

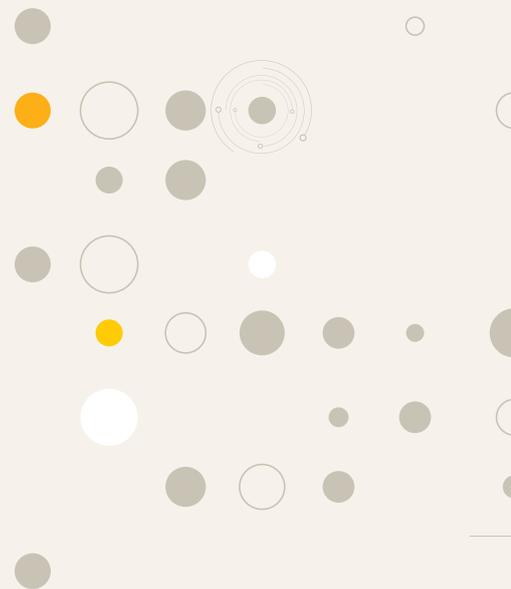


JOINT  
LEARNING  
NETWORK

For Universal Health Coverage

# USING DATA ANALYTICS TO MONITOR HEALTH PROVIDER PAYMENT SYSTEMS

*A Toolkit for Countries Working Toward Universal Health Coverage*



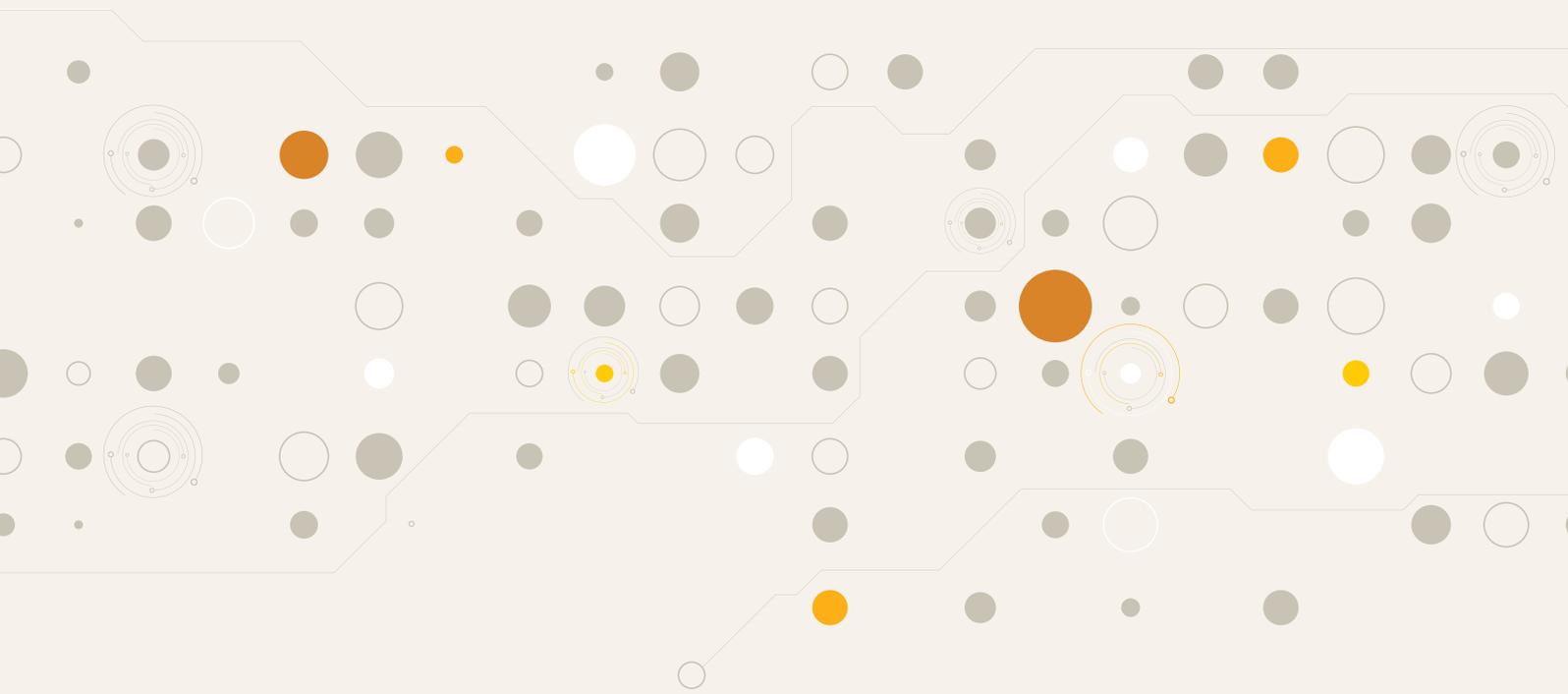


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# USING DATA ANALYTICS TO MONITOR HEALTH PROVIDER PAYMENT SYSTEMS

*A Toolkit for Countries Working Toward Universal Health Coverage*



**THIS GUIDE WAS PRODUCED by the Joint Learning Network for Universal Health Coverage (JLN)**, an innovative network of practitioners and policymakers from around the globe who collaboratively develop practical tools to help countries work toward universal health coverage. More information is available at [www.jointlearningnetwork.org](http://www.jointlearningnetwork.org). For inquiries about this guide or other JLN activities, please contact the JLN at [jln@r4d.org](mailto:jln@r4d.org).

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Photos: Joint Learning Network

## PREFACE

**THE JOINT LEARNING NETWORK** for Universal Health Coverage (JLN) convened representatives from 13 countries in 2015 and 2016 to share experience, expertise, and challenges related to monitoring health provider payment systems. With support from a facilitation team, they collaboratively produced this toolkit, which offers step-by-step guidance on using data analytics to monitor health provider payment systems, identify trends, track whether payment systems are supporting health system objectives, and get timely information on any unintended consequences.

The toolkit was created through in-person and virtual discussions among participants from Ghana, India, Indonesia, Kazakhstan, Kenya, Malaysia, Mali, Moldova, Mongolia, Nigeria, the Philippines, and Vietnam. Vietnam, the Philippines, and Ghana each hosted an in-person meeting that showcased their country's efforts in implementing and monitoring provider payment systems and provided an opportunity for countries to share experience and progressively build the toolkit. JLN technical facilitators from Results for Development (R4D), PATH, and PharmAccess Foundation collected and synthesized the shared lessons and guidance and combined them with global expertise in provider payment and data analytics to produce the toolkit.

This effort was a joint activity of the JLN's Provider Payment Mechanisms (PPM) Initiative and Information Technology (IT) Initiative. The JLN is an innovative network of practitioners and policymakers from around the globe who collaboratively develop practical tools to help countries work toward universal health coverage.

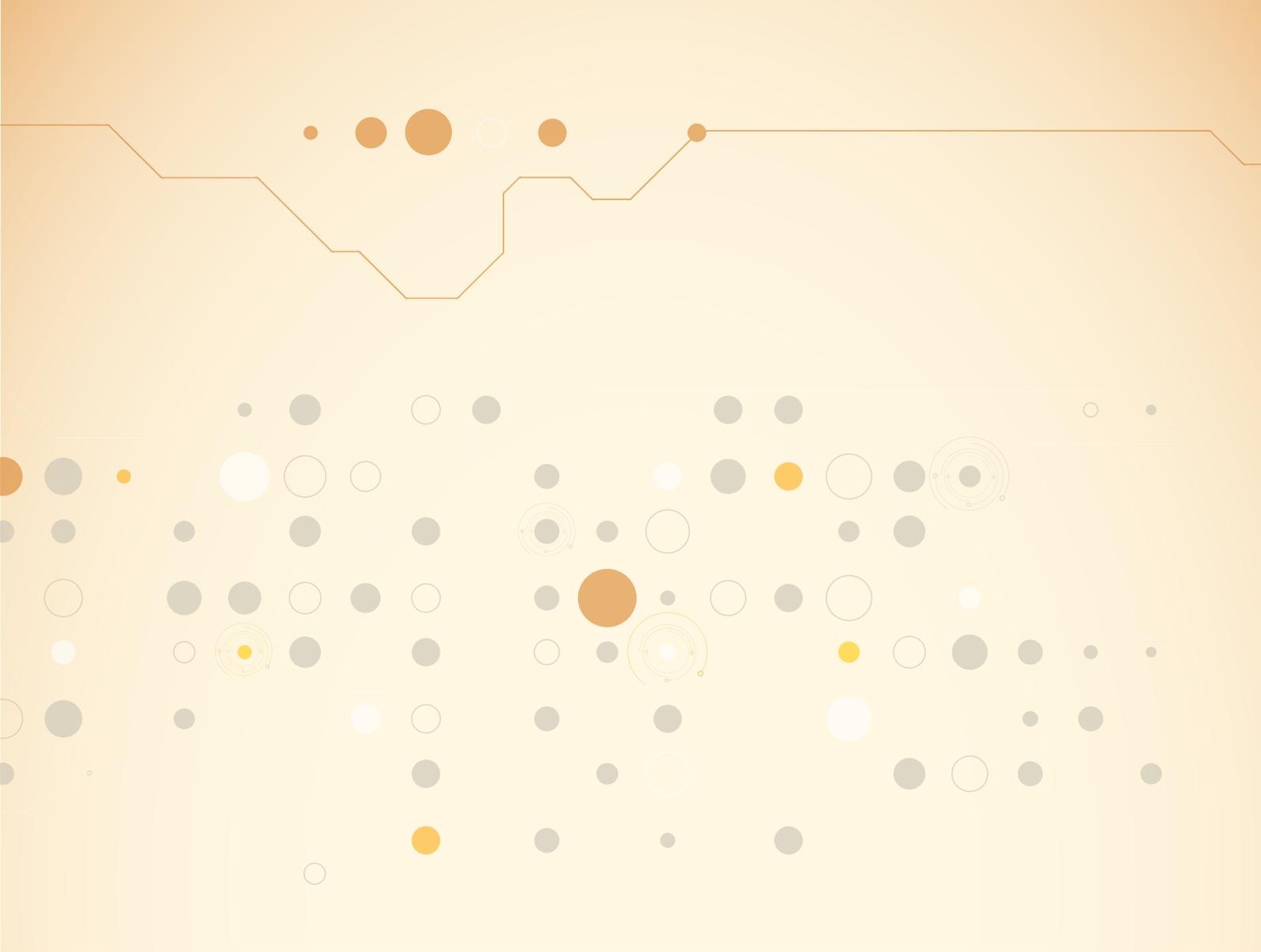
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# INTRODUCTION

**ACHIEVING UNIVERSAL HEALTH COVERAGE—ensuring access to basic health services for an entire population without risk of financial hardship or impoverishment—is a challenge confronting many countries.** To sustain progress toward universal health coverage, governments must generate resources for expanding coverage, distribute the resources equitably, and use them efficiently to achieve the most benefit in terms of meeting health care needs, ensuring quality of care, and protecting users from financial hardship due to out-of-pocket payments.

Health financing policies—policies that govern the resources and economic incentives of the health system—affect the efficiency, performance, and equity of the health system and ultimately health outcomes. Health financing policies apply to three main functions:

- Collecting revenue from public, private, and external sources to finance the health system
- Pooling health funds to spread financial risk and achieve greater equity and financial protection
- Purchasing health care goods, services, and interventions for covered populations from provider institutions using pooled funds

The way health purchasers<sup>1</sup> pay health care providers to deliver covered services is a critical element of strategic health purchasing. These *provider payment systems* consist of one or more *provider payment methods* and all supporting systems, such as contracting and reporting mechanisms, information systems, and financial management systems. Nearly every country that is working toward universal

health coverage is developing or improving strategic provider payment systems. An overview of the main provider payment methods is included in [APPENDIX A](#).

It is important to collect information about the implementation of provider payment systems, including how providers are responding, whether objectives for service delivery and other goals are being achieved, and whether any unintended consequences are occurring, such as overuse of expensive services, excessive referrals, or skimping on necessary care. Claims data and other routine administrative data that are generated by the implementation of provider payment systems should be the main sources of this strategic information. Many countries do not use these routine data to their fullest potential, however, particularly to determine whether provider payment systems are achieving their objectives or leading to unintended consequences. These data are often underutilized because of a lack of capacity within the purchasing agency, weak or underdeveloped data systems, or fragmentation in information sources.

<sup>1</sup> In this toolkit, a *health purchaser* is any institution that buys health care goods, services, and interventions on behalf of a covered population. Health purchasers can include the ministry of health, social health insurance agencies, special purchasing agencies, local or national government authorities, other ministries (such as the ministry of defense), private insurance companies, and community-based insurance funds.

## The Purpose of the Toolkit

This toolkit seeks to address the gap in data utilization by providing guidance and tools based on practical experience to help countries implement provider payment monitoring systems that use claims and/or other routine administrative data. Such a monitoring system can:

- Generate indicators and analytic reports to monitor whether provider payment systems are achieving service delivery and other objectives or leading to unintended consequences
- Point to particular services, providers, or other areas that warrant deeper analysis
- Alert purchasers if modifications to the payment system design and implementation may be needed
- Support ongoing dialogue among purchasers, providers, and other stakeholders that can lead to better health service delivery and help refine provider payment systems

## How the Toolkit Is Organized

The toolkit offers a framework, or cycle, for building and implementing a provider payment monitoring system. (See [FIGURE 1](#).) The framework is based on a generic “data for decision-making” process that has seven steps, organized into three parts. Each part consists of related tasks and involves a particular set of stakeholders. The toolkit provides practical tools generated from country experience that can be used to guide or carry out the different steps.

[PART 1](#) ([STEPS 1](#) and [2](#)) focuses on identifying the questions that need to be answered through the monitoring system and selecting the indicators to help answer those questions. The steps are carried out primarily by those involved in operating provider payment systems, as well as policy and governance. [PART 2](#) ([STEPS 3, 4, and 5](#)) focuses on generating the data to produce the indicators, improving the quality of the data, and producing the analysis, data visualizations, and reports that will be most useful to decision-makers. Tasks include defining data elements, mapping data to existing data sources, developing a set of functional requirements for reporting and analytic software, and developing effective visualizations for indicators. The steps are carried out primarily by information technology (IT) professionals and data analysts. [PART 3](#) ([STEPS 6 and 7](#)) focuses on using routine monitoring reports to inform options for improving and refining provider payment systems. In this part, decision-makers take the lead.

Although different stakeholders take the lead in different parts of the process, all stakeholders should be involved as early as possible in the process of developing the monitoring system to ensure that it meets everyone’s needs.

The process of developing and implementing the monitoring system is cyclical, and sometimes countries will find themselves having to return to an earlier step after hitting a roadblock. Once the monitoring system is in place, the process will be repeated routinely—indicators will be generated and analyzed, monitoring reports will be produced, and actions will be taken. New indicators and data sources will be added as objectives change or are met.

### WHO CAN BENEFIT FROM THIS TOOLKIT?



**Ministries of health, purchasing agencies, and stakeholders who are responsible for monitoring provider payment systems**



**IT or reporting departments in the ministry of health or purchasing agencies that are responsible for developing monitoring reports or dashboards**



**Country policymakers who are planning or implementing provider payment reforms**



**Anyone looking for processes and tools for developing reportable indicators**

**FIGURE 1**

## Framework for Building and Implementing a Provider Payment Monitoring System



The framework and tools presented here are also applicable beyond provider payment. The process of identifying questions, developing appropriate indicators from available data sources, and showing analysis in a meaningful way that enables users to

make better-informed decisions can be used to address other questions and problems. Further, monitoring provider payment cannot be separated from other data and monitoring systems (e.g., utilization, clinical outcomes, and health status).

## TOOLKIT OVERVIEW

Each step in the process introduces one or more tools, as shown below.

### PART 1 IDENTIFYING POLICY QUESTIONS AND MONITORING INDICATORS

#### STEP 1 - IDENTIFY THE POLICY QUESTIONS



Word table

**TOOL 1** - List of Common Objectives and Potential Unintended Consequences of Provider Payment Methods

#### STEP 2 - SELECT THE INDICATORS



Excel spreadsheet

**TOOL 2** - Menu of Indicators



Word template

**TOOL 3** - Indicator Scoring Template

### PART 2 COLLECTING AND ANALYZING THE DATA

#### STEP 3 - IDENTIFY DATA SOURCES



Word template

**TOOL 4** - Indicator Definition Template



Web application

**TOOL 5** - Open Health Data Dictionary



Word template

**TOOL 6** - Data Mapping Template

#### STEP 4 - MONITOR AND IMPROVE DATA QUALITY



Word table

**TOOL 7** - Data Quality Checklist

#### STEP 5 - ANALYZE AND REPORT THE DATA



Word template

**TOOL 8** - Reporting Requirements Template



Word template

**TOOL 9** - Indicator Summary Template

### PART 3 USING THE DATA FOR DECISION-MAKING

#### STEP 6 - PRODUCE THE ROUTINE MONITORING REPORT AND INTERPRET THE RESULTS



Word table

**TOOL 10** - Sample Provider Payment Monitoring Report Outline

#### STEP 7 - ASSESS OPTIONS FOR ACTION



Word document

**TOOL 11** - Exercises in Using Data for Decision-Making

Each step in the toolkit includes:

- A summary of common challenges faced by the participating countries, along with solutions they have found
- A tool that can facilitate the step that was developed or validated by country participants based on practical experience
- Examples of country experience with the step or the related tool
- Links to additional resources

Most of the tools are templates that can be adapted to each country context in the process of building or implementing a provider payment monitoring system. Within the toolkit, each template is shown with fields filled in for one example indicator: *Total claims and/or other payments to providers per month* (shortened to *Total payments per month*). Blank versions of all templates are included in [APPENDIX B](#).



## GHANA

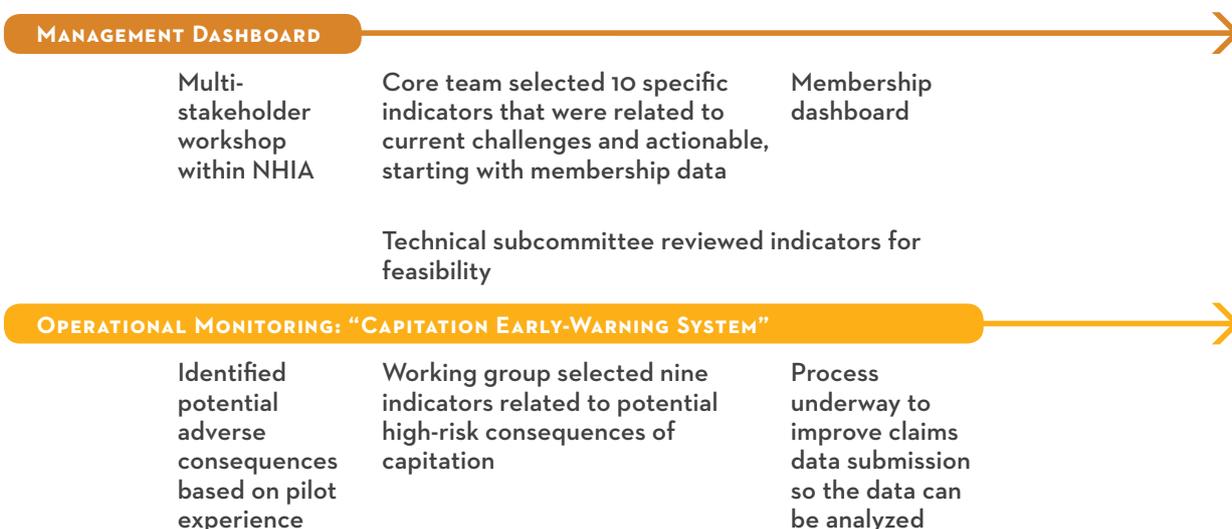
### Developing Monitoring Systems in Ghana's National Health Insurance Scheme

Ghana's National Health Insurance Authority (NHIA) is pursuing two parallel tracks to improve data analytics and the use of evidence in decision-making to manage the National Health Insurance Scheme (NHIS), as shown in the figure below. The first track is the development of a high-level management dashboard to provide real-time information on a set of indicators on overall strategic management of the scheme. The second track is the development of more operations-level monitoring to

generate early-warning information on the consequences of provider payment systems, starting with capitation.

Both tracks follow the steps presented in this toolkit, including identifying questions to answer on both the policy and operational levels, selecting indicators, mapping data sources, undertaking data analysis and visualization, and using the resulting information for decision-making.

#### Process of Improving Data Analytics



# IDENTIFYING POLICY QUESTIONS AND MONITORING INDICATORS

STEP

1

IDENTIFY THE  
POLICY QUESTIONS

STEP

2

SELECT THE INDICATORS

**THE FIRST STEP IN BUILDING A PROVIDER PAYMENT MONITORING SYSTEM is to identify the questions that the system should routinely answer and identify indicators that can help answer those questions.**

Indicators alone cannot answer all of the questions, but they can show general trends and point to services, providers, or other areas that warrant deeper analysis. It is important to identify and involve all relevant stakeholders, especially health care providers, from the beginning and include them in every step of designing and implementing the monitoring system. Some countries find it useful to establish a working group that oversees and participates in all stages of design and implementation of the monitoring system.

STEP

1

# IDENTIFY THE POLICY QUESTIONS

## OBJECTIVE

Select the questions the provider payment monitoring system should answer on a routine basis

## WHO IS INVOLVED

Policymakers, the purchaser, providers, and other stakeholders

## TOOL

A list of common objectives and potential unintended consequences of provider payment methods

**THE HEALTH PURCHASER AND OTHER STAKEHOLDERS** will seek to answer many questions through the provider payment monitoring system, so it is important to identify the most important questions.

These will fall into three general categories:

- Whether the objectives of the provider payment system are being met
- Whether any unintended consequences are occurring (ranging from consequences arising from misunderstanding or adverse incentives to gaming or fraud on the part of providers)
- Whether any adjustments are needed to the design or implementation of the payment system

### COMMON OBJECTIVES OF PROVIDER PAYMENT SYSTEMS

- Improved equity and access to services
- Better provider responsiveness and patient experience
- More efficient resource use
- Stronger primary health care
- Financial sustainability of the system
- More engagement of the private sector
- More effective service delivery and better quality of care
- Simpler claims processing and administrative procedures
- Improved allocation among primary, secondary, and tertiary-level services
- Increased transparency and accountability
- Improved care coordination and continuity

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## COMMON CHALLENGES



- The objectives of the provider payment system are not clearly defined.
- The objectives of stakeholders differ or conflict.
- Some objectives are too broad to form questions around.
- Although theory points to common adverse incentives of each provider payment method, some unintended consequences are difficult to anticipate.

## SOLUTIONS AND LESSONS LEARNED



- Use a participatory process at all stages of design and implementation of the monitoring system.
- Promote consensus building and compromise.
- Clarify objectives retroactively with stakeholders if objectives were not identified or stakeholders were not involved when payment systems were first implemented.
- Clarify the details of the payment systems to make it easier to anticipate potential unintended consequences.
- Use the experience of other countries, where available, to anticipate potential unintended consequences.

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*“Have the provider payment systems reduced unnecessary services and improved efficiency among health care providers?”*

*–The Philippines,  
PhilHealth*

**TOOL 1**

**List of Common Objectives and Potential Unintended Consequences of Provider Payment Methods**



This tool is a list of common objectives and possible unintended consequences of each of the provider payment methods. This list can be used as a reference when choosing objectives and consequences to monitor.

PAYMENT METHOD	INTENDED OBJECTIVES	UNINTENDED CONSEQUENCES
Capitation	<ul style="list-style-type: none"> <li>• More equitable resource allocation</li> <li>• More efficient output mix (e.g., increased prevention vs. referral services)</li> <li>• More efficient input use</li> <li>• Improved provider responsiveness and patient experience</li> <li>• Cost management</li> <li>• Reduced administrative burden</li> <li>• Engagement with the private sector</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive decrease in input use</li> <li>• Underprovision of services</li> <li>• Reduced quality</li> <li>• Over-referral (including “internal referrals”)</li> <li>• Reduced productivity</li> <li>• Avoidance of sicker or higher-cost registered persons</li> <li>• Cost escalation</li> </ul>
Case-based (e.g., diagnosis-related groups)	<ul style="list-style-type: none"> <li>• Increased fairness of payment</li> <li>• More efficient output mix (e.g., shifting from inpatient to outpatient services or services delivered at the appropriate level)</li> <li>• More efficient input use</li> <li>• Increased productivity</li> <li>• Cost management</li> <li>• Reduced administrative burden</li> <li>• Improved internal management of hospitals</li> <li>• Improved data quality</li> <li>• Engagement with the private sector</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive decrease in input use and/or length of hospital stays</li> <li>• Increased admissions beyond necessary level (including fraudulent practices to increase admissions)</li> <li>• Increased early discharges and readmissions</li> <li>• Avoidance of sicker or higher-cost patients</li> <li>• Upcoding or inappropriate multiple diagnoses</li> <li>• Unbundling of services</li> <li>• Provision of services beyond clinical capability</li> <li>• Cost escalation</li> </ul>
Fee-for-service	<ul style="list-style-type: none"> <li>• Increased productivity</li> <li>• Increased access to services</li> <li>• Increased provider responsiveness</li> </ul>	<ul style="list-style-type: none"> <li>• Increased number of services, including above the necessary level</li> <li>• Shift toward higher-cost services</li> <li>• Excessive decrease in inputs used per service</li> <li>• Fragmentation of services</li> <li>• Cost escalation</li> </ul>

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**TOOL 1** (continued)

PAYMENT METHOD	INTENDED OBJECTIVES	UNINTENDED CONSEQUENCES
Global budget	<ul style="list-style-type: none"> <li>• Cost management</li> <li>• More efficient input use</li> </ul>	<ul style="list-style-type: none"> <li>• If global budgets are formed based on inputs: underprovision of services, increased referrals, increased inputs</li> <li>• If global budgets are formed based on volume: increased volume of services, increased referrals to other providers, excessive decrease in input use</li> </ul>
Line-item budget	<ul style="list-style-type: none"> <li>• Cost management</li> <li>• Financial control</li> </ul>	<ul style="list-style-type: none"> <li>• Low productivity</li> <li>• Underprovision of services</li> <li>• Inefficient expenditures and underspending of budgets (inflexibility to move across line items and need to spend all remaining funds by the end of the budget year)</li> <li>• Poor provider responsiveness</li> <li>• Over-referral</li> <li>• Increased inputs over time</li> </ul>
Per diem	<ul style="list-style-type: none"> <li>• Increased productivity</li> <li>• Greater flexibility in use of funds</li> <li>• Step toward activity-based payment</li> </ul>	<ul style="list-style-type: none"> <li>• Increased number of bed-days (excessive admissions and/or lengths of hospital stays)</li> <li>• Excessive decrease in inputs used per bed-day</li> <li>• Excessive increase in length of stay</li> <li>• Decrease in input use per bed-day</li> <li>• Reduced quality</li> <li>• Cost escalation</li> </ul>

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*“Are some hospitals increasing co-morbid conditions for several procedures, leading to cost escalation?”*

*–India,  
Aarogyasri Health  
Care Trust*



## Country Snapshots: Objectives and Potential Unintended Consequences of Provider Payment Systems

The participating countries provided information about the provider payment systems used in their country, including the objectives of each system and the unintended consequences observed. These objectives and unintended consequences are the key issues to capture in a provider payment monitoring system.

COUNTRY	PAYMENT SYSTEMS IN USE	OBJECTIVES	UNINTENDED CONSEQUENCES
 Ghana	<b>Capitation</b> [National Health Insurance Scheme, or NHIS]	<ul style="list-style-type: none"> <li>• Address the sustainability challenges of the NHIS</li> <li>• Improve cost management and correct imbalances created by the Ghana Diagnosis Related Groups, or G-DRGs (supplier-induced demand)</li> <li>• Improve efficiency and effectiveness through more rational resource use</li> <li>• Improve distribution of risk among the NHIS and providers</li> <li>• Improve forecasting and budgeting</li> <li>• Simplify claims processing</li> </ul>	<ul style="list-style-type: none"> <li>• Provider dissatisfaction with payment rates</li> <li>• Shifting of services and claims out of the capitation service package to G-DRG for payment</li> <li>• Collusion among providers on referrals</li> <li>• Demand for illegal co-payments using the excuse “It is not in the capitation basket”</li> <li>• Delays in disbursing capitation payments in advance</li> </ul>
	<b>Case-based (G-DRG)</b> [NHIS]	<ul style="list-style-type: none"> <li>• Improve efficiency and cost management</li> <li>• Reduce unnecessary services</li> </ul>	<ul style="list-style-type: none"> <li>• Overprovision of services with higher payment rates</li> <li>• Upcoding and unbundling of services</li> <li>• Manipulation of service protocols for provider advantage</li> </ul>
	<b>Fee-for-service</b> [NHIS]	<ul style="list-style-type: none"> <li>• Initially to increase utilization of NHIS services, which had fallen in the past due to user fees</li> </ul>	<ul style="list-style-type: none"> <li>• Overprovision of services, particularly diagnostic services (e.g., X-rays)</li> <li>• Irrational prescribing of medicines</li> <li>• Continuous unjustified increase in tariffs</li> </ul>
	<b>Line-item budget</b> [Ministry of Health]	<ul style="list-style-type: none"> <li>• Promote government decentralization by having budget centers at the lowest level</li> </ul>	<ul style="list-style-type: none"> <li>• Limited autonomy and flexibility</li> <li>• Conflicting incentives with NHIS payment systems</li> </ul>

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COUNTRY	PAYMENT SYSTEMS IN USE	OBJECTIVES	UNINTENDED CONSEQUENCES
 India	<b>Bundled fee-for-service (package rates)</b> [Aarogyasri Health Care Trust, or AHCT]	<ul style="list-style-type: none"> <li>Bring payment rates in line with costs of services</li> </ul>	<ul style="list-style-type: none"> <li>Inappropriate upcoding of co-morbid conditions for several procedures, leading to cost escalation</li> </ul>
	<b>Fee-for-service</b>	None noted	<ul style="list-style-type: none"> <li>Provider dissatisfaction with payment rates</li> <li>Uncontrolled out-of-pocket payments due to providers being allowed to charge patients over and above AHCT rates</li> </ul>
	<b>Line-item budget [MOH]</b>	None noted	<ul style="list-style-type: none"> <li>Inflated administrative costs</li> </ul>
 Indonesia	<b>Capitation</b> [National health insurance purchaser, or BPJS]	<ul style="list-style-type: none"> <li>Improve cost management, efficiency, and quality of care</li> </ul>	<ul style="list-style-type: none"> <li>Providers underproviding services, overprescribing drugs, or charging patients out-of-pocket fees when they perceive that the payment is too low</li> <li>Inequity across geographic areas because of lack of adjustments</li> </ul>
	<b>Case-based (INA-CBG)</b> [BPJS]		<ul style="list-style-type: none"> <li>Skewing of case weights (too high for some types of cases and too low for others)</li> <li>Underprovision of services</li> <li>Cost escalation</li> <li>Increased readmission rate due to underprovision of services and reduced length of stay</li> </ul>
	<b>Bundled fee-for-service (package rates)</b> [BPJS]		
	<b>Fee-for-service</b> [BPJS]		
	<b>Line-item budget [MOH]</b>	None noted	<ul style="list-style-type: none"> <li>Inefficiency due to limited flexibility to reallocate funds</li> </ul>

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COUNTRY	PAYMENT SYSTEMS IN USE	OBJECTIVES	UNINTENDED CONSEQUENCES
 Kenya	<b>Capitation</b> [National Hospital Insurance Fund, or NHIF]	<ul style="list-style-type: none"> <li>• Improve transparency, cost management, and efficiency</li> <li>• Distribute risk between the NHIF and providers</li> <li>• Reduce out-of-pocket expenditure by members</li> </ul>	<ul style="list-style-type: none"> <li>• Increased referrals and admissions</li> <li>• Underprovision of services, leading to NHIF outpatient coverage becoming less popular</li> <li>• Delays in disbursing capitation payments</li> <li>• Increase in number of facilities seeking accreditation</li> <li>• Rising popularity of NHIF because registered persons can seek unlimited services (within the capitation package)</li> </ul>
	<b>Fee-for-service Bundled packages Per diem</b> [NHIF]	<ul style="list-style-type: none"> <li>• Increase efficiency</li> <li>• Promote better-quality outcomes</li> <li>• Manage costs</li> </ul>	<ul style="list-style-type: none"> <li>• Extended hospital stays (e.g., 7 days for normal delivery)</li> <li>• Increase in costly services (e.g., C-section rate increasing more than normal deliveries)</li> <li>• Overprovision of services</li> <li>• “Ghost” patients or bed-days</li> <li>• Coding of outpatients as inpatients</li> <li>• Increase in fraudulent claims when time to payment increases</li> </ul>
	<b>Global budget for tertiary hospitals</b> [MOH]	<ul style="list-style-type: none"> <li>• Improve access to services</li> <li>• Promote equity by ensuring that services are available to all</li> </ul>	<ul style="list-style-type: none"> <li>• Financial constraints due to insufficient resources</li> </ul>
	<b>Line-item budget for secondary hospitals and primary health care facilities</b> [county health departments]	<ul style="list-style-type: none"> <li>• Increase access to primary health care</li> </ul>	<ul style="list-style-type: none"> <li>• Inefficient budget allocations, with some places not being allocated the right amounts or getting what they don’t need</li> <li>• Delays in disbursement of funds to health facilities</li> <li>• Reduced financial autonomy of health care facilities</li> <li>• Political interference in budget and allocation process</li> </ul>
 Malaysia	<b>Line-item budget</b> <ul style="list-style-type: none"> <li>• Health care providers currently salaried; incentives given through annual staff performance appraisal</li> <li>• Service performance monitored through annual performance targets and various key performance indicators</li> </ul>	<ul style="list-style-type: none"> <li>• Provide accessible, equitable, and sustainable health care services</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of incentives for efficiency and other performance improvements</li> </ul>

COUNTRY	PAYMENT SYSTEMS IN USE	OBJECTIVES	UNINTENDED CONSEQUENCES
 Mongolia	<b>Capitation</b> [National health insurance, or SIGO]	<ul style="list-style-type: none"> <li>Ensure equity of resource allocation across primary health care providers</li> <li>Reduce out-of-pocket and catastrophic health payments</li> <li>Improve governance through effective and efficient management of funds</li> </ul>	<ul style="list-style-type: none"> <li>Per capita payment rate originally set too low</li> <li>Estimates of the number of enrolled patients per provider not always accurate because of population migration, leading to incorrect payments to providers</li> </ul>
	<b>Case-based (DRG)</b> [SIGO]	<ul style="list-style-type: none"> <li>Improve governance through effective and efficient management of funds</li> </ul>	<ul style="list-style-type: none"> <li>Current case groups capturing only some variation in cost per case</li> <li>Co-morbidities and outlier payments not captured</li> </ul>
	<b>Line-item budget</b> [MOH]	<ul style="list-style-type: none"> <li>Manage escalation of government health budget</li> </ul>	<ul style="list-style-type: none"> <li>Difficulty reallocating across expenditure items, leading to inefficiency</li> </ul>
 Nigeria	<b>Capitation</b>	<ul style="list-style-type: none"> <li>Ease administration of payment</li> <li>Manage costs at primary care level</li> </ul>	<ul style="list-style-type: none"> <li>Capitation payments perceived as too low by providers</li> <li>Providers denying access to eligible members if overall enrollment at the facility is low</li> <li>Upfront payment to providers leading to underprovision of care</li> <li>Some treatments that should be offered by primary care providers being referred to secondary/tertiary providers</li> </ul>
	<b>Fee-for-service</b>	<ul style="list-style-type: none"> <li>Promote quality health care delivery at secondary and tertiary levels</li> <li>Ensure that tariffs at secondary and tertiary levels are adequate to address the resource needs of these patients</li> </ul>	<ul style="list-style-type: none"> <li>Denial of referrals for secondary and tertiary services by health maintenance organizations (which must authorize referrals)</li> <li>Overprovision of unnecessary care to attract additional payments from patients</li> </ul>

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COUNTRY	PAYMENT SYSTEMS IN USE	OBJECTIVES	UNINTENDED CONSEQUENCES
 Philippines	<b>Capitation (per-family payment rate)</b> [PhilHealth]	<ul style="list-style-type: none"> <li>Control fees charged by health facilities</li> <li>Encourage more efficient management</li> <li>Simplify claims processing</li> <li>Make PhilHealth benefits more transparent and predictable for members</li> <li>Ensure financial resources for local government units to upgrade their health facilities</li> <li>Allow incentivizing of specific services (pay for performance)</li> <li>Improve gatekeeping functions of rural health units to minimize excess inpatient admissions</li> </ul>	<ul style="list-style-type: none"> <li>Payment rate too low to cover cost of outpatient benefit package</li> <li>Underprovision of services and low utilization by beneficiaries</li> <li>If the Local Government Unit does not allocate enough budget for rural health units, the capitation fund may be used for patients beyond those eligible for the benefit, thus providing inadequate services to those who are entitled to the primary care benefit.</li> </ul>
	<b>Case-based (23 case rates and all case rates, or ACRs)</b> [PhilHealth]	<ul style="list-style-type: none"> <li>Make PhilHealth benefits more transparent and predictable for members</li> <li>Ensure equity with full financial protection for the poor through the no-balance billing policy</li> <li>Implement cost sharing and cost management</li> <li>Streamline and reduce turnaround time for claims processing and payment</li> <li>Increase provider efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Tendency to undertreat patients / have excessively short hospital stays</li> <li>Delivery of services beyond provider service capability</li> <li>Increased referral of simple cases to higher facilities</li> <li>Higher rate of avoidance of sicker patients and/or more complicated cases by providers</li> <li>Upcoding, misdiagnosis, and double diagnosing</li> <li>Reported admissions exceeding bed capacity or reported services exceeding what can be provided in a day</li> <li>Increased out-of-pocket spending by members (asking patients to buy medicines)</li> <li>Fraudulent practices to increase admissions:               <ul style="list-style-type: none"> <li>- Offering patients incentives to increase utilization, promos, and “frequent flier” rewards</li> <li>- Using “sweepers” and “farmers” to recruit patients</li> </ul> </li> </ul>

COUNTRY	PAYMENT SYSTEMS IN USE	OBJECTIVES	UNINTENDED CONSEQUENCES
 <b>Philippines</b> (continued)	<b>Fee-for-service</b> [PhilHealth]	<ul style="list-style-type: none"> <li>• Base payment on actual inputs (e.g., professional fees, drugs and medicines, operating room fees)</li> <li>• Increase access to and provision of care</li> </ul>	<ul style="list-style-type: none"> <li>• Tendency to provide unnecessary services and procedures</li> <li>• Administratively complex process for reviewing and paying claims, which is inefficient and time consuming</li> <li>• Uncontrolled out-of-pocket payments due to providers being allowed to charge patients over and above PhilHealth rates</li> <li>• PhilHealth fully shifting away from fee-for-service to 23 case rates and ACRs in 2014</li> </ul>
	<b>Global budget</b> [PhilHealth]	<ul style="list-style-type: none"> <li>• Reduce out-of-pocket payments and expand the no-balance billing arrangement</li> <li>• Reduce transaction costs and payment delays</li> <li>• Promote efficient use of resources and quality of care</li> </ul>	<ul style="list-style-type: none"> <li>• Implementation suspended before it was fully implemented</li> </ul>
	<b>Line-item budget</b> [government health facilities and public health programs]	<ul style="list-style-type: none"> <li>• Implement mandatory budget allocation for government health workers' salaries and benefits</li> <li>• Ensure funding to implement priority health programs</li> </ul>	<ul style="list-style-type: none"> <li>• Budget allocations for health programs dependent on local elected officials</li> <li>• Salaried health personnel not always incentivized to deliver better-quality health services</li> <li>• Inadequate government salaries for doctors, leading to dual practices (government-paid doctors maintaining an off-hours private practice)</li> </ul>
 <b>Vietnam</b>	<b>Capitation</b> [National health insurance, or VSS]	<ul style="list-style-type: none"> <li>• Manage cost escalation</li> <li>• Ensure equitable allocation of health insurance funds</li> <li>• Control quality of health care</li> <li>• Improve management of resources by health care providers</li> <li>• Strengthen primary health care</li> </ul>	<ul style="list-style-type: none"> <li>• High financial risk to district hospitals due to fundholding</li> <li>• Potential benefits of capitation not being realized</li> <li>• Continued cost escalation, inequitable distribution of funds, and inefficiency</li> </ul>
	<b>Fee-for-service</b> [VSS]	None noted	<ul style="list-style-type: none"> <li>• Strong incentives for supplier-induced demand</li> <li>• Overprovision of high-cost services</li> <li>• Cost escalation</li> <li>• High administrative costs</li> </ul>
	<b>Line-item budget</b> [MOH]	(Historical supply-side subsidy for public providers)	None noted



## INDONESIA

# Identifying Objectives and Selecting Provider Payment Methods

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In January 2014, Indonesia took a major step toward UHC by unifying various public insurance schemes under a single agency—the Social Security Management Agency for the Health Sector (BPJS Kesehatan). BPJS is mandated to implement the National Health Insurance Program, or Jaminan Kesehatan Nasional (JKN), which aims to provide better health coverage for all Indonesians by extending insurance to the entire population.

JKN consolidates the country’s three previous main social health insurance programs: Jamkesmas (the government-financed health coverage program for the poor and near-poor), Jamsostek Health (the social health insurance program for formal-sector workers), and Askes (the social health insurance program for civil servants). JKN aims to provide a comprehensive package of services to all Indonesians, differing only in “hotel quality” (in terms of ward class). All JKN enrollees can access a wide range of health services provided by public facilities as well as private facilities that have opted to join the JKN scheme as providers.

The provider payment systems under JKN have carried over from the Jamkesmas scheme: case-based payment (Indonesia Case Based Groups, or INA-CBGs) for

inpatient services and capitation payment for primary care. The main objectives are to increase access to health services, improve the quality of health services, improve efficiency, and ensure cost management.

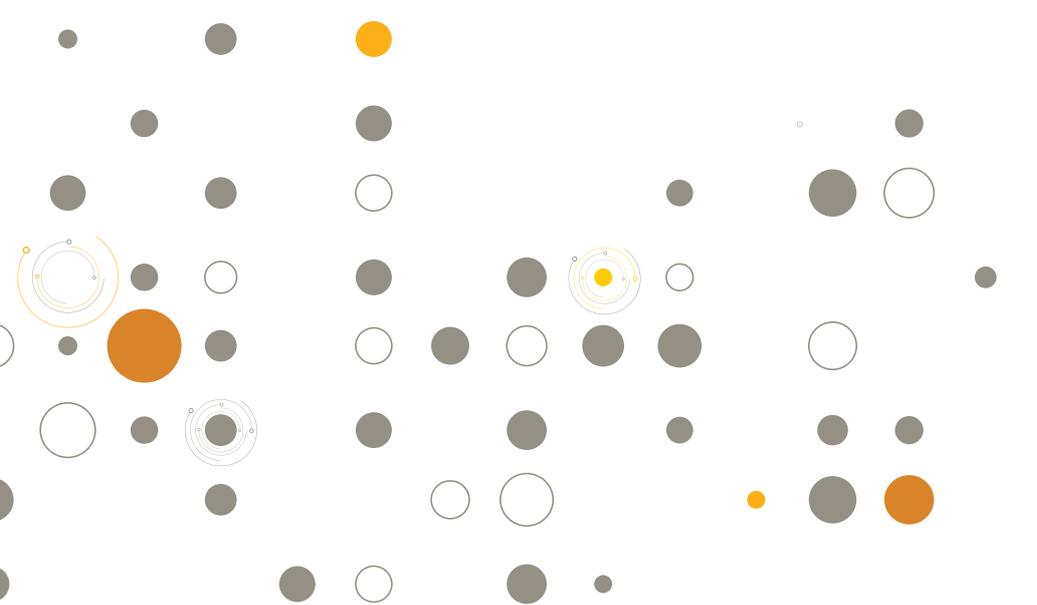
BPJS has identified potential unintended consequences of the payment methods that will require tracking.

For INA-CBGs:

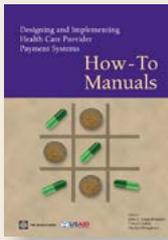
- Providers lowering their unit cost of hospital cases by reducing the length of hospital stays
- Reduced quantity and quality of services provided
- Providers selecting less complicated and therefore more “profitable” patients
- Upcoding of diagnoses
- Providers increasing the number of patients through early discharge and readmission and/or admitting patients for unnecessary services

For capitation:

- Underprovision of primary care services
- Over-referral



## FURTHER RESOURCES



### Designing and Implementing Health Care Provider Payment Systems (World Bank)

This manual helps countries design, manage, and implement reforms related to strategic purchasing, with an emphasis on changing their provider payment systems.

<http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/Peer-Reviewed-Publications/ProviderPaymentHowTo.pdf>



### Provider Payment Reform and Information Technology Systems (JLN)

This paper addresses key implementation questions raised by countries on the journey toward UHC and provides concrete data so policymakers and IT professionals alike can understand the ramifications of the provider payment choice on the IT systems underpinning them.

[www.jointlearningnetwork.org/resources/provider-payment-reform-and-information-technology-systems](http://www.jointlearningnetwork.org/resources/provider-payment-reform-and-information-technology-systems)



### Assessing Health Provider Payment Systems (JLN)

This step-by-step guide helps countries find answers to their provider payment policy questions through a country-led participatory process that draws on real-world practitioner experiences with designing, implementing, and managing the consequences of payment systems.



[www.jointlearningnetwork.org/resources/assessing-health-provider-payment-systems-a-practical-guide-for-countries-w](http://www.jointlearningnetwork.org/resources/assessing-health-provider-payment-systems-a-practical-guide-for-countries-w)

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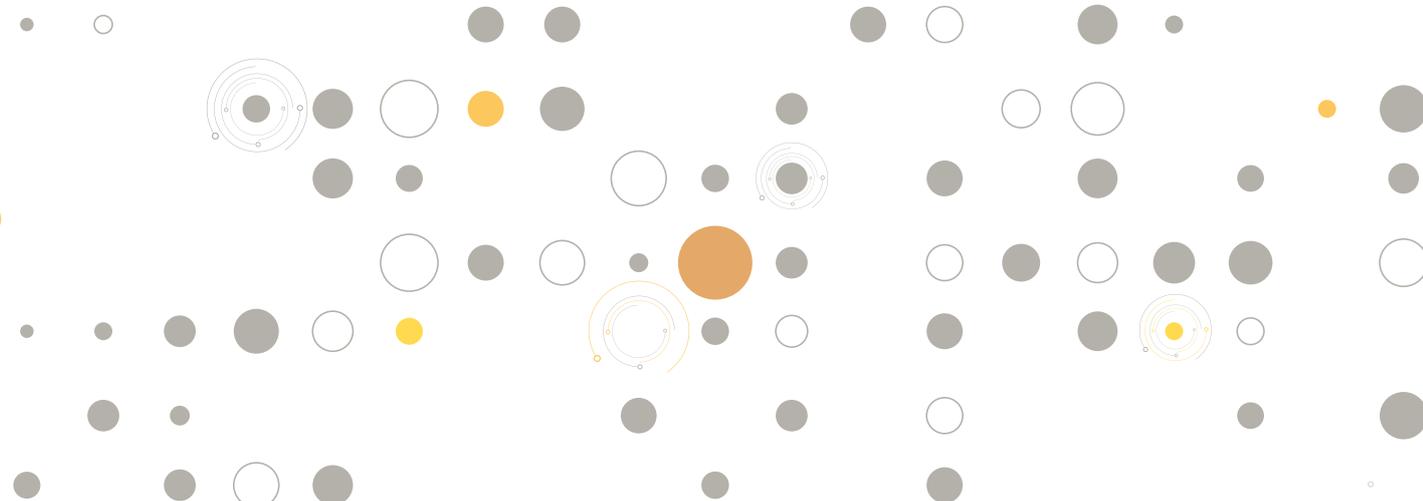
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STEP

2

## SELECT THE INDICATORS

### OBJECTIVE

Select and prioritize the indicators needed to answer the policy questions that were identified

### WHO IS INVOLVED

Policymakers, the purchaser, providers, and other stakeholders

### TOOLS

A menu of indicators for monitoring the intended and possible unintended consequences and a template to help evaluate and prioritize the indicators

**AFTER THE MOST IMPORTANT POLICY QUESTIONS ARE IDENTIFIED**, the next step is to select indicators that can help answer those questions. These routine indicators form the core of the provider payment monitoring system and constitute an “early-warning system” that will notify decision-makers when objectives are not being met or unintended consequences are emerging and corrective action may be needed. Some of the early-warning indicators may need additional indicators to interpret their values and trends, and they may point to additional analysis that is needed.

It is not necessary to monitor every individual provider behavior or response that relates to objectives and unintended consequences. Most provider responses to payment incentives, both positive and negative, are captured in higher-level “consequences.” For example, if providers are inflating admissions or upcoding, those behaviors will show up as the higher-level consequence of cost inflation. Only a high-level indicator related to that consequence (such as *Total payments per month*) needs to be monitored routinely.

If the value of this indicator increases, further analysis and deeper dives will be needed to uncover the cause (e.g., inflated admissions or upcoding).

Most countries find it useful to use no more than 20 indicators for routine analysis because a larger number can be burdensome and difficult to interpret. Additional indicators can be analyzed when specific issues emerge in the course of routine monitoring.

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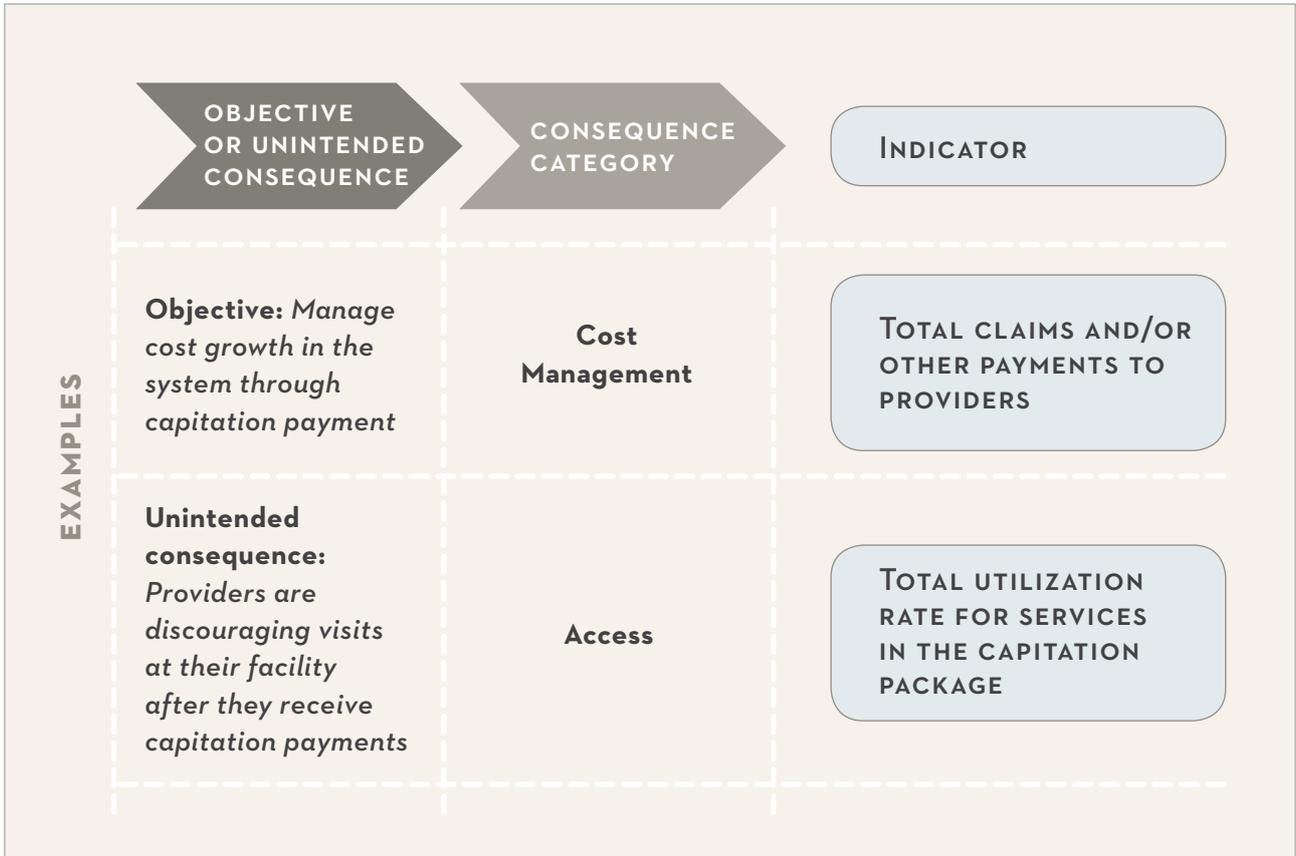
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**FIGURE 1**

## Logic of Selecting Indicators Within Categories of Provider Payment Consequences

Figure 1 shows the logic flow used in selecting indicators to monitor provider payment systems. The flow starts with the objective or unintended consequence of interest and moves to the high-level consequence category that it relates to and then the set of indicators that provide information on that consequence.



## TOP 10 INDICATORS FOR MONITORING PROVIDER PAYMENT SYSTEMS

Many options are possible for a Top 10 list of indicators, but the toolkit uses the following indicators as examples because they are representative of commonly used indicators.

### Claims and Other Payments\*

1. Total claims and/or other payments to providers in the defined time period
2. Average total claims and/or other payments to providers per registered person in the defined time period
3. Percentage of total claims and/or other payments attributed to medicines

### Access and Service Utilization

4. Total utilization rate (average number of visits or services per registered person in the defined time period)
5. Specific utilization rate (average number of visits or services per registered person for a specific service or attributed to a specific tracer condition [a condition that has high volume or high impact, such as malaria or hypertension] in the defined time period)
6. Percentage of registered persons seeking primary care in the defined time period
7. Percentage of total utilization attributed to preventive care in the defined time period
8. Average number of referrals made by providers per visit in the defined time period

### Quality

9. Rate of primary care-sensitive admissions per 1,000 people in the defined time period
10. Percentage of cases of a specific tracer condition that result in diagnosis and treatment according to guidelines in the defined time period

\* The form of total payments made to providers will differ depending on the organization of the purchasing system and the provider payment methods used. In a budget-based system or capitation payment system, payments to providers will be made by provider-specific allocations. In systems that pay based on activity or service outputs, payments are typically made to providers based on claims. In most systems, total payments to providers will be a combination of fixed allocations and claims payments.

*Limit the number of indicators, and select indicators that answer multiple questions.*

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## COMMON CHALLENGES



- It is difficult to determine appropriate indicators for some policy questions.
- Not all indicators lead to clear actions.
- Settling on the right number of indicators is difficult because everyone wants to know everything.
- Indicator selection can be driven by politics rather than technical best practices (e.g., because development partners or funders require specific indicators that are not on the priority list).
- The selected indicators do not effectively “tell the story.”

## SOLUTIONS AND LESSONS LEARNED



- Limit the number of early-warning indicators. (Most countries selected between seven and 15 indicators and no more than 20.)
- Select indicators that answer multiple questions (e.g., “the rate of primary care-sensitive hospital admissions” answers questions about both access to services and quality).
- Start small and increase the number of indicators, or start large and then reduce the indicator list as priority areas become clearer.
- Take the time to map the data sources and process at the outset to avoid selecting unachievable indicators.
- Organize a workshop or stakeholder meeting when introducing a new indicator, to ensure a common understanding of the indicator’s objective; agree on definitions and data to be collected and what the results will be used for.

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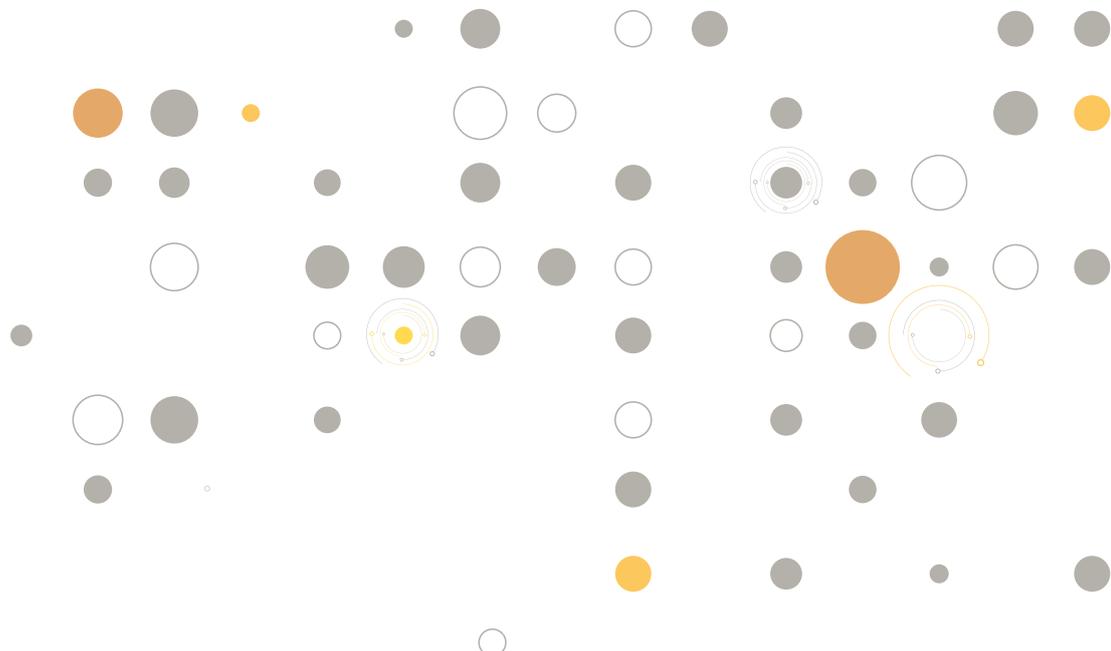
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**TOOL 2**

**Menu of Indicators**



Tool 2 is a *menu of indicators*—a searchable spreadsheet that links the different provider payment methods to the potential consequences they may lead to, both positive and negative, and to indicators to track those consequences. The indicators will show *what* is happening but not *why* or *how*, which will require further analysis and “deeper dives” into other indicators and analysis or supplemental qualitative information.

The menu of indicators (included in **APPENDIX C**) details how each potential objective or unintended consequence can be monitored.

The following information is included in the full spreadsheet, which is available at [www.jointlearningnetwork.org/resources/data-analytics-for-monitoring-provider-payment-toolkit](http://www.jointlearningnetwork.org/resources/data-analytics-for-monitoring-provider-payment-toolkit). (A screen shot is shown below.)

- Categories and subcategories of consequences
- Indicator definitions
- Illustrative indicator formulas (numerator and denominator)

A		B		C		D		E		F		G		H		
Consequence Category	Consequence Sub-Category	What issue is being addressed?		What question are you asking?	What to measure?	Indicator	What can you use to answer the question?									
		Definition	Numerator				Formulas	Denominator								
Equity and Fairness	Geography	Does the payment system contribute to fair and equitable distribution of resources across geographic areas (e.g. different regions, urban/rural, remote areas)?	Are the average (per person) allocations, payments, or claims equal across geographic areas? If not, is the variation due to a justifiable need?	Average total allocation, payment or claims per person	The average amount of resources (allocation, payment or claims) paid per person per month, quarter or year.	Total payments in the defined time period	Total enrolled population in the defined time period									
	Population	Does the payment system contribute to fair and equitable distribution of resources across populations with different health needs and different socioeconomic status?	Are the average (per person) allocations, payments, or claims equal across different populations? If not, is the variation due to a justifiable need? Are all individuals covered by the payment system?	Average total allocation, payment or claims per person % of population enrolled with a provider covered by the payment system	The average amount of resources (allocation, payment or claims) paid per person per month, quarter or year. % of population enrolled with a provider covered by the payment system	Total payments in the defined time period	Total enrolled population in the defined time period	Number of patients enrolled by the end of the defined time period (includes those who enrolled during the time period and those already enrolled)	Total number of people in catchment area							
	Provider	Does the payment system contribute to fair and equitable distribution of resources across providers?	Are the per provider allocations, payments, or claims equal across different providers? If not, is the variation due to a justifiable need?	Total claims and/or other payments to providers per month	The average amount of resources (allocation, payment or claims) paid to each provider per month, quarter or year.	Total payments in the defined time period	Total number of providers in the defined time period									
	Case Mix	Does the payment system contribute to fair and equitable distribution of resources across types of cases with different levels of severity?	Do the average (per person) allocations, payments, or claims vary in accordance to severity?	Average total allocation, payment or claims per person	The average amount of resources (allocation, payment or claims) paid per person per month, quarter or year.	Total payments in the defined time period	Total enrolled population in the defined time period									
Access to Services	Skimping on Services	Does the payment system encourage health providers/facilities to deliver fewer services than necessary or skimp on care in other ways?	Did the total utilization rate decrease with the introduction of the payment system? Is the total utilization rate appropriate given the needs of the population?	Total utilization rate	Total # of visits or services per enrolled person	Total # of visits or services in the defined time period	Total # of enrolled individuals									
			Did the utilization rate for specific conditions or services change significantly with the introduction of the payment system? Is the specific utilization rate appropriate given the needs of the population?	Specific utilization rate	Total # of visits or services attributed to tracer condition per enrolled person	Total # of visits or services in the defined time period attributed to tracer condition	Total # of enrolled individuals									
	Service or Treatment Delays	Does the payment system contribute to waiting lists, queues, or other barriers to patients?	Are more people experiencing waiting lists, queues, or other barriers in accessing services after the implementation of the payment system?	Rate of waiting lists and queues	% of patients experiencing waiting lists, queues, or other barriers in accessing services	# of patients experiencing waiting lists or queues	Total # of enrolled individuals									
	Risk Selection	Does the payment system encourage health providers/facilities to avoid sicker or more costly patients?	Are patients inappropriately referred to shift services?	Referral Rate	Average number of referrals made by providers per visit in the defined time period	Total # of referrals made by providers in the defined time period	Total # of visits to providers in the defined period									
			Was there a significant change in the ratio of highly complex to less complex patients? Definitions of complex may differ (e.g. top versus bottom 10th percentile of Case Mix group).	Ratio of highly complex to less complex patients (based on Case Mix).	Ratio of highly complex to less complex patients.	Total # of highly complex patients seen in the defined area during the defined time period	Total # of low complexity patients seen in the defined area during the defined time period									
			Are people being hospitalized more for conditions that could be treated at the primary care level because primary care providers are avoiding them or over-referring them?	Rate of primary care-sensitive admissions	# of admissions for defined primary care sensitive diagnoses per 1,000 population in the defined time period	Total # of admissions for primary care sensitive diagnoses in the defined time period	Total population in the defined time period divided by 1,000									
	Out-of-Pocket Payments	Does the system encourage providers to require patients to pay significant out-of-pocket fees to receive care?	What proportion of total payments in the health care system come from out-of-pocket payments?	Share of total health expenditure from out-of-pocket payments	% of private expenditure on health payments	Total out-of-pocket payments	Total health care expenditure									
	Engagement of the Private Sector	Does the payment system encourage efficient engagement of the private sector?	Did an appropriate proportion of visits occur within the private sector?	What proportion of visits occur within the private sector?	Proportion of visits occur within the private sector?	Number of claims submitted by private providers in the time period.	Total number of claims submitted in time period.									
		Are the costs of providing care within the private sector sustainable?	What proportion of total health care delivery costs are paid out to private providers?	Proportion of total health care delivery costs are paid out to private providers?	Proportion of total health care delivery costs are paid out to private providers?	Total amount of payments paid to private providers in the defined time period	Total amount of payments paid in the defined time period									
Quality and Continuity of Care	Quality	Does the payment system encourage providers/facilities to provide higher-quality care?	Are tracer conditions (conditions that have high volume or high health impact) being appropriately diagnosed and treated?	Appropriate diagnosis and treatment for tracer condition	% of cases of defined tracer condition with diagnosis and treatment according to guidelines	# of cases of defined tracer condition in the defined time period	Total # of cases of defined tracer condition in the defined time period									
			Are patients satisfied with the care that they receive?	% of patients reporting that they are satisfied with the services they received.	% of patients reporting that they are satisfied with the services they received.	# of individuals who report that they are satisfied with the services they receive in the defined time period	Total # of individuals receiving services									
			Is the staffing rate (personnel per patient) sufficient to ensure high-quality care?	Staffing to patient ratio	The ratio of personnel to patients	The total number of staff (doctors, nurses, other?) employed in the defined area during the defined time period	The total number of patients in the defined area during the defined time period									

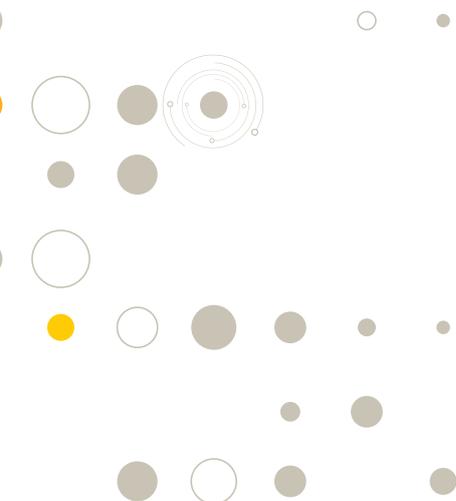
**TABLE 2****Categories and Subcategories of Consequences**

Table 2 details the categories and subcategories of consequences captured by the menu of indicators.

CONSEQUENCE CATEGORY	CONSEQUENCE SUBCATEGORY	DESCRIPTION
Equity and Fairness	Geography	Does the payment system contribute to fair and equitable distribution of resources across geographic areas (e.g., different regions, urban/rural, remote areas)?
	Population	Does the payment system contribute to fair and equitable distribution of resources across populations with different health needs and different socioeconomic status?
	Provider	Does the payment system contribute to fair and equitable distribution of resources across providers?
	Case Mix	Does the payment system contribute to fair and equitable distribution of resources across types of cases with different levels of severity?
Access to Services	Skimping on Services	Does the payment system encourage health providers/facilities to deliver fewer services than necessary or skimp on care in other ways?
	Service or Treatment Delays	Does the payment system contribute to waiting lists, queues, or other barriers to patients?
	Risk Selection	Does the payment system encourage health providers/facilities to avoid sicker or more costly patients?
	Out-of-Pocket Payments	Does the payment system encourage providers to require patients to pay significant out-of-pocket fees to receive care?
	Engagement of the Private Sector	Does the payment system encourage efficient engagement of the private sector?
Quality and Continuity of Care	Quality	Does the payment system encourage health providers/facilities to provide higher-quality care? Does the payment system encourage efficiency to the detriment of quality of care?
	Primary Care	Does the payment system encourage providers/facilities to deliver basic care at the primary level?
	Prevention	Does the payment system encourage health providers/facilities to focus on health promotion, prevention, and chronic disease management?
	Responsiveness	Does the payment system encourage health providers/facilities to be responsive to the non-medical needs of patients? Has patient satisfaction improved?

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CONSEQUENCE CATEGORY	CONSEQUENCE SUBCATEGORY	DESCRIPTION
Efficiency of Resource Use	Efficient Mix of Outputs	Does the payment system encourage delivery of services at the right level?
	Efficient Mix of Inputs	Does the payment system encourage providers to use an efficient mix of inputs, or are any inputs overused or underused?
		Does the payment system encourage health providers/facilities to deliver services in a costly way?
	Productivity	Does the payment system encourage higher productivity and/or reduce absenteeism among health workers?
	Overuse of Services	Does the payment system encourage health providers/facilities to deliver too many services?
Does the payment system encourage health providers/facilities to increase unnecessary referrals?		
Financial Sustainability	Provider Financial Viability	Does the payment system help health providers/facilities stay financially viable and avoid deficits?
	Provider Autonomy	Does the payment system help increase the autonomy of health providers/facilities?
	Cost Management	Does the payment system help keep total expenditures in the health system within available resources?
Efficiency of Administration	Administrative Burden	Is the payment system burdensome to administer?
	Payment Delays	Does the payment system contribute to delayed payment to health providers/facilities?
Gaming/Fraudulent Behavior	Gaming/ Fraud	Does the payment system encourage any gaming or fraudulent behavior?



## TOOL 3

## Indicator Scoring Template



Tool 3 is a template that can help countries evaluate and prioritize potential indicators in a transparent, systematic, and participatory way. It suggests seven criteria based on country experience that fall into two categories, theoretical and practical. These criteria are used to score each indicator, which can help countries choose which indicators to select.

This tool also includes a reference table that helps countries determine the score for a given criterion by providing definitions, questions to consider, and a paradigm for scoring each indicator. Indicators with the highest scores can be considered for the core set of indicators.

CRITERION	DEFINITION	QUESTIONS TO CONSIDER	SCORE		
			Weak (1 to 5 points)	Moderate (6 to 10 points)	Strong (11 to 15 points)
Theoretical Criteria			Weak (1 to 5 points)	Moderate (6 to 10 points)	Strong (11 to 15 points)
<b>Sensitivity</b>	Provider responses to the payment system will lead to noticeable changes in the indicator that can be accurately interpreted.	<ul style="list-style-type: none"> <li>How does this indicator reveal whether the objectives of the provider payment system are being met?</li> <li>How does this indicator reveal whether unintended consequences of the payment system are occurring?</li> <li>How would you interpret a change (increase or decrease) in the indicator measure?</li> <li>How much will the value of the indicator change in a short period of time?</li> </ul>	Only large changes at the system level will be picked up by the indicator.		Small changes in the system will be picked up by the indicator.
<b>Frequency at which changes can be detected</b>	Changes in the system will be quickly reflected by changes in the indicator.	<ul style="list-style-type: none"> <li>Are changes in the system quickly reflected by changes in the indicator, or is there a significant time lag?</li> </ul>	Changes will be reflected in the indicator after a year or longer.	Changes will be reflected in the indicator within 6 to 12 months.	Changes will be reflected in the indicator within 1 to 3 months.
<b>Specificity</b>	Indicator will accurately reflect changes in the system that it is intended to measure.	<ul style="list-style-type: none"> <li>Will any factors affect the indicator that do not reflect changes in provider behavior?</li> <li>Will the indicator be sensitive to changes other than changes in provider behavior?</li> </ul>	Indicator may be heavily influenced by other factors in the system and/or is very unstable.	Indicator may be mildly affected by other aspects of the system.	Indicator will be affected only by changes in provider behavior.

**TOOL 3**
**(continued)**

CRITERION	DEFINITION	QUESTIONS TO CONSIDER	SCORE		
			Weak (1 to 5 points)	Moderate (6 to 10 points)	Strong (11 to 15 points)
<b>Practical Criteria</b>					
<b>Feasibility</b>	The data for the indicator are feasible to collect over time.	<ul style="list-style-type: none"> <li>How difficult/expensive is it to collect the data needed for the indicator?</li> <li>Are the required data routinely collected?</li> <li>How reliable are the data?</li> </ul>	No existing source of data is available.	Existing sources can provide data, but some action will be needed to make data available.	Existing sources of regularly collected data are available.
<b>Purity</b>	The data for the indicator cannot be manipulated, corrupted, gamed, or adjusted.	<ul style="list-style-type: none"> <li>How easy or difficult is it to manipulate or adjust the existing data?</li> </ul>	Data are easy to manipulate because data are self-reported and/or collection is not standardized and/or data cannot be easily audited.	There is opportunity for manipulation, but there are ways to mitigate the opportunity and/or uncover it.	There is little opportunity for manipulation, possibly because collection is automated, data are collected by a (trained) third party, collection is standardized, data can be regularly audited, and/or checks and balances are in place.
<b>Usability</b>	The results of the indicator can (and will) be used to inform policy decisions.	<ul style="list-style-type: none"> <li>How closely does the indicator answer the policy question?</li> <li>How easy or difficult is it to translate the results of the indicator into a decision?</li> </ul>	Indicator cannot be interpreted without other data and/or a deep dive. The indicator value does not lead to clear interpretation or action.	More information will often be needed to understand the indicator results, but that information is easily obtainable.	Indicator can generally be interpreted without supplemental information. Indicator values clearly point to policy actions.
<b>Acceptability</b>	Indicator is acceptable to key stakeholders and does not create political risks or concerns.	<ul style="list-style-type: none"> <li>Do all stakeholders agree on this indicator?</li> <li>Will policymakers understand what the indicator conveys?</li> <li>Are there any political risks associated with reporting this indicator?</li> </ul>	Indicator is complex and/or controversial. Reporting the indicator is politically risky.	There is general agreement on the indicator, but there may be lack of understanding among some stakeholders or perceived political risk.	Indicator is generally accepted, easily understood, and not politically risky.
<b>How the Indicators Work Together as a Group</b>				No	Yes
<b>These questions should be asked about the indicators as a group.</b>	<ul style="list-style-type: none"> <li>Does the set of indicators cover each objective and unintended consequence?</li> <li>Do any indicators need to be considered together in order to reach the correct interpretation?</li> <li>Do the indicators as a group provide a good picture of how the payment system is performing?</li> </ul>				

**TOOL 3**

**(continued)**

The following example shows how the Indicator Scoring Template might be filled out for one indicator: *Total payments per month*. A blank version of the template can be found in [APPENDIX B](#).

INDICATOR: TOTAL PAYMENTS PER MONTH		
Criterion	Score	Assessment
<b>Theoretical Criteria</b>		
Sensitivity	13	Indicator is directly affected by even small changes in provider behavior in response to provider payment systems.
Frequency at which changes can be detected	13	Depending on sample size and natural variation, significant changes may not always appear quickly but changes and trends will be easy to see. Changes will be reflected relatively quickly.
Specificity	8	Total payments will vary for reasons other than the provider payment system, including seasonal variation and more people covered.
<i>Theoretical Subtotal</i>	34/45	
<b>Practical Criteria</b>		
Feasibility	11	Many/most systems are already collecting claims or other data on total payments, but operational challenges may emerge, such as data being collected manually or not easily aggregated.
Purity	13	Data collection can be automated, standardized, and audited.
Usability	8	Data are easily understood but will not give information about which provider behaviors are driving the results, so deeper dives will often be needed in order to act on the data.
Acceptability	15	Total claims and/or other payments to providers in a month is easily understood, and no complicated modeling is needed to create the indicator.
<i>Practical Subtotal</i>	47/60	
<b>Indicator Total</b>	81/105	Overall strong indicator



## GHANA

# Selecting Indicators for the Capitation Early-Warning System

Ghana's National Health Insurance Scheme (NHIS) began piloting a capitation payment system for primary care in one region in 2012 and began scaling up nationwide in 2015. Experience from the pilot suggested the need for an early-warning monitoring system to detect unintended consequences of capitation in time for corrective action. Discussions were held across departments in the National Health Insurance Authority (NHIA) to identify the highest-priority indicators.

In defining the set of indicators, the NHIA considered the following questions:

- What are the objectives of capitation in Ghana?
- What are the most critical potential negative results (unintended consequences)?
- Which indicators are aggregate and which are at the provider level?

Similarly, the NHIA considered the data collection process, the types of reports that would be generated, and the users of such reports. The following table shows the nine indicators selected to form the early-warning system for capitation.

The indicators were selected to routinely answer key questions related to utilization of capitation services, referrals, active enrollment with a preferred primary care provider, and the value of total claims in order to detect any cost escalation before sustainability concerns became serious.

KEY QUESTIONS	INDICATORS	DESCRIPTION
<b>Enrollment</b>		
Are people registering with a Preferred Primary Provider (PPP)?	% of active members who have registered with a PPP	Indicator is linked to the high-level management dashboard. Asks whether people who have registered are being active participants by selecting a PPP.
<b>Utilization</b>		
Is the package of capitation services being delivered?	% of registered persons who made at least one visit to their PPP	These two indicators measure use of the system. Very high and very low rates should both raise alarm.
	# of capitation visits per registered person	
	% of claims in the capitation basket with a diagnosis of malaria	Indicator helps monitor the amount of malaria (a tracer condition in Ghana) in the country. It also measures how much of the capitation payment is being spent on this single disease.
Are inappropriate referrals or overuse of medicines occurring?	% of outpatient cases outside of capitation package	Indicator captures unintended consequence of providers shifting services to those outside the capitation package.
	Cost of claims for medicines per capitation encounter	These two indicators measure the extent to which providers are increasing prescriptions to supplement their capitation revenue, since medicines are paid fee-for-service outside of the capitation payment.
	# of medicines per capitation package encounter	
<b>Claims</b>		
Are non-capitation claims increasing?	% of total claims for G-DRG claims	These two higher-level indicators are related to claims volume. They show whether inappropriate referrals and prescriptions are leading to inflated claims.
	% of claims for medicines	



## PHILIPPINES

# Monitoring the All Case Rates Payment System

Since 2011, the national health insurance agency in the Philippines, PhilHealth, has paid for hospital cases using the case-based (case rate) payment method. PhilHealth initially used the case rate method to pay for 23 specific diagnoses and surgical procedures and expanded to all hospital cases (All Case Rates payment system, or ACR) in 2013.

PhilHealth selected a set of four indicators to monitor the consequences of the ACR payment system for inpatient services. The indicators relate to quality of care, financial risk protection, patient and provider satisfaction, and fraud

detection. The table below shows the policy questions PhilHealth wanted to address, along with details about the indicators. It also shows the criteria used to select the indicators.

The monitoring system is implemented through the Health Care Providers Performance Assessment System, a set of tools used to assess the performance of accredited health care providers; standardize the process of recording, reporting, and analyzing provider performance; provide feedback for remedial measures or sanctions; and establish the monitoring team at PhilHealth regional offices.

	OBJECTIVE: HIGH-QUALITY CARE	OBJECTIVE: FINANCIAL RISK PROTECTION	OBJECTIVE: PATIENT/PROVIDER SATISFACTION	OBJECTIVE: FRAUD DETECTION
<b>Policy question</b>	Does ACR ensure quality care for patients?	Does ACR ensure that patients are not financially burdened?	Does ACR lead to operational efficiency for PhilHealth and ultimately patient/provider satisfaction?	Does ACR lead providers to game PhilHealth?
<b>Indicator name</b>	Length of stay	No-balance billing (NBB)	Turnaround time for claims processing	Upcoding/upcoding
<b>Definition</b>	Number of hours a patient stays in the health care institution, from admission to discharge	No other fees or expenses charged to or paid by the patient beyond the package rates paid by PhilHealth	Number of days it takes for a claim to be processed, from receipt to payment	Use of a code with a higher case rate to gain more financial benefit
<b>Unit of measure</b>	Hours (or sometimes days)	% compliance = # eligible for NBB with no out-of-pocket / total # eligible for NBB (monthly)	Days	Disease/procedure code used
<b>Measurability</b>	Data elements available in claims data (in data dictionary)	Data elements collected in patient exit survey (yet to be defined in data dictionary)	Data elements collected in claims data and in operations reports (in data dictionary)	Claims profile may show high volume of claims for certain codes. These are then validated and clinical charts are reviewed.

**PHILIPPINES**

**(continued)**

	<b>OBJECTIVE: HIGH-QUALITY CARE</b>	<b>OBJECTIVE: FINANCIAL RISK PROTECTION</b>	<b>OBJECTIVE: PATIENT/PROVIDER SATISFACTION</b>	<b>OBJECTIVE: FRAUD DETECTION</b>
<b>Magnitude or importance</b>	Very important in ensuring quality of care	Very important in ensuring financial risk protection, especially for indigents	Very important in measuring operational efficiency of PhilHealth	Very important in detecting adverse practices
<b>Applicability</b>	Monitors effectiveness of care management	Monitors administrative efficiency of health care institutions	Monitors operational efficiency of PhilHealth  Monitors whether efficiency will lead to patient or provider satisfaction	Detects fraud  Highlights areas for further investigation
<b>Challenges</b>	Lack of clinical practice guidelines for local context  Resistance from health care providers (institutions and professionals)	Supply-side issues: Government procurement Insufficient budget  Lack of awareness among indigents of their eligibility for NBB  Not all institutions have Philhealth Customer Assistance Relation Empowerment Staff (PCARES), so there could be areas where the indicator cannot be measured.	Backlogs in claims payment  Validation of adverse findings found through the Health Care Providers Performance Assessment System	Possible collusion between providers and members  Difficulty of onsite investigation due to lack of necessary skills among PhilHealth investigators
<b>Selection criteria</b>	Based on evidence  Actionable	Actionable	Ease of computation  Actionable	Availability of data to create needed indicators  Actionable
<b>Potential unintended consequence to be measured</b>	Gaming behavior of providers (upcoding/upcoding) or undertreatment/avoidance of sicker patients	Non-acceptance of patients for admission  Underutilization of services	Payment delays that may affect institutional efficiency or financial management  Financial sustainability of National Health Insurance Program (NHIP)	Legal cases filed against PhilHealth  Denial or payment delays that affect institutional efficiency or financial management

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The following table shows **TOOL 3** applied to the four indicators used by PhilHealth.

CRITERION	LENGTH OF STAY (OBJECTIVE: HIGH-QUALITY CARE)	NO-BALANCE BILLING (OBJECTIVE: FINANCIAL RISK PROTECTION)	TURNAROUND TIME (OBJECTIVE: PATIENT/PROVIDER SATISFACTION)	UPCASING/UPCODING (OBJECTIVE: FRAUD DETECTION)
<b>Sensitivity</b>	Shows the expected minimum basic health care with modest accommodation.  An abrupt decrease in length of stay that is not within clinical practice guidelines (CPGs) could indicate a problem with quality of care.	Indicator monitors whether (and by how much) patients are charged on top of PhilHealth benefits.  Out-of-pocket expenditures, especially among indigents, mean that hospitals may be having problems with financial management and procurement.	Indicator shows whether the provider and PhilHealth can control costs through improved efficiency.  Increase in turnaround time could indicate problems with PhilHealth's administrative efficiency. Month-to-month increases in turnaround time could signal need for administrative tweaks to prevent backlogs.	Shows unintended consequences or gaming (such as a provider deliberately using a code with higher reimbursement).  An increase in claims for a condition that is not usually claimed is a trigger. So is the claiming of a second case rate for a first case rate with a low amount.
<b>Frequency</b>	Indicator should be monitored quarterly or, if possible, monthly. May be used with other indicators, such as over-bed capacity or bed turnover rate.	Indicator is monitored quarterly	Indicator is monitored monthly. Frequency may change during a disease outbreak.	Validation studies by PhilHealth may trigger temporary changes in coding practices and indicator results.
<b>Specificity</b>	Indicators for over-bed capacity and bed turnover rate may be used with this indicator.  Changes are strongly linked to provider payment methods (e.g., fee-for-service often leads to longer stays).	Supply-side issues related to availability of drugs/medicines and diagnostic procedures, particularly in public facilities, affects compliance with NBB.	Disease outbreaks could affect facilities' ability to reduce turnaround time, unrelated to provider payment method.	Changes in which case rates are covered (e.g., by final diagnosis vs. resource use) will lead to indicator changes.
<b>Feasibility</b>	Data are in claims forms and are collected routinely.  The use of Power BI makes it easy to monitor this indicator.  Data are collected from claims but require medical professionals and updated CPGs if prepayment medical review is needed.	Data collection is difficult because it requires conducting surveys, which are labor and resource intensive.  To use this as a monitoring indicator, PCARES needs to be deployed to all health care providers. Feasibility is affected by factors such as security, armed conflict, and isolated areas where deployment of PCARES is difficult.	Data collection is easy because data elements are in the claims processing system and are monitored regularly.	Data are not yet routinely collected because algorithms have not been defined.  Data collection is difficult unless an algorithm is established to determine triggers to pull data.  A statistical tool is needed, along with additional staff capability.

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**PHILIPPINES**

**(continued)**

CRITERION	LENGTH OF STAY (OBJECTIVE: HIGH-QUALITY CARE)	NO-BALANCE BILLING (OBJECTIVE: FINANCIAL RISK PROTECTION)	TURNAROUND TIME (OBJECTIVE: PATIENT/PROVIDER SATISFACTION)	UPCASING/UPCODING (OBJECTIVE: FRAUD DETECTION)
Purity	<p>Hospitals may manipulate information on the claim form, but data can be validated by looking at clinical charts.</p> <p>Data are reliable except when a hospital games PhilHealth. An e-logbook or e-claims can be used to prevent gaming.</p>	<p>Purity depends on survey collection and data management.</p> <p>Purity is difficult to ensure because data are collected through a survey and may need to be validated.</p>	<p>Data may be manipulated if the definitions of claims processing duration are not standard across regions.</p> <p>Turnaround time is monitored in the system, so purity is high.</p>	<p>Hospitals can easily use a code with a higher amount because the case rate is paid on the most resources used and not the final diagnosis.</p> <p>Purity of data is difficult to ensure, especially if no algorithm is used to determine triggers.</p>
Usability	<p>Indicator is highly usable but should be paired with other indicators. Some deep diving is required.</p>	<p>It is difficult to enforce policy changes based on indicator since supply side is not in PhilHealth's control.</p>	<p>Turnaround time alone cannot answer the policy question. The law provides for payment within 60 days. The Governance Commission for government-owned or government-controlled corporations requires PhilHealth to pay within 30 days.</p>	<p>Information is difficult to translate into action. If fraud is detected, legal cases might have to be filed, and the providers involved could countersue.</p>
Acceptability	<p>Indicator is based on CPGs. Since professional societies sometimes argue that actual practices do not agree with CPGs, acceptability may be low.</p> <p>Indicator is difficult for policymakers to understand.</p>	<p>Hospitals do not agree with the indicator.</p> <p>Indicator is difficult for policymakers to understand.</p>	<p>Providers rely on faster release of payments to better manage their facilities. PhilHealth uses this indicator to monitor operational efficiency.</p> <p>Policymakers should understand the indicator.</p>	<p>Indicator is difficult for policymakers to understand.</p> <p>Stakeholders are unlikely to agree to the use of this indicator.</p>

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## Selecting Indicators for a Capitation Early-Warning Monitoring System

Vietnam began piloting a capitation payment system in four provinces in 2014 through the national health insurance system, Vietnam Social Security (VSS). The Ministry of Health charged the Health Strategy and Policy Institute (HSPI) with developing a monitoring system to track the effectiveness of the capitation payment system. Working with Ministry of Health officials, HSPI identified about 60 potential monitoring indicators related to health service delivery, payment of health services, quality of care, and use of health insurance funds. Collecting the data for the indicators proved to be burdensome for both HPSI and health system administrators, so they agreed to develop an early-warning monitoring system using a smaller number of key indicators that would give policymakers and practitioners insight into the impact of capitation and information for adjusting the system, if necessary. The monitoring system would use existing data to generate routine information in a timely and easily digestible manner. Working with a core working group of stakeholders who were involved in developing the capitation payment system, they narrowed the list to five indicators.

The working group included individuals who had responsibility for monitoring the capitation pilot (HSPI), developing provider payment policy (Ministry of Health), paying providers (VSS), and handling IT and data management (Ministry of Health and VSS).

The working group agreed on the following criteria to evaluate indicators:

- Will the capitation payment system lead to a change in this indicator?
- How much and how frequently will the indicator likely change due to the payment system?
- How easily can data for this indicator be collected from available sources?
- How easily can an increase or decrease in this indicator be interpreted?
- How reliable is the quality of the data?

Through this process, they agreed on these five indicators:

**INDICATOR 1:** Number of health insurance cardholders registered for primary care

**INDICATOR 2:** Average number of outpatient visits at each registered hospital per cardholder

**INDICATOR 3:** Inpatient referral rate

**INDICATOR 4:** Average claim value for an outpatient visit

**INDICATOR 5:** Average number of medicines per visit or admission

## FURTHER RESOURCES



### Performance Measurement for Health System Improvement (WHO)

This report offers guidance to policymakers, regulators, patient groups, and researchers on the technical and policy aspects of performance measurement. It draws on international experience in examining the various levels at which health system performance is undertaken, the available technical instruments and tools, and the implications of their use for those charged with health system governance.

[www.who.int/management/district/performance/PerformanceMeasurementHealthSystemImprovement2.pdf](http://www.who.int/management/district/performance/PerformanceMeasurementHealthSystemImprovement2.pdf)

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## COLLECTING AND ANALYZING THE DATA

STEP <b>3</b>	IDENTIFY DATA SOURCES
STEP <b>4</b>	MONITOR AND IMPROVE DATA QUALITY
STEP <b>5</b>	ANALYZE AND REPORT THE DATA

**THE NEXT STEP AFTER SELECTING THE INDICATORS for the provider payment monitoring system is collecting and analyzing the data.** This may involve working with a reporting and analytics team, an IT department, or others who are focused on data and reporting. The activities involved in producing the indicators include agreeing on precise definitions for the indicators (including what data elements are required and how the indicators will be calculated), identifying data sources, creating a process to assess and act on data quality issues, and determining a meaningful way to report and visualize the data.

**STEP****3****IDENTIFY DATA SOURCES****OBJECTIVE**

Identify data sources needed to create the selected indicators and determine how they will be linked

**WHO IS INVOLVED**

Data analysts, data collection agencies, IT departments, reporting and analytics teams, and other stakeholders

**TOOLS**

A template for defining data elements, an online customizable data dictionary, and a template for mapping data flows back to a data source

## Defining the Indicators and Data Elements

**TO IDENTIFY DATA SOURCES**, it is necessary to first define each indicator precisely, which involves identifying the formula for calculating the indicator (numerator and denominator) and each individual data element. Each data element can then be mapped to its source.

Defining what the indicators mean involves reaching a common understanding and agreement across stakeholders within an organization or across several organizations. It may be helpful to hold a workshop with key stakeholders to discuss and come to agreement on definitions because some indicators or data elements may mean different things to different people. For example, terms such as *claim*, *visit*, and *referral* can be defined as appropriate for the local or country context, but there should be agreement on the definitions so there will be consistent understanding and use of those terms.

A health data dictionary helps create a common language, thereby simplifying the consistent communication and exchange of information among people, organizations, and information systems and providing a collective

understanding of how to use and interpret data. It is therefore a useful tool for describing the indicators and their attributes, the indicator calculations, data elements required, and data sources. It should serve as a detailed reference document for using the indicators and can also help in structuring analytic files by clearly showing which data elements will need to be linked to each other and how.

A health data dictionary may already exist at the national level, at the organizational entity level (ministry of health or national purchasing agency), or specifically for a data source system. For example, the claims data system may have its own data dictionary. A dictionary of indicator definitions can be incorporated into an existing data dictionary or can be created using a common template to define the indicators, such as [TOOL 4](#), or in an online data dictionary application, such as [TOOL 5](#).

## COMMON CHALLENGES



- Indicators are not defined properly, precisely, or in a standardized way, so they cannot be interpreted.
- Stakeholders have differing definitions and interpretations of indicators.
- Stakeholders have different interpretations of data elements.
- Some important indicators (e.g., episodes of care, referral rates, quality of care, patient experience) are difficult to define.
- The methodology for measurement is wrong (e.g., some incidents are double-counted or the population in the denominator is not the same as the population in the numerator).
- Some indicators do not capture context-specific situations (e.g., hospital bed turnover rate or bed occupancy rate not capturing when there is more than one person per bed).
- It is difficult to get political buy-in on the need for a health data dictionary.

## SOLUTIONS AND LESSONS LEARNED



- Create standard definitions for indicators (in a data dictionary).
- Standardize indicators and definitions across regions, agencies/institutions, etc.
- When defining indicators on utilization, be specific about whether they measure visits, services, or episodes (e.g., does the visit end when the patient leaves or after the episode is complete?).
- Get top-level buy-in on the need for a health data dictionary and agreement from political stakeholders to create it.

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*Get top-level buy-in on the need for a health data dictionary and agreement from political stakeholders to create it.*

**TOOL 4**

**Indicator Definition Template**



Tool 4 is a template that can be used to document each indicator, including:

- Definition of the indicator (including, if applicable, a timeframe such as per month or per year)
- Data elements
- Calculations
- Possible disaggregation levels
- Data sources
- Information on data quality checks
- Statistics for version control
- Which organizations (or individuals) are involved in the various steps to create the indicator

The following example shows how the template might be filled out for one indicator: *Total payments per month*. A blank version of the template can be found in [APPENDIX B](#).

INDICATOR: TOTAL PAYMENTS PER MONTH		
Names and definitions	Full name of indicator	Total claims and/or other payments to providers per month
	Short name of indicator	Total payments per month
	Definition of indicator	Total value of claims and/or other payments submitted by providers and approved for payment in a calendar month
Data elements	What data elements are required?	Value of claims by month Definition of a claim
	Are the data elements currently collected/used?	Yes
Calculations	Numerator	Value of claims submitted and approved for payment in a calendar month
	Denominator	None
	Adjustments (if any)	None
Disaggregation	What levels of disaggregation are needed (if any)?	May want claims per month broken down by claim types (inpatient and outpatient)
		May want claims per month broken down by geographic regions

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<b>TOOL 4</b>	<b>(continued)</b>
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INDICATOR: TOTAL PAYMENTS PER MONTH		
<b>Data sources</b>	Data source name	Total_claims_mmm
	Data source format	Microsoft Excel file
	Data source constraints (e.g., use only after a certain year)	None
	Is the data source currently used?	Yes
<b>Data quality</b>	Restrictions on data use (e.g., age limits, conditions)	None
	Data quality checks	Large month-to-month or same month year-to-year (greater than one standard deviation) discrepancies should trigger a review.
<b>Monitoring</b>	Date created	
	Date updated	Updated by 15 <sup>th</sup> of each month
<b>Organizations/ departments/ people involved</b>	Organization that produces/owns the data	Claims department
	Organization that produces reports and indicators	Data Reporting and Analysis department

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## TOOL 5

# Open Health Data Dictionary



Tool 5 is the Open Health Data Dictionary (openHDD) application ([www.openhdd.org](http://www.openhdd.org)) developed by the JLN IT Initiative for creating and storing data dictionaries. It is a collaborative, web-based, free, open-source application that promotes interoperability among the various information systems used in health care and health care financing. In other words, it enables communication among people and information systems in order to support health financing systems. openHDD allows you to write definitions for indicators and data elements and share this information on the web or as XML or PDF files.

The following screen shot example was set up online in the openHDD application to show how our example indicator, *Total payments per month*, could be documented online in a data dictionary tool.

Home | About | Community | **Dictionaries** | Help | Links | Logout

Dictionary / Section / Indicator

**Evaluation**

- JLN Indicator Definitions
  - Provider Payment System Indicators
    - Average total claims and/or other payments to providers per registered person per month
    - Percentage of total claims and/or other payments attributed to medicines
    - Total claims and/or other payment: month

**Dictionaries**

The tree on the left shows the items currently defined in openHDD. You can open / close folders by clicking on them. Click on an item preceded by a document icon to display that item's details.

By default, the tree shows organizations / dictionaries / sections / data elements. To see some other "cross-section" of the database, select an item from the dropdown menu at the top of the tree. If recently added items are not being displayed, click the [Refresh] button.

Indicator – Public	
Section	Provider Payment System Indicators
Full Name	Total claims and/or other payments to providers per month
Short Name	Total Payments per Month
Description	Total value of claims and/or other payments submitted in a calendar month
Data Elements	Value of claims by month and definition of a claim
Calculation	Value of claims submitted for payment in a calendar month
Disaggregation	Claim types (inpatient and outpatient); geographic regions
Data Source	Claims
Data Quality Notes	Large month-to-month or same month year-to-year discrepancies should trigger a review.
Date Created	21-03-2017
Date Updated	21-03-2017
Owner	Claims Department

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## Identifying Data Sources

After the indicators have been defined, the next step is to identify data sources—where the data will come from. Existing data may be available, or new data may need to be collected. Most countries start by relying on existing data sources and their current IT systems. As the monitoring system develops, it may become possible to add additional indicators using data collected from special surveys and/or supplemental data.

If the organization has data available for reporting (e.g., in a data warehouse or from a data and analytics team), identifying data sources may be fairly easy. It is often challenging, however, to bring together data from different parts of the system (e.g., merging membership data with claims data within a purchasing agency) or access data from outside the immediate organization.

## Mapping the Data from Data Origin to Data Use

If it isn't clear where the data for an indicator will come from, a data mapping exercise can help to show how the data will flow from the original source to the point of analysis. Identifying any intermediate steps between data collection and data use and determining whether any manipulations or summary of the data happen along the way are important for understanding the validity and quality of the data.

For example, in the case of claims data, the exercise is helpful for understanding:

- How the data are captured and recorded at the provider level for an outpatient visit or an inpatient stay
- How the data are entered into the provider's information system
- How the data are submitted to the purchasing agency
- How the purchasing agency processes or adjudicates the claim
- Whether and how the data are extracted from the operational claims information system to a claims data warehouse

Understanding this data flow can help in determining the best source of data—for example, the hospital information system or the purchasing agency's claims data warehouse. Knowing whether the data are validated, coded, corrected, or summarized in any of those steps is crucial to ensuring that the data mean what they appear to mean. (Clearly, it is important to ensure a common and consistent definition of a claim at each point in the claims data flow.)

A data mapping exercise involves interviewing each stakeholder who touches the data between data origin and data use and documenting that information using a data flow chart. (It may be easier to start at the end point of data use and map backwards to the data origin.)

Questions to be considered during the exercise can include:

- Where will the data come from?
- How will they be collected?
- Which definitions are used by the different stakeholders?
- Which stakeholders are allowed to have access to which parts of the data?
- What does each data element mean?
- How readily available are the data?
- How frequently are the data updated?
- What data quality processes exist?
- Are data aggregated, summarized, calculated, or manipulated at any interim step between data collection and the point of analysis?

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## COMMON CHALLENGES



- The data management system in general is substandard.
- Data sources are fragmented and in different formats, making it difficult to link data.
- Getting data from outside the organizations is difficult, especially getting data from providers (who may think the data will be used against them rather than to help them).
- Sources for some important indicators (e.g., referrals and self-referrals or prescribing) are difficult to find.
- Since payment is not linked to claims in capitation, claims are not submitted, making it difficult to generate data to monitor the system.
- Reconciling data from a decentralized system is difficult.

## SOLUTIONS AND LESSONS LEARNED



- Involve stakeholders in identifying data sources.
- Use all available data sources, including both quantitative and qualitative information (e.g., claims data, exit interviews, medical audit results, hotlines).
- Special surveys or supplemental data may be needed when data are not available from routine sources.
- Limit the number of indicators generated from self-reported data outside of claims and other routine sources.
- Use proxy indicators when data for an indicator are not available.
- Contracts and even laws and regulations may not be enough to induce providers to provide data. It may be necessary to appeal to prestige, show the value of the data, threaten serious sanctions (e.g., nonpayment), or use other leverage.
- Data sharing will not happen without data governance and health data privacy guidelines.
- Develop a data governance policy and legal framework to specify who can access data and for what purpose. This will help reduce providers' hesitation to share data and assure them that the data will not be used against them.

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## TOOL 6

## Data Mapping Template



Tool 6 is a data mapping template that can help provide a common understanding of the data flow process from the first point of data collection to reporting for each indicator. It can also help identify potential obstacles to data collection, analysis, or dissemination. The data mapping exercise may also point to needed changes in data collection forms, database design, data storage systems, or requested aggregation levels.

The template should be completed for each combination of data element and organization/department involved with the data. The following example shows how the template might be filled out for one indicator: *Total payments per month*. A blank version of the template can be found in [APPENDIX B](#).

INDICATOR: TOTAL PAYMENTS PER MONTH		
Organization/department:		
Question	Details	Example
In what format do you receive the data?		Excel spreadsheet
How often do you receive the data?	<ul style="list-style-type: none"> <li>Is there a set data submission schedule?</li> <li>What is the frequency of data submission?</li> </ul>	Monthly (by 15 <sup>th</sup> of the month)
Data storage	<ul style="list-style-type: none"> <li>In what database or file do you enter or store the data after you receive them?</li> <li>What computer program do you use?</li> <li>How frequently do you enter/store the data?</li> <li>Any challenges in entering/storing the data?</li> <li>Any privacy issues when storing the data?</li> </ul>	<p>Enter value for total claims per month (monthly_claims) in the Excel database each month.</p> <p>Claims data are anonymized and stored without identifying information. (Stored data set includes month, number of claims, and disaggregation units.)</p>
Do you perform any data aggregations?	<ul style="list-style-type: none"> <li>Which ones?</li> <li>Using which calculations?</li> <li>How often?</li> <li>Are there any challenges in aggregating the data?</li> </ul>	<p>Data are aggregated by region using region list from MOH. If region list changes, rerun disaggregation for previous 13 months to allow trending.</p> <p>Run aggregation monthly (with each data update).</p>
Data quality	<ul style="list-style-type: none"> <li>Which quality checks do you perform on the data?</li> <li>Are there any known issues with data quality?</li> </ul>	<p>Monitor month-to-month and same month year-to-year (one standard deviation to trigger review).</p> <p>No known data issues.</p>
Data usage	<ul style="list-style-type: none"> <li>Do you use the data for reporting? If so, in which reports and for which purpose, and who is the audience?</li> <li>Are the data used for decision-making? If so, how?</li> </ul>	<p>Report is sent to MOH.</p> <p>Audience is the planning team.</p> <p>Potential shift of resources if claims increase and this reflects a true increase in health service utilization rather than fraud or gaming.</p>

**TOOL 6**
**(continued)**
**INDICATOR: TOTAL PAYMENTS PER MONTH**
**Organization/department:**

Question	Details	Example
<b>Sharing the data</b>	<ul style="list-style-type: none"> <li>• With whom do you share the data?</li> <li>• In which format do you share the data (type of form, file, database, aggregation levels)?</li> <li>• How often do you share the data?</li> <li>• How do you share the data (e.g., Internet, email, USB flash drive, disk, hard copy)?</li> <li>• Are there any delays or challenges in preparing the data and/or sending them?</li> </ul>	<p>Data shared using a table that shows last 13 months (total and by region).</p> <p>Data are shared/updated monthly.</p> <p>Data are shared via website upload.</p>
<b>Additional comments about this data element and/or indicator</b>		


**GHANA**
**An Interim Solution to Generate Analyzable Claims Data**

Ghana's National Health Insurance Authority (NHIA) is working to improve its use of data to inform key purchasing decisions by using high-level management dashboards, provider payment early-warning systems, and other analytic tools.

After selecting nine indicators for the capitation early-warning system, the NHIA conducted an exercise to map the data back to the original sources and diagnose data quality issues. The NHIA is implementing an e-claims application to automate the claims data, but scale-up efforts have proceeded slowly and most providers submit their claims in summary form using Excel.

The data-quality diagnostics identified problems with the structure, format, and linkability of the Excel-based claims summary data. Some of the challenges identified included:

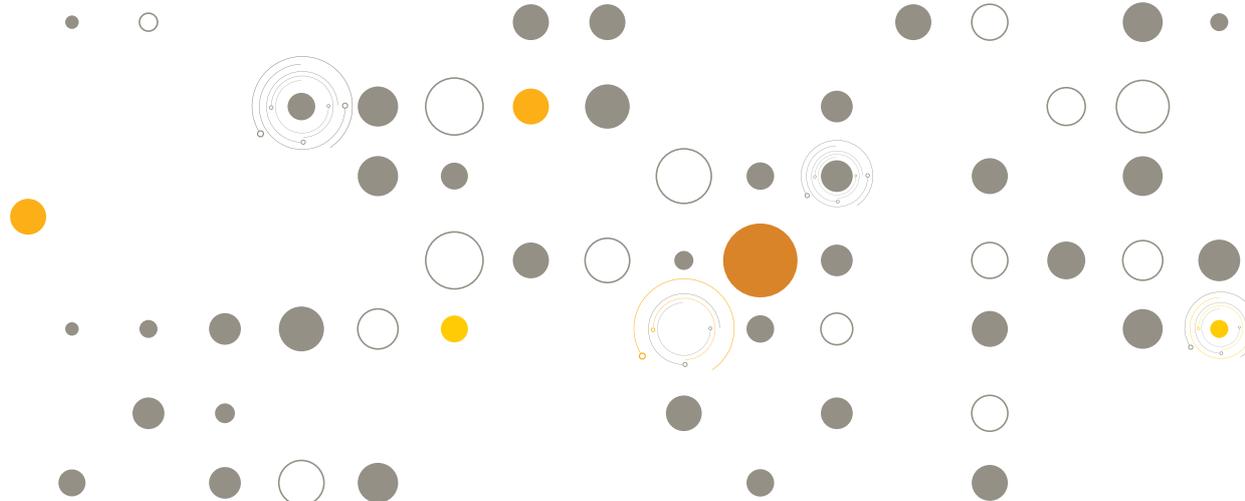
- No standard structure for claims files
  - » Some providers submitted a separate file for each month and a separate worksheet for each specialty.
  - » Tables did not use standard headings.
  - » Not all providers included a monthly summary sheet.
- No standard format for data elements
  - » Some files used different formats for dates in the same file (*mm/dd/yy*, *mm/dd/yyyy*, and text only)
  - » Not all providers used standard specialty titles and corresponding G-DRG codes.
- Difficulty linking data
  - » No unique identifiers were used for hospitals, departments, etc.
  - » Enrollment data were difficult to link to utilization data housed in other departments.

<b>GHANA</b>	<b>(continued)</b>
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Because of challenges with data structure and quality, only three of the early-warning indicators could be produced relatively easily, two could be partially produced, and four could not be produced at all, as shown in the following figure.

KEY QUESTIONS	INDICATORS	CURRENTLY FEASIBLE?
<b>Utilization</b>		
Is the package of services being delivered?	% of enrolled members who made at least one visit to their PPP	No
	# of capitation visits per enrolled member	No
	% of claims in the capitation basket with a diagnosis of malaria	Partially (only if medicine prescribed)
Are inappropriate referrals or overuse of medicines occurring?	% of Out Patient Department cases outside of the capitation basket	Partially (only if medicine prescribed)
	Value of claims for medicines per capitation encounter	Mostly
	# of medicines per capitation basket encounter	No
<b>Enrollment</b>		
What is the PPP enrollment rate?	% of active members enrolled with a PPP	No
<b>Claims</b>		
Are non-capitation claims increasing?	% of total claims for G-DRG claims	Mostly
	% of claims for medicines	Mostly

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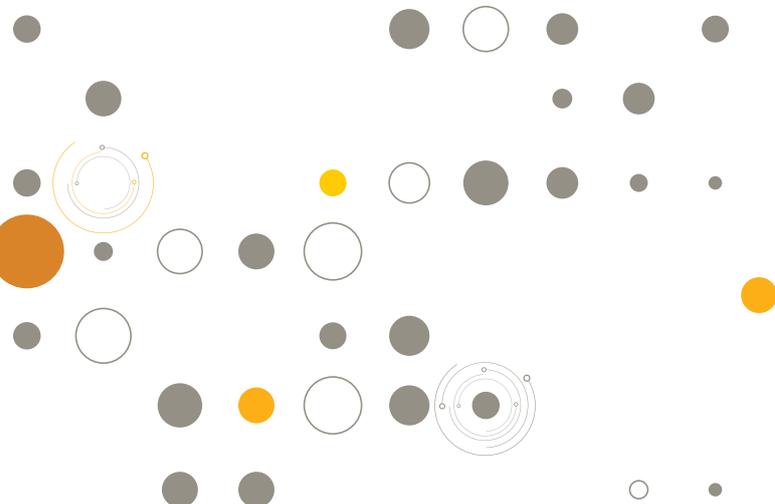
As an interim solution during the transition to electronic claims, the NHIA introduced a standardized version of the Excel-based summary form that included unique identifiers (to allow data to be aggregated) and filters and drop-down menus (to improve data quality). The standardized form collects the same information already submitted by all providers, so scaling up use of the new form has been relatively easy. The forms are customized for each type of provider (e.g., the G-DRG drop-down menu includes only

G-DRGs that are allowed for that type of provider) to both simplify data input (e.g., shorter lists to scroll through) and increase data quality (e.g., reduce the number of incorrect G-DRGs entered). All mandatory fields must be completed before the tariff for the treatment case is populated, which ensures completeness of data. The service buttons are included for the convenience of users, allowing them to print or email data or clear all data (when starting a new month).

### Standard Claims Summary Form

Hospital #	Surname	Other names	Date of Birth	Gender	Adm Date	Disch Date	Hospital Records Number	Claim Check Code (CCC)	Procedure	ICD10	Diagnosis	G-DRG	Service	Medicine	Other serv.	Total Claimed	Speciality	Child/Adm	Inpatient/Outpatient	Speciality2
1	Aaaaa	Bbbbbb	1-Jan-10	M	1-Jan-16	1-Feb-16	hhh888	7676777		M93.1	Kienbock's disease of adults	OBY35A	259.06			259.06	OBY	A	Inpatient	OBST & GYN/AE
2	Aaaaa	Bbbbbb	2-Jan-10	M	2-Jan-16	1-Feb-16	hhh889	7676778		A07.3	Isotoponiasis	OBY28A	462.24			462.24	OBY	A	Inpatient	OBST & GYN/AE
3	Aaaaa	Bbbbbb	3-Jan-10	M	3-Jan-16	1-Feb-16	hhh890	7676779		B54	Unspecified malaria	OPDC14A	0.00			0	OPDC	A	Outpatient	CAPITATION
4	Aaaaa	Bbbbbb	4-Jan-10	M	4-Jan-16	1-Feb-16	hhh891	7676780		O80	uncomplicated delivery	ASUR06A	854.63			854.63	ASUR	A	Inpatient	ADULT SURGERY
5	Aaaaa	Bbbbbb	5-Jan-10	M	5-Jan-16	1-Feb-16	hhh892	7676781		B54	Unspecified malaria	ASUR06A	854.63			854.63	ASUR	A	Inpatient	ADULT SURGERY
6	Aaaaa	Bbbbbb	6-Jan-10	M	6-Jan-16	1-Feb-16	hhh893	7676782		A00.9	Cholera, unspecified	PSUR9C	1002.59			1002.59	PSUR	C	Inpatient	PEDIATRIC SURGERY
7	Aaaaa	Bbbbbb	7-Jan-10	M	7-Jan-16	1-Feb-16	hhh894	7676783		B35.3	Trinea pedis	OBY34A	133.08			133.08	OBY	A	Outpatient	OBST & GYN/AE (A to B)
8	Aaaaa	Bbbbbb	8-Jan-10	M	8-Jan-16	1-Feb-16	hhh895	7676784		A20.7	Septicemic plague	OPDC06A	26.05			26.05	OPDC	A	Outpatient	GENERAL OPD
9	Aaaaa	Bbbbbb	9-Jan-10	M	9-Jan-16	1-Feb-16	hhh896	7676785		C18.9	unspecified	ZOOM07A	53.20			53.20	ZOOM	A	Outpatient	CROSS MDC

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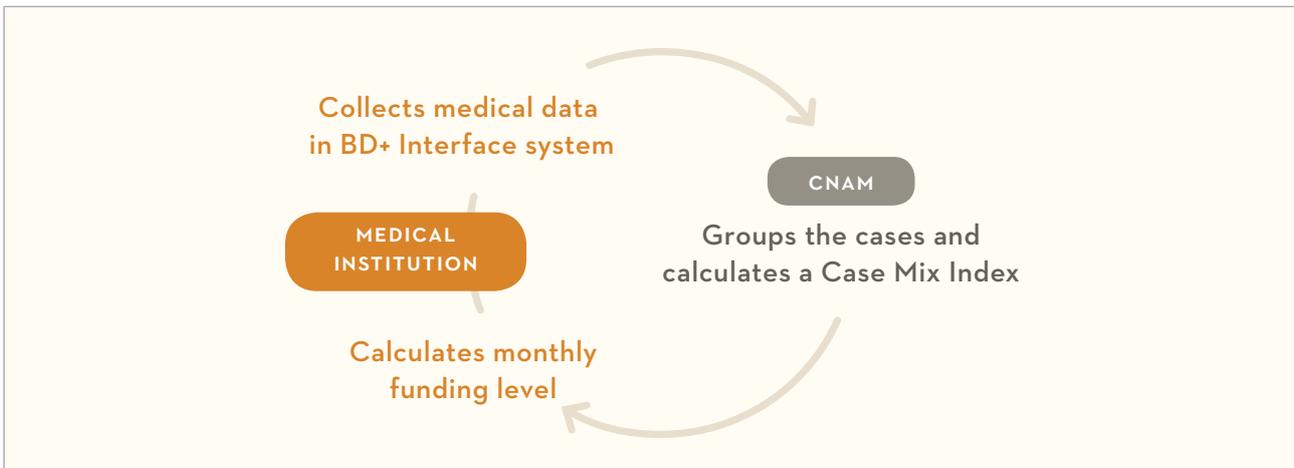


## MOLDOVA

### Mapping Data for Monitoring DRG Hospital Payment

In Moldova, hospitals have access to a DRG computer application called BD+ Interface that collects clinical data such as the number of treated cases and their diagnoses. Each hospital creates a .XML file each month and sends it to the National Health Insurance Company (CNAM). CNAM imports the file into the BD+ Interface system, which groups the cases to determine the average relative complexity of the hospital's cases. This is reflected in the

calculated case mix index (CMI), which is 1.0 for hospitals with cases of average complexity. The CMI increases as the complexity of a hospital's cases increases (and decreases as the complexity of cases decreases). This index, in turn, is sent to the hospital as a .XML file that can be imported into the hospital's DRG application, which is an SQL server with a "finance" application that uses the data to calculate monthly funding levels.



## VIETNAM

### Mapping Capitation Rapid-Response Indicators

The working group that developed the capitation monitoring system in Vietnam selected the following five indicators for monitoring the implementation of the provider payment system:

**INDICATOR 1:** Number of health insurance cardholders registered for primary care

**INDICATOR 2:** Average number of outpatient visits at a registered hospital per health insurance cardholder

**INDICATOR 3:** Inpatient referral rate

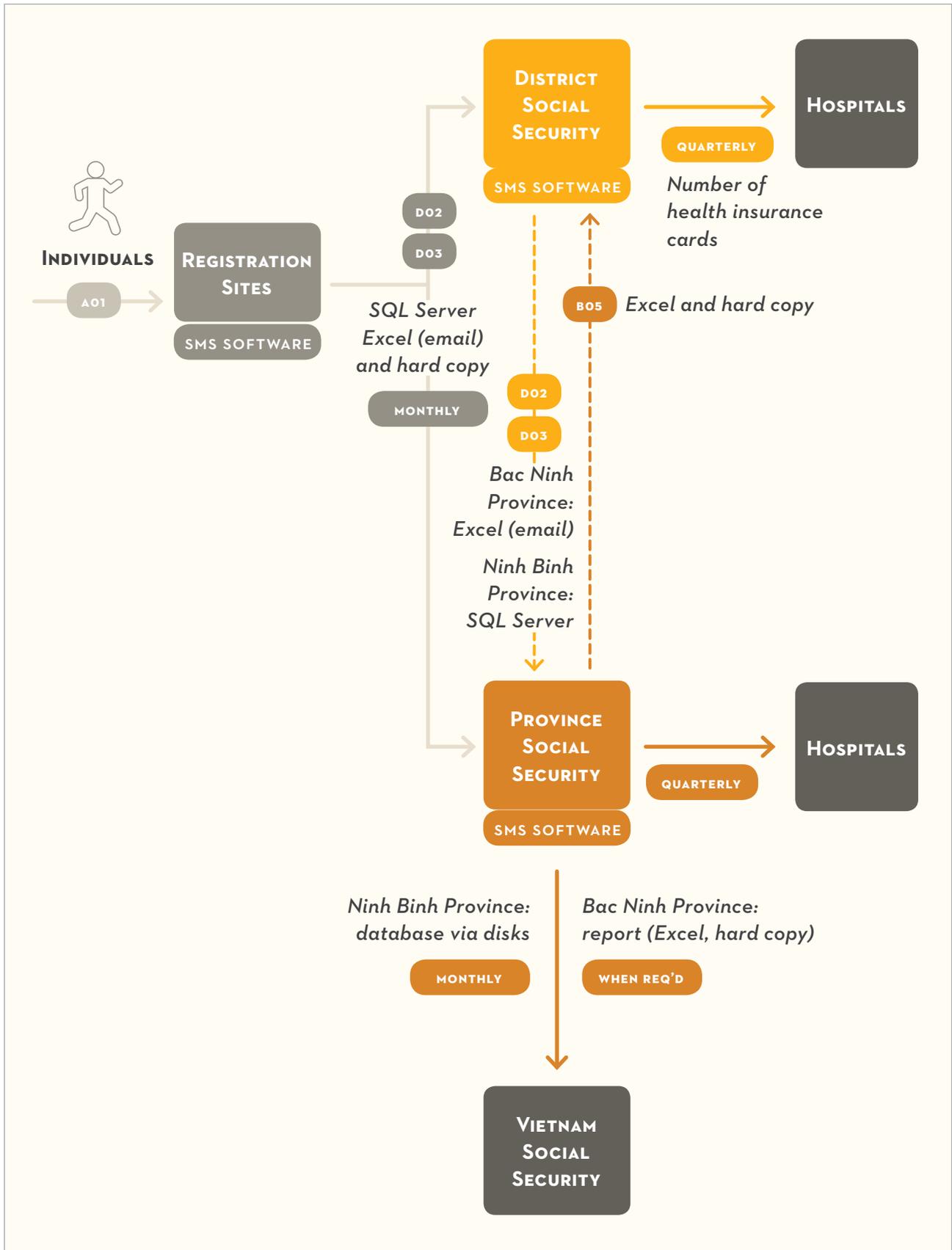
**INDICATOR 4:** Average claim value of outpatient visit

**INDICATOR 5:** Average number of medicines per visit/admission

The working group then carried out a data mapping exercise for each indicator to identify the format of the data, the data flow, and the most appropriate method for generating routine data (e.g., hard copy, computer program). It also developed a questionnaire to help generate a data flow diagram for each indicator. The questionnaire was originally meant to be used in each of the four provinces piloting the capitation payment system, but after a pretest the working group decided that the most efficient way to complete the mapping exercise was to hold a one-day workshop with the data management specialists from the four provinces. The workshop format allowed discussion and validation across provinces, and it helped reveal where different data management practices were being used. After the workshop, the working group produced data flow diagrams for each indicator showing the movement of data from the original source to the destination, where the data could be captured to produce the rapid-response indicators.

## Flow Diagram for Indicator 1 in Vietnam

The following figure shows the data flow diagram for the number of health insurance cardholders registered for primary care.



## FURTHER RESOURCES



### Connecting Health Information Systems for Better Health (JLN)

This e-book is a reference guide for countries that want to link their UHC and eHealth information systems using a standards-based approach. It provides a set of actionable steps and links to resources to develop a national eHealth standards framework. Real-world perspectives are provided from a select group of eHealth experts who have shared lessons learned from their countries' eHealth and UHC experiences.

<http://www.jointlearningnetwork.org/resources/connecting-health-information-systems-for-better-health>

### HEALTH DATA DICTIONARIES

#### Promoting Interoperability of Health Insurance Information Systems through a Health Data Dictionary (JLN)

This paper helps countries that are consolidating health insurance schemes to achieve universal coverage by providing an overview for national policymakers on the role of the health data dictionary and why establishing one early on is a key step in promoting standardization and system interoperability.

<http://www.jointlearningnetwork.org/resources/promoting-interoperability-of-health-insurance-information-systems-through>

### openHDD

openHDD is a collaborative, web-based, open-source tool developed by the JLN for creating data dictionaries in general and health data dictionaries in particular. A health data dictionary enables consistent, accurate, and systematic data collection and exchange.

<http://openhdd.org/>



#### Creating a Common Language for Universal Health Coverage: How OpenHDD Can Help You (JLN)

This brochure provides an overview of how openHDD works and who is using it.

<http://www.jointlearningnetwork.org/resources/creating-a-common-language-for-universal-health-coverage-how-openhdd-can-be>

### DATA MAPPING TOOLS

Basic office productivity software can be useful for creating simple flow diagrams, which are sufficient for many situations. For more complex diagrams, Microsoft Visio is one suggested software package:

<https://products.office.com/en-US/Visio/flowchart-software?omkt=en-US>

For consistency, flow charts should use some common symbols. Examples can be found at:

<http://asq.org/learn-about-quality/process-analysis-tools/overview/flowchart.html>

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STEP

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## MONITOR AND IMPROVE DATA QUALITY

### OBJECTIVE

Create a process to ensure that indicators are based on accurate, consistent, and complete data

### WHO IS INVOLVED

Data analysts, data managers, IT department, and other stakeholders

### TOOL

A checklist of elements to be included in a data quality assurance system

**DECISION-MAKERS AND OTHER STAKEHOLDERS** should be able to trust the indicator values and monitoring system results, so data used to calculate the indicators should be complete, accurate, consistent, and available in a timely manner. When indicators are based on quality data, they correctly reflect what's happening and in time for the results to be acted on. This makes data quality a concern for the whole system.

The IT department can implement business rules and coding systems to ensure correct data entry and data consistency, and data managers can monitor data quality and give feedback to data collectors. But the policymakers who need the data to make decisions cannot trust the indicator results if they doubt the data quality.

The same data can be considered good quality when used for one purpose but low quality when used for a different purpose. For example, claims data may be of sufficient

quality for the purchaser to determine the total payments it needs to make to providers each month, but they might not provide enough detail or accuracy to assess and monitor the quality of the services delivered. Also, users may have different opinions about the quality of the data and validity of the results. That makes it difficult to define when data quality is good enough. Data quality generally improves greatly when the data are being used at all levels of the system and quality is being actively measured.

## COMMON CHALLENGES



- Data reporting systems lack standards or enforcement of existing standards is lacking within and between facilities.
- Different facilities and departments within facilities use different data collection methods.
- Data standards set by policymakers do not reflect reality at the health facility level.
- There are problems with timeliness, accuracy, and completeness of the data.
- Fraud and/or gaming in data reporting may be occurring.
- Moving from paper-based claims to digital claims requires an overhaul of the data quality monitoring system.

## SOLUTIONS AND LESSONS LEARNED



- Start with the data you have and improve the quality as you develop the monitoring system.
- Improve basic information and communications technology (ICT) across all facilities.
- Agree on standard formats for data sets as well as standard coding so different data sets can be easily combined and analyzed.<sup>2</sup>
- Standardize data formats where possible.
- Create unique identifiers for registered people and providers for use across databases to allow for linking between and within databases.
- Use multiple approaches to monitor data quality—business rules within the electronic system for claims validation, manual checks of a subset of claims, and data verification at the provider level during clinical audits.
- Use incentives to reward health facilities for sharing timely, accurate, and complete data.
- Help providers use their data for decision-making. Data quality will improve if providers are using the data they submit or if their payment is linked to data submission.
- Measure and report the time and resources it takes to clean data to build a case for political buy-in on investing in database resource and to generate ideas on how to improve efficiency.

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<sup>2</sup> Most countries use ICD-10 (the 10th revision of the International Classification of Diseases and Related Health Problems, developed by WHO) for coding diagnoses, modifying it to suit their needs. ICD-10 provides codes for classifying diseases, disorders, injuries, and other health-related conditions. WHO is developing ICD-11 for countries that are currently using ICD-9; it may be preferable for those countries to continue using ICD-9 until ICD-11 is available rather than moving to ICD-10 and then to ICD-11. See [www.who.int/classifications/icd/en](http://www.who.int/classifications/icd/en).

**TOOL 7****Data Quality Checklist**

Data quality must be addressed at multiple stages during the monitoring process:

- When the process for data collection and database entry is established
- When data are collected
- When data are entered
- When databases are maintained

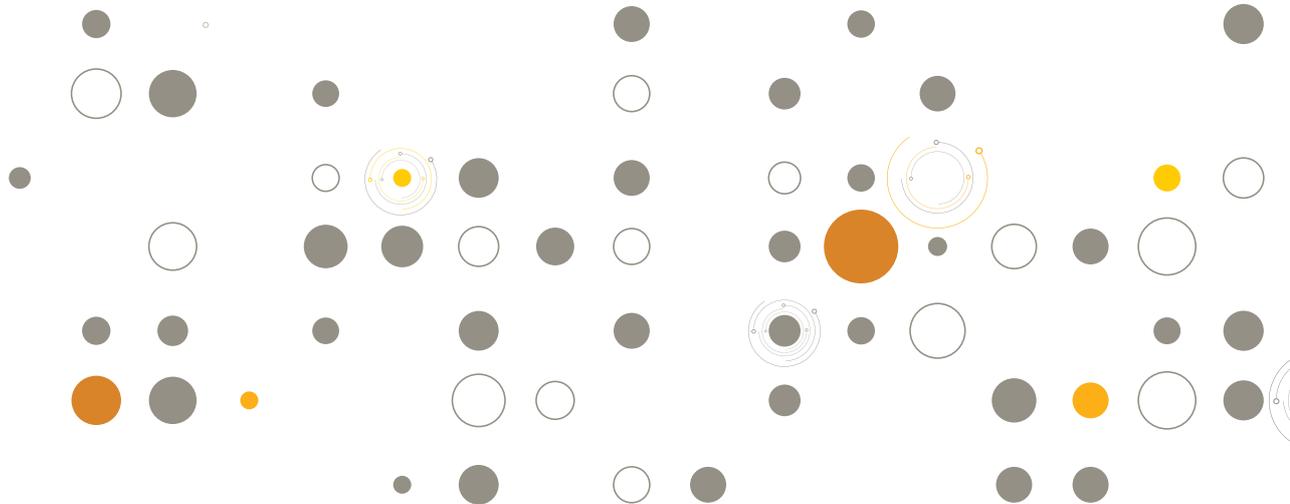
Tool 7 lists the elements to include in a data quality checklist that can be used to ensure that data quality issues are addressed at each step. Note that some potential issues are considered at multiple stages. If the data submission system is automated, some of these data quality checks will not apply.

**DATA QUALITY CHECKLIST**

Data Quality Check	Description	When to Conduct the Check
Data collection forms align with database structure	<ul style="list-style-type: none"> <li>• Database documents all data collected on collection forms.</li> <li>• Data forms collect data in the same way that they are entered in the database (e.g., if the database allows only “yes” or “no,” the forms allow only “yes” or “no”).</li> </ul>	<ul style="list-style-type: none"> <li>• Database development</li> <li>• Data collection</li> </ul>
Quick data check to catch obvious errors	<ul style="list-style-type: none"> <li>• Check for completeness of mandatory fields.</li> <li>• Check internal consistency (e.g., pregnancy should not be coded for a male patient).</li> <li>• Check unlikely extreme values (e.g., a person who is 300 cm tall). (The system should provide an override option if an unusual value is confirmed/documentated.)</li> </ul>	<ul style="list-style-type: none"> <li>• Data collection</li> <li>• Data entry</li> </ul>
Limit free text	<ul style="list-style-type: none"> <li>• Use lists or drop-down menus when possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Data entry</li> <li>• Database development</li> </ul>
Use coding standards and validation rules (relying on international standards where possible)	<ul style="list-style-type: none"> <li>• Limit values of data items to a group of allowed values.</li> <li>• Use systems such as ICD coding for diagnoses and interventions.</li> </ul>	<ul style="list-style-type: none"> <li>• Data collection</li> <li>• Database development</li> </ul>
Limit unnecessary redundancies	<ul style="list-style-type: none"> <li>• Some redundancies can be used for data checks, but capturing the same information multiple times can lead to inconsistencies.</li> <li>• Data captured more than once means multiple areas to change in case of edits.</li> </ul>	<ul style="list-style-type: none"> <li>• Data collection</li> <li>• Database development</li> </ul>

DATA QUALITY CHECKLIST (CONTINUED)		
Data Quality Check	Description	When to Conduct the Check
Format database to help limit errors	<ul style="list-style-type: none"> <li>Reject “orphan” records (e.g., claims for people who are not also listed in registration data).</li> <li>Specify field formats (e.g., dates stored as dd/mm/yyyy or yyyy/mm/dd).</li> </ul>	<ul style="list-style-type: none"> <li>Database development</li> </ul>
Document thoroughly	<ul style="list-style-type: none"> <li>Create regular database backups.</li> <li>Log all data changes (who, what, when).</li> <li>Institute strict version control.</li> <li>Keep list of inconsistent/incomplete data elements.</li> <li>If outliers are excluded from reports, be transparent and provide reasoning.</li> </ul>	<ul style="list-style-type: none"> <li>Database development</li> <li>Database maintenance</li> </ul>
Ensure health data privacy	<ul style="list-style-type: none"> <li>Obtain informed consent from registered persons/patients.</li> <li>Limit access to sensitive data to those who need it.</li> <li>Agree on which organizations can use the data and for what purpose.</li> </ul>	<ul style="list-style-type: none"> <li>Data collection</li> <li>Data entry</li> <li>Database maintenance</li> </ul>

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## Country Snapshots: Monitoring and Improving Data Quality

Countries have made progress in improving data quality by improving coding standards and procedures and by adopting data governance policies. Examples of each approach are presented below.

### Challenges and Solutions: Data Coding

The ability to effectively use data related to health services provided by clinicians to patients depends on data coding, which translates health services into code values. Data coding is a common challenge that directly affects data quality.

A number of countries shared their challenges and strategies related to data coding in Table 3.

**TABLE 3**

**Challenges and Solutions Related to Data Coding**

COUNTRY	CHALLENGES	SOLUTIONS
 Ghana	<ul style="list-style-type: none"> <li>Difficulty ensuring consistent data coding. (Providers submit data using different fields and formats.)</li> <li>Lack of good ICT backbone to standardize how data are submitted and to collect data in a format that facilitates analytics.</li> </ul>	<ul style="list-style-type: none"> <li>Modified ICD-10 to suit the country's specific needs, including codes for procedures and medications.</li> <li>Developed own DRGs based on ICD-10 codes.</li> </ul>
 Indonesia	None noted	<ul style="list-style-type: none"> <li>Uses ICD-9 and ICD-10 codes.</li> <li>Provides certification for coders to ensure consistent coding capacity.</li> </ul>
 Kenya	<ul style="list-style-type: none"> <li>An initial challenge related to improving data quality in the NHIF was determining who would do the coding and billing. The responsibility was given to health provider billing clerks.</li> <li>Biggest challenge was that codes were not tied to payment, so providers were not so concerned about coding accuracy.</li> <li>Outpatient benefits were not included in the original provider payment system, so the data on outpatient benefits were not part of the data collection for monitoring and were not subject to stringent quality checks.</li> </ul>	<ul style="list-style-type: none"> <li>Coding has been automated. Providers are linked into the NHIF ICT database and select the disease from a drop-down menu; the code is automatically filled in.</li> <li>Providers have basic ICT systems so the data and coding are in the background, as part of the ICT infrastructure—no extra personnel needed.</li> </ul>
 Moldova	<ul style="list-style-type: none"> <li>In Moldova, there are no specialized clinical coders; coding of all diagnoses and procedures is performed by doctors.</li> <li>Selection of cases for audit is done manually based on the knowledge of auditors in the field; this is time consuming and may be biased.</li> </ul>	<ul style="list-style-type: none"> <li>An ongoing training system in clinical coding and classification has been implemented to strengthen the skills of coders.</li> <li>Introduction of automated coding software (or a template) would help ensure data quality.</li> </ul>

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COUNTRY	CHALLENGES	SOLUTIONS
 <b>Mongolia</b>	<ul style="list-style-type: none"> <li>• Needed professional approach to coding of hospital cases based on international experience.</li> <li>• Professional software used internationally was expensive, so adapted a national hospital application.</li> </ul>	<ul style="list-style-type: none"> <li>• Piloted case mix / DRG in 2005 using coding software, along with training for coders.</li> <li>• Later, modified ICD-10 to suit the country's specific needs and developed 110 groups for hospital inpatient cases and integrated into facility-based software.</li> <li>• Will expand this coding structure to include co-morbidities, complications, and procedures.</li> </ul>
 <b>Nigeria</b>	<ul style="list-style-type: none"> <li>• Lack of capacity in clinical coding and informatics.</li> <li>• Coding is not considered a top priority by those within the country's health care system.</li> </ul>	<ul style="list-style-type: none"> <li>• Modified ICD-10 to suit the country's specific needs, including codes for procedures and medications.</li> <li>• Contracted out the process of coding to a company.</li> <li>• Will develop a template for data capture (drop-down menu for diseases and auto-fill with code).</li> <li>• Will hold stakeholder consultations.</li> </ul>
 <b>Philippines</b>	<ul style="list-style-type: none"> <li>• Consensus building is a challenge because of the numerous specialty and subspecialty societies that must be consulted, particularly for Relative Value Scale (RVS) updating.</li> </ul>	<ul style="list-style-type: none"> <li>• Modified ICD-10 (diagnoses) and RVS codes (procedures) to suit the country's specific needs.</li> <li>• ACR had an application (on the PhilHealth website)—ICD-10, RVS codes, and the payment amount appeared. Also converted to an application for cell phones.</li> <li>• Currently reviewing RVS codes with specialty societies. The different approaches for determining relative values are consolidated, and consensus will be reached on one standard process. External validation will be conducted by a third party before finalization by PhilHealth.</li> </ul>

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TABLE 4

## Challenges and Solutions Related to Data Governance

**Challenges and Solutions: Data Governance**

Data governance refers to the overall management of the availability, usability, integrity, and security of the data employed in an organization or enterprise. A sound data governance program includes a governing body or council, a defined set of procedures, and a plan to execute those procedures. Countries shared their challenges and experiences with data governance in Table 4.

COUNTRY	CHALLENGES	SOLUTIONS
 Ghana	<ul style="list-style-type: none"> <li>Parallel data sources across Ghana Health Service (GHS) and the National Health Insurance Scheme (NHIS) create fragmentation and some duplication.</li> <li>GHS uses a data system called the District Health Management Information System (DHMIS). A policy defines data flows, but additional data can be incorporated. The system is flexible and it is easy to add data elements, but there are challenges with getting people to use the data.</li> <li>Claims data for the NHIS often get more attention than DHMIS data because they are linked to payment. Providers invest in software for better claims data because it is tied to their reimbursement.</li> </ul>	<ul style="list-style-type: none"> <li>District and regional offices have access to aggregated DHMIS data for their district/region for decision-making purposes.</li> </ul>
 Indonesia	<ul style="list-style-type: none"> <li>It is challenging to get primary health care data under capitation. A primary care data application exists (Pcare), but data are incomplete because of geographic challenges and Internet access issues.</li> </ul>	<ul style="list-style-type: none"> <li>Under DRG payment, all contracted hospitals must submit a mandatory comprehensive data set to the national health insurance agency. If they do not submit data, they are not paid.</li> <li>The national health insurance agency owns the data and shares them with other government institutions, including MOH.</li> </ul>
 Kenya	<ul style="list-style-type: none"> <li>Comprehensive data collection happens through NHIF, and all licensed facilities also submit data through MOH. A lot of data are available, but the challenge is how to collate, analyze, and use them. Many data sources are not connected.</li> <li>NHIF is more like a repository system. May need additional data from other systems to make it usable.</li> <li>For visits covered by capitation, it is challenging to make the system more intelligent and to know that all of the necessary data are being submitted and that they are of good quality.</li> <li>For public providers, getting the data is not a problem—they have trained medical records staff at least at the hospital level.</li> <li>Private-sector providers usually do not submit data—it is not a licensing requirement, so it is considered an extra burden. Providers do not have any incentive to submit the data because they do not get any feedback.</li> <li>Lack of data governance and a data warehouse makes it difficult to get a clear picture of the whole sector.</li> </ul>	<ul style="list-style-type: none"> <li>When incentives are offered (e.g., free vaccines in the vaccination program), providers must submit reports to get the incentive. That results in sector-wide submission of data and better data quality.</li> <li>NHIF owns its data and allows restricted access to accredited facilities.</li> </ul>

COUNTRY	CHALLENGES	SOLUTIONS
 <b>Malaysia</b>	<ul style="list-style-type: none"> <li>The country has a national plan for a data warehouse and an initiative to collect data from all sources and integrate them on one platform. The challenge is to implement what is a good plan on paper.</li> <li>Data quality is important, but quality and validity concerns are common. Need appropriate data quality checks.</li> </ul>	<ul style="list-style-type: none"> <li>Understanding the incentives of those providing the data provides insight into potential data quality issues.</li> </ul>
 <b>Moldova</b>	<ul style="list-style-type: none"> <li>Challenges related to privacy concerns have arisen, but these have been managed.</li> <li>Opportunities for much more analysis and sharing are needed.</li> </ul>	<ul style="list-style-type: none"> <li>Data from different institutions (e.g., Bureau of Statistics) have been integrated on one platform so more information will be available than just health insurance data.</li> </ul>
 <b>Mongolia</b>	<ul style="list-style-type: none"> <li>Implementation of electronic health insurance cards was controversial because of concerns over privacy of health utilization data.</li> <li>Discussions are ongoing about whether to use national ID numbers or special IDs for insurance.</li> <li>If a separate system for health insurance were to be implemented, some people would be missing.</li> <li>The government IT agency will provide solutions through the national ID card and will add health-related statistics to the embedded chip.</li> <li>Sometimes the denominator for an indicator needs to be enrollment, and at other times it needs to be population (which would need to come from different data sources).</li> </ul>	<ul style="list-style-type: none"> <li>By law, every citizen is insured and has a unique identifier.</li> </ul>
 <b>Philippines</b>	<ul style="list-style-type: none"> <li>Congress is pressuring the Department of Health (DOH) and PhilHealth to show that premium payments targeted to the poor are actually reaching the poor.</li> <li>DOH and PhilHealth realized that the IT sector needed to meet this mandate, but they cannot do it alone. The challenge is that no single agency can deliver all the data.</li> <li>Data sharing can still be challenging, but at least the foundation is there.</li> <li>Privacy laws are a challenge. DOH and PhilHealth are exploring what legal cover is needed and what rules are acceptable to share data under privacy law.</li> </ul>	<ul style="list-style-type: none"> <li>DOH, PhilHealth, and the Department of Science and Technology formed a multi-sector, top-level board (the National eHealth Program).</li> <li>PhilHealth and DOH created the Tamang Serbisyo para sa Kalusugang Pampamilya Program (TSEKAP) to show that the “right service” is being delivered. (Both agencies faced the same challenge.)</li> <li>The local university was invited to participate in helping to build local capacity.</li> <li>Good governance will happen when challenges are shared across organizations. The only way to address challenges is to work together.</li> </ul>

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# GHANA

## Improving Data Quality by Standardizing Data Entry

To improve the quality of clinical information entered into claims data forms, the NHIA in Ghana automated the input of diagnosis codes. Users enter one or two words related to the diagnosis, and a list appears containing

all possible diagnoses related to the search phrase (as shown in the screen shot below). The user can then select the appropriate diagnosis, and the ICD-10 code will automatically populate the appropriate field.

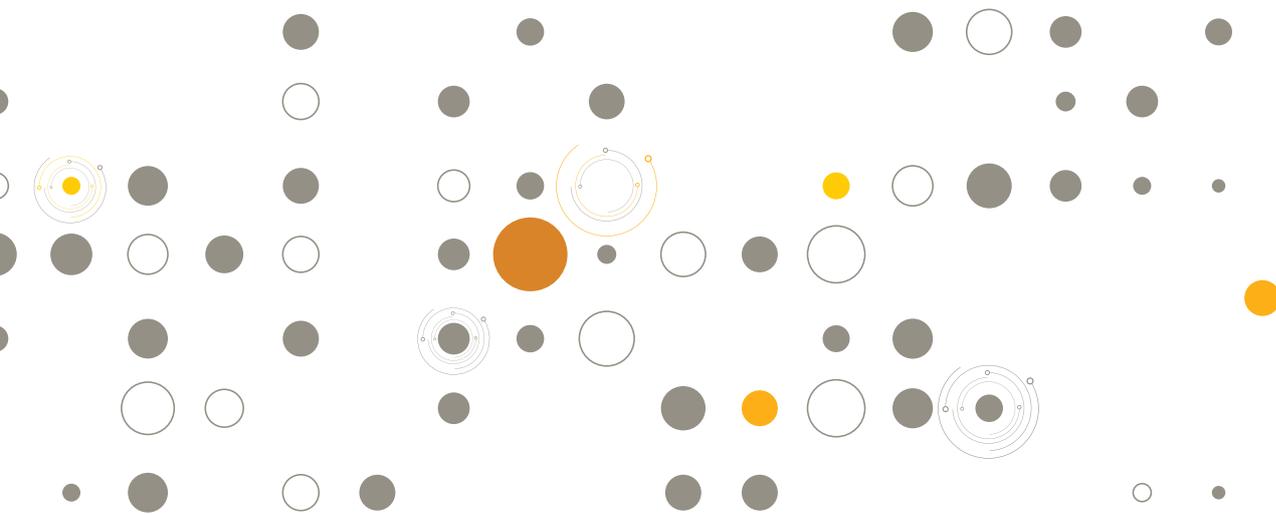
CLAIM SUMMARY

Results of Diagnosis Search		Totals:	
Diagnosis	G-DRG		
Plasmodium falciparum malaria with cerebral complications	DRG1		
Plasmodium vivax malaria without complication	DRG4		
Plasmodium malariae malaria	DRG4		
Labor and delivery complicated by other cord entanglement, with compression, other fetus	DRG3		
Delivery			

Results of Diagnosis Search

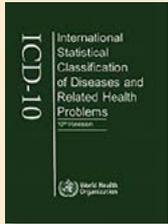
- O60.0 Preterm labor without delivery
- O60.1 Preterm labor with preterm delivery
- O60.2 Term delivery with preterm labor
- O63.2 Delayed delivery of second twin, triplet, etc.
- O67 Labor and delivery complicated by intrapartum hemorrhage, not elsewhere classifiec
- O68 Labor and delivery complicated by abnormality of fetal acid-base balance
- O69 Labor and delivery complicated by umbilical cord complications
- O69.0 Labor and delivery complicated by prolapse of cord, other fetus
- O69.1 Labor and delivery complicated by cord around neck, with compression, other fetus
- O69.2 Labor and delivery complicated by other cord entanglement, with compression, othe
- O69.3 Labor and delivery complicated by short cord, other fetus

Buttons: OK, Cancel



## FURTHER RESOURCES

### INTERNATIONAL CODING SYSTEMS



#### International Statistical Classification of Diseases and Related Health Problems (WHO)

The 10th revision of this document, ICD-10, provides codes to classify diseases, disorders, injuries, and other health-related conditions.

[www.who.int/classifications/icd/en/](http://www.who.int/classifications/icd/en/)

#### International Classification of Primary Care, Second Edition (WHO)

ICPC-2 is a coding system designed for use in primary care and general/family practice. It provides a systematic way to code the reason for the encounter, problems/diagnoses managed, and interventions.

[www.who.int/classifications/icd/adaptations/icpc2/en/](http://www.who.int/classifications/icd/adaptations/icpc2/en/)

### ICD-10 CODING

WHO provides resources to help coders learn how to use the ICD coding system.

<http://apps.who.int/classifications/apps/icd/icd10training/>

<https://www.aapc.com/training/online-medical-coding-billing-courses.aspx>

### DATA QUALITY MANAGEMENT

[www.enterpriseappstoday.com/data-management/slideshows/5-best-practices-for-data-quality-management.html](http://www.enterpriseappstoday.com/data-management/slideshows/5-best-practices-for-data-quality-management.html)

### DATA QUALITY CAPABILITY/MATURITY MODEL

<http://dataqualitybook.com/kii-content/Practitioners-Guide-to-Data-Quality.pdf>

### DATA GOVERNANCE

#### Health Data Governance: Privacy, Monitoring and Research (OECD Policy Brief)

<https://www.oecd.org/health/health-systems/Health-Data-Governance-Policy-Brief.pdf>

#### Seven Essential Practices for Data Governance in Healthcare (Health Catalyst)

<https://www.healthcatalyst.com/healthcare-data-governance-practices>

#### Data Governance Key to Health Information Systems (Health Data Management)

[www.healthdatamanagement.com/news/data-governance-a-roadblock-for-analytic-ambitions](http://www.healthdatamanagement.com/news/data-governance-a-roadblock-for-analytic-ambitions)

More resources can be found on the website of the International Association for Information and Data Quality: [www.iaidq.org](http://www.iaidq.org).

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STEP

5

## ANALYZE AND REPORT THE DATA

### OBJECTIVE

Develop a standard set of analyses of the monitoring indicators that will be produced routinely

### WHO IS INVOLVED

Policymakers, data analysts, data managers, IT department, and other stakeholders

### TOOLS

A template outlining reporting requirements and a template for creating an indicator summary table

**THE NEXT STEP AFTER DEFINING THE INDICATORS** and addressing data quality is analyzing and reporting the data routinely in a standardized and meaningful way. Critical to this step is understanding who will use the data and how. The *data producers* (those responsible for collecting, calculating, and producing the indicators) must understand the requirements of the *data users* (those who will interpret and use the information gleaned from the indicators) in order to provide the data in the most appropriate and usable format. This is why they must work together from the outset in evaluating what questions to ask and selecting the indicators.

The data analysis can be presented in reports, visualizations, dashboards, and even analytic tools. Understanding who will use the data will help determine the most appropriate form for presenting and disseminating the information and analysis. Different users often have different needs when it comes to the same data. For example, an operations manager may need only monthly trend information, while an analyst might want to drill down into the data through a software tool and perform queries and analysis.

The analysis process involves inspecting, cleaning, transforming, and modeling data, with the goal of discovering useful information that suggests conclusions and supports decision-making. High-quality data and reporting tools are necessary to effectively and accurately inform that decision-making.

## Reporting Requirements for Provider Payment Monitoring Systems

The main types of analysis and visualization that data users for provider payment monitoring need are:

- **Current situation** (most recent indicator values)
  - » Are the values in line with system objectives, or do any of them raise concerns?
- **Trends over time**
  - » Are trends moving in the right direction to meet objectives of the payment system, or is there evidence of unintended consequences?

- **Variation in indicator values and trends** (across providers, services, population groups, and/or regions)
  - » Which providers, provider groups, or regions are performing well relative to the average? Which are outliers and should be examined more closely?
  - » Are specific services or population groups driving any of the observed indicator values or trends?

Different users of the system will need these types of information at different levels of aggregation and in different formats. Mapping out the different users and their functions in the system will help determine their requirements for reporting.

The main user groups for provider payment monitoring reports are:

- Policymakers, particularly in the national health purchasing agency
- Institutions, departments, or branches that are responsible for monitoring individual providers
- Providers
- Other stakeholders (e.g., ministry of health, local government, the public)

**COMMON CHALLENGES** 

- The IT department selects tools for data management, analysis, and visualization without consulting users.
- User requirements are not clearly defined before reporting begins.
- Users don't know what they are looking for in a report until they see a first prototype and then realize that it is not what they wanted.

**SOLUTIONS AND LESSONS LEARNED** 

- The IT department should include users in discussions about data management, data analysis, and visualization, as well as selection of tools for these purposes.
- An iterative process may be needed before user requirements for reporting are entirely clear.
- Separate reporting of strategic indicators for management from reporting of operations indicators.
- Convene all stakeholders—from data collection staff to users of the report—to come to agreement on the type of analysis required, need for visualizations, and acceptable level of data quality.

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## TOOL 8

# Reporting Requirements Template



Tool 8 is a template that can help with documenting reporting requirements for each indicator—for example, how often the indicator should be reported and to whom, what disaggregation levels are needed, whether a target or benchmark is available, and how the data should be presented.

The reporting requirements should be discussed with the “owner” of the indicator (or the person who is closest to understanding what it means) and the data users.

A data dictionary or the data mapping results will show whether the data are available at the required frequency and at the requested disaggregation levels. If the reporting requirements and the data mapping results are not aligned, it might be necessary to request changes in the data flow (e.g., asking for data on a monthly basis instead of quarterly) or reporting requirements (e.g., asking for reports quarterly instead of monthly).

The template can be completed by each type of user, or the data producers can use the template to interview data users about their requirements for the report or dashboard. Countries that have produced data reports and dashboards for monitoring have found it helpful to use an iterative process. Users may not know at the outset exactly how they will use the data or what format will be most helpful, so data producers can show them examples and get their feedback. The following example shows how the template might be filled out for one indicator: *Total payments per month*. A blank version of the template can be found in [APPENDIX B](#).

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**TOOL 8**

**(continued)**

**INDICATOR: TOTAL PAYMENTS PER MONTH**

Who owns this indicator? (person/department/organization)	<p>Claims department</p> <p>Secondary owner: analysts in reporting department</p>
How often is the indicator updated?	Monthly
Who will use the indicator, and how?	<p>Executive team will use it via the executive dashboard to view utilization and growth trends.</p> <p>Claims department leads will use it via the claims dashboard to monitor volume trends and plan staffing needs.</p> <p>Staff responsible for provider payment monitoring will use it via the monitoring dashboard and/or report to monitor for unintended consequences of provider payment reforms.</p>
What policy question should the indicator answer?	Are there any unusual increases or decreases in claims volume that require further research to evaluate underlying causes?
Which disaggregation levels should be available for which user?	<p>Claim type</p> <p>Geographic region</p> <p>Provider</p>
What are the baseline and threshold values for the indicator?	Average claims volumes are available by month for the previous three years. Threshold values have not been established.
What data quality is required before the indicator is reported?	Claims volumes reported from the claims data warehouse undergo data quality checks.
Is a target or benchmark available for this indicator? Or a critical value?	No
What might be the best way to present the information?	Bar chart or line graph (to show trend data over time)
Who should take which action when the target/benchmark critical value is (or is not) reached?	<p>The reporting team should ensure that there aren't any errors with data or reporting.</p> <p>The claims department should be consulted about any known factors affecting claims volume (e.g., seasonal spike in malaria cases).</p>

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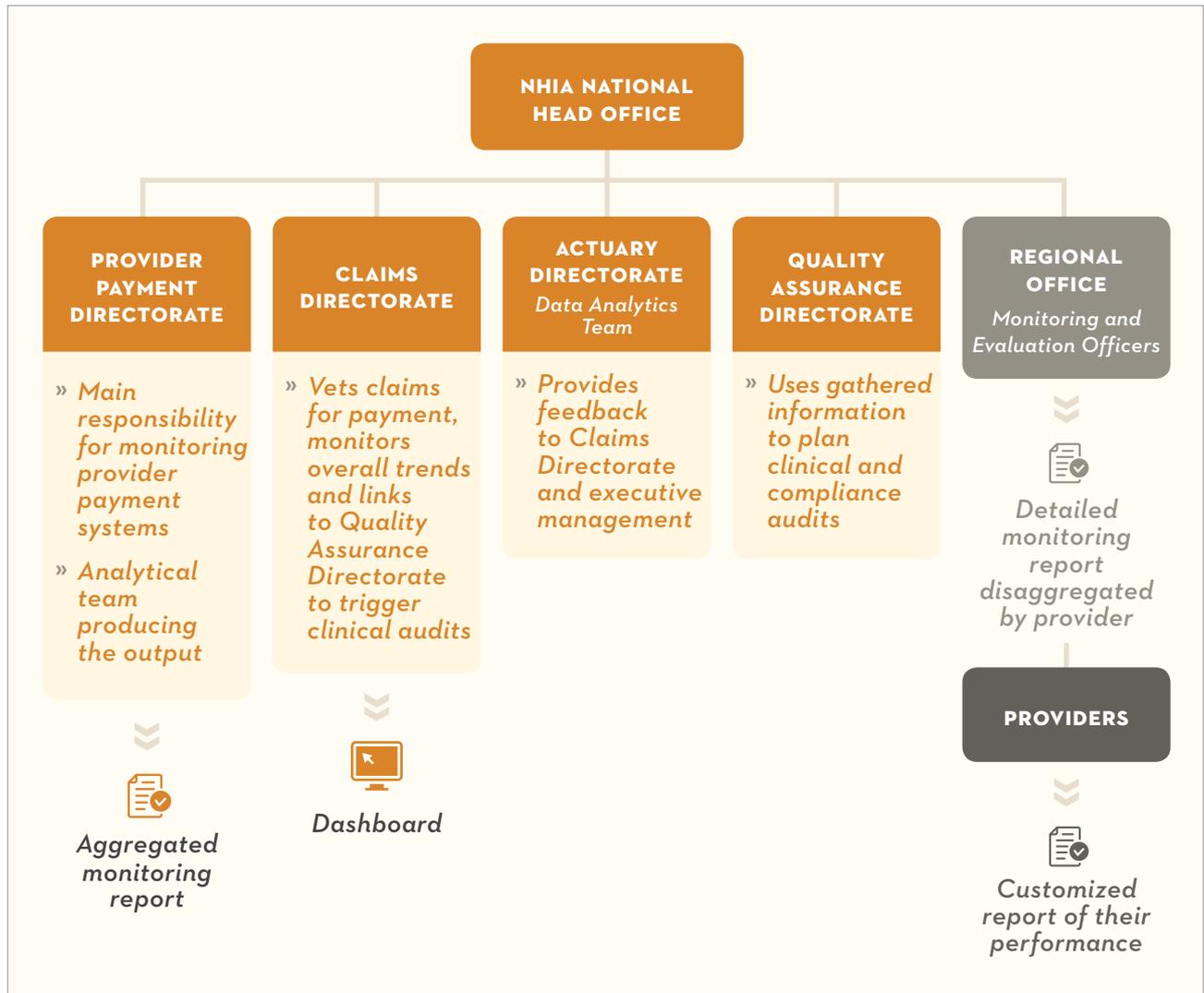


# GHANA

## Mapping Data Users in the National Health Insurance Scheme

In Ghana, the NHIA mapped out the different users of the capitation early-warning system and the types of monitoring reports and other output they would require.

### National NHIA Mapping in Ghana



# Data Visualization

Data visualization is the presentation of data in a graphical or pictorial format to make concepts and patterns more easily understandable, provide exploratory data capabilities, or improve the user experience in interacting with the data.<sup>3</sup> An entire industry and body of knowledge is built around data visualization skills, practices, training, tools, and resources. Here we will focus on experiences and strategies related to data visualization for provider payment monitoring and provide some best practices and places to find additional resources.

The data analysis and visualization process is iterative. It consists of numerous components and involves defining the key questions and what data or information are required to help answer those questions. Multiple software platforms, either open-source or proprietary, are available to facilitate data visualization. Many of these, including Tableau and Microsoft Power BI, are interactive and provide tools to develop charts, maps, infographics, timelines, and other visualizations.<sup>4</sup>

Before creating visualizations, decide the following:

- Who the audience is
- How they will consume the information
- What information will be most useful in the decision-making process
- What relationships or comparisons in the data will provide this information

Best practices for creating visualizations include:

- Select chart types that focus on meaningful comparisons and relationships.
- Eliminate distractions within graphics, particularly too many colors or lines.
- Annotate charts to highlight interesting behavior.

Chart types include bar graphs, scatter plots, line graphs, and maps; some chart types are more suitable than others for specific tasks. Using the simplest graph that adequately conveys the desired message is ideal. Two powerful but often underused chart types are bar graphs and scatter plots, which show comparison through length, angle, and/or depth. These charts (and others) can be displayed as a panel chart (sometimes called a trellis chart, lattice chart, grid chart, or small multiples), which displays a series of similar charts using a single scale and axis, allowing easy comparison across different partitions of the data set (e.g., regions, age groups, genders).

In charts, try to show:

- Magnitude/size
- Relationship between two or more variables
- Trend over time
- Ratio/composition of a group
- Differences between groups (e.g., geographies, regions, groups of people)
- Differences within groups (distribution)
- Differences between different data sets (context)

When looking to select a data visualization software platform, several factors should be taken into consideration. These include specific country requirements that have been established and documented (both functional and nonfunctional), overall cost of use and ownership, scalability, ease of use, adaptability, and sustainability. Numerous comparisons of analytic and visualization platforms have been performed, and some are publicly available.

Evaluating and selecting a visualization system should be a well thought-out, collaborative process.

Criteria should be outlined and enumerated and can include the following: visualization capabilities, specific features and product details, intended users (including number and types of users who will access the system), data integration features, analytic and business intelligence capabilities (such as data integration from various sources), system maturity, system support, upgrade availability, administrative controls, vendor/system supplier information, interoperability with other systems in use (such as Microsoft Office), the hosting platform required (Office, Linux, etc.), cloud vs. local storage, visualization sharing, and export capabilities.

<sup>3</sup> SAS Institute: [www.sas.com/en\\_us/insights/big-data/data-visualization.html](http://www.sas.com/en_us/insights/big-data/data-visualization.html)

<sup>4</sup> "Data Visualization That Works: Facilitating HIV Program Targeting: Case Examples and Considerations." *MEASURE Evaluation*, April 2016.

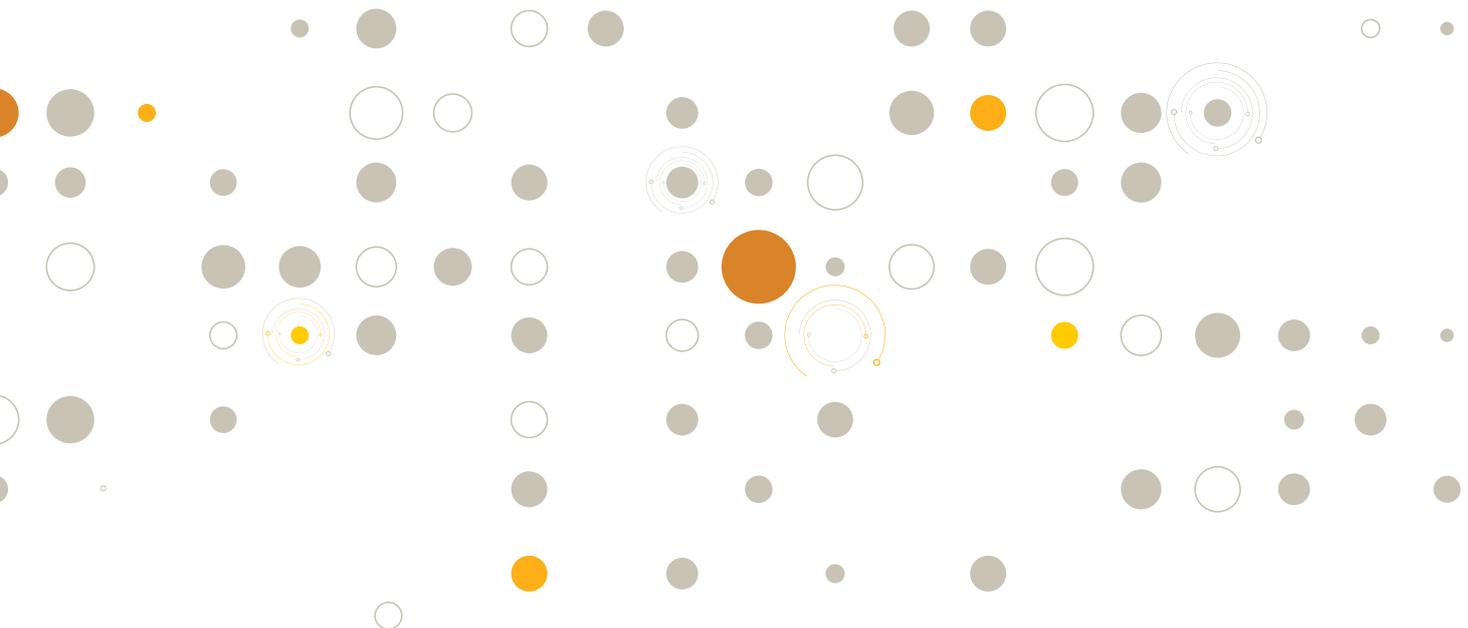
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## COMMON CHALLENGES

- Significant resources are required for data analytics and visualization, including staff to identify and procure appropriate technology (including visualization software), develop and implement systems, and conduct training and ongoing maintenance.
- It can be challenging to find simple visualizations that highlight the most important information.

## SOLUTIONS AND LESSONS LEARNED

- Do not wait for complete or “perfect” data before beginning analysis and visualization.
- Involve stakeholders in the process of developing data visualizations.
- Monitor output to look for trends, but realize that indicators show what is happening but not why or how it is happening. Further research is often needed when interpreting analytics.
- Dashboards can provide meaningful information and an effective way to identify trends and simultaneously examine multiple indicators.
- Remember that sometimes “less is more”—simple visualizations can sometimes have more impact than more complicated graphs that are difficult to digest.
- Generate information that is useful for providers.



## TOOL 9

## Indicator Summary Template



Tool 9, an indicator summary template, includes all information about an indicator, including what it is used for, how it was created, and a sample visualization—everything important about the indicator.

The following example shows the template completed for one indicator: *Total payments per month*. A blank version of the template can be found in [APPENDIX B](#). [APPENDIX D](#) includes completed examples for all of the top 10 indicators listed in [STEP 2](#).

INDICATOR: TOTAL PAYMENTS PER MONTH		
Identifying information	Indicator name	Total claims and/or other payments to providers per month
	Description	Total number of claims submitted for payment in a calendar month
	Questions answered by indicator	A high-level early-warning indicator that can be used to track utilization of covered health services and monitor for potential overuse, which would affect sustainability. If disaggregated (e.g., by region, case mix, income group), it can also be used to monitor equity and fairness by comparing per capita spending across disaggregation levels.
	Consequence categories	Equity and Fairness, Access to Services, Financial Sustainability
	Consequence subcategories	Depends on disaggregation. For example, if disaggregated by region, can show Equity and Fairness, Geography.
Indicator calculation	Type of measurement	Monetary value
	Numerator	Value of claims submitted and approved for payment in a calendar month
	Denominator	N/A
Indicator use	Interpretation	Higher values indicate higher utilization of covered services or utilization of higher-cost services. This could signal early signs of changing health needs (e.g., an epidemic) or overuse of services (an unintended consequence). Variation by region or population group could show inequity.
	Target/benchmark	No specific benchmark. Look for significant changes over time.
	Corrective actions	Review data for possible causes. Ask for documentation of claims in regions (or for providers) where the change is significant. If potential gaming/fraud is found, establish tighter review for those regions/providers.

**TOOL 9**

**(continued)**

**INDICATOR: TOTAL PAYMENTS PER MONTH**

<p>Visualization</p>	<p>Visualization</p>	<table border="1"> <caption>Total Payments to Providers by Month</caption> <thead> <tr> <th>Month</th> <th>Total Payments to Providers</th> </tr> </thead> <tbody> <tr><td>JAN</td><td>\$1,400,000</td></tr> <tr><td>FEB</td><td>\$1,500,000</td></tr> <tr><td>MAR</td><td>\$1,520,000</td></tr> <tr><td>APR</td><td>\$1,580,000</td></tr> <tr><td>MAY</td><td>\$1,570,000</td></tr> <tr><td>JUN</td><td>\$1,590,000</td></tr> <tr><td>JUL</td><td>\$1,540,000</td></tr> <tr><td>AUG</td><td>\$1,590,000</td></tr> <tr><td>SEP</td><td>\$1,620,000</td></tr> <tr><td>OCT</td><td>\$1,580,000</td></tr> <tr><td>NOV</td><td>\$1,630,000</td></tr> <tr><td>DEC</td><td>\$1,610,000</td></tr> </tbody> </table>	Month	Total Payments to Providers	JAN	\$1,400,000	FEB	\$1,500,000	MAR	\$1,520,000	APR	\$1,580,000	MAY	\$1,570,000	JUN	\$1,590,000	JUL	\$1,540,000	AUG	\$1,590,000	SEP	\$1,620,000	OCT	\$1,580,000	NOV	\$1,630,000	DEC	\$1,610,000
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SEP	\$1,620,000																											
OCT	\$1,580,000																											
NOV	\$1,630,000																											
DEC	\$1,610,000																											
<p>Additional information</p>	<p>Related indicators</p>	<p>Average total claims and/or other payments per provider</p> <p>Average total claims and/or other payments per registered person</p>																										
	<p>Related payment systems</p>	<p>All payment systems</p>																										

**FURTHER RESOURCES**

**DATA ANALYSIS AND VISUALIZATIONS**

- [geocenter.github.io/StataTraining/resources](https://geocenter.github.io/StataTraining/resources)
- [www.fusioncharts.com/charting-best-practices/](http://www.fusioncharts.com/charting-best-practices/)
- [www.datavizcatalogue.com/](http://www.datavizcatalogue.com/)
- [www.colorbrewer2.org](http://www.colorbrewer2.org)

**DASHBOARDS**

- <https://www.tableau.com/sites/default/files/whitepapers/dashboards-for-financial-services.pdf>

**EXCEL CHARTS AND VISUALIZATIONS**

- <https://support.office.com/en-us/article/Charts-and-other-visualizations-in-Power-View-141BD462-9853-4973-AC37-842E8345F51E>
- [www.stephanieevergreen.com](http://www.stephanieevergreen.com)
- [www.annkemery.com](http://www.annkemery.com)

**POWER BI**

- <https://powerbi.microsoft.com>

**TABLEAU**

- <https://www.tableau.com>

**QLIK (QLIKVIEW/QLIKSENSE)**

- [www.qlik.com/](http://www.qlik.com/)

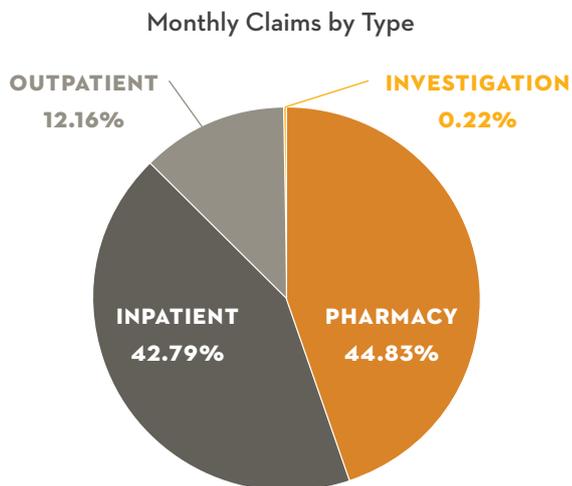
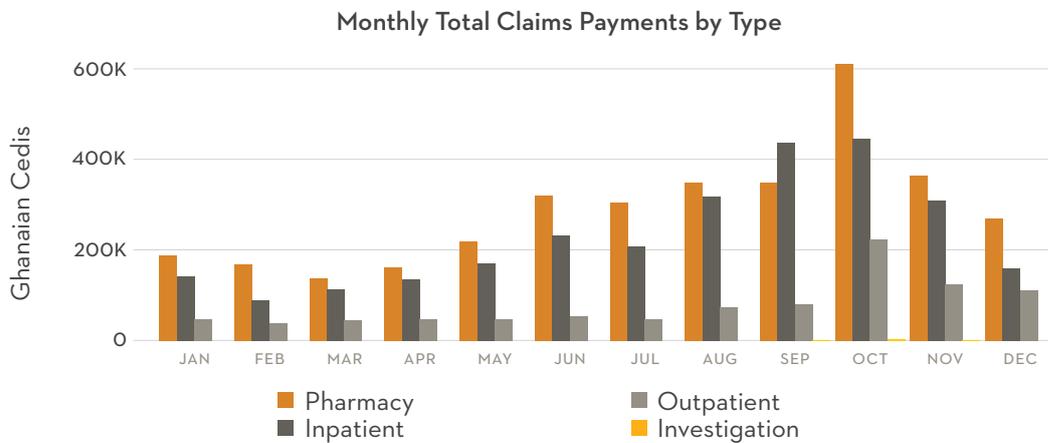
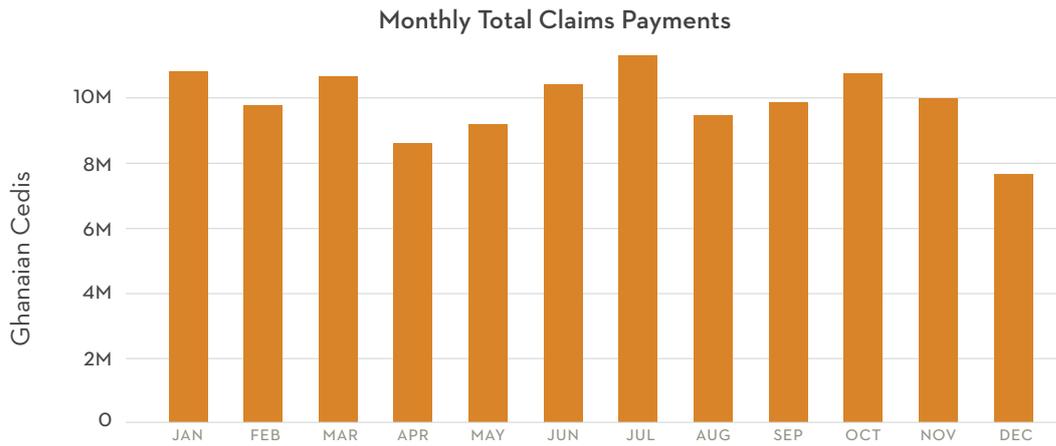


**GHANA**

## NHIS Dashboard Visualizations

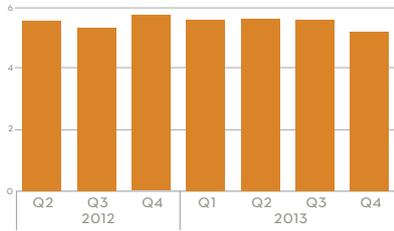
These are examples of data visualizations that use claims data from Ghana's NHIS.

### Visualizations for Capitation Early-Warning Indicators

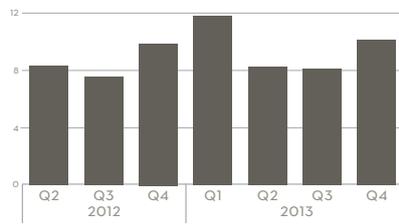


Early-Warning Indicator Dashboard

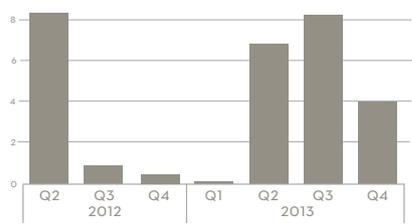
% OF ENROLLED MEMBERS WHO MADE AT LEAST ONE VISIT TO THEIR PPP



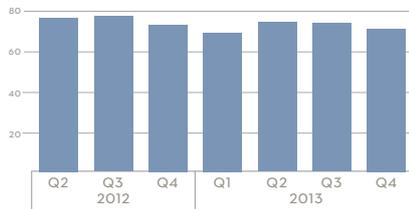
# OF CAPITATION VISITS PER ENROLLED MEMBER PER MONTH



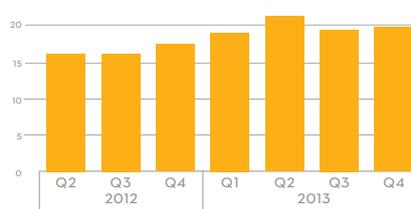
% OF CASES IN THE CAPITATION BASKET WITH A DIAGNOSIS OF MALARIA



% OF OPD CASES OUTSIDE OF THE CAPITATION BASKET



VALUE OF CLAIMS FOR MEDICINE PER CAPITATION ENCOUNTER



Provider Benchmarking

HOSPITAL	% OF ENR. WITH AT LEAST 1 VISIT	# OF CAP. VISITS PER MEMBER PER MONTH	% OF CLAIMS WITH MALARIA DIAGNOSIS	% OF OPD CASES OUTSIDE OF CAP.	VALUE OF CLAIMS FOR MEDICINES PER CAP. ENCOUNTER	% OF TOTAL CLAIMS FOR G-DRG CLAIMS
AFEGAME CHPS	6.80	8.29	8.29	78.42	22.22	72.79
AGBESIA CHPS ZONE	4.03	8.07	8.07	75.68	18.59	78.54
AKPOKOFE CHPS	8.64	11.30	11.30	71.73	20.09	74.58
AMUZDUVEVE CHPS	1.22	9.70	9.70	75.24	34.32	64.10
ANYAKO HEALTH CENTRE	1.48	5.59	5.59	85.75	20.09	78.79
AVEE CHPS ZONE	13.84	19.19	16.19	59.05	21.16	71.05
DRAMAVE CLINIC	2.24	12.41	12.41	71.48	28.75	63.82
FODOME WOE CHPS	6.66	12.15	12.15	72.98	21.29	72.65
GBLEDI GBORGAME H/C	7.12	16.93	16.93	58.46	23.61	77.93
GIDIKPOE CHPS	0.54			100.00	21.94	80.91
HAVE HEALTH CENTRE	12.74			100.00	24.20	88.87





## USING THE DATA FOR DECISION-MAKING

STEP 6	PRODUCE THE ROUTINE MONITORING REPORT AND INTERPRET THE RESULTS
STEP 7	ASSESS OPTIONS FOR ACTION

**THE ULTIMATE GOAL OF CREATING a provider payment monitoring system is to make better-informed policy decisions, fine-tune provider payment systems to ensure that objectives are met and unintended consequences are minimized, and identify issues that call for deeper analysis or operations.** The last part of the framework has two steps: producing and interpreting the results in routine monitoring reports and using the data to assess options for action. Making data-driven decisions involves producing a routine monitoring report, interpreting indicator results, and considering the options for action based on the interpretation. This process should involve all stakeholders, particularly health care providers, and a mechanism to feed monitoring information to them for their own use and performance improvement.

STEP

6

## PRODUCE THE ROUTINE MONITORING REPORT AND INTERPRET THE RESULTS

### OBJECTIVE

Create a routine monitoring report that presents the indicator analysis and summary results

### WHO IS INVOLVED

Policymakers, providers, data analysts, IT department, and other stakeholders

### TOOL

Sample provider payment monitoring report outline

## Producing the Routine Monitoring Report

THE PRIMARY END PRODUCT OF THE PROVIDER PAYMENT MONITORING SYSTEM is the *routine monitoring report*, which can be a paper or online report. Data can also be made available on mobile devices, a dashboard, or a software tool that allows drill-downs and data analysis. The monitoring report should present the indicator analysis and visualizations with a summary of the results for each indicator based on the current indicator values, trends, and benchmarking across individual providers and groups of providers (e.g., public vs. private providers).



# PHILIPPINES

## PhilHealth Provider Payment Monitoring Report

The following are sample tables of claims profiling reports that are expected to be generated by the regions for the monitoring of claims utilization by their accredited health

care providers. Reviewing such reports could reveal unusual practices and trigger further validation activities.

### CLAIMS PROFILING REPORT (OVERALL)

REGION:

QUARTER:

**A.**

FIRST CASE RATE (MEDICAL)	THIRD CASE		TOTAL		TOTAL PHIC		AVERAGE		OF (OS)
	SECOND CASE	TOTAL	TOTAL PHIC	AVERAGE	TOTAL PHIC	AVERAGE	TOTAL PHIC	AVERAGE	
1. Ranking based on volume of claims									
2.									
3.									
4.									
5.									
6.									
3000.									

### CLAIMS PROFILING REPORT (OVERALL)

REGION:

QUARTER:

**B.**

FIRST CASE RATE (SURGICAL)	THIRD CASE		TOTAL		TOTAL PHIC		AVERAGE		OF (OS)
	SECOND CASE	TOTAL	TOTAL PHIC	AVERAGE	TOTAL PHIC	AVERAGE	TOTAL PHIC	AVERAGE	
1. Ranking based on volume of claims									
2.									
3.									
4.									
5.									
6.									
3000.									

### CLAIMS PROFILING REPORT (OVERALL)

REGION:

QUARTER:

#### CASE RATE 1 (MEDICAL CONDITION)

**A.**

NAME OF HOSPITAL	THIRD CASE		TOTAL		TOTAL PHIC		AVERAGE		OF (OS)
	SECOND CASE	TOTAL	TOTAL PHIC	AVERAGE	TOTAL PHIC	AVERAGE	TOTAL PHIC	AVERAGE	
1. Ranking based on volume of claims									
2.									
3.									
4.									
5.									
6.									
3000.									

### CLAIMS PROFILING REPORT (OVERALL)

REGION:

QUARTER:

#### CASE RATE 1 (SURGICAL PROCEDURE)

**B.**

NAME OF HOSPITAL	THIRD CASE		TOTAL		TOTAL PHIC		AVERAGE		OF (OS)
	SECOND CASE	TOTAL	TOTAL PHIC	AVERAGE	TOTAL PHIC	AVERAGE	TOTAL PHIC	AVERAGE	
1. Ranking based on volume of claims									
2.									
3.									
4.									
5.									
6.									
3000.									

# Interpreting the Monitoring Results

Reaching a valid interpretation and using it to guide actions typically requires discussing the monitoring results with stakeholders to understand more of the context behind the indicator values. This may identify the need for supplementary analyses and “deep dives” on some parts of the data and for bringing in additional information such as

qualitative information, results of research or special studies, and expert opinion. Taking indicators and monitoring results at face value and drawing conclusions based on that information alone can lead to misleading conclusions and inappropriate actions. Countries often find it useful to create a process that allows this interpretation exercise to occur routinely (e.g., quarterly).

## COMMON CHALLENGES

- Creating capacity at the right level to carry out monitoring activities can be difficult.
- Stakeholders may rush to judgment without looking at all possible interpretations of the monitoring results.

## SOLUTIONS AND LESSONS LEARNED

- Create an ongoing participatory process that includes forums at the national and local levels with all key stakeholders to discuss and interpret results.
- Interpret the indicators together to “tell the story.”
- Consider additional analysis, qualitative information, and expert opinion.
- Identify issues that need to be studied more deeply.
- Build early-warning systems into the information system to generate triggers for action.
- Use software that can automatically monitor trends and spot outliers.
- Create a formal process for feeding information back to providers.

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**TOOL 10****Sample Provider Payment Monitoring Report Outline**

This tool provides a model outline for a routine provider payment report.

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**PROVIDER PAYMENT ROUTINE MONITORING REPORT**

<b>PROVIDER PAYMENT ROUTINE MONITORING REPORT</b>	
<b>Introduction</b>	<ul style="list-style-type: none"> <li>Summary of key issues from the previous period: policy changes, new health system challenges, or other external factors that may affect monitoring results</li> </ul>
<b>Overview of the monitoring system</b>	<ul style="list-style-type: none"> <li>Objectives: what is being monitored and why</li> <li>Summary of indicators</li> <li>Number of providers included in the monitoring system (by type, region, public/private, etc.)</li> </ul>
<b>Dashboard</b>	Visualization of current values of all indicators and the direction of change from the last period
<b>Results for individual indicators (using the Indicator Summary Template)</b>	<p>For each indicator:</p> <ul style="list-style-type: none"> <li>Numerator</li> <li>Denominator</li> <li>Data notes               <ul style="list-style-type: none"> <li>- Missing data, anomalous values, other data quality issues</li> <li>- Assumptions, extrapolations, or other data manipulations</li> </ul> </li> <li>Trends in the indicator value (with key disaggregations, such as by region, public/private providers, etc.)               <ul style="list-style-type: none"> <li>- Visualization and narrative</li> </ul> </li> <li>Ranking of individual provider values—noting mean, median, and standard deviations (with key disaggregations, such as by region, public/private providers, etc.)               <ul style="list-style-type: none"> <li>- Visualization and narrative</li> </ul> </li> <li>Key issues for discussion and/or further analysis</li> </ul>
<b>Conclusions</b>	<ul style="list-style-type: none"> <li>Summary of overall trends for the period</li> <li>Key issues for discussion and/or further analysis</li> </ul>
<b>Annex: Description of provider payment systems</b>	

**STEP****7****ASSESS OPTIONS FOR ACTION****OBJECTIVE**

Use results of the monitoring system to inform needed changes to the provider payment system, take action at the provider level, or inform health system-level changes needed to achieve objectives

**WHO IS INVOLVED**

Policymakers, the purchaser, providers, and other stakeholders

**TOOL**

Exercises in using provider payment monitoring results for decision-making

ONCE THE STAKEHOLDERS REACH CONSENSUS ON THEIR INTERPRETATION of the monitoring results and main conclusions, corrective action may be needed to nudge the payment systems and provider responses toward meeting objectives and reducing unintended consequences. The actions typically fall into three categories:

- **Refining payment system design, payment rules, or reporting requirements.** Some indicator results might reflect widespread gaming by providers or other unintended consequences due to weaknesses or loopholes in the payment system design or payment rules. For example, if a case-based hospital payment system allows providers to designate cases as high severity and the higher-severity cases within the same case group are paid at a higher rate, the monitoring system may show an increase in cases designated as high severity. In this situation, an appropriate action may be to change the design of the payment system and payment rules to limit the ability of providers to self-code the severity of cases and instead generate severity levels automatically in the claims reporting system.
- **Taking action at the provider level.** The monitoring system will show outliers among providers for some or all of the monitoring indicators. In this case, an appropriate action may be to trigger a clinical audit or other deeper examination of the reason for a provider's results.
- **Making system-level changes beyond provider payment to remove bottlenecks to achieving objectives.** The monitoring results and the additional information and analysis may point to bottlenecks that require system-level action. For example, if referral rates are high on average across most regions and providers, this may indicate that lower levels of the system do not have adequate capacity to manage conditions appropriate for their level. This will require a system-level intervention to upgrade capacity at lower levels of the delivery system.

**COMMON CHALLENGES** 

- It is difficult to decide on appropriate actions, particularly to balance technical recommendations indicated by the analysis with politically feasible steps.
- Avoiding a “policing” role (reporting results rather than judging) can be challenging.

**SOLUTIONS AND LESSONS LEARNED** 

- Outliers or unusual trends for specific providers may be used to target clinical audits.
- “Name and praise” rather than “name and shame” (unless appropriate).
- Identify both system-level and provider-level actions.
- Make incremental changes that are acceptable to all stakeholders.

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**MOLDOVA**

**Actions Taken in Response to Monitoring Results**

As part of implementing the DRG hospital payment system, Moldova’s CNAM monitors the number of hospital admissions and the average length of stay to identify whether unintended consequences are occurring. These analyses showed excessive levels of hospital admissions and lengths of stay. A deeper dive suggested that patients with diseases that could be treated at the ambulatory level were being treated at the tertiary level, thereby increasing costs in the system. This discovery led to a policy change

that pays hospitals differently for acute versus chronic cases. CNAM began paying for acute cases using the DRG payment system and paying for chronic cases based on submitted costs for treating the case (which had been the system used for all cases before implementation of the DRG system). Further, to avoid excessive hospital admissions, the contracts between CNAM and hospitals were amended to clearly stipulate the number of contracted acute cases per hospital.



## PHILIPPINES

### Actions Taken in Response to Monitoring Results

PhilHealth routinely takes actions based on monitoring system results. These are mainly refinements to the payment system, but in serious cases of adverse behavior PhilHealth also takes provider-level actions. Typical actions include:

- Refining payment system design, payment rules, or reporting requirements.
  - » Delisting codes or conditions that should not have led to admission or should have been treated in the primary health care setting (PHC-sensitive conditions).
  - » Setting policy to limit the length of stay for certain conditions.
  - » Developing criteria for possible prepayment medical review for selected cases (e.g., potential gamers, high cost, high volume).
  - » Adjusting case rate amounts based on a costing study.
- Taking actions at the provider level.
  - » Sharing adverse findings on professionals and institutions with regulatory bodies. For example, clinicians found to be engaging in adverse practices by the Quality Assurance Committee (which is composed of leaders of different specialty societies) are referred to the Professional Regulations Commission for appropriate action.

- » Suspending payment of claims from government health care institutions that are not complying with policies that prohibit balance billing to collect additional revenue from patients.
- » Not renewing accreditation of health care institutions or professionals found to be violating rules and regulations. Further validation and investigation may result in filing of cases against erring providers.

One example of changes made due to monitoring results relates to pneumonia. When case-based payment was first implemented in 2011, the PhilHealth management team observed that admissions for moderate-risk pneumonia were increasing rapidly, particularly in four regions and among the subsidized members of PhilHealth. A deeper examination of the claims data revealed that almost 60% of patients admitted for moderate-risk pneumonia in 2015 were discharged before the fourth day, even though the condition usually requires intravenous antibiotics for three days. (See the table below.) One interpretation was that patients with low-risk pneumonia were being admitted but upcoded as moderate-risk pneumonia. Another possibility was that moderate-risk patients were not receiving necessary care and were being discharged prematurely.

Length of Stay (Days)	Number of Claims	%
0	2	0.00
1	7,290	2.58
2	64,566	22.86
3	94,739	33.55
4	51,294	18.16
5	25,616	9.07
6 or more	38,908	13.78
<b>Total</b>	<b>282,415</b>	<b>100.00</b>

59% of the claims for moderate-risk pneumonia had a length of stay of 3 days or less

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Based on these monitoring results, PhilHealth made the following changes to the payment rules for pneumonia cases:

- If the length of stay for a moderate-risk pneumonia case is three days or less, the IT system generates a red flag and the claim is denied.
- If the length of stay for a high-risk pneumonia case is six days or less, the IT system generates a red flag and the claim is denied.
- All pneumonia claims must include X-ray results. If the X-ray result is negative or missing, the IT system generates a red flag and the claim is selected for validation.

## TOOL 11

## Exercises in Using Data for Decision-Making



No single tool is universally appropriate as a template for data-driven decision-making. The following two exercises illustrate how monitoring results might be used for decision-making. They show that interpreting provider payment monitoring indicators is a process and that taking indicators and monitoring reports at face value can lead to incorrect conclusions and inappropriate actions. They also illustrate how additional analysis and “deep dives” can be helpful in getting to the correct explanation and interpretation of the monitoring results.

These exercises are designed to be undertaken by the group of stakeholders involved in designing and implementing the provider payment monitoring system. The participants should discuss each scenario and compare their interpretations to the “answer sheet.”

### Exercise 1. Capitation Payment for Primary Health Care

You work for a purchasing agency that implemented a new capitation payment system for primary health care in March. The payment system pays providers a fixed amount each month for each person registered in a given facility to deliver the capitation package of primary health care services. The payment rate is adjusted by age and sex to pay higher rates for people who are expected to have greater needs (such as children under age 1 and women of reproductive age). Capitation payment replaced fee-for-service for primary health care, but your agency still pays fee-for-service for referral services (outpatient specialty and inpatient services). You are in charge of the provider payment monitoring system for the district office of the purchasing agency.

The monitoring system includes three indicators:

- Total claims and other payments per month (all fee-for-service claims plus capitation payments)
- Average number of outpatient visits (primary health care and specialist) per day (by month)
- Average number of visits per day to each primary health care provider in the district

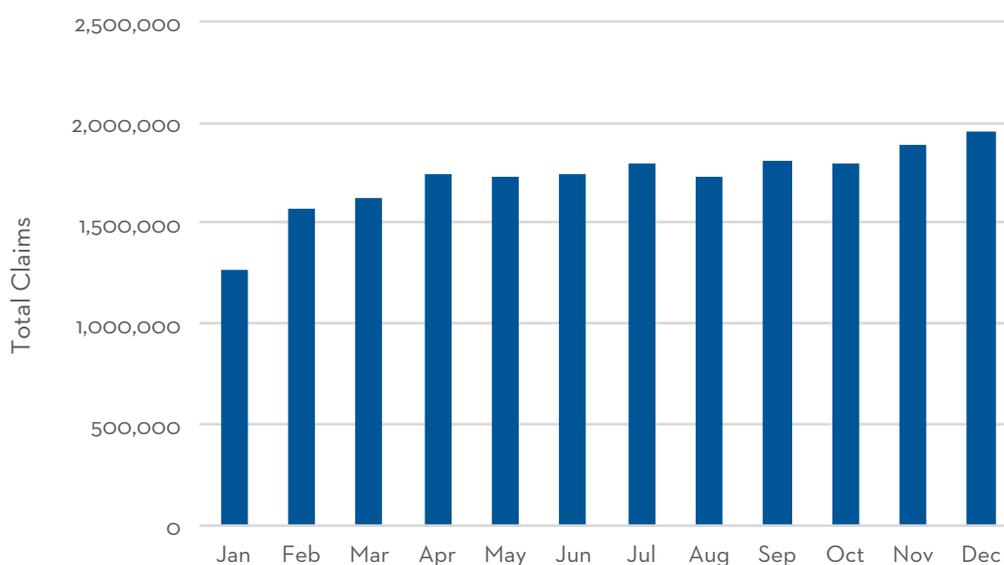
It is now December, so your data for the year include three months under the previous payment systems and nine months with the new capitation payment system for primary health care.

#### Your Tasks

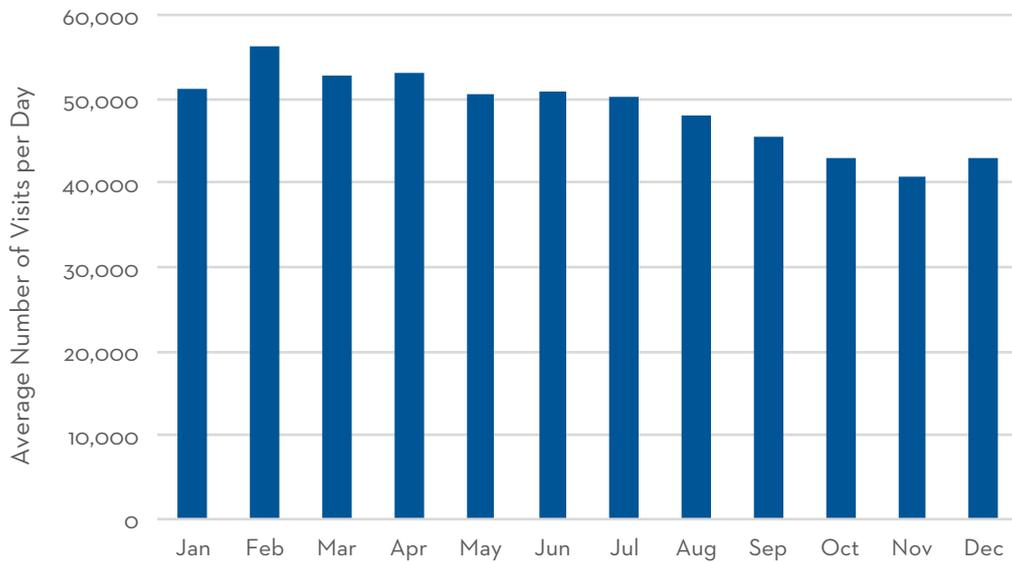
1. Identify the possible objectives and potential unintended consequences of the new capitation payment system for primary health care.
2. Examine the indicator results and make an initial interpretation of how providers are responding to the capitation payment system in your district. Develop a hypothesis about what these results mean in terms of meeting your objectives or uncovering unintended consequences.
3. Discuss what additional information you need in order to test your hypothesis.

#### Monitoring System Results

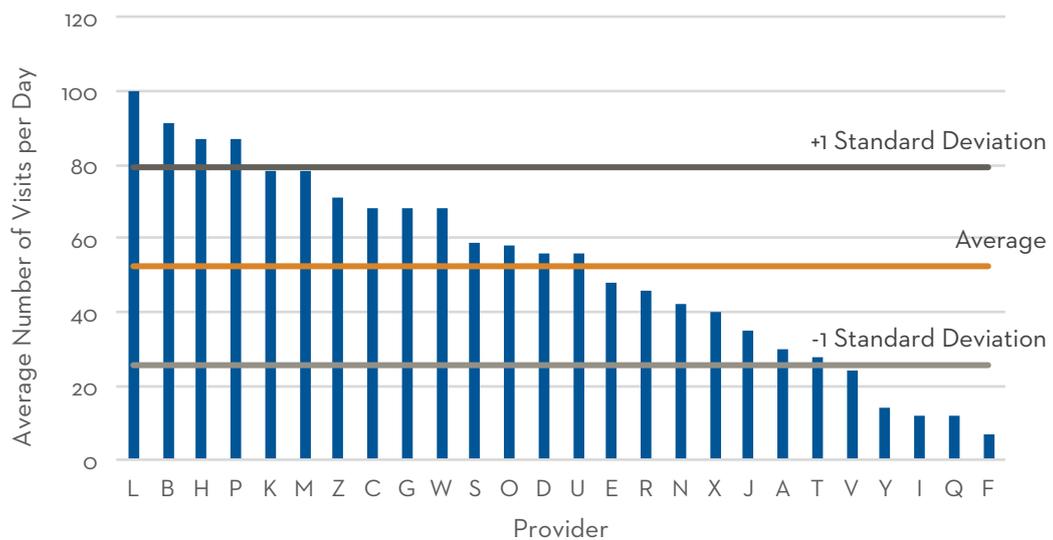
#### Indicator 1. Total Claims and Other Payments per Month in the District (\$)



**Indicator 2. Average Number of Outpatient Visits per Day in the District (by Month)**



**Indicator 3. Average Number of Visits per Day (by Provider) in December**



**Answer Sheet 1****What the indicators show:**

The first indicator shows the aggregate total claims and other payments per month for the district. These have been relatively stable over the past year, with a slight increase over the previous eight months (starting shortly after the capitation system was introduced).

The second indicator shows the aggregate average number of primary health care visits per day. Again, these have been relatively stable but (in contrast to total claims) with a slight decrease starting shortly after the capitation system was introduced.

The third indicator drills down to the 26 providers in the district and shows the average number of primary health care visits per day for each provider in December. The range is wide, with the busiest provider seeing an average of 100 patients per day and the least busy provider seeing only seven patients per day. The mean number of visits per day as well as plus/minus one standard deviation is also shown. There are both positive and negative outliers (providers who see many more than average and those who see many fewer than average).

**Hypothesis:**

The indicators appear to show that the capitation system has not been successful in reducing system costs, given the slight increase in total claims and other payments starting shortly after the capitation system was introduced. Comparing the increase in total system costs with the decrease in the total number of visits, the average cost per visit has increased. However, we don't have enough evidence to determine why this has occurred. We can hypothesize that, given the nature of the capitation payment system, providers are shifting care to more expensive services (such as inappropriate referrals to specialists) and/or delivering more services not captured in the capitation package. The third indicator alone does not confirm the hypothesis, but it does point to specific providers of interest—the outliers with a large number of visits (possibly delivering more services outside of the capitation basket and billing them separately) and those with a small number of visits (possibly underproviding care and/or over-referring to other providers).

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**Additional information required:**

To test the hypothesis, we would need to determine whether any (or all) of the following are occurring:

- Increase in the average number of visits at “higher-level” providers (specialists and hospitals paid at a higher rate)
- Increase in the number of patients seen by specialists
- Increase in the number of hospital admissions for conditions that could have been treated in the primary care setting
- Correlation between increases in referral rates and providers who are reporting a lower number of visits
- Increase in the number of non-capitation services being billed

**Additional Information for a Deeper Dive**

You ask your data analysts for more information and receive two additional indicators:

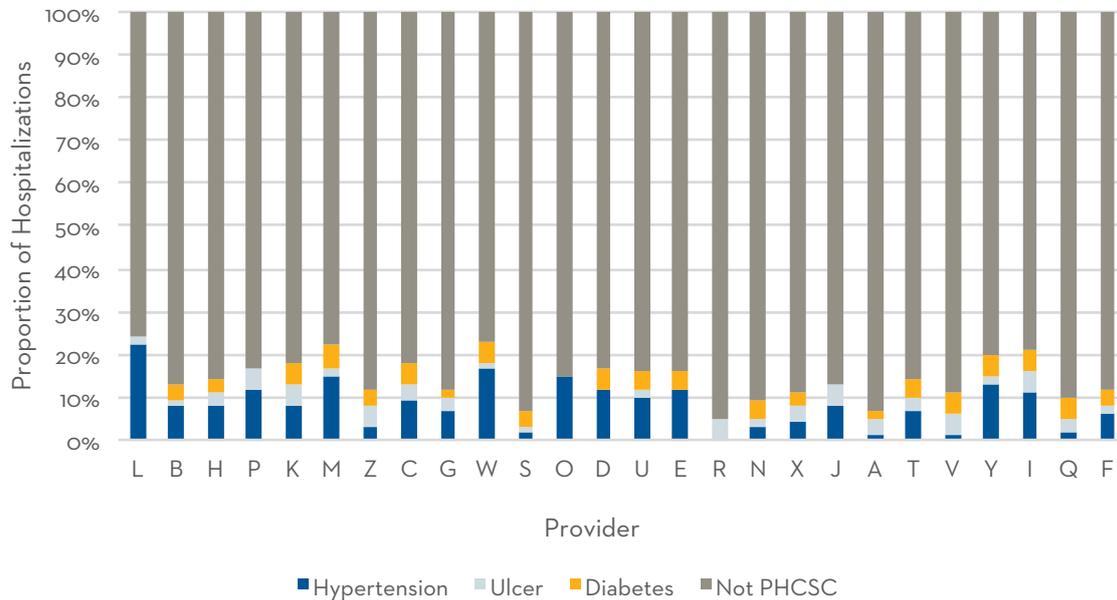
- Hospitalization rate for PHC-sensitive conditions by provider (percentage of population enrolled with the provider under capitation with a hospital admission for a PHC-sensitive condition)
- Distribution of hospitalizations for PHC-sensitive conditions among diagnoses (%) by provider

Please review these additional indicators and refine your interpretation of the preliminary indicators.

**Indicator 3. Hospitalization Rate for PHC-Sensitive Conditions (by Provider Average Visits per Day)**



### Indicator 4. Distribution of Hospitalizations for PHC-Sensitive Conditions (by Provider)



#### Answer Sheet 2

##### What the additional indicators show:

As with the average number of visits by provider, the proportion of each provider's population hospitalized for a PHC-sensitive condition varies widely, ranging from 4% to 13%. Looking at specific providers, a correlation is apparent between providers with a high hospitalization rate and those with a low daily number of visits. This indicates that these providers are likely over-referring their patients to reduce their own costs and benefit from a surplus under capitation payment.

The second additional indicator also highlights variations in the hospitalization rates for PHC-sensitive conditions. Beyond what was seen with the first indicator, the second graph shows that hypertension, specifically, is responsible for much of the variation.

##### Refined interpretation of the monitoring results:

These additional analyses support the hypothesis that, after the capitation system was introduced, some providers began over-referring patients to the hospital for conditions that could (and should) be treated in the primary care setting.

##### Suggested actions:

Based on the refined interpretation, this action is recommended: Refine the payment system design, payment rules, or reporting requirements.

- Provider level
  - Undertake clinical audit of providers with high rates of primary care-sensitive admissions
- System level outside of the payment system policy
  - Introduce standard treatment guidelines for hypertension

**Exercise 2. Case-Based Hospital Payment**

You work for a purchasing agency that has implemented a new case-based hospital payment system using DRGs in December. Under the payment system, each hospital case is assigned to a case group that has a case weight coefficient attached to it. More complex cases have higher case weight coefficients and are paid at a higher rate. The case-based payment system replaced fee-for-service payment for hospitals. You are in charge of operating the provider payment monitoring system for the district office of the purchasing agency.

Your provider payment monitoring system includes two indicators:

- Total number of hospital admissions per month
- Average case severity (case weight coefficient) per month

It is now April, so your data include eight months under the previous payment systems and four months under the new case-based hospital payment system.

**Your Task**

1. Identify the possible objectives and potential unintended consequences of the new case-based hospital payment system.
2. Examine the indicator results and make an initial interpretation of how providers are responding to the new case-based payment system in your district. Develop a hypothesis about what the indicator results mean in terms of meeting the objectives or uncovering unintended consequences.
3. Determine what additional information you need to test your hypothesis.

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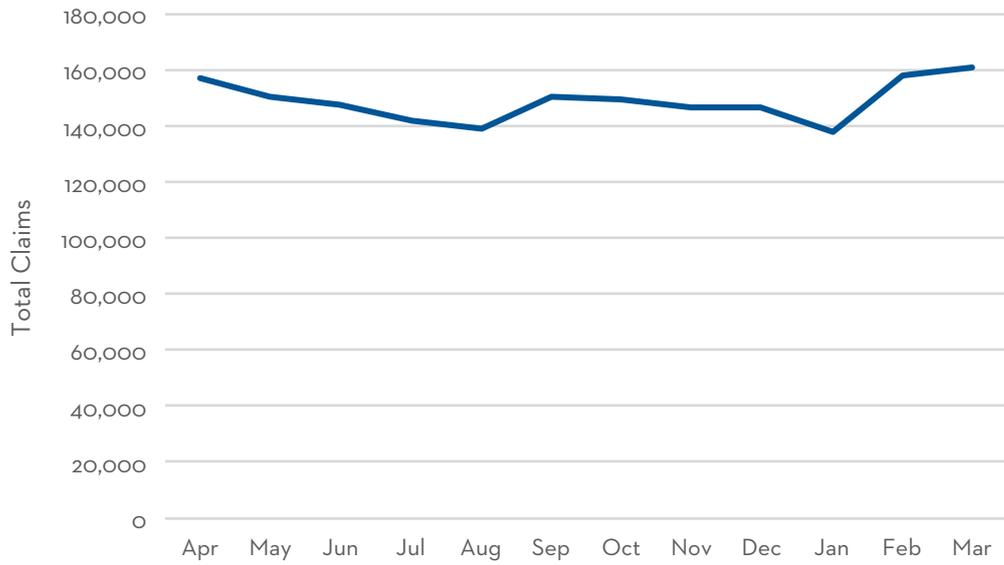
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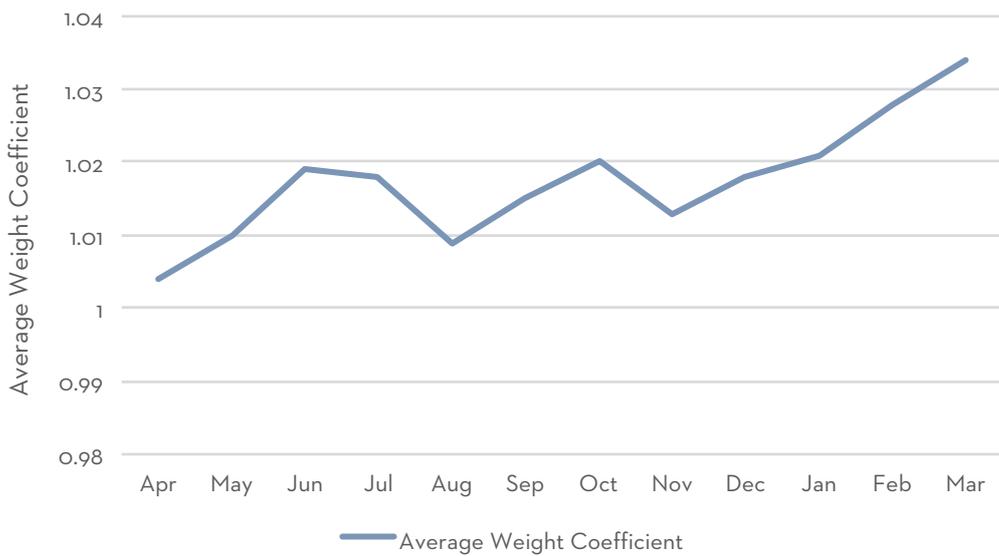
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**Monitoring System Results**

**Indicator 1. Total Number of Hospital Admissions in the District (by Month)**



**Indicator 2. Average Case Weight Coefficient in the District (by Month)**



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**Answer Sheet 1****What the indicators show:**

The first indicator shows the total number of hospital admissions per month in the district. These have been relatively stable over the past year, although they increased slightly over the previous three months (which could be within the normal variation).

The second indicator shows the average case weight coefficient per month. The average weight coefficient abruptly increased when the case-based system was introduced.

**Hypothesis:**

Based on these two indicators, it appears that, on average, patients hospitalized in the district have had higher-complexity cases since December. But the two indicators do not reveal why this is the case. While it is possible that the complexity of health conditions in the community has changed, the fact that this occurred at the same time as the switch to a payment system in which providers are paid higher rates for more complex cases is suspicious. It is possible that providers are upcoding their patients to increase payments—a known possible negative consequence of a case-based payment system.

**Additional information needed:**

To test the hypothesis, we need to seek evidence that providers are gaming the system to get higher payment rates per patient, coding practices have changed, or actual patient case complexity has changed. Indicators that could help provide this additional information include:

- A comparison of average weight coefficient by provider and/or subdistrict to see if the change has been uniform
- A deep dive into specific conditions that could be driving this change
- An examination of total costs
- An examination of average costs—overall and by provider/region

**Additional Information for a Deeper Dive**

You know that obstetric cases make up a large share of hospital admissions in your district. You are also concerned that hospitals can easily shift from normal deliveries to cesarean sections to get paid higher rates for deliveries, so this may be a good place to start a deeper dive.

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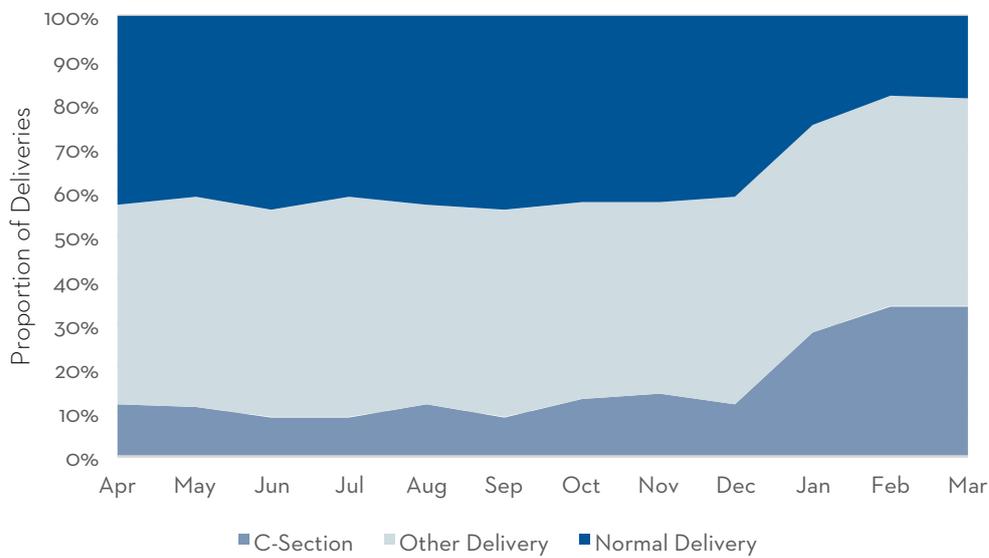
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You ask your analysts for additional indicators that look at obstetric delivery cases both before and after the change in the payment system and disaggregated in multiple ways to identify where hospitals may have changed their behavior. These indicators measure:

- Number and % of deliveries by type (C-section, normal, and other)
- Number of obstetric cases by complexity before and after the case-based payment system was implemented, disaggregated by facility

**Indicator 4. Distribution of Deliveries by Type (%)**



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### Indicator 5. Number of Obstetric Cases by Type and Facility (December vs. April)

Facility	Normal Deliveries		Complicated Deliveries	
	December	April	December	April
1	182	50	23	217
2	159	76	28	114
3	101	40	15	120
4	12	3	0	13
5	32	27	13	10
6	13	9	0	4
7	6	4	0	2
8	8	7	3	4
9	6	6	5	5
10	0	1	0	2
11	12	13	4	4
12	69	70	11	25

#### Answer Sheet

##### What the new indicators show:

After the introduction of the case-based system, an obvious shift occurred from normal deliveries to C-sections: C-sections jumped from around 10% to close to 30% of deliveries, while normal deliveries dropped from about 40% to less than 20%. Looking at the results by hospital, it is clear that the drop in normal deliveries has been much more significant at some hospitals than others.

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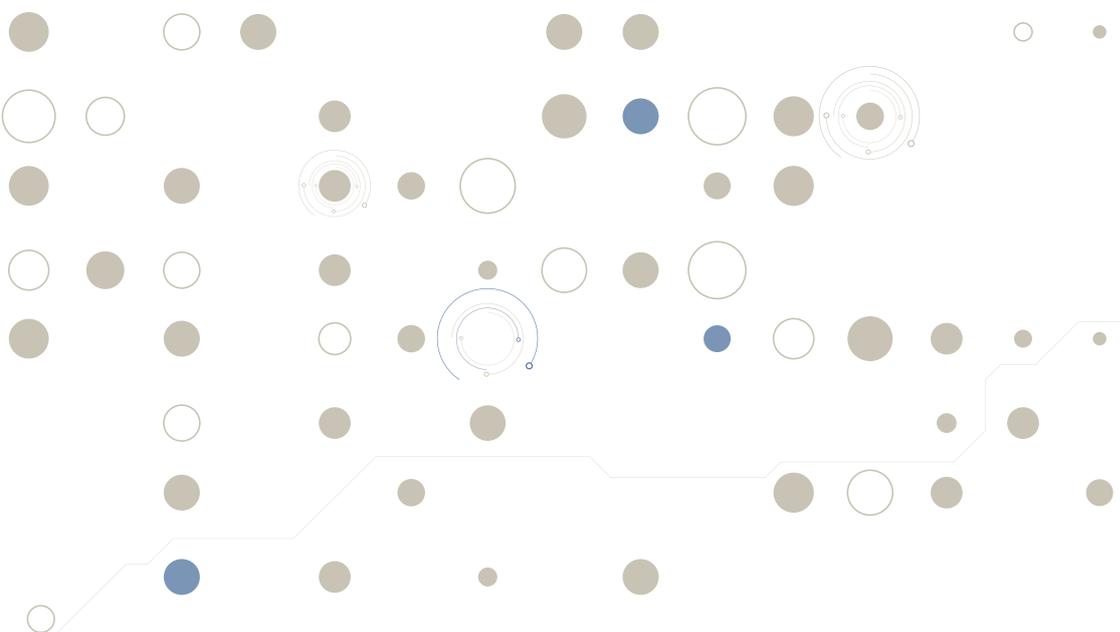
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**Refined interpretation of the monitoring results:**

The additional indicators confirm a shift toward more complex deliveries, and they point specifically to a move toward C-sections, which is driving the increase in the average case weight coefficient. While it is possible that something has changed with pregnancies in the region, thereby necessitating more C-sections, the fact that the increase is not consistent across hospitals suggests that some facilities may be performing C-sections with limited clinical justification.

**Suggested actions:**

We cannot yet conclude that gaming or fraud is taking place or that the C-section rate is too high. A clinical audit of the facilities with high C-section rates could help answer the question about C-section need. On the other hand, examination of the mortality and readmission rates may show that this increase in C-section rate is warranted—indicating, for example, that C-sections were not performed at the correct rate in the past because providers did not receive adequate payment for them. There is enough evidence to suggest a chart review and possible modifications to guidelines on C-sections.



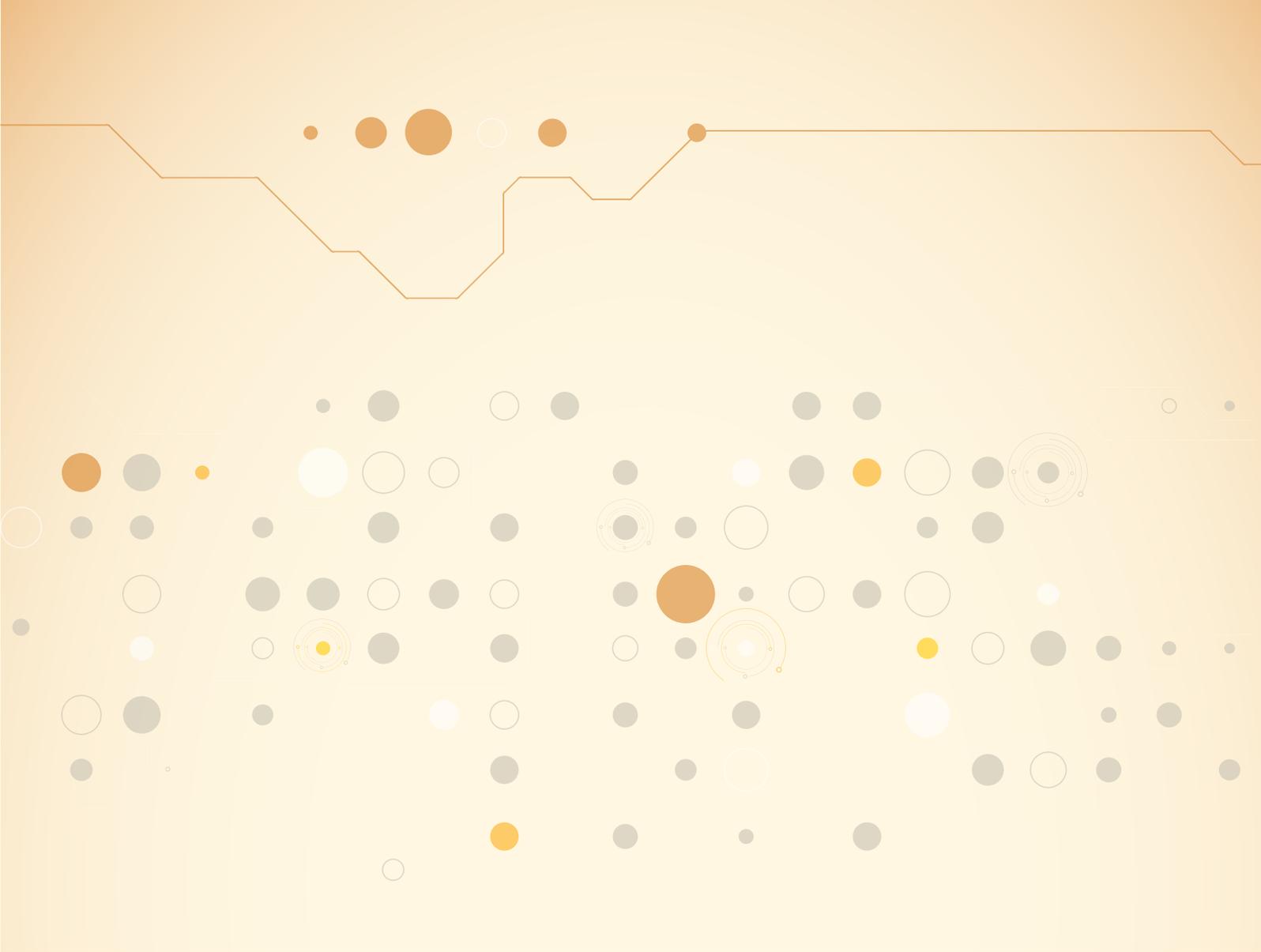
## CONCLUSION

A CAREFULLY DEVELOPED PROVIDER PAYMENT SYSTEM can be a powerful instrument for making progress toward universal health coverage. Countries can draw on the collective experience presented in this toolkit to create an effective provider payment monitoring system that generates information on an ongoing basis about whether objectives are being met or unintended consequences are emerging.

Indicators can only show *what* is happening, however, not *why* or *how*. The monitoring results may suggest additional areas where research is needed to better understand how providers are responding to the provider payment systems and other dynamics of the health care system.

As circumstances and objectives change, objectives are met, new data become available, or refinements are made to the provider payment system based on initial monitoring results, countries will need to modify the monitoring system and can do so by returning to and revising the tools in this toolkit.





## APPENDICES



## PROVIDER PAYMENT METHODS

THIS APPENDIX PROVIDES AN OVERVIEW of the main provider payment methods.

Each payment method has strengths and weaknesses in different contexts, and each creates a different set of economic signals, or incentives, that influence the behavior of provider institutions—specifically, what services they deliver, how they deliver them, and the mix of inputs they use. These economic signals affect both the value obtained from pooled funds and the financial sustainability of coverage. The right incentives can direct provider behavior in ways that serve health system goals, such as better quality of care, expanded access to priority services, greater responsiveness to patients, and more efficient use of resources.

The most commonly used payment methods are:

- Capitation (per capita)
- Case-based (e.g., diagnosis-related groups)

- Fee-for-service (tariffs or fixed fee schedule)
- Global budget
- Line-item budget
- Per diem

Table A-1 summarizes these methods, the incentives they create, and when each method may be useful. The mix of provider payment methods that is best for a country, region, or institution to pay for different health services at different levels will change over time. The effective use of provider payment to advance health system goals is an ongoing process that involves constant refinement as providers adapt and change their behavior and as goals change.

TABLE A-1

## Most Common Provider Payment Methods and the Incentives They Create

PAYMENT METHOD	DEFINITION	INCENTIVES FOR PROVIDERS	WHEN THE METHOD MAY BE USEFUL
Capitation (per capita)	Providers are paid a fixed amount in advance to provide a defined set of services for each enrolled individual for a fixed period.	Improve efficiency of the input mix, attract enrollees, decrease inputs, underprovide services, increase referrals to other providers, improve the output mix (focus on less expensive health promotion and prevention), attempt to select healthier (less costly) enrollees.	Management capacity of the purchaser is moderate to advanced, choice and competition are possible, strengthening primary care and cost control are top priorities, a broader strategy is in place to increase health promotion.
Case-based (e.g., diagnosis-related groups)	Hospitals are paid a fixed amount per admission or discharge depending on the patient and clinical characteristics, which may include department of admission, diagnosis, and other factors.	Increase admissions, including to excessive levels; reduce inputs per case, which may improve the efficiency of the input mix; unbundle services (e.g., through pre-admission testing); reduce length of hospital stays; shift rehabilitation care to the outpatient setting.	Management capacity of the purchaser is moderate to advanced, there is excess hospital capacity and/or use, improving efficiency is a priority, cost control is a moderate priority.

PAYMENT METHOD	DEFINITION	INCENTIVES FOR PROVIDERS	WHEN THE METHOD MAY BE USEFUL
<b>Fee-for-service (fixed fee schedule)</b>	Providers are paid for each individual service provided. Fees are fixed in advance for each service or group of services.	Increase the number of services, including above the necessary level; reduce inputs per service, which may improve the efficiency of the input mix.	Increased productivity, service supply, and access are top priorities; there is a need to retain or attract more providers; cost control is a low priority.
<b>Global budget</b>	Providers receive a fixed amount for a specified period to cover aggregate expenditures to provide an agreed-upon set of services. Budget is flexible and not tied to line items.	<p>If global budgets are formed based on inputs: underprovide services, increase referrals to other providers, increase inputs.</p> <p>If global budgets are formed based on volume: increase the number of services, increase referrals to other providers, decrease inputs. Mechanism exists to improve efficiency but may need to be combined with other incentives.</p>	Management capacity of the purchaser and providers is at least moderate, competition among providers is not possible or not an objective, cost control is a top priority.
<b>Line-item budget</b>	Providers receive a fixed amount for a specified period to cover specific input expenses (e.g., personnel, medicines, utilities).	Underprovide services, increase referrals to other providers, increase inputs, spend all remaining funds by the end of the budget year. No incentive or mechanism to improve efficiency.	Management capacity of the purchaser and providers is low, cost control is a top priority.
<b>Per diem</b>	Hospitals are paid a fixed amount per day for each admitted patient. The per diem rate may vary by department, patient, clinical characteristics, or other factors.	Increase the number of bed-days (may lead to excessive admissions) and lengths of hospital stays; reduce inputs per bed-day (may improve the efficiency of the input mix).	Management capacity of the purchaser and providers is moderate, improving efficiency and increasing bed occupancy are priorities, the purchaser wants to move to output-based payment, cost control is a moderate priority.

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Source: Adapted from Langenbrunner J, Cashin C, O'Dougherty S, eds. *Designing and Implementing Health Care Provider Payment Systems: How-to Manuals*. Washington, DC: World Bank, 2009.

APPENDIX

B

TEMPLATES

THIS APPENDIX INCLUDES BLANK VERSIONS OF THE TEMPLATES in this toolkit. These should be filled out (and modified, if necessary, to meet a country’s specific needs) when creating a provider payment monitoring system.

TOOL 3

Indicator Scoring Template



	INDICATOR #1	INDICATOR #2	INDICATOR #3	INDICATOR #4	INDICATOR #5
<b>Theoretical</b>					
Sensitivity					
Frequency at which changes can be detected					
Specificity					
<i>Theoretical Subtotal</i>					
<b>Practical</b>					
Feasibility					
Purity					
Usability					
Acceptability					
<i>Practical Subtotal</i>					
<b>Indicator Score</b>					

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**TOOL 4**

**Indicator Definition Template**



INDICATOR:		
Names and definitions	Full name of indicator	
	Short name of indicator	
	Definition of indicator	
Data elements	What data elements are required?	
	Are the data elements currently collected/used?	
Calculations	Numerator	
	Denominator	
	Adjustments (if any)	
Disaggregation	What levels of disaggregation are needed (if any)?	
Data sources	Data source name	
	Data source format	
	Data source constraints (e.g., use only after a certain year)	
	Is the data source currently used?	
Data quality	Restrictions on data use (e.g., age limits, conditions)	
	Data quality checks	
Monitoring	Date created	
	Date updated	
Organizations/ departments/ people involved	Organization that produces/ owns the data	
	Organization that produces reports and indicators	

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**TOOL 6**
**Data Mapping Template**

**INDICATOR:**
**Organization/department:**

Question	Details	Example
In what format do you receive the data?		
How often do you receive the data?	<ul style="list-style-type: none"> <li>• Is there a set data submission schedule?</li> <li>• What is the frequency of data submission?</li> </ul>	
Data storage	<ul style="list-style-type: none"> <li>• In what database or file do you enter or store the data after you receive them?</li> <li>• What computer program do you use?</li> <li>• How frequently do you enter/store the data?</li> <li>• Any challenges in entering/storing the data?</li> <li>• Any privacy issues when storing the data?</li> </ul>	
Do you perform any data aggregations?	<ul style="list-style-type: none"> <li>• Which ones?</li> <li>• Using which calculations?</li> <li>• How often?</li> <li>• Are there any challenges in aggregating the data?</li> </ul>	
Data quality	<ul style="list-style-type: none"> <li>• Which quality checks do you perform on the data?</li> <li>• Are there any known issues with data quality?</li> </ul>	
Data usage	<ul style="list-style-type: none"> <li>• Do you use the data for reporting? If so, in which reports and for which purpose, and who is the audience?</li> <li>• Are the data used for decision-making? If so, how?</li> </ul>	
Sharing the data	<ul style="list-style-type: none"> <li>• With whom do you share the data?</li> <li>• In which format do you share the data (type of form, file, database, aggregation levels)?</li> <li>• How often do you share the data?</li> <li>• How do you share the data (e.g., Internet, email, USB flash drive, disk, hard copy)?</li> <li>• Are there any delays or challenges in preparing the data and/or sending them?</li> </ul>	
Additional comments about this data element and/or indicator		

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**TOOL 8****Reporting Requirements Template**

INDICATOR:	
Who owns this indicator (person/department/organization)?	
How often is the indicator updated?	
Who will use the indicator, and how?	
What business question should the indicator answer?	
Which disaggregation levels should be available for which user?	
What are the baseline and threshold values for the indicator?	
What data quality is required before the indicator is reported?	
Is a target or benchmark available for this indicator? Or a critical value?	
What might be the best way to present the information?	
Who should take which action when the target/benchmark critical value is (or is not) reached?	

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**TOOL 9**

**Indicator Summary Template**



**INDICATOR:**

<b>Identifying information</b>	Indicator name	
	Description	
	Questions answered by indicator	
	Consequence categories	
	Consequence subcategories	
<b>Indicator calculation</b>	Type of measurement	
	Numerator	
	Denominator	
<b>Indicator use</b>	Interpretation	
	Target/benchmark	
	Corrective actions	
<b>Visualization</b>	Visualization	
<b>Additional information</b>	Related indicators	
	Related payment systems	

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## MENU OF INDICATORS

THE MENU OF INDICATORS (**TOOL 2**) IS A SEARCHABLE EXCEL SPREADSHEET that provides details about potential objectives and unintended consequences of provider payment systems. It includes a main summary sheet, shown below. The entire Excel file is available at [www.jointlearningnetwork.org/resources/data-analytics-for-monitoring-provider-payment-toolkit](http://www.jointlearningnetwork.org/resources/data-analytics-for-monitoring-provider-payment-toolkit).

	What question are you asking?	What to measure?	Indicator	Definition
<b>EQUITY AND FAIRNESS</b>				
Geography	Does the payment system contribute to fair and equitable distribution of resources across geographic areas (e.g. different regions, urban/rural, remote areas)?	Are the average (per person) allocations, payments, or claims equal across geographic areas? If not, is the variation due to a justifiable need?	Average total allocation, payment, or claims per person	The average amount of resources (allocation, payment, or claims) paid per person per month, quarter, or year
Population	Does the payment system contribute to fair and equitable distribution of resources across populations with different health needs and different socioeconomic status?	Are the average (per person) allocations, payments, or claims equal across different populations? If not, is the variation due to a justifiable need?	Average total allocation, payment, or claims per person	The average amount of resources (allocation, payment, or claims) paid per person per month, quarter, or year
		Are all individuals covered by the payment system?	% of population enrolled with a provider covered by the payment system	% of population enrolled with a provider covered by the payment system
Provider	Does the payment system contribute to fair and equitable distribution of resources across providers?	Are the per provider allocations, payments, or claims equal across different populations? If not, is the variation due to a justifiable need?	Total claims and/or other payments to providers per month	The average amount of resources (allocation, payment, or claims) paid to each provider per month, quarter, or year
Case Mix	Does the payment system contribute to fair and equitable distribution of resources across types of cases with different levels of severity?	Do the average (per person) allocations, payments, or claims vary in accordance to severity?	Average total allocation, payment, or claims per person	The average amount of resources (allocation, payment, or claims) paid per person per month, quarter, or year

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	What question are you asking?	What to measure?	Indicator	Definition
<b>ACCESS TO SERVICES</b>				
Skimping on Services	Does the payment system encourage health providers/facilities to deliver fewer services than necessary or skimp on care in other ways?	Did the total utilization rate decrease with the introduction of the payment system? Is the total utilization rate appropriate given the needs of the population?	Total utilization rate	Total # of visits or services per enrolled person
		Did the utilization rate for specific conditions or services change significantly with the introduction of the payment system? Is the specific utilization rate appropriate given the needs of the population?	Specific utilization rate	Total # of visits or services attributed to tracer condition per enrolled person
Service or Treatment Delays	Does the payment system contribute to waiting lists, queues, or other barriers to patients?	Are more people experiencing waiting lists, queues, or other barriers in accessing services after the implementation of the payment system?	Rate of waiting lists and queues	% of patients experiencing waiting lists, queues, or other barriers in accessing services
Risk Selection	Does the payment system encourage health providers/facilities to avoid sicker or more costly patients?	Are patients inappropriately referred to shift services?	Referral rate	Average number of referrals made by providers per visit in the defined time period
		Was there a significant change in the ratio of highly complex to less complex patients? Definitions of complex may differ (e.g., top versus bottom 10th percentile of case mix groups).	Ratio of highly complex to less complex patients (based on case mix).	Ratio of highly complex to less complex patients.
		Are people being hospitalized more for conditions that could be treated at the primary care level because primary care providers are avoiding them or over-referring them?	Rate of primary care-sensitive admissions	# of admissions for defined primary care sensitive diagnoses per 1,000 population in the defined time period
Out-of-Pocket Payments	Does the system encourage providers to require patients to pay significant out-of-pocket fees to receive care?	What proportion of total payments in the health care system come from out-of-pocket payments?	Share of total health expenditure from out-of-pocket payments	% of private expenditure on health
Engagement of the Private Sector	Does the payment system encourage efficient engagement of the private sector?	Did an appropriate proportion of visits occur within the private sector?	Share of visits that occur within the private sector	Proportion of total visits to health care providers occurring within the private sector
		Are the costs of providing care within the private sector sustainable?	Share of total health care delivery costs paid out to private providers	Total payments paid out to private providers as a proportion of total payments paid out to all health care providers

	What question are you asking?	What to measure?	Indicator	Definition
<b>QUALITY AND CONTINUITY OF CARE</b>				
Quality	Does the payment system encourage providers/facilities to provide higher-quality care?	Are tracer conditions (conditions that have high volume or high health impact) being appropriately diagnosed and treated?	Appropriate diagnosis and treatment for tracer condition	% of cases of defined tracer condition with diagnosis and treatment according to guidelines
		Are patients satisfied with the care that they receive?	% of patients reporting that they are satisfied with the services they received.	% of patients reporting that they are satisfied with the services they received.
		Is the staffing rate (personnel per patient) sufficient to ensure high-quality care?	Staffing-to-patient ratio	The ratio of personnel to patients
	Does the payment system encourage efficiency to the detriment of quality of care?	Did the percentage of patients re-admitted to an acute care facility (for unplanned care) increase?	% of hospital discharges in which the patient is re-admitted within a specific number of days (e.g., 30) of discharge	The unplanned readmission rate estimates unplanned readmission to an acute care hospital within a defined period of time of discharge from hospitalization.
Primary Care	Does the payment system encourage providers/facilities to deliver basic care at the primary level?	What percentage of visits are for primary health care?	Share of enrolled/registered individuals seeking primary care	% of visits or services delivered at the primary care level (as defined by the country)
		What percentage of enrolled patients have at least one primary care visit each year?	Share of enrolled/registered individuals seeking primary care	% of enrolled/registered individuals with at least one primary care visit in a one-year period
		Are people being hospitalized more for conditions that could be treated at the primary care level because they are not able to access services in the community in a timely manner?	Rate of primary care-sensitive admissions	# of admissions for defined primary care-sensitive diagnoses per 1,000 population in the defined time period
Prevention	Does the payment system encourage providers/facilities to focus on health promotion, prevention, and chronic disease management?	What percentage of visits or services are focused on preventing disease?	Share of total utilization for prevention	% of visits or services delivered with the purpose of preventing illness (as defined by the country)
Responsiveness	Does the payment system encourage health providers/facilities to be responsive to the non-medical needs of patients? Has patient satisfaction improved?	Are patients satisfied with the care that they receive?	Rate of patient satisfaction	% of patients reporting that they are satisfied with the services they received
		What is the rate of complaints from registered persons?	Proportion of individuals registering a formal complaint	% of enrolled/registered individuals formally registering a complaint

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	What question are you asking?	What to measure?	Indicator	Definition
<b>EFFICIENCY OF RESOURCE USE</b>				
<b>Efficient Mix of Outputs</b>	Does the payment system encourage services to be delivered at the right level?	Is the proportion of care received at the primary care level appropriate?	% of total utilization at the primary care level	Proportion of visits or services per enrolled person that occur at the primary care level
		Is the proportion of care received at the tertiary care level appropriate?	% of total utilization at the tertiary care level	Proportion of visits or services per enrolled person that occur at the tertiary care level
		Is the rate of hospitalizations for conditions that could be treated at the primary care level increasing due to inappropriate referrals to hospital care?	Rate of primary care-sensitive admissions	# of admissions for defined primary care-sensitive diagnoses per 1,000 population in the defined time period
<b>Efficient Mix of Inputs</b>	Does the payment system encourage providers to use an efficient mix of inputs, or are any inputs over- or under-used?	Does personnel consume an appropriate amount of total costs relative to medicines, supplies, and other inputs?	% of average unit cost for personnel	% of total costs attributed to provider salaries
		Is the mix of staff (physicians, nurses, other clinical, non-clinical) efficient?	Nurse-to-doctor ratio	The ratio of nurses to doctors
		Is the staffing rate (personnel per patient) efficient?	Staffing-to-patient ratio	The ratio of personnel to patients
		Are medicines and supplies overused or underused?	% of average unit cost for medicines and supplies	% of total costs attributed to medicines and supplies
		Does transport consume an appropriate amount of total costs?	% of average unit cost for transport	% of total costs attributed to transport
		Do utilities consume an appropriate amount of total costs?	% of average unit cost for utilities	% of total costs attributed to utilities
	Does the payment system encourage health providers/facilities to deliver services in a costly way?	Did the cost of one "unit" of service increase/decrease under the new payment system?	Average unit cost of services	Average total cost per unit of service
		Did the total amount spent on claims and/or other payments increase/decrease under the new payment system?	Total claims and/or other payments to providers per month	The average amount of resources (allocation, payment, or claims) paid to each provider per month, quarter, or year
		Did the average length of hospital stay increase/decrease under the new payment system?	Average length of stay	Total average number of bed-days for a hospital admission or discharge

	What question are you asking?	What to measure?	Indicator	Definition
<b>EFFICIENCY OF RESOURCE USE</b>				
Productivity	Does the payment system encourage higher productivity and/or reduce absenteeism among health workers?	Did the average number of cases each provider saw per day change significantly with the introduction of the payment system? Are the providers overloaded? Are the providers providing too little service?	Average daily visit rate	Average number of daily visits per provider per day
Overuse of services	Does the payment system encourage health providers/facilities to deliver too many services?	Did the total utilization rate increase with the introduction of the payment system? Is the total utilization rate appropriate given the needs of the population?	Total utilization rate	Total # of visits or services per enrolled person
		Did the rate of expensive services (e.g., tests and procedures) increase significantly with the introduction of the payment system?	Rate of costly services	Proportion of visits during which a costly service (defined by country) occurred
	Does the payment system encourage health providers/facilities to increase unnecessary referrals?	Are patients inappropriately referred to shift services?	Referral rate	Average number of referrals made by providers per visit in the defined time period
		Is the rate of hospitalizations for conditions that could be treated at the primary care level increasing due to inappropriate referrals to hospital care?	Rate of primary care-sensitive admissions	# of admissions for defined primary care-sensitive diagnoses per 1,000 population in the defined time period

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	What question are you asking?	What to measure?	Indicator	Definition
<b>FINANCIAL SUSTAINABILITY</b>				
<b>Provider Financial Viability</b>	Does the payment system help health providers/facilities stay financially viable and avoid deficits?	Are providers able to cover reasonable costs?	Average resources paid per provider per patient	The claims and/or other payments paid to each provider per patient in the defined time period
<b>Provider Autonomy</b>	Does the payment system help increase the autonomy of health providers/facilities?	Does the payment system make it possible for providers to make internal resource allocation decisions?	Context-specific indicators; may be qualitative	
<b>Cost Management</b>	Does the payment system help keep total expenditures in the health system within available resources?	Did the cost of providing care change with the implementation of the payment system? Are the costs stable? Are the costs sustainable?	Total claims and/or other payments to providers per month	Total claims and/or other payments made in the defined time period
			Average claims and/or other payments per registered person per visit	The average amount of resources paid per person in the defined time period

	What question are you asking?	What to measure?	Indicator	Definition
<b>EFFICIENCY OF ADMINISTRATION</b>				
Administrative Burden	Is the payment system burdensome to administer?	How much is spent on administering the payment system? Include staff costs, materials, shipping, etc.	Total resources spent on system administration by providers	The total amount of resources (\$) spent on system administration
			Total resources spent on system administration by the purchaser	The total amount of resources (\$) spent on system administration
Payment Delays	Does the payment system contribute to delayed payment to health providers/facilities?	Does the time it takes to process claims create problems for providers?	Length of time to process claims	The average time (days, weeks, months) between when a provider submits a claim for payment and when payment is made
				The average time (days, weeks, months) between when a service is delivered and claims for payment are submitted
				The average time (days, weeks, months) between when a provider submits a claim for payment and end of processing
				The average time (days, weeks, months) between the end of claims processing and when payment is made
<b>GAMING/FRAUDULENT BEHAVIOR</b>				
Gaming/Fraudulent Behavior	Does the payment system encourage any gaming or fraudulent behavior?	There is no "fraud" indicator. Monitor other indicators for outliers. Indicators to monitor include: utilization rate, % of population enrolled with a provider, average/total allocation of claims/services, rate of costly services, case mix distribution, and visit rate.	N/A	Gaming behavior involves choosing patients or service plans based on maximizing payment, rather than focusing on patient care. Fraudulent behavior involves falsifying data submitted for payment.

## INDICATOR SUMMARY SHEETS FOR “TOP 10” INDICATORS

THE FOLLOWING ARE EXAMPLE INDICATOR SUMMARY SHEETS for the 10 indicators used as examples in this toolkit.

INDICATOR: TOTAL PAYMENTS IN THE DEFINED TIME PERIOD		
Identifying information	Indicator name	Total claims and/or other payments to providers in the defined time period
	Description	Total amount paid to all providers in a calendar month
	Questions answered by indicator	This indicator is a high-level “early-warning” indicator that can be used to track utilization of covered health services. It can be used to monitor for potential overuse, which would lead to unsustainability. If disaggregated (e.g., by region, case mix, or income group), it can also be used to monitor equity and fairness by comparing per capita spending across the disaggregation levels.
	Consequence categories	Financial Sustainability, Access, Equity and Fairness
	Consequence subcategories	Depends on disaggregation. For example, if disaggregated by region, can show Equity and Fairness, Geography.
Indicator calculation	Type of measurement	Monetary value
	Numerator	Value of claims submitted and approved for payment in a calendar month
	Denominator	N/A
Indicator use	Interpretation	Higher values indicate higher utilization of covered services or utilization of higher-cost services. This could signal early signs of changing health needs (e.g., an epidemic) or overuse of services (an unintended consequence). Variation by region or population group could show inequity.
	Target/benchmark	No specific benchmark. Look for significant changes over time.
	Corrective actions	Review data for possible causes. Ask for documentation of claims in regions (or for providers) where the change is significant. If potential gaming/fraud is found, establish tighter review for those regions/providers.

**INDICATOR: TOTAL PAYMENTS IN THE DEFINED TIME PERIOD**

<p><b>Visualization</b></p>	<p>Visualization</p>	<table border="1"> <caption>Total Payments to Providers by Month</caption> <thead> <tr> <th>Month</th> <th>Total Payments to Providers</th> </tr> </thead> <tbody> <tr><td>Jan</td><td>\$1,400,000</td></tr> <tr><td>Feb</td><td>\$1,550,000</td></tr> <tr><td>Mar</td><td>\$1,560,000</td></tr> <tr><td>Apr</td><td>\$1,600,000</td></tr> <tr><td>May</td><td>\$1,590,000</td></tr> <tr><td>Jun</td><td>\$1,620,000</td></tr> <tr><td>Jul</td><td>\$1,570,000</td></tr> <tr><td>Aug</td><td>\$1,640,000</td></tr> <tr><td>Sep</td><td>\$1,660,000</td></tr> <tr><td>Oct</td><td>\$1,600,000</td></tr> <tr><td>Nov</td><td>\$1,680,000</td></tr> <tr><td>Dec</td><td>\$1,660,000</td></tr> </tbody> </table>	Month	Total Payments to Providers	Jan	\$1,400,000	Feb	\$1,550,000	Mar	\$1,560,000	Apr	\$1,600,000	May	\$1,590,000	Jun	\$1,620,000	Jul	\$1,570,000	Aug	\$1,640,000	Sep	\$1,660,000	Oct	\$1,600,000	Nov	\$1,680,000	Dec	\$1,660,000
Month	Total Payments to Providers																											
Jan	\$1,400,000																											
Feb	\$1,550,000																											
Mar	\$1,560,000																											
Apr	\$1,600,000																											
May	\$1,590,000																											
Jun	\$1,620,000																											
Jul	\$1,570,000																											
Aug	\$1,640,000																											
Sep	\$1,660,000																											
Oct	\$1,600,000																											
Nov	\$1,680,000																											
Dec	\$1,660,000																											
<p><b>Additional information</b></p>	<p>Related indicators</p>	<p>Average total claims and/or other payments per provider Average total claims and/or other payments per registered person</p>																										
	<p>Related payment systems</p>	<p>All payment systems</p>																										

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**INDICATOR: AVERAGE TOTAL PAYMENTS TO PROVIDERS PER REGISTERED PERSON IN THE DEFINED TIME PERIOD**

1 2 3 4	<b>Identifying information</b>	Indicator name	Average total claims and/or other payments to providers per registered person in the defined time period																									
	Description	Average total amount paid per month per person enrolled in the system and/or with an individual provider																										
	Questions answered by indicator	Does the payment system contribute to fair and equitable distribution of resources? Does the payment system contribute to the creation of “super users”?																										
	Consequence categories	Equity and Fairness, Access to Services, Financial Sustainability																										
	Consequence subcategories	Geography, Population, Provider, Case Mix, Skimping on Services, Cost Management																										
5 6 7	<b>Indicator calculation</b>	Type of measurement	Ratio																									
	Numerator	Total value of claims submitted and approved for payment in a calendar month																										
	Denominator	Total registered population in the calendar month																										
	Reporting level/ disaggregation	Geography, population, case mix																										
<b>Indicator use</b>	Interpretation	Higher values indicate higher utilization of covered services or utilization of more costly services. This could be an early sign of an epidemic. Could also be an unintended consequence (overuse of services). Variation by region could show inequity.																										
	Target/benchmark	No specific benchmark. Average allocation is equal across groups unless there is justified variation by need. Look for significant changes over time.																										
	Corrective actions																											
<b>Visualization</b>	Visualization	<table border="1"> <caption>Total Payments to Providers by Month</caption> <thead> <tr> <th>Month</th> <th>Total Payments to Providers</th> </tr> </thead> <tbody> <tr><td>Jan</td><td>\$68</td></tr> <tr><td>Feb</td><td>\$55</td></tr> <tr><td>Mar</td><td>\$80</td></tr> <tr><td>Apr</td><td>\$62</td></tr> <tr><td>May</td><td>\$68</td></tr> <tr><td>Jun</td><td>\$58</td></tr> <tr><td>Jul</td><td>\$65</td></tr> <tr><td>Aug</td><td>\$55</td></tr> <tr><td>Sep</td><td>\$65</td></tr> <tr><td>Oct</td><td>\$68</td></tr> <tr><td>Nov</td><td>\$62</td></tr> <tr><td>Dec</td><td>\$68</td></tr> </tbody> </table>	Month	Total Payments to Providers	Jan	\$68	Feb	\$55	Mar	\$80	Apr	\$62	May	\$68	Jun	\$58	Jul	\$65	Aug	\$55	Sep	\$65	Oct	\$68	Nov	\$62	Dec	\$68
Month	Total Payments to Providers																											
Jan	\$68																											
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Jul	\$65																											
Aug	\$55																											
Sep	\$65																											
Oct	\$68																											
Nov	\$62																											
Dec	\$68																											
<b>Additional information</b>	Related indicators	Total claims and/or other payments in the defined time period Utilization rate																										
	Related payment systems	All payment systems																										

**INDICATOR: PERCENTAGE OF TOTAL PAYMENTS ATTRIBUTED TO MEDICINES**

<b>Identifying information</b>	Indicator name	Percentage of total claims and/or other payments attributed to medicines						
	Description	Percentage of total claims and/or other payments attributed to medicines						
	Questions answered by indicator	Does the payment system encourage providers to use an efficient mix of inputs, or are any inputs overused or underused? Are medicines being overused or underused?						
	Consequence category	Efficiency of Services						
	Consequence subcategory	Efficient Use of Resources						
<b>Indicator calculation</b>	Type of measurement	Percent						
	Numerator	Total costs directed to medications in the defined time period						
	Denominator	Total costs attributed to services submitted in the defined time period						
	Reporting level/disaggregation	Geography, facility, public/private						
<b>Indicator use</b>	Interpretation	A high value may indicate that medicines account for an excessively high proportion of spending, leaving little money for other needs. A low value may indicate skimping on resources or a significant out-of-pocket burden on patients for medicines.						
	Target/benchmark	No absolute target. Monitor for change and variation. Low and high extremes are both negative (high = inefficient payment system with little money left for other factors; low = lack of medications and supplies for patients).						
	Corrective actions							
<b>Visualization</b>	Visualization	<p>A pie chart illustrating the distribution of total payments. The chart is divided into two segments: a larger orange segment representing 'Other Health Services' at 65%, and a smaller grey segment representing 'Medicine' at 35%.</p> <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Other Health Services</td> <td>65%</td> </tr> <tr> <td>Medicine</td> <td>35%</td> </tr> </tbody> </table>	Category	Percentage	Other Health Services	65%	Medicine	35%
Category	Percentage							
Other Health Services	65%							
Medicine	35%							
<b>Additional information</b>	Related indicators	Total spending						
	Related payment systems	All payment systems						

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**INDICATOR: TOTAL UTILIZATION RATE**

1 2 3 4 5 6 7	<b>Identifying information</b>	Indicator name	Total utilization rate
	Description	Average number of visits or services per eligible person in the defined time period	
	Questions answered by indicator	Is the total utilization rate appropriate given the needs of the population? Did the total utilization change significantly with the introduction of the payment system?	
	Consequence category	Access to Services, Efficiency	
	Consequence subcategory	Skimping on Services, Overuse of Services	
<b>Indicator calculation</b>	Type of measurement	Rate	
	Numerator	Total # of visits or services in the defined time period	
	Denominator	Total # of individuals eligible for health services	
	Reporting level/disaggregation	Geography (e.g., urban/rural), administrative division (e.g., province, region, municipality), population group, provider type, provider	
<b>Indicator use</b>	Interpretation	Monitor for change and variation. Low and high extremes are both negative (high = potential overuse; low = potential skimping on services). High outliers could be an indicator of gaming/fraudulent behavior.	
	Target/benchmark	No absolute target	
	Corrective actions		
<b>Visualization</b>	Visualization	<p>The chart displays the total utilization rate for eight providers over four quarters. The y-axis represents the utilization rate from 0.0 to 2.0. A horizontal line at 1.0 indicates the mean. Two horizontal lines at approximately 1.5 and 0.6 represent the +1 standard deviation and -1 standard deviation, respectively. Provider 7 (orange) consistently has the highest utilization rate, peaking at 2.0 in Q2. Provider 4 (black) consistently has the lowest utilization rate, dipping to 0.3 in Q3. Other providers (1-3, 5-6, 8) fluctuate around the mean.</p>	
<b>Additional information</b>	Related indicators	Total claims and/or other payments in the defined time period Average total claims and/or other payments per patient Total resource allocations Specific utilization rate	
	Related payment systems	All payment systems	

**INDICATOR: SPECIFIC UTILIZATION RATE**

<b>Identifying information</b>	Indicator name	Specific utilization rate																								
	Description	Average number of visits or services per eligible person in the defined time period attributed to a tracer condition																								
	Questions answered by indicator	Did a specific utilization rate decrease with the introduction of the payment system? Is the specific utilization rate appropriate given the needs of the population? (Note: Specific conditions that are considered tracer conditions will differ by country.)																								
	Consequence category	Access to Services																								
	Consequence subcategory																									
<b>Indicator calculation</b>	Type of measurement	Ratio																								
	Numerator	Total # of visits or services in the defined time period attributed to a tracer condition																								
	Denominator	Population																								
	Reporting level/ disaggregation	Geography (e.g., urban/rural), administrative division (e.g., province, region, municipality), population group, provider type, provider																								
<b>Indicator use</b>	Interpretation	High values and significant increases may indicate an epidemic. High values may also suggest a lack of sustainability.																								
	Target/benchmark	None																								
	Corrective actions																									
<b>Visualization</b>	Visualization	<table border="1"> <caption>Average Annual Number of Visits per Client by Region</caption> <thead> <tr> <th>Region</th> <th>Average Annual Number of Visits per Client</th> </tr> </thead> <tbody> <tr><td>1</td><td>9.5</td></tr> <tr><td>2</td><td>4.5</td></tr> <tr><td>3</td><td>6.5</td></tr> <tr><td>4</td><td>6.0</td></tr> <tr><td>5</td><td>4.0</td></tr> <tr><td>6</td><td>5.5</td></tr> <tr><td>7</td><td>11.5</td></tr> <tr><td>8</td><td>10.5</td></tr> <tr><td>9</td><td>8.5</td></tr> <tr><td>10</td><td>7.5</td></tr> <tr><td>11</td><td>7.0</td></tr> </tbody> </table>	Region	Average Annual Number of Visits per Client	1	9.5	2	4.5	3	6.5	4	6.0	5	4.0	6	5.5	7	11.5	8	10.5	9	8.5	10	7.5	11	7.0
Region	Average Annual Number of Visits per Client																									
1	9.5																									
2	4.5																									
3	6.5																									
4	6.0																									
5	4.0																									
6	5.5																									
7	11.5																									
8	10.5																									
9	8.5																									
10	7.5																									
11	7.0																									
<b>Additional information</b>	Related indicators	Total utilization rate																								
	Related payment systems	Should be monitored in all payment systems																								

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**INDICATOR: PROPORTION OF ENROLLED INDIVIDUALS SEEKING PRIMARY CARE**

1 2 3 4 5 6 7	<b>Identifying information</b>	Indicator name	% of registered persons seeking primary care in the defined time period																							
	Description	% of registered persons with at least one primary care visit in a one-year period																								
	Questions answered by indicator	Does the payment system make it beneficial or more profitable for basic care to be delivered at the primary level?																								
	Consequence category	Access to Services																								
	Consequence subcategory	Primary Care																								
<b>Indicator calculation</b>	Type of measurement	Percentage																								
	Numerator	Total # of unique individuals seen in the defined time period seeking primary care																								
	Denominator	Total # of enrolled individuals																								
	Reporting level/ disaggregation	Geography (e.g., urban/rural), administrative division (e.g., province, region, municipality), provider type, provider																								
<b>Indicator use</b>	Interpretation	Low values suggest problems with access to care.																								
	Target/benchmark	High (ideally 100% or close to it)																								
	Corrective actions																									
<b>Visualization</b>	Visualization	<table border="1"> <caption>Approximate data from the visualization chart</caption> <thead> <tr> <th>Region</th> <th>Poorest Quintile</th> <th>Quintile 2</th> <th>Quintile 3</th> <th>Quintile 4</th> <th>Richest Quintile</th> </tr> </thead> <tbody> <tr> <td>Region 1</td> <td>60%</td> <td>65%</td> <td>80%</td> <td>90%</td> <td>95%</td> </tr> <tr> <td>Region 2</td> <td>75%</td> <td>80%</td> <td>85%</td> <td>90%</td> <td>95%</td> </tr> <tr> <td>Region 3</td> <td>85%</td> <td>90%</td> <td>90%</td> <td>95%</td> <td>95%</td> </tr> </tbody> </table>	Region	Poorest Quintile	Quintile 2	Quintile 3	Quintile 4	Richest Quintile	Region 1	60%	65%	80%	90%	95%	Region 2	75%	80%	85%	90%	95%	Region 3	85%	90%	90%	95%	95%
Region	Poorest Quintile	Quintile 2	Quintile 3	Quintile 4	Richest Quintile																					
Region 1	60%	65%	80%	90%	95%																					
Region 2	75%	80%	85%	90%	95%																					
Region 3	85%	90%	90%	95%	95%																					
<b>Additional information</b>	Related indicators	Total claims and/or other payments in the defined time period Average total claims and/or other payment per patient Total resource allocations																								
	Related payment systems	All payment systems																								

**INDICATOR: PROPORTION OF TOTAL UTILIZATION FOR PREVENTION**

<b>Identifying information</b>	Indicator name	% of total utilization attributed to preventive care in the defined time period																		
	Description	% of visits where preventive care is received																		
	Questions answered by indicator	Does the payment system make it beneficial or more profitable for health providers/facilities to focus on health promotion, prevention, and chronic disease management?																		
	Consequence category	Quality and Continuity of Care																		
	Consequence subcategory	Prevention																		
<b>Indicator calculation</b>	Type of measurement	Percentage																		
	Numerator	# of visits or services delivered with the purpose of preventing illness in the defined time period																		
	Denominator	Total # of visits or services delivered at all levels in the defined time period																		
	Reporting level/disaggregation	Geography (e.g. urban/rural), administrative division (e.g. province, region, municipality), provider type, provider																		
<b>Indicator use</b>	Interpretation																			
	Target/benchmark	No absolute target. Monitor for change and variation.																		
	Corrective actions																			
<b>Visualization</b>	Visualization	<table border="1"> <caption>Proportion of Total Utilization for Prevention by Age Group</caption> <thead> <tr> <th>Age Group</th> <th>Proportion (%)</th> </tr> </thead> <tbody> <tr> <td>Under 1</td> <td>60</td> </tr> <tr> <td>1 to 5</td> <td>63</td> </tr> <tr> <td>6 to 10</td> <td>55</td> </tr> <tr> <td>11 to 15</td> <td>54</td> </tr> <tr> <td>16 to 20</td> <td>50</td> </tr> <tr> <td>21 to 40</td> <td>45</td> </tr> <tr> <td>41 to 60</td> <td>30</td> </tr> <tr> <td>Over 60</td> <td>20</td> </tr> </tbody> </table>	Age Group	Proportion (%)	Under 1	60	1 to 5	63	6 to 10	55	11 to 15	54	16 to 20	50	21 to 40	45	41 to 60	30	Over 60	20
Age Group	Proportion (%)																			
Under 1	60																			
1 to 5	63																			
6 to 10	55																			
11 to 15	54																			
16 to 20	50																			
21 to 40	45																			
41 to 60	30																			
Over 60	20																			
<b>Additional information</b>	Related indicators	Total claims and/or other payments in the defined time period Average total claims and/or other payments per patient Total resource allocations Total utilization rate																		
	Related payment systems	All payment systems																		

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INDICATOR: REFERRAL RATE																										
Identifying information	Indicator name	Average number of referrals made by providers per visit in the defined time period																								
	Description	Average number of referrals made by providers per visit in the defined time period																								
	Questions answered by indicator	Are patients being inappropriately referred in order to shift services? Does the payment system make it beneficial or more profitable for health providers/facilities to increase unnecessary referrals?																								
	Consequence category	Efficiency of Services, Access to Services																								
	Consequence subcategory	Overuse of Services, Risk Selection																								
Indicator calculation	Type of measurement	Rate																								
	Numerator	Total # of referrals made by providers in the defined time period																								
	Denominator	Total # of visits to providers in the defined period																								
	Reporting level/ disaggregation	Geography (e.g., urban/rural), administrative division (e.g., province, region, municipality), population group, provider type, provider																								
Indicator use	Interpretation	High rates may indicate that resource-intensive patients are being inappropriately referred. Low values may indicate that patients are not receiving the specialized care they need.																								
	Target/benchmark	No absolute target. Monitor for change and variation. Both low and high extremes are negative (high = potential overuse; low = potential skimping on services).																								
	Corrective actions	Reduction of payments for repeat offenders																								
Visualization	Visualization	<table border="1"> <caption>Estimated Referral Rates (%)</caption> <thead> <tr> <th>Specialty</th> <th>Before Capitation Implementation</th> <th>After Capitation Implementation</th> </tr> </thead> <tbody> <tr> <td>Ocular</td> <td>~18.5%</td> <td>~21.5%</td> </tr> <tr> <td>Gastrointestinal</td> <td>~13.5%</td> <td>~18.5%</td> </tr> <tr> <td>Orthopedic</td> <td>~12.5%</td> <td>~16.5%</td> </tr> <tr> <td>Dermatologic</td> <td>~10.5%</td> <td>~15.5%</td> </tr> <tr> <td>Cardiovascular</td> <td>~8.5%</td> <td>~13.5%</td> </tr> <tr> <td>General/Viral</td> <td>~6.5%</td> <td>~9.5%</td> </tr> <tr> <td>Ear/Nose/Throat</td> <td>~4.5%</td> <td>~8.5%</td> </tr> </tbody> </table>	Specialty	Before Capitation Implementation	After Capitation Implementation	Ocular	~18.5%	~21.5%	Gastrointestinal	~13.5%	~18.5%	Orthopedic	~12.5%	~16.5%	Dermatologic	~10.5%	~15.5%	Cardiovascular	~8.5%	~13.5%	General/Viral	~6.5%	~9.5%	Ear/Nose/Throat	~4.5%	~8.5%
Specialty	Before Capitation Implementation	After Capitation Implementation																								
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Additional information	Related indicators	Total utilization rate PHC-sensitive admission rate																								
	Related payment systems	Should be monitored in all payment systems, but biggest risk of unintended consequences is in capitation.																								

**INDICATOR: RATE OF PHC-SENSITIVE HOSPITAL ADMISSIONS**

<b>Identifying information</b>	Indicator name	Rate of PHC-sensitive hospital admissions per 1,000 people in the defined time period
	Description	Number of inpatient hospital admissions for defined PHC-sensitive diagnoses per 1,000 population in the defined time period
	Questions answered by indicator	What is the rate of hospitalization for primary care-sensitive conditions? Does the payment system make it beneficial or more profitable for health providers/facilities to avoid sicker or more costly patients?
	Consequence category	Access to Services
	Consequence subcategory	Primary Care, Risk Selection
<b>Indicator calculation</b>	Type of measurement	Rate
	Numerator	Total # of inpatient hospital admissions for primary care-sensitive diagnoses in the defined time period
	Denominator	Total population in the defined time period divided by 1,000
	Reporting level/disaggregation	Geography (e.g. urban/rural), administrative division (e.g., province, region, municipality), population group
<b>Indicator use</b>	Interpretation	High rates may indicate that people are not receiving adequate care in the community.
	Target/benchmark	Low. Most patients with PHC-sensitive conditions do not need to be referred to the hospital. Unrealistic to expect 0.
	Corrective actions	
<b>Visualization</b>	Visualization	<p>The chart displays the proportion of hospitalizations for four conditions across 16 providers (L-F). The y-axis is 'Proportion of Hospitalizations' (0% to 100%). The x-axis is 'Provider'. The legend indicates: Hypertension (dark blue), Ulcer (light blue), Diabetes (orange), and Not PHCSC (grey). For all providers, 'Not PHCSC' is the dominant category, representing approximately 70-90% of hospitalizations. Hypertension, Ulcer, and Diabetes represent smaller proportions, generally between 5% and 25% each.</p>
<b>Additional information</b>	Related indicators	
	Related payment systems	Should be monitored in all payment systems, but biggest risk of unintended consequence is in capitation.

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**INDICATOR: APPROPRIATE DIAGNOSIS OF TRACER CONDITION**

1 2 3 4	<b>Identifying information</b>	Indicator name	% of cases with a specific tracer condition that result in diagnosis and treatment according to guidelines in the defined time period
	Description	% of cases of defined tracer condition with diagnosis and treatment according to guidelines	
	Questions answered by indicator	Does the payment system make it beneficial or more profitable for health providers/facilities to provide higher-quality care? Are tracer conditions being appropriately diagnosed and treated?	
	Consequence category	Quality and Continuity of Care	
	Consequence subcategory	Quality	
5 6	<b>Indicator calculation</b>	Type of measurement	Percentage
	Numerator	# of cases of the defined tracer condition with diagnosis and treatment according to guidelines in the defined time period	
	Denominator	Total # of cases of defined tracer condition in the defined time period	
	Reporting level/disaggregation	Geography (e.g., urban/rural), administrative division (e.g., province, region, municipality), population group, provider type, provider	
7	<b>Indicator use</b>	Interpretation	Low values suggest poor quality of care.
	Target/benchmark	100%	
	Corrective actions		
<b>Visualization</b>	Visualization	<p>A bar chart with 10 bars representing data points. The y-axis is labeled from 0% to 70% in 10% increments. The x-axis is labeled from 1 to 10. The bars have the following approximate values: 1: 20%, 2: 38%, 3: 35%, 4: 32%, 5: 28%, 6: 42%, 7: 32%, 8: 30%, 9: 60%, 10: 38%.</p>	
<b>Additional information</b>	Related indicators	Specific utilization rate	
	Related payment systems	All payment systems	

## GLOSSARY

**AVERAGE LENGTH OF STAY.** The average number of bed-days (inpatient days) for each patient discharged from the hospital. The average length of stay can be calculated for an entire facility, a department, or a diagnosis-related group classification.

**CAPITATION PAYMENT.** A payment method in which all providers in the payment system are paid a predetermined fixed rate in advance to provide a defined set of services to each individual enrolled with the provider for a fixed period. Also called *per capita provider payment*.

**CASE-BASED PROVIDER PAYMENT.** A hospital payment method that pays hospitals a fixed amount per admission or discharge depending on the patient and clinical characteristics, which may include department of admission, diagnosis, and other factors. The payment rate covers all tests, procedures, and other services provided during the hospital stay. If the cases are grouped according to diagnosis, it is a case-based diagnosis-related group (DRG) payment method.

**CASE GROUP.** A group of hospital cases defined for a case-based hospital payment system that includes cases with similar clinical characteristics and that require similar resources to diagnose and treat cases or complete a phase of case management.

**CASE MIX.** The average relative complexity and resource intensity of services required to diagnose and treat patients in a hospital due to diagnosis, disease severity, and personal characteristics such as age.

**COST.** The value of resources (inputs), expressed in monetary terms, used to produce a good or service, carry out an activity, or achieve a goal.

**COST ITEM.** An input, or resource, used by providers to deliver health services to which costs are attached. Cost items include both capital and recurrent items.

**DIAGNOSIS-RELATED GROUP (DRG).** A classification of hospital case types into groups that are clinically similar and are expected to have similar hospital resource use. The groupings are based on diagnoses and may also include procedures, age, sex, and the presence of complications or comorbidities. DRGs are an example of a system of case groups and relative case weights. See also *case-based provider payment*.

**FEE-FOR-SERVICE PROVIDER PAYMENT.** A payment method that pays providers for each individual service provided. Fees or tariffs are fixed in advance for each service or bundle of services.

**FIXED-FEE SCHEDULE.** See *fee-for-service provider payment*.

**GLOBAL BUDGET PROVIDER PAYMENT.** A payment method that allocates a fixed amount to a provider for a specified period to cover aggregate expenditures to provide an agreed-upon set of services. The budget can be used flexibly and is not tied to specific line items for input expenses (e.g., personnel, medicines, utilities).

**HEALTH PURCHASER.** An entity that transfers pooled health care resources to providers to pay for covered health care goods, services, and interventions for a defined population. Purchasers can include health ministries, social insurance funds, private insurance funds, and other entities that manage health funds on behalf of the population.

**HEALTH PURCHASING.** The allocation of pooled resources to health care providers on behalf of the covered population to pay for covered health care goods, services, and interventions.

**INCENTIVE.** An economic signal that directs individuals (e.g., health workers) or organizations (e.g., health provider institutions) toward self-interested behavior. The incentives created by a provider payment system will affect provider decisions about the services they deliver, how they deliver them, and the mix of inputs they use for delivery.

**INPUT.** A resource (e.g., personnel time, supplies, equipment) that is used to produce a good or service, carry out an activity, or achieve a goal.

**LINE-ITEM BUDGET PROVIDER PAYMENT.** The allocation of a fixed amount to a health care provider for a specified period to cover specific input costs (e.g., personnel, medicines, utilities).

**OUTPUT.** The result of a production process—a good or service, a completed activity, or an achieved goal. See also *unit of service*.

**PER CAPITA PROVIDER PAYMENT.** See *capitation payment*.

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**PHC-SENSITIVE CONDITION.** A condition (illness) that should be treated in the primary health care setting. Patients hospitalized due to PHC-sensitive conditions are sometimes referred to as avoidable admissions.

2

**PROVIDER AUTONOMY.** Decision rights of a health care provider to make key management decisions, such as those related to staffing, salaries, and bonuses, use of other inputs, physical assets, organizational structure, output mix, and use of surplus revenue.

3

**PROVIDER PAYMENT.** The allocation of resources to a health care provider to deliver the covered package of health care goods, services, and interventions to the covered population.

4

**PROVIDER PAYMENT MECHANISM.** The way in which a purchaser pays health care providers to deliver a service or set of services. A provider payment mechanism is defined primarily by the unit of payment. See also *unit of payment*.

5

6

**PROVIDER PAYMENT RATE.** The amount of money that a purchaser pays to a provider to deliver a service or set of services under the payment system.

7

**PROVIDER PAYMENT SYSTEM.** One or more payment methods and all supporting systems, such as contracting and reporting mechanisms, information systems, and financial management systems.

**RELATIVE CASE WEIGHT.** A coefficient applied to the base rate in a case-based hospital payment system to adjust the payment for a case upward or downward to reflect the cost of treating cases in a particular group relative to the average cost per case for all cases. Used to calculate case mix. See also *case mix*.

**RESOURCE USE.** A measurement of the amount or cost of resources used to produce a good or service, carry out an activity, or achieve a goal.

**TOTAL COST.** The cost of all resources used to produce a good or service, carry out an activity, or achieve a goal, including direct and indirect costs. Sometimes referred to as *full cost*.

**TRACER CONDITION.** A condition chosen as a landmark condition for the monitoring system because it accounts for high volume and/or has high health impact. A tracer condition should be common, have a clear and accurate description in local illness terms, and have well-defined treatment norms.

**UNIT COST.** The cost incurred to deliver a single good or service or a bundle of services (e.g., a lab test or a hospital bed-day). The average cost per good or service is the total cost of each good or service divided by the number of goods or services provided.

**UNIT OF PAYMENT.** The unit of output for which a health care provider is paid under the payment method—per service, per visit, per case, per bed-day, or per person per year.

**UNIT OF SERVICE.** A unit of output of inpatient or outpatient health care delivery (e.g., bed-day, discharge, visit, lab test, exam, surgery, prescription).

**UNIVERSAL HEALTH COVERAGE.** Ensured access to essential health services for an entire population without risk of financial hardship or impoverishment.

**UPCODING.** The practice of inaccurately assigning a more expensive treatment or procedure to a patient. This is done by providers to increase the reimbursement rate.





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