National eHealth Strategy Toolkit

Part 3
Monitoring and Evaluation
Part 3

Monitoring and evaluation

Purpose

Part 3 of the National eHealth Strategy Toolkit is a guide to establishing a framework to monitor the action plan developed in Part 2, and to evaluate the outcomes. The main aspects of this work are the development of indicators and targets to be measured, and the definition of the governance and processes required.

Audience

Like Parts 1 and 2 of the Toolkit, Part 3 is intended for use primarily by government, ministerial and health sector leaders, including personnel in health ministries, departments and agencies who will monitor and evaluate their national eHealth action plan. It is designed to be used by countries that have developed a national eHealth vision and action plan using the previous two parts, with the assumption that the outputs from them are available and have been endorsed. Part 3 should also be of use to other decision-makers who have developed their action plans but are uncertain how to monitor and evaluate the results.

Overview

The Toolkit provides a framework and method for the development of a national eHealth vision, action plan and monitoring and evaluation framework. The Toolkit is designed in three parts, with the second and third building progressively on the work of Part 1.

- Part 1: A national eHealth vision that responds to health and development goals.
- Part 2: A national eHealth action plan that reflects country priorities and the eHealth context.
- Part 3: A plan to monitor implementation and evaluate outcomes achieved.

How this Toolkit will be used, and the end result, will be based on a country’s context, priorities and vision.
Orientation to Part 3

Part 3 provides guidance on establishing a national monitoring and evaluation framework.

- The introduction summarizes the outputs of Part 2 and how these relate to monitoring and evaluation.
- Chapters 1–2: The elements of a monitoring and evaluation framework, and the method by which the framework is developed.
- Chapters 3–5: Detailed guidance on defining a national monitoring and evaluation framework.

Annexes provide additional information to support this Toolkit, including a definition of terms.
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INTRODUCTION

Assessing progress and results

National eHealth vision and action plan

By this point, a government will typically have established a national vision for eHealth and an eHealth action plan, by completing Parts 1 and 2 of the Toolkit. The action plan will have been endorsed by health-sector leadership and supported by the broader stakeholder environment.

The action plan should describe:

▶ the action lines required to implement the national eHealth vision
▶ the outputs and related activities for each action line
▶ the dependencies and timings of activities
▶ the resources required to deliver the outputs and activities
▶ the phases in which the action plan will be implemented.

Monitoring and evaluation framework for eHealth

A monitoring and evaluation framework enables a government to track and assess the results of implementing the eHealth action plan. ‘Results-based management’ is the management strategy used by the United Nations1 (Figure 1) and adopted in the Toolkit. The approach focuses on performance and on achievement of outputs, outcomes and impacts by:

▶ defining indicators that provide insight into the adoption of eHealth and the tangible results for health and non-health stakeholders;
▶ identifying indicator baseline and target measures to allow monitoring and evaluation of progress over the duration of the plan; and
▶ describing the governance and processes required.

Figure 1. Results-based management

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Introduction » page 1
A clear distinction should be made between a monitoring and evaluation framework for a national eHealth strategy and the programme management activities that are designed to implement and manage a large-scale eHealth action plan.

Programme management monitors the execution of the action plan, and is central in answering the question of whether the country is on track in terms of its implementation of a national eHealth environment. It focuses on three main components.

- **Programme inputs**: funding, budgets, resources and other inputs required to deliver the eHealth action plan.
- **Programme activities**: these correspond to the activities defined in the action plan.
- **eHealth outputs**: the deliverables, such as eHealth components, resulting from the activities undertaken.

By contrast, a monitoring and evaluation framework complements programme management by looking primarily at results. It overlaps programme management and enables a country to determine whether it is on the right track. But it goes further to answer the question of whether the action plan is delivering the outcomes, impact, and level of change anticipated. It also focuses on three main components:

- **eHealth outputs**: the deliverables, such as eHealth components, resulting from the activities undertaken (as above).
- **eHealth outcomes**: the strategic outcomes that eHealth outputs enable, or contribute to enabling.
- **Impact**: the change that eHealth outcomes create for health and non-health sector stakeholders.

A monitoring and evaluation framework assigns accountability (who), and determines the approach (how) and timing (when) for measuring the results. Part 3 of the Toolkit focuses specifically on eHealth. Countries seeking information on programme management should refer to one of the programme management frameworks that are in wide use, such as PMBOK® or PRINCE2®.

### The strategic importance of monitoring and evaluation

Monitoring and evaluation plays an essential role in demonstrating the progress that a country is making towards the development of its national eHealth environment, and the results or changes that these efforts are delivering. The outputs of monitoring and evaluation form a critical part of ongoing communication regarding a country’s national eHealth programme, which in turn is essential to building the support of stakeholders for further adoption and investment in eHealth.

In particular, communicating the progress and results of the eHealth action plan is important in demonstrating to donors or funders the impact of their investments. It can also help in building trust and understanding with potential funders as to how their contribution would be used to further the country’s national eHealth programme.

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Establishing a national monitoring and evaluation framework

Establishing a successful national monitoring and evaluation framework requires dedicated resources and effort, often at various levels, to develop, manage and operate an effective process. Governments should consider monitoring and evaluation as part of the planning and costing of their national eHealth programmes, thereby ensuring that appropriate resources are dedicated to the work.

Countries using their own results-based management approaches are encouraged to ensure that they encompass the concepts described in the results chain shown in Figure 1. Annex A provides additional information regarding results-based management.
CHAPTER 1

eHealth monitoring and evaluation framework

This section describes the elements to be considered in establishing a monitoring and evaluation framework for a national eHealth programme (Figure 2).

Figure 2. Elements of an eHealth monitoring and evaluation framework

1.1 Indicators for eHealth

An effective monitoring and evaluation framework is constructed around a set of meaningful indicators, the measurement of which provides insight into the adoption, use and results that eHealth is delivering.

Meaningful indicators should include the perspective of stakeholders, as this ensures that changes or improvements important to stakeholders are measured. Developing and selecting these indicators requires an understanding of eHealth outcomes (formed during Part 1) and outputs (formed during Part 2) that are important to each stakeholder.

There are two types of indicators to consider.

- Output indicators provide information and insight on the adoption of eHealth.
- Outcome indicators provide information and insight on the results obtained.
1.2 Indicator measures

Monitoring the progress of the action plan requires an understanding of where a country is starting from (baseline measures), and what it is expecting to achieve (target measures). Targets should be defined for a range of timeframes throughout the duration of the action plan.

1.3 Governing monitoring and evaluation

National governance provides oversight, coordination and guidance for monitoring and evaluation efforts, and ensures timely intervention when there appears to be divergence between what is actually happening and what a country was aiming to achieve through its eHealth programme. Governance must be supported by processes that direct how the adoption and results of eHealth are monitored and evaluated.
CHAPTER 2
Developing an eHealth monitoring and evaluation framework: overview

This section describes how a monitoring and evaluation framework can be developed (Figure 3).

**Figure 3. A method for developing an eHealth monitoring and evaluation framework**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Measures</th>
<th>Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define indicators for eHealth</td>
<td>Define baseline and target measures for indicators</td>
<td>Define supporting governance and processes</td>
</tr>
</tbody>
</table>

This is a sequential process that begins with determining the indicators to be monitored and outcomes to be evaluated. Baseline and target measures are set for each indicator. Targets serve as the basis for tracking actual progress against planned progress, and determining whether corrective action is required. A monitoring and evaluation framework also describes the governance model and processes through which national monitoring and evaluation will be performed. Stakeholders are consulted throughout the process in order to gain commitment and understanding, as well as to ensure that their roles are considered in the governance structure and processes.

The development of a monitoring and evaluation framework is closely linked to the outputs of Parts 1 and 2 of the Toolkit, in particular:

- the important health- and non-health-sector stakeholders
- the eHealth outcomes on which the national eHealth vision is based
- the eHealth outputs that the action plan will deliver
- the implementation phases and timing for delivery of these outputs.

A considerable portion of developing a monitoring and evaluation framework involves using this existing knowledge.

### 2.1 Define indicators for eHealth

This step determines the purpose of monitoring and evaluation, based on the eHealth vision, action plan and stakeholder perspectives. It focuses on developing a set of eHealth output and outcome indicators that will measure the results that eHealth delivers. An important aspect is to consider the consultations completed with stakeholders in Part 1, and to link a number of the indicators to outcomes important to stakeholders. It is also important to link indicators to timeframes for measuring other health outcomes where possible (for example, in the national health system reporting processes) to show the contribution of eHealth to these outcomes and to avoid creating separate reporting processes.
2.2 Define baseline and target measures for indicators

This step validates the baseline measures and creates target measures for each indicator. Target measures are defined for different timeframes so that progress can be monitored throughout the execution of the plan.

2.3 Define supporting governance and processes

This stage defines the governance and processes within which the monitoring and evaluation of eHealth adoption and associated results will be undertaken. Experience shows that monitoring the progress of, and evaluation of, eHealth may be carried out at multiple levels and by multiple parties. It is important that these various efforts are planned and executed within an overall national monitoring and evaluation model.
CHAPTER 3
Define indicators for eHealth

This stage focuses on defining the indicators that will be monitored and the outcomes that will be evaluated during the implementation of the eHealth action plan.

<table>
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<td>Define supporting governance and processes</td>
</tr>
</tbody>
</table>

Objective

This step defines eHealth output and outcome indicators that will assist in measuring the results of the eHealth action plan. Indicators should be linked to the stakeholders and outcomes identified in Part 1, so that the true success of eHealth is understood, above and beyond noting the progress of eHealth implementation.

Activities

- Identify priority stakeholders for whom it is critical to show results in eHealth.
- Review eHealth outcomes for priority stakeholders.
- Identify the eHealth outputs that will lead to these outcomes.
- Review and confirm focus areas with priority stakeholders.
- Develop eHealth adoption and outcome indicators.

Outputs

- eHealth output indicators, which will be used to measure the adoption and take-up of eHealth within the health sector.
- eHealth outcome indicators, which will be used to measure the results of the adoption and take-up of eHealth.
3.1 Identify priority stakeholders

Objective
This step prioritizes the health- and non-health-sector stakeholders identified in Parts 1 and 2 of the Toolkit for whom it is important to show results of the eHealth action plan. The development of indicators should be informed by the perspective of stakeholders, minimizing the risk that indicators are based on programme delivery alone.

Recommended outputs
This step should determine the priority health- and non-health-sector stakeholders for whom it is especially important to demonstrate eHealth outcomes. It is recommended that stakeholders are described at the level of an organization, group or role, rather than as a specific individual or political party, because these will change with time. For example, a stakeholder could be defined as the ‘Department of Health’ (organization-level) or the ‘Health Minister’ (role-level) rather than the particular individual fulfilling the role of the health minister. An example of a stakeholder group could be ‘Individuals aged 65 years or older’.

Approach
This step is based on the knowledge of multisectoral stakeholders developed in Parts 1 and 2. As this may be a long list, this step should focus on stakeholders for whom the demonstration of progress and outcomes of eHealth is important in building support and momentum for further adoption of and investment in eHealth.

Stakeholders for whom eHealth outcomes may be especially important are:
- consumers
- healthcare providers
- healthcare managers and administrators
- health and medical researchers.

Funding bodies, such as social and economic development agencies and other donors, should also be considered. While they are not direct beneficiaries of eHealth programmes, these bodies may have stipulated requirements for monitoring implementation progress and the results of their investment in a national eHealth programme (as part of their provisions of funding).

3.2 Review eHealth outcomes for priority stakeholders

Objective
This step identifies the outcomes that delivering the eHealth action plan will have for the stakeholders identified above. As delivering the outcomes leads to concrete improvements and results for stakeholders, indicators should be based on them. The outcomes should be linked to each of the prioritized stakeholders and explored from each shareholder’s perspective in order to describe what delivering each outcome will mean for them. For example, the improvements or changes that a particular stakeholder will experience through the realization of a particular eHealth outcome (Figure 4).
Figure 4. Relationship between stakeholders, eHealth outcomes and indicators

Recommended outputs

This step should describe the expected outcomes (concrete improvements) for each prioritized stakeholder. These will be based on the eHealth outcomes described in Part 1 of the Toolkit (Table 1).

Table 1. Examples of eHealth outcomes for stakeholders (non-exhaustive)

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Examples eHealth outcomes</th>
</tr>
</thead>
</table>
| Consumers                                        | • Improve the ability of consumers located in rural and remote locations to access primary care services, and reduce the need to travel large distances to access care.  
• Enable pregnant women in rural and remote areas to access knowledge and services to assist in managing their pregnancy.  
• Enable consumers to access knowledge and services that support early detection and treatment of preventable communicable and noncommunicable diseases.  
• Improve care coordination by ensuring their health information can be easily exchanged between their health-care providers.  
• Improve access to knowledge resources and support for better management of their chronic conditions, and their adherence to treatment and medication regimes. |
| Health-care providers                            | • Improve the ability of providers to access health information at the point of care.  
• Improve the ability of providers to exchange patient information with other providers.  
• Enable providers to interact with consumers who are located remotely.  
• Enable providers to monitor and track their patients more effectively.  
• Enable providers to access clinical knowledge, evidence and expertise to support skills development and the delivery of health care within their local communities. |
| Health-care managers and administrators           | • Support national and regional health authorities to predict and plan for the spread of infectious diseases.  
• Enable health authorities to monitor and respond to outbreaks and other emergencies more effectively and to meet reporting obligations.  
• Support the education, training and development of the country’s health workforce.  
• Provide reliable and quality data to inform and monitor the results of clinical, policy, investment and administrative decisions.  
• Provide access to quality data sources that inform service and workforce planning and management.  
• Enable effective management of the supply, distribution and availability of vaccines and essential medicines. |
| Health and medical researchers                    | • Provide researchers with greater access to evidence-based information to support clinical decision-making and treatment design and assessment.  
• Improve access to the medical literature, knowledge networks and resources. |
Approach

This step is based on the eHealth outcomes developed during the development of the national eHealth vision in Part 1. Formulating the vision involved defining a set of eHealth outcomes, which answered the question of what will be achieved or changed through using eHealth? The process of developing the vision also involved exploring what each of these eHealth outcomes would mean for stakeholders.

This activity should take these eHealth outcomes and refine them where required to describe the concrete results that the vision is expected to deliver to each stakeholder. The descriptions should be concrete enough to support the identification of indicators that will allow these outcomes to be measured.

3.3 Identify eHealth outputs that will lead to these outcomes

Objective

This step identifies the outputs of the eHealth action plan that will lead to the eHealth outcomes identified in Section 3.2. This understanding provides the context for identifying eHealth output indicators (Figure 5).

Figure 5. Relationship between stakeholders, eHealth outcomes and outputs, and eHealth output indicators

The eHealth outputs and associated activities defined in the action plan (Part 2) should be linked to the eHealth outcomes defined in the previous step.

Recommended outputs

This step should define a set of outputs for each eHealth outcome (Table 2).

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3 Refer to Part 1, Section 8.2 Define the eHealth outcomes.
4 Refer to Part 1, Section 8.5 Describe what eHealth vision will mean for stakeholders.
<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>eHealth outcomes</th>
<th>Associated eHealth outputs</th>
</tr>
</thead>
</table>
| Consumers                  | Improve the ability of consumers located in rural and remote locations to access primary care services, and reduce the need to travel large distances to access care. | • Fit-for-purpose data/telecommunications connectivity established to rural and remote communities  
• National telemedicine service established  
• Fit-for-purpose computing/access infrastructure deployed to rural and remote communities  
• Telemedicine education and awareness programmes delivered to rural and remote communities |
|                            | Enable pregnant women in rural and remote locations to access knowledge and services to assist in managing their pregnancy. | • Fit-for-purpose data/telecommunications connectivity established to rural and remote communities  
• National pre/postnatal health knowledge portal established  
• SMS-based pre/postnatal support service established  
• Fit-for-purpose computing/mobile handset infrastructure deployed to rural and remote communities  
• Health knowledge and SMS support service education and awareness programmes delivered to rural and remote communities |
| Care providers             | Improve the ability for providers to exchange a patient’s health information with other providers. | • National eHealth data and messaging standards approved  
• Unique health identifiers exist for consumers and care providers  
• Standard-compliant care provider software available from vendors  
• Fit-for-purpose care provider computing infrastructure deployed  
• Fit-for-purpose data/telecommunications connectivity established to care providers  
• National electronic health record (EHR) system available  
• Consumers have opted in to have their health information shared via the national EHR system |
| Health-care managers and administrators | Enable national and regional health authorities to monitor, and respond to outbreaks and other emergencies, in a more rapid manner. | • Fit-for-purpose data/telecommunications connectivity established to health facilities and care providers  
• National care provider knowledge portal service established  
• Mobile knowledge and decision support applications developed and deployed  
• Fit-for-purpose computing/mobile infrastructure deployed to care providers |
|                            | Support the education, training and development of the country’s health workforce. | • Fit-for-purpose data/telecommunications connectivity established for the health sector  
• Fit-for-purpose computing/mobile infrastructure deployed  
• National disease management and reporting portal service established  
• Surveillance applications for mobile devices developed and deployed |

**Approach**

This step is based on the eHealth outputs developed in Part 2 of the Toolkit.

Some eHealth outputs will be delivered progressively over time (such as the adoption of a particular eHealth solution by care providers) while others will represent a ‘point in time’ event.

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5 Refer to Part 2, Section 5.2 Assign outputs to action lines.
3.4 Review and confirm focus areas with priority stakeholders

Objective
This step confirms the eHealth outcomes and outputs for monitoring and evaluation, which involves reviewing with stakeholders. This step allows the relative importance of different eHealth outcomes and outputs to emerge. This is particularly important given that the resources to undertake monitoring and evaluation will likely be limited and therefore measuring ‘everything’ is unlikely to be possible.

This step also provides an opportunity to:
- build stakeholder support
- gather stakeholder input on indicators that could be used
- communicate the expected outcomes relevant to stakeholders.

Recommended outputs
This step should produce a list of the eHealth outcomes and associated outputs that will be the focus of national monitoring and evaluation efforts.

Approach
This step will require consultation with stakeholders to review and confirm the eHealth outcomes and outputs that are of particular importance to them. Consultation should focus on understanding those aspects that ‘must’ be monitored and evaluated, versus those that ‘should’ or ‘could’ be measured. Typically this discussion will tend to focus more on stakeholder priorities in the short to medium timeframes.

Once eHealth outcomes and outputs are prioritized, stakeholders should also be consulted regarding the indicators that they regard as being practical and appropriate to measure.

3.5 Define eHealth output and outcome indicators

Objective
This step defines the indicators that will be used throughout the execution of the eHealth action plan. Two types of indicators should be considered.
- **eHealth output indicators** provide information and insight into the adoption of eHealth
- **eHealth outcome indicators** provide information and insight into the results for stakeholders.

Output indicators are derived from the eHealth outputs.
Outcome indicators are derived from the eHealth outcomes. These indicators are closely related, in that the rate of adoption (measured by eHealth output indicators) will drive the expected improvements (measured by eHealth outcome indicators) (Figure 6).
Typically, eHealth output indicators are used for those outputs that are delivered progressively, such as the deployment of data communications infrastructure, or the take-up of standards-compliant software by care providers.

**Recommended outputs**

This step should produce meaningful indicators that can be used to monitor and evaluate the results of implementing the eHealth action plan (Table 3).

**Table 3. Example of eHealth outcome indicators (non exhaustive)**

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>eHealth outcomes</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumers</td>
<td>Improve the ability for consumers located in rural and remote locations to access</td>
<td>• Percentage increase in the number of primary care-related consultations conducted via telemedicine</td>
</tr>
<tr>
<td></td>
<td>primary care services, and reduce the need to travel large distances to access care.</td>
<td>• Percentage increase in the number of rural and remote consumers that can gain access to primary care services via telemedicine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Average reduction in time for a rural or remote consumer to access primary care services as a result of telemedicine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Consumer satisfaction regarding role of technology in improving their access to health services</td>
</tr>
<tr>
<td>Care providers</td>
<td>Improve the ability for providers to exchange a patient’s health information with</td>
<td>• Percentage increase in the number of electronic health information transactions between health-care providers</td>
</tr>
<tr>
<td></td>
<td>other providers.</td>
<td>• Percentage reduction in clinician time gathering consumer health and medical history</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Percentage increase in the number of discharge summaries being received by primary care providers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provider satisfaction of using eHealth to improve information sharing with other providers</td>
</tr>
<tr>
<td></td>
<td>Enable providers to access clinical knowledge, evidence sources and expertise to</td>
<td>• Percentage increase in visits to national care provider knowledge portal</td>
</tr>
<tr>
<td></td>
<td>assist with skills development, and the delivery of health care within their local communities.</td>
<td>• Provider satisfaction of using eHealth to improve access to knowledge and expertise to support them in delivering care</td>
</tr>
</tbody>
</table>
### Stakeholder eHealth outcomes Indicators

**Healthcare managers and administrators**

- Enable national and regional health authorities to monitor and respond to outbreaks and other emergencies, in a more rapid manner.
  - Percentage reduction in time to detect, intervene and contain an emerging disease outbreak or similar threat
  - Percentage reduction in time and cost to report and analyse disease outbreaks to support decision-making processes and resource allocation decisions
  - Perceptions of issues/challenges affecting use of eHealth for monitoring and response

- Support the education, training and development of the country’s health workforce.
  - Percentage increase in the number of health workers entering the health workforce that have been trained in part through eLearning and other similar e-based training
  - Percentage growth in the number of people enrolling for electronic-based education and training programmes

**Table 4 provides examples of eHealth output indicators for the various eHealth outcomes and associated indicators listed in the above table.**

**Table 4. Example of eHealth output indicators (non exhaustive)**

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>eHealth outcome indicators</th>
<th>eHealth output indicators</th>
</tr>
</thead>
</table>
| **Consumers** | • Percentage increase in the number of primary care-related consultations conducted via telemedicine  
• Percentage increase in the number of rural and remote consumers that can gain access to primary care services via telemedicine  
• Average reduction in time for a rural or remote consumer to access primary care services as a result of telemedicine  
• Consumer satisfaction regarding role of technology in improving their access to health services | • Percentage of rural and remote communities that have access to fit-for-purpose data/telecommunications connectivity  
• Percentage of rural and remote communities that have access to computing/access infrastructure  
• Percentage of rural and remote communities that have been educated regarding the availability and benefits of the national telemedicine service  
• Outputs from consumer satisfaction survey and focus groups |
| **Care providers** | • Percentage increase in the number of electronic health information transactions between health-care providers  
• Percentage reduction in clinician time gathering consumer health and medical history  
• Percentage increase in the number of discharge summaries being received by primary care providers  
• Provider satisfaction of using eHealth to improve information sharing with other providers  
• Provider perceptions of issues/challenges impacting their use of eHealth to support improve information sharing | • Percentage of health-care providers that have standards-compliant software systems  
• Percentage of consumers and health-care providers that have obtained their unique health identifier  
• Percentage of health-care providers that have access to fit-for-purpose data/telecommunications connectivity  
• Percentage of health-care providers that have access to fit-for-purpose computing infrastructure  
• Percentage of consumers that have registered to participate in the national EHR system  
• Outputs from provider satisfaction survey  
• Outputs from provider reference group discussions |
| | • Percentage increase in visits to national care provider knowledge portal  
• Percentage of consultations which are being supported by mobile handset knowledge and decision support applications  
• Provider satisfaction of using eHealth to improve access to knowledge and expertise to support them in delivering care | • Percentage of rural and remote health-care providers that have access to fit-for-purpose data/telecommunications connectivity  
• Percentage of rural and remote health providers that have downloaded and installed a knowledge and decision support applications  
• Percentage of rural and remote health-care providers that have been educated regarding the availability and benefits of the national care provider knowledge portal  
• Outputs from provider satisfaction survey  
• Outputs from provider reference group discussions |
Quantitative indicators minimize the level of ambiguity regarding the results achieved. Some outcomes require the use of qualitative indicators, which are usually derived from surveys, questionnaires, feedback and other evaluation mechanisms, and may also allow for greater insights into the potential cause(s) of divergence from expected results. The choice of indicators is explored further in the following section.

**Approach**

This activity requires internal analysis to define a set of candidate eHealth output and outcome indicators, which can then be confirmed with stakeholders. It also requires working through each outcome or output, and answering the question of **what needs to be monitored or measured to monitor progress towards that outcome or output**.

Consultation with stakeholders should focus on confirming the initial set of candidate indicators and identifying any others that should be considered. This may include confirming that indicators meet the criteria that they are observable, reliable and controllable (Table 5). Subject-matter experts and stakeholders may be consulted on how best to measure a particular eHealth outcome or output.
Table 5. Suggested criteria for selecting indicators

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linked to objectives</td>
<td>Indicators should provide information that can be linked to and support the monitoring and evaluation of eHealth outcomes and outputs</td>
</tr>
<tr>
<td>Quantifiable</td>
<td>Indicators should be concrete, as opposed to conceptual, and should be measurable and easily expressed in relevant units of measurement</td>
</tr>
<tr>
<td>Observable</td>
<td>Measurement data exists (or will exist) that will allow an indicator to be derived</td>
</tr>
<tr>
<td>Reliable</td>
<td>The data used for the indicators should not be arbitrarily derived and should reflect accurate, verifiable information as much as is possible</td>
</tr>
<tr>
<td>Controllable</td>
<td>Indicators should measure the results of delivering the eHealth action plan, and should be selected to control the potential impact of activities that fall outside the scope of the plan</td>
</tr>
<tr>
<td>Ongoing and comparable</td>
<td>Indicators should provide information that is comparable and relevant across periods, rather than being ‘one time’ indicators of progress</td>
</tr>
</tbody>
</table>

There is little value in defining a set of indicators where the data do not exist or cannot be regularly collected, analysed and reported. This step should consider the reality of the country’s current environment, in particular the challenges or barriers that exist to gathering the required data. The result of this may be the need to consider using a mixture of quantitative and qualitative indicators.

In practice, a country will use a mixture of both quantitative and qualitative measures over the course of implementing the plan. Both types of measures can play a useful role in understanding whether the desired outcomes and outputs are being delivered, as well as providing insights into the results obtained. Countries need to ensure that the appropriate skills and expertise exist to do both types of research.
CHAPTER 4
Define baseline and target measures for indicators

This stage focuses on defining the baseline and target measures for each of the defined indicators.

<table>
<thead>
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<th>Governance</th>
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<tbody>
<tr>
<td>Define indicators for eHealth</td>
<td>Define baseline and target measures for indicators</td>
<td>Define supporting governance and processes</td>
</tr>
</tbody>
</table>

**Objective**

This stage defines baseline and target measures for each indicator along with the timeframes for measuring indicators against targets.

Baseline measures provide an understanding of a country’s starting point and assist in defining realistic and achievable targets, which allow evaluation of the progress in implementing the plan (i.e. Are we achieving what we set out to achieve?).

Evaluating indicators against targets should occur at regular intervals to ensure that the programme is delivering tangible results to stakeholders in a timely manner and that potential problems are identified and addressed as soon as possible.

**Activities**

- Determine national monitoring and evaluation timeframes.
- Identify baseline measures for each indicator.
- Define target measures for output indicators.
- Define target measures for outcome indicators.

**Outputs**

- Indicator monitoring and evaluation timeframes.
- Agreed baseline and target measures for eHealth output and outcome indicators.
4.1 Determine national monitoring and evaluation timeframes

Objective
This step defines the timeframes for national monitoring and evaluation defined in Section 3.3. Regular monitoring and evaluation allows a government to:

▶ determine whether the action plan is delivering the expected results;
▶ identify issues and challenges affecting the delivery of results, for which corrective actions can be applied;
▶ regularly communicate the results to stakeholders, which will assist in building further momentum and support for eHealth.

Recommended outputs
This step establishes the intervals for national monitoring and evaluation. Ideally, a single set of consistent timeframes should be defined for all indicators but this may not always be possible due to the nature or requirements of a particular indicator.

Approach
Monitoring and evaluation timeframes should align with the implementation phases defined in the action plan (Figure 7).

For example, a country may define a set of implementation targets that align with the strategy’s three implementation horizons, which in turn lead to the definition of quantitative and qualitative implementation targets for timeframes of 3, 6 and 10 years.

While the implementation phases provide a good starting point, other factors may require using different timeframes.

▶ Specific stakeholder requirements, such as those related to reporting requirements that may need to be met as part of the provision of funding.
▶ Political and funding cycles, such as government election terms and national funding cycles which may influence when reports on the results of investing in eHealth are required.
Level and timing of eHealth implementation activity, which in turn drives when indicators should be measured. Monitoring and evaluation timeframes have little point if nothing is expected to be delivered during them. Conversely, periods of very high eHealth activity may require closer monitoring of particular indicators.

4.2 Identify baseline measures for each indicator

Objective
This step defines the baseline measure for each eHealth output and outcome indicator. Evaluating the progress of eHealth adoption and the results flowing from this requires identification of the starting point (current status) for each indicator that will be monitored.

Recommended outputs
This step should identify baseline measures for each eHealth output and outcome indicator, which represents the value of that indicator at the start of the action plan.

Approach
This step will require research and analysis to determine baseline measures for each indicator. As a first step, it is suggested that countries determine whether their overall starting position warrants further effort in identifying a baseline measure for a particular indicator.

For example, consider a government that has defined an eHealth outcome indicator to measure ‘the percentage increase in the number of primary care-related consultations conducted via telemedicine’. If that country has few or no telemedicine services in place, it may opt to define a baseline measure for this indicator as zero. A country that has already made substantial investment in telehealth, however, would need to research and identify an appropriate baseline measure to allow the results of further investment to be quantified and demonstrated.

Once it has been confirmed that a baseline measure for an indicator is required, a country will need to analyse historical data that allows a baseline measure to be calculated. If no historical data is available, the country may need to consider using a proxy source of data to infer a baseline measure for the indicator.

Examples of potential sources of historical data are shown below.

- Health ministries and authorities
- Industry and representative groups
- Advocacy groups
- Research, studies, and official publications
- Nongovernmental organizations (NGOs).

In practice, many countries may not have the people, processes or infrastructure in place to support the collection of data. They may need to build this capacity over time and incorporate it into the action plan.
4.3 Define target measures for eHealth output indicators

Objective

This step defines target measures for each eHealth output indicator. This allows monitoring of the adoption of eHealth. Target measures for output indicators must be defined prior to defining targets for outcome indicators, because the latter depend on the former.

Targets should be realistic and achievable in order to remain relevant and motivating.

Recommended outputs

This step should produce a set of achievable target measures for each eHealth output indicator within a given timeframe (Table 6).

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>eHealth output indicators</th>
<th>Baseline measure (%)</th>
<th>Target measures (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3 Years</td>
<td>6 Years</td>
</tr>
<tr>
<td>Consumer</td>
<td>Percentage of rural and remote communities that have access to fit-for-purpose data/telecommunications connectivity.</td>
<td>35</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Percentage of rural and remote communities that have access to computing/access infrastructure.</td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Percentage of rural and remote communities that have been educated regarding the availability and benefits of the national telemedicine service.</td>
<td>0</td>
<td>30</td>
</tr>
</tbody>
</table>

Approach

This step should begin within internal analysis, though it may be extended to involve input from subject-matter experts and other health experts (Figure 8).

Internal analysis

Internal analysis should focus on drafting an initial set of targets for each output indicator. Defining targets is an estimation exercise that considers the various questions below.

- Baseline measures and timeframe: What is the starting point for this indicator and what can be realistically achieved within the monitoring timeframe?
- eHealth activities: What other activities (in the action plan) are occurring in the same timeframe and how will this influence what can be achieved?
- External research: What have other relevant national programmes achieved and what timeframes were associated with this output?
Target measures for other eHealth output indicators: What relationships exist between eHealth output indicators, and how do target measures that have been defined for other indicators influence the targets for this indicator?

This step should also take as input the implementation targets that were defined during the development of the action plan. These targets describe, at a broad level, the targets for each implementation phase of the plan and may provide direction as to the specific targets for eHealth output indicators.

This internal activity should establish a set of draft targets for eHealth output indicators, supported by rationale as to why these measures represent achievable adoption targets.

Input from subject-matter experts and multi-sector stakeholders

Subject-matter experts and stakeholders can provide insight into achievability of the draft targets measures for output indicators through knowledge of:

- similar initiatives or change programmes, and the outcomes that these were able to deliver;
- the particular risks, challenges and barriers to adoption of eHealth;
- other national or international programmes, initiatives or events that may influence the adoption of eHealth in the country.

The draft indicators should be reviewed in consultation with relevant subject matter experts and multi-sector stakeholders to refine the targets and ensure that the rationale is sound.

4.4 Define target measures for eHealth outcome indicators

Objective

This step defines targets for each eHealth outcome indicator across the previously-defined timeframes. These targets allow the evaluation of the results for stakeholders.

The targets set for the eHealth outcome indicators should accurately reflect the results that can be realized given the target rates of eHealth adoption. Targets should be ambitious but realistic.

Recommended outputs

This step should produce a set of targets for each eHealth outcome indicator across the previously defined timeframes (Table 7).

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>eHealth outcome indicators</th>
<th>Baseline measure (%)</th>
<th>Target measures (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 Years</td>
</tr>
<tr>
<td>Consumers</td>
<td>• Percentage increase in the number of primary care-related consultations conducted via telemedicine.</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>• Percentage increase in the number of rural and remote consumers that can gain access to primary care services via telemedicine.</td>
<td>0</td>
<td>30</td>
</tr>
</tbody>
</table>
Approach

The process for identifying targets for outcome indicators is similar to that used for output indicators to identify target measures for eHealth output indicators.

Internal analysis

Internal analysis should focus on drafting an initial set of targets for each eHealth outcome indicator by considering the questions below.

- **Related eHealth output indicators:** What results can be achieved given the targets that have been defined for related output indicators?
- **Baseline eHealth outcome indicator measures:** What is the country's starting point in terms of the tangible results that are to be measured? Are there results already delivered that need to be accounted for?
- **Monitoring and evaluation timeframes:** What results can realistically be achieved within the monitoring and evaluation timeframe?

This internal activity should establish a set of draft target measures for eHealth outcome indicators which will reflect the tangible results that can be expected, given the rates of adoption of eHealth anticipated.

Input from subject-matter experts and multi-sector stakeholders

Subject-matter experts and stakeholders can provide insight into the potential to realize tangible results for stakeholders, given the levels of eHealth adoption anticipated and targeted by the eHealth output indicators.

Consideration should be given to the questions below.

- Given the level of adoption of an eHealth service or solution, what do they anticipate that will mean in terms of delivering health services to the population?
- Given the change in the ability to deliver health services, what does that mean in terms of patient outcomes?
- Is the proposed target realistic, given the level of adoption anticipated?

The draft list of indicators and rationale should be reviewed with relevant subject-matter experts and stakeholders.
CHAPTER 5
Define supporting governance and processes

This stage focuses on defining the national governance and processes for monitoring and evaluating the results of implementing the eHealth action plan.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Measures</th>
<th>Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define indicators for eHealth</td>
<td>Define baseline and target measures for indicators</td>
<td>Define supporting governance and processes</td>
</tr>
</tbody>
</table>

**Objective**

This stage defines the governance and processes through which the actors and levels are all brought together for monitoring and evaluation of eHealth.

**Activities**

- Define a governance model for national monitoring and evaluation.
- Define a process for it.

**Outputs**

- Governance model for national monitoring and evaluation.
- High-level process for undertaking it.
5.1 Define a governance model for national monitoring and evaluation

Objective

This step defines a governance model for national monitoring and evaluation of the adoption of eHealth and the tangible results flowing from this. This model should describe the governance functions and structure within which national monitoring and evaluation will be undertaken.

Monitoring and evaluation is typically an effort performed by various parties. A governance model provides the structure by which these collective efforts are aligned.

The governance model is distinct from the broader programme management function, which provides overall governance and oversight of the execution of the eHealth plan. Monitoring and evaluation of eHealth adoption and associated results is a specialized role that is typically separate from broader programme management, yet it also complements it. This also ensures an independent perspective on programme progress.

A governance model consists of a range of functions and the required mechanisms to deliver them (Table 8).

Table 8. Example functions for governing national monitoring and evaluation

<table>
<thead>
<tr>
<th>Function</th>
<th>Purpose</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring oversight and steering</td>
<td>Provide executive-level oversight in regard to national monitoring and reporting (i.e. input, escalation, review and endorsement of deliverables).</td>
<td>Health Department – departmental executive committee</td>
</tr>
<tr>
<td>Project management</td>
<td>Provide overall management of national monitoring and reporting functions (i.e. planning and scheduling, progress monitoring, financials, risk management).</td>
<td>Health Department – performance management business unit</td>
</tr>
<tr>
<td>National indicator development</td>
<td>Develop national eHealth output and outcome indicators to enable monitoring of the delivery of the eHealth action plan, and through doing so, the national eHealth vision.</td>
<td>Health Department – performance management business unit</td>
</tr>
<tr>
<td>National measures definition</td>
<td>Define national baseline and target measures for eHealth output and outcome indicators, against which national progress can be measured.</td>
<td>Health Department – performance management business unit</td>
</tr>
<tr>
<td>National capability development</td>
<td>Develop national monitoring processes and supporting frameworks, tools and templates, and the communication and education of others regarding these processes and timelines.</td>
<td>Health Department – performance management business unit</td>
</tr>
<tr>
<td>Activity monitoring and evaluation</td>
<td>Define activity-specific indicators and targets aligned to national indicators and targets, and the subsequent monitoring and reporting of these.</td>
<td>Health Department–performance management business unit</td>
</tr>
<tr>
<td>Health sector monitoring and evaluation</td>
<td>Define health-sector-specific indicators and targets (if required) aligned to national indicators and targets, and the subsequent monitoring and reporting of these.</td>
<td>Health Department–performance management business unit, Public and private care providers</td>
</tr>
<tr>
<td>Non-health sector monitoring and evaluation</td>
<td>Define broader non-health sector indicators and targets (if required) aligned to national indicators and targets, and their monitoring and reporting.</td>
<td>Health Department–eHealth programme management office, Non-health-sector infrastructure and service providers</td>
</tr>
<tr>
<td>National analysis and evaluation</td>
<td>Collate and analyse activity, health sector and non-health sector reporting to report against national indicators and targets, and identify where corrective actions may be required.</td>
<td>Cross-sector coordination authority or committee</td>
</tr>
<tr>
<td>Function</td>
<td>Purpose</td>
<td>Responsible Party</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Expert support</td>
<td>Provide expert support in the monitoring, analysis and evaluation of eHealth adoption and the tangible results of this adoption.</td>
<td>Health Department – subject-matter experts&lt;br&gt;Third-party organizations&lt;br&gt;NGOs&lt;br&gt;International agencies (WHO, ITU, etc.)</td>
</tr>
<tr>
<td>Research</td>
<td>Provide broader research and analytical capabilities to support monitoring and reporting of eHealth, potentially through the provision of data and insights from other national and international eHealth programmes.</td>
<td>Health Department–research and policy units&lt;br&gt;External research organizations&lt;br&gt;International agencies (WHO, ITU, etc.)</td>
</tr>
</tbody>
</table>

**Recommended outputs**

The step should produce a definition of the governance model required to monitor and evaluate eHealth. It should identify and describe:

- the governance mechanisms required
- the structure and relationships between them.

A governance mechanism is a committee, council, team or special group that has the mandate or responsibility to perform one or more of the functions described. The composition of a governance mechanism should be the best available to carry out this mandate or responsibility (Figure 9).

**Figure 9. Sample governance model for national monitoring and evaluation**

In the above example, the responsibility for monitoring and evaluation at a national level belongs to the national monitoring and evaluation function. This complements programme management, and provides an independent view of eHealth adoption and associated results to the programme steering committee. This function could be implemented as a new organizational group, or could sit within an existing government entity or eHealth agency. Alternatively, it could be contracted to a professional services firm.
Individual eHealth projects, including external projects on which the action plan is dependent, are responsible for monitoring their own progress within the overall national framework. External projects include those undertaken outside the scope of the national action plan (Table 9).

The framework enables the rolling up of project level performance into the defined output and outcome indicators.

Table 9. Role of governance mechanisms as they relate to national monitoring and evaluation

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Responsibilities</th>
</tr>
</thead>
</table>
| Health sector leadership               | • Acting as the vocal and visible champion of the national eHealth work programme  
                                         • Accountable for the delivery of national eHealth adoption and associated results                                                                 |
| National eHealth programme steering committee | • Provides monitoring and evaluation oversight and steering, which includes:  
                                                                                       • Providing guidance and input to definition of national indicators, measures, and monitoring and evaluation timeframes  
                                                                                       • Reviewing and endorsing national indicators, measures, and monitoring and evaluation timeframes  
                                                                                       • Assisting in resolving risks, issues and conflicts related to monitoring and evaluation  
                                                                                       • Reviewing and endorsing recommendations on corrective actions to the programme to address divergences between actual and target targets  
                                                                                       • Ensuring targets are being achieved and that corrective actions are being made to the eHealth work programme to resolve divergences. |
| Programme management                   | • Ensuring monitoring and evaluation processes and tools are aligned and integrated with broader programme management processes and tools  
                                         • Working with the national monitoring and evaluation function to identify options for taking corrective action to address divergences between actual and target indicator measures  
                                         • Undertaking corrective actions that have been endorsed by the programme steering committee |
| National monitoring and evaluation function | • Project management (i.e. day-to-day management of activities, progress, financials, risks and issues)  
                                                                                       • Development of national eHealth output and outcome indicators  
                                                                                       • Development of baseline and target measures  
                                                                                       • Liaising with subject matter experts and stakeholders to gain input into the definition of indicators and baseline/target measures for indicators  
                                                                                       • Confirm indicators, and associated baseline and targets, with decision-makers  
                                                                                       • Develop and communicate processes, schedules, templates, etc., for the operation of the national monitoring and evaluation process  
                                                                                       • Collate and analyse activity, health-sector and non-health-sector reporting to assess against national indicators and targets, and identify where corrective actions may be required  
                                                                                       • Develop recommendations regarding corrective actions, and advise the programme steering committee (Note: The national monitoring and evaluation function does not have accountability for correcting programme actions)  
                                                                                       • Provide expert support in the monitoring, analysis and evaluation of eHealth adoption and associated results  
                                                                                       • Provide broader analytical capabilities to support monitoring and evaluation, including the provision of data and insights from other national programmes |
| Subject matter experts                 | • Provide input into the definition of and insights into the achievability of the draft target measures for indicators  
                                         • Provide input into corrective actions that may be appropriate to address divergence |
| Multi-sector stakeholders               | • Provide input into the definition of and insights into the achievability of the draft target measures for indicators  
                                         • Provide input into corrective actions that may be appropriate to address divergence |
| eHealth project team                   | • Define eHealth output and outcome indicators and targets aligned to national indicators and targets  
                                         • Undertake monitoring and evaluation of activity-level indicators  
                                         • Report on activity-level indicators to the national monitoring and evaluation function in accordance with defined processes, schedules, templates and tools |
Mechanism | Responsibilities
---|---
External eHealth projects on which the action plan is dependent | • Define eHealth output and outcome indicators and targets aligned to national indicators and targets
• Undertake monitoring and evaluation of activity-level indicators
• Report on activity-level indicators to the national monitoring and evaluation function in accordance with defined processes, schedules, templates and tools

Broader health-sector monitoring team(s) | • Same as per External eHealth projects except that their focus is on the eHealth outputs and outcomes within a particular part or segment of the country’s health sector

Broader non-health-sector monitoring team(s) | • Same as per External eHealth projects except that their focus is on the adoption eHealth outputs and outcomes in other sectors (e.g. ICT industry), and broader social and economic development linked to eHealth

Approach
A suggested approach for defining a governance model for national monitoring and evaluation involves a number of steps.

▶ Confirming the functions required
▶ Identifying existing governance mechanisms that could be used, based on:
  • mandate: the scope of responsibilities officially given to that governance mechanism;
  • external perception: the perception of that governance mechanism within the wider health sector, which enables that mechanism to perform its role;
  • engagement and influence: the ability of that mechanism to engage with, influence and consult with stakeholders;
  • internal capabilities: the capability of that mechanism to fulfill its responsibilities.
▶ Defining a pragmatic governance model that will deliver the required governance functions, taking into account the existing governance mechanisms that can be used, and new mechanisms that need to be developed to address gaps. The role and responsibilities of each governance mechanism, and the nature of the relationships and interactions between them, also need to be clearly defined.
5.2 Define a process for national monitoring and evaluation

Objective

This step defines the national monitoring and evaluation process. It will be an ongoing process, in the background of the implementation programme, with monitoring and evaluation undertaken at the agreed timeframes for each of the indicators.

It is not the focus of this step to define detailed processes that will occur at the eHealth activity level, such as within specific initiatives and projects in the action plan. The specific monitoring and evaluation processes for eHealth activities should be aligned with the national approach (Table 10).

Recommended outputs

This step should produce a description of the national process for monitoring and evaluation of eHealth during the implementation of the action plan, including the governance required to ensure that it will be done (Figure 10).

Figure 10. Example of a national monitoring and evaluation process

Approach

Defining a pragmatic monitoring and evaluation process is a complex undertaking, particularly for large-scale eHealth programmes in which many parties will be involved.
### Table 10. Example of national- and activity-level monitoring and evaluation activities

<table>
<thead>
<tr>
<th>Process</th>
<th>National-level (non-exhaustive)</th>
<th>Activity-level (non-exhaustive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning and initiation</td>
<td>• Define and communicate national evaluation schedule and milestones</td>
<td>• Establish local monitoring and evaluation roles and responsibilities</td>
</tr>
<tr>
<td></td>
<td>• Develop and communicate national monitoring and evaluation frameworks, tools and templates</td>
<td>• Define detailed monitoring and evaluation timelines and milestones that align with national timings</td>
</tr>
<tr>
<td></td>
<td>• Provide advice and support to activity-level teams in defining appropriate indicators and targets that support national-level indicators and targets</td>
<td>• Develop and deploy detailed monitoring and evaluation procedures, tools and templates that align with national requirements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Define detailed indicators that support measurement of national indicators</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Define target measures that support national targets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Define indicator measurement approaches</td>
</tr>
<tr>
<td>Execution and measurement</td>
<td>• Provide advice and expertise to activity-level teams on developing indicator measures to assess current performance</td>
<td>• Collect measurement data while activity is being undertaken</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Develop and track current indicator measures</td>
</tr>
<tr>
<td>Progress analysis and reporting</td>
<td>• Collate activity-level reports on actual versus target performance for indicators</td>
<td>• Develop reports that describe actual versus target performance for activity-level indicators</td>
</tr>
<tr>
<td></td>
<td>• Liaise with activity-level teams to explore performance and understand causes of divergences</td>
<td>• Identify causes of divergences in actual and target performance at the activity level</td>
</tr>
<tr>
<td></td>
<td>• Develop reports that describe actual versus target performance for national-level indicators</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Identify causes of divergences in actual and target performance at the national level</td>
<td></td>
</tr>
<tr>
<td>Corrective action planning</td>
<td>• Liaise with activity-level teams to understand corrective actions that can be taken to address activity-level and programme-level divergences</td>
<td>• Identify local actions that can be taken to address divergences in actual and target performance for activity-level indicators</td>
</tr>
<tr>
<td></td>
<td>• Identify and assess programme-level corrective actions to address divergences in actual and target performance at the national level</td>
<td>• Identify programme-level actions that can be taken to address divergences in actual and target performance for activity-level indicators</td>
</tr>
<tr>
<td></td>
<td>• Assess impact, costs and risks of implementing programme-level corrective actions</td>
<td>• Assess impact, costs and risks of implementing local and programme-level actions for the activity in question</td>
</tr>
<tr>
<td></td>
<td>• Review and gain endorsement programme-level corrective actions with the programme steering committee</td>
<td>• Manage changes in scope (if required) to implement corrective actions</td>
</tr>
<tr>
<td></td>
<td>• Manage changes in the scope of national programme (if required) to implement corrective actions</td>
<td></td>
</tr>
<tr>
<td>Refinement</td>
<td>• Identify national target measures for indicators that may be unrealistic or unachievable within the required timeframe</td>
<td>• Identify activity target measures for indicators that may be unrealistic or unachievable within the required timeframe</td>
</tr>
<tr>
<td></td>
<td>• Liaise with activity-level teams to understand changes to activity-level targets</td>
<td>• Refine target measures for indicators to be realistically achievable</td>
</tr>
<tr>
<td></td>
<td>• Understand implications on national level target measures for indicators</td>
<td>• Agree changed target measures for indicators for future monitoring periods</td>
</tr>
<tr>
<td></td>
<td>• Develop revised national target measures for indicators</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Review and gain endorsement of revised national target measures with the programme steering committee</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 6
Conclusion

This Toolkit has been developed as a guide to assist countries to develop a national eHealth vision, an action plan to achieve that vision, and a framework by which results can be monitored and evaluated. Like all strategies and plans, the outcomes of this Toolkit are not static and represent a point-in-time understanding of what a country needs to achieve in order to address its particular goals and challenges. For example, the various eHealth visions, strategies and plans that are referenced in Annex C represent a point-in-time view for each of the countries that developed them.

Changes in a country’s strategic context will require a dynamic approach to updating the vision for eHealth and the associated action plan so that they remain relevant. This requires understanding the key triggers for refreshing the vision and action plan, whether they be specific events that change a nation’s strategic context for eHealth or a defined period of time after which a revision is required.

Ongoing engagement with essential health and non-health stakeholders must also be maintained. Success in implementing a national eHealth vision is heavily dependent on having the continued support and guidance of stakeholders, and thus does not stop after a national strategy has been developed.

Continued communication is also vital. Part 3 has emphasized that stakeholders should be regularly informed of the progress of the programme, and in particular, any impacts or results arising from implementation. This ensures transparency, which is essential in maintaining stakeholder support and momentum for further activity and investment in eHealth.
ANNEX A
Results-based management

Results-based management (RBM) has become increasingly important for the United Nations and its specialized agencies as they have sought to improve their ability to respond to new demands within the limits of resource constraints, and to demonstrate that they have delivered on expectations. It is also of direct relevance to the establishment of monitoring and evaluation for a national eHealth programme.

The goal of RBM

The goal of results-based management is to shift managerial and administrative emphasis from a process-focused approach to one based on performance and results (outcomes). It is a management strategy that focuses on performance and achievement of outputs, outcomes and impacts. Organizations and programmes that apply results-based management seek to:

▶ focus the organization or programme efforts and resources on expected results
▶ improve the effectiveness and sustainability of operations (or programme activities)
▶ improve accountability for resources used.

Key concepts in RBM

Figure 11 below highlights the key concepts in RBM, and lays out a logical framework in which to guide the planning and execution of a results-based management approach.

Figure 11. Logical framework for results-based management
Results-based management is both a planning process from the top down and a management process in the reverse direction. Planning starts with defining objectives – future end-states, deciding what accomplishments are expected if the objective is to be achieved, determining which outputs will lead to those accomplishments, defining the activities necessary to produce those outputs and, finally, identifying the inputs that are necessary to carry out the activities.

The management process is exactly the opposite. The inputs are acquired and deployed to carry out the activities, the activities lead to the production of outputs and, if they are well designed and executed, the output will lead to the expected accomplishments (or expected results) (Table 11).

Table 11. Monitoring and evaluation concepts

<table>
<thead>
<tr>
<th>Concept</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>An overall desired achievement involving a process of change aimed at meeting certain needs of identified end-users within a given period of time (i.e. the situation that would be observed at the end of a specific period).</td>
</tr>
<tr>
<td>Expected accomplishment</td>
<td>A desired outcome involving benefits to end-users, expressed as a quantitative or qualitative standard, value or rate. The direct consequence or effect of the generation of outputs leads to the fulfilment of a certain objective. It is a change that can be observed to have taken place. It is something that has to happen if an objective is to be achieved.</td>
</tr>
<tr>
<td>Indicator of achievement</td>
<td>The measures of whether and/or the extent to which the objectives and/or expected accomplishments have been achieved. They correspond either directly or indirectly to the objective or the expected accomplishment for which they are used to measure performance. All results should have a corresponding indicator of achievement.</td>
</tr>
<tr>
<td>Results achieved</td>
<td>The actual outcome that delivers benefits to end-users, expressed as a quantitative or qualitative standard, value or rate. It describes what has actually been achieved.</td>
</tr>
<tr>
<td>Verification of results</td>
<td>The actual measures that demonstrate that a particular result has been achieved.</td>
</tr>
<tr>
<td>Output</td>
<td>Tangible products or services delivered by a programme to end-users in order to induce outcomes. Outputs are produced by activities.</td>
</tr>
<tr>
<td>Activity</td>
<td>An action taken to transform inputs into outputs.</td>
</tr>
<tr>
<td>Input</td>
<td>Personnel and other resources necessary for producing outputs and achieving accomplishments. Inputs are the objects of expenditure that are used to undertake activities.</td>
</tr>
</tbody>
</table>

Monitoring and evaluation in RBM

Monitoring and evaluation – or M&E as it sometimes called – is an integral part of RBM:

- monitoring is the continuing function of collecting data indicating the extent of progress and achievement of objectives, and progress in the use of allocated funds;
- evaluation is the process that seeks to determine as systematically and objectively as possible the relevance, effectiveness and impact of an activity in light of its goals, objectives and accomplishments.

The focus of M&E is best demonstrated by understanding its relationship to the key concepts that were introduced in the previous section (Figure12).
Monitoring primarily focuses on implementation and the measurement of execution. Evaluation primarily focuses on measuring the change and impact that implementation has had in terms of the objectives and results that were originally sought.

An effective M&E programme requires the following:

- understanding the expected accomplishments of the eHealth programme;
- ensuring that expected accomplishments can really be evaluated;
- reviewing performance indicators to ensure that they are pragmatic, simple and achievable;
- determining when the programme will be evaluated, which may be at specific times in the programme or at other key events in the programme (e.g., problem is perceived, results are supposed to have happened);
- planning for the collection of information to support evaluation, including:
  - data sources
  - collection method
  - baseline data for performance indicators
  - time required for collection
  - responsible organization/personnel;
- collecting and analysing evaluation data, and drawing appropriate conclusions;
- developing recommendations (including corrective actions) and lessons learned.
ANNEX B

Examples of eHealth strategies

A number of countries have made their eHealth Strategies or eHealth Roadmaps publicly available via the Internet. The table below lists a selection of these publications as examples of how different countries have documented their eHealth Strategies and Roadmaps. However, it should be noted all of these pre-date this Toolkit’s development, and therefore none of them has been developed using the Toolkit’s proposed approach.

Table 12. Examples of eHealth strategies

<table>
<thead>
<tr>
<th>Country</th>
<th>Type</th>
<th>Link</th>
<th>Published</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Commission</td>
<td>Repository of eHealth strategies and priorities for EU Member States</td>
<td><a href="http://www.ehealth-era.org/database/database.html">http://www.ehealth-era.org/database/database.html</a></td>
<td>N/A</td>
</tr>
<tr>
<td>Country</td>
<td>Type</td>
<td>Link</td>
<td>Published</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
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</tr>
</tbody>
</table>

N/A, not applicable.
### ANNEX C

**Definition of terms used in the Toolkit**

<table>
<thead>
<tr>
<th>Part</th>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part I: Establishing a national eHealth vision</strong></td>
<td>Strategic goals and challenges</td>
<td>Strategic health sector goals and challenges and/or other national development goals that can be best supported by eHealth. While there may be many different health sector goals and challenges, only some of these can be directly supported by eHealth and where a national eHealth vision will have the most impact.</td>
</tr>
<tr>
<td></td>
<td>eHealth outcomes</td>
<td>What will be achieved or changed through using eHealth, and how will the health system and services change by: • Improving the information flows within the health sector • Improving electronic access to health services and information.</td>
</tr>
<tr>
<td></td>
<td>eHealth vision</td>
<td>High-level statement that describes the strategic benefits and outcomes for the country in general or for the health system and population through the strategic changes to health system and services introduced by eHealth (eHealth outcomes).</td>
</tr>
<tr>
<td></td>
<td>National eHealth environment</td>
<td>The national eHealth environment is made up of eHealth components representing the enabling and foundation elements for eHealth as well as technical capabilities that form together an ‘ecosystem’ for eHealth in a country.</td>
</tr>
<tr>
<td></td>
<td>eHealth components</td>
<td>The building blocks of a national eHealth environment, which will allow the eHealth outcomes to be achieved. They describe what is needed to be introduced or strengthened to achieve the eHealth vision in terms of: • leadership and governance • strategy and investment • services and applications • infrastructure • standards and interoperability • legislation, policy and compliance • workforce.</td>
</tr>
<tr>
<td></td>
<td>Strategic recommendations</td>
<td>Strategic recommendations describe the high–level actions required to deliver the national eHealth environment. These actions may describe how new eHealth components will be delivered, or how existing eHealth components will be repurposed or extended</td>
</tr>
<tr>
<td><strong>Part II: Developing an eHealth action plan</strong></td>
<td>Action Lines</td>
<td>Broad areas to group national activities of similar focus and intent that are required to deliver a nation’s eHealth vision</td>
</tr>
<tr>
<td></td>
<td>eHealth Outputs</td>
<td>The specific achievements, deliverables, results or changes required to deliver a strategic recommendation</td>
</tr>
<tr>
<td></td>
<td>Activities</td>
<td>The set of activities that need to be undertaken to deliver a particular output</td>
</tr>
<tr>
<td><strong>Part III: National eHealth monitoring and evaluation guidelines</strong></td>
<td>Output indicators</td>
<td>Indicators that provide insights into the adoption and take-up of eHealth within the country’s health sector</td>
</tr>
<tr>
<td></td>
<td>Outcome indicators</td>
<td>Indicators that provide insights into the tangible results for stakeholders that arise from the adoption and use of eHealth</td>
</tr>
</tbody>
</table>
Worldwide, the application of information and communication technologies to support national health-care services is rapidly expanding and increasingly important. This is especially so at a time when all health systems face stringent economic challenges and greater demands to provide more and better care, especially to those most in need.

The National eHealth Strategy Toolkit is an expert, practical guide that provides governments, their ministries and stakeholders with a solid foundation and method for the development and implementation of a national eHealth vision, action plan and monitoring framework. All countries, whatever their level of development, can adapt the Toolkit to suit their own circumstances.

Representing one of the most significant collaborations in recent years between the World Health Organization and the International Telecommunication Union, the Toolkit is a landmark in understanding what eHealth is, what it can do, and why and how it should be applied to health care today.