b>					
Yes	3765	0.68	0.49	0.96	0.030
No (ref)	765	1.00			-
Unknown	723	0.65	0.37	1.13	0.124

\*\*Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.13.1 Prognosis factors for death within 30 days among STEMI patients, NCVD-ACS Registry, 2006**

Factors	N	Odds Ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	113	1			-
40 - <60	803	1.32	0.62	2.85	0.472
≥60	529	2.70	1.23	5.92	0.013
<b>Gender</b>					
Male (ref)	1230	1			-
Female	215	1.38	0.86	2.22	0.182
<b>Ethnic group*</b>					
Malay (ref)	780	1			-
Chinese	301	0.81	0.55	1.18	0.276
Indian	286	0.87	0.59	1.28	0.476
Others	78	0.53	0.25	1.09	0.085
<b>Killip classification code</b>					
I (ref)	802	1			-
II	288	1.56	1.06	2.29	0.025
III	62	3.06	1.63	5.72	<0.001
IV	66	4.19	2.28	7.72	<0.001
Not stated/inadequately described/missing	227	1.33	0.88	2.00	0.178
<b>Percutaneous Coronary Intervention</b>					
Yes	308	0.57	0.31	1.04	0.065
No (ref)	1137	1			-
<b>Cardiac catheterisation</b>					
Yes	298	1.00	0.55	1.83	0.990
No (ref)	1147	1			-
<b>TIMI risk score</b>					
0-2 (ref)	643	1			-
3-4	377	1.33	0.90	1.96	0.151
5-7	337	1.99	1.33	2.99	0.001
>7	88	4.10	2.26	7.43	<0.001
<b>Fibrinolytic therapy</b>					
Given	1018	0.59	0.43	0.81	0.001
Not given (ref)	427	1			-

**Table 5.13.1 Prognosis factors for death within 30 days among STEMI patients, NCVD-ACS Registry, 2006**

Factors	N	Odds Ratio	95% CI		P-value
<b>Smoking</b>					
Never (ref)	417	1			-
Former (quit >30 days)	272	2.09	1.19	3.68	0.010
Current (any tobacco use within last 30 days)	723	2.08	1.22	3.56	0.008
Unknown	33	2.20	0.92	5.24	0.074
<b>Family history of premature cardiovascular disease</b>					
Yes	168	1.57	0.86	2.85	0.138
No (ref)	742	1			-
Unknown	535	0.76	0.50	1.16	0.204
<b>Dyslipidaemia</b>					
Yes	278	1.12	0.65	1.94	0.680
No (ref)	458	1			-
Unknown	709	0.98	0.66	1.46	0.929
<b>Hypertension</b>					
Yes	681	3.01	1.81	5.03	<0.001
No (ref)	433	1			-
Unknown	331	1.36	0.77	2.39	0.290
<b>Diabetes</b>					
Yes	525	2.80	1.73	4.54	<0.001
No (ref)	538	1			-
Unknown	382	1.08	0.64	1.82	0.783
<b>Heart failure</b>					
Yes	48	1.83	0.91	3.70	0.092
No (ref)	1008	1			-
Unknown	389	1.77	1.05	3.00	0.033
<b>Coronary artery disease**</b>					
Yes	779	0.97	0.66	1.42	0.866
No (ref)	306	1			-
Unknown	360	0.99	0.54	1.81	0.981

\*'Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.13.2 Prognosis factors for death within 30 days among STEMI patients, NCVD-ACS Registry, 2007**

Factors	N	Odds Ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	112	1			-
40 - <60	954	1.49	0.61	3.60	0.380
≥60	621	3.35	1.37	8.18	0.008
<b>Gender</b>					
Male (ref)	1447	1			-
Female	240	0.78	0.51	1.19	0.252
<b>Ethnic group*</b>					
Malay (ref)	893	1			-
Chinese	356	0.73	0.50	1.06	0.097
Indian	322	0.88	0.59	1.31	0.521
Others	115	1.10	0.62	1.96	0.738
<b>Killip classification code</b>					
I (ref)	903	1			-
II	307	1.22	0.82	1.83	0.329
III	66	3.32	1.79	6.14	<0.001
IV	95	4.65	2.66	8.14	<0.001
Not stated/inadequately described/missing	316	1.15	0.77	1.73	0.490
<b>Percutaneous Coronary Intervention</b>					
Yes	297	0.77	0.35	1.69	0.520
No (ref)	1390	1			-
<b>Cardiac catheterisation</b>					
Yes	351	0.88	0.42	1.82	0.722
No (ref)	1336	1			-
<b>TIMI risk score</b>					
0-2 (ref)	534	1			-
3-4	560	1.45	0.91	2.31	0.113
5-7	466	2.83	1.73	4.61	<0.001
>7	127	4.12	2.13	7.95	<0.001
<b>Fibrinolytic therapy</b>					
Given	1231	0.78	0.57	1.08	0.138
Not given (ref)	456	1			-

**Table 5.13.2 Prognosis factors for death within 30 days among STEMI patients, NCVD-ACS Registry, 2007**

Factors	N	Odds Ratio	95% CI		P-value
<b>Smoking</b>					
Never (ref)	480	1			-
Former (quit >30 days)	303	1.50	0.90	2.50	0.123
Current (any tobacco use within last 30 days)	824	1.07	0.66	1.74	0.794
Unknown	80	0.83	0.44	1.59	0.580
<b>Family history of premature cardiovascular disease</b>					
Yes	207	1.77	1.00	3.13	0.050
No (ref)	1008	1			-
Unknown	472	1.49	1.01	2.19	0.043
<b>Dyslipidaemia</b>					
Yes	381	1.49	0.90	2.45	0.118
No (ref)	614	1			-
Unknown	692	1.41	0.96	2.07	0.079
<b>Hypertension</b>					
Yes	840	2.51	1.53	4.12	<0.001
No (ref)	545	1			-
Unknown	302	0.97	0.50	1.90	0.940
<b>Diabetes</b>					
Yes	612	2.12	1.34	3.35	0.001
No (ref)	734	1			-
Unknown	341	0.89	0.48	1.62	0.693
<b>Heart failure</b>					
Yes	56	2.46	1.30	4.65	0.006
No (ref)	1338	1			-
Unknown	293	0.91	0.51	1.61	0.737
<b>Coronary artery disease**</b>					
Yes	1033	0.99	0.68	1.43	0.947
No (ref)	374	1			-
Unknown	280	0.71	0.37	1.37	0.302

\*'Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.13.3 Prognosis factors for death within 30 days among STEMI patients, NCVD-ACS Registry, 2008**

Factors	N	Odds Ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	119	1			-
40 - <60	812	1.02	0.43	2.46	0.958
≥60	603	1.89	0.78	4.60	0.159
<b>Gender</b>					
Male (ref)	1281	1			-
Female	253	1.07	0.66	1.73	0.786
<b>Ethnic group*</b>					
Malay (ref)	852	1			-
Chinese	301	0.77	0.50	1.18	0.226
Indian	271	0.82	0.50	1.33	0.423
Others	105	0.52	0.23	1.17	0.112
<b>Killip classification code</b>					
I (ref)	785	1			-
II	320	1.09	0.68	1.74	0.720
III	56	1.78	0.86	3.68	0.120
IV	90	5.29	2.91	9.62	<0.001
Not stated/inadequately described/missing	283	1.37	0.83	2.26	0.222
<b>Percutaneous Coronary Intervention</b>					
Yes	258	0.43	0.20	0.90	0.026
No (ref)	1276	1			-
<b>Cardiac catheterisation</b>					
Yes	299	2.78	1.41	5.49	0.003
No (ref)	1235	1			-
<b>TIMI risk score</b>					
0-2 (ref)	476	1			-
3-4	465	2.08	1.09	3.97	0.026
5-7	471	4.94	2.59	9.41	<0.001
>7	122	12.98	5.92	28.47	<0.001
<b>Fibrinolytic therapy</b>					
Given	1143	0.81	0.55	1.20	0.299
Not given (ref)	391	1			-

**Table 5.13.3 Prognosis factors for death within 30 days among STEMI patients, NCVD-ACS Registry, 2008**

Factors	N	Odds Ratio	95% CI		P-value
<b>Smoking</b>					
Never (ref)	438	1			-
Former (quit >30 days)	269	1.42	0.75	2.70	0.280
Current (any tobacco use within last 30 days)	712	1.31	0.70	2.43	0.396
Unknown	115	0.92	0.45	1.88	0.822
<b>Family history of premature cardiovascular disease</b>					
Yes	160	0.60	0.24	1.49	0.269
No (ref)	920	1			-
Unknown	454	1.16	0.68	1.96	0.593
<b>Dyslipidaemia</b>					
Yes	349	1.14	0.62	2.12	0.670
No (ref)	559	1			-
Unknown	626	0.98	0.60	1.61	0.945
<b>Hypertension</b>					
Yes	731	1.44	0.81	2.54	0.212
No (ref)	530	1			-
Unknown	273	1.89	0.87	4.10	0.108
<b>Diabetes</b>					
Yes	515	2.02	1.16	3.51	0.014
No (ref)	705	1			-
Unknown	314	0.90	0.42	1.92	0.785
<b>Heart failure</b>					
Yes	34	1.55	0.65	3.69	0.321
No (ref)	1165	1			-
Unknown	335	0.60	0.30	1.21	0.150
<b>Coronary artery disease**</b>					
Yes	798	1.13	0.72	1.76	0.591
No (ref)	403	1			-
Unknown	333	1.44	0.69	2.97	0.329

\*'Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.13.4 Prognosis factors for death within 30 days among STEMI patients, NCVD-ACS Registry, 2006-2008**

Factors	N	Odds Ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	344	1			-
40 - <60	2569	1.36	0.85	2.17	0.203
≥60	1753	2.78	1.73	4.48	<0.001
<b>Gender</b>					
Male (ref)	3958	1			-
Female	708	0.97	0.75	1.25	0.798
<b>Ethnic group*</b>					
Malay (ref)	2525	1			-
Chinese	958	0.78	0.63	0.98	0.029
Indian	879	0.85	0.67	1.08	0.186
Others	298	0.75	0.51	1.09	0.130
<b>Killip classification code</b>					
I (ref)	2490	1			-
II	915	1.39	1.10	1.75	0.006
III	184	2.76	1.92	3.95	<0.001
IV	251	4.79	3.45	6.64	<0.001
Not stated/inadequately described/missing	826	1.26	0.99	1.61	0.060
<b>Percutaneous Coronary Intervention</b>					
Yes	863	0.65	0.44	0.97	0.033
No (ref)	3803	1			-
<b>Cardiac catheterisation</b>					
Yes	948	1.19	0.82	1.73	0.368
No (ref)	3718	1			-
<b>TIMI risk score</b>					
0-2 (ref)	1653	1			-
3-4	1402	1.33	1.03	1.72	0.030
5-7	1274	2.35	1.81	3.06	<0.001
>7	337	4.54	3.18	6.48	<0.001
<b>Fibrinolytic therapy</b>					
Given	3392	0.70	0.58	0.85	<0.001
Not given (ref)	1274	1			-

**Table 5.13.4 Prognosis factors for death within 30 days among STEMI patients, NCVD-ACS Registry, 2006-2008**

Factors	N	Odds Ratio	95% CI		P-value
<b>Smoking</b>					
Never (ref)	1335	1			-
Former (quit >30 days)	844	1.61	1.18	2.21	0.003
Current (any tobacco use within last 30 days)	2259	1.38	1.02	1.86	0.037
Unknown	228	0.96	0.65	1.42	0.833
<b>Family history of premature cardiovascular disease</b>					
Yes	535	1.35	0.95	1.93	0.097
No (ref)	2670	1			-
Unknown	1461	1.13	0.88	1.43	0.337
<b>Dyslipidaemia</b>					
Yes	1008	1.18	0.87	1.59	0.296
No (ref)	1631	1			-
Unknown	2027	1.10	0.87	1.38	0.430
<b>Hypertension</b>					
Yes	2252	2.25	1.68	3.02	0.000
No (ref)	1508	1			-
Unknown	906	1.29	0.90	1.87	0.167
<b>Diabetes</b>					
Yes	1652	2.25	1.71	2.97	<0.001
No (ref)	1977	1			-
Unknown	1037	1.00	0.71	1.40	0.979
<b>Heart failure</b>					
Yes	138	1.96	1.31	2.92	0.001
No (ref)	3511	1			-
Unknown	1017	1.07	0.77	1.49	0.684
<b>Coronary artery disease**</b>					
Yes	2610	1.07	0.86	1.34	0.519
No (ref)	1083	1			-
Unknown	973	0.98	0.67	1.41	0.894

\*'Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.14.1 Prognosis factors for death within 30 days among NSTEMI/UA patients, NCVD-ACS Registry, 2006**

Factors	N	Odds ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	53	1.00			-
40 - < 60	872	0.92	0.38	2.20	0.849
≥60	1052	2.29	0.96	5.46	0.062
<b>Gender</b>					
Male (ref)	1339	1.00			-
Female	638	0.94	0.70	1.25	0.663
<b>Ethnic group*</b>					
Malay (ref)	904	1.00			-
Chinese	485	0.73	0.56	0.97	0.030
Indian	513	0.65	0.48	0.87	0.004
Others	75	0.81	0.44	1.49	0.493
<b>Killip classification code</b>					
I (ref)	866	1.00			-
II	304	2.25	1.61	3.12	<0.001
III	91	3.40	2.06	5.62	<0.001
IV	34	6.12	2.74	13.65	<0.001
Not stated/ inadequately described	682	1.47	1.11	1.96	0.008
<b>Percutaneous Coronary Intervention</b>					
Yes	241	0.48	0.29	0.80	0.005
No (ref)	1736	1.00			-
<b>Cardiac catheterisation</b>					
Yes	357	1.14	0.76	1.71	0.524
No (ref)	1620	1.00			-
<b>TIMI risk score</b>					
0-2 (ref)	1140	1.00			-
3-4	689	1.05	0.81	1.35	0.712
5-7	148	1.52	0.98	2.35	0.061
<b>Smoking</b>					
Never (ref)	953	1.00			-
Former (quit >30 days)	533	2.34	1.62	3.39	<0.001
Current (any tobacco use within last 30 days)	415	1.83	1.21	2.76	0.004
Unknown	76	1.25	0.69	2.24	0.464

**Table 5.14.1 Prognosis factors for death within 30 days among NSTEMI/UA patients, NCVD-ACS Registry, 2006**

Factors	N	Odds Ratio	95% CI		P-value
<b>Family history of premature cardiovascular disease</b>					
Yes	236	1.37	0.86	2.19	0.182
No (ref)	942	1.00			-
Unknown	799	1.16	0.87	1.54	0.318
<b>Dyslipidaemia</b>					
Yes	853	1.14	0.77	1.68	0.513
No (ref)	444	1.00			-
Unknown	680	0.79	0.55	1.12	0.179
<b>Hypertension</b>					
Yes	1403	2.05	1.35	3.10	0.001
No (ref)	353	1.00			-
Unknown	221	1.00	0.58	1.72	0.996
<b>Diabetes</b>					
Yes	972	2.41	1.69	3.44	<0.001
No (ref)	688	1.00			-
Unknown	317	0.78	0.49	1.23	0.281
<b>Heart failure</b>					
Yes	236	2.24	1.60	3.15	<0.001
No (ref)	1281	1.00			-
Unknown	460	1.26	0.87	1.83	0.218
<b>Coronary artery disease**</b>					
Yes	1420	1.06	0.73	1.55	0.756
No (ref)	226	1.00			-
Unknown	331	1.02	0.62	1.69	0.935

\*\*Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.14.2 Prognosis factors for death within 30 days among NSTEMI/UA patients, NCVD-ACS Registry, 2007**

Factors	N	Odds ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	69	1.00			-
40 - < 60	846	1.48	0.57	3.84	0.417
≥60	1044	3.29	1.28	8.48	0.014
<b>Gender</b>					
Male (ref)	1350	1.00			-
Female	609	1.10	0.81	1.50	0.552
<b>Ethnic group*</b>					
Malay (ref)	847	1.00			-
Chinese	497	0.76	0.56	1.02	0.068
Indian	525	0.83	0.61	1.12	0.214
Others	87	0.67	0.35	1.27	0.216
<b>Killip classification code</b>					
I (ref)	884	1.00			-
II	280	1.51	1.06	2.14	0.022
III	65	2.76	1.57	4.84	<0.001
IV	31	4.73	2.11	10.60	<0.001
Not stated/ inadequately described	699	1.47	1.11	1.94	0.007
<b>Percutaneous Coronary Intervention</b>					
Yes	238	1.19	0.66	2.15	0.556
No (ref)	1721	1.00			-
<b>Cardiac catheterisation</b>					
Yes	382	0.51	0.31	0.84	0.008
No (ref)	1577	1.00			-
<b>TIMI risk score</b>					
0-2 (ref)	1050	1.00			-
3-4	757	1.22	0.92	1.62	0.163
5-7	152	2.23	1.40	3.55	0.001
<b>Smoking</b>					
Never (ref)	878	1.00			-
Former (quit >30 days)	515	1.99	1.31	3.04	0.001
Current (any tobacco use within last 30 days)	426	1.75	1.10	2.77	0.018
Unknown	140	1.16	0.71	1.88	0.560

**Table 5.14.2 Prognosis factors for death within 30 days among NSTEMI/UA patients, NCVD-ACS Registry, 2007**

Factors	N	Odds Ratio	95% CI		P-value
<b>Family history of premature cardiovascular disease</b>					
Yes	271	0.94	0.58	1.51	0.786
No (ref)	1193	1.00			-
Unknown	495	1.29	0.94	1.76	0.115
<b>Dyslipidaemia</b>					
Yes	910	1.12	0.76	1.65	0.567
No (ref)	571	1.00			-
Unknown	478	0.82	0.57	1.19	0.305
<b>Hypertension</b>					
Yes	1439	1.85	1.20	2.84	0.005
No (ref)	385	1.00			-
Unknown	135	0.94	0.44	2.00	0.869
<b>Diabetes</b>					
Yes	987	2.24	1.53	3.28	<0.001
No (ref)	792	1.00			-
Unknown	180	1.01	0.53	1.92	0.974
<b>Heart failure</b>					
Yes	192	2.64	1.86	3.73	<0.001
No (ref)	1534	1.00			-
Unknown	233	0.87	0.53	1.41	0.567
<b>Coronary artery disease**</b>					
Yes	1467	0.66	0.48	0.92	0.013
No (ref)	323	1.00			-
Unknown	169	0.95	0.54	1.69	0.874

\*\*Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.14.3 Prognosis factors for death within 30 days among NSTEMI/UA patients, NCVD-ACS Registry, 2008**

Factors	N	Odds ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	50	1.00			-
40 - < 60	532	3.38	0.44	25.76	0.239
≥60	735	9.27	1.23	69.77	0.031
<b>Gender</b>					
Male (ref)	866	1.00			-
Female	451	0.89	0.59	1.35	0.583
<b>Ethnic group*</b>					
Malay (ref)	574	1.00			-
Chinese	359	1.66	1.11	2.46	0.012
Indian	330	1.09	0.68	1.77	0.714
Others	51	0.86	0.33	2.27	0.766
<b>Killip classification code</b>					
I (ref)	501	1.00			-
II	208	1.32	0.79	2.18	0.286
III	50	7.51	3.73	15.10	<0.001
IV	25	4.90	1.91	12.56	0.001
Not stated/ inadequately described	533	1.09	0.70	1.70	0.706
<b>Percutaneous Coronary Intervention</b>					
Yes	110	0.45	0.19	1.08	0.075
No (ref)	1207	1.00			-
<b>Cardiac catheterisation</b>					
Yes	185	1.67	0.89	3.13	0.112
No (ref)	1132	1.00			-
<b>TIMI risk score</b>					
0-2 (ref)	793	1.00			-
3-4	455	1.09	0.71	1.66	0.704
5-7	69	1.81	0.87	3.75	0.112
<b>Smoking</b>					
Never (ref)	575	1.00			-
Former (quit >30 days)	286	1.42	0.78	2.58	0.247
Current (any tobacco use within last 30 days)	259	1.13	0.59	2.18	0.711
Unknown	197	0.84	0.40	1.75	0.636

**Table 5.14.3 Prognosis factors for death within 30 days among NSTEMI/UA patients, NCVD-ACS Registry, 2008**

Factors	N	Odds Ratio	95% CI		P-value
<b>Family history of premature cardiovascular disease</b>					
Yes	100	1.06	0.47	2.41	<b>0.889</b>
No (ref)	773	1.00			-
Unknown	444	1.07	0.66	1.75	<b>0.784</b>
<b>Dyslipidaemia</b>					
Yes	534	1.39	0.80	2.43	<b>0.242</b>
No (ref)	437	1.00			-
Unknown	346	1.62	0.86	3.07	<b>0.135</b>
<b>Hypertension</b>					
Yes	871	1.59	0.80	3.14	<b>0.183</b>
No (ref)	238	1.00			-
Unknown	208	1.66	0.49	5.65	<b>0.420</b>
<b>Diabetes</b>					
Yes	583	1.34	0.76	2.36	<b>0.312</b>
No (ref)	502	1.00			-
Unknown	232	0.78	0.25	2.41	<b>0.662</b>
<b>Heart failure</b>					
Yes	107	3.07	1.83	5.14	<b>&lt;0.001</b>
No (ref)	959	1.00			-
Unknown	251	0.59	0.23	1.48	<b>0.258</b>
<b>Coronary artery disease**</b>					
Yes	878	0.51	0.32	0.82	<b>0.005</b>
No (ref)	216	1.00			-
Unknown	223	0.72	0.28	1.86	<b>0.498</b>

\*'Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

**Table 5.14.4 Prognosis factors for death within 30 days among NSTEMI/UA patients, NCVD-ACS Registry, 2006-2008**

Factors	N	Odds ratio	95% CI		P-value
<b>Age group, years</b>					
20 - <40 (ref)	172	1.00			-
40 - < 60	2250	1.49	0.82	2.70	0.194
≥60	2831	3.48	1.92	6.30	<0.001
<b>Gender</b>					
Male (ref)	3555	1.00			-
Female	1698	0.98	0.82	1.18	0.845
<b>Ethnic group*</b>					
Malay (ref)	2325	1.00			-
Chinese	1341	0.84	0.70	1.00	0.052
Indian	1368	0.77	0.64	0.93	0.006
Others	213	0.71	0.48	1.06	0.093
<b>Killip classification code</b>					
I (ref)	2251	1.00			-
II	792	1.74	1.41	2.15	<0.001
III	206	3.73	2.70	5.14	<0.001
IV	90	4.91	3.07	7.84	<0.001
Not stated/ inadequately described	1914	1.41	1.18	1.68	<0.001
<b>Percutaneous Coronary Intervention</b>					
Yes	589	0.67	0.48	0.95	0.023
No (ref)	4664	1.00			-
<b>Cardiac catheterisation</b>					
Yes	924	0.94	0.72	1.23	0.652
No (ref)	4329	1.00			-
<b>TIMI risk score</b>					
0-2 (ref)	2983	1.00			-
3-4	1901	1.07	0.91	1.27	0.417
5-7	369	1.84	1.39	2.45	<0.001
<b>Smoking</b>					
Never (ref)	2406	1.00			-
Former (quit >30 days)	1334	2.03	1.59	2.59	<0.001
Current (any tobacco use within last 30 days)	1100	1.67	1.27	2.19	<0.001
Unknown	413	0.95	0.70	1.29	0.726

**Table 5.14.4 Prognosis factors for death within 30 days among NSTEMI/UA patients, NCVD-ACS Registry, 2006-2008**

Factors	N	Odds Ratio	95% CI		P-value
<b>Family history of premature cardiovascular disease</b>					
Yes	607	1.17	0.86	1.58	0.318
No (ref)	2908	1.00			-
Unknown	1738	1.22	1.01	1.47	0.038
<b>Dyslipidaemia</b>					
Yes	2297	1.24	0.98	1.57	0.074
No (ref)	1452	1.00			-
Unknown	1504	0.96	0.76	1.20	0.712
<b>Hypertension</b>					
Yes	3713	1.88	1.44	2.46	<0.001
No (ref)	976	1.00			-
Unknown	564	0.97	0.65	1.44	0.884
<b>Diabetes</b>					
Yes	2542	2.11	1.68	2.66	<0.001
No (ref)	1982	1.00			-
Unknown	729	0.80	0.56	1.13	0.212
<b>Heart failure</b>					
Yes	535	2.60	2.10	3.22	<0.001
No (ref)	3774	1.00			-
Unknown	944	1.12	0.85	1.47	0.414
<b>Coronary artery disease**</b>					
Yes	3765	0.76	0.62	0.94	0.012
No (ref)	765	1.00			-
Unknown	723	0.86	0.62	1.21	0.395

\*\*Others' includes Orang asli, Kadazan, Melanau, Murut, Bajau, Bidayuh, Iban, other Malaysian and foreigner

\*\*Coronary artery disease is defined as 'Yes' to any of the following co-morbidities: 1) History of myocardial infarction, 2) Documented CAD >50% stenosis, 3) Chronic angina (onset more than 2 weeks ago), 4) New onset angina (less than 2 weeks)

## APPENDIX A: DATA MANAGEMENT

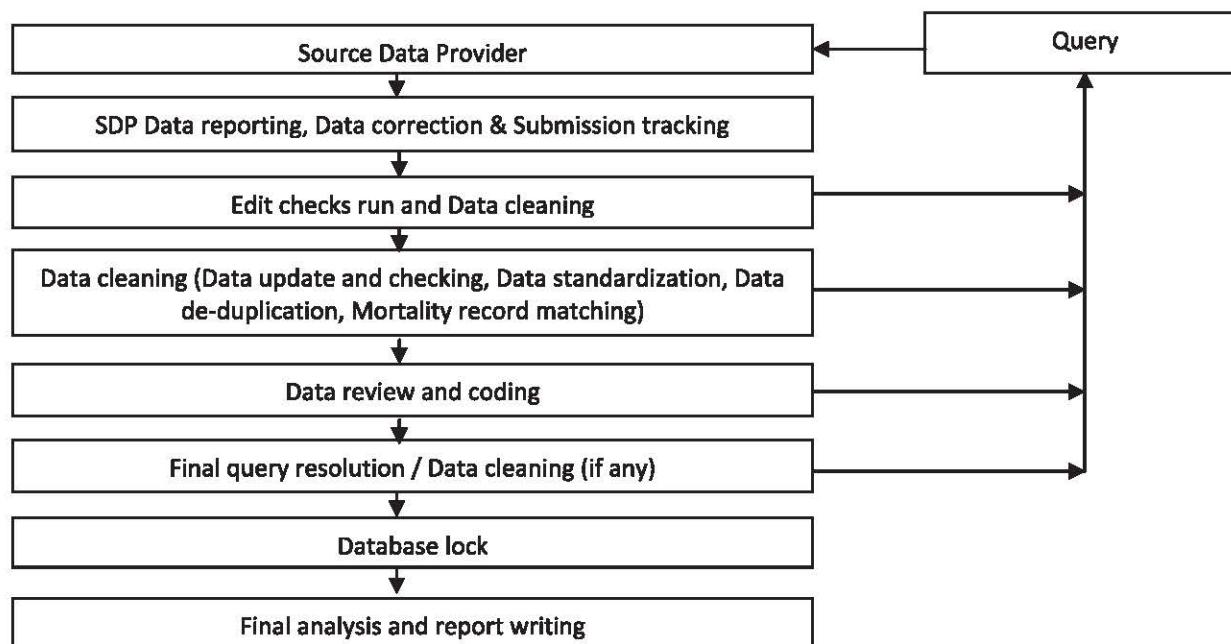
The National Cardiovascular Disease Database (NCVD) Registry maintains two different databases for cardiovascular diseases, i.e. for Acute Coronary Syndrome and Percutaneous Coronary Intervention. Data is stored in SQL Server due to the high volume of data accumulated throughout the years.

### Data sources

Source Data Providers (SDPs) of NCVD-ACS registry comprise of all major hospitals who have participated in the registry, throughout Malaysia.

### *Data Flow Process*

This section describes the data management flow process of the National Cardiovascular Disease Database Registry.



### *SDP Data reporting, Data Correction and Submission tracking*

Data reporting by SDP is done via Web Applications e-Case Report Forms.

There are a number of data security features that are designed into the NCVD web application (eCRF) such as web owner authentication, 2-level user authentication (user name and password authentication and a Short Messaging System (SMS) of authorisation code of mobile phone authentication), access control, data encryption, session management to automatically log off the application, audit trail and data backup and disaster recovery plan.

For ACS, SDP submits NCVD-ACS Notification form on an ad-hoc basis whenever a patient was admitted for an ACS event. SDP also submits follow-up data at 30 days and 12 months post notification date intervals. An alert page containing all the overdue submissions for follow-up at 30-days and 12-months post notification date is available to users for ease of submissions tracking.

Prior to registering a patient record, a verification process is done by using the search functionality to search if the patient already exists in the registry. The application will still detect a duplicate record if the same MyKad number is keyed in, should the step of searching patient not done. This step is done to avoid duplicate records. For patients whose records already exist in the database, the SDP need only add a new ACS notification as the basic patient particulars are pre-filled, based on existing patient information in the database. The ACS and PCI registries share the same patient list.

There are a few in-built functionalities at the data entry page that serve to improve data quality. One such function is auto calculation function to reduce human error, in calculations. There is also an inconsistency check functionality that disables certain fields and prompts the user, if the value entered is out of range.

A real time data query page is also available via the web application to enable users to check which non-compulsory data is missing, out of range or inconsistent. A link is provided on the data query page for user to click on to resolve the query for the particular patient.

Real time reports are also provided in the web application. The aggregated data reports are presented in the form of tables and graphs. The aggregated data reports are typically presented in two forms, one as centre's own aggregated data report and another as the registry's overall aggregated data report. In this way, the centre can be compared with the overall registry's average.

Data download function is also available in the web application to allow users to download their own centre's data from all the forms entered, for their own further analyses. The data are downloadable as Text - tab delimited (.txt) format, Microsoft excel workbook (.xls) and as Comma separated value (.csv) format.

#### *Edit checks run and Data cleaning*

Edit checks is performed periodically by the registry manager to identify missing compulsory data, out of range values, inconsistency of data, invalid values and errors with de-duplication. Data cleaning is then performed based on the results of edit checks. Data update and data checking of the dataset is performed when there is a query of certain fields as and when necessary. It could be due to request by user, correction of data based on checking via data query in eCRF or after receiving results for preliminary data analysis. During data standardisation, missing data are handled based on derivation from existing data. Data de-duplication is also performed to identify duplicate records in the database that might have been missed out by SDPs. Finally record matching against the National Death Register (*Jabatan Pendaftaran Negara*) is performed to verify the mortality status of the patient.

#### *Final query resolution / data cleaning / database lock*

A final edit check run is performed to ensure that the data is clean. All queries will be resolved before the database is locked, to ensure data quality and integrity. The final dataset is subsequently locked and exported to the statistician for analysis.

#### *Data analysis*

Please refer to Statistical Analysis Method section for further details.

#### **Data release policy**

One of the primary objectives of the Registry is to make data available to the cardiovascular healthcare providers, policy makers and researchers. The Registry would appreciate if users acknowledge the Registry for the use of the data. Any request for data that requires a computer run must be made in writing (by e-mail, fax, or registered mail) accompanied with a Data Release Application Form and signed Data Release Agreement Form. These requests need prior approval by the Advisory Board before data can be released.

#### **Registry ICT Infrastructure and Data centre**

The operation of the NCVD is supported by an extensive ICT infrastructure to ensure operational efficiency and effectiveness.

The NCVD subscribes to co-location service with a high availability and highly secured Internet Data Centre at Cyberjaya in order to provide NCVD with quality assured Internet Hosting services and state-of-the-art physical and logical security features without having to invest in costly data centre setup internally. Physical security features implemented includes state-of-the-art security features such as anti-static raised flooring, fire protection with smoke and heat alarm warning system, biometric security access, video camera surveillance system, uninterrupted power supply, environmental control, etc.

Other managed security services include patch management of the servers, antivirus signature monitoring and update, firewall traffic monitoring and intrusion detection, security incidence response, data backup service done on a daily, weekly and monthly basis, data recovery simulation to verify that the backup works, which is done at least once yearly, network security scan and penetration test done on a half-yearly basis, security policy maintenance, maintenance and monitoring of audit trail of user access, etc. Managed system services such as usage and performance report, operating system maintenance and monitoring, bandwidth monitoring and systems health monitoring are also provided.

## APPENDIX B: STATISTICAL METHODS

The statistical methods described were used to summarise the data collected from the National Cardiovascular Database (NCVD). In this report, two sources of data have been used for analysis. They were the centre survey data and the NCVD ACS registry data.

### **Provision of acute coronary care services in Malaysia**

This chapter has been reserved.

The analyses for the rest of this report were generated based on the NCVD ACS registry data, using the following analysis set:

The data without missing on initial diagnosis, final diagnosis is neither stable angina nor non-cardiac, and age at least 20 that were collected until 31<sup>st</sup> December 2008 by NCVD-ACS were analysed. The data was stratified to reflect differences in

- Demography: race, gender, age
- Medical factors: premorbid or past medical history
- Initial diagnoses: ACS strata
- Therapy: fibrinolytic given, aspirin use

### **Methods for handling missing data and outliers**

Missing age was imputed using the hotdeck method. The outliers were set to missing (see table below)

<b>Fields</b>	<b>Acceptable range</b>
Number of distinct episodes of angina	≤20
Heart rate	25 – 200 beats/min (should not be 0)
Systolic BP	60 – 230 mmHg (should not be 0)
Diastolic BP	10 – 120 mmHg
Height	130cm – 210cm
Weight	30kg - 200kg
Waist circumference	≥ 36cm
Hip circumference	60 - 200cm
Peak CK-MB	<1000 Unit/L (should not be 0)
Peak CK	<10 000 Unit/L (should not be 0)
Peak Troponin – TnT	No range
Peak Troponin – TnI	No range
TC	3 - 20 mmol/L
LDL	1 - 15 mmol/L
HDL-C	0.5 - 5 mmol/L
Tg	1 -15 mmol/L
Fasting Blood Glucose	3 - 30 mmol/L
Left Ventricular Ejection Fraction	5% - 80%
Onset to door	Should not be 0 minute
Door to needle time (mins)	1 min -24 hours (or equivalent minutes) (should not be 0)
Door to balloon time (mins)	1 min-24 hours (or equivalent minutes) Apply only for patients with STEMI and planned for primary angioplasty (should not be 0)

### Patient Characteristics

The information on patient characteristics was summarised in chapter 2 of the report. These tables included patients' age, gender, ethnic group, coronary risk factors, anthropometric measurements, co-morbidity, and also the distribution of patients by source data providers (SDP). For summarising continuous data, the mean, standard deviation, median, minimum and maximum values were reported. On the other hand, both the frequency count and percentage were reported for discrete data. Invariably, there were situations where there were missing data. For the purpose of analysis, subjects with missing age had their values imputed by using a hotdeck imputation method. For discrete data, analysis was confined to available data and no imputation was done.

### Cardiac Presentation

Chapter 3 of the report summarized patient characteristics, vital sign measurements, and laboratory parameters by ACS stratum such as STEMI, NSTEMI and UA, age groups namely young, middle-age and elderly, gender as well as the pre-morbid conditions such as diabetes, hypertension, and dyslipidaemia. For continuous data, the mean, standard deviation, median, minimum and maximum values were reported. On the other hand, frequency count and percentage were reported for discrete data. Only the missing age was imputed for the purpose of analysis.

### Treatment

The treatments that were provided to the patients were mainly summarised in the chapter 4. This information was cross tabulated by ACS stratum, age group, gender as well as the main ethnic group in Malaysia. No imputation was done for this chapter.

### Clinical Outcomes

Chapter 5 of the report summarised the overall in-hospital as well as 30-day outcomes for patients with ACS. Cross tabulations of outcomes by gender, pre-morbid conditions such as diabetes, hypertension, dyslipidaemia, and ACS stratum were included in this chapter. Tabulation of outcomes by fibrinolytic therapy was only presented for STEMI patients. Other tabulations such as outcomes by percutaneous coronary intervention at admission, CABG at admission, and also the pre-admission aspirin use were presented separately for patients with STEMI and NSTEMI/UA. Prognostic factors for in-hospital death as well as death in 30 days were summarised separately for STEMI and NSTEMI/UA patients. No imputation was done for this chapter.

## APPENDIX C: PARTICIPATING CENTRE DIRECTORY

### SDP Code: 1001

#### Pusat Perubatan Universiti Malaya (*University Malaya Medical Centre*)

c/o Department of Medicine, Lembah Pantai, 59100 KUALA LUMPUR

Investigator: Prof Dr Wan Azman Wan Ahmad

Coordinator: Suzanna Hani Hussein

### SDP Code: 1002

#### Institut Jantung Negara (*National Heart Institute*)

c/o Department of Cardiology, 145 Jalan Tun Razak, 50400 KUALA LUMPUR

Investigator: Dato' Dr Azhari Rosman

Coordinator: Siti Nurzaliana Mohd Safari

### SDP Code: 1003

#### Hospital Kuala Lumpur

c/o Department of Medicine, Jalan Pahang, 50586 KUALA LUMPUR

Investigator: Dato' Dr Jeyaindran Sinnadurai

Coordinator: SN Sarah Mohd Yusof

### SDP Code: 1004

#### Hospital Pulau Pinang

c/o Department of Cardiology, Jalan Residensi, 10990 PULAU PINANG

Investigator: Dato' Dr Omar Ismail

Coordinator: SN Norhafiza Abd Aziz

### SDP Code: 1005

#### Hospital Umum Sarawak (*Sarawak General Hospital*)

c/o Sarawak General Hospital Heart Centre, Kota Samarahan Expressway, 94300 Kuching, SARAWAK

Investigator: Prof Dr Sim Kui Hian

Coordinator: SN Mila Jane AK Patrick Bai

### SDP Code: 1006

#### Hospital Sultanah Aminah

c/o Department of Cardiology, Jalan Skudai, 80100 Johor Bahru, JOHOR

Investigator: Dr Lee Chuey Yan

Coordinator: SN Fauziah Mohd Tahir

### SDP Code: 1009

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c/o Department of Medicine, KM 6 Jalan Langgar, 05460 Alor Setar, KEDAH

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Coordinator: SN Zarina Abd Hamid

### SDP Code: 1010

#### Hospital Tuanku Ja'afar

c/o Department of Medicine, Jalan Rasah, 70300 Seremban, NEGERI SEMBILAN

Investigator: Dr Sudharanan Sivathasan

Coordinator: Raja Husniatulakma Raja Hussain

**SDP Code: 1011**

**Hospital Tuanku Fauziah**

*c/o Department of Medicine, Jalan Kalam, 01000 Kangar, PERLIS*

Investigator: Dr Ku Noraisikin Ku Ali

Coordinator: Sr Rusmira Ramli

**SDP Code: 1012**

**Hospital Raja Permaisuri Bainun**

*c/o Department of Medicine, Jalan Hospital, 30450 Ipoh, PERAK*

Investigator: Dato' Dr K Chandran

Coordinator: Sr Jamiliah Zainal Abidin

**SDP Code: 1014**

**Hospital Raja Perempuan Zainab II**

*c/o Department of Medicine, Jalan Hospital, 15000 Kota Bharu, KELANTAN*

Investigator: Dr Azerin Othman

Coordinator: SN Wan Ruzita Wan Hassan

**SDP Code: 1015**

**Hospital Queen Elizabeth**

*c/o Department of Medicine, Locked Bag No. 2029, 88586 Kota Kinabalu, SABAH*

Investigator: Dr Phanindranath Mahadasa

Coordinator: SN Damica Kunisong

**SDP Code: 1016**

**Hospital Tengku Ampuan Afzan**

*c/o Department of Cardiology, Jalan Tanah Putih, 25100 Kuantan, PAHANG*

Investigator: Dr Ng Kok Huan

Coordinator: Sr Asanah Asbi

**SDP Code: 1017**

**Hospital Melaka**

*c/o Department of Medicine, Jalan Mufti Haji Khalil, 75400 MELAKA*

Investigator: Dr Sharifah Omar

Coordinator: SN Suriana Jantan

**SDP Code: 1018**

**Hospital Tengku Ampuan Rahimah**

*c/o Department of Medicine, Jalan Langat, 41200 Klang, SELANGOR*

Investigator: Dr Ungku Ahmad Ameen Ungku Mohd Zam

Coordinator: Sr Khairunnizam Harun

## APPENDIX D: ACUTE CORONARY CARE SERVICES INFORMATION FOR YEAR 2007 & 2008 SURVEY PARTICIPATION

We extend our appreciation to the following centres that have contributed in the acute coronary care services information survey for year 2007 and 2008, conducted from July 2009 to March 2010:

### JOHOR

**KPJ Johor Specialist Hospital**  
39-B Jalan Abdul Samad  
80100 Johor Bahru  
Johor

**Sultanah Aminah Hospital**  
Jalan Abu Bakar  
80100 Johor Bahru  
Johor

**Sultanah Fatimah Specialist Hospital**  
Jalan Salleh  
84000 Muar  
Johor

**Sultan Ismail Hospital**  
Jalan Persiaran Mutiara Emas Utama  
Taman Mount Austin  
81100 Johor Bahru  
Johor

**Puteri Specialist Hospital**  
33 Jalan Tun Abdul Razak (Susur 5)  
80000 Johor Bahru  
Johor

### KEDAH

**Kedah Medical Centre**  
Pumpung  
05250 Alor Setar  
Kedah

**Metro Specialist Hospital**  
1 Lorong Metro  
08000 Sungai Petani  
Kedah

**Pantai Hospital Sungai Petani**  
1 Persiaran Cempaka  
Bandar Amanjaya  
08000 Kedah

**Sultanah Bahiyah Hospital**  
KM 6 Jalan Langgar  
05460 Alor Setar  
Kedah

**Sultan Abdul Halim Hospital**  
Jalan Lencongan Timur  
Bandar Aman Jaya  
08000 Sungai Petani  
Kedah

**Kulim Hospital**  
Jalan Mahang  
(Kulim Hi Tech Park)  
09000 Kulim  
Kedah

### KELANTAN

**Perdana Specialist Hospital**  
Lot PT37 & 600 Seksyen 14 Jalan Bayam  
15200 Kota Bharu  
Kelantan

**Universiti Sains Malaysia Hospital**  
16150 Kubang Kerian  
Kelantan

**Raja Perempuan Zainab II Hospital**  
15586 Kota Bharu Kelantan

### MALACCA

**Mahkota Medical Centre**  
3 Mahkota Melaka  
Jalan Merdeka  
75000 Melaka

**Pantai Hospital Ayer Keroh**  
No. 2418-1  
KM 8 Lebuh Ayer Keroh  
75450 Melaka

**MALACCA**

**Putra Specialist Hospital Sdn Bhd**  
169 Jalan Bendahara  
75100 Melaka

**Malacca Hospital**  
Jalan Mufti Haji Khalil  
75400 Melaka

**NEGERI SEMBILAN**

**Tuanku Ja'afar Hospital**  
Jalan Rasah  
70300 Seremban  
Negeri Sembilan

**Tuanku Ampuan Najihah Hospital**  
KM 3 Jalan Melang  
Kuala Pilah  
72000 Negeri Sembilan

**Seremban Specialist Hospital**  
Lot 6219 & 6220  
Jalan Toman 1 Kemayan Square  
70200 Seremban  
Negeri Sembilan

**Port Dickson Hospital**  
KM 11 Jalan Pantai  
Si Rusa  
71050 Port Dickson  
Negeri Sembilan

**PAHANG**

**Tengku Ampuan Afzan Hospital**  
Jalan Tanah Putih  
25100 Kuantan  
Pahang

**Sultan Haji Ahmad Shah Hospital**  
Jalan Maran  
28000 Temerloh  
Pahang

**Kuantan Clinical Diagnostic Centre Sdn Bhd**  
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25200 Kuantan  
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**Kuantan Specialist Hospital**  
51 Jalan Alor Akar  
Kuantan Garden  
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**Pekan Hospital**  
26600 Pekan  
Pahang

**PERAK**

**Taiping Hospital**  
Jalan Taming Sari  
34000 Taiping  
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**KPJ Ipoh Specialist Hospital**  
26 Jalan Raja Dihilir  
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**Teluk Intan Hospital**  
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**Raja Permaisuri Bainun Hospital**  
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**Slim River Hospital**  
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Perak

**Seri Manjung Hospital**  
32040 Seri Manjung  
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**Perak Community Specialist Hospital**  
277 Jalan Raja Permaisuri Bainun  
30250 Ipoh  
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**PERLIS**

**Tuanku Fauziah Hospital**  
Jalan Kolam  
01000 Kangar  
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**PENANG**

**Pulau Pinang Hospital**  
Jalan Residensi  
10990 Georgetown  
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**Gleneagles Medical Centre (Penang)**  
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10050 Pulau Pinang

**Penang Adventist Hospital**  
465 Burma Road  
10350 Georgetown  
Pulau Pinang

**Seberang Jaya Hospital**  
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13700 Prai  
Pulau Pinang

**Kepala Batas Hospital**  
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13200 Kepala Batas  
Pulau Pinang

**SABAH**

**Tawau Hospital**  
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91007 Tawau  
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**Sabah Medical Centre**  
Lorong Bersatu  
Off Jalan Damai  
Luyang 88300 Kota Kinabalu  
Sabah

**SARAWAK**

**Normah Medical Specialist Centre**  
Lot 937 Section 30 KTLD  
Jalan Tun Abdul Rahman  
Petrajaya  
93050 Kuching  
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**Sarawak General Hospital**  
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**Lam Wah Ee Hospital**

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11600 George Town  
Pulau Pinang

**Loh Guan Lye Specialists Centre**  
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10400 Pulau Pinang

**Pantai Hospital Penang**  
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11900 Bayan Baru  
Pulau Pinang

**Bukit Mertajam Hospital**  
Jalan Kulim  
14000 Bukit Mertajam  
Pulau Pinang

**Island Hospital**  
308 Macalister Road  
10450 Pulau Pinang

**Keningau Hospital**  
Peti Surat 11  
89007 Keningau  
Sabah

**Queen Elizabeth Hospital**  
Karung Berkunci No. 2029  
88586 Kota Kinabalu  
Sabah

**Timberland Medical Centre**  
Lot 5164-5165 Block 16  
KCLD 2 1/2 Mile Rock Road  
Taman Timberland  
93250 Kuching  
Sarawak

**Bintulu Hospital**  
Jalan Nyabau  
97000 Bintulu  
Sarawak

**SARAWAK**

**Sibu Hospital**  
Bt 5/12 Jalan Ulu Oya  
96000 Sibu  
Sarawak

**SELANGOR**

**Sunway Medical Centre**  
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Bandar Sunway  
46150 Petaling Jaya  
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**KPJ Selangor Specialist Hospital**  
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40300 Shah Alam  
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**Sime Darby Medical Centre Subang Jaya**  
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**Ampang Hospital**  
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**Kajang Hospital**  
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**Assunta Hospital**  
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46990 Petaling Jaya  
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**KPJ Ampang Puteri Specialist Hospital**

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SN JABADAH @ JUBAIDAH UKI  
SN TERESA HIMANG  
SN WALI DIHIK  
SN MASNI OSMAN  
SN MARY KEMPO TAHAK  
SN AINA SAPIEE  
SN PAYA ANYI  
SN DAISY NURAISSYA ABDULLAH  
SN MILA JANE AK PATRICK BAI  
SN ISABELLA VINCENT UGAP  
SN NURUL HUDA YUSUF  
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DR LIEW CHEE KHOON  
DR LEONG WENG SAN  
DR BENJAMIN LEO CHEANG LENG  
DR LU HOU TEE  
DR TIEH SIAW CHENG  
DR RAJA SITI AISHAH RAJA MOHD RADZI  
DR LING KAH HING  
SR SARIMAH AB SAMAD  
SN SHARIFAH IBRAHIM  
SN FAUZIAH MOHD TAHIR  
SN ZAITON GHAZALI  
SN AZRIRA ABD RAHIM  
SN SARIPAH HAMID  
SN JORIAH ROSNI  
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DR SUDARSHAN  
DR RUBAN KANESALINGAM  
DR SUDHAHARAN SIVATHASAN  
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DR OON YEN YEE  
DR PUSPARANI P  
DR RAYMUND DASS  
SN NARIZAN ZULKIFLI  
SITI ADDAWIAH BAHAROM  
ROSMAWATI ABDUL ZAMAN  
RAJA HUSNIATULAKMA RAJA HUSSAIN  
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**SARAWAK GENERAL HOSPITAL**

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DR ONG TIONG KIAM

**PENANG HOSPITAL**

DATO' DR OMAR ISMAIL  
DR LIEW CHEE TAT  
DR SAFARI ELLIS  
DR GOH TECH HWA  
DR LIM SEH KIN  
DR MANSOR YAHYA  
DR BARAKATH BADUSHA  
DR MUHAMMAD ALI SHEIKH ABD KADER  
DR CHAN KOK KHENG  
DR NAJHAN MAZWAN  
DR EVELYN CHAN KAM YEEN  
DR SHAMA MOHAMED NOOHU  
DR TEE CHEE HIEN  
DR FAHMIDA ILYAS  
DR BUSHRA ILYAS  
DR SITI KHAIRANI  
DR AMARDEEP SINGH  
DR AINOL SHAHERA SAHAR  
DR MA SOOT KENG  
DR STANLEY LIM CHIN YU  
DR LIM P.G  
DR GOH CHONG AIK  
DR ZAHARATUL NAJWA HAMID  
DR TAN YEE FONG  
DR EVELYN CHAN KAM YEEN  
DR T. SARAVANABAWA  
SR MAHANI DIN  
SR MASNI HARUN  
SR TAN AHR ER  
SR JAMELAH AHMAD  
SN BALKHIS AHMAD  
SN NATRAH OMAR  
SN NATRAH ABD RADZAK  
SN NUR HUDA CHE KALIB  
SN AZIZAH YUSUF  
SN NORMILAH YAHAYA  
SN NURSYAMSINAR ABU BAKAR  
SN MASYIDAWATI MOHD RODZI  
SN CHONG HOOI JOO  
SN NORHAFIZA ABDUL AZIZ  
SN SURAIDAH RAMLI  
SALAWATI SAEDIN  
LIM HOOI CHENG  
SN NOR AZAB ABDUL AZIZ  
SN KOO KWAI CHUN  
SN LALITHA

**RAJA PERMAISURI BAINUN HOSPITAL**

DATO DR K CHANDRAN  
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DR KHOR CHIEW GEK  
DR NOR HANIM MOHD AMIN  
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SHAMSUL ARDI ALI  
AINA JUANA MIOR ANUAR

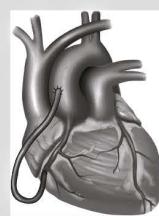
**TENGKU AMPUAN AFZAN HOSPITAL**

DATO' DR SAPARI SATWI  
DR ABDUL HADI JAAFAR  
DR NG KOK HUAN  
DR HARRIS NGOW ABDULLAH  
SR ONG SIEW GEOK  
SN ASANAH ASBI  
SN BASARIAH HASSAN  
SN HASMAH HAMAT  
SN NOR IRDAWATY SAMSUDIN  
SN AMINAH SAFINA ISHAK  
SN AFZARINIE ISMAIL  
SN ZUHAINI ISMAIL  
SN SUZILAWANI GHANI  
SN ZALENAWATI GHAZALI  
SN INTAN YULIAANA YUSOF  
SN NOORNI ABDULLAH  
SN NORAINI NOR ABIDIN  
SN ZAWIAH JUSOH  
SN ZARINA ISMAIL  
SN KHAIROK KARIM  
SN SITI NOR AMAMAH SHEIKH ZAKARIA  
SN NUR HAFIZAH AHMAD

**QUEEN ELIZABETH HOSPITAL**

DR LIEW HOUNG BANG  
DR PHANINDRANATH MAHADASA  
SN DAMICA KUNSIONG  
MATRON WONG KATH KOAU  
SR LAWASA MOJIMBAL  
SR SITI RAHMAH IDRIS  
SN ANGELEN SHIRLEY GAING  
SN FELIZIA ALLIUN

<b>TENGKU AMPUAN RAHIMAH HOSPITAL</b>	SN NOOR HAFIZAH BAHAROM
DATIN PADUKA DR SANTHA KUMARI	SN SHARMILA ISMAIL
DR SIA KOON KET	SN MARIAM AHMAD
DR ABDUL WAHAB UNDOK	MOHD SABRI YAHAYA
DR UNGKU AHMAD AMEEN UNGKU MOHD ZAM	
DR CHOOR CHEE KEN	<b>TUANKU FAUZIAH HOSPITAL</b>
SR KHAIRUNNIZAM HARUN	DR SIA KOON KET
P WILSON	DR KHOR BOON TAT
SR HASMAH SALLEH	DR KHALED MOHAMED HELMY
SN ROHAIZA ABD RAZAK	DR YUHANIS YUSOF
SN CHOONG TSU MEILI	DR ABD KARIM ABDULLAH
SN MASLIZA MOHAMED LAZIM	DR NURULRAZIQUIN MOHD JAMID
SN SUHANA MOHD YUSOF	DR ZALWANI ZAINUDDIN
SN ROHAYA ZAKARIA	DR NORAZRULRIZAL MAT NOR
SN NORZARINA RAZALI	DR KU NORAIKIN KU ALI
SN NORAZREEN MAT NOR	SR JAMALIAH OSMAN
SN ZURAYA ABDULLAH	SR ZAURIAH ABU BAKAR
SN ZAHRAH ZAINUDDIN	SR TEH GUAT HUA
SN TERESA AK BILON	SR RUSMIRA RAMLI
MOGANA KRISHNAN	SN RASUBIVI OLI MOHAMED
	SN ZALIZA SAID
<b>MALACCA HOSPITAL</b>	SN RAFIZAH MD LELA
DR ARIFATUL FADZILLAH MUSA	SN ROSMAWATI MD ARIFFIN
DR MOOI CHIN LEONG	SITI ERTINA
DR SHARIFAH OMAR	
DR YEW TECK ZUAN	<b>RAJA PEREMPUAN ZAINAB II HOSPITAL</b>
DR SITI NUR HAYATI ADZNAN	DR MANSOR YAHYA
DR SHALINI DATO' VIJAYASINGHAM	DR AZERIN OTHMAN
SN FARIDAH SHARIF	DR NOOR ZAKIAH MAT HUSSAIN
SN NORLIZA SAHARI	SN WAN RUZITA WAN HASSAN
SN FLORENCE BONG S L	SN RAFIDAH MUSTAFA
SN MARINA YUSOFF	SN FARIDAH ABDUL RAHMAN
SN HALIJAH HASSIM	SN KHAMIDAH MUSA
SN SURIANA JANTAN	SN NORHAYATI IBRAHIM
SN JUNAIDAH AHMAD	SN WAN HASMAH WAN ISMAIL
SN NUR MAWATI AWANG	
NORHANA ADNAN	
JUARIEYAH MAT ARIFFIN	
<b>SULTANAH BAHIYAH HOSPITAL</b>	
DR ABDUL RAHIM TAHIR	
DR HASMANNIZAR ABD MANAP	
DR BILLY CHING SENG KEAT	
SN NAPISAH SHAFIE	
SN KHODIJAH MAT ISA	
SN ZARINA ABDUL HAMID	
SN CHE ARPAAH HASSAN	
SN RASHIDA OMAR	
SN SURYATI MD DERUS	



## **APPENDIX F: CASE REPORT FORM**



# NATIONAL CARDIOVASCULAR DISEASE DATABASE (NCVD) NOTIFICATION FORM

**Instruction:** Complete this form to notify all ACS admissions at your centre to National Cardiovascular Disease Registry. Where check boxes  are provided, check (✓) one or more boxes. Where radio buttons  are provided, check (✓) one box only.

For NCVD Use only:	
ID:	<input type="text"/> / <input type="text"/>
Centre:	

A. Reporting centre:

B. Date of Admission (dd/mm/yy):

## SECTION 1 : DEMOGRAPHICS

1. Patient Name :	2. Local RN No (if applicable):			
3. Identification Card Number :	MyKad / MyKid: <input type="text"/> - <input type="text"/> - <input type="text"/>			
	Old IC: <input type="text"/>			
4. Gender:	<input type="radio"/> Male	<input type="radio"/> Female		
5a. Date of Birth:	d <input type="text"/> m <input type="text"/> y <input type="text"/>	5b. Age on admission:		
6. Ethnic Group:	<input type="radio"/> Malay <input type="radio"/> Orang Asli <input type="radio"/> Murut <input type="radio"/> Iban <input type="radio"/> Chinese <input type="radio"/> Kadazan <input type="radio"/> Bajau <input type="radio"/> Other M'sian, specify: _____ <input type="radio"/> Indian <input type="radio"/> Melanau <input type="radio"/> Bidayuh <input type="radio"/> Foreigner, specify country of origin: _____			
7. Contact Number	(1): <input type="text"/>	(2): <input type="text"/>		

## SECTION 2 : STATUS BEFORE EVENT

1. Smoking Status:	<input type="radio"/> Never	<input type="radio"/> Former (quit >30 days)	<input type="radio"/> Current (any tobacco use within last 30 days)		
2. Status of Aspirin Use:	<input type="radio"/> None	<input type="radio"/> Used less than 7 days previously	<input type="radio"/> Used more than or equal to 7 days previously		
3. Premorbid or past medical history :					
a) Dyslipidaemia	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known		
b) Hypertension	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known		
c) Diabetes	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known		
d) Family history of premature cardiovascular disease	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known		
e) Myocardial infarction history	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known		
f) Documented CAD > 50% stenosis	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known		
g) Chronic Angina (onset more than 2 weeks ago)	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known		
	h) New onset angina (Less than 2 weeks)		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known
	i) Heart failure		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known
	j) Chronic lung disease		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known
	k) Renal disease		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known
	l) Cerebrovascular disease		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known
	m) Peripheral vascular disease		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not known
	n) None of the above		<input type="checkbox"/>		

## SECTION 3 : ONSET

1a. Date of onset of ACS symptoms:	d <input type="text"/> m <input type="text"/> y <input type="text"/>	1b. Time of onset of ACS symptoms:	h <input type="text"/> m <input type="text"/> (24hr)	<input type="checkbox"/> Not available
2a. Date Patient presented :	d <input type="text"/> m <input type="text"/> y <input type="text"/>	2b. Time Patient presented :	h <input type="text"/> m <input type="text"/> (24hr)	<input type="checkbox"/> Not available
3. Was patient transferred from another centre?	<input type="radio"/> Yes <input type="radio"/> No			

## SECTION 4 : CLINICAL PRESENTATION & EXAMINATION

1. Number of distinct episodes of angina in past 24 hours:	<input type="checkbox"/> Not available		
2. Heart rate at presentation:	(beats / min)		
3. Blood pressure at presentation:	a. Systolic: <input type="text"/> (mmHg)	b. Diastolic: <input type="text"/> (mmHg)	
4. Anthropometric :	a. Height: <input type="text"/> (cm)		<input type="checkbox"/> Not available
	b. Weight: <input type="text"/> (kg)		<input type="checkbox"/> Not available
	c. Waist Circumference: <input type="text"/> (cm)		<input type="checkbox"/> Not available
	d. Hip Circumference: <input type="text"/> (cm)		<input type="checkbox"/> Not available
5. Killip classification code :	<input type="radio"/> I	<input type="radio"/> II	<input type="radio"/> III
	<input type="radio"/> IV	<input type="radio"/> Not stated / inadequately described	

## SECTION 5 : ELECTROCARDIOGRAPHY (ECG)

1. ECG abnormalities type (Check one or more boxes)	<input type="checkbox"/> ST-segment elevation ≥ 1mm (0.1 mV) in ≥ 2 contiguous limb leads <input type="checkbox"/> ST-segment elevation ≥ 2mm (0.2 mV) in ≥ 2 contiguous frontal leads or chest leads <input type="checkbox"/> ST-segment depression ≥ 0.5mm (0.05 mV) in ≥ 2 contiguous leads <input type="checkbox"/> T-wave inversion ≥ 1mm (0.1 mV)	<input type="checkbox"/> Bundle branch block (BBB) <input type="checkbox"/> Non-specific <input type="checkbox"/> None <input type="checkbox"/> Not stated / inadequately described
2. ECG abnormalities location : (Check one or more boxes)	<input type="checkbox"/> Inferior leads: II, III, aVF <input type="checkbox"/> Anterior leads: V1 to V4 <input type="checkbox"/> Lateral leads: I, aVL, V5 to V6 <input type="checkbox"/> True posterior: V1 V2	<input type="checkbox"/> Right ventricle: ST elevation in lead V4R <input type="checkbox"/> None <input type="checkbox"/> Not stated / inadequately described

a. Patient Name :	b. Local RN No (If applicable):
c. Identification Card Number :	

### SECTION 6 : BASELINE INVESTIGATIONS (Values obtained within 48 hours from admission)

	Absolute values	Unit	Reference upper limits	Check (✓) if not done
1. Peak CK-MB		Unit/L		<input type="radio"/> Not done
2. Peak CK		Unit/L		<input type="radio"/> Not done
3. Peak Troponin:	a. TnT: <input type="radio"/> +ve <input type="radio"/> -ve OR <input type="text"/>	ng/mL or mcg/L		<input type="radio"/> Not done
	b. TnI: <input type="radio"/> +ve <input type="radio"/> -ve OR <input type="text"/>	ng/mL or mcg/L		<input type="radio"/> Not done
4. Lipid profile (Fasting):	a. Total cholesterol:  b. HDL-C:  c. LDL-C:  d. Triglycerides:	mmol/L mmol/L mmol/L mmol/L		<input type="radio"/> Not done <input type="radio"/> Not done <input type="radio"/> Not done <input type="radio"/> Not done
5. Fasting Blood Glucose:		mmol/L		<input type="radio"/> Not done
6. Left Ventricular Ejection Fraction:		%		<input type="radio"/> Not done

### SECTION 7 : CLINICAL DIAGNOSIS AT ADMISSION

1. Acute coronary syndrome stratum:	<input type="radio"/> STEMI	<input type="radio"/> NSTEMI	<input type="radio"/> UA
2a. TIMI risk score UAP / NSTEMI:		Auto Calculated	2b. TIMI risk score STEMI:

### SECTION 8 : FIBRINOLYTIC THERAPY (Following Section is applicable for STEMI only)

1. Fibrinolytic therapy status :	<input type="radio"/> Given at this centre → (Please proceed to 2, 3, 4 below) <input type="radio"/> Given at another centre prior to transfer here <input type="radio"/> Not given-proceeded directly to primary angioplasty <input type="radio"/> Not given-Missed thrombolysis <input type="radio"/> Not given-patient refusal <input type="radio"/> Not given- Contraindicated
Fill in (2), (3), (4) only if you check 'Given at this centre' in (1) above	2. Fibrinolytic drug used: <input type="radio"/> Streptokinase <input type="radio"/> Others (t-PA, r-PA, TNK t-PA)
	3. Intravenous fibrinolytic therapy : a. Date: <input type="text"/> d <input type="text"/> d <input type="text"/> m <input type="text"/> m <input type="text"/> y <input type="text"/> y b. Time: <input type="text"/> h <input type="text"/> h <input type="text"/> m <input type="text"/> m (24hr)
	4. Door to needle time: (mins) <input type="text"/> Auto Calculated - (time pt presented to time of intravenous fb ty)

### SECTION 9 : INVASIVE THERAPEUTIC PROCEDURES

1. Did patient undergo cardiac catheterization on this admission at your centre?	<input type="radio"/> No <input type="radio"/> No - Transferred to another centre <input type="radio"/> Yes
2. Did patient undergo percutaneous coronary intervention on this admission?  (If No or Not Applicable, Please skip 5, 6 & 7b below)	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not applicable  <div style="display: flex; align-items: center;"> <input type="radio"/> a. For STEMI → <div style="border: 1px solid black; padding: 2px;">Urgent</div> → <input type="radio"/> Primary PCI  <input type="radio"/> <input type="radio"/> Rescue PCI  <input type="radio"/> <input type="radio"/> Facilitated PCI    <input type="radio"/> Elective → <input type="radio"/> Routine hospital practice? <input type="radio"/> Yes <input type="radio"/> No         </div> <div style="display: flex; align-items: center;"> <input type="radio"/> b. For NSTEMI / UA → <div style="border: 1px solid black; padding: 2px;">Urgent</div> → <input type="radio"/> Primary PCI  <input type="radio"/> <input type="radio"/> Elective → <input type="radio"/> Routine hospital practice? <input type="radio"/> Yes <input type="radio"/> No         </div>
3a. Number of diseased vessels:	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3
3b. Left Main Stem involvement:	<input type="radio"/> Yes <input type="radio"/> No
4. Culprit artery:	<input type="radio"/> LAD <input type="radio"/> LCx <input type="radio"/> RCA <input type="radio"/> LM <input type="radio"/> Bypass Graft
5. First balloon inflation: (for STEMI - Urgent PCI only)	a. Date: <input type="text"/> d <input type="text"/> d <input type="text"/> m <input type="text"/> m <input type="text"/> y <input type="text"/> y b. Time: <input type="text"/> h <input type="text"/> h <input type="text"/> m <input type="text"/> m (24hr)
6. Door to balloon time (mins): (for STEMI - Urgent PCI only)	Auto Calculated - (time pt presented to time of first angio balloon inflation )
7a(i). TIMI flow classification pre-PCI:	<input type="radio"/> 0 <input type="radio"/> I <input type="radio"/> II <input type="radio"/> III
7a(ii). Intra-coronary Thrombus present?	<input type="radio"/> Yes <input type="radio"/> No
7b. TIMI flow classification post-PCI:	<input type="radio"/> 0 <input type="radio"/> I <input type="radio"/> II <input type="radio"/> III
8. PCI type:	<input type="radio"/> Angioplasty <input type="radio"/> Stenting → a) <input type="checkbox"/> Direct stenting b) <input type="checkbox"/> Pre-dilatation done c) <input type="checkbox"/> Stent type: 'Drug-eluting' d) <input type="checkbox"/> Stent type: 'Bare-metal'
9. Did patient undergo CABG on this admission?	<input type="radio"/> Yes → a. Date of CABG: <input type="text"/> d <input type="text"/> d <input type="text"/> m <input type="text"/> m <input type="text"/> y <input type="text"/> y <input type="radio"/> No

a. Patient Name :		b. Local RN No (If applicable):	
c. Identification Card Number :			

#### SECTION 10 : PHARMACOLOGICAL THERAPY (used / given during admission)

Group	Given pre admission		Given during admission		Given after discharge	
1. ASA	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
2. ADP antagonist	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
3. GP receptor inhibitor	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No		
4. Unfrac Heparin	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No		
5. LMWH	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No		
6. Beta blocker	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
7. ACE Inhibitor	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
8. Angiotensin II receptor blocker	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
9. Statin	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
10. Other lipid lowering agent	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
11. Diuretics	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
12. Calcium antagonist	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
13. Oral Hypoglycaemic agent	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
14. Insulin	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
15. Anti-arrhythmic agent	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No

#### SECTION 11 : IN-HOSPITAL CLINICAL OUTCOMES

1. Number of overnight stays	a. CCU		days
	b. ICU / CICU:		days
2. Outcome:	<input type="radio"/> Discharged	a. Date : <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (dd/mm/yy)	
	<input type="radio"/> Transferred to another centre	a. Date : <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (dd/mm/yy)	
	<input type="radio"/> Died	a. Date : <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (dd/mm/yy)	b. Cause of Death : <input type="radio"/> Cardiovascular <input type="radio"/> Non Cardiovascular <input type="radio"/> Other, specify : _____
3. Final diagnosis at discharge:	<input type="radio"/> Q wave MI <input type="radio"/> non-Q wave MI <input type="radio"/> Unstable angina <input type="radio"/> Stable angina <input type="radio"/> Non-cardiac		
4. Bleeding Complication (TIMI Criteria):	<input type="radio"/> Major <input type="radio"/> Minor <input type="radio"/> None <input type="radio"/> Not stated / Inadequately described		



# NATIONAL CARDIOVASCULAR DISEASE DATABASE FOLLOW UP FORM AT 30 DAYS

For NCVD Use only:	
ID:	/
Centre:	

**Instruction:** This form is to be completed at patient follow-up 30 days (+ 2 weeks) after admission.  
Following may be performed by clinic visit or telephone interview.

Where check boxes  are provided, check (✓) one or more boxes. Where radio button  are provided, check (✓) one box only.

<b>A. Name of reporting centre:</b>	
<b>B. Patient Name :</b> Hj/Hjh/Dato'/Dr.	
<b>C. Identification Card Number :</b>	MyKad / MyKid: _____ - _____ - _____ Old IC: _____
	Other ID document No: _____ Specify type (eg.passport, armed force ID): _____
<b>D. Date of Follow up Notification:</b> _____ (dd/mm/yy)	

## SECTION 1: OUTCOME

<b>1. Outcome:</b>	1. Alive <input type="checkbox"/>				
	2. Died <input type="checkbox"/>	→ a. Date of death: _____ (dd/mm/yy) b. Cause of Death: <input type="radio"/> Cardiovascular <input type="radio"/> Non Cardiovascular <input type="radio"/> Other, specify: _____			
	3. Transferred to another centre : <input type="checkbox"/>	→ a. Date of last follow-up: _____ (dd/mm/yy) b. Name of Centre : _____			
	4. Lost to Follow up: <input type="checkbox"/>	→ a. Date of last follow-up: _____ (dd/mm/yy)			
<b>2. Cardiovascular readmission:</b>	1. ACS <input type="checkbox"/>	→ a. Date : _____ (dd/mm/yy) b. ACS Stratum: <input type="radio"/> STEMI <input type="radio"/> NSTEMI <input type="radio"/> UA			
	2. Heart failure <input type="checkbox"/>	→ a. Date : _____ (dd/mm/yy)			
	3. Revascularization <input type="checkbox"/>	→ a. Date : _____ (dd/mm/yy) b. Type of Revascularization : <input type="checkbox"/> 1. PCI → <input type="radio"/> Urgent <input type="radio"/> Elective <input type="checkbox"/> 2. CABG → <input type="radio"/> Urgent <input type="radio"/> Elective			
	4. Stroke <input type="checkbox"/>	→ a. Date : _____ (dd/mm/yy)			

## SECTION 2: CLINICAL HISTORY AND EXAMINATION (OPTIONAL)

<b>1. Angina Status:</b> (CCS classification)		<input type="radio"/> None <input type="radio"/> Class I <input type="radio"/> Class II <input type="radio"/> Class III <input type="radio"/> Class IV			
<b>2. Functional capacity:</b> (NYHA classification)		<input type="radio"/> None <input type="radio"/> NYHA I <input type="radio"/> NYHA II <input type="radio"/> NYHA III <input type="radio"/> NYHA IV			
<b>3. BP</b>	<b>a. Systolic:</b>	mmHg	<b>b. Diastolic:</b>	mmHg	
<b>4. Anthropometric:</b>	<b>a. Weight:</b>	kg	<b>b. Waist circumference:</b>	cm	
	<b>c. Hip circumference:</b>	cm			

## SECTION 3: INVESTIGATIONS (OPTIONAL)

<b>1. Lipid profile:</b>		<b>Values</b>	<b>Unit</b>	
a. Total cholesterol:		mmol/L		
b. HDL-C:		mmol/L		
c. LDL-C:		mmol/L		
d. Triglycerides:		mmol/L		
2. Left Ventricular Ejection Fraction:		%		

## SECTION 4: MEDICATIONS (OPTIONAL)

Group	Given	Group	Given
1. ASA	<input type="radio"/> Yes <input type="radio"/> No	9. Statin	<input type="radio"/> Yes <input type="radio"/> No
2. ADP antagonist	<input type="radio"/> Yes <input type="radio"/> No	10. Other lipid lowering agent	<input type="radio"/> Yes <input type="radio"/> No
3. GP receptor Inhibitor	<input type="radio"/> Yes <input type="radio"/> No	11. Diuretics	<input type="radio"/> Yes <input type="radio"/> No
4. Warfarin	<input type="radio"/> Yes <input type="radio"/> No	12. Calcium antagonist	<input type="radio"/> Yes <input type="radio"/> No
5. LMWH	<input type="radio"/> Yes <input type="radio"/> No	13. Oral Hypoglycaemic agent	<input type="radio"/> Yes <input type="radio"/> No
6. Beta blocker	<input type="radio"/> Yes <input type="radio"/> No	14. Insulin	<input type="radio"/> Yes <input type="radio"/> No
7. ACE Inhibitor	<input type="radio"/> Yes <input type="radio"/> No	15. Anti-arrhythmic agent	<input type="radio"/> Yes <input type="radio"/> No
8. Angiotensin II receptor blocker	<input type="radio"/> Yes <input type="radio"/> No		

## SECTION 5: REHABILITATION AND COUNSELLING (OPTIONAL)

1. Was patient referred to cardiac rehabilitation?	<input type="radio"/> Yes <input type="radio"/> No
2. Has patient stopped smoking?	<input type="radio"/> Yes <input type="radio"/> No



# NATIONAL CARDIOVASCULAR DISEASE DATABASE FOLLOW UP FORM AT 1 YEAR

For NCVD Use only:	
ID:	/
Centre:	

**Instruction:** This form is to be completed at patient follow-up 1 year ± 1 month after admission. Following may be performed by clinic visit or telephone interview.

Where check boxes  are provided, check (✓) one or more boxes. Where radio button  are provided, check (✓) one box only.

A. Name of reporting centre:											
B. Patient Name :	Hj/Hjh/Dato'/Dr.										
C. Identification Card Number :	MyKad / MyKid:					-		-		Old IC:	
	Other ID document No:					Specify type (eg.passport, armed force ID):					
D. Date of Follow up Notification:	(dd/mm/yy)										

## SECTION 1: OUTCOME

1. Outcome:	1. Alive <input type="checkbox"/>										
	2. Died <input type="checkbox"/>	→ a. Date of death:      (dd/mm/yy) b. Cause of Death: <input type="radio"/> Cardiovascular <input type="radio"/> Non Cardiovascular <input type="radio"/> Other, specify: _____									
	3. Transferred to another centre : <input type="checkbox"/>	→ a. Date of last follow-up:      (dd/mm/yy) b. Name of Centre : _____									
	4. Lost to Follow up: <input type="checkbox"/>	→ a. Date of last follow-up:      (dd/mm/yy)									
2. Cardiovascular readmission:	1. ACS <input type="checkbox"/>	→ a. Date :      (dd/mm/yy) b. ACS Stratum: <input type="radio"/> STEMI <input type="radio"/> NSTEMI <input type="radio"/> UA									
	2. Heart failure <input type="checkbox"/>	→ a. Date :      (dd/mm/yy)									
	3. Revascularization <input type="checkbox"/>	→ a. Date :      (dd/mm/yy) b. Type of Revascularization : <input type="checkbox"/> 1. PCI → <input type="radio"/> Urgent <input type="radio"/> Elective <input type="checkbox"/> 2. CABG → <input type="radio"/> Urgent <input type="radio"/> Elective									
	4. Stroke <input type="checkbox"/>	→ a. Date :      (dd/mm/yy)									

## SECTION 2: CLINICAL HISTORY AND EXAMINATION

1. Angina Status: (CCS classification)	<input type="radio"/> None	<input type="radio"/> Class I	<input type="radio"/> Class II	<input type="radio"/> Class III	<input type="radio"/> Class IV
2. Functional capacity: (NYHA classification)	<input type="radio"/> None	<input type="radio"/> NYHA I	<input type="radio"/> NYHA II	<input type="radio"/> NYHA III	<input type="radio"/> NYHA IV
3. BP	a. Systolic:	mmHg	b. Diastolic:	mmHg	
4. Anthropometric:	a. Weight:	kg	b. Waist circumference:	cm	
	c. Hip circumference:	cm			

## SECTION 3: INVESTIGATIONS

1. Lipid profile:	Values	Unit	
a. Total cholesterol:		mmol/L	
b. HDL-C:		mmol/L	
c. LDL-C:		mmol/L	
d. Triglycerides:		mmol/L	
2. Left Ventricular Ejection Fraction:		%	

## SECTION 4: MEDICATIONS

Group	Given		Group	Given	
1. ASA	<input type="radio"/> Yes	<input type="radio"/> No	9. Statin	<input type="radio"/> Yes	<input type="radio"/> No
2. ADP antagonist	<input type="radio"/> Yes	<input type="radio"/> No	10. Other lipid lowering agent	<input type="radio"/> Yes	<input type="radio"/> No
3. GP receptor inhibitor	<input type="radio"/> Yes	<input type="radio"/> No	11. Diuretics	<input type="radio"/> Yes	<input type="radio"/> No
4. Warfarin	<input type="radio"/> Yes	<input type="radio"/> No	12. Calcium antagonist	<input type="radio"/> Yes	<input type="radio"/> No
5. LMWH	<input type="radio"/> Yes	<input type="radio"/> No	13. Oral Hypoglycaemic agent	<input type="radio"/> Yes	<input type="radio"/> No
6. Beta blocker	<input type="radio"/> Yes	<input type="radio"/> No	14. Insulin	<input type="radio"/> Yes	<input type="radio"/> No
7. ACE Inhibitor	<input type="radio"/> Yes	<input type="radio"/> No	15. Anti-arrhythmic agent	<input type="radio"/> Yes	<input type="radio"/> No
8. Angiotensin II receptor blocker	<input type="radio"/> Yes	<input type="radio"/> No			

## SECTION 5: REHABILITATION AND COUNSELLING

1. Was patient referred to cardiac rehabilitation?	<input type="radio"/> Yes	<input type="radio"/> No
2. Has patient stopped smoking?	<input type="radio"/> Yes	<input type="radio"/> No



