

Country Health Information System Assessment Tool
Version 1.96: 10 May 2006



Health Metrics Network

**Strengthening Country
Health Information Systems:
Assessment and Monitoring Tool**

Version 1.96

Table of Contents

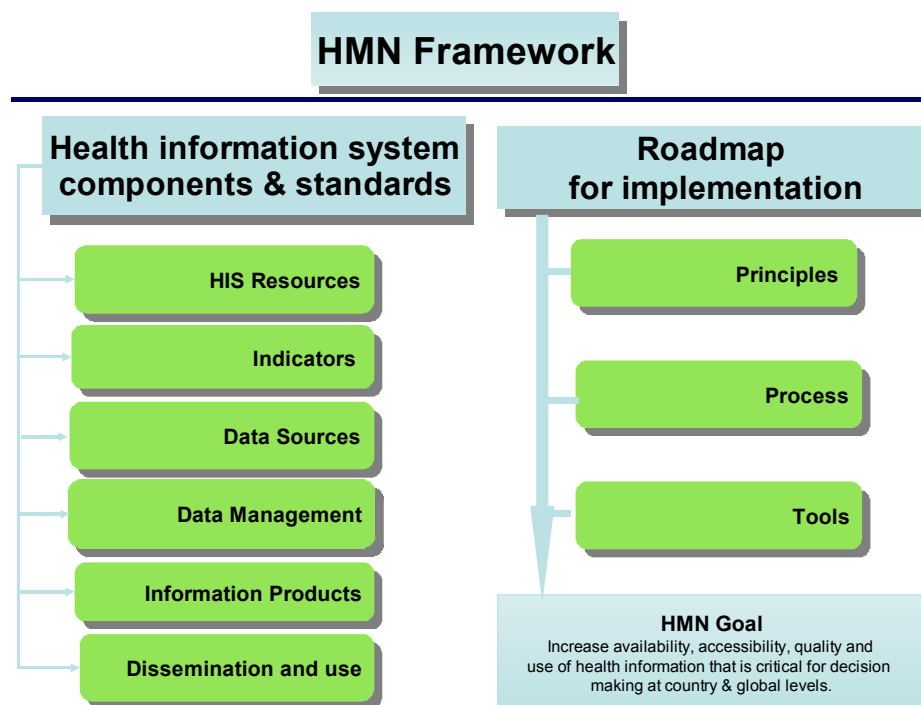
INTRODUCTION.....	2
HOW TO ORGANIZE AN ASSESSMENT OF THE NATIONAL HEALTH INFORMATION SYSTEM:	Error! Bookmark not defined.
SCORING AND INTERPRETATION OF RESULTS	11
ASSESSING HIS RESOURCES	13
ASSESSING INDICATORS	18
ASSESSING DATA SOURCES.....	21
ASSESSING DATA MANAGEMENT.....	35
ASSESSING INFORMATION PRODUCTS.....	38
ASSESSING DISSEMINATION AND USE	51

INTRODUCTION

Health information system strengthening requires the active involvement of many stakeholders who have roles and responsibilities in different areas of health statistics. The Health Metrics Network (HMN) seeks to align all partners – at country level and in the donor community – around a coherent framework (the HMN Framework) that focuses partner actions and guides the overall direction of health information system development. The HMN Framework is needed because a major constraint to health information system strengthening is the absence of consensus on the relative strengths, usefulness and feasibility of different data collection approaches required to generate the array of health indicators needed by programme managers and decision-makers. The HMN Framework, developed under the auspices of the Health Metrics Network, brings together diverse data needs with data generation methods and helps to define country and global systems, standards, capacities and processes. It combines the normative framework for measurement in health with inclusive and participatory assessment, planning and implementation tools. The Framework focuses the inputs of donors and technical agencies around a country-owned plan for health information, thus reducing overlap and duplication and enabling donor and development partner efforts to converge. At both the country and global level, the HMN framework will enable access to and use of health information, thus serving the needs of individual countries while generating global public goods.

The HMN Framework has two parts: a normative portion (components and standards) and an implementation portion (a roadmap).

Figure 1: The HMN Framework



The normative component describes the standards and assessment criteria relating to the inputs, processes, outputs and outcomes of the health information system and comprises six sub-components:

- a) *HIS resources* – the policy, legislative, regulatory, management and financial environment that must be in place; and the infrastructure and resources required to ensure a fully functional health information system.
- b) *Indicators* – defining core health indicators covering the domains of health information.
- c) *Data sources* – key data sources, standards for their use, their role in generating health information and potential linkages between them. The subsystems are census, vital events monitoring, health facilities statistics, public health surveillance, population-based surveys and resource tracking, including health infrastructure and human resources.
- d) *Data management* – optimal processes for collecting, sharing, and storing data, data flows and feedback loops.
- e) *Information products* – criteria for assessing the quality of available data.
- f) *Dissemination and use* – norms for presenting, disseminating data and sharing information among stakeholders and creation of incentives for evidence-based decision making.

The implementation component outlines a roadmap for strengthening health information systems and includes a tool to guide assessment of the country health information system, thus enabling countries to establish a baseline and monitor progress of health information system development. This is linked to a set of principles, processes and benchmarks for the implementation of the HMN Framework at the country level. The HMN principles include country leadership and ownership; consensus-building; focus on country needs; and health information system development as a gradual and incremental process. The process has clearly defined stages and benchmarks and specifies the specific role of HMN as a catalyst and technical resource.

ASSESSMENT OF THE NATIONAL HEALTH INFORMATION SYSTEM:

I. What are the objectives of the assessment?

The health information system should be assessed in order to accomplish several objectives:

- a) *Provide for objective baseline and follow-up evaluation.* Assessment findings should thus be comparable over time.
- b) *Inform* certain stakeholders about aspects of the HIS about which they may not be familiar;
- c) *Build a consensus;* and
- d) *Mobilize joint technical and financial support for implementation of a strategic plan* that identifies priority investments during the short- (1-2 years), medium (3-5 years) and long-term (10 years).

It is envisaged that the assessment exercise would be repeated at an appropriate interval, preferably involving similar stakeholders, thus providing a tool to monitor progress and inform future plans to improve the country's health information system. This will enable an iterative cycle that informs the improvements of country health information systems over time.

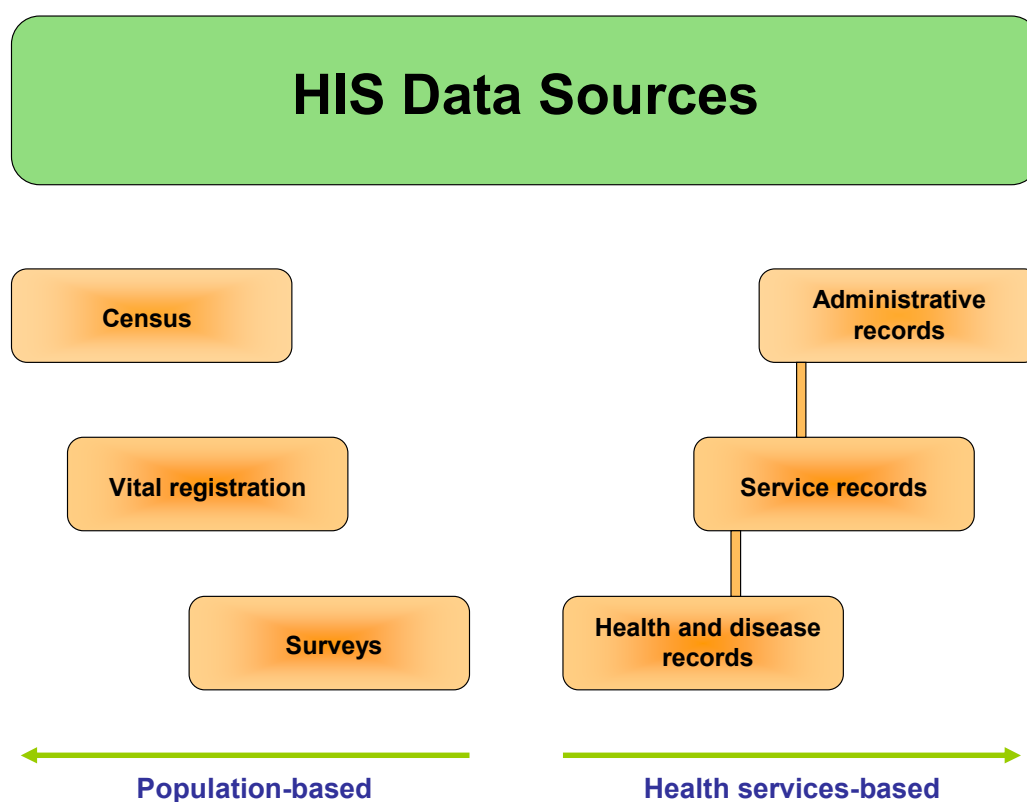
II. Who should assess?

A first step in the planning of an assessment of the national health information system (HIS) is to identify who should be involved. It is a basic principle of the HMN approach that *all major stakeholders should participate in assessing and planning for the strengthening of the HIS.*

Who has a stake in the HIS? Stakeholders include *producers, users and financers* at different levels (sub-national vs. national) of health information and other social statistics.

As shown by Figure 1, it is also important to keep in mind that essential health information is generated from a range of data sources and that a wide array of stakeholders is involved in different ways with each of these sources. For example, ministries of health are usually responsible for data derived from health services records. National statistics offices are usually responsible for the conduct of censuses and household surveys. Responsibility for vital statistics including births and deaths may be shared between the National Statistics Office, the Ministry of Home Affairs/Local Government and the Ministry of Health.

Figure 2: Data sources in a comprehensive health information system



Following is an illustrative list of appropriate representatives of relevant stakeholders:

1. Central Statistics Office
 - a) Officials and analysts responsible for the national population census;

- b) Officials and analysts responsible for household surveys such as the Demographic and Health Survey (DHS), Living Standard Measurement Survey (LSMS) and Multiple Indicator Cluster Survey (MICS);
- c) Other leading demographers and statisticians.
2. Senior advisers of the Ministry of Health as well as member of the Ministry cabinet and Ministry of Health heads/coordinators of the:
 - a) Planning unit;
 - b) Annual M&E / performance reviews;
 - c) HIS section/unit of MoH;
 - d) Acute disease surveillance and response;
 - e) Disease control, immunization (EPI) and maternal and child / family planning (MCH/FP) programs;
 - f) Non-communicable disease control programs;
 - g) Units responsible for management of human resources, drugs/logistics, finances
3. Other Ministries and governmental agencies responsible for planning, monitoring and evaluation of social programs:
 - a) Whichever ministry or government agencies are responsible for Civil Registration -- Ministry of Interior or Home Affairs or Local Government
 - b) Planning Commission;
 - c) Ministry of Finance;
 - d) Population Commission;
 - e) Commissions developing master plans for social statistics
4. Researchers/directors of demographic surveillance sites (DSS), institutes of public health and universities
5. Major donors to the health sector (bilateral and multilateral as well as Global Health Partnerships such as GFATM) and donors who finance specific activities of relevance:
 - a) National population census;
 - b) Large-scale national population-based surveys (DHS, MICS, LSMS);
 - c) Demographic Surveillance systems;
 - d) Sample vital registration systems;
 - e) DSSs;
 - f) Strengthening of surveillance/ Integrated Disease Surveillance and Response (IDSR);
 - g) Strengthening of HMIS;
 - h) Health accounts;
 - i) Mapping of health risks and health services;
 - j) Health facility surveys (e.g. Service Provision Assessment - SPA);
 - k) Annual performance reviews of the health sector;
 - l) Systems for M&E of major disease control programs (HIV/AIDS, malaria, tuberculosis, immunizable diseases);
6. Organizations of the United Nations system active in development and in monitoring progress towards the Millennium Development Goals (MDGs) such as UNICEF, UNDP, UNFPA, the World Bank
7. Representatives of key non-governmental organizations and civil society
 - a) Private health professional associations;
 - b) Associations of faith-based health providers and other NGOs;
 - c) Health advocacy groups.

The HIS should be strengthened by a country-led process involving input and close coordination of these stakeholders. To mobilize these stakeholders it will help greatly if there is a "champion". This might be someone in the Ministry of Health but could also be from the national statistics office or from a major programme area involved in health systems. The

champion can help assure that stakeholders understand well the objectives of the assessment and how it fits into the overall process of health information system development. In particular, stakeholders should be aware that the assessment will very soon be followed by a comprehensive strategic planning process to which they will also be asked to contribute.

III. How to organize and facilitate assessment?

The stakeholder group may want to form a steering committee that provides *on-going* oversight, direction and coordination of HIS strengthening activities including the planning and implementation of an HIS assessment. Not all stakeholders need to be active on the steering committee. For example, a group of bilateral donors, each of whom finance aspects of HIS strengthening may want to designate, perhaps on a rotating basis, a single representative.

The stakeholder group and its steering committee needs to designate an existing agency such as the HIS section/unit of the Ministry of Health to carry out certain administrative tasks (e.g. communications, procurement) required to conduct an assessment.

The assessment can be carried out in the setting of a large national workshop or during smaller meetings of several groups or with individual interviews of key informants. In general, a combination of all these approaches will be most effective and time-efficient for soliciting inputs from all key stakeholders. Many participants will not be familiar with particular aspects of the HIS and it would take quite a long time for anyone to participate in discussions about all 244 items included on the assessment tool. Hence, it will usually work best if participants are divided up into small groups which can work either sequentially or simultaneously (e.g. at a national workshop) to reach a consensus on a subset of items. When some assessment items are completed by only a sub-set of participants, care needs to be taken with feedback and discussion of the findings with all of the key stakeholders in order to meet the objectives of informing and building consensus among all stakeholders.

HMN's "**Group Builder**" tool helps those organizing the assessment to form several groups of informants and divide the assessment items among those groups. Each group should be made up of the key informants that are most qualified to assess each item. The number of items for any one group to assess should not greatly exceed 100.

Proposed groups are as follows:

- 1) The HIS section/unit of the Ministry of Health -- even without adding any additional members to this group, they are key informants to assess almost 100 items
- 2) Senior planner / policy maker with the Ministry of Health -- even without pairing such senior officials with other key informants, they are important for assessing about 75 items
- 3) Central statistics office paired with other available demographers -- to assess about 100 items
- 4) Program managers (coordinators of public health programs such as MCH/FP, EPI, TB, HIV/AIDS control, disease surveillance, etc...) -- to assess almost 100 items
- 5) Sub-national informants (managers and HIS staff from provincial, district and hospital levels) -- to assess 60 items and thus complete a sort of "sub-national assessment"
- 6) Finance monitoring -- a specialized group to assess about 28 items

- 7) Administrative statistics -- a specialized group made up of those who manage the databases that track human resources, supplies and infrastructure to assess 22 items
- 8) Non-project donors (including the World Bank and those contributing to a "common basket" for funding of a Sector-Wide Approach) -- 55 items are identified for these partners to assess if they do not already do so by joining one of the other groups. Donors supporting public health programs (EPI, surveillance, etc...) or the population census or national household surveys should be invited to join with the group that includes the respective program manager.

Group Builder permits those organizing the assessment to customize the membership of each group, adding or removing members based upon local circumstances and preferences. It is best not to add too many optional members as this may also increase the number of items that the group must assess. Once the group members are specified, the spreadsheet for each group indicates the best items for the group to assess. A separate spreadsheet (titled "Ungrouped") lists the key informants that have not been included in any of the groups and the items for which key informants are still lacking. Consider inviting these ungrouped informants to join one of the groups. Or consider scheduling separate interviews to receive their assessment input.

Certain informants (e.g. senior policy makers and planners within the Ministry of Health, the Central Statistics Office, the Ministry of Finance, the vital registration authorities) may not be available to attend throughout an assessment workshop. If such is the case, those organizing the assessment may want to form a team to schedule special appointments and obtain the input of these key informants.

It is essential for one or more facilitators or resource persons to support workshops or meetings where the assessment tool is being used. The facilitators should be thoroughly familiar with all of the assessment tool and the HMN Framework on which it is based. In addition to helping to lead the plenary sessions, s/he can circulate among small groups, helping to clarify the meaning of particular items and answering questions. The facilitator can also explain to those who are writing up the assessment report how to compile composite scores for each aspect of the HIS and how to summarize the findings.

The major advantage of a self-assessment approach is that it engages all partners in a shared learning experience. Facilitators can help to speed up the assessment and make the findings more comparable. However, it is important that the facilitator not interfere with the process of self-discovery among country stakeholders. Self-assessment can result in a felt need for improving the country health information system.

A large number of items should be assessed by leading staff of the HIS section/unit of the Ministry of Health. These same persons may play a key role in organizing and facilitating assessment workshops, meetings and interviews. Hence, it may work best if these key participants meet in advance of the workshops and other meetings to assess this large number of items. Groups that meet subsequently can then be provided with a record of the scores generated by staff of the HIS section/unit of the Ministry of Health.

Groups or individual informants participating in the assessment need to be provided with copies of certain documents. In addition to a print out of the assessment tool for each participant, this includes a copy of several background documents for each relevant group: the

HMN Framework, the UN Fundamental Principles of Official Statistics¹, PARIS21 National Strategy for the Development of Statistics², OECD Guidelines for Data Protection³, and the IMF Guidelines for Data Quality Assessment Framework⁴.

Assessments of certain items can be informed by external findings such as statistics appearing in global databases. For example, vital statistics practices can in part be assessed on the basis of statistics compiled by the UN Statistics Division or available in WHO's global mortality database (<http://www.who.int/healthinfo/mortables/en/index.html>).

IV. How to reach final consensus and disseminate the findings?

Whatever approach is used for conducting the initial assessment (interviews with key informants, discussions in small groups of subsets of items, etc.) efforts need to be made to involve concerned stakeholders in the analysis of the findings and identification of next steps. The complete assessment tool should be presented in plenary and persons not able to participate in a given break-out group should not only understand all of the items but have a chance to comment upon and shape the consensus on how the item is assessed. This makes it possible for stakeholders to be informed comprehensively about the strengths and weaknesses of the HIS. These discussions in plenary enable the stakeholder group to reach a broader consensus.

The assessment tool can be used as a sort of check-list to generate a list of gaps in the health information system: Is there a legal framework (item I.A.1)? Is there an adequate mechanism for coordination of the national statistics office and the Ministry of Health (item I.A.5)? Do regular meetings take place at facility, district and other levels to review the quality of and interpret health information (item I.A.8)? Is there adequate capacity in epidemiology, demography and statistics (item I.B.10)? Are there designated, full-time health information officers in most districts (item I.B.3)?, etc... The group interpreting the assessment findings should review the complete set of items and note the gaps identified. The immediate challenge then becomes to synthesize and summarize these gaps in a concise and coherent way that can best be presented to and discussed with other stakeholders. Findings go beyond the scores recorded on individual items to include the comments recorded on each of these items and the important points that are made during subsequent plenary discussions. Ideally, these discussions will help considerably to identify next steps and making the bridge between assessment and strategic planning (see next section).

A special task force should be established to draft the consensus report on the assessment. The draft report should be distributed for review and comment by a broad range of stakeholders. It will be worthwhile to budget not only for a national consensus workshop but for an editor and printing costs for dissemination of the final report.

¹ <http://unstats.un.org/unsd/goodprac/bpabout.asp>

² <http://www.paris21.org/pages/designing-nsds/NSDS-reference-paper/>

³ http://www.oecd.org/document/18/0,2340,en_2649_34255_1815186_1_1_1_1.00.html

⁴ <http://dsbb.imf.org/Applications/web/dqrs/dqrsdqaf/>

V. How to build on assessment findings?

The assessment findings should inform development of a comprehensive strategic plan for HIS strengthening. Such a strategic plan will have the following characteristics:

- A. The plan will specify what is to be done over the coming decade to increase the availability, quality, value and use of timely and accurate health information.
- B. The plan will be *based upon consultation with all key constituencies* including those supporting the population census, vital statistics, household health surveys, disease surveillance, health service statistics (including those from the private sector), health administrative records and Health Accounts.
- C. Also *based upon the assessment and additional findings* regarding the resources (human resources, financing) currently available and likely to be required for achievement of priorities;
- D. These various constituencies (those producing, using and financing such health information) should be asked to *identify investment priorities and strategies* for HIS strengthening.
- E. Priority investments during the short- (1-2 years), medium (3-5 years) and long-term (10 years) will be identified, sequenced and costed.
- F. The plan will discuss how these investments will be financed and identify appropriate funding sources at country level including Ministry budgets, HIPC debt relief, concessional loans, bilateral and multilateral development agencies and Global Health Partners.
- G. Consensus on the plan will be reached at a national workshop. The plan will be subsequently endorsed by the HIS coordinating committee.

HMN is now developing guidelines to support the development of strategic plans for HIS strengthening. Following are a few general principles to keep in mind when preparing for this process.

A task force can be established to review findings from the assessment, conduct or commission additional studies and draft a strategic plan. As when selecting persons to organize and facilitate the assessment meetings themselves, when establishing the task force to draft the strategic plan it is essential to involve appropriate technical resources and stakeholders. For better coordination and partnership, consider:

- A range of views and expertise may be essential to reach a consensus that will ultimately be endorsed by a broad range of stakeholders including those in the Ministry of Health, the national statistics office and financing partners;
- Too large a group may make it hard to reach consensus. Those organizing the group that is interpreting the assessment findings should ask themselves whose participation is essential.

Decisions about the timing of activities included in the workplan will depend upon many factors: perceived urgency, extent of the gap (i.e. assessment items scored as a zero or a one), ease of implementation considering existing human resources and health system, availability of financing, etc... The assessment tool may identify some data sources for which the country has good *capacity* but has problems with the *content* of the information produced (for example, a good quality census is regularly conducted every ten years but questions on mortality have not been included on the census questionnaire). This may suggest areas where important advances can be made in the short-term or with modest effort.

It is essential that the strategic plan not be limited, however, to those activities that can or must be launched and advanced in the short-term. More ambitious or longer-term objectives can be met by mobilizing financial, organizational and technical commitment around a compelling strategic vision. Hence, problems of weak capacity can be addressed over the longer-term.

Achievement of some of the more ambitious objectives (e.g. development of human resources for the HIS; strengthening of civil registration) will depend upon the broader policies, plans and budgets of the Ministry of Health, the national statistical office or the national government more generally. This makes it essential that the HIS strategic plan be consistent with these broader policies and plans. It also makes it important for champions of HIS strengthening to engage in discussions about reform or development of these broader policies and plans. Hence, implementation of important components of the HIS strategic plan will depend upon continued advocacy, lobbying, negotiation and participation in related policy formulation and planning processes.

SCORING AND INTERPRETATION OF RESULTS

For each item included on the assessment tool a range of anticipated scenarios is provided to permit an objective and numbered rating. The highest score (3) is given for a scenario considered “highly adequate” compared to the gold standard defined by the HMN framework. The lowest score (0) is given when the situation is regarded as “not functional” in terms of the ability to meet the HMN standard. The total score for each category is aggregated and compared to a maximum score to yield a percentage rating. Each question can be rated by multiple respondents and the replies aggregated to come up with an overall score. The more varied the (informed) respondents involved, the less the risks of bias in the results. In some cases a particular item is judged to be not applicable. In such instances the item should be omitted from the scoring and the reasons for omitting the item should be recorded.

Scores are converted to quintiles for the overall report. Thus, answers with scores falling into the lowest quintile (less than 20th percentile) are classified as “*Not functional*”. Scores falling into the next lowest quintile are classified as “*Not adequate*”, followed by “*Present but not adequate*”, “*Adequate*”, and “*Highly adequate*” for the, third, fourth, and fifth quintiles, respectively.

Scores may be awarded by individual informants or by groups. On the spreadsheet version of the assessment tool there are spaces for recording the scores awarded by up to 14 individual informants and there is an adjacent space for recording detailed comments elicited from informants about major gaps, constraints, possible solutions and intervention priorities. Early experience with use of the HMN assessment tool suggests that it is important to capture these detailed qualitative remarks. If responses are recorded on a paper copy of the assessment tool rather than the spreadsheet version then it is best to insert blank rows after each item or a couple of blank pages after each table so that important qualitative remarks can be captured.

On the spreadsheet version of the assessment tool, rows are provided for insertion of additional assessment items. Insertion and deletion of rows from the spreadsheet is not recommended as this can lead to errors in the formulae that are used to sum up scores and color code the results. Instead of deleting an item, it can merely be skipped and the item will then not affect the resulting scores. New items can be inserted into the blank rows that are provided for each section of the assessment tool. Assessment scores entered into the cells to the right of these additional items will be averaged and summed up and the results will be displayed along with the results for the standard items. If such an approach does not meet the needs for adaptation of the tool, those organizing the assessment are encouraged to contact the Health Metrics Network (HealthMetrics@who.int) for assistance.

Template for Analysing Results of the Assessment Tool

Categories	Number of Questions	Total Possible Score	Highly adequate	Adequate	Present but not adequate	Not adequate	Not functional
I. Resources	23	69	55-69	41-54	27-40	14-26	0-13
<i>A. Policy and planning</i>	8	24	19-24	14-18	10-13	5-9	0-4
<i>B. HIS institutions, human resources and financing</i>	9	27	22-27	17-21	11-16	6-10	0-5
<i>C. HIS infrastructure</i>	6	18	15-18	11-14	8-10	4-7	0-3
II. Indicators	5	15	13-15	10-12	7-9	4-6	0-3
III. Data sources	83	249	200 - 249	150 - 199	100 - 149	50 -99	0-49
<i>A. Census</i>	9	27	22-27	17 - 21	11 - 16	6 - 10	0 - 5
<i>B. Vital statistics</i>	13	39	31 - 39	24 - 30	16-23	9-15	0-8
<i>C. Population-based surveys</i>	11	33	27 - 33	20 - 26	14-19	7-13	0-6
<i>D. Health and disease records (e.g. surveillance)</i>	12	36	29 - 36	22 - 28	14 - 21	8 - 13	0-7
<i>E. Service records</i>	12	36	29 -36	22 - 28	14 - 21	8 - 13	0 - 7
<i>F. Administrative records</i>	26	78	63 - 78	47 - 62	32 - 46	16 - 31	0 - 15
<i>i. infrastructure</i>	7	21	17 - 21	13 - 16	9 - 12	5 - 8	0 - 4
<i>ii. human resources</i>	4	12	10 -12	8 - 9	5 - 7	3 - 4	0-2
<i>iii. financial</i>	8	24	20 - 24	15 - 19	10 - 14	5 - 9	0 - 4
<i>iv. equipment, supplies, commodities</i>	7	21	17 - 21	13 - 16	9 - 12	5 - 8	0 - 4
IV. Data management	5	15	13 - 15	10 - 12	7 - 9	4 - 6	0 - 3
V. Information products: selected indicators	137	411	329 - 411	247 - 328	165 - 246	83 - 164	0 - 82
<i>A. Health status</i>	33	99	80 - 99	60 - 79	40 - 59	20 - 39	0-19
<i>1. Mortality</i>	21	63	51 - 63	38 - 50	26 - 37	13 - 25	0- 12
<i>2. Morbidity</i>	12	36	29 - 36	22 - 28	15 - 21	8 - 14	0 - 7
<i>B. Health system information</i>	54	162	130 - 162	98 - 129	65 - 96	32 - 64	0 - 31
<i>C. Determinants</i>	18	54	44 - 54	33 - 43	22 - 32	11 - 21	0 - 10
VI. Dissemination and use	20	60	49 - 60	37 - 48	25 - 36	13 - 24	0 - 12
<i>A. Analysis and use</i>	6	18	15 - 18	11 - 14	8 - 10	4 - 7	0 - 3
<i>B. Policy and advocacy</i>	4	12	10-12	8 - 9	5 - 7	3 - 4	0 - 2
<i>C. Planning and priority setting</i>	3	9	8 - 9	5 - 7	4 - 5	2 - 3	0 - 1
<i>D. Resource allocation</i>	4	12	10-12	8 - 9	5 - 7	3 - 4	0 - 2
<i>E. Implementation and action</i>	3	9	8 - 9	5 - 7	4 - 5	2 - 3	0 - 1

ASSESSING HIS RESOURCES

Policy and planning framework: The legal, regulatory and planning context within which health information is generated and used is key. It enables the establishment of mechanisms to ensure data availability, exchange and quality. Legal and policy guidance is needed, for example, to elaborate specifications for electronic access and to protect confidentiality. The legal framework is of particular significance in relation to the ability of the health information system to draw upon information from both the private and public health services and from non-health sectors. Furthermore, the existence of a legal and policy framework consistent with international standards such as the Fundamental Principles of Official Statistics⁵ enhances confidence in the integrity of the results. The policy framework for health information identifies main actors and coordinating mechanisms, ensures links to programme monitoring, and identifies accountability mechanisms. A national HIS strategic plan is essential for coordination. This is a roadmap guiding HIS investments with indications of the timeline and anticipated budget of activities to be completed in the short (1-2 years), intermediate (3 to 5 years) and long term (10 years and beyond). The document provides for maintenance / strengthening and coordination of each of the key components of the HIS: vital statistics, household surveys/census, disease surveillance, routine service statistics and health accounts. The strategic plan emphasizes integration of data sources at national and sub-national levels.

Institutions and human resources: There is increasing awareness that improvements in health outcomes cannot be achieved unless attention is paid to the training, deployment, remuneration and career development of human resources at all levels. At national levels, skilled epidemiologists, statisticians and demographers are needed to oversee data quality standards for collection, ensure appropriate analysis and utilization of information. At peripheral levels, dedicated health information staff are needed for data collection, reporting and analysis. Deploying health information officers within larger facilities and at district level (as well as at higher levels of the health care system) results in significant improvements in the quality of data reported and in the understanding of its importance by health care workers. Development of the HIS will also depend upon the functioning of key units and institutions such the central HIS unit of the Ministry of Health and the central statistics office which have responsibility for designing, strengthening or supporting data collection, transmission, analysis, reporting and other dissemination. It may help to undertake some form of institutional analysis to identify constraints (for example, those related to reporting hierarchies or relationships between different units with responsibility for M&E) which undermine policy and M&E program implementation.

Financial resources: Investments from domestic and international sources are required to strengthen data collection, analysis and utilization.

Infrastructure: Computers, internet access, databases and transport facilities to ensure data quality and enhance feedback and data use will greatly facilitate the ability of health information systems to produce timely, relevant and high quality information.

⁵ United Nations (1994) Fundamental Principles of Official Statistics, Statistics Division, New York. These principles include impartiality, scientific soundness, professional ethics, transparency, consistency and efficiency, coordination and collaboration.

I. Resources

A. Policy and planning

Items		Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
I.A.1	The country has up-to-date legislation providing the framework for health information covering the following specific components: vital registration, notifiable diseases, private sector data including social insurance, confidentiality, and fundamental principles of official statistics	Legislation covering all aspects exists and is enforced	Legislation covering some aspects exists and is enforced	Legislation exists but is not enforced	There is no such legislation	
I.A.2	There is a written HIS strategic plan in active use addressing all HIS components as in the HMN Framework that is being implemented at the national level	Yes, it exists and is being implemented	The strategic plan exists, but the resources to implement it are not available	The strategic plan exists, but it is not used or does not emphasize integration	There is no written HIS strategic plan	
I.A.3	There is a written HIS strategic plan addressing all HIS components as in the HMN Framework that is being implemented at sub-national level	Yes, it exists and is being implemented at sub-national level	The strategic plan exists, but the resources to implement it at sub-national level are not available	The strategic plan exists, but it is not used or does not emphasize integration	There is no written HIS strategic plan	
I.A.4	There is a representative national committee in charge of coordination of HIS	Yes, a functional committee exists	There is a functional national HIS committee, but without resources	There is a national HIS committee, but it is not functional	No national HIS committee exists	
I.A.5	Country Statistical Office and Ministry of Health have established coordination mechanisms (e.g. task force on health statistics; this mechanism may be multi-sectoral)	Yes, fully operational, meets regularly and meets needs for coordination	Yes, but meets only occasionally on an <i>ad hoc</i> basis or agenda is too full	Yes in theory, but these mechanisms are not operational	No	
I.A.6	Is there a regular system in place for monitoring the performance of the HIS and its various sub-systems?	Yes, it exists and is used regularly	Yes, but it is seldom applied	Yes, but never used	No	
I.A.7	There is a written policy (part of the HIS strategic plan) to promote a culture of information use throughout the health system. Senior managers act as role models for use of information	Yes, both the HIS strategic plan and senior management do promote an information culture	Yes, the HIS strategic plan promotes information culture but it is not implemented	No policy exists on promoting culture but discussion is ongoing	No policy exists or discussion on promoting culture of information	
I.A.8	It is an official policy to conduct regular meetings at facility, district and other levels to review HIS information and take action based upon such information	Yes, the policy exists and is being implemented	The policy exists, but there is no regularity of meetings	The policy exists, but is not implemented	No policy exists	

B. HIS institutions, human resources and financing

Items		Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
I.B.1	There is national capacity in core health information sciences to meet health information needs (epidemiology, demography, statistics, health planning)	Highly adequate	Adequate	Partially adequate	Not adequate	
I.B.2	There is a functional central HIS administrative unit in the Ministry of Health for design, development and support of health information collection, management, analysis, dissemination and use for planning and management	HIS central unit is effective at coordinating, strengthening and maintaining the national HIS	HIS central unit is functional but lacking adequate resources	HIS unit has very limited functional capacity and undertakes few HIS strengthening activities	There is no functioning central HIS administrative unit in the Ministry of Health	
I.B.3	At sub-national levels (e.g. regions / provinces, districts) there are designated full-time health information officer positions and they are filled	Yes, 100% of health offices at sub-national level have a designated, filled full time health information officer	Yes, more than 50% half of health offices at sub-national level have a filled designated full-time health information officer position	Less than 50% of health offices at sub-national level have a designated full-time health information officer position	No positions	
I.B.4	HIS capacity building activities have occurred over the past year for <i>HIS staff</i> (statistics, software and database maintenance, and/or epidemiology)	Significant capacity building occurred as part of a long-term government-driven human resources development plan	Significant capacity building, but largely depending on external (e.g. donor) support and input	Limited capacity building	No	
I.B.5	HIS capacity building activities have occurred over the past year for <i>health facility staff</i> (data collection, self-assessment, analysis, presentation)	Significant capacity building occurred as part of a long-term government-driven human resources development plan	Significant capacity building, but largely depending on external (e.g. donor) support and input	Limited capacity building	No	
I.B.6	Availability of IT and database support to health and HIS staff at national and sub-national levels	Excellent	Adequate, usually available for occasional assistance and back-up	Limited, does not meet needs of staff for assistance and support	Not available	

I.B.7	Do written guidelines exist for the processes of HIS data collection, management and analysis?	Yes, written guidelines exist and are observed	Written guidelines exist and are used, but not integrated into overall service supervision	Written guidelines exist but are not implemented/used	No guidelines exist	
I.B.8	Acceptable rate of health information staff turnover at national level (either at Ministry of Health or Central Statistics Office)	Low turnover, not a problem	Moderate turnover but manageable	Turnover rate is problematic	Turnover rate is unacceptably high	
I.B.9	Are there specific budget line items within the national budgets for various sectors to provide adequately for a functioning HIS for all data sources (the HMN HIS sub-systems)?	Yes, there are specific budget line items within the national budgets to provide adequately for a functioning HIS for all data sources	National HIS budget line items are limited but allow for adequate functioning of all data sources	National HIS budget line items are limited and do not allow for adequate function of all data sources	There are no National HIS budget line items and there is inadequate function of most data sources	

C. HIS infrastructure

Items	Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score	
	3	2	1	0		
I.C.1	A complete list of public sector health facilities exists and is up-dated every year	Yes, at least 90% of public sector health facilities are listed. The list is updated annually	The listing covers 50-89% of public sector health facilities and the listing is up to date	Listing is out of date or covers less than 50% of facilities	Not available	
I.C.2	A complete list of private sector health facilities exists, and is up-dated every year	Yes, at least 80% of private sector health facilities are listed. The list is updated annually	The listing covers 50-79% of private sector health facilities and the listing is up to date	Listing is out of date or covers less than 50% of facilities	Not available	
I.C.3	Is there availability of paper forms, paper, pencils, and supplies that are needed for recording of health information?	Yes, paper recording forms, paper and supplies are always available for recording required health information	There are occasional "stock-outs" of recording forms, paper, pencils and supplies but it does not affect our ability to record required information	There are "stock-outs" of recording forms, paper, pencils and supplies and it affects our ability to record required information	Health service is not able to meet reporting requirements due to lack of recording forms, paper and pencils	

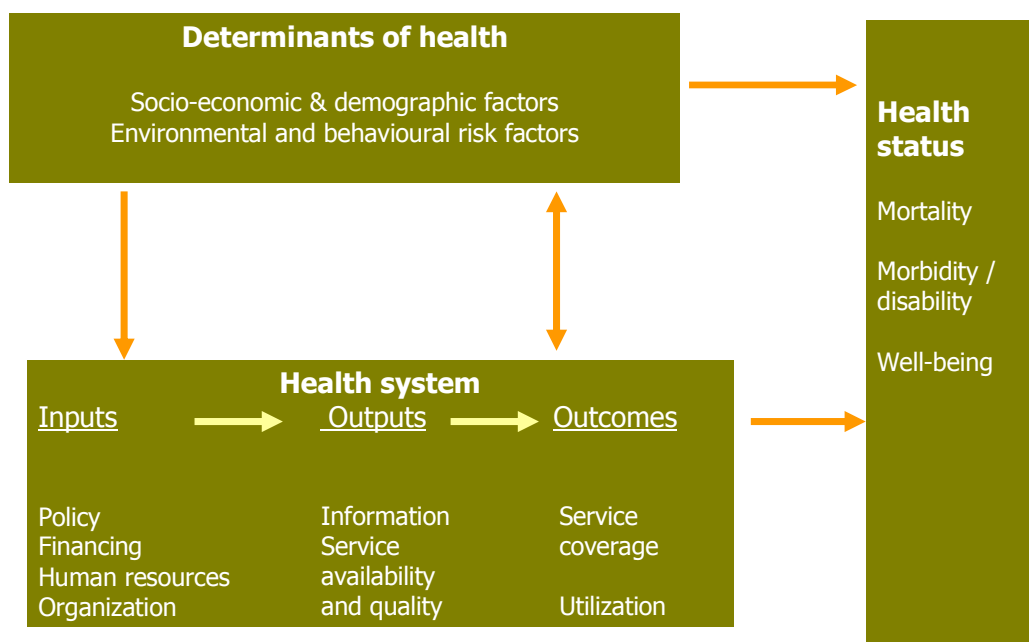
I.C.4	Are computers available at the relevant offices at national, regional, and district levels to permit rapid compilation of sub-national data?	Yes, all managers at district, regional and national levels have access to computers	Some managers at district level and nearly all managers at regional and national levels have access to computers	Managers at regional/provincial level and majority of managers at national level have access to computers	No, only managers at national level have access to computers	
I.C.5	Is the basic communication technology infrastructure (telephones, internet access, e-mail) in place at national, regional and district levels to ensure rapid compilation of sub-national data?	Yes, the basic communication technology infrastructure is in place at national, regional and district levels to ensure rapid compilation of sub-national data	No the basic communication technology is not in place at all levels but we are able to ensure compilation of national and sub-national data as needed	The basic communication technology is not in place at the national and all sub-national levels and it affects our ability to ensure compilation of national and sub-national data as needed	The basic communication technology is not in place at national and sub-national levels and we are not able to compile data as needed	
I.C.6	Is there IT equipment maintenance support available at national and sub-national levels to ensure data and information reporting requirements are met and on time?	Yes, there is IT equipment maintenance support at national and sub-national levels that makes possible meeting data and information reporting requirements	There is not always IT equipment maintenance support available but we are able to meet data and information reporting requirements	There is not always IT equipment maintenance support available and it prevents us from meeting data and information reporting requirements	There is no IT equipment maintenance support and it affects meeting data and information reporting requirements	

ASSESSING INDICATORS

Health information systems need to cover many information areas, ranging from data for the management and administration of health services, to health system outputs such as coverage and quality of care, and outcomes such as mortality and morbidity. The domains to be tracked by the health information system can be grouped into three main types (Figure 1):

- *Determinants of health:* these include socio-economic, environmental, behavioural and genetic determinants or risk factors. Such indicators also characterize the contextual environments within which the health system operates.
- *Health system:* these include the inputs to the health system and related processes such as policy, organization, human resources, financial resources, health infrastructure, equipment and supplies; the outputs including health service availability and quality, information availability and quality; and the immediate health system outcomes including coverage of population with key health services.
- *Health status:* these include mortality, morbidity, disability and well-being. The health status variables depend on the coverage and efficacy of the interventions and the determinants of health which may have an influence on health outcomes independent of the health services coverage.

Figure 3 – Domains of interest of health information systems



Identifying key indicators

Each country must identify core indicators that the health information system is able to regularly report upon. The methods for measuring these indicators must also be specified. Core indicators may include, but would not be limited to, those related to the Millennium Development Goals (MDGs)⁶. The precise list of indicators will vary according to the epidemiological profile and development needs of each country. The standard is for health indicators to monitor local and national priorities. However indicator *definitions* must meet international technical standards. Moreover, there should be a consistent link and harmonization of national indicators with key indicators used in major international and global initiatives such as the MDGs, Global Fund, and GAVI. The selection of indicators will take into account: the level at which the information is needed (individual, district, national, global), the key users of the information and ways it is used, and existing capacity to generate the information. Statistics that are stratified by sex, age, socio-economic status, geographic location and ethnicity permit analysis of inequities in health.

⁶ Health indicators related to the Millennium Development Goals (MDGs) include:
(1) Prevalence of underweight children under five years of age ; (2) Proportion of population below minimum level of dietary energy consumption ; (3) Under-five mortality rate ; (4) Infant mortality rate ; (5) Proportion of one-year-old children immunized against measles ; (6) Maternal mortality ratio ; (7) Proportion of births attended by skilled health personnel ; (8) HIV prevalence among pregnant women aged 15-24 years ; (9) Condom use rate of the contraceptive prevalence rate ; (10) Prevalence and death rates associated with malaria ; (11) Proportion of population in malaria-risk areas using effective malaria prevention and treatment measures ; (12) Prevalence and death rates associated with tuberculosis ; (13) Proportion of tuberculosis cases detected and cured under DOTS (Directly Observed Treatment Short-course) ; (14) Proportion of population with sustainable access to an improved water source, urban and rural ; (15) Proportion of population with access to improved sanitation, urban and rural ; (16) Proportion of population with access to affordable essential drugs on a sustainable basis (http://www.who.int/mdg/publications/MDG_Report_revised.pdf).

II. Indicators

Items		Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
II.A.1	National minimum core indicators have been identified for national and sub-national levels covering all categories of health indicators (determinants of health; health system inputs, outputs, outcomes; health status)	Yes, minimum core indicators are identified at national and sub-national levels and covering all categories	Minimum core indicators are identified at national and sub-national levels but they do not cover all categories	Discussions under way to identify essential indicators	No, minimum indicators or data set identified	
II.A.2	There is a clear and explicit official strategy for measuring each of the country relevant health-related MDG-indicators	Yes, all of the appropriate health-related MDG indicators are included in the minimum core indicator set	Not all, but at least half of the health-related MDG indicators are included in the minimum core indicator set	At least one but less than half of the appropriate MDG indicators are included in the minimum core indicator set	None of the MDG health related indicators are included in the minimum core indicator set	
II.A.3	Are core indicators defined in collaboration with all key stakeholders, e.g., Ministry of Health (MoH), National Statistics Office (NSO), other relevant ministries, professional organizations, sub-national experts, major disease-focused programs?	Yes, all the relevant stakeholders collaborated in the selection of the core indicators	Relevant ministries and the NSO are involved but more external participation would be desirable	Collaboration across the MoH, sub-national, some disease programmes but no involvement of the NSO	No, each programme demands data as they see fit.	
II.A.4	Have the core indicators been selected according to explicit criteria including usefulness, scientific soundness, reliability, representativeness, feasibility, accessibility	Yes, the core indicators have been selected according to explicit criteria including usefulness, scientific soundness, reliability, representativeness, feasibility, accessibility	Mostly, but not all criteria for selection were clear and explicit	There are guidelines but they do not include explicit criteria for selection of indicators	There are not guidelines or explicit criteria for selection of indicators	
II.A.5	Reporting on the minimum set of core indicators occurs on a regular basis	Regular reporting (e.g. annual, bi-annual)		Reporting is irregular and incomplete	Reporting is very limited	

ASSESSING DATA SOURCES

All country health information systems draw on a set of core data collection methods. The role and contribution of each source or method to the health information system will vary, as there is overlap between the kinds of information they collect. In many cases, measurement of the same indicators with data from multiple sources can contribute to better quality information while maintaining efficiency. In other cases, it will be more efficient to avoid duplication. The optimal combination of methods to gather data on health issues depends on a range of factors, including epidemiology, specific characteristics of the measurement instrument, cost and capacity considerations, and programmatic needs (e.g. in terms of evaluation). In addition, each source can generate data on a range of indicators. The frequency and mode of data collection depends on how likely change is and the ability of the indicator to detect change (measurement error). Health information system development aims to ensure that an appropriate combination of data collection methods is available to provide for the priority information required.

Selection of data collection modes is informed by an assessment of feasibility, periodicity, cost-effectiveness and sustainability. Periodicity of measurement will depend on the likely speed of change of the indicator and the costs of generating it. Determining which items of information can be most appropriately generated through routine health information systems and which require special surveys is a central feature of the reform plan.

The following sections describe the key features and desirable standards for the leading data collection methods: census, vital statistics, population-based surveys, health status records including disease surveillance, health services statistics and administrative records.

Census

A census is carried out at least once each ten years and the results by enumeration area are made available within 2 years after the data are collected. The census provides essential information on population numbers and distribution by age and sex and other characteristics. The census can also be used to supplement information on mortality. The nature of the census allows for small area estimation and for disaggregations by key stratifiers such as socio-economic status. Unfortunately, only a small number of questions can be included on a census questionnaire and the data are often of variable quality. To assess census data quality it is standard practice to conduct a post-enumeration survey during which the census questionnaire is re-administered to a small sample of the population.

If vital registration captures less than 90% of deaths then questions about recent deaths in the household by age and sex are to be added to the census questionnaire. In addition, health authorities may opt to use the census to assess maternal mortality by revisiting households which have reported the death of a woman of reproductive age.

Vital statistics

Vital registration refers to a system of comprehensive, ongoing monitoring of births and deaths by age and sex and with attribution of cause of death. The gold standard is a vital registration system that provides a complete record of all births and deaths (100% coverage) and that includes a medically certified cause of death.

Achieving the gold standard may not be attainable in most developing countries for the foreseeable future. However, there are possibilities for improvement in the relatively short term. For example, countries such as India and China have introduced sample registration systems (SRS) which have been shown to work effectively. In the near future, packages such as Sample Vital Registration with Verbal Autopsy (SAVVY) could rapidly improve knowledge about basic health statistics in a population. Demographic Surveillance Systems (DSS) offer another data source for continuous surveillance of births and cause-specific mortality. Novel approaches use a hybrid set of consolidated methods based on demographic surveillance, sample registration and the periodic use of sample cause of death modules using verbal autopsy within household surveys in countries with low levels of medical certification of cause of death.

Population-based surveys

The gold standard is a well-integrated, demand driven survey programme, that is part of a national health information and statistical systems and generates essential high quality information on population health and socio-economic status on a regular basis. As such, national surveys become a major national planning and evaluation instrument. The surveys could be part of international survey programmes or be national surveys. It is important however that international standards and norms are adhered to.

Recently, population-based surveys have been the vehicle for biological and clinical data collection (health examination surveys), providing much more accurate and reliable data on health outcomes than self-reports. A substantial number of countries, especially in Latin America and Asia, also conduct national household surveys on health. By linking surveys focused on health with those directed to other issues such as living standards, education or employment, it is possible to generate important information on the links between health and socio-economic determinants.

Standards for consent and confidentiality are provided by the OECD Guidelines on the Protection of Privacy and Transborder Flows of Personal Data (http://www.oecd.org/document/18/0,2340,en_2649_34255_1815186_1_1_1_1,00.html). These apply to data collected from all sources (i.e. including from censuses, civil registration, surveys, health services and research). Standards are provided for limiting the collection of data to that which is relevant, specifying the purpose of the data at the time that data are collected, limiting the use to those specified at the time of collection, assuring the security of personal data, disclosure of the existence of personal data to those concerned, access to personal data by those concerned, and accountability of a data controller for compliance with these principles.

Health services based information

There are a wide variety of health services based data: facility-based data on morbidity and mortality among those using services; types of services delivered, drugs and commodities provided; information on the availability and quality of services; financial and management (e.g. human resource, logistics) information. The HMN Framework classifies these data into individual health status records, health service reports and administrative records.

Health and disease records include individual health (e.g. growth monitoring, antenatal, delivery outcome) and disease (consultation, discharge) records routinely produced by health workers as well as by special disease registries (e.g. for cancer). One of the most important

functions of these records is to support the quality and continuity of care of individual patients. Essential information recorded on a patient chart or patient-retained "health passport" informs decision making and delivery of services on subsequent visits.

Health and disease records also include reports of notifiable conditions -- diseases or health events of such priority and public health significance that they require enhanced reporting through surveillance systems and an immediate public health response. The 2005 revision of the International Health Regulations (IHR) called for all WHO member countries to report to WHO any cases of poliomyelitis due to wild-type poliovirus, human influenza caused by a new subtype and severe acute respiratory syndrome (SARS). In addition, countries should report any cases of cholera, pneumonic plague, yellow fever, viral haemorrhagic fevers (Ebola, Lassa, Marburg), West Nile fever and other diseases that are of special national or regional concern (e.g. dengue fever, Rift Valley fever, and meningococcal disease) if these cases are of serious public health impact and there is a significant risk of international spread. The full list of diseases warranting prompt notification varies from one country to another depending upon the epidemiological setting and the resources available. Integrated Disease Surveillance and Response (IDSR) is a strategy of the World Health Organization African Regional Office (WHO AFRO) which has encouraged and supported member countries to strengthen surveillance for

- epidemic prone diseases (including cholera, dysentery, measles, meningitis, plague, rabies/animal bite, relapsing fever, typhoid fever and yellow fever) and
- diseases targeted for eradication / elimination (AFP, neonatal tetanus, dracunculiasis, and leprosy)

as well as other diseases of public health importance. Integration of reporting for disease surveillance and monitoring of focussed public health programs reduces the burden on those completing as well as those reviewing reports and increases the likelihood that the information will be acted upon by general purpose health staff.

For acute communicable diseases, a sound surveillance system is able to rapidly detect events, manage outbreaks, support response and document outcomes. It requires practical and widely known case definitions, timely and complete reporting, adequate communication capability, quality assured laboratory services, qualified and motivated personnel (for reporting, data management, laboratory confirmation, analysis, and outbreak response). Public health monitoring and response is aided by mapping of health risks, populations at risk and health services.

Service records capture information on the numbers of clients provided with various services and the drugs and commodities consumed. To the extent possible, the HIS should capture service statistics from the private sector as well as communities and civil society organizations.

A related component of health service information concerns the quality, availability, logistics and financing of health service inputs and key health services. This includes information on the density and distribution of health facilities, human resources for health, drugs and other core commodities and key services.

Health Accounts

For purposes of managing the health services, data on financing come routinely from the financial management information system. For purposes of policy development and strategic planning, expenditure information is compiled using the national health accounts methodology. National health accounts provide information on the amount of financial resources for health, and the flow of these resources across the health system. Breakdown by private vs. public

sector is important. Disaggregating by major disease or health programme area is desirable but may not be possible. At the sub-national levels, budget information is needed as a minimum; information on actual expenditure is what is really useful.

Criteria for assessment of data sources

The following section describes the assessment criteria and standards for each data source. A set of common principles applies: core procedures to ensure data quality need to be implemented, such as standard definitions, appropriate data collection methods, meta-data and data audit trail, use of routine procedures to correct bias and confounding, primary data available. Each data collection method will be assessed against core dimensions of data collection platforms, i.e., contents, capacity, practices, dissemination, and integration.

- Contents
 - Events or measures of public health importance identified explicitly and captured by the data source
 - Data elements defined (e.g., case definitions of notifiable conditions), and definitions consistent with global standards (i.e., HMN standards TBD)
 - Appropriate data collection method used
 - Cost efficiency and effectiveness issues considered.
- Capacity & practices
 - Country capacity exists to collect the data and manage and analyse the results.
 - Standards applied for data collection.
 - Documentation available, accessible and of high quality.
- Dissemination
 - Analysis of results available and disseminated.
 - Micro data available for public access.
 - Meta data available.
- Integration & use
 - The number of reports required and surveys conducted is kept to an optimal level through agreements on indicators and harmonized design of formats and questionnaires
 - Results from different data collection methods compared.
 - Appropriate data collection methods used for demographic, health and socioeconomic data collection (poverty monitoring) and to provide denominators for estimating of need and coverage.

III. Data sources

A. Census

Core dimensions	Items	Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
III.A.1 Contents	1.1 Mortality questions on the last census Note: This question is not applicable if vital registration covers at least 90% of deaths	Questions on recent household deaths as well as questions for indirectly estimating both child mortality and adult mortality	Questions on recent household deaths as well as questions for indirectly estimating either child mortality or adult mortality	Questions on recent household death or questions for indirect estimating either child mortality or adult mortality	No recent mortality questions	
III.A.2 Capacity & practices	2.1 The country has adequate capacity to (1) implement data collection, (2) process the data and (3) analyze the data	Adequate capacity for all 3	Adequate capacity for 2 of the 3	Adequate capacity for only 1 of the 3	Adequate capacity for none of the 3	
	2.2 A census was carried out in the last ten years and results have been published or are likely to be published in the next 5 years	Yes			No	
	2.3 Census sample re-interview has been completed and a written report is available and widely distributed	Re-interview undertaken and report is available on the web	Re-interview undertaken and printed report is available	Re-interview undertaken but no report available	No re-interview undertaken	
III.A.3 Dissemination	3.1 Report including descriptive statistics (age, sex, residence by smallest administrative level) from the most recent census are available and widely distributed (on line or with paper copy)	All districts have immediate access	All provinces have immediate access	Central health officials have immediate access	Not available	
	3.2 Lag between the time that descriptive statistics (age, sex, residence by enumeration area) were last published and the time that the data were collected	Less than 2 years	2 or 3 years	4 or 5	No census results available for at least 10 years (if so, skip all subsequent questions on the census)	
	3.3 Accurate population projections by age and sex are available for small areas (districts or below) for the current year	Accurate projections are available for the smallest administrative level	Accurate projections are available for districts	Accurate projections are available for provinces/regions	No projections for current year or projections are not felt to be accurate	
	3.4 Microdata are available for public access	Available on request	Available on request with restrictions		Not available	
III.A.4 Integration and use	4.1 Census projections are used for the estimation of coverage and planning of health services	Projections used by most sub-districts	Projections used by most districts	Projections used at national +/- provincial levels	Population projections are not used for health	

B. Vital statistics

Core dimensions	Items	Highly adequate	Adequate	present but not adequate	not adequate at all	Score
		3	2	1	0	
III.B.1 Contents	1.1 Is there a reliable source of nationwide vital statistics: civil registration vs. sample registration system (SRS) vs. demographic surveillance systems (DSS)?	Civil registration	Sample registration system	Demographic surveillance systems	There is no reliable source	
	1.2 Coverage of vital registration of deaths (in percent)	90% or more	70 - 89%	50 - 69%	<50%	
	1.3 Cause of death information is recorded on the death registration form	Always - compulsory by law	Sample registration system	Sometimes	Never	
III.B.2 Capacity & practices	2.1 The country has adequate capacity to (1) implement data collection, (2) process the data and (3) analyze the data from vital registration or SRS or DSS	Adequate capacity for all 3	Adequate capacity for 2 of the 3	Adequate capacity for only 1 of the 3	Adequate capacity for none of the 3	
	2.2 Frequency of the assessment of completeness of vital registration	Every year	Every 2-4 years	Every 5 years	Never	
	2.3 International Statistical Classification of Diseases and Related Health Problems (ICD) is currently in use Note: not applicable if there is no cause of death registration	ICD-10 detailed	Tabulation List ICD10	ICD-9	No ICD used or ICD 8 or earlier	
	2.4 Proportion of all deaths coded to ill defined causes (garbage codes) - in percent Note: this question is not applicable if there is no cause of death registration	<5%	5-10%	11-19%	20% or more or no cause of death registration	
	2.5 Published statistics from vital statistics (VR) or SRS are disaggregated by (1) sex, (2) age, and (3) geographic region (or urban / rural) Note: not applicable if no VR or SRS	All 3	2 of 3	1 of 3	None of 3 or no cause of death registration	
	2.6 Sample registration system (SRS) developed and generating timely and accurate data Note: not applicable if no SRS	Nationally representative	Sample registration system	Partially representative	None	
	2.7 Demographic surveillance system (DSS) sites developed and generating timely and accurate data Note: not applicable if no DSS	Nationally representative	Partially representative (at least 1 urban and 2 rural sites)	Non-representative	None	
	2.8 Verbal autopsy (VA) tool Note: not applicable if no DSS or SRS	VA tool validated; questionnaire publicly available and consistent with intl stds	VA tool validated	VA not validated	No verbal autopsy used by SRS and/or DSS	

III.B.3 Dissemination	3.1 Lag between the time that statistics from VR / SRS / DSS were last published and the time that the data were collected Note: not applicable if no VR or SRS or DSS	Less than 3 years	3 years	4 or 5 years	More than 5 years or statistics not published or no VR and no SRS and no DSS	
III.B.4 Integration and Use	4.1 Information from VR / SRS / DSS on (1) mortality rates and (2) causes of death is used for national and sub-national analyses Note: not applicable if no VR or SRS or DSS	Both mortality rates and cause of death information are used	1 of 2 used		Not used or statistics not published or no VR and no SRS and no DSS	


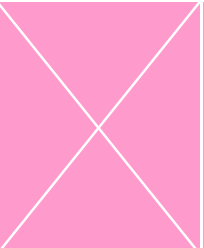
C. Population-based surveys

Core dimensions	Items	Highly adequate	Adequate	present but not adequate	not adequate at all	Score
		3	2	1	0	
III.C.1 Contents	1.1 In the last five years, a nationally representative survey has measured the percentage of the relevant population receiving key maternal and child health services (family planning, antenatal care, professionally attended deliveries, immunization)	Yes			No	
	1.2 In the last five years, a nationally representative survey has provided sufficiently precise and accurate estimates of infant and under-five mortality.	Yes			No	
	1.3 In the last five years, nationally representative population-based survey(s) have measured the prevalence of some priority non-communicable diseases/health problems (e.g. disability, mental illness, hypertension, diabetes, accidents, violence) and leading risk factors (e.g. smoking, drug use, diet, physical inactivity)	Yes, nationally representative surveys have measured biomarkers and at least three priority non-communicable diseases/health conditions or risk factors	Surveys have not measured any additional biomarkers but have measured the prevalence of at least one priority non-communicable disease/health problem or risk factor	In the last five years, population-based surveys have not measured the prevalence of any priority non-communicable disease/health problem or risk factor	No population-based surveys have been organized in the past five years	
III.C.2 Capacity & practices	2.1 The country has adequate capacity to (1) conduct household surveys (including sample design and field work), (2) process the data and (3) analyze the data	Adequate capacity for all 3	Adequate capacity for 2 of the 3	Adequate capacity for only 1 of the 3	Adequate capacity for none of the 3	
	2.2 Surveys follow international standards for consent, confidentiality and access to personal data (see OECD Guidelines on the Protection of Privacy)	Yes			No	
	2.3 The data allow disaggregation by age, sex and geographical regions (urban/rural, first administrative level)	All three	Two	One	None	

	2.4 The data allow disaggregation by socio-economic status: a) wealth and b) education	Yes, both	Publicly available	Only by education	No	
III.C.3 Dissemination	3.1 Metadata (design, sample implementation, questionnaires) are available for recent surveys	Publicly available	Available on request	Available on request with restrictions	Not available	
	3.2 Microdata are available from recent surveys	Available on request	Available on request with restrictions	Present, but not adequate	Not available	
III.C.4 Integration and use	4.1 There are meetings and a multi-year plan to coordinate the timing, key variables measured and funding of nationally representative population-based surveys which measure health indicators	Yes, coordination mechanism and plan coordinates all nationally representative surveys	Coordination group and long-term plan coordinate > 75% of nationally representative household surveys	Plan exists but is incomplete and/or coordination group is unable to effectively coordinate surveys	Neither a coordination group nor a long-term plan exist	
	4.2 The health and statistical constituencies in the country work together closely on survey design, implementation and data analysis and use	Highly adequate	Adequate	Present, but not adequate	Not adequate at all	

D. Health and disease records (including disease surveillance systems)

Core dimensions	Items	Highly adequate	Adequate	present but not adequate	not adequate at all	Score
		3	2	1	0	
III.D.1 Contents	1.1 For each of the key epidemic prone diseases and diseases targeted for eradication / elimination (see text) appropriate case definitions have been established and cases can be reported on the current reporting format	True for all key epidemic prone diseases and diseases targeted for eradication / elimination	True for all except one or two key epidemic prone diseases and diseases targeted for eradication / elimination	There are 3 or more key diseases for which case definitions remain to be established or for which the reporting form is not adequate	No system for notification or a system which fails to report on most of the key diseases	
	1.2 For health conditions of substantial importance other than in 1.1 above, a measurement / assessment strategy exists and is reflected in appropriate plans, tools, supporting structures, and assignments of responsibility	True for all leading causes of morbidity, mortality, and disability	True for several major conditions of public health importance; plans exist for extending coverage	True for one to several prototypes, and plans exist to discuss how to extend to at least one more public health problem	No good prototype currently exists	
	1.3 Mapping of public health risks, populations at risk and health resources (facilities, labs, health workers)	Maps are up-to-date and comprehensive and capacity exists to promptly add new features	Maps are up-to-date and reasonably comprehensive	Mapping of only a few public health risks or resources	No mapping of public health risks or services	

III.D.2 Capacity & practices	2.1 The country has adequate capacity to (1) diagnose and record cases of notifiable diseases, (2) report and transmit timely and complete data on these disease (3) analyze and act upon the data for outbreak response and planning of public health interventions	Adequate capacity for all 3	Adequate capacity for 2 of the 3	Adequate capacity for only 1 of the 3	Adequate capacity for none of the 3	
	2.2 Percentage of health workers making primary diagnoses who can correctly cite the case definitions of the majority of notifiable diseases	90% or more	75% to 89%	25% to 74%	< 25%	
	2.3 Percentage of health facilities submitting weekly or monthly surveillance reports on time to the district level	90% or more	75% to 89%	25% to 74%	< 25%	
	2.4 Percentage of districts submitting weekly or monthly surveillance reports on time to the next higher level	90% or more	75% to 89%	25% to 74%	< 25%	
	2.5 Proportion of investigated outbreaks with laboratory results	90% or more	75% to 89%	25% to 74%	< 25%	
	2.6 Individual patient records (patient charts or patient-retained "health passports") support quality and continuity of care	Patient records are almost always completed adequately and can be retrieved for almost all patients	Records are usually completed adequately and can be retrieved for the majority of patients in time to promptly inform clinical decision making	Essential patient information is often not recorded and/or records cannot be retrieved for most patients	No system of patient charts or health passports in most health facilities	
	2.7 International Statistical Classification of Diseases and Related Health Problems (ICD) is currently used for reporting hospital discharge diagnoses Note: not applicable if No ICD coding of discharge diagnoses	ICD-10 detailed	Tabulation List ICD10	ICD-9	No ICD used or ICD 8 or earlier	
III.D.3 Dissemination	3.1 Surveillance data are disseminated and fed back through regularly published weekly, monthly or quarterly bulletins	Bulletin produced regularly during last year and available at all district health offices		Bulletin not produced regularly during the last year or not distributed to districts	No bulletin produced	
III.D.4 Integration & use	4.1 Integration of reporting for disease surveillance and other focused public health programs (e.g. maternal care, family planning, growth monitoring,...)	A single form is used for notification of key diseases. Reporting of other public health programs is also well integrated	Although there are a number of reporting forms, there is good coordination and efforts to integrate the reporting requirements of public health programs		Health workers and managers face a heavy burden completing and reviewing separate reports for numerous public health programs	

	4.2 Proportion of epidemics detected at regional or national levels through analysis of surveillance data from districts and that were missed by the district level	At least 90% of epidemics noted at regional or national levels are first detected at district level	At least 75% of epidemics noted at regional or national levels are first detected at district level		More than 25%	
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E. Health service records

Core dimensions	Items	Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
III.E.1 Contents	1.1 There is a health services based information system that brings together data from all public and private facilities	Yes, it covers both public and private facilities	Integrated but covers few private facilities	Covers few private facilities (e.g. only not-for-profit)	No data from private facilities	
	1.2 There is a systematic approach to evaluating the quality of services provided by health facilities. This includes both a) systematic standardized supervision with reporting of findings to district and national levels; and b) a health facility survey of all facilities or of a nationally representative sample at least once each 5 years	There is both systematic standardized supervision with reporting and a nationally representative health facility survey	There has been at least one nationally representative health facility survey in the last 5 years	There is information on quality of services but only from a convenience sample of health facilities	Records of findings from structured supervision or health facility surveys are not available	
III.E.2 Capacity & practices	2.1 The health information system has a cadre of trained health information specialists who have at least two years of training and are placed at the district level	At least 75% of districts	10% to 74% of districts	1% to 9% of districts	Not in any district	
	2.2 Health workers in clinics receive regular training in health information, which is either integrated into continuing education or through special workshops	Most health workers received training in the last 5 years	25% to 49% of health workers trained in the last 5 years	5% to 24% of health workers trained in the last 5 year	Less than 5% of health workers trained	
	2.3 There are mechanisms in place at national and sub-national levels for supervision and feedback on information practices	Highly adequate	Adequate	Present, but not adequate	Not adequate at all	
	2.4 There is a mechanism in place from district up through national level to verify completeness and consistency of data from facilities	Highly adequate	Adequate	Present, but not adequate	Not adequate at all	
	2.5 Population projections based upon census statistics are used to calculate coverage rates (e.g. for immunization) at district level	At least 90% of districts	50% to 89% of districts	25% to 49% of districts	Less than 25% of districts	
III.E.3 Dissemination	3.1 When was the last time that an annual summary of health service statistics was published with statistics disaggregated by major administrative region?	Less than 2 years ago	2-3 years ago	4-5 years ago	6 years ago or more	

	3.2 Districts or similar administrative units compile their own monthly, and annual summary reports, disaggregated by health facility	Highly adequate	Adequate	Present, but not adequate	Not adequate at all	
III.E.4 Integration and use	4.1 Vertical reporting systems such as those for tuberculosis and vaccination communicate well with the general health service reporting system	Highly adequate	Adequate	Present, but not adequate	Not adequate at all	
	4.2 Managers and analysts at national and sub-national levels frequently use findings from surveys, vital registration or DSS to assess the validity of clinic-based data	Highly adequate	Adequate	Present, but not adequate	Not adequate at all	
	4.3 The data derived from health service records are used to estimate coverage with key services such as antenatal care (ANC), delivery with a skilled attendant and immunization	Yes, always	Yes, sometimes	Occasionally	Never	

F. Administrative records

1. Database/mapping of infrastructure and health services

Core dimensions	Items	Highly adequate	Adequate	present but not adequate	not adequate at all	Score
		3	2	1	0	
III.F.1 Contents	1.1 There is a national roster of public and private sector health facilities. Each health facility has been assigned a unique identifier code that permits data on facilities to be merged	Yes	There is a database of <i>public</i> health facilities with a coding system that permits integrated data management	X	No	
	1.2 Global Positioning Satellite (GPS) coordinates are included in the facility database for the majority of facilities	True for 90% or more of public and private facilities	True for 90% or more of public facilities	True for <90% of public facilities	Not adequate at all	
III.F.2 Capacity & practices	2.1 There are human resources and equipment for maintaining and updating the database and maps	Highly adequate	Adequate	Present, but not adequate	Not adequate at all	
	2.2 The national database of facilities was updated no less than:	Less than 2 years ago	2 - 3 years ago	More than 3 years ago	Do not have a national database	
III.F.3 Dissemination	3.1 Maps are available in most districts showing the location of health infrastructure, health staff and key health services	Highly adequate	Adequate	Present, but not adequate	Not adequate at all	
III.F.4 Integration and use	4.1 Managers and analysts at national and district levels commonly evaluate physical access to services by linking information about the location of health facilities and health services to the distribution of the population	Highly adequate	Adequate	Present, but not adequate	Not adequate at all	

2. Database of human resources

Core dimensions	Items	Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
III.F.1 Contents (continued)	1.4 There is a national human resources (HR) database that tracks the number of health professionals by major professional category working in either the public or the private sector	Yes, the national HR database tracks numbers of health professionals by professional category in both the public and private sectors.	The national HR database tracks numbers by professional category but only those working in the public sector	The national HR database fails to provide statistics disaggregated by professional category	No national HR database	
	1.5 There is a national database that tracks the annual numbers graduating from all health training institutions	Yes	X	Numbers graduating from certain health training institutions (e.g. nursing; private institutions) are not tracked	No	
III.F.2 Capacity and practices (continued)	2.3 There are human resources for maintaining and updating the national HR database	Highly adequate	Adequate	Present, but not adequate	Not adequate at all	
	2.4 The national HR database statistics on the number of public sector health professionals was last updated no more than:	0-1 year ago	2-3 years ago	4-5 years ago	6 years ago or more	

3. Information on financing and expenditures for health services

Core dimensions	Items	Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
III.F.1 Contents (continued)	1.6 Financial records are available on general government expenditures on health, private expenditures on health (and their components) and external expenditure on health	All components, public and private	Only public and external expenditures	Only public expenditures	No system or incomplete	
	1.7 There is a system for tracking budgets and expenditures from all sources of finance (general government including social security and local government, donors, health insurance, out-of-pocket) disaggregated by sub national / district level	All sources of finance are disaggregated by sub national / district level	Sources other than out-of-pocket (government including social security and local government, donors, health insurance) by sub national level	Government budget/expenditure plus at least one more source such as donors but only at national level	No tracking or only tracking of national government expenditure	

III.F.2 Capacity and practices (continued)	2.5 Adequate numbers of qualified, long-term staff are regularly devoted to work on National Health Accounts (NHA) (whether or not employed by the Ministry of Health) Note: not applicable if no NHA conducted	Yes	Adequate numbers and skills but staff are not employed long-term by any in-country agency or are not regularly devoted to work on NHA	Adequate numbers but in need of external technical support	Ad hoc staff chosen when activity takes place	
	2.6 Periodicity and timeliness of routine National Health Accounts. Note: not applicable if no NHA conducted	Estimates every year with one year lag	Estimates every year with 2 year lag	Erratic	No	
	2.7 NHA routinely provides information on the following 4 classifications - sources, agents, providers, functions Note: not applicable if no NHA conducted	All four	Any 3	Any 2	1 only	
	2.8 NHA provides information on health expenditure by major diseases, health program areas, geographical areas and/or and target populations (according to major policy concerns) Note: not applicable if no NHA conducted	Health expenditure information is available for at least 2 major disease programs and another area of policy concern	Health expenditure information is available for at least 1 major disease program and another area of policy concern	Estimates are available of expenditure on some areas of policy concern but they exclude some important sources of finance (e.g. out-of-pocket)	None	
III.F.3 Dissemination (continued)	3.2 NHA findings are widely and easily accessible Note: not applicable if no NHA conducted	NHA findings have been widely disseminated and are cited in a document that is accessible on a website	NHA findings have been disseminated to the public	NHA findings are available within the agency but have not been widely disseminated	Written report on NHA findings not available	
III.F.4 Integration and use (continued)	4.2 NHA has been used for policy formulation and resource allocation Note: not applicable if no NHA conducted	There is at least one major policy document that has been substantially influenced by or cites prominently NHA findings	At least some findings from NHA have been used in budgeting and planning	Policy makers and other stakeholders are aware of the NHA findings but there is no evidence that these findings have shaped policy and planning	There is no evidence that policy makers are aware of NHA findings	

4. Information on equipment, supplies and commodities

Core dimensions	Items	Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
III.F.1 Contents (continued)	1.8 Each facility is required to report at least annually on the inventory and status of equipment and physical infrastructure	Yes			No	
	1.9 Each facility is required to report at least quarterly on its stock of health commodities (drugs, vaccines, contraceptives, other supplies)	Yes			No	
III.F.2 Capacity and practices (continued)	2.9 There are sufficient numbers of adequately skilled human resources for managing the logistics of equipment, supplies and commodities	Highly adequate	Adequate	Present, but not adequate	Not adequate at all	
	2.10 Periodicity and completeness of reporting on equipment and physical infrastructure	Complete quarterly reporting	Complete annual reporting	incomplete reporting	None	
	2.11 Periodicity and completeness of reporting on health commodities	Complete, monthly reporting	Complete, quarterly reporting	Incomplete reporting	None	
III.F.4 Integration and use (continued)	4.3 Are reporting systems for different commodities integrated?	Fully	Partially	Somewhat	All commodities separately reported	
	4.4 Do managers at national and sub-national levels routinely attempt to reconcile data on consumption of commodities with data on cases of disease reported?	Routine reconciliation, monthly	Occasional	Rarely	Never	

ASSESSING DATA MANAGEMENT

Countries should have a centralized data depository (preferably in electronic format) that brings together information for all parts of the health information system and that is available to all, ideally via the internet and the world wide web. The availability of such a depository facilitates cross-referencing of data among programmes, promotes adherence to standard definitions and methods, and helps reduce redundant and overlapping data collection. It also provides a forum to examine and understand data inconsistencies and to generate reconciliation between data reported through different systems.

IV. Data management

Items		Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
IV.A.1	There is a written set of procedures for data management including data collection, storage, cleaning, quality control, analysis, and presentation for target audiences, and these are implemented throughout the country	Yes, a written set of procedures exists including all the steps in data management and these are implemented throughout the country	Yes, a written set of data management procedures exists, but these are only partially implemented	Yes, a written set of data management procedures exists, but these are not implemented	No written procedures exist	
IV.A.2	The HIS unit at national level is running an integrated "data warehouse" containing data from all data sources (both population-based and facility-based sources including all key health programmes), and has a user-friendly reporting utility accessible to various user audiences	Yes, there is a data warehouse at national level with a user-friendly reporting utility accessible to all relevant government and international agencies	Yes, there is a data warehouse at national level but it has a limited reporting utility	Yes, there is a data warehouse at national level but it has no reporting utility	No national data warehouse exists	
IV.A.3	Sub national levels have a data warehouse equivalent to the national one and have a reporting utility accessible to various audiences	Yes, there is a data warehouse at sub national levels with a user-friendly reporting utility accessible to sub national levels including the district level	Yes, there is a data warehouse at sub national levels but it has a limited reporting utility	Yes, there is a data warehouse at national level but it has no reporting utility	No sub national data warehouse exists	
IV.A.4	A "metadata dictionary" exists which provides data variable definitions as well as their use in indicators, specification of data collection method, periodicity, geographic designations, analysis techniques used and possible biases	Yes, there is a metadata dictionary which provides common data element definitions as well as specification of other essential information about the data	Yes, there is a metadata dictionary but with a slightly incomplete set of definitions and specifications	Yes, there is a metadata dictionary but with very incomplete set of definitions and specifications	No metadata dictionary exists	

IV.A.5	Identifier codes are available for health facilities and administrative geographic units (e.g. province, district, municipality, etc.) to facilitate merging of multiple databases from different sources	The same Identifier codes are used in different databases or a complete relational table is available to merge them	Similar identifier codes are used in different databases but some work should be done to merge them	Identifier codes are available but do not match between different databases	Not available	
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ASSESSING INFORMATION PRODUCTS

The health information system should aim to have accurate and reliable data available for the key domains and for a select set of core indicators within each domain. Most indicators are estimated based on empirical data sources. Therefore, it is important to assess the strength of the source data and the statistical techniques and estimation methods used to generate the indicator. Building upon the Data Quality Assessment Framework (DQAF) used by IMF, the following elements are assessed:

- Quality assessment criteria:
 - Timeliness: recent data is made available shortly after completion of data collection or within agreed time frame
 - Periodicity (frequency): follows internationally accepted standards about intervals between data collection efforts
 - Consistency and revisions: the data points are consistent within a dataset and over time, and with other major data sets; revisions follow a regular, well-established and transparent schedule
 - Representativeness: the source data adequately represent the population and relevant sub-populations
 - Disaggregation: the indicator should be available by major stratifiers, notably sex, age, socio-economic status, major geographic or administrative region, and ethnicity, all as appropriate.
 - Estimation methods and statistical techniques: the estimation method, including adjustments, data transformation, and analytical methods follows sound statistical procedures and is transparent.

NOTE:

This assessment tool examines 15 selected indicators covering the three domains of health information (see Figure 1 on page 13) and largely reflective of MDG indicators. However, countries may add to or replace these indicators with ones more relevant to their situation, then apply the same set of criteria to assess such indicators.


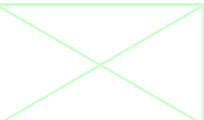
V. Information products

A. Health status indicators

Indicators	Quality assessment criteria	Results	Highly adequate	Adequate	present but not adequate	not adequate at all	Score
			3	2	1	0	
Mortality							
1. Under five mortality (all cause)	V.A.1.1 Data collection method	Method used to collect the most recent major data point	Vital registration of at least 90% of under-five deaths	Birth history from household survey or sample registration system	Other methods (such as indirect ones, recent deaths) from household survey or census	No data	
	V.A.1.2 Timeliness	For the most recently published estimate, how many years ago were the data collected?	0-2 years	3-5 years	6-9 years	10 years or more	
	V.A.1.3 Periodicity	How many times were data collected in last 10 years?	Three or more	Two	One	None	
	V.A.1.4 Consistency	Data points consistent over time and between sources during last decade	No major discrepancies	A few discrepancies	Multiple discrepancies	Not applicable	
	V.A.1.5 Representativeness	Coverage of data upon which the most recently reported estimate is based	All deaths (>90%)	Sample of deaths	Local studies	Not applicable	
	V.A.1.6 Disaggregation	Most recent data point disaggregated by demographic characteristics (e.g. sex and age) socioeconomic status (e.g. wealth or occupation or education of their parent) and by locality (e.g., urban-rural or major administrative region)	All three	Two	One	None	
	V.A.1.7 Estimation methods	In country estimates use transparent, well-established methods	Yes	X	X	No	
2. Adult mortality (all cause)	V.A.2.1 Data collection method	Method used to collect the most recent major data point	Vital registration of at least 90% of deaths	Sample vital registration	Direct methods from household survey or censuses (such as sibling history, recent deaths)	No data	
	V.A.2.2 Timeliness	For the most recently published estimate, how many years ago were the data collected	0-2 years	3-5 years	6-9 years	10 years or more	

	V.A.2.3 Periodicity	Number of data collection rounds in last decade	Three or more	Two	One	No data	
	V.A.2.4 Consistency	Data points in last decade consistent over time	No major discrepancies	A few discrepancies	Multiple discrepancies	Not applicable	
	V.A.2.5 Representativeness	Coverage of data upon which the most recently reported estimate is based	All (>90%) deaths	Sample of deaths	Local studies	No data	
	V.A.2.6 Disaggregation	Most recent data point disaggregated by demographic variables (age and sex), socio-economic status (e.g. by wealth quintiles, level of education, or occupations) and by locality (e.g. urban/rural, major administrative regions)	All three	Two	One	None	
	V.A.2.7 Estimation methods	In country estimates use transparent, well-established methods	Yes			None	
3. Maternal mortality	V.A.3.1 Data collection method	Data collection method for most recent data point	Vital registration of at least 90% of deaths and with good medical certification of cause of death	Sample vital registration with verbal autopsy	Direct methods from household survey or censuses (such as sibling history, recent deaths with verbal autopsy)	No data	
	V.A.3.2 Timeliness	For the most recently published estimate, how many years ago were the data collected	0-2 years	3 -5 years	6 - 9 years	10 years or more	
	V.A.3.3 Periodicity	Number of data collection rounds in last decade	Three or more	Two	One	No data	
	V.A.3.4 Consistency	Data points in last decade consistent over time	No major discrepancies	A few discrepancies	Multiple discrepancies	Not applicable	
	V.A.3.5 Representativeness	Coverage of data upon which the most recently reported estimate is based	All deaths	Sample of deaths	Local studies	No data	
	V.A.3.6 Disaggregation	Most recent data point disaggregated by demographic variables (age), socio-economic status (e.g. by wealth quintiles, level of education, and occupations) and by locality (e.g. urban/rural, major administrative regions)	All three	Two	One	None	
	V.A.3.7 Estimation methods	In country estimates use transparent, well-established methods	Yes			None	

Morbidity

4. HIV prevalence	V.A.4.1 Data collection method	Methods used to collect the most recent data point					
		1. If generalized epidemic;	1. General population survey + ANC surveillance;	1. ANC surveillance;	HIV case reporting	Otherwise	
		2. If concentrated epidemic;	2. High risk population surveillance with random sampling	2. High risk population surveillance with purposive sampling	HIV case reporting	Otherwise	
	V.A.4.2 Timeliness	For the most recently published estimate, how many years ago were the data collected	< 2 years	2 years	3- 4 years	5 or more years	
	V.A.4.3 Periodicity	How many times was it measured in the last 5 years?	5	3-4	2	1 or none	
	V.A.4.4 Consistency	Data points and trends in last 5 years consistent	No major discrepancies	A few discrepancies	Multiple discrepancies	Not applicable	
	V.A.4.5 Representativeness	Coverage of data upon which the most recently reported estimate is based					
		1. If generalized epidemic;	1. <i>Nationally representative survey + both urban & rural ANC clinics;</i>	1. Both <i>urban & rural</i> ANC clinics	1. Inadequate sample of clinics	Otherwise	
		2. If concentrated epidemic	2. <i>All major high risk populations with random sampling</i>	2. <i>At least one major high risk population in multiple locations</i>	2. One high risk population in one location	Otherwise	
	V.A.4.6 Disaggregation	Recent estimates are disaggregated by demographic characteristics (e.g. sex and age), socioeconomic status (e.g. wealth or occupation or education) and by locality (e.g. urban-rural, major administrative region or geographical region)	All three -- specifically, prevalence among 15-24 year olds is estimated with an adequate sample size	Two	One	None	
5. Underweight in children (<59 months or <36 months)	V.A.5.1 Data collection method	Method used to collect the data for the most recent estimate	Population based survey with anthropometry			none	

	V.A.5.2 Timeliness	For the most recently published estimate, how many years ago were the data collected	0-2 years	3-5 years	6-9 years	10 years +	
	V.A.5.3 Periodicity	How many times was it measured in last decade?	3 or more	2	1	None	
	V.A.5.4 Consistency	Estimates in last decade consistent	No major discrepancies	A few discrepancies	Multiple discrepancies	Not applicable	
	V.A.5.5 Representativeness	Coverage of data upon which the most recently reported estimate is based	Nationally representative sample	X	Local studies	Otherwise	
	V.A.5.6 Disaggregation	Most recent data point disaggregated by demographic characteristics (e.g, sex and age), socioeconomic status (e.g, wealth or occupation or education of their parent) and by locality (e.g., urban-rural, major administrative region)	All three	Two	One	None	

B. Health system indicators

Indicators	Quality assessment criteria	Results	Highly adequate	Adequate	present but not adequate	not adequate at all	Score
			3	2	1	0	
6. Outpatient attendance	V.B.6.1 Data collection method	Methods use to collect and validate the information	Clinic reports are validated by reviewing records at a representative sample of health facilities	Clinic reports are reviewed at each level for completeness and consistency. Inconsistencies are investigated <i>ad hoc</i>	Clinic reports not validated. There is limited or no evaluation of completeness or reporting bias	None	
	V.B.6.2 Timeliness	For the most recently published data, how many months ago were the last data collected (typically from December of the year being reported)	0 - 11 months	12 - 17 months	18 - 29 months	30 months or more	
	V.B.6.3 Periodicity	How many times was it nationally published in last 5 years?	Five times	Three or more times	Once or twice	None	
	V.B.6.4 Consistency	Consistency over time and between clinic reports and sample clinic records	No major discrepancies	A few discrepancies	Multiple discrepancies	Not applicable	

	V.B.6.5 Representativeness / completeness	Most recent statistic includes data from (i) teaching hospitals; (ii) more than 90% of public and private sector health facilities	Yes	Based upon data from (i) teaching hospitals; and (ii) more than 90% of other public sector health facilities	Data exclude teaching hospitals and/or more than 10% of other public sector facilities (or completeness unknown)	Data exclude more than 25% of public sector facilities	
	V.B.6.6 Disaggregation - 1	Distinguishes curative consultations from visits solely for preventive services and initial visits from follow-up visits for the same illness	Distinguishes curative from preventive and initial from follow-up		Distinguishes curative from preventive but fails to distinguish initial from follow-up	Fails to distinguish	
	V.B.6.7 Disaggregation - 2	Statistics on curative consultations are disaggregated by disease	Yes			No	
	V.B.6.8 Disaggregation - 3	Most recent data point disaggregated by geographic region, sex and age for relevant indicators	All three	Two	One	No	
7. Measles coverage by 12 months of age	V.B.7.1 Data collection method - administrative statistics	Measles coverage can be estimated from routine administrative statistics submitted by at least 90% of immunizing health facilities. These statistics are systematically reviewed at each level for completeness and consistency and inconsistencies are investigated and corrected. To calculate coverage, reliable estimates of population are available	Yes. Administrative statistics are complete and quality control is good. Population denominators are based upon full (>90%) birth registration	Administrative statistics are evaluated for completeness and consistency; Population denominators are based upon population projections	There is little evaluation of the completeness or consistency of administrative statistics or they are submitted by less than 90% of relevant facilities or no population projections are available	Estimates of measles coverage based upon administrative statistics are not available	
	V.B.7.2 Data collection method - household survey statistics	Measles coverage has been measured by at least two nationally representative household surveys in the last five years and immunization cards were shown during each survey for at least 2/3 of children	Yes	In the last 5 years there has been one nationally representative household survey measuring measles coverage and for which cards were shown for at least 2/3 of children	During the household survey, immunization cards were shown for less than 2/3 of children	Coverage not measured by any national household survey in the last five years	
	V.B.7.3 Timeliness	For the most recently published estimate, how many months ago were the last data collected	0 - 11 months	12 - 17 months	18 - 29 months	30 months or more	

	V.B.7.4 Periodicity	How many times in the last 5 years was an annual estimate published based upon administrative statistics?	Five times	Three or more times	Once or twice	None	
	V.B.7.5 Consistency	Data points consistent between recent surveys and reports	No major discrepancies	A few discrepancies	Multiple discrepancies	Not applicable	
	V.B.7.6 Representativeness	Coverage of data upon which recent estimates were based	(i) Data from at least 90% of health facilities and outreach sites which immunize children including all major hospitals and both public and private sector; or (ii) Nationally representative household sample	Data from at least 80% of health facilities and outreach sites which immunize children	Data from less than 80% of health facilities and outreach sites which immunize children	Otherwise	
	V.B.7.7 Disaggregation	Most recent survey disaggregated by demographic characteristics (e.g. age and sex), socioeconomic status (e.g. wealth or occupation or education of their parent) and by geographical region (e.g., urban-rural, major administrative region)	All three (demographic, socio-economic and geographic characteristics)	Two of three	One of three	None	

8. Deliveries attended by skilled health professionals	V.B.8.1 Data collection method - administrative statistics	The percentage of deliveries attended by a skilled health professional can be estimated from routine administrative statistics submitted by at least 90% of relevant health facilities. These statistics are systematically reviewed at each level for completeness and consistency and inconsistencies are investigated and corrected. To calculate coverage, reliable estimates of population are available	Yes. Administrative statistics are complete (>90%) and quality control is good. Population denominators are based upon full (>90%) birth registration	Administrative statistics are evaluated for completeness and consistency; Population denominators are based upon population projections	There is little evaluation of the completeness or consistency of administrative statistics or they are submitted by less than 90% of relevant facilities or no population projections are available	The percentage of deliveries attended by a skilled health professional cannot be estimated from administrative statistics	
	V.B.8.2 Data collection method - household survey statistics	The percentage of deliveries attended by a skilled health professional has been measured by at least two nationally representative household surveys in the last five years	Yes. In the last 5 years there have been at least two nationally representative household surveys measuring coverage	In the last five years there has been one nationally representative household survey measuring coverage		No coverage estimate or estimate based upon a household survey from more than 5 years ago	

	V.B.8.3 Timeliness	For the most recently published estimate, how many months ago were the last data collected	0 - 11 months	12 - 17 months	18 - 59 months	60 months or more	
	V.B.8.4 Periodicity	How many times was it measured in last 10 years?	Three or more	Two	One	None	
	V.B.8.5 Consistency	Data points consistent between recent surveys and reports	No major discrepancies	A few discrepancies	Multiple discrepancies	Not applicable	
	V.B.8.6 Representativeness	Coverage of data upon which recent estimates were based	Data from at least 90% of professionally supervised deliveries and from complete (>90%) registration of births	Nationally representative household sample	Local studies; incomplete reporting on professionally supervised deliveries with limited or no evaluation of completeness	None	
	V.B.8.7 Disaggregation	Most recent estimate disaggregated by age, socioeconomic status (e.g. wealth or occupation or education of parent) and by geographical region of respondent / client	All three (demographic, socio-economic and geographic characteristics)	Two of three	One of three	None	
9. Tuberculosis (TB) treatment success rate under DOTS	V.B.9.1 Data collection method	Methods used to collect the most recent data	Clinic reports with evaluation of reporting rate	District reports with evaluation of reporting rate	National reports with limited evaluation of reporting bias	None	
	V.B.9.2 Timeliness	For the most recently published estimate, how many years ago were the data collected	1 year	2 years	3-4 years	5+	
	V.B.9.3 Periodicity	How many times was it measured in the last year? (should be quarterly)	4	X	< 4	None	
	V.B.9.4 Consistency	Trend in treatment success rate consistent since 1995	No major discrepancies	A few discrepancies	Multiple discrepancies	Not applicable	
	V.B.9.5 Representativeness	Coverage of data upon which last estimate is based -- % of sub national DOTS quarterly reports received by national TB programme in most recent year	Over 90%	75-89%	50-75%	Less than 50%	
	V.B.9.6 Disaggregation - 1	Most recent data point disaggregated by age, socioeconomic status (e.g. wealth or occupation or education) and by locality (e.g., urban-rural, major administrative region) of respondent / client	All 3 (demographic, socio-economic and geographic characteristics)	Any 2 of 3	Any 1 of 3	None	

	V.B.9.7 Disaggregation - 2	Most recent data point disaggregated by HIV status and by drug resistance	Disaggregated by both	Disaggregated by one of these		Neither	
10. Proportion of children (<59 months or <36 months) sleeping under insecticide treated bednets	V.B.10.1 Data collection method	Data collection method used for most recent data point	Household survey			None	
	V.B.10.2 Timeliness	Time lag since last data collection	0-1 years	2-3 years	4-5 years	none or >5 years	
	V.B.10.3 Periodicity	Number of data points available over past decade	Three or more	Two	One	None	
	V.B.10.4 Consistency	Data points consistent over time	No major discrepancies	A few discrepancies	Multiple discrepancies	Not applicable	
	V.B.10.5 Representativeness	Coverage of most recent data points	Nationally representative sample of households	Locally representative	Local studies	Otherwise	
	V.B.10.6 Disaggregation	By demographic characteristics, by socioeconomic status and by locality	All three	Two	One	None	

Indicators	Quality assessment criteria	Results	Highly adequate	Adequate	present but not adequate	not adequate at all	Score
			3	2	1	0	
11. General government expenditure on health (GGHE) per capita	V.B.11.1 Data collection & estimation	Data collection method	Data compiled using NHA methodology	Data compiled from administrative sources	Data imputed from secondary sources	No data	
	V.B.11.2 Timeliness	For the most recently published estimate, how many years ago were the data collected	Less than 1-year lag	2 year lag	3 year lag or more	No data	
	V.B.11.3 Periodicity	Periodicity	Yearly	Every 1-2 years	More than every 2 years	No data	
	V.B.11.4 Consistency	Consistent across components of the indicator and over time	Single source with no break in series	Various sources that are harmonized	Various sources that are not harmonized	None	

	V.B.11.5 Representativeness	Components represented	All components: Ministry of Health, other ministries and social security, regional and local governments, extra budgetary	Ministry of Health, sub-national governments and Social Security	Ministry of Health and as well as Social Security	Ministry of Health	
	V.B.11.6 Disaggregation - 1	General government expenditure available by district or subnational level	All components	Ministry of Health, sub-national governments and Social Security	Ministry of Health and as well as Social Security	Only Ministry of Health (or none)	
	V.B.11.7 Disaggregation - 2	Share of general government expenditure funded through external resources (if not relevant, 3 is given by default)	Disbursed external resources from multilateral, bilateral, private foundations, NGOs, others	Disbursed external resources from multilateral and bilateral	Committed external resources from multilateral and bilateral	None	
	V.B.11.8 Transparency		Data audit trail available	Replicable at 75%	Replicable at 50%	Not replicable	
12. Private expenditure on health per capita (out-of- pocket, private health insurance and NGO)	V.B.12.1 Data collection & estimation	Data collection over 5 years	Data compiled using NHA methodology	Data compiled using 1 household survey for out-of- pocket, a survey for at least one other component, and imputations for remaining components	Data compiled using 1 household survey for out-of- pocket and imputations for the other components	No data	
	V.B.12.2 Timeliness	Time lag between most recent national publication and the time that the data were collected	Less than 1 year lag	2 year lag	3- to 4-year lag	No data	
	V.B.12.3 Periodicity	Periodicity	Data for all components available yearly	All components surveyed at least once in last 5 years	Households surveyed at least once in last 5 years	No data	
	V.B.12.4 Consistency	Consistent across components of the indicator and over time	Single source with no break in series	Various sources that are harmonized	Various sources that are not harmonized	No data	
	V.B.12.5 Representativeness	Components represented in aggregated figure	All components: Household out-of- pocket, private insurance, NGOs, firms	Households and 2 other components	Households and 1 other component	No data	

	V.B.12.6 Disaggregation - 1	Private expenditure available by district	All components	Households and 2 other components	Households and 1 other component	No data	
	V.B.12.7 Disaggregation - 2	Tracking of private expenditure funded through external resources (if not relevant, 3 is given by default)	Disbursed external resources from multilateral, bilateral, private foundations, NGOs, others	Disbursed external resources from multilateral and bilateral	Committed external resources from multilateral and bilateral	No data	
	V.B.12.8 Transparency		Complete data audit trail available	Replicable at 75%	Replicable at 50%	Not replicable	

13. Density of health workforce (total and by professional category) by 1,000 population	V.B.13.1 Data collection method	Routine administrative records are validated with findings from a regularly conducted health facility survey/census, labour force survey and the population census	Population census, labour force surveys, health facility census/surveys and administrative records	Administrative records and either health facility census/surveys or labour force surveys	Only administrative records without validation by any census or survey	No data	
	V.B.13.2 Timeliness	For the most recently published estimate, how many years ago were the data collected	0-5 months	6-11 months	>12 months	No data	
	V.B.13.3 Periodicity	How many times was it measured in last 5 years?	5 or more	3-4	1-2	No data	
	V.B.13.4 Consistency	Variables and data definitions and classifications consistent over time and across sources	All sources are consistent. The variables have the same definitions / classification in all sources	Most of the sources are consistent. The variables have the same definitions / classification in most of the sources	Only some of the main sources are consistent	The main sources are not consistent. Variables definitions and classifications vary across sources	
	V.B.13.5 Disaggregation- 1	Categories of health workers (ISCO: International Standard Classification of Occupations)	>15 occupations or ISCO 4 digits or national equivalent	4-14 occupations or ISCO 3 digits or national equivalent	< 4 or ISCO 2 digits or national equivalent	Otherwise	
	V.B.13.6 Disaggregation-2	Most recent estimate disaggregated by (1) gender, (2) urban/rural, (3) major administrative areas and (4) public/private sector	The data allow disaggregation by all four variables	The data allow disaggregation by three variables (excluding public and private sector)	The data allow disaggregation by two variables (excluding public/private and urban/rural)	The data allow disaggregation only by gender or no disaggregation possible	

C. Risk factor indicators

Indicators	Source of Data	Results	Highly adequate	Adequate	present but not adequate	not adequate at all	Score
			3	2	1	0	
14. Smoking prevalence (15 years and older)	V.C.14.1 Data collection method	Data collection methods used for most recent data point	Population based survey with self report , daily smokers over previous month			No data	
	V.C.14.2 Timeliness	For the most recently published estimate, how many years ago were the data collected?	0-2 years	3-5 years	6 or more years	none	
	V.C.14.3 Periodicity	How many times was it measured in last 10 years?	Three or more	Two	One	None	
	V.C.14.4 Consistency	Data points consistent over time	No major discrepancies	A few discrepancies	Multiple discrepancies	Not applicable	
	V.C.14.5 Representativeness	Coverage of data upon which last estimates are based	Nationally representative sample	Suboptimal national sample	Local studies	Otherwise	
	V.C.14.6 Disaggregation	Most recent data point disaggregated by (1) demographic characteristics, (2) socioeconomic status and by (3) locality	All three	Two	One	None	
15. Condom use with higher risk sex	V.C.15.1 Data collection method	Survey with self reports and appropriate questions 1. If generalized HIV epidemic; 2. If concentrated HIV epidemic	Self reports with appropriate questions 1. General household survey 2. High risk populations	Self reports with non-standard questions 1. General household survey 2. High risk populations	1. Administrative (condom distribution) data 2. Little information on high risk populations	No estimate available	
	V.C.15.2 Timeliness	For the most recently published estimate, how many years ago were the data collected?	0-1 years	2-3 years	4 years or more	No data	
	V.C.15.3 Periodicity	Estimates based on new data points during five years	Three or more	Two	One	None	
	V.C.15.4 Consistency	Data service statistics and survey based data points	High	Moderate	Low	None	
	V.C.15.5 Representativeness	Type of sample upon which last estimates are based	Nationally representative with random sampling	Purposive or other non-random national sampling	Local studies	Otherwise	

	V.C.15.6 Disaggregation	Most recent data point disaggregated by (1) demographic characteristics, (2) socioeconomic status and by (3) locality	All three	Two	One	None	
16. Proportion of households using improved water supply (pipe borne or borehole or protected well)	V.C.16.1 Data collection method	Data collection method	Household survey	Administrative report	X	Otherwise	
	V.C.16.2 Timeliness	For the most recently published estimate, how many years ago were the data collected?	0-1 years	2-3 years	4 years or more	No data	
	V.C.16.3 Periodicity	Estimates based on new data points during five years	Three or more	Two	One	None	
	V.C.16.4 Consistency	Data points consistent over time and between sources during last decade	High	Moderate	Low	None	
	V.C.16.5 Representativeness	Sample general population or all major risk groups	Nationally representative with random sampling	Purposive or other non-random national sampling	Local studies	Otherwise	
	V.C.16.6 Disaggregation	Most recent data point disaggregated by (1) demographic characteristics, (2) socioeconomic status and by (3) locality	All three	Two	One	None	

ASSESSING DISSEMINATION AND USE

Data synthesis and use

Data by themselves do not always tell a straightforward story; meaning is acquired when they are analysed and interpreted. Data should be synthesized, analysed and interpreted within the overall context of the health systems functioning and of health intervention delivery. A critical aspect of analysis is the synthesis of data from multiple sources, examination of inconsistencies and contradictions, and summary into a consistent assessment of the health situation and trends. This includes the burden of disease, patterns of risk behaviour, health service coverage, and health system metrics.

Following the analysis stage comes use of the data for decision-making. Capacity for data analysis is often lacking at peripheral levels where the data are generated and the results need to be used for planning and management. Bringing together a comprehensive analysis of the health situation and trends with data on health inputs, such as health expenditure and health system characteristics, is particularly important. The development of such analytic capacity requires planning and investment.

Behavioural, organizational and environmental factors influence the extent to which information is used.⁷ Entry points for improving the use of data include:

- addressing behavioural constraints, for example, through the use of incentives for data use;
- providing a supportive organizational environment that puts a premium on the availability and use of data for decision-making;
- ensuring that data are relevant to strategic decision-making and to planning;
- engaging all key constituencies in determining what information to collect in order to ensure wide ownership and involvement;
- making maximum efforts to ensure confidence in the information's reliability and validity;
- avoiding offering too much information, with excessive detail and making sure that important aggregations are provided;
- providing essential disaggregations, such as health status by major measures of equity;
- customising data presentation to the needs of specific target audiences;
- ensuring timeliness of data.

An important function of the health information system is to bring together data production with data use. Users comprise those delivering care as well as those responsible for the management and planning of health programmes. More broadly, users include those financing health care programmes, both within the country (health and finance ministries) and external (donors, development banks and technical support agencies). Users of health-related data are not confined to health care professionals or statisticians. Indeed, decision-making around country health priorities must necessarily involve the wider community, including civil society as well as policy-makers at senior levels of government.

These different users of data have varying needs in terms of the level of detail and technical specificity required. Health care planners and managers who are responsible for tracking epidemiological trends and the response of the health care system, generally require more detailed data than policy-makers who need data for broader strategic decision-making. Thus, the health information system should present and disseminate data in appropriate formats for different audiences.

⁷ RHINO (2003) The Prism: Workshop paper September/October

VI. Dissemination and use

A. Analysis and use of information

Items		Highly adequate	Adequate	Present but not adequate	Not adequate at all	
		3	2	1	0	
VI.A.1	There is continual demand for good quality and timely health information—for example for results/performance-based budgeting	Yes, health information is continually demanded	Health information is demanded on an ad-hoc basis	Health information is seldom used	None	
VI.A.2	Senior managers and policy makers demand complete, timely, accurate, relevant and validated HIS information	Yes	Yes, but they do not have the skills to judge	Demand from managers is ad-hoc, usually as a result of external pressure (e.g. questions from politicians or the media)	Negligible demand from managers	
VI.A.3	Graphs are widely used to display information at sub national / district offices / health facilities	Yes	Up-to-date graphs are displayed, but poorly understood	Some graphs, but they are not up-to-date	No graphs	
VI.A.4	Maps are widely used to display information at sub national / district offices / health facilities	Yes	Up-to-date maps are displayed but poorly understood	Some maps, but they are not up-to-date	No maps	
VI.A.5	Central HIS Unit conducts in-depth data analysis that provides answers to important questions and identifies critical changes important for population health	Yes, strategic planning and policy development are regularly based on central HIS unit analytic reports	HIS unit regularly provides information but in-depth analysis from the unit does not regularly contribute to policy development and planning	HIS unit supplies information but not on a regular or timely basis. No in-depth analysis	No central HIS unit or there is an unit but it does not have this capacity	
VI.A.6	HIS data and indicators collected by any public agencies, are in principle regarded as belonging in the public domain, i.e. they should be available to all interested citizens	Public access and availability are guaranteed by law / regulations and fully implemented	Public access accepted in principle and largely implemented	Public access accepted in principle, but not implemented in practice	Access is strictly controlled	

B. Policy and advocacy

Items		Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
VI.B.1	HIS information is readily available in a written annual (or biannual) report that pulls together and analyzes critical health information from all subsystems	Yes	Report made but analysis weak	Report out of date and/or poor quality	No report	
VI.B.2	Integrated HIS summary reports covering (at least a minimum set of core indicators including of MDGs and global health partners (GHPs) where relevant) are distributed regularly to all relevant parties	Regular integrated reports at least annually to national and local relevant partners	Regular integrated reports at least annually, but distributed only to Ministry of Health	Occasional reports, but not annually	No integrated reports	
VI.B.3	The national "Under 5 mortality rate", "Maternal mortality ratio", "Immunization rate" and "HIV prevalence" are well known among politicians and media.	Yes	Known among health-focused policy/decision makers	Known by a few "specialists" only;	No	
VI.B.4	Policy and decision makers regularly use health information to evaluate performance and set policies on health.	Systematic use of HIS information, with most accepting the HIS information as reliable and valid.	HIS information used frequently, but with reservations or disagreements due to concerns about validity	HIS information used occasionally, but with clear reservations due to concerns about validity	No	

C. Planning and priority setting

Items		Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
VI.C.1	Health information (risk factors, systems, status) is demonstrably used in the planning process, e.g. for annual integrated development plans, medium-term expenditure frameworks, long-term strategic plans, and annual health sector reviews	Yes, systematically used with methods and targets aligned between different planning frameworks	Commonly used for "diagnostic" purposes to describe health problems / challenges, but no synchronised use of health information between different planning frameworks	Health information is used occasionally	Never used.	

VI.C.2	District health workers analyse all health statistics in their province / district, compare them with national benchmarks and act accordingly	Yes	Most health information is analysed by district health workers and any discordant activities are adjusted accordingly.	Health statistics are analysed and reported	No	
VI.C.3	All indicators in the national minimum core indicator set are linked to the relevant short (1 year), medium (3-5 years), and long-term (10-15 years) targets	All indicators have relevant targets	40-80% of indicators have targets	Under 40% of indicators have targets	No targets	

D. Resource allocation

Items		Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
VI.D.1	HIS information is widely used to set national resource allocations	The majority of targets/budget proposals are backed up by HIS information	Some targets/budget proposals are backed up by HIS information	Few targets/budget proposals are backed up by HIS information	None of the targets/budget proposals are backed up by HIS information	
VI.D.2	HIS information is widely used, by district and sub-national management teams to set resource allocation in the annual budget processes	The majority of targets/budget proposals are backed up by HIS information	Some targets/budget proposals are backed up by HIS information	Few targets/budget proposals are backed up by HIS information	None of the targets/budget proposals are backed up by HIS information	
VI.D.3	HIS information is used to advocate for equity and increased resources to disadvantaged groups and communities by e.g. documenting their disease burden and poor access to services	HIS information is systematically used to pursue equity	HIS information is regularly used to promote equity	HIS information is used for equity purposes on an ad-hoc basis	Not used for equity purposes	
VI.D.4	During the last 5 years, HIS information has resulted in significant changes in annual budgets and/or general resource allocation	All resource allocation (budgets, staff allocations) are based on HIS information, resulting in major shifts	Information-driven resource allocation adopted in principle, but not yet fully implemented;	Some shifts, but links to information not clear	Budgets are not information-driven	

E. Implementation & Action

Items		Highly adequate	Adequate	Present but not adequate	Not adequate at all	Score
		3	2	1	0	
VI.E.1	Managers at all levels use health information for local health service delivery management, planning and monitoring	Health information is used by managers at all levels for health service delivery management, planning and monitoring	X	Health Information is rarely used for management and monitoring, but no real planning done	All key decisions are centralized or HIS information is never used	
VI.E.2	Care providers at all levels use health information for local service delivery, planning and monitoring	Health information is used by care providers at all levels for health service delivery, planning and monitoring	X	Health Information is rarely used for service delivery and monitoring, but no real planning done	Care providers other than at Central level do not use health information for service delivery, planning and monitoring	
VI.E.3	Information on health risk factors are systematically used to advocate less-risk behaviour in the general public as well as in targeted vulnerable groups.	Such indicators are systematically used and tailored to fit the risk profile and situation facing each vulnerable group	Such indicators are regularly used, but generally not tailored to each vulnerable group	Only used on an ad-hoc basis	Not used	