MONITORING AND INDICATORS IN THE HEALTH SECTOR

TECHNICAL NOTE

2006

MONITORING AND INDICATORS IN THE HEALTH SECTOR

Technical Note

Technical Advisory Service
DANIDA   March 2006

Table of Contents

ABBREVIATIONS

AHSPR	Annual Health Service Progress Report (Uganda)
Danida	Danish International Development Assistance
DOTS	Directly Observed Treatment Short Course
FY	financial year
GAVI	Global Alliance for Vaccines and Immunisation
GFATM	Global Fund to Fight AIDS, TB and Malaria
GHP	global health partnership
HIS	health information system
HMN	Health Metrics Network
HQ	headquarters
HSPS	health sector programme support
MDG	Millennium Development Goal (of the United Nations)
NHA	national health accounts
PRS	poverty reduction strategy
SWAp	sector-wide approach
TB	tuberculosis
WHO	World Health Organisation

1. Introduction

This Note offers a brief introduction to indicators and monitoring tools relevant to the health sector in Danida programme countries. It is primarily aimed at supporting Danish representations and Danida HQ Departments responsible for preparing and managing Danish bilateral development assistance. The Note may also be of assistance to partner organisations, Danida-funded technical advisers, and consultants who assist in preparing and managing health sector programme support (HSPS).

The present Note should be read in conjunction with the technical note on "Monitoring at Programme and Project Level – General Issues", which presents definitions of relevant monitoring terms and explains important aspects of the monitoring challenge at the programeme and project level, including links between monitoring and the international agenda on ownership, alignment, hamonisation, and management for results. The terms and definitions used in the present Note correspond to those presented in the general note.

This Note contains a short background chapter on Danida's health sector programme support as well as on alignment and harmonisation issues in the health sector (Chapter 2). This is followed by a presentation of internationally defined goals, indicators and targets (Chapter 3). Chapter 4 outlines the objectives and indicators in Danida's health sector programme support. Chapters 5 and 6 concern the process of selecting health-sector indicators for monitoring purposes, and the strengths and weaknesses of different methods of health sector monitoring.

Inquiries and comments on this note may be sent to the contact person in the Technical Advisory Service, Senior Health Adviser, Jørn Heldrup (jorhel@um.dk).

2. Sector Background

Fundamentally, Danida's support for the health sector is governed by bilateral government agreements with a number of developing countries of programme cooperation (in Danida terminology so-called 'programme countries'). The main aid modality is known as 'health sector programme support' (HSPS) which, to a large extent, shares the vision, philosophy and strategic approach of what has come to be known as a Sector-Wide Approach (SWAp) to development assistance. HSPS includes both public and private actors, it is dynamic and process-oriented (acknowledging, for instance, that in some transitory situations HSPS components may have to resemble traditional projects). Finally, HSPS should not simply be equated with budget support alone. Danida's HSPS joins in collaborative efforts in support of national health sector programmes, working alongside other donors under the leadership of the national government.

The strategic approach pursued in Danida HSPS consists of securing national ownership, alignment, harmonisation, managing for results and accountability. The aim is always to assist programme countries in scaling up basic health interventions in the short term, within the given capacity of the health system, while simultaneously supporting efforts to enhance capacity in the medium term in a few critical areas in which Danida has comparative advantages, such as resource-based budgeting and planning, health management systems, mainstreaming of important cross-cutting issues, district capacity-building, human-resource development and pharmaceutical systems development.

All Danida health sector programme support (HSPS) is provided in countries with advanced national health sector programmes, thus giving rise to full alignment between the national health sector

programme and the HSPS as regards the objectives, sector monitoring and indicators. Moreover, Danida is supporting harmonisation efforts in all programme countries with respect to planning, budgetting, procurement, reviews, monitoring and evaluation of health sector development in the context of the national SWAp process. In this respect, Danida's monitoring of HSPS and each national health sector programme is based on the relevant national health information system (HIS), relying on its capacity to provide dependable data on a set of core health indicators that track the inputs, outputs and outcome of the health sector, thus overseeing the utilisation of available resources, including Danida's HSPS.

3. Internationally defined goals, indicators and targets

The Millennium Declaration of eight development goals (MDGs) has intensified international pressure to strengthen information systems in order to monitor 48 target indicators, 15 of which are directly related to health. The Human Development Report 2003 stressed the "unprecedented demand, [and] urgent opportunity" provided by the MDGs to strengthen statistical frameworks and build statistical capacity. According to the United Nations (UN) Millennium Project, "today's ad hoc international statistical efforts are unreliable — often duplicative, inconsistent, and burdensome to national governments".

The issue of health is strongly linked to poverty reduction and to long-term economic growth (MDG 1 – 'Eradicate extreme poverty and hunger'). In some low-income regions, especially Sub-Saharan Africa, the burden of disease imposes an immense drag on economic growth. Consequently, the health factor must be addressed in any comprehensive development strategy. The AIDS pandemic represents a unique challenge, as it has the potential to undermine Africa's development over the next generation (MDG 6).

The Danish development policy emphasises the linking of Danida's development assistance to national Poverty Reduction Strategies (PRS) and to the achievement of the UN Millennium Development Goals (MDGs). Therefore, Danida's specific monitoring requirements are subordinated to both national (including PRS) and international (MDG) monitoring requirements[1].

The following table lists the internationally defined MDGs, targets and indicators directly related to the health sector. The 15 health-related MDG indicators are a combination of *output & outcome indicators* as indicated in Table 1 below. Monitoring of Danida's health sector programme support must, as indicated above, relate to these goals, targets and indicators.

---

[1] For further elaboration on this issue, please refer to the general note 'Monitoring at Programme and Project Level – General Issues'.

Table 1: MDG Health goals, targets and indicators

	Goals and targets	Indicators
MDG 4	**Reduce child mortality**	
	Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate	• 13. Under-five mortality rate (outcome) • 14. Infant mortality rate (outcome) • 15. Proportion of one-year-old children immunized against measles (output)
MDG 5	**Improve maternal health**	
	Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio	• 16. Maternal mortality ratio (outcome) • 17. Proportion of births attended by skilled health personnel (output)
MDG 6	**Combat HIV/AIDS, malaria, and other diseases**	
	Target 7: Have halted by 2015 and begun to reverse the spread of HIV/AIDS	• 18. HIV prevalence among 15- to 24-year-old pregnant women (outcome) • 19. Condom use rate of the contraceptive prevalence rate (outcome) • 19a. Condom use at last high-risk sex (outcome) • 19b. Percentage of population aged 15-24 with comprehensive correct knowledge of HIV/AIDS (outcome) • 19c. Contraceptive prevalence rate (outcome) • 20. Ratio of school attendance of orphans to school attendance on non-orphans aged 10-14 (outcome)
	Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases	• 21. Prevalence and death rates associated with malaria (outcome) • 22. Proportion of population in malaria-risk areas using effective malaria prevention and treatment measures (outcome) • 23. Prevalence and death rates associated with tuberculosis (outcome) • 24. Proportion of tuberculosis cases detected and cured under directly observed treatment short course (DOTS) (output)

Although the MDGs have generally been endorsed as a framework for measuring development progress in the health sector, in practice, none of Danida's programme countries have sufficiently-developed health information systems to permit regular monitoring. For example, several MDG targets are worded in terms of reductions in child, maternal and cause-specific mortality, on which few developing countries are able to report. Where country data are available, these are often based on a variety of definitions, sources and methodologies, thus complicating comparability both between countries and over time. The challenge of assessing trends is particularly acute.

Reporting on progress towards achieving specified targets for each indicator has become more important with the introduction of performance-based disbursement in several international initiatives, such as GAVI and the Global Fund to fight AIDS, TB and Malaria (GFATM), the President's Emergency Plan for AIDS Relief, Roll Bank Malaria, and STOP TB. More resources, coupled with recognition of the complexity of health challenges and interventions, create a demand

for better data, which is essential to forestall serious risks of misguided interventions, wasted effort and resources.

Driven by demands for accountability and results-based disbursement, donor agencies and global health partnerships (GHPs) often support and implement their own data collection platforms. The result is separate and parallel mechanisms that respond to donor and GHP requirements rather than to the needs of national decision-makers.

Available data suggests that 73 countries are far behind in meeting the MDG targets for infant mortality, and 66 are far behind for meeting the MDG targets for child mortality according to data collected by the World Bank in 2005. The disease burden can be alleviated in line with the MDGs only if there is a concerted, global strategy of increasing the access to essential health services for the world's poor. On current trends, none of the Danida-supported programme countries in Sub-Saharan Africa receiving health sector programme support (Ghana, Kenya, Mozambique, Tanzania, Uganda and Zambia) are on track to reach the MDG health targets.

4. Objectives and indicators in Health Sector Programme Support

The introduction of Poverty Reduction Strategies (PRS) with agreed goals and indicators, reflecting the MDGs, is expected to facilitate improved dialogue with development partners in monitoring the impact of poverty reduction. Danida will adhere to the agreed core indicators in national poverty-reduction and health-sector strategies, and to the joint monitoring process of PRS impact and outcomes.

All Danida health sector programme support (HSPS) is provided in countries with advanced national health sector programmes, thus giving rise to full alignment between the national health sector programme and the HSPS as regards the objectives, sector monitoring and indicators. Moreover, Danida is supporting harmonisation efforts in all programme countries with respect to planning, budgetting, procurement, reviews, monitoring and evaluation of health sector development in the context of the national SWAp process. In this respect, Danida's monitoring of HSPS and each national health sector programme is based on the relevant national health information system (HIS), depending on its capacity to provide reliable data on a set of core health indicators that track the inputs, outputs and outcome of the health sector, thus overseeing the utilisation of available resources, including Danida's HSPS.

Given Danida's relatively limited financial and technical support for the health sector in each programme country, it is very difficult to attribute developments and performances of national health sector programmes to Danida-sponsored interventions. The direct result of possible Danida-earmarked support for development and introduction of new health management systems will most likely be reflected in increased capacity at the central and district level to plan, budget, implement, monitor and account for the use of available financial, physical and human resources. More Danida-specific indicators, related to earmarked support for capacity-building etc., will have to be identified on a case-by-case basis, depending on the focus of the Danida grant concerned (see Chapter 5 below).

5. The choice of indicators

Given the importance of the Poverty Reduction Strategy (PRS) and the health aspects of the Millennium Development Goals (MDGs) in development assistance, as well as the quest for harmonisation and alignment of goals and indicators in Danida's health sector programme support, in most countries, the indicators of Danida-sponsored achievements will be selected as a combination of indicators from the PRS, MDGs, national health sector programme and health sector capacity-building. In this context, it is important for Danida to support and secure consistency between indicators in the PRS, MDGs, national health sector programme and health sector capacity-building. This has already been achieved in Uganda.

A basic prerequisite of any national health sector programme is the ability to state unequivocally how much it will contribute to the reduction of child and maternal mortality, and what share of the national disease burden it seeks to address.

The health information system is part of both the health system and the wider statistical system. Accountability for health-related statistics is often distributed across various line ministries (e.g. ministries of employment, agriculture and education) or agencies. Countries vary in the extent to which there is good collaboration between ministries of health and national statistics offices, notwithstanding the central role of the ministry of health as a generator of data and, perhaps more importantly, as a primary user of data for public-health action.

At the level of individuals and communities, information is needed for effective clinical management and for assessing the extent to which services are meeting the needs and demands of communities (e.g. skilled birth attendance). At the level of the district, health information enables health planners and managers to take decisions regarding the effective functioning of health facilities and of the health system as a whole (e.g. measles vaccine coverage rate). At higher levels, health information is needed for strategic policy-making and resource allocation (e.g. trends in child and maternal mortality rates). Although the data requirements for patient care, system management and policy-making are somewhat different, they are linked along a continuum.

This continuum from patient care to strategic management implies that not everything needs to be known at every level of the system. The quantity and detail of data needed is generally greater at the lower levels of the system, where decisions are made on the care of individuals, than at the higher levels, where broader policy-making takes place. Too often, lower-level managers are required to report vast quantities of data to higher levels, but rarely receive any feedback. At the same time, information overload at the higher levels is such that the data are, in practice, seldom used effectively.

Data do not always tell a straightforward story by themselves, but take on meaning when analysed and interpreted. Data should be synthesised, analysed and interpreted within the overall context of the health system's functioning and delivery. A critical aspect of analysis is the synthesis of data from multiple sources, examination of inconsistencies and contradictions, and summarisation in terms of a consistent assessment of the health situation and trends.

From the perspective of contents and core indicators, the health information system should report on four major spheres of interest:

Determinants of health: these include socio-economic, environmental, behavioural and genetic determinants or risk factors, making up the contextual environments in which the health system operates. The stratification or disaggregation of variables in the other spheres by key stratifiers such as sex, socio-economic status, ethnic group and geographic location captures the distribution of health and health services in the population.

Health system: this includes **inputs** to the health system and related **processes**, including policy and organisation, health infrastructure, facilities and equipment, costs, human and financial resources, health information systems, and the performance or **outputs** of the health system in terms of quantity and quality of services.

Health-service coverage: the combination of health-service availability and utilisation determines the coverage of the health system in terms of delivering health interventions to the population (**outputs**).

Health status: this includes mortality, morbidity, disability and well-being. Health status variables depend on the coverage and efficacy of interventions, and on the determinants of health, which may have an influence on health **outcomes,** independent of the health service coverage.

A range of data generation methods are available, including health facility data, administrative returns, household surveys, censuses, vital registration, national health accounts and health research. Matching the data item or indicator to the most appropriate and cost-effective tool for generating it is an essential function of the health information system. There is no universal formula for a precise combination of data sources that will be optimal in every setting. Much depends on existing systems that are themselves the products of history and social development. In some settings, certain approaches will be absent or rudimentary; elsewhere they may exist, but require strengthening. The sequence of events in establishing or strengthening data-generation approaches will depend on existing capacity and resources. Vital registration systems cannot be established overnight, and the capacity to implement a household survey effectively needs to be built up gradually. The availability of appropriately trained human resources with analytical, numerical and statistical skills is critical.

The vast array of data to be generated by a health information system may appear overwhelming. However, from the viewpoint of policy-makers and planners, some types of information are more important than others. One function of the health information systems is to bring stakeholders together to identify the data that is critical for strategic decision-making and, therefore, must be available in a timely and reliable manner.

All countries should have a nationally defined minimum set of health-related indicators to be regularly used in national health planning, monitoring and evaluation. The reporting frequency may vary, depending on the type of indicators and the likelihood of change. Core indicators may include, but would not be limited to, those included in the MDGs. The precise list of indicators should respond to the epidemiological profile and development needs of each country.

The process of defining the core set of indicators needs to involve key national and international stakeholders in the country. The main challenge is to avoid an impractically long list of indicators, which easily arises from the highly diverse and specific demands of programmes. For several indicators, it is appropriate to set targets, either in line with international goals such as the MDGs or in line with national health sector plans.

Health Metrics Network (HMN) – launched in 2005 as a global health partnership to support developing countries in increasing the availability, quality and use of timely and accurate health information – has developed a list of 16 health indicators used for assessing the performance of national health information systems (HIS), see Table 2 below.

Table 2: HMN country HIS performance assessment indicators

Mortality
1. Child mortality (Probability of dying by age 5 years) (outcome)
2. Maternal mortality (outcome)
Morbidity
3. HIV prevalence (outcome)
4. TB incidence (outcome)
5. Underweight in children (outcome)
6. Obesity in adults (outcome)
Health Service
7. Measles coverage (output)
8. Skilled birth attendance (output)
9. TB treatment success rate under DOTS (output)
10. Proportion of children sleeping under insecticide treated bed nets (output)
11.General government expenditure on health per capita (input)
12. Private expenditure on health per capita (input)
13. Density of health workforce per 1,000 inhabitants (input)
14. Smoking prevalence (outcome)
15. Condom use at higher-risk sex (outcome)
16. Improved water supply (output)

Table 2 can be seen as a list of core health-sector indicators, the minimum to be used by countries to assess the performance of their health sector, covering the main spheres of health information (determinants, health-system inputs, processes and outputs, health-service coverage and quality, and health status). There is considerable overlap between the HMN assessment indicators and the health-related MDG indicators outlined in Table 1. In addition, HMN has suggested indicators related to health expenditure, health workforce and smoking, which are not included among the MDG indicators. Nutrition and water supply are covered by MDG 1 – 'Eradicate extreme poverty and hunger' and MDG 7 – 'Ensure environmental sustainability'.

Few Danida-supported programme countries have sufficiently-developed health information systems to permit regular monitoring of the above-mentioned indicators. Most developing countries rely on costly household surveys to obtain child and maternal mortality data. Reliable maternal mortality data can only be obtained through a national vital registration system[2] or through a census.

Reliable morbidity and mortality data related to HIV/AIDS, TB and malaria also require an effective national vital registration system or costly household surveys, which are usually undertaken every 3–5 years in Danida-supported programme countries.

In most of the countries receiving support, reliable data can be obtained with respect to: measles coverage; skilled birth attendance; TB treatment success rate under DOTS; general government expenditure on health per capita; density of health workforce per 1,000 inhabitants; and improved

---

[2] Data generation system that deals with basic human events, such as birth, mortality, marriage, and illness.

water supply on an annual basis. The indicators related to: underweight in children; obesity in adults; private expenditure on health per capita; smoking prevalence; and condom use at higher-risk sex can usually only be measured through household surveys.

The direct result of Danida's earmarked support for the development and introduction of new health management systems etc. will most likely be reflected in increased capacity at the central and district level to plan, budget, implement, monitor and account for the use of the available financial, physical and human resources. As an example, the agreed indicators for the monitoring of earmarked Danish support under the Uganda Health Sector Programme Support, Phase II, are presented in Annex 1.

6. Methods of health sector monitoring

Monitoring in health is conceptually and technically complex, requiring statistical, public-health and biomedical knowledge and expertise unique to each disease or programme area. Accurate measurement depends on the availability of disease-specific biometric tests, clinical diagnoses, population level and measurability of health services. Thus, different health statistics vary greatly in terms of reliability and validity of indicators, and feasibility and accuracy of measuring instruments.

Health information systems have evolved in an erratic, piecemeal fashion, shaped by administrative, economic, legal or donor pressures. This has resulted in fragmentation of health information systems, dispersal and dilution of responsibility, and competing interests of different actors from different sectors.

Health information systems are further fragmented by disease-specific programme demands, typically derived from donor requirements and international initiatives directed at specific areas, such as malaria, HIV/AIDS or tuberculosis. Thus, there are intense pressures for data to guide decisions about resource allocation. Health authorities risk being overwhelmed, as multiple and parallel information demands stretch their resources beyond limits. The fragility of health information systems is compounded by increasing demands for data coupled with pressures faced by all administrations to cut costs and increase efficiency.

In the context of health sector reform and decentralisation, health systems are managed as close to the population as possible, often at the district level, so as to be more responsive to the needs of the population. This shift in functions between the central and peripheral levels generates new information needs and calls for an in-depth restructuring of information systems, with changing data collection, processing, analysis, and dissemination requirements. Health sector reforms also face major challenges regarding standardisation and quality of information, which need to be addressed by the central level.

The vast array of information needs cannot be met by a single method of data collection. The most appropriate data source depends upon the information required, cost effectiveness of the method, human and technical capacity to collect, manage and disseminate the data, and time constraints of the data user. Broadly, data sources for health sector monitoring can be divided into two groups, 1) population-based information and 2) information derived from health-service provision. Population-based monitoring sources include census, vital registration, and population surveys. Information derived from health-service provision is obtained both from health-facility records and from non-health-facility records. Health-facility-based information includes disease surveillance (active and passive), service coverage statistics, and health-facility surveys. Non-health-facility-based

information may include financial records, national health accounts[3], human resources etc., from a range of public and private sources.

For each of the core health-sector indicators, a clear plan needs to be developed on how and how often to collect data for the indicator. In the context of indicators to monitor progress towards the MDGs, with specific goals for 2015, a ten-year plan needs to be developed with benchmarks in the years between 2005 and 2015.

For several indicators, multiple data-collection strategies may be pursued to obtain data and compute health statistics. For some indicators, one data collection strategy is clearly superior to another, either in terms of costs or result. For instance, maternal-mortality data by cause are best obtained from complete vital-registration systems, but if such data are not available, household surveys and censuses with questions about the survival of sisters can provide an estimate. For other indicators, it is necessary to combine the results from different methods of data collection to obtain health statistics. A good example is HIV prevalence among adults in countries with generalised epidemics. Antenatal clinic-based surveillance systems chart the trend be providing annual data on HIV prevalence among pregnant women, whereas nationally-representative household surveys with HIV testing serve to determine general HIV prevalence, as they provide much wider coverage of the country, including men and non-pregnant women. Technical expertise is needed to decide on the best data collection strategy for a given indicator.

7. Literature

This technical note is based on publications and website information from Danida, Health Metrics Network (HMN), OECD–DAC, World Bank & World Health Organization (WHO).

Recommended reading:
Monitoring at Programme and Project Level – General Issues. Copenhagen: Danish International Development Assistance, 2006.

Claeson M, Wagstaff A. The Millennium Development Goals for Health. Rising to the Challenges. Washington: The World Bank, 2004.

WHO. The World Health Report 2000. Health Systems: Improving Performance. Geneva: World Health Organization, 2000.

Lippeveld T et al. Design and implementation of health information systems. Geneva: WHO, 2000.

---

[3]National health accounts (NHA) can provide policy-makers with reliable information on the quantity of financial resources used for health, their sources and how they are used, in order to develop policies to enhance the performance of their health systems. If undertaken regularly, they reveal trends in health expenditure over time, an essential element in health-system monitoring and evaluation.

Annex I Uganda Health Sector Programme Support Phase II Indicators

The following indicators were monitored throughout the implementation of the Danida HSPS Phase II in Uganda (Baseline data established for FY 2002/03):

Component	Indicator	Actual score/baseline	Scoring system for indicators
Component Two: "Support to the Central Level"	Performance of Area Teams	**Score: 2** Average performance: 50% Estimate	Average performance at 100%: score 5 Average performance between 80-99%: score 4 Average performance between 60-79%: score 3 Average performance between 40-59%: score 2 Average performance below 40%: score 1
	District Performance – management and service delivery	**Score: 3** Average: 63.1% Refer District League table (AHSPR 2002/3)	Average performance at a total score of 80 and above: score 5 Average performance at a total score between 70-79: score 4 Average performance at a total score between 60-69: score 3 Average performance at a total score between 50-59: score 2 Average performance at a total score of 49 and below: score 1
Component Three: "Intensified provision of priority health interventions and capacity-building support to districts in Northern Uganda"	Performance of Area Teams	As above	As above
	District Performance – management and service delivery	As above	As above
	Completeness of HMIS Reporting	**Score: 4** Average: 86% Refer AHSPR 2002/3	100% complete: Score 5 75% to 99% complete: Score 4 50% to 74% complete: Score 3 25% to 49% complete: Score 2 1% to 24% complete: Score 1
	Timeliness of HMIS Reporting	**Score: 3** Average: 71% Refer AHSPR 2002/3	In time 100% of the time: Score 5 In time 75% to 99% of the time: Score 4 In time 50% to 74% of the time: Score 3 In time 25% to 49% of the time: Score 2 In time between 1% to 24% of the time: Score 1
Component Four: "Pharmaceutical Sector Support"	Timeliness of provision of drugs to districts:	**Score: 1** Refer AHSPR 2002/3	In time 100% of the time: Score 5 In time 75% to 99% of the time: Score 4 In time 50% to 74% of the time: Score 3 In time 25% to 49% of the time: Score 2 In time between 1% to 24% of the time: Score 1
	Availability of essential drugs at service delivery level	**Score: 2** Average: 33% Refer AHSPR 2002/3	All drugs available according to level: Score 5 Between 75% to 99% of drugs available: Score 4 Between 50% to 74% of drugs available: Score 3 Between 25% to 49% of drugs available: Score 2 Between 1% to 24% of drugs available: Score 1