

ISPOR 7th Asia-Pacific Conference

## Introduction to the Casemix Database in Malaysia, Indonesia, and Philippines

**Prof. Syed Aljunid**

Kuwait University & Universiti Kebangsaan Malaysia

**Dr. Soraya Azmi**

Azmi Burhani Consulting, Malaysia

**Mr. Adrian Goh**

Azmi Burhani Consulting, Malaysia



## Panellists

### **Prof. Syed Aljunid PHD**

Professor and Chair, Dept. of Health Policy and Management,  
Faculty of Public Health, Kuwait University, &  
International Centre for Casemix and Clinical Coding,  
Faculty of Medicine, National University of Malaysia

### **Dr. Soraya Azmi MBBS, MPH**

Managing Director, Azmi Burhani Consulting & Veras Research, Petaling Jaya,  
Malaysia

### **Adrian Goh B.Ec, M.Ec**

Manager, Azmi Burhani Consulting & Veras Research, Petaling Jaya, Malaysia

# Workshop Overview

- Content of Casemix and how data is collected
- Differences between country datasets
- Examples of how Casemix data has been used
- Workshop discussion

3



INTERNATIONAL CENTRE FOR CASEMIX AND CLINICAL CODING (ITCC-UKM)  
FACULTY OF PUBLIC HEALTH, KUWAIT UNIVERSITY



ISPOR AP Conference 2016 Workshop

## An Introduction to the Casemix Database in Malaysia, Indonesia, and Philippines:

### **Professor Dr Syed Mohamed Aljunid**

*MD (UKM) MPH (Singapore) PhD (London); DLSHTM (London); FAMM, FPHMM*

***Professor of Health Policy and Management***

***Faculty of Public Health***

***Kuwait University***

**&**

***Professor of Health Economics & Public Health Medicine***

***National University of Malaysia***

**casemix** SOLUTIONS

Copyright of ITCC-UKM

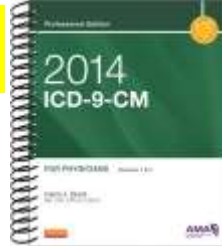


# What is Casemix system?



14,500 Codes

**Casemix  
-DRG**



8,500 Codes

**A-1-20-III**

**Diagnosis Related Group (DRG)**

1,200 Groups/Codes



# UNU-CBG: The New Casemix Grouper

- ◆ Grouper developed by researchers from United Nations University and ITCC-UKM
  - UNU-International Institute For Global Health (Kuala Lumpur)
  - UNU-International Institute For Software Technology (Macau)
- ◆ Research and Collaboration
  - ITCC- International Training Centre on Case-Mix and Clinical Coding
  - MOH of Developing Countries
  - Asia Pacific Network of FIC
  - WHO-FIC (ICD-10 and Procedure Classifications)
- ◆ United Nations University
  - United Nations Agency
  - Non-for Profit and No Commercial Interest
  - Priority to support developing countries to achieve MDGs



## What is UNU-CBG Grouper?

- ◆ Universal Grouper
  - Cover all types of patients care
    - Acute (In-patient/Outpatient)
    - Sub-Acute (Moderately complex cases)
    - Chronic Case (Long Stay Cases)
- ◆ Dynamic Grouper
  - Total number of CBGs can be set-according to need of the country
  - Severity level is not static
  - Depending on types of patient care
    - I to III
    - I to IV
    - I to IX
    - I to X
  - Very refined classifications
- ◆ Advance Grouper
  - Can be used with future changes in diagnosis and procedure classifications (ICD-11 and ICHI classifications)

**casemix** SOLUTIONS



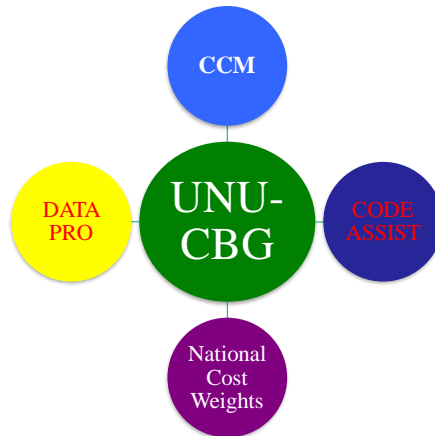
## UNU-CBG Casemix System: SERVICES COVERED

- ◆ Hospital In-patient
- ◆ Day Care Surgery
- ◆ Specialist Clinic
- ◆ Emergency Room
- ◆ General Out-patient
- ◆ Rehabilitation
- ◆ Chemotherapy and Radiotherapy
- ◆ Mental Health Services and Procedures
- Chronic cases
- Long Staying patients
- Specific Package Groups
  - ◆ Package Out Patient
  - ◆ Prostheses
  - ◆ Drugs
  - ◆ Procedures
  - ◆ Investigations

**casemix** SOLUTIONS



# Components of UNU Casemix System



casemix SOLUTIONS



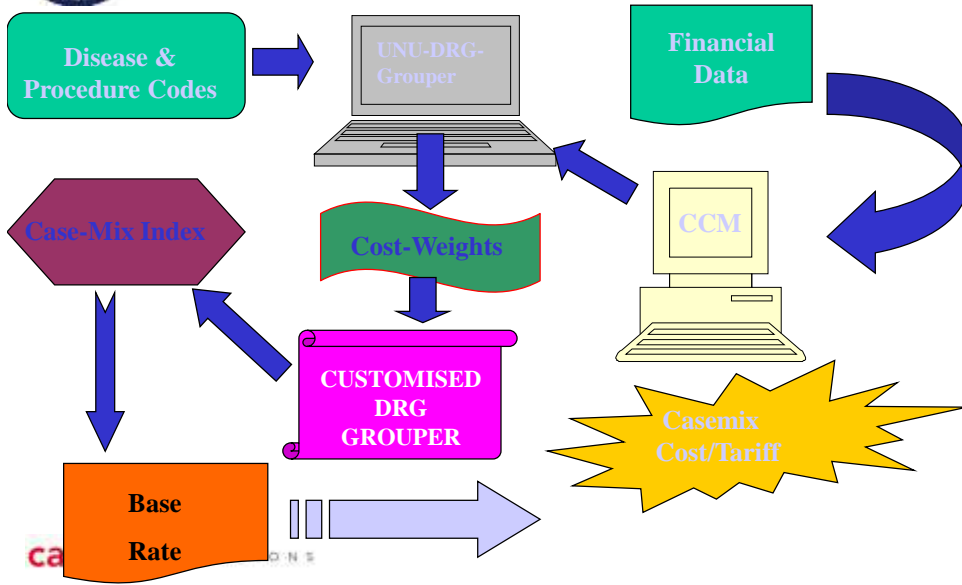
# Softwares in CaseMix System

- ◆ **Digital Coding Tool**
  - DataTool Pro- Assist to enhance productivity of Coders
  - UNU-Code Assist- Assist in Verifications of Casemix coding and grouping
- ◆ **Casemix Grouper**
  - UNU-CBG Grouper
- ◆ **Costing Tool**
  - CCM Version 2.0-UKM/UNU
  - Costing Template for Hospital Base-Rates
  - Costing Template for National Tariff

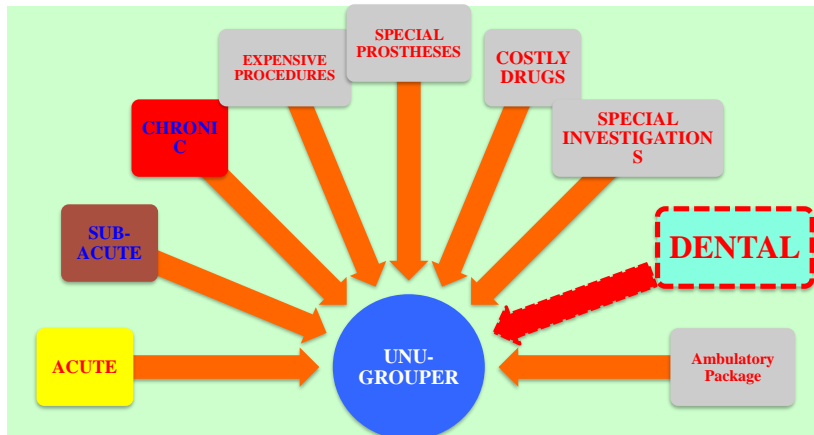
casemix SOLUTIONS



### MODEL FOR IMPLEMENTATION OF CASEMIX SYSTEM IN DEVELOPING COUNTRIES

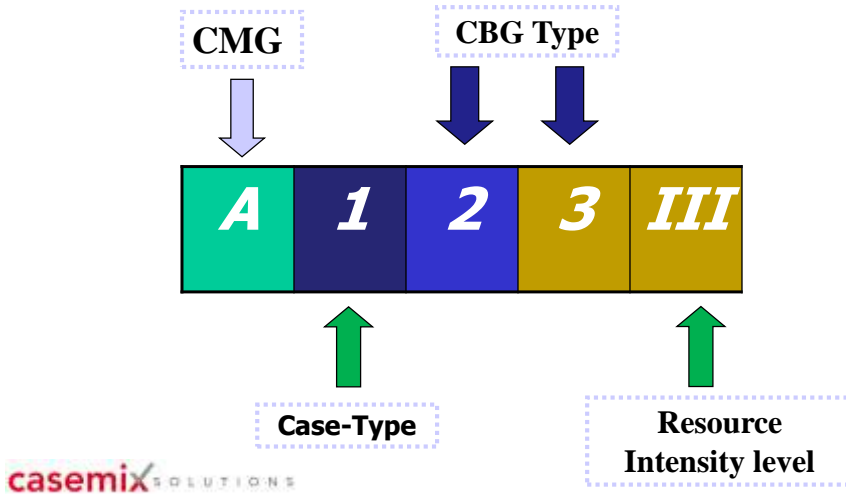


### NINE COMPONENTS OF UNU-CASEMIX SYSTEM



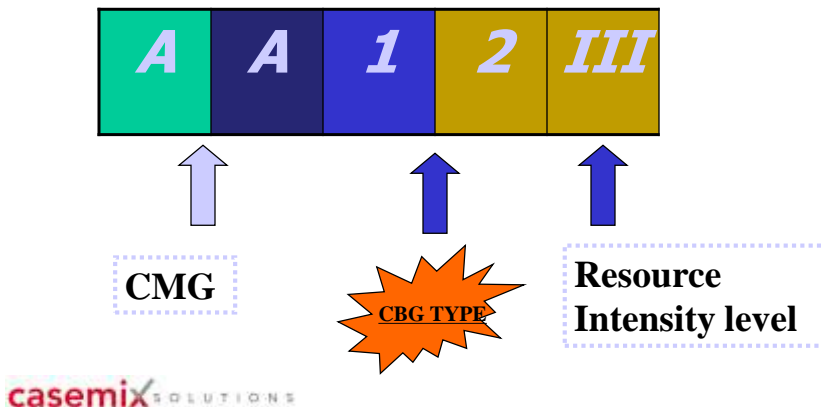


# UNU-IIGH Casemix Grouper Ver 4.0: 5 Digit System (Acute)



# UNU-IIGH Casemix Grouper Ver 4.0: 5 Digit System

## SPECIAL GROUPS CBGs (Sub-acute/Chronic/Special Groups/Package)



# Introduction to the Casemix Database in Malaysia, Indonesia, and Philippines

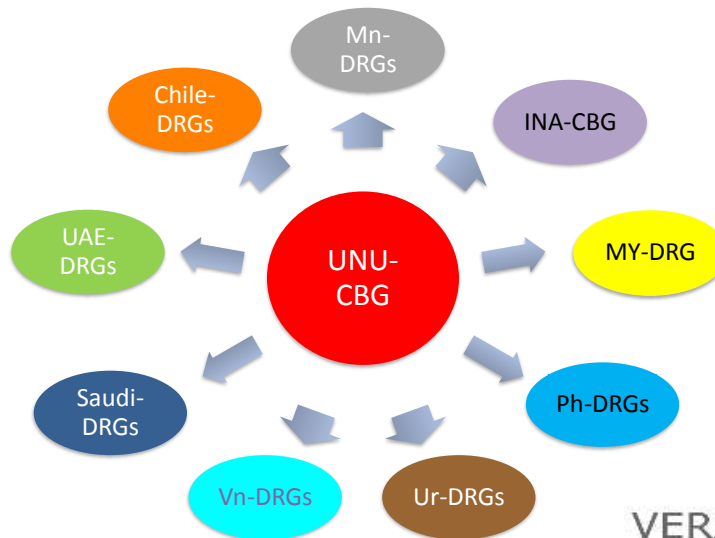
Content and collection of Casemix data in  
Malaysia, Philippines and Indonesia

**Dr Soraya Azmi**

Azmi Burhani Consulting & Veras Research, Malaysia



## Casemix Around the World





## Casemix in South East Asia



17

## Information in Casemix Data

- Demographic Data of patients: Age, Gender
- Length of Stay
- Primary Diagnosis
- Secondary Diagnosis: Complications and Co-morbidities
- Primary Procedures
- Secondary Procedures
- Costly Drugs, Procedures and Prosthesis
- Outcome of Care
- Quality of Life Score (WHO-DAS)
- Cost per DRGs/ CBGs

18

## Malaysian Casemix System (MY-DRG)

- MY-DRG system has been used since 2002 (HUKM)
- Based on UNU-CBG casemix System
- Casemix Major Groups: 32; CBG: 1,077
- Cover both inpatient and outpatients
  - Inpatient: 789 groups
  - Outpatient: 288 groups
- Three severity levels
- Dental Casemix (DD-DRG) launched in 2015
  - 150 groups
- 2 teaching hospitals (UKM and USM)
- Use:
  - For Budgeting and Quality Assurance Monitoring
  - R&D: CEA and BIA studies

## Indonesian Casemix System (INA-CBG)

- Development began in 2005 (starting with JAMKESMAS)
- Adopted by JKN (National Health Insurance) for ALL Hospitals in Indonesia since January 2014
- Based on UNU-CBG Casemix System
- Casemix Major Groups: 35; CBGs: 1,250
- Covers both inpatients and outpatients
  - Inpatients: 288
  - Outpatients: 789
  - Special Groups: 7 Components: 173
- Sub-acute and chronic cases: WHO-DAS Quality of Life Scale
- Uses Five-Digit System
- Severity level: 3 for Acute; Special CMG: 15 levels
- Use: Plan for Provider Payment Method
  - In process to adopt full UNU-CBG system

## Philippines Casemix System (PH-DRG)

- Developed since 2010
- Based on UNU-CBG Casemix System
- Under Philhealth for prospective payment of providers
- Data from 19 hospitals: 13 public and 6 private hospitals
- Casemix Major Groups: 23; CBGs: 314
- Covers only inpatients
  - 314 DRGs
- Uses Four-Digit System
- Severity level: 1
- Use: Plan for Provider Payment Method
  - In process to adopt full UNU-CBG system

## Messages



- There are differences between countries
- Basic Casemix structure is the same
- Whether and what type of insurance systems in place

# Introduction to the Casemix Database in Malaysia, Indonesia, and Philippines

## Using Casemix Data for HEOR Research

**Adrian Goh**

Azmi Burhani Consulting, Malaysia



## Uses of Casemix Data

- Burden of disease research
  - Disease prevalence and incidence
  - Health outcomes
  - Duration of hospitalisation
- Costing & health economics
  - Cost of managing the condition - DRG based
  - Data input to cost-effectiveness analysis





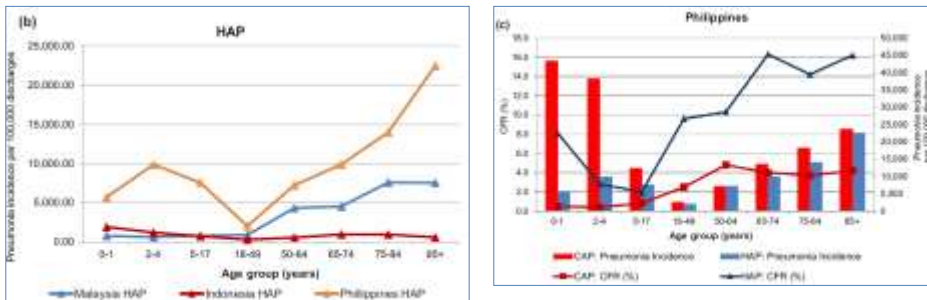
## Assessing the burden of pneumonia using administrative data from Malaysia, Indonesia, and the Philippines



Soraya Azmi <sup>a\*</sup>, Syed Mohamed Aljunied <sup>b,c</sup>, Namaitijiang Maimaiti <sup>d</sup>, Al-Abed Ali <sup>e</sup>, Amrizal Muhammad Nur <sup>e</sup>, Madeleine De Rosas-Valera <sup>f</sup>, Joyce Encluna <sup>g</sup>, Rosminah Mohamed <sup>h</sup>, Bambang Wibowo <sup>i</sup>, Kalsum Komaryani <sup>j</sup>, Craig Roberts <sup>k</sup>

	Malaysia	Philippines	Indonesia
Hospitals	2 academic hospitals	42 hospitals	18 public hospitals
Type of reimbursement	Paid by government	Social insurance	Social insurance for poor

## Results



Item	Malaysia		Indonesia		Philippines	
	CAP	HAP	CAP	HAP	CAP	HAP
Mean LOS (days)	8.6	10.2	6.1	7.9	6.2	6.9
Mean cost per admission	\$927	\$1482	\$1208	\$1373	\$254	\$275
Overall cost (mill.)	\$2.26	\$1.88	\$1.61	\$1.00	\$1.84	\$0.78

CAP = community acquired pneumonia; HAP = hospital-acquired pneumonia

- Poster: S. Azmi, S. Aljunid, A. Goh, A. et al. Cost and Treatment Duration for Acute Myocardial Infarction in South East Asia. Value Health June 2012, 15(4): A117–A118
- Duration and cost of an episode of hospitalised acute myocardial infarction in Indonesia, Malaysia and Philippines.

	Average LOS		Cost (US\$)	
	Days	sd	Mean	sd
<b>Indonesia</b>				
Mild MI	6.0	4.0	1,075.48	711.61
Moderate MI	8.3	5.1	1,698.20	1,045.52
Severe MI	13.8	9.1	2,449.79	1,615.44
<b>Malaysia (HUKM)</b>				
Mild MI	5.8	4.4	1,264.33	955.1
Moderate MI	7.5	5.6	1,615.92	1,241.40
Severe MI	9.2	6.5	1,999.04	1,415.92
<b>Philippines</b>				
Mild MI	4.5	2.5	1,220.12	689.78
Moderate MI	7.1	4.0	1,926.60	1,089.18
Severe MI	10.2	5.8	2,779.28	1,571.24

27



ELSEVIER

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: [www.elsevier.com/locate/vhri](http://www.elsevier.com/locate/vhri)



### Economic Impact of Pneumococcal Protein-D Conjugate Vaccine (PHiD-CV) on the Malaysian National Immunization Programme

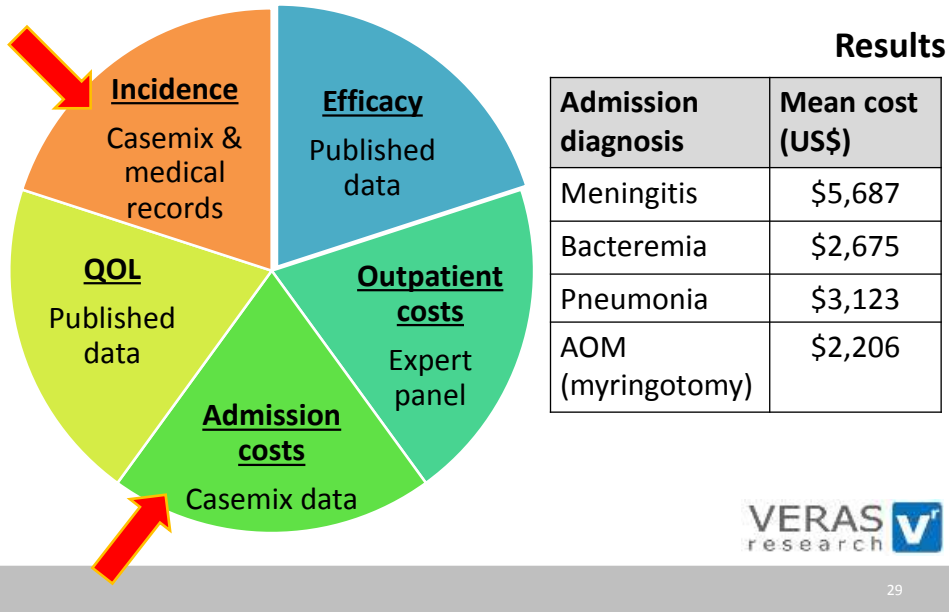


Syed Aljunid, MD, MSc, PhD, FAMM<sup>1,2,\*</sup>, Namaitjiang Maimaiti, LL.B, MSc, PhD<sup>1,3</sup>,  
Zofar Ahmed, MBBCh, MBA, PhD<sup>4</sup>, Amrizal Muhammad Nur, MD, MSc, PhD<sup>5</sup>,  
Zaleha Md Isa, PhD<sup>6</sup>, Soraya Azmi, MD, MPH<sup>7</sup>, Saperi Sulong, MD, PhD<sup>8</sup>

- Casemix data provided disease incidence rates and cost data inputs for a CE model
- Data coverage:
  - 3 MOH hospitals, 1 university hospital

28

## Cost-Effectiveness Analysis



## Conclusions

- How has Casemix data been used for research?
  - Limited use so far
  - Estimate disease prevalence & incidence
  - Estimate outcomes (mortality, morbidity)
  - Estimate treatment costs by 3 levels of severity
  - To provide inputs for CE models
- How can it be used?
  - National epidemiological studies (especially in Indonesia and Philippines)
  - Potential for greater use in economic studies
  - Cross-country comparison research

## Introduction to the Casemix Database in Malaysia, Indonesia, and Philippines

### Workshop Discussion

**Prof. Syed Aljunid**

Kuwait University & Universiti Kebangsaan Malaysia



INTERNATIONAL CENTRE FOR CASEMIX AND CLINICAL CODING (ITCC-UKM)  
FACULTY OF PUBLIC HEALTH, KUWAIT UNIVERSITY



### Limitations of Casemix data

- ◆ **Casemix Costing Data is based on Disease-Related Groups**
  - Cost of each item cannot be directly obtained in the casemix costing data-base
    - E.g. Minor Lab data, cost of drugs, cost of minor surgical procedures, cost of minor radiology procedure
- ◆ **Casemix System varies between countries**
  - Differences in collection of data across countries
  - Reflects the objectives of Casemix data in each country (reimbursement vs budgeting vs research)
- ◆ **Casemix Tariff differs between countries**
  - Depending on incentives and disincentives in the SHI



## Workshop Questions

---

1. What study question would you like to ask using the Casemix data?
2. For your study objectives, what are the strengths and weaknesses of Casemix data from your perspective?
3. How useful would it be for your purposes?

33

---

## Open Discussion



34

# Thank you

