APPENDIX B: STATISTICAL METHODS

The statistical analysis described below was conducted on data collected in the NCVD-ACS Registry from year 2014 to 2015.

The inclusion criteria were:

* all patients who had ACS procedures performed between 2014 and 2015
* all patients who are aged 20 years and above

The exclusion criteria were:

* all patients with unknown or missing ACS stratum
* all patients with the final diagnosis of either stable angina or non-cardiac condition

In general, the unit of analysis was the number of patients with admission due to ACS. A total of 17,380 patients were admitted due to ACS from 2014 to 2015 with 391 patients admitted in both years.

Table 1: Distribution of patients by number of admissions, NCVD-ACS Registry, 2014 – 2015

Year		Number of Admissions		
		1	2	Total
Number of Patients	2014	8,067	391	8,458
	2015	8,922	391	9,313
	Total	**16,989**	**782**	**17,771**

Statistical methods for most chapters involved descriptive analysis. For categorical and discrete data, we calculated frequency and percentage. For continuous data, the mean, standard deviation (SD), median, minimum and maximum values were calculated. An exception to this was the survival analyses, which were performed to evaluate the prognostic factors for in-hospital, 30-day and 1-year mortality in Chapter 5.

For all variables, percentages were only calculated for categories listed in the CRFs.

Missing data were reported for categorical, discrete and continuous data. No statistical imputation was applied to replace missing data. However, to avoid illogical ranges in continuous data, outliers were set to missing data based on acceptable range, as presented in a table below:

Fields	**Acceptable Range**
Age	≥ 20 years
Height	130 – 250 cm
Weight	30 – 200 kg
BMI	14 – 50 kg m^{-2}
WHR	0.7 – 3.0
Waist Circumference	70 – 130 cm
Hip Circumference	80 – 200 cm
Fasting Blood Glucose	3.0 – 50.0 mmol/L
Systolic blood pressure	50 – 270 mmHg
Diastolic blood pressure	10 – 170 mmHg
Pulse Pressure	1 – 100 mmHg
Heart rate	20 – 200 beats/min

Fields	Acceptable Range
Number of distinct episodes of angina	≤ 20 (0=no episodes)
Total cholesterol	2.0 – 25.0 mmol/L
HDL-C	0.5 – 5.0 mmol/L
LDL-C	0.5 – 20.0 mmol/L
HbA1c	4.0 – 32.0 %
Triglycerides	0.5 – 15.0 mmol/L
Left ventricular ejection fraction	5.0 – 90.0 %
Total admission	1 – 100 days
Number of days in CCU	1 – 30 days
Number of days in ICU/CICU	1 – 30 days
Pain-to-needle time	15 – 1440 minutes
Door-to-needle time	1 – 1440 minutes
Door-to-balloon time	1 – 1440 minutes

The data was analysed based on the focus of each report chapter as described below.

Patient Characteristics

Patient characteristics were summarised in Chapter 2. Number of patients in each year was determined based on their admission year due to ACS. The results presented the patients' age, gender, ethnicity, coronary risk factors, co-morbidities and other variables in the CRF.

Cardiac Presentation

Chapter 3 includes an analysis of the clinical presentations, baseline investigations, electrocardiography, clinical diagnosis at admission, fibrinolytic therapy and invasive therapeutic procedures. An analysis of STEMI time-to-treatment was performed in which we excluded any illogical values of time-to-treatment (such as negative values for pain-to-needle time and door-to-balloon time).

Treatment

Summary of treatments is presented in Chapter 4. The summary of treatments includes duration of hospitalisation, admission days in CCU and ICU, types of treatment and pharmacological therapy given during admission.

Clinical Outcomes

The patient outcomes at discharge, 30-day and 1-year follow-up are presented by their ACS stratum, by pre-morbid conditions and types of treatment. In order to evaluate the status of alive or deceased, individual patients were matched against the status provided by the Malaysian National Registration Department (NRD). Patients were considered as alive at the time of follow-up if the date of their death was not provided in the NRD dataset. Prognostic factors for in-hospital, 30-day and 1-year mortality were also presented in Chapter 5.