ISPOR 7th Asia-Pacific Conference

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

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Panellists

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Workshop Overview

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

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
What is Casemix system?

Casemix - DRG

14,500 Codes

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)

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
Components of UNU Casemix System

- **CCM**
- **UNU-CBG**
- **National Cost Weights**
- **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
MODEL FOR IMPLEMENTATION OF CASEMIX SYSTEM IN DEVELOPING COUNTRIES

Disease & Procedure Codes → UNU-DRG-Grouper → Financial Data
Case-Mix Index
Cost-Weights → CUSTOMISED DRG GROUPER

Base Rate

NINE COMPONENTS OF UNU-CASEMIX SYSTEM

EXPENSIVE PROCEDURES → ACUTE
SPECIAL PROSTHESSES → DENTAL
COSTLY DRUGS → CHRONIC
SPECIAL INVESTIGATIONS → SUB ACUTE
Ambulatory Package

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

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

Malaysia Casemix:
2 Universities
600,000 Patients/year

Indonesia Casemix:
1,800 hospitals
9 million Patients/year

Philippines Casemix:
13 public & 6 private hospitals
3 million Patients

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
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

DRG = Diagnosis Related Groups
Assessing the burden of pneumonia using administrative data from Malaysia, Indonesia, and the Philippines

Soraya Azmi a, Syed Mohamed Aljunid b, Namaitijiang Maimaiti d, Al-Abed Ali e, Amrizal Muhammad Nur c, Madeleine De Rosas-Valera f, Joyce Encluna f, Rosmaniah Mohamed b, Bambang Wirbowo f, Kalsum Komaryani f, Craig Roberts k

<table>
<thead>
<tr>
<th>Type of reimbursement</th>
<th>Malaysia</th>
<th>Philippines</th>
<th>Indonesia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hospitals</td>
<td>2 academic hospitals</td>
<td>42 hospitals</td>
</tr>
<tr>
<td>Paid by government</td>
<td>Social insurance</td>
<td>Social insurance for poor</td>
<td></td>
</tr>
</tbody>
</table>

Results

<table>
<thead>
<tr>
<th>Item</th>
<th>Malaysia</th>
<th>Indonesia</th>
<th>Philippines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean LOS (days)</td>
<td>8.6</td>
<td>10.2</td>
<td>6.1</td>
</tr>
<tr>
<td>Mean cost per admission</td>
<td>$927</td>
<td>$1482</td>
<td>$1208</td>
</tr>
<tr>
<td>Overall cost (mill.)</td>
<td>$2.26</td>
<td>$1.88</td>
<td>$1.61</td>
</tr>
</tbody>
</table>

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


• Duration and cost of an episode of hospitalised acute myocardial infarction in Indonesia, Malaysia and Philippines.

<table>
<thead>
<tr>
<th></th>
<th>Average LOS</th>
<th>Cost (US$)</th>
<th>Mean</th>
<th>sd</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Days</td>
<td>Mean</td>
<td>sd</td>
<td>Mean</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Mild MI</td>
<td>6.0</td>
<td>4.0</td>
<td>1,075.48</td>
</tr>
<tr>
<td></td>
<td>Moderate MI</td>
<td>8.3</td>
<td>5.1</td>
<td>1,698.20</td>
</tr>
<tr>
<td></td>
<td>Severe MI</td>
<td>13.8</td>
<td>9.1</td>
<td>2,449.79</td>
</tr>
<tr>
<td>Malaysia (HUKM)</td>
<td>Mild MI</td>
<td>5.8</td>
<td>4.4</td>
<td>1,264.33</td>
</tr>
<tr>
<td></td>
<td>Moderate MI</td>
<td>7.5</td>
<td>5.6</td>
<td>1,615.92</td>
</tr>
<tr>
<td></td>
<td>Severe MI</td>
<td>9.2</td>
<td>6.5</td>
<td>1,999.04</td>
</tr>
<tr>
<td>Philippines</td>
<td>Mild MI</td>
<td>4.5</td>
<td>2.5</td>
<td>1,220.12</td>
</tr>
<tr>
<td></td>
<td>Moderate MI</td>
<td>7.1</td>
<td>4.0</td>
<td>1,926.60</td>
</tr>
<tr>
<td></td>
<td>Severe MI</td>
<td>10.2</td>
<td>5.8</td>
<td>2,779.28</td>
</tr>
</tbody>
</table>

Cost-Effectiveness Analysis

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

Results

<table>
<thead>
<tr>
<th>Admission diagnosis</th>
<th>Mean cost (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meningitis</td>
<td>$5,687</td>
</tr>
<tr>
<td>Bacteremia</td>
<td>$2,675</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>$3,123</td>
</tr>
<tr>
<td>AOM (myringotomy)</td>
<td>$2,206</td>
</tr>
</tbody>
</table>

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
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Workshop Discussion

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Kuwait University & Universiti Kebangsaan Malaysia

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?

Open Discussion
Thank you