Development of iDRG and Costing Study

Presented at The 16th IHEA World Congress 2025
Bali, 20th July 2025

Center for Health Financing

Ministry of Health, Republic of Indonesia

Outline

1. Background
2. Development of iDRG
3. Costing to Improve Appropriateness of iDRG Payments

Background

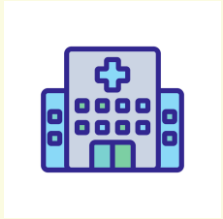
Background

Indonesia's National Health Insurance (JKN) uses a DRG payment system in which cases are grouped using the INA-CBG (Indonesian Case Base Group) classification.

Indonesia first introduced JKN in 2014 along with the establishment of BPJS Kesehatan (Social Security Administration for Health).

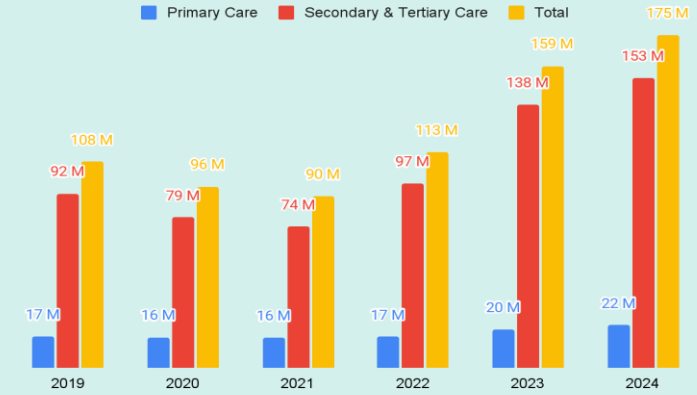
Two types of healthcare payment systems are currently in use:

Capitation in Primary Care



INA-CBG in Secondary & Tertiary Care

Annually, **more than 80%** of total claims for JKN are secondary & tertiary care (hospital services).



M = in Trillion Rupiah

	2019	2020	2021	2022	2023	2024
Primary Care	15%	17%	18%	15%	13%	13%
Secondary & Tertiary Care	85%	83%	82%	85%	87%	87%

The need to develop Indonesia's own DRG payment system:

1. To enhance the precision of case classification based on clinical relevance and similarity in resources utilization;
2. To provide a more accurate representation of diseases patterns within the population;
3. To integrate advanced medical technologies and reflect an up-to-date medical practices
4. To adapt to fluctuations in the cost of pharmaceuticals, medical supplies, and other healthcare inputs.

Development of iDRG

The Long Journey Towards Developing Indonesia's Own iDRG

DRG Workshop (for all MDC) involving DRG experts & professional organization
2015 – 2018

2019 – 2020
Inpatient Reclassification in each MDC involving related professional organization

INA-Grouper Inpatient Trials, Evaluation, and Launching involving hospitals, BPJS Kesehatan, and professional organizations
2020 – 2022

2023 – 2024
Outpatient Reclassification in each MDC involving related professional organizations

INA-Grouper Outpatient Trials, Evaluation, and Launching involving hospitals, BPJS Kesehatan, and professional organizations
2024 – 2025

January 2025
"iDRG" was introduced as the official name for the new Indonesian Diagnosis Related Group classification

iDRG Socialization and Trials involving all stakeholders in JKN Ecosystem
Now

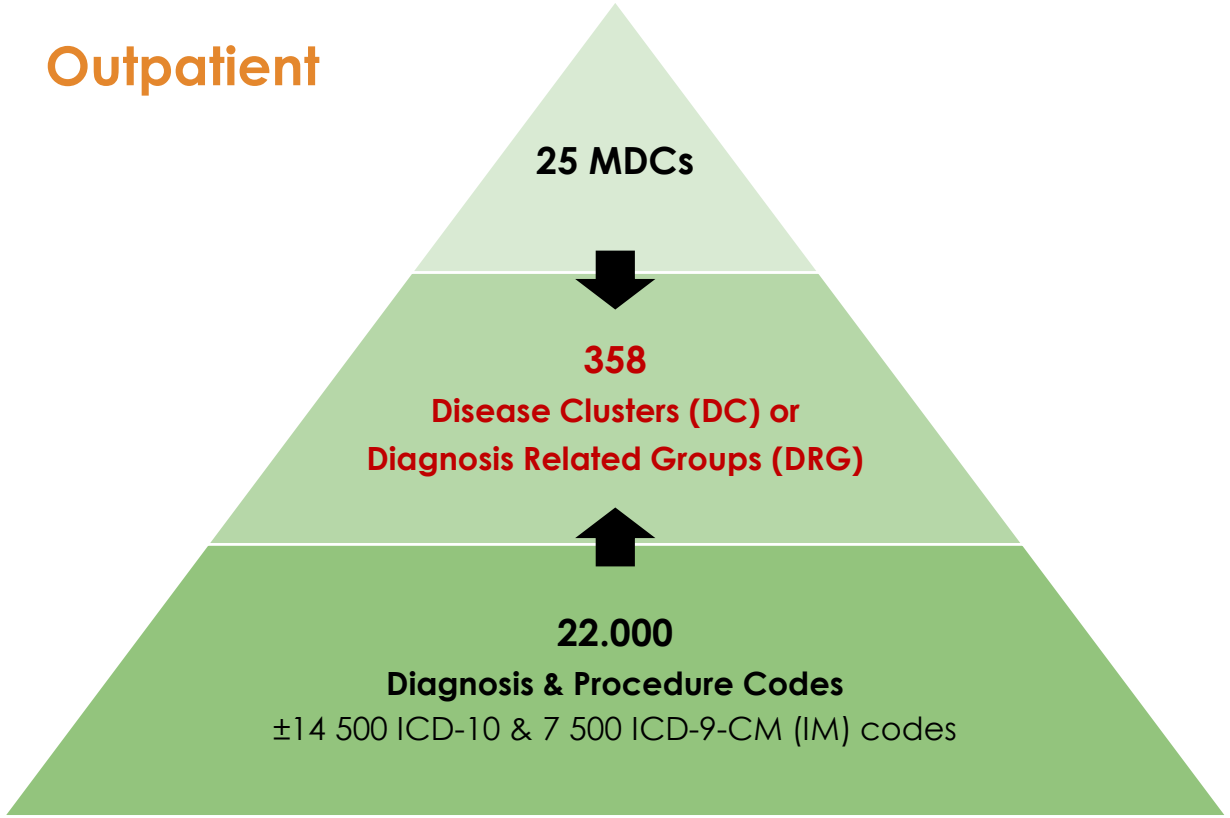
- **Costing Study**
- **CART analysis - PCCL**
- **COV Assessment - homogeneity**
- **RIV Assessment - identification in resource consumption between groups**

Kemenkes

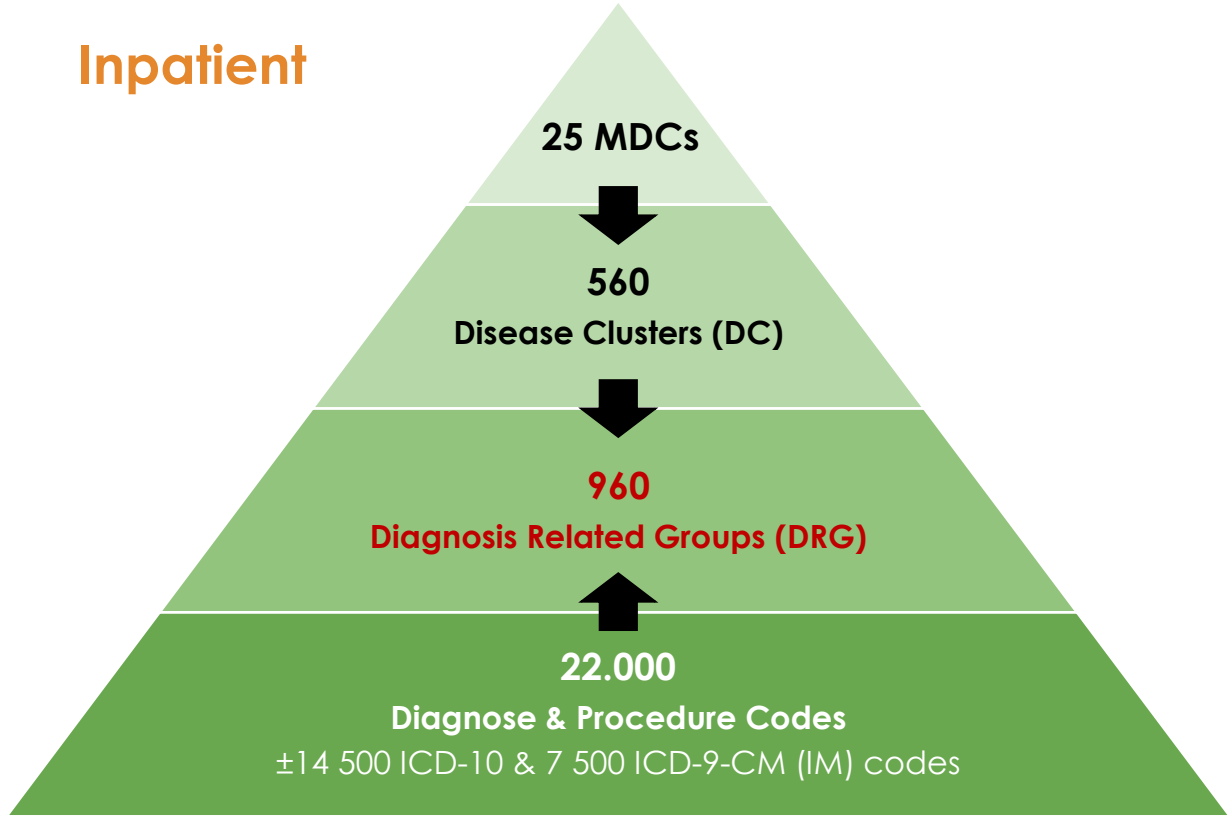
The 1st Version of iDRG

- **iDRG includes both inpatient and outpatient care** at the hospital which allows Indonesia to calibrate incentives towards outpatient rather than inpatient care
- **The iDRG increased the number of groups** compared to INA-CBG, to better reflect the morbidity patterns and resource use differentials in the different groups

Outpatient



Inpatient



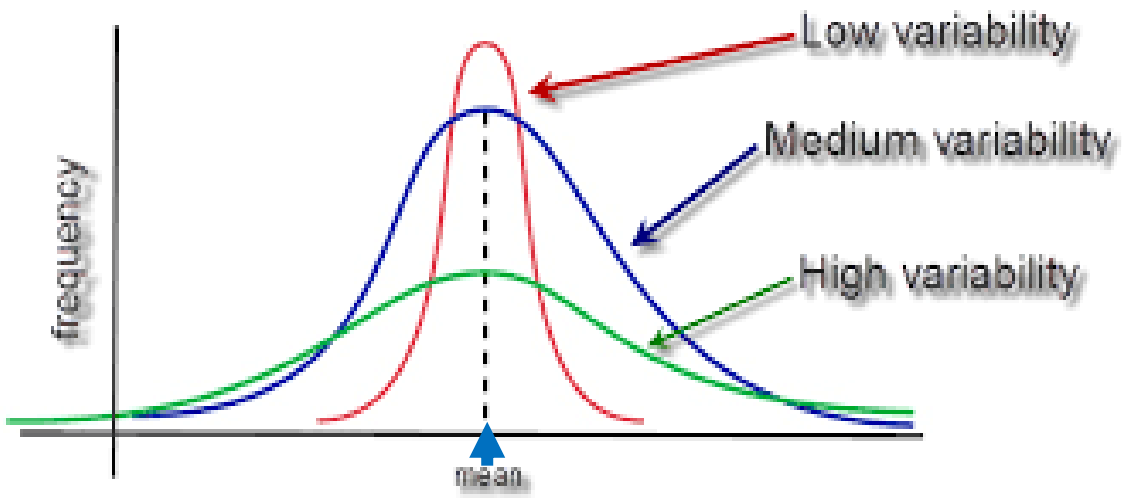
Classification System	CMG/MDC	DC	CBG/DRG
INA-CBG	22	289	289
iDRG	**25**	**358**	**358**

Classification System	CMG/MDC	DC	CBG/DRG
INA-CBG	22	262	786
iDRG	**25**	**560**	**960**

Basic Concept of DRG classification and its relationship with DRG Tariffs

- ✅ The homogeneity of resources required for the treatment of one DRG is measured by the Coefficient of Variation (CoV) value.
- ✅ The iDRG grouping achieves **low variability**, indicated by CoV < 1

Graph of Normal Distribution of Variability within 1 DRG Group



Analysis of Cost Variation Led to Significant Changes in The Grouper Including

Split large heterogeneous groups into a larger number of groups, each of which had similar clinical and resource use features. This ensures payment is closer to costs of providing care in the group.

Merge groups with small cases when there was little meaningful difference in costs.

In a limited number of cases, merging combined with unbundling the key cost driver (e.g. chemotherapy drugs) to be paid as a top-up when the clinical criteria met the requirements of the treatment protocol for use of the drug.

Reclassification of Outpatient Group: Other Minor Chronic Conditions (Q-5-44-0)

- **Group Q-5-44-0** includes consultation services for all diseases, including follow-up consultations coded with Z codes as the primary diagnosis.
- **The concentration of consultation services** within Group Q-5-44-0 has made it **difficult to identify specific disease types** in outpatient care, such as the top 10 most frequent diseases.
- **A reclassification** was conducted to divide Group Q-5-44-0 into **159 more specific groups including:** comprehensive, follow-up, multispecialty and multispecialty preoperative consultations in different MDCs.

INA-CBG

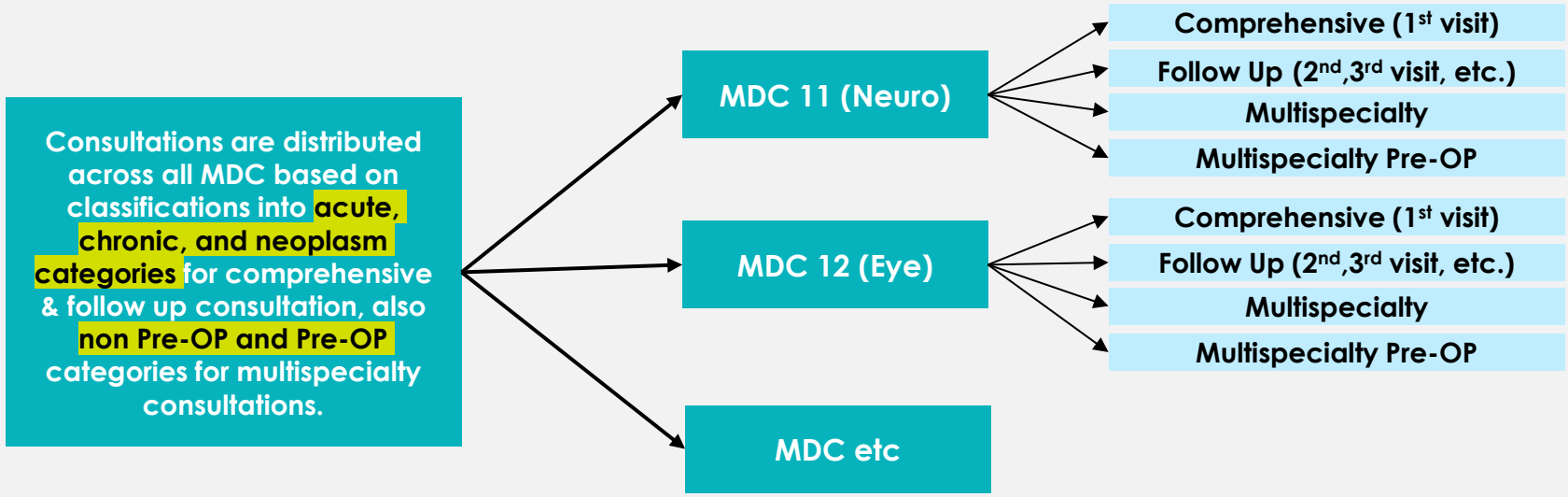
Consultation (Q-5-44)

Total visits in 2023: 70.9 Millions (55% of total outpatients visits)

Total claim in 2023: 16.2 T IDR (increase 35% compared to year 2022)

Concentration of consultation services within group Q-5-44 (Other Minor Chronic Diseases).

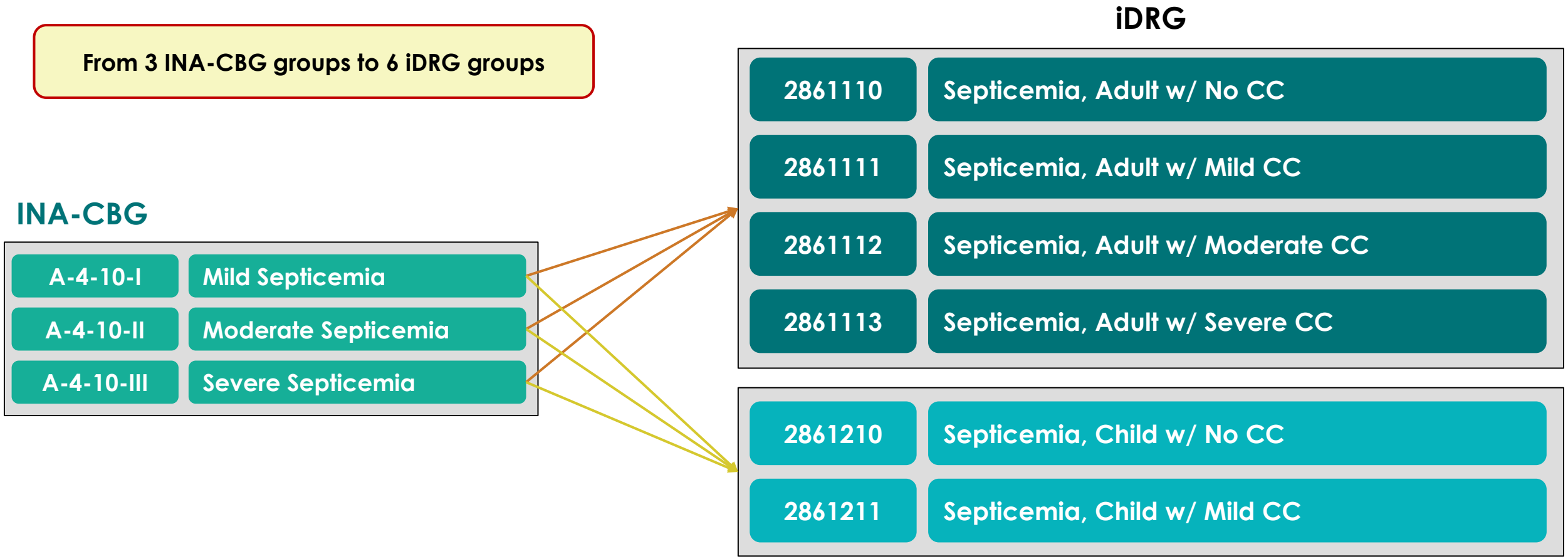
iDRG



- **Group Q-5-44 has been reclassified by remapping it across all MDCs, making it easier to identify cases based on disease type.**
- **Consultation services are now divided into four distinct groups: comprehensive, follow up, multispecialty, and multispecialty Pre-OP consultations**

Example: Septicemia Reclassification in Inpatient Care

From 3 INA-CBG groups to 6 iDRG groups



Example: Chemotherapy Reclassification in Outpatient Care

INA-CBG

C-3-11-0	Chemotherapy for Lung & Bladder Tumors
C-3-12-0	Chemotherapy for Colon Tumors
C-3-13-0	Chemotherapy for Breast or Ovarian Tumors
C-3-14-0	Chemotherapy for Gastrointestinal Tumors
C-3-15-0	Chemotherapy for Melanoma, Kidney, or Prostate Tumors
C-3-16-0	Chemotherapy for Brain Tumors
C-3-17-0	Chemotherapy for Head or Neck Tumors
C-3-18-0	Chemotherapy for Acute Leukemia
C-3-19-0	Chemotherapy for Lymphoma, Myeloma, or Testicular Tumors
C-3-20-0	Chemotherapy for Skin Tumors
C-3-21-0	Chemotherapy for Gynecological Tumors
C-3-22-0	Chemotherapy for Metastatic Tumors
C-3-23-0	Chemotherapy for Other Tumors

From 13 INA-CBG groups classified by organ to 2 iDRG groups classified by method.

iDRG

3445120	Chemotherapy (Injection)
3445220	Chemotherapy (Oral)

Chemotherapy drugs are paid by Non-INA-CBG (unbundled)

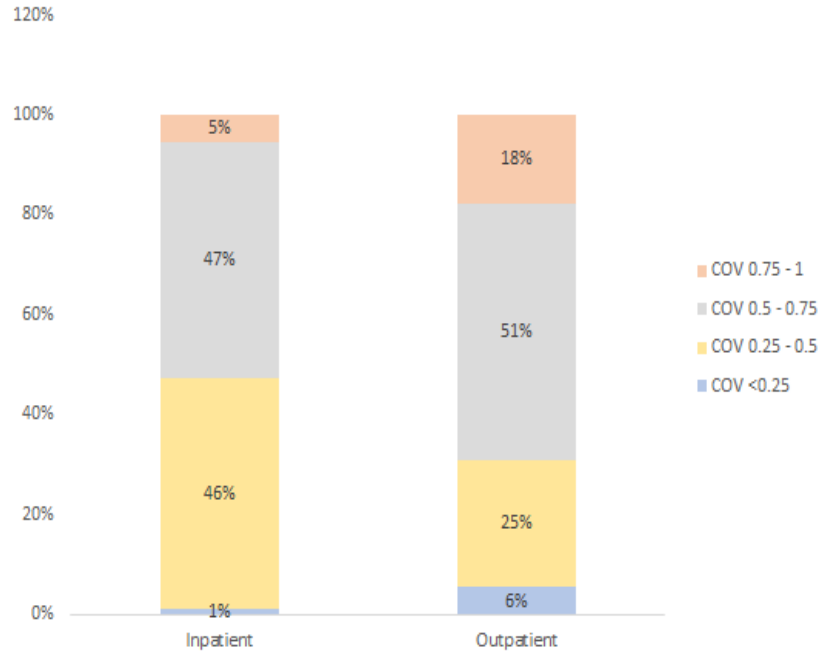
COV & RIV of iDRG

- **Diagnosis Related Group (DRG) classification** is a system used to categorize hospital cases into groups that are expected to have similar hospital resource use.
- **Two important statistical measures** used to assess the effectiveness of DRG grouping are **Coefficient of Variation (COV)** and **Reduction in Variance (RIV)**.

Coefficient of Variation (COV)

COV is used to evaluate the *homogeneity* of resource consumption (such as costs or length of stay) within each DRG group.

Distribution of CoV iDRG



Reduction in Variance (RIV)

RIV assesses how well the DRG system explains differences in resource consumption between groups in each MDC (within MDC).

Distribution of RIV Total iDRG

RIV Total Inpatient	RIV Total Outpatient
iDRG = 0.76	iDRG = 0.71
INA-CBGs = 0.67	INA-CBGs = 0.65

Notes:
- COV: the lower the COV, the more homogenous the groups
- RIV: the higher the RIV, the better the variance reduction

Costing to Improve Appropriateness of iDRG Payments

Costing Study for iDRG Development

Background for iDRG Tariff Calculation

1. **The policy of using iDRG in 2025** requires updated tariff calculations

2. **iDRG Tariff =**
   Cost Weight x National Base Rate x Adjustment

   to obtain the cost weight, costing data is necessary

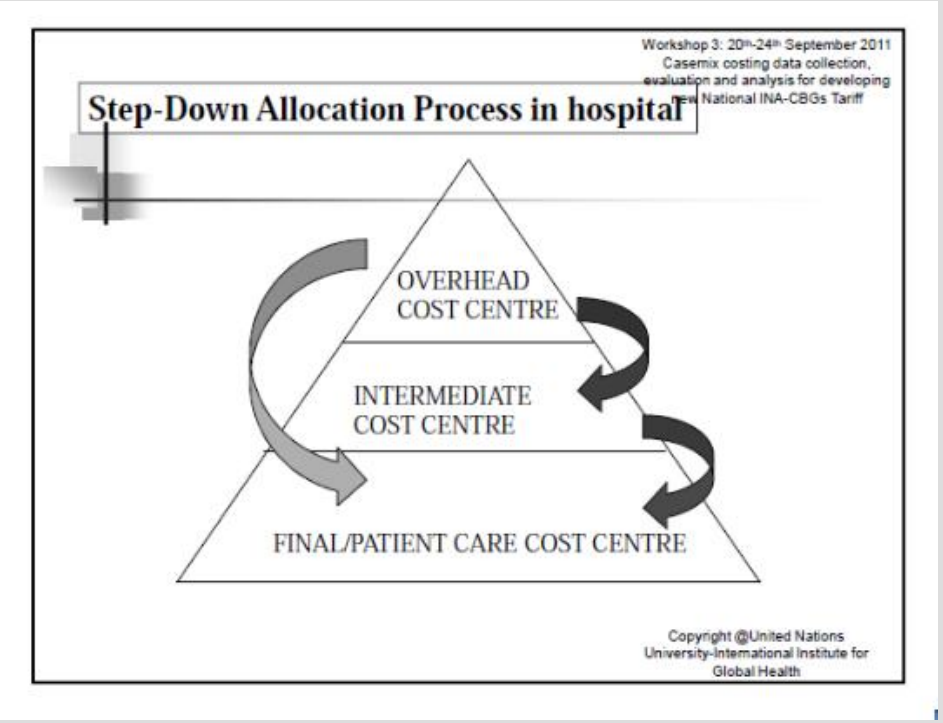
3. **Robust costing data requires:**
   - Adequate sample size, requiring hospital participation.
   - User-friendly costing template for hospitals.
   - Improved and more accurate methodology for calculating cost per DRG.

Key Principles for Cost Data Collection

1. **Hospital data confidentiality guarantee**
2. **Anonymity of hospital names** in Analysis and Results Presentation
3. **Data use is strictly limited** for iDRG Tariff Analysis Only
4. **Ease of data entry**
5. **Increased number of contributing hospitals**
6. **Data validation**
7. **Incentives for contributing hospitals**

Old Costing Methodology 2013-2018: Important shortcomings

Top Down



The output of inpatient calculation is unit cost per day per department

INA-CBGs cost
= ALOS x Unit Cost per Day per Department

No	INA-CBG	Description	Department	ALOS	UC per Day (Rp)	Total (Rp)
1	A-4-10-II	Septicemia (mild)	Digestive	6	1.301.713	7.810.278
2	A-4-12-III	Unknown Fever (Severe)	Digestive	5	1.301.713	6.508.565
3	K-4-11-I	Gastritis & Peptic Ulcer (Mild)	Digestive	3	1.301.713	3.905.139
4	B-1-13-I	Pancreatic Procedure & Others Hepatobiliary (Mild)	Surgery	8	2.012.865	16.102.920
5	I-1-06-I	Other Cardiothoracic Procedures (Mild)	Surgery	8	2.012.865	16.102.920

Potentially **Under Cost** and **Over Cost**

Improvements in Costing Methodology were needed

Patient Level Costing Using a Hybrid Top-Down and Bottom-Up Method: Improved accuracy

Methodology in Other Countries

✓ **Patient Level Costing** is widely adopted in many countries as an approach for calculating healthcare costs.
(Thailand, Mongolia, France, England, Estonia etc)

Data Availability

✓ **Costing Template (Top-Down)**

Costing template was used by hospitals for INA-CBG tariff setting in 2013-2018.

✓ **Tariff Components (Bottom-Up)**

Tariff components per case are entered in e-claims (per patient).

Availability of hospital tariff components data in e-claim systems enables patient-level costing

18 Tariff Component Variables

1. Non-Surgical Procedures
2. Surgical Procedures
3. Consultation
4. Expert Personnel
5. Nursing Care
6. Supporting Services
7. Radiology
8. Laboratory
9. Blood Transfusion Services
10. Rehabilitation
11. Room/Accommodation
12. Intensive Care
13. Medication
14. Chronic Medication
15. Chemotherapy Drug
16. Medical Devices
17. Consumables
18. Equipment Rent

Evolution of Costing Studies in Indonesia

In the development of iDRG, a more accurate costing study was conducted using patient-level costing

Tariff INA-CBG	2013	2014	2016	2018	2025 (iDRG Tariff)
Number of Hospitals	100	137	157	67	303 hospitals (for aggregate cost), **130 hospitals for Detailed Costing**
Hospital Ownership	Public	Public	Public, Private	Public, Private	Public, Private
Type of Hospital	A-B-C-D	A-B-C-D	A-B-C-D	A-B-C-D	A-B-C-D
Data Year	2010	2011	2014	2016	2022
Costing Methodology	Top down	Top down	Top down	Top down	**Patient Level Costing**
Data Used	Hospital costing template & LOS per CBG	Hospital costing template & LOS per CBG	Hospital costing template & LOS per CBG	Hospital costing template & LOS per CBG	Hospital costing template, Operational Report, and tariff per service component in JKN claims

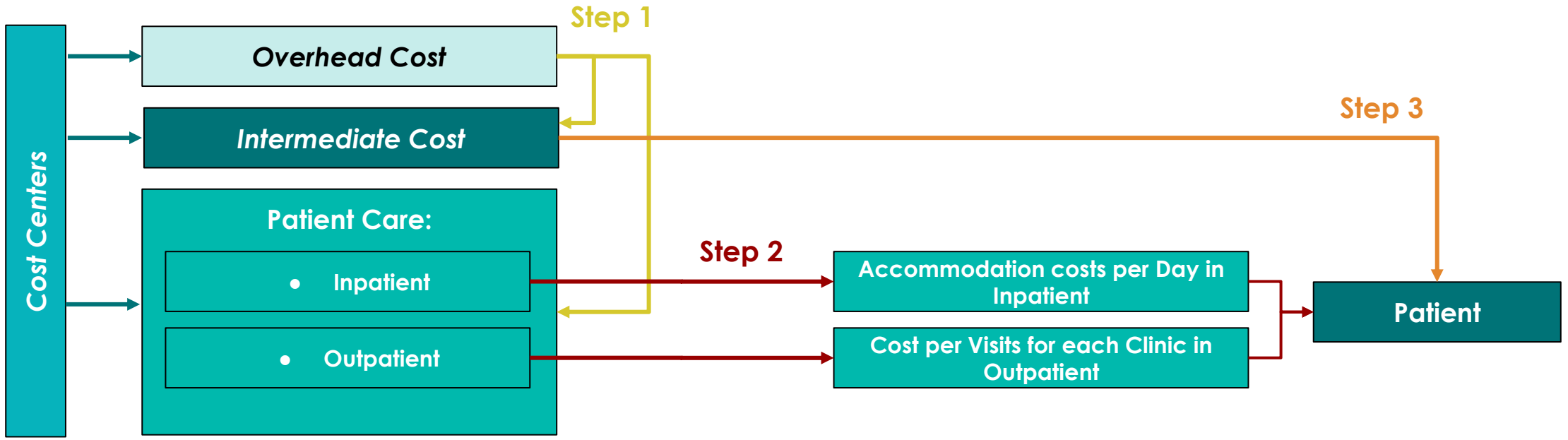
Patient-Level Costing for iDRG Tariff 2025

Patient-level costing uses a top-down and bottom-up approach

Step 1
Allocate **overhead costs** to **intermediate costs**, and patient care (**inpatient**, and **outpatient)**

Step 2
Calculate the **accommodation costs per day (inpatient) and cost per visit for each clinic (outpatient),** followed by determining the cost per patient based on their utilization

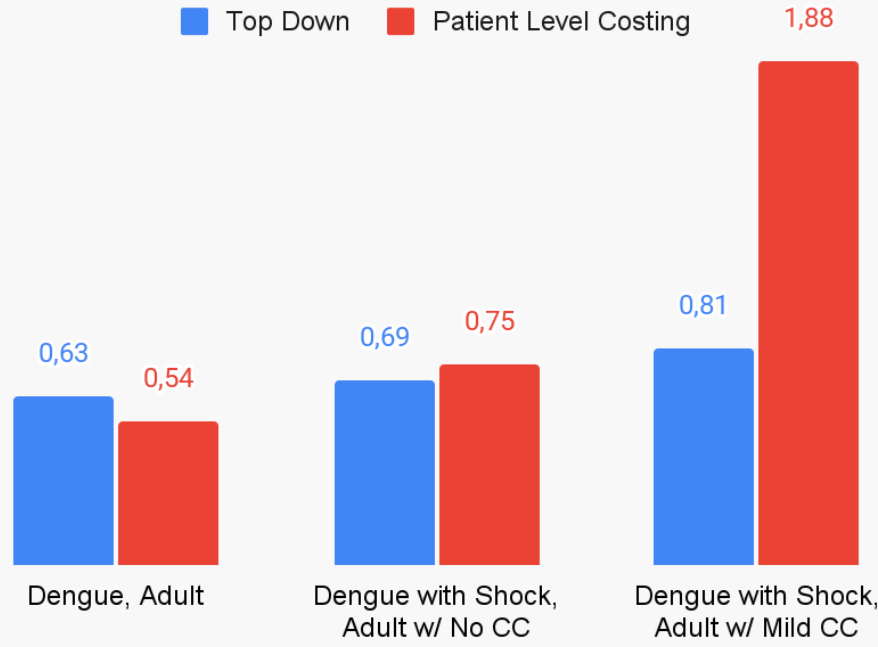
Step 3
Distribute **Intermediate costs** directly to the patient, based on the proportion of the hospital tariff component.



Switching from Top-Down to Patient-Level Costing Improves Matching of Payment to Costs

Cost Weight of Group

A-4-13-X Other Viral and Non-Bacterial Infections

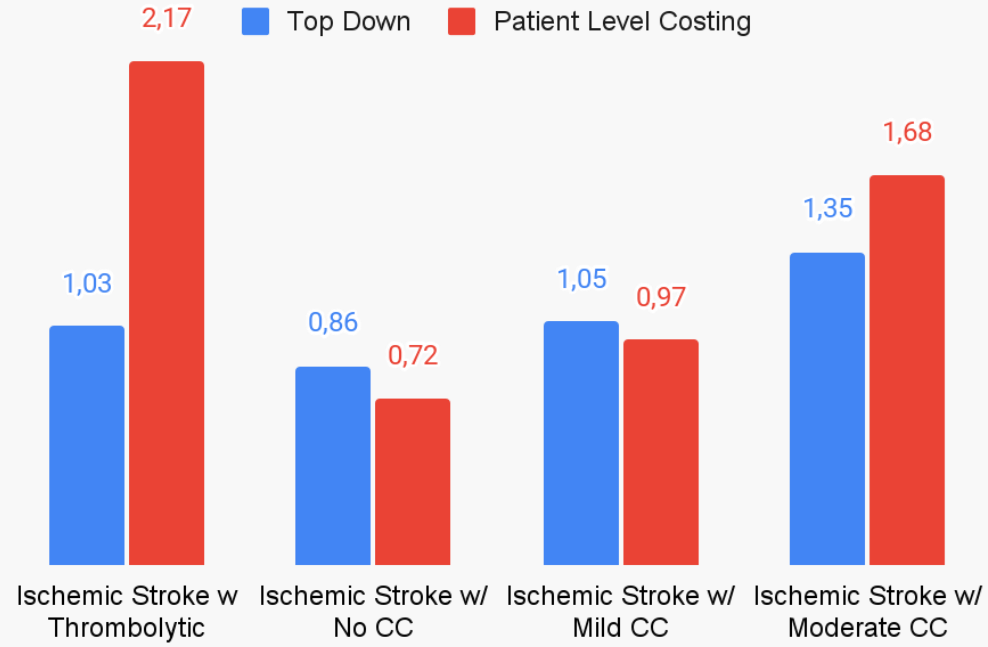


ALOS		
4,67	5,05	5,99

- **Top Down calculation** shows that cost weight for Dengue with shock is 1.1-1.3 times greater than Dengue because the ALOS is almost the same, namely 4.67 with 5.05-5.99
- **Calculation of patient level costing** for Dengue with shock shows 1.38-3.5 times greater than Dengue

Cost Weight of Group

G-4-14-X Cerebrovascular Injury with Infarct



ALOS			
5,91	4,9	6,02	7,73

- **Top Down calculation** shows that cost weight for Ischemic stroke with thrombolytics is only 1.2 times greater than Ischemic stroke because ALOS is 4.90 and 5.91
- **Calculation of patient level costing** for ischemic stroke with thrombolytics shows that it is 3.01 times greater than ischemic stroke.

Key Lessons

1. **Indonesia is proud to have established its own classification system — iDRGs,** built on Indonesia's disease patterns and calibrated using detailed, patient-level costing data to support the government in achieving its policy objectives.
2. Indonesia continues to **strengthen the methodology, sampling, and data inputs of its DRG costing** study to ensure results are robust, accurate, and transparent for improved tariff setting.
3. **Collaboration across hospitals, hospital associations, professional organization, BPJS Kesehatan, DJSN, and the Ministry of Finance,** is key to build shared understanding and a common vision for a sustainable implementation of iDRGs

Way Forward

1. **Costing studies must be conducted every two years** to align with DRG classificationupdates to cover inflation
2. **DRG classification must be regularly updated** to reflect changes in disease patterns, advancements in medical technology and evolving prices and costs.


Kemenkes