PUSAT PERUBATAN UNIVERSITI MALAYA

ILMU PUNCA KEMAJUAN

The disease burden of cardiac in-patient cases in 2020 according to My-DRG code at a teaching hospital

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Introduction

- Cardiovascular Diseases (CVD) pose a significant threat to the world. It causes considerable disease and economic burdens due to the complexity of the disease and the complications.

- According to the World Health Organization (WHO), in general, Non-Communicable Diseases (NCD) were responsible for 73.4% of global deaths (2017), and the main attribute was cardiovascular diseases.
  - CVD caused→ 17.9 million deaths accounting for 44% of global NCD related deaths

- It was estimated that the disease burden of CVD to reach 23.6 million people annually by 2030.

- The incident and the outcome of CVD varies between countries.
  - The burden of CVD remains disproportionately larger in low and middle-income countries (LMICs) compared to high-income countries (HICs)
    - More than 80% of CVD deaths occur in LMICs

Introduction

- CVD is also the leading cause of death in Malaysia, however there is limited reported data on the exact magnitude of the disease burden.

- In Malaysia, the NCVD-ACS (National Cardiovascular Disease Database – Acute Coronary Syndrome) registry showed that the incidence peak is between 51 – 60 years old [in comparison with Thailand (63.5 years old) & Singapore (68.3 – 69.2 years old)].

- It was estimated that, the three main NCDs (CVD, diabetes and cancer) resulted in RM12.88 billion cumulatively every year with CVDs, as the main cost driver.

- Prior to this study, the use of casemix codes or Diagnosis-Related Group (DRG) to describe the disease burden is limited.

  - Using case-mix in classifying various types of CVDs in University Malaya Medical Centre (UMMC) will help to understand the economic implications of the disease in the centre.

  - Implication of using casemix → Help for better and efficient management in treating patients with CVDs and will improve the quality of services in UMMC.

Aims of study

To establish the casemix codes of patients with CVDs treated in UMMC

To conduct casemix analysis based on the codes to understand the disease burden of cardiac in-patient cases in UMMC

1. To establish the casemix codes of patients with CVDs treated in UMMC

- Patients with CVD cases admitted from January to December 2020 were identified.

- Patients' data on hospital admissions were extracted from the Hospital Information System (HIS) and discharge summaries.

- The data include:
  - Sociodemographic characteristics of patients such as patient identification, date of birth, age, admission date, discharge date, gender and discharge status
  - ICD-10 codes for the diagnoses (Primary and secondary diagnoses)
  - ICD-9-CM (Clinical procedures)

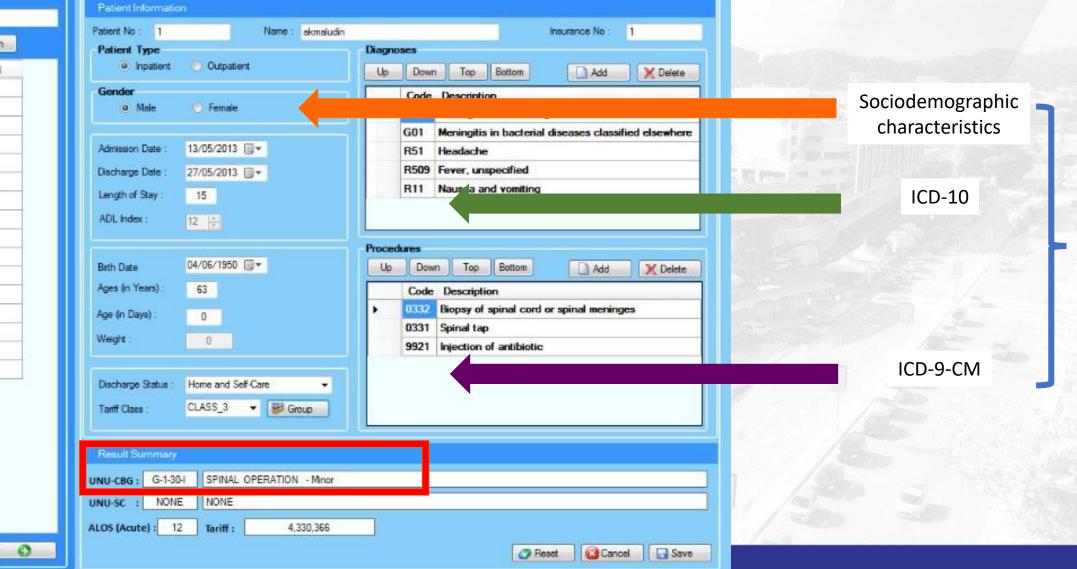- Extracted data were imputed into the case-mix grouper to obtain the DRGs

Specific Objectives and Methods

Sociodemographic characteristics

ICD-10

ICD-9-CM

2. To conduct casemix analysis based on the codes to understand the disease burden of cardiac in-patient cases in UMMC

- DRGs were arranged according to the number of cases seen and top five DRGs were identified.

- The details of the top five DRGs were reported which include:

  - DRG codes

  - Description of the code

  - Number of cases

  - Mean age (years)

  - Average length of stay (days)

Results

- Based on the HIS data; total admission for CVD cases in 2020 at UMMC were **6562**

- Total episode of hospital admissions was 42,804 → which made CVD cases [(6562/42,804) or **15%** of total admission)]

- In total, **72 DRGs** was found for CVD cases

- Top five DRGs were:
  - Cardiac Catheterization (I-1-15-I)
  - Angina Pectoris & Chest Pain (I-4-20-I)
  - Atherosclerosis (I-4-16-I)
  - Acute Myocardial Infarction (I-4-10-I)
  - Peripheral & Other Vascular Diseases (I-4-15-I)

	Diagnosis-Related Group (DRG)	Description	Number of cases (% of cardiac cases)	Mean Age (years)	ALOS (days)
1	I-1-15-I	Cardiac Catheterization	1620 (25%)	57.76	12.24
2	I-4-20-I	Angina Pectoris & Chest Pain	789 (12%)	60.34	3.57
3	I-4-16-I	Atherosclerosis	441 (7%)	61.85	3.83
4	I-4-10-I	Acute Myocardial Infarction	340 (5%)	59.66	4.43
5	I-4-15-I	Peripheral & Other Vascular Diseases	305 (5%)	61.39	6.64

Discussion

- Findings in this study were consistent with data from other hospitals in Malaysia, which reported that the commonest casemix codes → Unstable Angina, Stroke (either haemorrhage or infarction), Congestive Heart Failure and Essential (primary) hypertension (Ministry of Health Malaysia, 2013).

- However, the top five cardiac cases treated at UMMC were in the 'mild' group in casemix, which reflected cases that is less complex and utilize minimal resources for the clinical management.

	Diagnosis-Related Group (DRG)	Description
1	I-1-15-I	Cardiac Catheterization
2	I-4-20-I	Angina Pectoris & Chest Pain
3	I-4-16-I	Atherosclerosis
4	I-4-10-I	Acute Myocardial Infarction
5	I-4-15-I	Peripheral & Other Vascular Diseases

**In the DRG code, the final digit, which is written as a roman number reflects the resource intensity level, which is mild, moderate or severe. The bigger the number, the greater the healthcare resource utilization required, and therefore the higher the costs.

Discussion

- As a tertiary and teaching hospital, UMMC should be treating more severe and complicated cardiac cases.

- This observation could be due to:

  - **Incomplete discharge summary** → The more severe cases which required admission to ICU could had been missed since the discharge summary were mostly incomplete. Therefore, treating clinicians are required to document all the primary and secondary diagnoses with complete procedures done during the treatment episode to improve the quality of the discharge summary.

  - **Poor coding** →The implementation of casemix in UMMC is still in the initial stage and thus more training on casemix coding would need to be given to the treating physicians and medical officers.

  - **Lack of man power or trained coders to do casemix coding** → The coders in the medical record department in UMMC are not familiar with the casemix codes as they are used to the old coding system such as SNOMED codes, therefore more training are required to equip them with the skills on casemix codes.

- The magnitude of burden of CVD cases is significantly high and therefore efficient clinical management and adequate resource alloncation are important to ensure the quality of care for the patient.

- This study is one of the improtant preliminary study to understand the disease burden of cardiac in-patient cases in UMMC.

- However, it was found that majority of the cases admitted in UMMC were in the 'mild' casemix group, which might not reflect the function of UMMC as a tertiary hospital. This findings could be due to:

  - Lack of training on casemix coding and incomplete dischrage summary → training for coders and medical personnel that involve in casemix coding is crucial

- Casemix is a relevant tool to assess the workload and effeciency of care provided by the hospital with good documentation of data.

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