HEALTH METRICS NETWORK

Cambodia Health Information System: Review and Assessment



HMN

Department of Planning and Health Information
Ministry of Health

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* Core indicators for NSDP 2006-2010 are based on the **CMDG,** but minor different targets in some indicators.

List of acronyms

CDC: Communicable Disease Control
CDHS: Cambodia Demographic and Health Survey
CIPS: Cambodia Inter-censal Population Survey
CSES: Cambodia Socio-economic survey
CMDG: Cambodia Millennium Development Goals
CNM: National Center for Malaria
DPHI: Department of Planning and Health Information
EPI: Expanded Program on Immunization
GMS: Greater Mekong Sub-Regions
MCH: Maternal and Child Health
NCHADS: National Center for HIV/AIDS, Dermatology and Sexually Transmitted Diseases
NHIS: National Health Information System
HMIS: Health Management Information System
NPRS: National Poverty Reduction Strategy
NSDP: National Strategic Development Plan 2006-2010
OPD: Out-patient department
OD: Operational district
PES: Post Enumeration Survey
RACHA/USAID: Reproductive and Child Health Alliance
URC/USAID: University Research Co.,LLC

List of organization in HIS Stakeholder working group

1- Department of Planning and Health Information, MoH
2- National Center for Maternal and Child Health
3- Communicable Disease Control Dept.
4- National Center for HIV/AIDS, Dermatology and STD
5- National Center for Tuberculosis (CENAT)
6- National Center for Malaria (CNM)
7- National Institute of Statistics, Ministry of Planning
8- Dept. of Local Administration (Civil registration), Ministry of Interior
9- National Institute of Public Health
10- WHO representative
11- UNICEF representative
12- UNFPA representative
13- Medicam representative*
14- RACHA (local NGOs)

* *Representative of local NGOs*

Coordinated by

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1- Background

Facing a growing demand for information necessary for assessing the health status of the country, in July 1992, the Ministry of Health established the HIS sub-committee (one of several sub-committee or working group for health), which composed of director of the Planning and Statistics Unit (now Dept. of Planning and Health Information), and concerned national programs (MCH, Tuberculosis, Malaria, EPI), head of municipal health department, a representative from MEDICAM (coordination group for medical NGOs working in Cambodia), a representative from WHO, and technical and financial support from AEDES/UNICEF (1).

A new national health information system (NHIS) was then developed by the sub-committee in 1993 to serve the needs of the country. It was then gradually implemented in a few provinces starting in May 1994. Complete nationwide coverage was achieved by February 1995. The NHIS collects data on routine health service activities and health problems reported from all levels of public health facilities (referral hospitals and health centers) in the national health care system. However, the NHIS does not cover data on logistics/administration, finance nor vital statistics. Data are disaggregated by age group and geographical location, sex information is available only for total outpatient consultation, in-patient discharges and lab results for malaria. The general objective of the HIS is to provide the Ministry of Health and different levels of the health system with reliable and timely information on health problems and health service activities for better planning and management of health services and intelligent decision-making.

Since its inception, the NHIS has undergone several revisions in 1996, 1999, and late 2003. The 1996 revision was required to make adjustments to the NHIS on the basis of the newly introduced health coverage plan, which defined the services to be delivered by each health facility on a geographic and population basis. The late 2003 revision was conducted to identify additional indicators required based on the capacity and the availability of health serviced delivered, and also removed unused indicators, for monitoring and evaluation by health facilities and the national programs. A hallmark of both the 1996 and 2003 revisions was the consultative and participatory approaches to revise the system, involving all key stakeholders.

However, a comprehensive assessment of the health information system has not yet been conducted. Therefore it is really a great opportunity for the Department of Planning and Health Information, Ministry of Health, Cambodia, with financial and technical support from the Health Metrics Network, to assess the country health information system using HMN tools to identify its strength and weakness. Moreover, the outputs of the assessment can be used for improving the current NHIS as well as mobilizing resources among stakeholders, in term of technical and financial investment, for the development of the HIS development plan (both short and medium term).

To raise awareness about the global movement for improving the country HIS, in which the HMN plays a big role as driving force (a catalytic funding), a key stakeholder; (though is was not yet officially established at that time) comprised of a representative from national programs (HIV/AIDS, Malaria, Maternal and Child Health), Departments from CDC, Preventive Medicine, Finance and Budget, Hospital Service, Drug and Food, National Institute of Public Health, a representative from Department of Local Administration/ Civil Registration (Ministry of

Interior), Census and Survey/National Institute of Statistics (Ministry of Planning), a representative from UNFPA, local NGOs (RACHA and URC), were invited to attend the first meeting on 2nd February 2006 aimed at introducing the Health Metrics Network, the components of the submitted proposal and the plan for the assessment of the country Health Information System using the HMN tools. Since then, the term of reference for the HIS stakeholder has been developed and finalized.

The HIS assessment workshop was successfully conducted on 18-20 October 2006 in Phnom Penh, capital city, with financial and technical supports from the HMN. Prior to the workshop, a meeting was convened by the project director to assign tasks and responsibilities among the organizers including, presented at that time, team of the HMN-HIS project, representative from department of budget and finance, the NIS/MoP, and MoI. Unfortunately, representatives from international agencies were not available due to their commitment for other activities. In addition, two consensus meetings among HIS stakeholders were held separately in Phnom Penh on 25 October and at Kampong Cham province on 15-16 November, 2006. The national dissemination workshop on the HIS Assessment Findings using the HMN tools was conducted on 26th January 2007 in Phnom Penh, chaired by H.E Professor Eng Huot, Secretary of State for Health, with the total of 99 participants attended from all levels: Provincial Health Directors and HIS staff in all 24 provinces and city, representatives of all national programs, concerned health departments, NIS/Ministry of Planning, Department of Local Administration/Ministry of Interior, and Health Partners (WHO, UNFPA, UNCEF, GTZ, Medicam, RHAC, and URC) .

Framework of the assessment

Six components of the HIS were assessed using the HMN tool, are as follows:

1- The HIS resources which covers:
   - a- policy and planning,
   - b- HIS institutions, human resource and financing
   - c- HIS infrastructure

2- Indicators

3- Data sources covering:
   - a- Census
   - b- Vital statistics
   - c- Population-based surveys
   - d- Health and disease records (including disease surveillance systems)
   - e- Health service records
   - f- Administrative records

4- Data management

5- Information products includes:
   - a- Health status indicators
   - b- Health system indicators
   - c- Risk factor indicators

6- Dissemination and use

a- Analysis and use of information
b- Policy and advocacy
c- Planning and priority setting
d- Resource allocation
e- Implementation and action

2. Context and resources

Country profile: Overview



Cambodia is an agriculture country located in Southeast Asia; it is bounded by Thailand to the west, Laos PDR and Thailand to the north and Vietnam to the east. It has a total land area of 181,035 square kilometers. The maximum extent of the country from the east to the west is approximately 580 kilometers; it extends for 450 kilometers from the north to the south.

The 1962 Census was the last official census to be conducted prior to 1998; it revealed a population of 5.7 million. The population census in 1998 recorded the number of the people in the country at 11,437,656 with an annual growth rate of 2.49 percent. The 1998 census showed that 51.8 percent of the population was female and 48.2 percent was male. In 2004, the total population was 13,09 millions with an annual growth rate of 1.81 percent (about 0.7 percent reduction since 1998), according to the Cambodia inter-censal population survey 2004 (2). A large proportion of the population, 85 percent, live in rural areas, and only 15 percent live in urban areas. The average size of the Cambodian household is 5.1. The total sex ratio is 93.5. The literacy rate among adults aged 15 and over is 73.6 percent, in which the male adult literacy rate (73.6%) is considerably higher than those of females (64.1%). Life expectancy at birth is 58 for

males and 64 for females (3). It is estimated that currently, approximately 34.7 per cent of the total population are living below the poverty line.

Health status:

There is marked improvement in health status recently. The latest Cambodia Demographic and Health Survey 2005 (CDHS) revealed the decrease of infant mortality rate from 95 per 1,000 live births in 2000 to 66 per 1000 live births in 2005, and the under five mortality rate from 124 to 83 in the same period (4). Yet, the maternal mortality ratio still remains unchanged with 472 per 100,000 live births which is comparable to the figure in 2000 (437 per 100,000 live births). The main causes of morbidity and mortality are mostly communicable diseases, including diarrhoea, acute respiratory infections (ARI), dengue haemorrhagic fever, malaria, tuberculosis, malnutrition, and vaccine-preventable diseases. HIV/AIDS posed a great serious public health concern since its generalized epidemic hit across the country with the highest sero-prevalence rates in Asia. Following a peak of 3% in 1998, sero-prevalence rates among adult population aged 15-49 declined to 1.9% in 2003 (HIV sentinel surveillance 2003-Ministry of Health/NCHADS) (5). The Demographic and Health Survey 2005 indicates that the sero-prevalence rate among adult population aged 15-49, both male and female, is 0.6%.

Cambodia is among the 22 countries in the world with a high burden of tuberculosis (TB). At present, the TB incidence rate of all forms is estimated at 508/100,000 inhabitants and that of smear-positive pulmonary form at 225/100,000 population, also among the highest in the Western Pacific Region (WPR). The death rate is 95 per 100,000 populations. The number of new tuberculosis cases detected at public health facilities nearly doubled over the last five years. The number of new TB cases of all types was 36,121 in 2005, which included 21,104 cases of smear positive pulmonary TB. The impact of HIV/AIDS on TB is currently enormous in Cambodia, resulting in the highest number of cases ever notified in NTP. Currently, the directly observed therapy short-course (DOTS) is implemented nationwide, and the cure rate remains high at 90 per cent in 2005 (6).
In October 2000, Cambodia was certified as polio free, with no cases of poliomyelitis reported since March 1997.

Malaria is a major cause of morbidity and mortality in all age groups, especially in socio-economically productive groups. The people affected by malaria are forest dwellers and migrant forest workers and gem miners. Currently, it is estimated that malaria incidence rate is 6/1,000 population, whereas the case fatality rate of severe cases is 10.45% in 2005 (6).
Despite marked progress made, the health status of the Cambodian people is still among the lowest in the region.

Health System

Cambodia started its health sector reform in 1991 under the Strengthening Health Systems Project. WHO played a critical role by providing supports in the reform. The reform composed of three phases: phase I covered the period 1991-1994 and Phase II 1995-1997. Phase III (1998-2000) is continuing under the title Health Sector Reform (7).

Prior to the 1995 Health Sector Reform, the government policy was to have a clinic in each commune, a hospital in each district capital and a provincial hospital in each provincial capital (Ministry of Health, 1995). However, that system did not meet the essential health needs of the population, as most clinics at commune levels were non-existent or had been demolished, staff were poorly skilled and motivated. At district levels, most of the hospitals functioned only as clinics, and only few district hospitals really provided referral services. Medical, surgical, and obstetrical emergencies could only be treated in provincial hospitals, in national hospitals, and in a limited number of district hospitals. In addition, there were neither a clear nor a complementary difference between the first level of care and the referral level. Moreover, the size of the population covered by clinics and hospitals was inappropriate (too large or too small).

In 1995 the Ministry of Health approved a new health system which aimed at improving and extending primary health care through "District-based health system" also known as operational district. Criteria for location of health facilities were redefined accordingly, as well as definition of a basic minimum package of health services to be delivered at each level. A district-based health system composed of three levels: the first level, the most peripheral was made up of operational district serving approximately 100,000 - 200,000 population, and consisted of a referral hospital and a network of health centers. Each health center covered the population of 8,000 to 12,000. The second level or intermediate level was made up of a provincial hospital and provincial health department. The third or central level consisted of Ministry of Health, national institutes, national hospitals, national programs, and training institutions.
As of 2006, there were eight national hospitals, 77 operational districts, 69 referral hospitals, and 972 health and 79 health posts.

National Health information system, (it is a health management information system)**,** was also then reconstructed in 1993 and implemented in 1994. The Ministry of Health considered the NHIS as a powerful tool for national, provincial, and district managers for priorities setting, planning (Annual Operational Plan: AOP), resource allocation, and monitoring and evaluation (Joint Annual Performance Review: a review process of health sector performance conducted by the MoH, with the involvement of national health programs and departments, health partners, community representatives, provincial governors, (see detailed above).
The main strengths of the NHIS lie in the following:

- Integration of nearly 20 recording and reporting systems into one system to prevent duplication and reduce staff workload
- Standardization of recording and reporting forms and definitions
- Simplicity and reliability, and
- Computerization (currently at all provinces and some districts)

However, some constraints facing the effective function of the national health information system still remain since the NHIS was first implemented. These are as follows:

- Low and irregular investment in HIS as compared to some national programs, as no specific line item of budget is dedicated to this area both at central and peripheral levels
- No policy on HIS (only guideline for instruction) neither HIS legislation
- Data quality (accuracy) is still a concern in a few health facilities
- Capacity of health staff for data analysis and interpretation is still limited

- Limited use of the HIS data in planning and monitoring of health service delivery
- High turnover of designated staff responsible for the HIS at provincial and district level, mainly due to lack of incentive/motivation
- Lack of technical assistance, particularly at lower levels
- Problems with the functioning of the HIS database (software and ITC), no IT staff at peripheral and
- Lack of information from the private and NGO sectors.

In addition, there is no written policy on the health information system, especially with regard to documentation of patient records and confidentiality.

2.1 Policy and planning

Results of Resources

Summary	Result
Policy and Planning	**Not adequate [35%]**
HIS institutions, human resources and financing	**Not adequate [38%]**
HIS Infrastructure	**Present but not adequate [50%]**
Overall	**Present but not adequate [40%]**

The overall score for resources, in four items; policy and planning, HIS institutions, human resources and financing, and HIS infrastructure, as shown in the summary table was 40% equivalent to "present but not adequate". Four items will be addressed in this sections as follows:

- **Legislation**: The National Assembly passed a Statistics Law in November 2005 which governs, as stated in Article 1, all statistical data collection, processing, compilation, analysis, publication and dissemination, in the Kingdom of Cambodia (7). Statistical data are collected from census (population, agricultural and establishment census), surveys, and government and non-government administrative data sources. By law, a Statistical Coordination Committee should be established as determined by Sub-Decree. The HIS framework was not clearly mentioned in the law nor was reporting of notifiable diseases. However, the Ministry of Interior is responsible for registration of births, marriages and deaths.
- **HIS strategic plan**: The Department of Planning and Health Information, MoH with technical support from the World Health Organization, WPRO, conducted a workshop in late 2005 on the development of the Cambodia HIS strategic plan 2006-2010. The workshop identified key priorities and developed a matrix that will from the basis for further development in line with the HMN framework.
- **HIS coordination committee**: as mentioned earlier prior to the restructuring of the NHIS of the Ministry of Health, a HIS sub-committee was established in the 1993. The committee played a main role as coordination body for the development of the new health information for the need of the country. However, the members of the committee were at

that time only representatives of health institutions (national health programs and concerned health departments). Since the implementation of the new HIS national wide in 1995, the function of the committee was gradually phased out, and only an ad hoc meetings were carried out. Currently, the Technical Working Group for Health (TWG-H), previously known as CoCom (Coordination committee) has reviewed all the MoH sub-committees and removed some of them, including the HIS-sub committee. Facing the requirement of the HMN as well as the need for improving the HIS (according to the HMN concept), an HIS Stakeholder working group was established under the lead of the Department of Planning and Health Information System (DPHI) (see page 2 for its members).

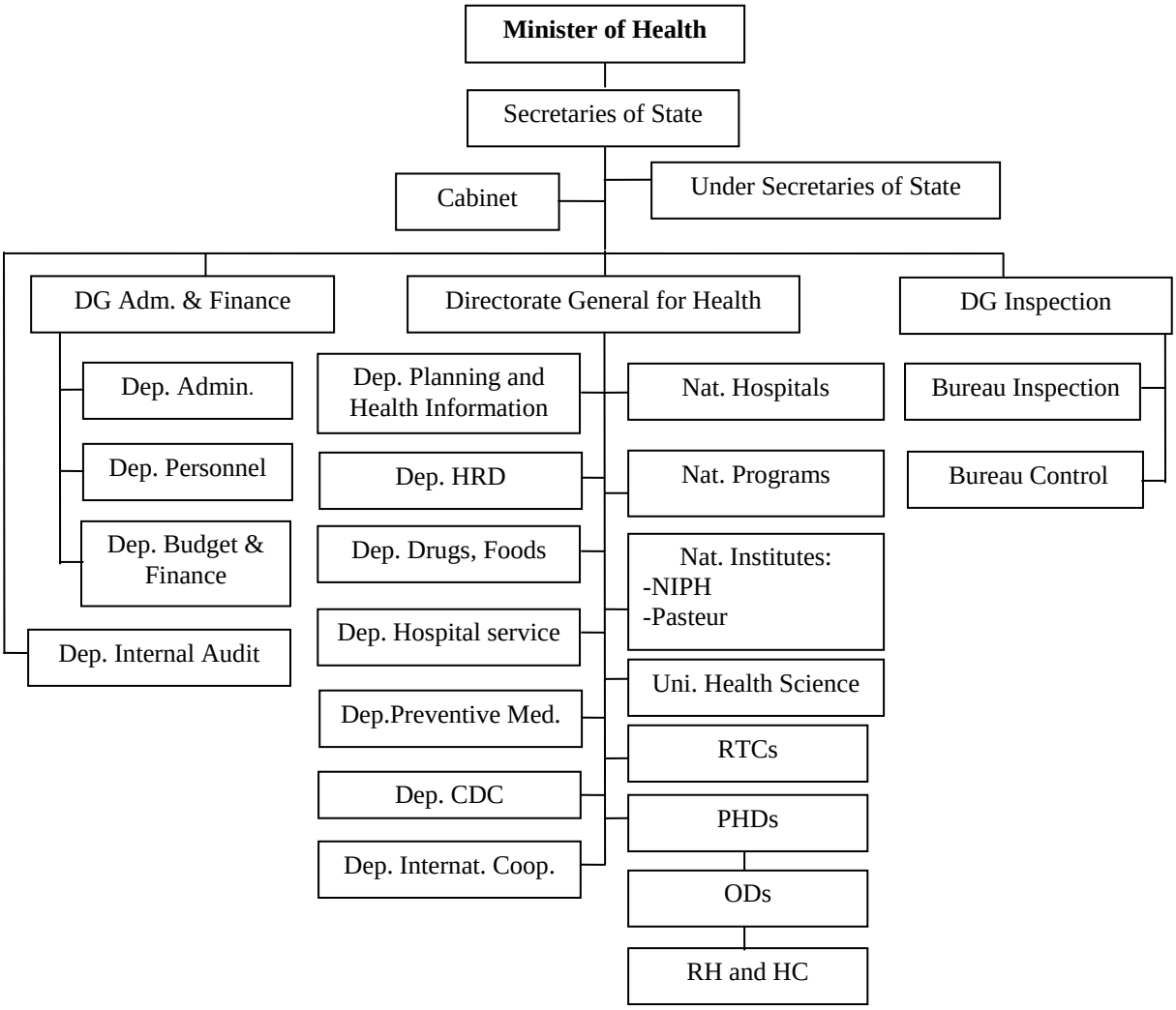
- **Promotion of information use culture**: Although there is no written policy promoting the information use so far, the DPHI of the Ministry of Health has developed HIS guidelines which emphasized the use of data for management, budgeting and resource allocation. In addition, under the Health Sector Support Project (HSSP-2003-2007), health information was used for developing the Annual Operational Plan (AOP) since 2003 and the Joint Annual Performance Review. However, data use needs to be further strengthened and promoted both at central and peripheral levels for better decision and interventions. More investment should be made in the National Health Information System, not just for monitoring and evaluation of sector performance.

2.2 HIS institutions, human resources and financing

Department of Planning and Health Information (DPHI) previously known as Bureau of Planning and Statistics, is under the Directorate General for Health. DPHI composes of three bureaus; i) Health Information (HIB), ii) Policy, Planning and Health Sector Reform, and iii) Health Economics and Financing. Health information, mainly from public health facilities, is managed by the HIB. Hospital service department also collects quarterly data (for limited information) from the private sectors (Clinics, Poly-clinics etc) in the capital city of Phnom Penh, using a paper-based format. However, most of the private sectors in Phnom Penh irregularly submit their reports and only for legal licensing or extension their services. In addition, data from those private facilities have not been used, nor has software been developed. The link of the HIB can be shown in the diagram of data transmission below:

-Human resource: Currently, there are thirteen staff working at the HIB, and most of them are medical staff. There are neither health information specialists nor epidemiologist/biostatisticians in this bureau. In addition, all staff have never been trained in health management information system. At each level of the system (health center, referral hospital, operational district and provincial health department offices) a designated health information staff is assigned to compile all data from health services records for the monthly report. At health center level, most of the chiefs of health centers are responsible for data collection and compilation as one of their tasks. These staff has only skills in data collection, and very few are able to perform basic analysis, presentation, mainly at central and provincial level. At health center, referral hospital, and district offices, data are compiled manually. Few operational districts with supports from local NGOs can access computers. Computerization, using Access software for data entry and analysis, is available only at central and provincial health department. Major concern facing at the

Organizational Structure of the Ministry of Health



CDC: Communicable disease control, HC: Health center, HRD: Human resource development, Internat. Coop: International Cooperation, NIPH: National institute of public health, OD: Operational district, PHD: Provincial health department, RH: Referral hospital, RTC: Regional training centers.
Note: this organization is still in process for approval from Minister of Health.

moment is the high turnover of designated HIS staff due to poor salary, lack of incentive coupled with the perception that HIS is not an attractive and income-making job. Maintain the HIS software [Access program] from being damaged or cracked which resulted in loss of data and delay the transmission of report.

-Financing for National Health Information System (NHIS):
Unlike other areas especially some national programs where funds come from multiple sources (government, bilateral, donor agencies, etc…), NHIS has low and irregular investment despite

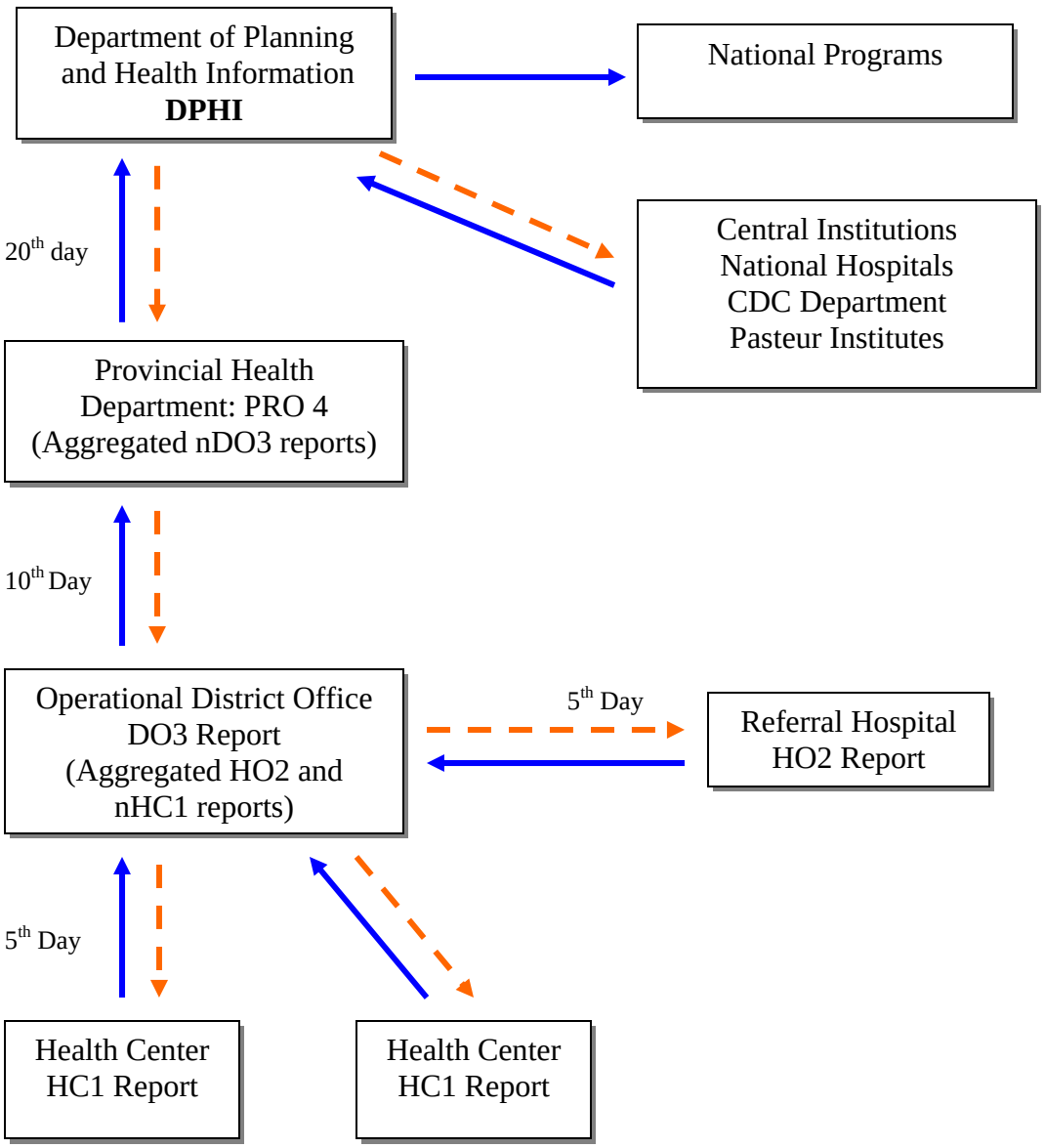
the need for quality data. Since its implementation in 1995, the NHIS faced irregularity of financial support and technical assistance, especially from 1997 till 2003, which hampered expected improvement of the NHIS as well as capacity building of health information staff. In August 2002, the Ministry of Health launched the National Health Sector Strategic Plan for the five year periods from 2003-2007 in which funds are provide from the government and the Health Sector Support Project (a five-year project 2003-2005, jointly funded by the MOH, ADB, World Bank, DFID, and UNFPA). However, only a small proportion of funds, are allocated to the NHIS mainly for monitoring and evaluation.

2.3 HIS infrastructure

- **Information-Communication and Technology (ICT):** Use of technology for the NHIS is still limited. HIS computerization using Access software, developed by a local consultant, is available at central and provincial levels. Few districts can access computers usually in areas with financial support from bilateral-donors or local non-governmental organizations (NGOs). It is planned that with funds from the Health Sector Support Project (HSSP), each district (excluding districts which are not under the HSSP in 03 provinces; municipal health department in Phnom Penh, Siem Reab and Kandal provinces) would be equipped with a computer and a printer by the end of 2007. No computers are available at health centers and no plans exist currently since the majority of health centers don't have electricity. At the health center, the chief of health center manually collects data from all registers (Out-patient consultations, in-patient discharge for form district hospital, antenatal and post-natal cares, birth spacing, birth delivery, vaccination, vitamin A program, deworming activities, dental activities, leprosy, and lab results for malaria), and compile a paper form for monthly report (HC1 form) then sends it to the operational district office (ODO). Referral hospitals also manually compile all data on discharged patients into the HO2 form and then send to operational district office. The operational district office aggregates all HC1 and HO2 within the catchment area into the DO3 form, then sends it to the technical bureau of the provincial health department (PHD). The PHD, by using Access software program, aggregates all the OD3 forms from all operational districts within its catchments areas into PRO4 form, then the completed-PRO4 in hardcopy is sent to the Health Information Bureau of the Department of Planning and Health Information, where it is entered into an Access database. Currently, few provinces are able to send electronic data to HIB using flash-drives, usually when the health information staff come to Phnom Penh for meeting or workshop (see transmission of NHIS below). The International Classification of Diseases (ICD) has not yet been introduced into the NHIS.
- **Internet and website:** Access to internet is extremely limited in most provinces, however, few provinces are able to use email, but the speed of network is slow and frustrating. At central Department of Planning and Health Information, only director and deputy director can access email, and the internet. Internet access is not available at the HIB. Recently, the Ministry of Health (MoH) with financial support from the University Research Co., LLC (URC) of the USAID have launched the MoH website: http://www.moh.gov.kh.
- **Electricity** is available to all provinces, however electricity interruption occurs frequently at provinces in remote areas and some operational districts. Electricity is not available in most health centers.

- **Vehicles**: no specific vehicles (car) are earmarked for HIS staff either at central or peripheral levels to conduct tasks such as monitoring, supervision, conducting workshop, training etc. HIS are required to share vehicles with other units, programs, sometimes leading to delays in implementation of activities.
- **Road condition**: Recently, the government has made great effort for the improvement of transport infrastructure, so people can get access to health facilities. Major roads from central city of Phnom Penh to most of provinces has been built, however, those leading to rural or remote areas (especially from villages to health centers or referral hospitals) are still poor or in bad condition especially during the rainy season, which hampers access to health care facilities.

Transmission of NHIS



Period for reporting: Monthly reports generated by health centers (form HC1) and referral hospitals (form HO2) are required to be sent to operational district offices by the fifth day of the following month. The aggregated DO3 will be reached provincial health department on the tenth day and then the aggregated PRO4 will be sent to DPHI on the 20th of the following month.

Report:
Feedback:

3-Essential Health Indicators

Summary	Result
Indicators	Adequate

Indicators are scored 62% equivalent to adequate.

The Ministry of Health has developed its own core indicators based on the six key areas of work (Health service delivery, Behavior change and communication, Quality improvement, Human resource development, Health financing and Institutional development) of the Health Strategic Plan 2003-2007. These core indicators were developed by the active involvements from all concerned health institutions/department, national programs and health partners (particularly main donors). These indicators were used to assess the performance of the health sector on an annual basis since 2003, known as the Joint Annual Performance Review (JAPR), in which the Department of Planning and Health Information was assigned to take lead in the review process. Following the election in 1998, several strategies have been developed by the Royal Government of Cambodia aiming at reducing poverty and inequality, improving economic growth and the quality of life of the Cambodian people (3). These strategies include the *Triangle Strategy* for the sustainable development of Cambodia, the National Poverty Reduction Strategies 2003-2005 (NPRS), the Cambodian Millennium Development Goals 2003 (CMDG), and the National Strategic Development Plan 2006-2010 (NSDP). In response to the needs for the development of these strategies mainly the NPRS, the CMDG and the NSDP, all line ministries were requested to provide their core indicators through the consultative process (See list of CMDG 2005 update Annex 3).

4- Data sources

Results of Data Sources

Data Source	Contents	Capacity & Practices	Dissemination	Integration and use	Total
Census	Present but not adequate	Present but not adequate	Present but not adequate	Not adequate	Present but not adequate
Vital statistics	Adequate	Not adequate	Not functional	Adequate	Present but not adequate
Population-based surveys	Adequate	Adequate	Highly adequate	Not adequate	Adequate
Health and disease records (incl. disease surveillance sys.)	Present but not adequate	Present but not adequate	Not functional	Present but not adequate	Present but not adequate
Health service records	Not adequate	Not adequate	Present but not adequate	Present but not adequate	Present but not adequate
Administrative records	Adequate	Present but not adequate	Adequate	Present but not adequate	Adequate

4.1. Census

In 1998, the National Institute of Statistics (NIS), belonging to the Ministry of Planning, performed the last National Census. Overall score: 44%, equivalent to present but not adequate.

a) **Contents**: there were mortality questions in the last Census. In 2004 an Inter-census Survey was conducted by NIS. In November 2004, the preliminary findings were published: growth rate 1.81, estimated population 13.091 (against an estimated population of 13.807 in January 2005 based on 1998 projections), subdivided in 2.530.000 households with a 5.1 average people each, urban population up to 15%. The data collected helped to adjust new projections on population by provinces. However, the first reactions suggest that users such as the provincial administrative authorities are not satisfied and consider that the new estimations continue to over numbering inhabitants.

b) **Capacity.** The staff of NIS increased its capacity in the three major activities of collection, process and analysis of data. However, only recently country officers have begun to carry out autonomously all the phases of the next census for 2008, with technical assistance from foreign experts.

c) **Dissemination.** The descriptive statistics are available only at central level.

d) **Integration and use.** The projections are used for measuring coverage and for planning health services mainly at central and provincial levels, and in some districts since there are discrepancies between the real inhabitants and the projection.

4.2. Vital Statistics (Vital Registration)

Overall score: 42%, equivalent to present but not adequate.

a) **Contents.** A specific legislation regulates the registration of births, marriages and deaths under the responsibility of the Ministry of Interior and by law the implementation of the data collection and issuing of the certificates is delegated to the municipalities and equivalent peripheral administrative services in rural areas. The coverage of vital statistics which mainly covers birth registration is about 90%, according to the Ministry of Interior. In case of death due to diseases a medical certificate of death is annexed to the authority certificate. Causes of death are not coded.

b). **Capacity.** Doctors and paramedical personnel, mainly directors of hospitals, issue certificates by routine, but causes of death are not coded in most of the hospitals and health facilities of the country according to the International Classification of Diseases (ICD-10 or earlier versions), since the ICD-10 is not yet officially introduced by the MoH.. There is no published data on mortality produced yet. However, there is a plan for entering retrospectively all the certificates of death issued in the last years with the support of an International NGO.

c) **Dissemination** is not functional, mortality data are not extracted from vital registration, but data from household surveys are used by health managers.

d) **Integration and use**. Mortality data have not been used at health facility level since this area is not yet introduced into the health management information system of the MoH. *It should also be borne in mind that it is in an earlier stage to assess this area since it is just reactivated recently.*

4.3. Population-based surveys

This sub section of questions scored 64% of the maximum score reachable, equivalent to adequate. Therefore, the area of the household surveys is without doubts judged by the workshop participants as a strong component of the data sources in the country. However, this positive overall appraisal shows also some limits at a more detailed analysis of each response.

a) **Contents** adequate. Participants considered that household surveys have measured adequately two out of the three major aspects listed in the questionnaire: use of reproductive and child health services, the mortality data. On the other hand, they considered that the last five years surveys were not adequate for measuring the third aspect: some important non-communicable diseases, such as diabetes, mental illness, hypertension, etc., and risk factors. However, in 2006, a household survey organized by a public National Center for Health Promotion investigated smoking habits in sampled households.

b) **Capacity** adequate. Household surveys organization, sample design, field work, process and analysis of data are competences that have been increasing in the country and international standards are applied within the NIS, the National Institute of Public Health (entity related to the MOH and in charge of the operational health research).

c) **Dissemination** highly adequate. Methodology and micro data are available on request.

d) **Integration** not adequate. Since 1998 until 2006, the number of health related surveys with national representativeness are: National Health Survey 1998 (NHS), Cambodia Demographic and Health Survey 2000 and 2005. However, participants strongly

complained about poor coordination among Cambodian institutions and between major donors with regards to unplanned and overlapped surveys.

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

Overall score: 43%, equivalent to present but not adequate.

a) **Contents**: Present but not adequate. All public health facilities, referral hospitals and health centers, report weekly on the epidemiological surveillance of 12 diseases and syndrome mix , such as Acute flaccid paralysis (AFP), acute jaundice, acute respiratory infections: (ARI) including severe acute respiratory syndrome (SARS) and avian flu, severe diarrhea, dysenteries, dengue hemorrhagic fever, diphtheria, measles, meningo-encephalitis, neonatal tetanus, rabies and cluster-unknown diseases.
The system aims to alert on possible outbreaks and triggers immediate investigation on cases for diagnosis identification and control action. Case definitions are covering all identified major outbreak prone diseases. Two sentinel surveillance were; influenza like illness (set up in four sites: Takeo referral hospital (RH), Kampong.Cham RH, Battambang RH and Nattional pediatric hospital) and Japanese encephalitis (in five sites: Angkor hospital in Siem Reab, Takeo RH, Battambang RH, Kampong.Cham RH and National pediatric hospital. Maps of population at risk and of resources, such as the laboratories are available only for few public health risks and resources.

b) **Capacity & Practice**: Present but not adequate. There are limited staff, limited infrastructure and labs [public labs only available at National institute of public health and Pasteur institute in the capital city] for the size of the task performing public surveillance services and coupled with little staff motivation, low salary and conditions of services delivered. However, rapid response teams were established across the country.
The system of outbreak surveillance reporting is through radio communication at health center and operational districts and by fax, email and telephone or mobile phone message (SMS: short message system) from province to Communicable Disease Control department at central level. Computerization is available at all provinces and few districts. The software has been developed by a local officer and allows tabulation and maps.. The timeliness is quite good, completeness less satisfactory. Surveillance is completely integrated and is carried out as part of other functions. There is very few staff graduated at district and provincial levels doing surveillance and epidemic control. There are few epidemiologists (Master's level or higher) at MoH Central level.
Provincial laboratories have variable capacity, due to shortage of lab technicians and sometimes supplies. The discrepancy between the volume of work and the capacity affects the ability to carry out quality control, both in terms of reporting of diseases and lab work.

c) **Dissemination:** no systematic communication strategy in place. However, the bulletin on epidemic prone diseases and conditions called as *Bulletin of Communicable Diseases*, is produced monthly by the CDC department but not in regular manner due to irregular of fund and were distributed to most of the districts.

d) **Integration and use**: some overlap with other data collection
The reporting forms are still several. However, there are efforts to integrate disease surveillance. Most of the epidemics were detected at provincial and higher level.

4.5. Health service records

Overall score: 41%, equivalent to present but not adequate.

a) **Contents** not adequate at all. The major obstacle to the completeness of the routine health information system in the country is the absence of data from the private health care institutions. Only major hospital/clinics in the capital city of Phnom Penh submitted irregular /semestrial/annual reports for obtaining the authorized license. The access to the public HC and hospitals is limited to about 20% of patients *(Source: PES 2003, Baseline values for HSSP, published January 2005, Table 10, page 16)* and the other 80% seek treatment from private doctors, small clinics or bigger health polyclinics and hospital (40%), directly to the private pharmacies (32%) or traditional healers (9). The coverage of population for the preventive services such as mother and child and reproductive health is much higher, but the majority of pregnant women have delivery at home. There is no systematic control of the quality of services delivered by the HC and hospitals.

b) **Capacity** not adequate at all. In Cambodia, the major obstacle to a well performing HMIS is the acute shortage of dedicated and qualified personnel due to low salary and lack of staff motivation. This is the claim of most of workshop participants and a well known problem by the senior MOH officers (Director of Planning Department, Secretary of State for Health). In addition, there are no health information specialists at all levels of the health system, nor epidemiologist/biostatistician at central health information bureau. At provincial level the staff complement is better, with in principle 3 dedicated permanent staff, but in the reality the turnover is high and you can have only 1 staff dedicated. Due to this fundamental shortage procedures for validation of data collected (completeness, timeliness and accuracy), data process and especially analysis is severely hampered. Supervision is conducted irregularly. Population projections originated by the Census are not available for the district level, both for the administrative districts or for the health operational districts, called OD (which aggregate the population of 1-3 districts around the available public health facilities).

c) **Dissemination** present but not adequate. The annual statistical report is regularly published with the information disaggregated by provinces and districts, but provinces and OD compile also their reports but the contents are not considered adequate.

d) **Integration and use** present but not adequate. The monthly routine reports starting from the HC1 (data-filling form for health center), up to DO3 (an aggregation of all data from health centers and a referral hospital under the OD's catchments area) and PRO4, Province formats (see for more details under Data Management section the Flow chart and consult the formats in the referenced Health Information System Guidelines, 2005[10]) encompass activity data from:

   a. OPD morbidity, for example HC1 monthly form lists 28 conditions or diseases, including other, ANC, Deliveries and PNC, EPI and adult vaccinations, Birth spacing, Nutritional supplements, Laboratories results, including Malaria and TB,
   b. Hospital morbidity and mortality, for example HO2 monthly form presents a wide list of 46 diseases, accidents and conditions, TB in-patients, Blood Bank, Leprosy control services and others.
   c. Vertical programs (HIV, TB, and Malaria) still have separate staff who, among other tasks should compile supplementary forms for monitoring theirs own results.

4.6. Administrative records

Overall score: 63%, equivalent to adequate

a) **Database on infrastructure and services**. Present but not adequate. Cambodia has an inventory of all HC and higher level health facilities, 90% of these facilities have their own codes and geo-positions for mapping. There is a minimum staff competent and qualified for maintaining the GIS working and updated and the maps were updated less 2-3 years ago. They are available, are disseminated and they contain the location of the infrastructure and the distribution of human resources and type of services for the majority of the districts.

b) **Database of human resources**: The human staff working in the public sector is monitored and disaggregated by categories, no information on private health workers. The number of personnel graduating from University and other qualified paramedical and health related professions are tracked every year from all training institutions. The staff able to maintain the database updated is present but not adequate. The database was updated less than 1 year ago.

c) **Financing and expenditures for health services**. Financial records are available for tracking the budget allocations and the expenditures of the public services and the external support (grants and loans) from partners. The government and the external support budget and expenditures are disaggregated by national and provincial levels. However not all the sources are tracked, for instance there is not complete picture of the social security, health insurance, out-of-pocket volumes. A National Health Accounts system is in progress but not yet implemented, consequently the important questions about the capacity devoted and the dissemination and use of the financial records were omitted, as requested by the questionnaire. .

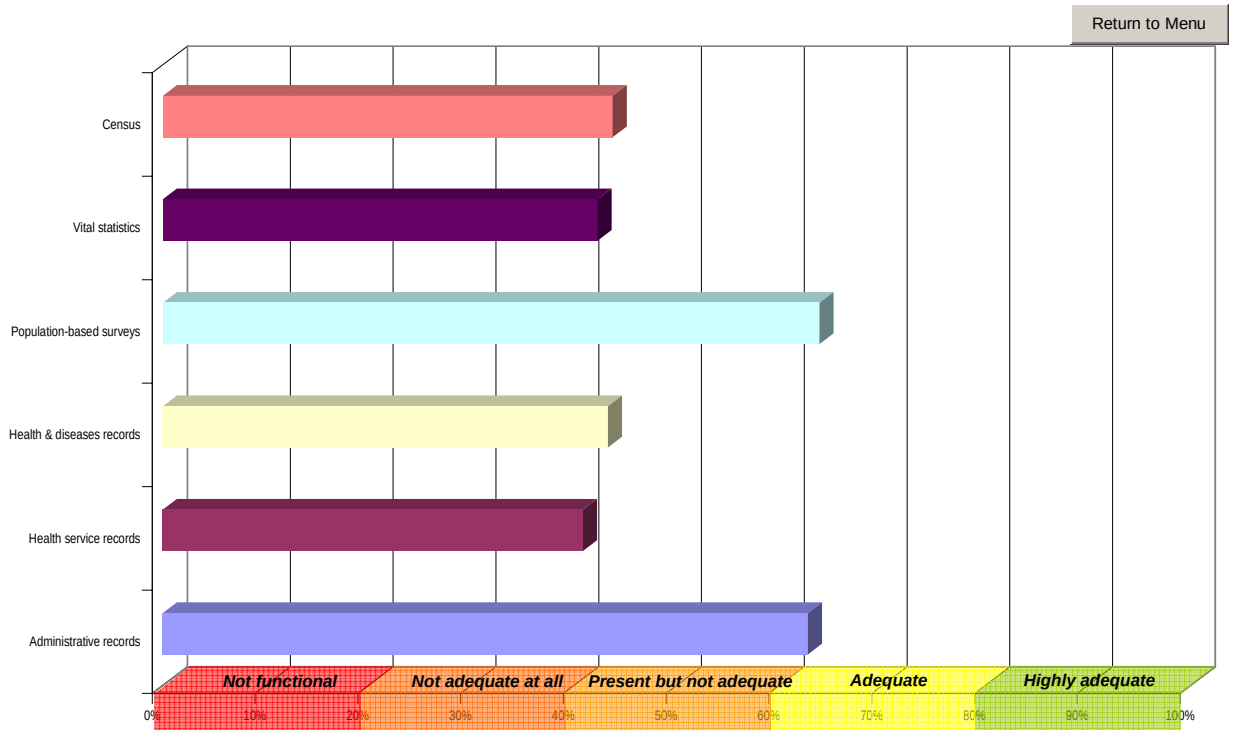
d) **Equipment, supplies and commodities**. Each HC and hospital is requested to report regularly on the status of equipment and physical infrastructure and on the stock of drugs, vaccines, contraceptives and other medical supplies. There is staff dedicated to this area but is not enough. Occasionally health managers attempt to reconcile the data on commodities consumption with data on cases and services delivered.

Table showing the matrix identifying the potential development areas:

Highly adequate content	**3**				
Adequate content	**2**	D (surveillance)			
Present but not adequate content	**1**	E (routine)			
Not adequate at all content	**0**				
		0 Not adequate at all capacity	**1 Present but not adequate capacity**	**2 Adequate capacity**	**3 Highly adequate capacity**

HORIZONTAL BAR CHART TITLE:
SUMMARY OF DATA SOURCES

5-Data management



Results of Data Management

Summary	Result
Data management	Not adequate

Overall score: 23% [before 36%], equivalent to not adequate at all.

a) There is the Health Information System Guidelines for Ministry of Health only (see References) which describe procedures for data management including data collection, storage, cleaning, quality control, analysis, and presentation for target audiences (10). However, participants referring scored very low mark for this aspect judging that the recommendations are not implemented throughout the country. For instance the Guidelines do not include a detailed instructions about the filling up of each of the major HIS routine forms.

b) A “data warehouse” has not been developed containing data from all potential data sources, such as household surveys, census, disease surveillance, routine facility based data, financial data and human resources data either at national or at provincial level. [*changed score from 2 to 0*, due to misunderstanding, since no data warehouse established yet at national level.].

c) A "metadata dictionary", such as a catalogue of indicators or guidelines for aggregating and processing data elements originating from two or more different relational databases, 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 does not exist.

d) Identifier codes for administrative units, such as province, operational districts, and for HC and hospital exist and are used. Maps are produced and GIS software is largely available (training courses in progress). However, data from the different department database within the MoH, bank of data used by training central institutions, NGOs and donors are still separate and without a plan for merging the information and exchange data elements among themselves.

e) A paper-based data form at HC (HC1) and hospital (HO2) were manually compiled then aggregated into DO3 form, then the PRO4 form aggregates all data from all operational districts (nDO3) within the province's catchment area and is sent to the Department of Planning and Health Information on a monthly basis for processing and simple analysis. Data are computerized at Provincial health department (24 provinces). Only few districts supported by NGOs can access to computers (see detail in page 14 above).

6- Information products

Results of Information Products

Marking Indicators / *Elements for assessing selected indicators*	Health status			Health system indicators	Risk factors indicators	Overall health indicators quality
	Mortality	*Morbidity*	Overall			
Data collection method	present but not adequate	adequate	adequate	adequate	adequate	adequate
Timeliness	adequate	adequate	adequate	present but not adequate	adequate	adequate
Periodicity	present but not adequate	present but not adequate	present but not adequate	present but not adequate	adequate	adequate
Consistency / completeness	present but not adequate	present but not adequate	present but not adequate	present but not adequate	adequate	present but not adequate
Representativeness / appropriateness	present but not adequate	adequate	present but not adequate	adequate	present but not adequate	present but not adequate
Disaggregation	adequate	present but not adequate	adequate	adequate	adequate	adequate
Estimation method / transparency	highly adequate		highly adequate	not assessed		highly adequate
Overall assessment of results	adequate	adequate	adequate	adequate	adequate	adequate

The presence of several population based surveys providing data on these indicators justifies this satisfactory rating. The cross-checking of data collected through facility-based sources and administrative against population-based surveys show discrepancies and it is not widely used as a way of data validation.

A) Health Status Indicators: overall 66%, equivalent to adequate

Mortality, 66%, equivalent to adequate:

- Under- Five Year Mortality is collected through the indirect method of questioning about recent deaths during household survey, because of the low performance of the Vital Registration (VR) system. The expected periodicity of survey such as NHS and the DHS are 5 years, not satisfactory for making policy decision on the basis of this measure. In practice, since 1998 the unplanned series of household surveys conducted in Cambodia, provided much more measures than expected.
- Adult mortality can not rely on performing VR and should use the household survey or census.
- Maternal Mortality Ratio measured by direct method through several household surveys (see under 5y mortality for comments).

Morbidity, overall 65%, equivalent to adequate:

- HIV prevalence has been measures by ANC sentinel site clinics since 1997. Recently, in 2005 the Cambodia DHS introduced also the testing of adult population (about 15,867 people) in reproductive age and both sex.
- Underweight in children. Survey with anthropometry has been conducted and the measures have been conducted at least 2 times in the last decade.

B) Health System Indicators: overall 61%, equivalent to adequate.

- Outpatient Attendance. The data collected are checked for completeness and accuracy, but not on a regular basis. In some provinces where there are active support from the NGOs, more consistent assessment of HC registers and HC1 monthly form against community individual interviews was observed. Guidelines disseminated by the Department of Planning and Health Information describe in detail procedures on data quality validation through supervision random spot-checks and HC monitoring forms (pages 12-15).
- Measles coverage. The coverage is monitored by the multiple household surveys in the last 5 years [changed score from 1.7 to 3 in Q. V.B.7.2, two DHS were conducted in 2000 and 2005]. Data from routine present multiple discrepancies with the survey originated data.
- Deliveries attended by skilled staff. Deliveries in public health facilities are too low for estimating this indicator, but multiple household surveys have been conducted in the last 5 years. [changed score from 1.9 to 3 in Q. V.B.8.2, DHS were conducted in 2000 and 2005]
- TB treatment success rate under DOT. The data are collected from health centers and are estimated to cover between 75 up to 90%. Data are estimated to be reliable.
- Proportion of children sleeping under ITN against malaria. Survey conducted, no socioeconomic desegregation available.
- General Government expenditures on health per capita. Data from administrative sources. National Health Accounts building up undergoing.
- Private expenditure on health per capita. Data are affected by a a lag time of 3-4 years and originate from an household survey.
- Density of health workforce by 1.000 population. Routine administrative records on staff are validated with facility and labor force surveys. Data collected more than 12 months ago. No consistency among the different sources. ISCO classification was not well known by the participants.

C) Risk Factor Indicators: overall 66%, equivalent to adequate

- Smoking prevalence. The habit has been investigated by the recent population based survey [changed score from 1.5 to 3 in Q. V.C.14.1]
- Condom use with higher risk sex. The household surveys have investigated this sexual behavior.
- Proportion of households using improved water supply. There is a certain consistency in the data source points selected in the last decade and a certain desegregation of data by locality and demographic characteristics.

7-**Dissemination and Use**

Result of Dissemination and Use

Summary	Result
Analysis and Use of Information	Adequate
Policy and Advocacy	Adequate
Planning & Priority Setting	Present but not adequate
Resource allocation	Present but not adequate
Implementation/action	Adequate
Overall	Present but not adequate

A) ***Analysis and use of information*** was scored as 63%, equivalent to adequate

B) ***Policy and Advocacy*** was scored 60%, equivalent to adequate. The report that put together data from the sub-systems is not considered satisfactory from the participants, but major indicators on mortality and HIV prevalence are well known by politicians.

C) ***Planning and priority setting*** was scored 59%, equivalent to adequate. There already the habit of using statistical data for elaboration of the planning.

D) ***Resource allocation*** was scored 41%, equivalent to present but not adequate. Participants think that few budget and relative targets are backed by HIS data. Occasionally data are an instrument for correcting inequalities among provinces and districts of the country and so the in the last 5 years the data evidence did not determined significant changes in the allocation process.

E) ***Implementation/action*** was scored 68%, equivalent to adequate. Health managers use information for their service delivery and planning. The clinicians and health providers use the information for their decision on clinical aspects, service delivery and monitoring and also data on risk-factors are sued.

Summary of the HIS assessment and policy implications

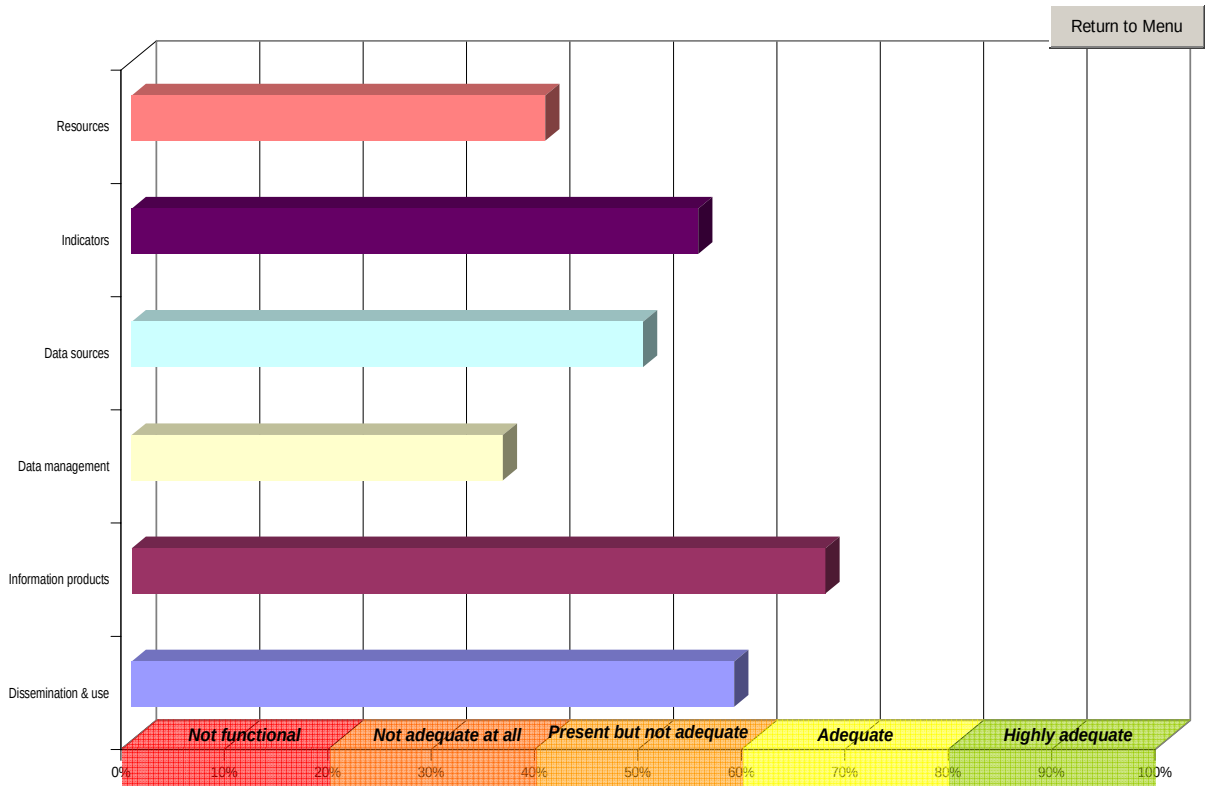
TABLE: OVERALL RESULTS SCORE PROGRESS

Main categories	Percentage	Comments
OVERALL		HIS COMPONENTS
RESOURCES	40%	The second lowest & most critical area
INDICATORS	55%	Present but not adequate
DATA SOURCES	49%	Critical area in same data sources
DATA MANAGEMENT	38%	The lowest score and most critical area
INFORMATION PRODUCTS	67%	Adequate, relatively well provided
DISSEMINATION & USE	58%	Adequate, but with some problems
I. SECTION		RESOURCES
Policy and Planning	35%	Several important actions needed: legislative, national Statistics Strategic Plan and multi-sectoral HIS Committee
HIS institutions, human resources and financing	38%	Critical human resource shortage
HIS Infrastructure	50%	Present but not adequate
II. SECTION		ESSENTIAL INDICATORS
Indicators	62 [before 55%]	Present but not adequate [Consider revise score of mdg, it may be 3 & not 2] Already changed to 3 for MDG
III. SECTION		DATA SOURCES
A. Census	44%	Capacity improvement for next Census
B. Vital statistics	42%	Intervention on ICD-10 coding in hospitals, digitalization at MoI
C. Population-based surveys	64%	The strongest source, it needs better coordination
D. Health & diseases records (surveillance)	43%	
E. Health service records	41%	Public HC low coverage, private not included
F. Administrative records	63%	
IV. SECTION		DATA MANAGEMENT
Data Management	23% [before 36%]	Investment on HIS qualified human resources, training of clinical and managerial staff on HIS, building up a central health repository of existing databases
V. SECTION		INFORMATION PRODUCTS
-- Categories		
Data collection method	62%	
Timeliness	66%	

Periodicity	60%	
Consistency/ completeness	58%	
Representativeness/ appropriateness	59%	
Disaggregation	64%	
Estimation method/transparency	100%	
-- Type		
Health status Mortality	66%	
Health Status Morbidity	65%	
Health system	61%	
Risk factors	66%	
Overall health indicators quality	67%	
VI. SECTION		
Analysis and use of information	63%	Need for improvement
Policy and advocacy	60%	Need for improvement
Planning and priority setting	59%	Enhance the already existent use of data evidence for monitoring and planning
Resource allocation	41%	Need for regular and sustained investment
Implementation/action	68%	

Note: In RED marked the lowest score.

HORIZONTAL BAR CHART TITLE:
SUMMARY OF SCORES



Despite the wide recognition that HIS and health data evidence play a crucial role in the health sector reforms in general, and especially in the planning and M&E process (see Health Sector Reforms in Cambodia by Lo Veasna Kiry, 1997 and the Health Sector Strategic Plan) scarce investments have occurred in human resources, capacity building, infrastructures and ICT in the specific area of HIS. The disease control programmes such as HIV, TB and Malaria have received more support for their specific cycle of information. However, a comprehensive approach to the improvement of the production, analysis and use of health related data need to be further strengthend and developed. Some of the findings show:

- Lack of a major commitment for the HIS coordination among the main stakeholders: MoH departments/national programs, relevant institutions, private health sectors, and health partners.
- Lack of a medium and long term plan covering the development and the improvement of the HIS major components.
- Little attention devoted to the HIS in the Health Sector Strategic Plan 2003-2007, mentioned only for few activities of M&E to be implemented under the Strategy 17 of the Sixth Key Area: Institutional Development (p. 52),(11).

The assessment's findings show the NHIS is relatively good since there is a system functioning in place (please see p.11 above) however there is a need for increasing investments and for

intercepting some fraction of the external flow of funds in favor of a relatively neglected HIS area, having in mind that in low-income countries, like Cambodia, an annual cost per capita is approximately US$0.5 for a comprehensive HIS which includes salaries, planning and information technology (12). However, other critical aspects detected, for instance in the component of data sources, such Census, Vital Registration, or Financing or Personnel data or in the section of data management can be addressed through local training and improvement of coordination among officers, better data processing and analysis. Activities which all depend more on political commitment, good willing and coordination skills than on volume of money available.

Way forward

At a glance, based on the results of the assessment revealed that most items in the six components (resources, indicators, data sources, data management, information product, dissemination and use) were weak that required further development for improving the National Health Information System of Cambodia. Within the context of the HMN support, the following suggestions for improvement are made:

- Strengthening the capacity of HIS staff, health managers, and decision-makers in data use and analysis both at central and peripheral level
- Develop HIS strategic plan in line with the HMN framework
- Develop HIS policy and legislation on notifiable diseases and patient records
- Ensure continuity of technical and financial support for HIS development
- Apply International Classification of Diseases (ICD10) for health data coding at all levels of health system
- Improve policy and planning, HIS institutions and infrastructure (human resources, ITC, hardware and software etc)
- Improve HIS software and integration of other HIS sub-system into one database (human resource, drugs, finance)
- Strengthen data management at all levels of health system
- Strengthen vital statistics and utilization for health planning
- Improving disease surveillance system and record and health service records (both for public and private facilities) and documentation of patient records
- Strengthen coordination among stakeholders (relevant institutions, national health programs, MoH departments, research bodies etc)
- Develop data warehouse at central level
- Further expand computerization at central and peripheral levels.

1. Opportunities

- Technical and financial support from HMN/WHO, together with technical assistance from WPRO/WHO
- Ongoing efforts by the Ministry of Interior to expand Vital Registration system nation wide
- Establishment of HIS Stakeholders working group
- Implementation of recent nation wide surveys such as CIPS 2004, CSES 2004, and CDHS 2005 yielding information for HIS validation
- Holding of Joint Annual Performance Review and National Health Congress involving key stakeholders in the health sector, and requiring use of HIS data to review performance
- Preparation of Annual Operational Plans by all levels in the health system, requiring increasing use of HIS to carry out annual reviews, and determine priorities and targets
- Implementation of National Census in 2008 yielding accurate population data
- Commitment of MOH and its health development partners to strengthening the national HIS
- Implementation of new Greater Mekong Sub-Regions (GMS) project on cross-border disease surveillance

2. Opportunities for Donor Coordination and Support

- Computerization of HIS functions at central and peripheral levels
- Development of data warehouse at central level
- Training workshops for central and peripheral staff on data use and management
- Integration of other HIS sub-systems into the national HIS
- Active participation in, and support to the HIS Stakeholders working group

3. Critical Next Steps

- Develop national HIS strategic plan incorporating results of HIS assessment, and identifying priority actions required
- Conduct regular meetings of HIS Stakeholders working group and follow up on actions required
- Train staff at central and peripheral levels in data use and management
- Implement spot checks for HIS data validation per HIS Guidelines at health facilities
- Develop an integrated national HIS incorporating other HIS sub-systems

Annex 1 HMN Assessment tool: scoring

(Giving table of assessment with definitions of each item and score, and average scores)

Example:

Items		Highly adequate 3	Adequate 2	Present but not adequate 1	Not adequate at all 0	Average scores
I.A.1	The country has recent 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	

Suggestion: Better see the scores in HMN assessment tool since it is too much for all items.

Annex 2

How was the HIS Assessment Organized?
Summary Report

Your answers to the following questions will provide lessons on how best to organize an assessment of a health information system

1. **Name of country: CAMBODIA**

2. **Members of the stakeholder group** (please list all organizations that participated in the planning and execution of the assessment including producers, users and sources of finance for health information)

   1- Department of Planning and Health Information, MoH
   2- National Center for Maternal and Child Health
   3- Communicable Disease Control Dept.
   4- National Center for HIV/AIDS, STD and Dermatology
   5- National Center for Tuberculosis (CENAT)
   6- National Center for Malaria (CNM)
   7- Hospital Service Dept.
   8- Preventive Medicine Dept.
   9- Human Resource Dept.
   10- Dept. of Local Administration (Civil registration), Ministry of Interior
   11- WHO representative
   12- UNICEF representative
   13- UNFPA representative
   14- Medicam representative*
   15- RACHA representative (local NGOs)
   16- URC representative (local NGOs)
   17- 24 Provincial and Municipal health information officers
   ***** *Representative body of all NGOs in health in the country.*

3. **Which unit or units took the lead in organizing the assessment?** (*e.g. "Central Statistics Office" or "M&E unit of the Ministry of Health", etc…*)
   The Department of Planning and Health Information, Ministry of Health, took the lead in organizing the HIS assessment workshop. However, key stakeholders were informed and actively involved in the assessment process.

4. **Please describe briefly how the assessment was organized.** In February 2006, an HIS stakeholder meeting was held and chaired by the Director of the Department of Planning and Health Information to raise awareness about the HMN and preparation for the incoming assessment of the HIS using the HMN tool. Prior to the assessment event, two smaller group meetings were carried to familiarise the group member with the HMN tool and task assignment. In addition, regular meetings among key staff of HMN-HIS project team were carried out to review the HMN tool in order to get used to and better understanding, editing

the translation (from English to our Khmer language), and prepare for logistics for the assessment event.

[How many separate meetings were held? Include meetings for planning the assessment as well as meeting for carrying out the assessment. This includes how many meetings of the full stakeholder group? This includes how many meetings of smaller worker group?]

5. **Meetings of smaller working groups -- Were subsets of items assessed by smaller working groups? YES**

To effectively manage the assessment process and get a variety of ideas, participants were divided into six small working group. Each group was assigned to selected topic of the six components of the HIS.

Number and types of participants

1. Group 1: Central and provincial HIS staff
2. Group 2: Central and provincial HIS staff
3. Group 3: National programs: MCH, Malaria, HIV/AIDS, TB,
4. Group 4: Financial staff
5. Group 5: Central and provincial HIS staff
6. Group 6: Health Partners: WHO, UNICEF, UNFPA, GTZ, Medicam, local NGOs (RACHA, and URC)

-Group I and II assessed the following items:

I- Resources

A-Policy and Planning: I.A1, I.A2, I.A3, I.A3, I.A4, I.A5, I.A6, I.A7, I.A8

B-HIS institutions, human resources and financing: I.B1, I.B2, I.B3, I.B4, I.B5, I.B6, I.B7, I.B8, I.B9

C-HIS infrastructure: I.C1, I.C2, I.C3, I.C3, I.C4, I.C5, I.C6

II- Indicators: II.A1, II.A2, II.A3, II.A4, II.A5

III- Data Sources

A-Census

III.A3-3.1, III.A3-3.3 and III.A4-4.1

B-Vital Registration

III.B4-4.1

D-Health and Disease records (including disease surveillance system)

III.D1-1.1, III.D1-1.2, III.D1-1.3, III.D1-2.1,
III.D2-2.2, , III.D2-2.3, III.D2-2.4, III.D2-2.5, III.D2-2.6, III.D2-2.7
III.D3-3.1 and III.D4-4.1

E-Health Service records

III.E1-1.1, III.E1-1.2 and III.E2-2.1, III.E2-2.2, III.E2-2.3, III.E2-2.4, III.E2-2.5
III.E3-3.1, III.E3-3.2, and III.E4-4.1, III.E4-4.2, III.E4-4.3

F-Administrative records

1. Database/mapping of infrastructure and health services

-III.F1-1.1, III.F1-1.2 and III.F2-2.1, III.F2-2.2

-III.F3-3.1 and III.F4-4.1

2. Database of human resources

-III.F1-1.1, III.F1-1.2, III.F1-1.4

4. Database on equipment, supplies and commodities

-III.F1-1.8, III.F1-1.9, III.F2-2.9, III.F2-2.10, III.F2-2.11,III.F4-4.3, III.F4-4.4,

IV-Data Management

-IV.A.1, IV.A.2, IV.A.3, IV.A.4, IV.A.5,

V-Information Products

B-Health System Indicators

- Outpatient attendance

-V.B6.1, V.B6.2, V.B6.3, V.B6.4, V.B6.5, V.B6.6, V.B6.7, V.B6.8,

-Measles coverage by 12 months of age

V.B7.1, V.B7.2, V.B7.3, V.B7.4, V.B7.5, V.B7.6, V.B7.7,

-Tuberculosi treatment success rate

-V.B9.1, V.B9.2, V.B9.3, V.B9.4, V.B9.5, V.B9.6, V.B9.7

VI-Dissemination and Use

A-Analysis and Use of Information: VI.A.1, VI.A.2, VI.A.3, VI.A.4, VI.A.5, VI.A.6,

B-Policy and Advocacy: VI.B.1, VI.B.2

C-Planning & Priority Setting: VI.C.2

D-Resource allocation: VI.D.2

E-Implementation/action: VI.E.1, VI.E.2

-Group III assessed the following items:

I-Resources

A-Policy and Planning: I.A.4

B-HIS institutions, human resources and financing

C-HIS infrastructures

II-Indicators: II.A1, II.A2, II.A3, II.A4, II.A5

III-Data Sources

A-Census

B-Vital Statistics

C-Population -based surveys: III.C1-1.1, III.C1-1.2, III.C1-1.3

-III.C2-2.1 and III.C4-4.1, III.C4-4.2

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

-III.D1-1.1, III.D1-1.2, III.D1-1.3, III.D1-2.1

-III.D2-2.2, III.D2-2.3, III.D2-2.4, III.D2-2.5, III.D2-2.6, III.D2-2.7

-III.D3-3.1 and III.D4-4.1, III.D4-4.2

E-Health service records

-III.E1-1.1, III.E1-1.2 and III.E2-2.1, III.E2-2.2, III.E2-2.3, III.E2-2.4, III.E2-2.5

-III.E3-3.1, III.E3-3.2 and III.E4-4.1, III.E4-4.2, III.E4-4.3

F-Administrative records

3. Information on financing of health services

-III.F1-1.6, III.F1-1.7 and III.F2-2.5, III.F2-2.6, III.F2-2.7, III.F2-2.8,

-III.F3-3.2 and III.F4-4.2

V-Information products

A-Health Status Indicators

- Under five, adult and maternal mortality (all cause)

-V.A1.1, V.A1.2, V.A1.3, V.A1.4, V.A1.5, V.A1.6,
-V.A3.1, V.A3.2, V.A3.3, V.A3.4, V.A3.5, V.A3.6, V.A.3.7

-**HIV prevalence:** V.A4.1, V.A4.2, V.A4.3, V.A4.4, V.A4.5, V.A4.6

- Underweight in children (< 59 months or <36)

-V.A5.1, V.A5.2, V.A5.3, V.A5.4, V.A5.5, V.A5.6,

B-Health System Indicators

-Measles coverage by 12 months of age: V.B7.1, V.B7.2, V.B7.3, V.B7.4, V.B7.5, V.B7.6, V.B7.7,

-Deliveries attended by skilled health professionals:

-V.B8.1, V.B8.2, V.B8.3, V.B8.4, V.B8.5, V.B8.6, V.B8.7,

-Tuberculosis treatment success rate: V.B9.1, V.B9.2, V.B9.3, V.B9.4, V.B9.5, V.B9.6, V.B9.7

- Proportion of children (< 59 months or <36 months) sleeping under insecticide

-V.B10.1, V.B10.2, V.B10.3, V.B10.4, V.B10.5, V.B10.6,

C-Risk Factors Indicators

- Smoking prevalence(15 years and older)

-V.C14.1, V.C14.2, V.C14.3, V.C14.4, V.C14.5, V.C14.6

- Condom use with higher risk sex

-V.C15.1, V.C15.2, V.C15.3, V.C15.4, V.C15.5, V.C15.6

-Group IV assessed the following items:

I-Resources

A-Policy and Planning: I.A1, I.A2, I.A3, I.A3, I.A4, I.A5, I.A6, I.A7, I.A8
B-HIS institutions, human resources and financing: I.B1, I.B2, I.B9
C-HIS infrastructures: I.C.1, I.C.2

III. Indicators: II.A1, II.A2, II.A3, II.A4, II.A5

III-Data Sources

A-Census: III.A1-1.1,
B-Vital Statistics: III.B4-4.1
C-Population-based surveys: III.C1-1.1, III.C1-1.2, III.C1-1.3 and III.C4-4.2
E-Health service records: III.E1-1.1 and III.E3-3.1, and III.E4-4.2, III.E4-4.3,
F-Administrative records

1-Database/mapping of infrastructure and health services: III.F4-4.1,
2-Database of human resources: III.F1-1.4, III.F1-1.5, and III.F2-2.3, III.F2-2.4
3-Information of financing of health services:

-III.F1-1.6, III.F1-1.7, and III.F2-2.5, III.F2-2.6, III.F2-2.7, III.F2-2.8,

-III.F3-3.2, and III.F4-4.2,

4-Database on equipment, supplies and commodities

- III.F1-1.8, III.F1-1.9 and III.F2-2.9, III.F2-2.10, III.F2-2.11, and III.F4-4.3, III.F4-4.4,

V-Information Products

A-Health Status Indicators

-Under five, adult and maternal mortality (all cause)

-V.A1.1, V.A1.3, V.A1.4, V.A1.6, V.A1.7

- V.A2.2, V.A2.3, and V.A3.1, V.A3.3, V.A3.4, V.A3.5, V.A3.7,

-HIV prevalence : V.A4.1, V.A4.2, V.A4.3, V.A4.4, V.A4.5,

-Underweight in children (<59 months or <36 months): V.A5.1, V.A5.4,

B-Health System Indicators

-Measles coverage by 12 months of age: V.B7.1, V.B7.2, V.B7.5, V.B7.6,

-Deliveries attended by skilled health professionals: V.B8.1,

-General government expenditure on health (GGHE) per capita

-V.B.11.1, V.B.11.2, V.B.11.3, V.B.11.4, V.B.11.5, V.B.11.6, V.B.11.7, V.B.11.8,

-Private expenditure on health per capita (out of pocket, private health insurance and NGO)

-V.B.12.1, V.B.12.2, V.B.12.3, V.B.12.4, V.B.12.5, V.B.12.6, V.B.12.7, V.B.12.8

-Density of health workforce (total and by professional category) by 1.000 population

-V.B13.1, V.B13.2, V.B13.3, V.B13.4, V.B13.5, V.B13.6

VI-Dissemination and use

A-Analysis and Use of Information: VI.A.1, VI.A.2, VI.A.3, VI.A.4, VI.A.5, VI.A.6,

B-Policy and Advocacy: VI.B.1, VI.B.2, VI.B.3, VI.B.4,

C-Planning and Priority setting: VI.C.1, VI.C.2, VI.C.3

D-Resource allocation: VI.D.1, VI.D.2, VI.D.3, VI.D.4,

E-Implementation/action: VI.E.1, VI.E.2, VI.E.3,

-Group V assessed the following items:

I-Resources

A-Policy and Planning: I.A4, I.A5, I.A6,

B-HIS institutions, human resources and financing

-I.B.1, I.B.3, I.B.4, I.B.6, I.B.7, I.B.8, I.B.9,

C-HIS infrastructures: I.C3, I.C4, I.C.6,

III. Indicators: II.A1, II.A3, II.A4,

III-Data Sources

A- Census: III.A1-1.1, and III.A2-2.1, III.A2-2.2, III.A2-2.3,

-III.A3-3.1, III.A3-3.2, III.A3-3.3, III.A3-3.4, and III.A4-4.1

B-Vital Statistics:

-III.B1-1.1, III.B1-1.2, III.B1-1.3,

-III.B2-2.1, III.B2-2.2, III.B2-2.3, III.B2-2..4, III.B2-2.5, III.B2-2.6, III.B2-2.7, III.B2-2.8,

-III.B3-.1 and III.B4-4.1,

C-Population-based surveys:

-III.C1-1.1, III.C1-1.2, III.C1-1.3, and III.C2-2.1, III.C2-2.2, III.C2-2.3, III.C2-2.4,
- III.C3-3.1, III.C3-3.2, and III.C4-4.1, III.C4-4.2

IV-Data Management: IV.A.4,

V-Information Products

A-Health Status Indicators

- Under five, adult and maternal mortality

-V.A1.1, V.A1.2, V.A1.3, V.A1.4, V.A1.5, V.A1.6, V.A1.7
-V.A2.1, V.A2.2, V.A2.3, V.A2.4, V.A2.5, V.A.2.6, V.A2.7,
-V.A3.1, V.A3.2, V.A3.3, V.A3.4, V.A3.5, V.A3.6, V.A3.7,

- HIV prevalence: V.A4.1, V.A4.3, V.A4.4, V.A4.5,

- Underweight in children (<59 months or <36 months)

- V.A5.1, V.A5.2, V.A5.3, V.A5.4, V.A5.5, V.A5.6

B-Health System Indicators

- Deliveries attended by skill health professionals:

- V.B8.1, V.B8.2, V.B8.3, V.B8.4, V.B8.5, V.B8.6, V.B8.7,

C-Risk Factors Indicators

- Smoking prevalence (15 years and older): V.C14.1,

- Condom use with higher risk sex: V.C15.1, V.C15.2, V.C15.3, V.C15.4, V.C15.5, V.C15.6,

- Proportion of households using improved water supply

- V.C16.1, V.C16.2, V.C16.3, V.C16.4, V.C16.5, V.C16.6,

VI-Dissemination and use

B-Policy and Advocacy: VI.B.3, VI.B.4,

6. **What role, if any was played by a national or international consultant?** Two local consultants (*instead of four as in the proposal due to lack of qualified person in the HIS*) were hired to assist the project team in organizing the assessment workshop including logistics arrangement, reviewing the HMN tool, facilitation, and making reports. In addition, technical assistance was provided by an international consultant, Dr. Bruno Piottie, Health Metrics Network Senior Adviser.

7. **Was a national consensus conference organized to conclude the assessment and review the findings?** YES, NO
   If YES, please list all the organizations that were represented and indicate the number of participants.

Immediately after the HIS assessment workshop, two consultative meetings were organized by the project team to endorse and provide recommendation for the assessment's findings. The first meeting was held on 26Th October, 2006 and participated by members of the HIS stakeholders with a total of. including key staff of the project team/DPHI, representatives from National programs ; HIV/AIDS, Malaria, MCH, NIPH, National Institute of Statistics/Ministry of Planning (2), Department General of Administration/Ministry of Interior (2), health partners (WHO, Unicef, Medicam, RACHA/USAID (Reproductive and Child Health Alliance), URC/USAID (University Research Co., LLC) The second meetings was held in Kampong Cham province from 15-16 November 2006. A week later, a draft report was circulated among stakeholder working group for feedback and recommendation (See list of participants below).

8. **Briefly describe any modifications that were made to the assessment tool. Also note if the tool was translated.**
   Some modifications were made for the assessment tool since we got the 1.5 version (as told the latest version) during the RHINO workshop in Chiang Rai, Thailand on late February 2006. The latest version 1.96 was given by Dr. Bruno Piottie, on his arrival. Both assessment tool and the framework were translated into Khmer language and changes (from version 1.5 to 1.96) were made accordingly.

9. **List the item# of any items that were omitted from the assessment because they were judged to be inappropriate**
   No items were removed from the assessment tool.

10. **List the item# of any items that were not well understood. Please offer any suggestions for clarifying the meaning of specific items**
    In III. Data sources; A. Census. III.A.1 Content: in question Adequate and present but not adequate is not clear and seems they are the same?
    - E. Health services records: III. E3. Dissemination: the question did not directly ask about the dissemination but the period of publication instead. Sometime documents are published only for internal use only or among health institutions. So if dissemination is the core question it should also state to *who*? *all user*? *at what levels and by what means* (website, workshop, other media…).

11. **Describe any special problems you had with organizing the assessment**
    No special problems encountered.
12. **Has the final report on the assessment been completed? YES, NO**
    It is on the process of finalizing the report.

13. **How much time was required to complete the assessment process -- from the first planning meeting until the concluding meeting, how many weeks elapsed?**
    - *16 weeks (since the release of the first instalment(Agust2006) until finalizing report in Mid December 2006).*
14. **Please offer any further comments or recommendations on how to improve the assessment tool or how to organize a successful assessment** (use a separate sheet of paper if necessary)

- Intercountry workshop [countries whose proposals are approved by the HMN] should be held to train participant or training of trainers to be familiar with the assessment tools so as this will help ease the process of the HMN-HIS assessment at country level.
- In addition, a *prerequisite assessment* of the status of the HIS at the country level should be assessed prior to the application of the HMN tool.

Agenda

Workshop on The HIS Assessment using HMN Tool

18-20 October 2006 Phnom Penh, Intercontinental Hotel

Day-Hours	Items	Presenters
FIRST DAY 18-10-2006		
H: 7.30-8.00	Registration	
H: 8.00-8.15	Opening Speech	Dr. Lo Veasnakiry, Director of Planning and Health Information Department (DPHI)
H: 8.15-8.30	Introduction to Workshop Objectives	Dr. Sao Sovanratnak, Deputy Director, DPHI
H: 8.30-10.00	HMN Framework, the goals of the initiative and the standards for data sources and the future process and tools	Dr. Bruno Piotti, Senior Adviser of HMN Secretariat
H: 10.00-10.30	Tea break	
H: 10.30-11.00	Introduction to the Assessment Questionnaire	Dr. Khol Khemrary
11.00-12.00	Group organisation, Specific questions, facilitators and rules	Dr. Youk Dararith
H: 12.00-13.30	Lunch interval	
13.30-	Working groups on Assessment tool	Facilitators
H: 15.30-16.00	Tea break	
H: 16.00-17.30	Working groups on Assessment tool	Facilitators
SECOND DAY 19-10-2006		
H: 8.00-12.00	Working groups on Assessment tool	Facilitators
H: 12.00-13.30	Lunch interval	
H: 13.30 15.30	Working groups on Assessment tool	Facilitators
H: 15.30-16.00	Tea break	
H: 16.00-17.30	Working groups on Assessment tool	At the end of each group discussion and scoring each Facilitator presents the results to his/her group
THIRD DAY 20-10-2006		
H: 8.00-10.00	Plenary session on the assessment results: questions and answers	Speaker for Group1, Group 2, Group 3 Facilitators
H: 10.00-10.30	Tea break	
10.30-12.00	Plenary session on the assessment results: questions and answers	Speaker for Group 4, Group 5, Group 6 Facilitators
H: 12.00-13.30	Lunch interval	
H: 13.30	Conclusions	Dr. Lo Veasnakiry, Director of Planning and Health Information Department, Dr. Sao Sovanratnak, Deputy Director, DPHI

Agenda
HIS Stakeholder's Consensus Meeting on
the HIS Assessment Results
26th October 2006
Tonle Basac Restaurant, Phnom Penh

I. Brief on the HIS Assessment Methodology
II. Present:
    - Overall Results
    - Summary of the results:
        - Resources
        - Indicators
        - Data Sources
        - Data Management
        - Information Products
        - Dissemination and Use
III. Discussion
    - Concerned weakness of the HIS components
    - Define causes of the weakness
    - Recommendation for action plan

IV. Other business

Agenda
HIS Stakeholder's Consensus Meeting on
the HIS Assessment Results
15-16 November
Phnom Pros Restaurant, Kg.Cham Province

I. Review and Revise (if necessary) the overall HIS Assessment Results

II. Comments, Recommendations for
    - All weak areas (items) of the six components: THE RED
    - All weak areas (items) of the six components: THE BROWN

IV. Proposed date for Dissemination of HIS Assessment Report.
V. Next Step Activities

List of participants in the Workshop on HIS Assessment, 18th to 20th October 2006 Intercontinental Hotel, Cambodia

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Consultative meeting on the Health Information Assessment Findings				
Tonlé Basak Restaurant, Date: 26 October 2006				
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otPhoto: Activities during HIS Assessment workshop

Project Director



Group works











HIS Stakeholder's Consensus Meetings







