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Strengthening Health Information Systems in Countries of the South-East Asia Region

*Report of an Intercountry Consultative Meeting
Chiang Mai, Thailand, 14-17 December 2005*



**World Health
Organization**

Regional Office for South-East Asia
New Delhi

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1. INTRODUCTION

The objectives of the meeting were as follows:

- (1) to review and discuss with country representatives outcomes of the WHO Bi-regional Consultation on Strengthening Health Information Systems (HIS) in Asia and the Pacific held in December 2004;
- (2) to discuss a framework for strengthening health information in Asia and the Pacific;
- (3) to identify country-specific issues and challenges related to national and sub-national health information considering recent initiatives and developments like the Health Metrics Network, Millennium Development Goals (MDGs), "3 by 5" Health mapping/GIS, bi-regional strategies on communicable disease surveillance, integrated disease surveillance for SEAR countries (communicable and noncommunicable diseases), etc.; and
- (4) to discuss/formulate outlines of the national strategic action plans for the countries' health information system strengthening.

The meeting had two expected outcomes: (i) the Regional Strategic plan for Strengthening Health Information Systems in the South-East Asia Region for 2006-2015, and (ii) the outlines of the national strategic action plans for strengthening the health information systems of the Member Countries.

The meeting was attended by experienced representatives of national health information system (HIS) representatives from the Ministries of Health and National Statistical Offices of 10 Member Countries, as well as selected staff from WHO country offices liaising with respective governments in the area of health information system. Other participants included experts and resource persons, staff from the WHO Regional Office and HQ, as well as representatives from the Health Metrics Network and United Nations Economic Commission for Asia and Pacific (UNESCAP). The meeting had 40 participants as listed in Annex 1.

2. INAUGURAL SESSION

The inaugural address was delivered by Dr. Sangay Thinley, Acting Director, Department of Health Systems Development, WHO/SEARO on behalf of Dr. Samlee Plianbangchang, Regional Director, South-East Asia Region. In his address, Dr. Samlee highlighted that while the collection and analysis of relevant data to provide necessary evidence for assessing the development and performance of health systems at national and sub-national levels constituted a major role of any health information system, these are plagued with several problems. These included among others, delayed and inadequate feedback to programme managers, fragmented information systems which are unresponsive to the needs of data users, and insufficient attention given to capability building. All of these had led to the inability of countries to assimilate the data needed to monitor progress towards the Millennium Development Goals. The solutions to these problems must be comprehensive, and should be accompanied by sustained efforts at systems development, together with greater accountability and allocation of responsibilities.

Dr. Samlee emphasized that the meeting could be considered a milestone in strengthening health information systems in the Region for the following reasons: (1) it was based on the results of a series of regional and country meetings, consultations and workshops held during the past 5 to 6 years; (2) there had been some related initiatives like the MDGs, the Health Metrics Network, "3 by 5" and others, with the recognition that strengthening HIS was a cross-cutting priority; (3) significant resources were being directed towards the generation of health information in developing countries; (4) the Meeting was a follow-up on the bi-regional work (SEAR AND WPR) on the framework for strengthening HIS in Asia and the Pacific; and (5) the outcomes of the meeting would be the Regional Strategy for Strengthening Health Information Systems in South -East Asia which would be the first strategic document of its kind in the Region, as well as the outlines of the country strategic action plans. For full text of inaugural address, please see Annex 2.

3. TECHNICAL SESSIONS

The meeting had three major activities: presentations on technical issues related to HIS, group work and plenary sessions. There were 12 technical

sessions revolving around a certain theme which was the focus of discussions for each of the first three days of the meeting. The themes for discussion were Global and regional developments on HIS and the Regional Strategic Plan on strengthening HIS, main challenges related to HIS strengthening, and Partnerships and Technology.

Presentations on various technical issues were made by the country representatives, as well as by resource persons. The presentations related to the theme for the day and were followed by group work, wherein the participants discussed the implications of the technical issues presented, especially at the country level. The results of the group work were presented during the plenary session.

On the last day, the first draft of the Regional Strategy for Strengthening the Health Information Systems in the South-East Asia Region was reviewed, taking into consideration the inputs from the technical sessions during the first three days. Considerable time was spent on the preparation and presentation of the country action plans for HIS strengthening.

The agenda of the meeting is presented in Annex 3. The highlights of the 12 technical sessions are presented in the following sections. The complete text of the background papers, group work documents and all the presentations are in the attached CD.

3.1 Highlights and Follow-up on WHO Regional Consultations on HIS in Asia and The Pacific in the Last Few Years

The presentation on the Highlights and follow-up on the WHO regional consultations on HIS in Asia and the Pacific in the last few Years was made by Dr. Anton Fric, Regional Adviser, Evidence and Health Information, WHO/SEARO. Dr. Fric summarized the objectives and recommendations of nine important HIS-related meetings and workshops held in the Region since 2000. Specific areas covered in these activities include HIS assessment; vital registration systems; data management, health measurement and the MDGs. Among these activities is the bi-regional consultation on HIS strengthening which was jointly conducted by SEARO/WPRO in December 2004, wherein six areas for the strategic framework for HIS strengthening were identified. These were: policy development on HIS-related issues; strengthening data collection systems,

including the collection of supplementary data through special studies; human resources for HIS; monitoring and evaluation system for HIS; communication, coordination and cooperation; and a maintenance plan for HIS. Activities of all these previous meetings served as good inputs for further work on the regional strategy being drafted at the meeting.

3.2 Updates on Current Global Developments in the Field of World Health Statistics

Dr. Kenji Shibuya, Coordinator, Health Statistics and Evidence, Measurement and Health Information Systems, WHO/HQ, made a presentation on Updates and current global developments in the field of World Health Statistics. He informed the group about the recent WHO products in the area of world health statistics and showed examples of the types of data which can be derived from them. These products include the World Health Statistics 2005, the Global Atlas and the HMN Country Logbook. A big advantage of these products compared to earlier initiatives is that they offer a "one-stop-shop" for important health indicators, instead of users having to go through several data sources before they can compile their values. In addition, they provide not only the levels of the various indicators, they also include information about the data sources, best estimates, uncertainty ranges and quality judgments.

Dr. Shibuya also provided an update of the World Health Survey (WHS), in which five countries in the Region participated. He indicated that the tabulated results had been completed, the reports were being drafted, and the data sets were ready for release by March 2006. Technical support in the form of workshops could be provided to countries who wished to undertake detailed analysis of the data generated from the WHS to meet their needs.

3.3 HMN Update: HMN Proposals from SEAR Countries

The description of the objectives and activities of the HMN was presented by Dr. Carla Abou-Zahr while the update on the HMN proposals submitted by countries was presented by Dr. Churnrurtai Kanchanachitra, both from the HMN Secretariat in WHO/HQ.

The goal of HMN is to increase the availability and use of timely data. It provides support to countries in various aspects of HIS strengthening, following the principles of country ownership, multi-stakeholder involvement, harmonization and alignment of inputs, sustainability, and using a comprehensive approach to HIS development.

For the first phase of HMN support, the proposals of five SEAR countries were approved, namely Bangladesh, Bhutan, Indonesia, Myanmar and Timor-Leste. Other countries were encouraged to submit proposals to be supported under the second phase.

3.4 Proposed Regional HIS Strategic Plan for Strengthening HIS in SEAR Countries

Dr. Ophelia Mendoza, Consultant on Health Information, presented the first draft of the Regional Strategy for Strengthening Health Information Systems in the South-East Asia Region for 2006-2015. The draft regional plan had eight major strategic areas, namely:

- (1) Policy development, regulation and legislation on HIS-related issues;
- (2) System analysis (HIS design/set-up and maintenance);
- (3) Development and allocation of HIS resources (human, physical and financial);
- (4) Appropriate application of information and communication technology (ICT);
- (5) Promotion of data quality;
- (6) Effective marketing of HIS products;
- (7) Strengthening of data sharing, analysis and utilization at all levels; and
- (8) Enhancement of mechanisms for effective communication, cooperation and coordination.

During discussions and the group work following the presentation, further modifications were recommended as follows:

- (1) combining/separating certain items listed under actions and initiatives corresponding to different strategies;
- (2) expansion of target groups for certain activities
- (3) inclusion of advocacy among activities for policy development, assessment of human resource requirements, capability building, and improvement of physical facilities for HIS;
- (4) strengthening of the sentinel surveillance system in countries where the use of ICD cannot be implemented;
- (5) establishing linkages with the media, meteorological centres, and other institutions which can facilitate the transmission and sharing of information during disease outbreaks, disasters and emergency situations; and
- (6) incorporation of 'strengthening data collection and use in decentralized systems' as a separate strategic area.

3.5 Ensuring and Maintaining Data Quality at all Levels

Two presentations were made on ensuring and maintaining data quality at all levels. The first one was by Dr. Kenji Shibuya of WHO/HQ and the other was by Dr. Pinij Faramnuayphul, who shared the experience of Thailand in this area. The Thai presentation was supplemented by Ms. Pattama Amornsirisomboon from the National Statistics Office who shared the NSO experience in implementing data quality control mechanisms during their Health and Welfare Survey.

Dr. Shibuya presented the 4-step guidelines followed by WHO/HQ before publishing country level information, covering the database of evidence, estimation methods, advisory group and EIP clearance. Country consultations were also necessary after all the steps had been complied with to ensure the transparency and quality of published information.

At the country level, a number of issues related to data quality were identified, based on the presentation from Thailand, as well as the group work outputs. These included the qualifications of data providers, systematic data collection procedures, feedback mechanisms, data quality assessment and the transparency of procedures. The strategies recommended to address these issues included: capability building; design

and implementation of data quality control mechanisms, the provision of feedback mechanisms; provision of incentives, conduct of special studies to assess data quality; standardization of methods; promotion of data ownership; and the development and implementation of guidelines to ensure accuracy and transparency of information.

3.6 Vital Registration Systems

Experiences related to the vital registration system (VRS) were shared by Indonesia (presented by Dr. Doti Indrasanto) and Sri Lanka (presented by Ms. L.P de Silva). The two countries presented very contrasting experiences, with Indonesia having a registration coverage of about only 40% and Sri Lanka reporting a coverage of at least 90%.

Among the important issues presented on vital registration systems during the country presentations and group work discussions was that the VRS was, in most countries, the responsibility of sectors outside the MOH. In the case of Indonesia, the decentralized system is another hindering factor affecting its implementation. Other issues identified were the level of government commitment in its implementation, data quality problems especially in relation to the timeliness, completeness and accuracy of the data collected and reported, as well as the difficulty of collecting cause-of-death statistics.

The following strategies were identified to address the various issues affecting VRS: regulation and legislation; capability building; provision of technical support for data processing; more rigid monitoring and supervision; and increasing public awareness on the importance of vital registration.

3.7 Using and Accessing External Data

External data refers to health and health-related data collected/produced by any of the following:

- (1) units within the MOH but outside of the Department of Planning/Statistics. Examples are data collected by the vertical programmes (EPI, HIV/AIDS, etc.) or by special projects within the MOH)

- (2) agencies other than the MOH. Examples are population data from the National Statistics Office; data on accidents from the police; supply of health manpower from the Education Ministry; nutrition data from the Agriculture Ministry; and research data from the academic institutions.

Bangladesh (presented by Dr. Moazzem Hossain) and Nepal (presented by Mr. Dharanidhar Gautam) shared their experiences related to using and accessing external data. Among the issues identified during the country presentations and group work discussions were the quality of external data; the adequacy of external data to meet users' needs, especially in relation to the level of aggregation of available data; the data processing and analysis skills of MOH staff; the compatibility of computer systems; and donor coordination. The strategies recommended to address problems related to external data included legislation, capability building; upgrading of ICT facilities; strengthening of linkages and partnerships among HIS stakeholders and better coordination of donor demands by government.

3.8 Analyzing and Converting Health Information into Policy and Action

Two presentations were made on 'Analyzing and converting health information into policy and action'. These were by Dr. Steve Sapirie, Director, INFORM, and by Mr. Kado Zangpo of the Ministry of Health, Bhutan. The issues identified related to this area were data quality, skills of staff on data analysis and utilization, the design of the reporting system, involvement of stakeholders in determining data needs, the existence of a data culture within the MOH, adoption of foreign models and donor demands/reporting requirements. The strategies identified to address these issues include: capability building; application of ICT; involvement of different stakeholders in designing the reporting system; defining/developing essential data sets to be shared at different levels; conduct of special studies and sample surveys; better coordination among agencies; and decentralization of the planning process.

3.9 Applying Information and Communication Technology

There were three presentations on ICT applications. The first presentation was by Mr. Johann Lemarchand of WHO/HQ on the use of the Health

Mapper using PDAs. He also covered Service Availability Mapping (SAM), which is one of the current WHO initiatives in this area.

Two countries shared their experiences on ICT applications. These were Maldives (presented by Ms. Aishath Enaz) and Thailand (presented by Dr. Pinij Faramnuayphol). Maldives shared experiences with telemedicine while Thailand's presentation covered experiences with the use of computers at the point of service (health centre and at the district levels) and on Disease Mapping. The issues identified related to ICT applications including human resources, particularly the lack of IT experts, the lack of positions for IT personnel, and the limited knowledge and training among those who are already hired; lack of policies related to the use of IT, particularly the sharing of resources; technical and financial constraints; the maintenance of IT equipment; and the lack of maximization of IT inputs in certain areas, making it a very costly investment.

3.10 Feedback Mechanisms and Marketing HIS Products

Country experiences on establishing feedback mechanisms and marketing HIS products were shared by India (presented by Dr. Ashok Kumar) and Myanmar (presented by Dr. Tin Linn Myint). There was a very wide variety of feedback mechanisms used by these countries, including monthly meetings, telephones, written communication, supervisory visits, and electronic forms of communication like websites and email. India has been posting the ICD on their website. They have also passed the right to information legislation which has facilitated public access to health information. Among the issues discussed during the plenary session on this topic were cost recovery for marketed HIS products and creating public demand and interest for health information.

3.11 Harmonizing HIS-related Initiatives at the Country Level

Dr. Pinij Faramnuayphal of Thailand and Mr. Francisco Pereira do Rego of Timor-Leste shared their experiences in harmonizing HIS-related initiatives at the country level.

Thailand's presentation highlighted about the need to consider both the supply and the demand side when planning and implementing harmonization and integration efforts. Among the initiatives which serve as examples of integration is the community-based surveillance system which

is linked to their disease surveillance system. They also recently launched a publication entitled, "Thai Core Indicators 2005", containing all the important health and health-related indicators.

Timor-Leste, being a newly independent country, had to deal with a variety of donor-related issues. These include the tendency of donors to maintain their own information systems, the capability of the country to meet the information requirements of donors, and the lack of coordination in the conduct of surveys like assessment and baseline studies which lead to duplication and waste of resources.

3.12 Implementing HIS in Decentralized Systems

Two countries with decentralized systems shared their experiences on implementing HIS. These were Indonesia (presented by Dr. Doti Indrasanto) and Sri Lanka (presented by Dr. G.S.Sennayake).

While Dr Senanayake spoke about the use of IT solutions to address issues related to decentralization, Dr Indrasanto, on the other hand, presented the problems in data collection after decentralization, with the national level having to go directly to the district level, bypassing the province, just to be able to collect data from the lower levels. Both countries presented the weaknesses of decentralization including the inadequate time and resources spent in planning for it, the data quality problems especially in relation to the coverage, completeness and timeliness of reporting, and the general deterioration of HIS as a result of decentralization. During the plenary session on this topic, one of the major benefits of decentralization, which is providing an opportunity to the district level to use the information they produce for decision-making, was discussed.

4. MEETING OUTCOMES

4.1 Revised Strategic Plan for HIS strengthening in SEAR Countries

The first draft of the Regional Strategic Plan for HIS Strengthening in SEAR countries was revised based on the inputs during the discussions. The revised version of the strategic plan is presented in Annex 4. A template

presented during the meeting served as a guide for outlining the country action plans (Annex 5). A separate document – Regional Strategy for strengthening Health Information Systems in SEAR countries is being finalized.

4.2 Outlines of Country Action Plans

The second outcome of the meeting are the outlines of the country action plans which were drafted and presented by the participants on the last day of the meeting. The action plans developed by the 10 countries represented in the meeting are shown in Annex 5.

Annex 1

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Annex 2

INAUGURAL ADDRESS BY DR SAMLEE PLIANBANGCHANG, REGIONAL DIRECTOR, WHO SOUTH-EAST ASIA REGION

Distinguished participants, ladies and gentlemen,

I have great pleasure in welcoming you all to this important meeting. Reliable and timely health information is a critical component in health system development. Collection of relevant data and its related analysis to provide necessary evidence for assessing the development and performance of health systems at national and sub-national levels is a major role of any health information system.

Providing timely feedback to programme managers has always been a challenging task for the health information teams at all levels of the health system.

Public health decision making is critically dependent on the timely availability of sound data. The role of health information systems is to collect, analyze and disseminate such data. In practice, however, health information systems rarely function systematically. They are fragmented and unresponsive to needs. This is largely due to the fact that not sufficient attention has been paid to country capacity-building in this area. The result is apparent in the inability of most countries to assimilate the data needed to monitor progress towards the Millennium Development Goals.

The solution to the problem must be comprehensive; money alone is likely to be insufficient unless accompanied by sustained efforts at systems development, coupled with greater accountability and allocation of responsibilities.

This intercountry consultation could be considered as *a milestone* in strengthening health information systems in the South-East Asia Region, due to various reasons. Firstly, it is based on the results of a series of regional and country meetings, consultations and workshops during the previous five to six years. Secondly, there have been some related initiatives, such as MDGs, Health Metrics Network, "3 by 5", etc. There is also the recognition that strengthening health information systems is a cross-cutting priority.

Thirdly, significant financial resources are being directed towards generation of health information in developing countries. Fourthly, this consultation is being conducted as a follow-up of the bi-regional work (SEAR and WPR) on the framework for strengthening health information systems in Asia and the Pacific. Fifthly, an outcome of this consultation would be the Regional Strategy for Strengthening Health Information Systems in South-East Asia (the first strategic document of this kind in the Region) and also the outlines for re-orientating the countries' strategic plans.

Distinguished participants, ladies and gentlemen,

I am pleased to learn that the Health Metrics Network has recently become functional in our Region. In fact, this consultation is very timely considering that very recently, the Health Metrics Network Board met at this venue. In fact, several distinguished members of the HMN Board are also participating in this consultation. An interaction with the country representatives, the HMN Board members and WHO during the next four days would facilitate and synchronize further the country and regional work on strengthening health information.

Given the provisional programme of work, I can see that you have a challenging task ahead. I am sure you will share your rich experiences and vast expertise and consider better ways to effect positive change in health information systems. We have here experienced representatives from the Ministries of Health, National Statistical Offices, as well as several renowned experts and resource persons and colleagues from the WHO country and Regional Office and HQ. I would also like to take this opportunity to thank the Royal Thai Government for all their support to conduct this meeting in Chiang Mai.

I wish you success in achieving the objectives of this consultative meeting, and a very pleasant stay in Chiang Mai.

Annex 3

PROGRAMME

14 December	THEME: Global and Regional Developments on HIS and the Regional Strategic Plan on Stengthening the HIS	
	MODERATER: WHO/SEARO	
8:30 – 9:00	Registration of Participants	
9:00 – 9:15	Opening Ceremonies	
9:15 – 9:45	Topic 1: Highlights and Follow-up of WHO Regional Consultations on HIS in Asia and the Pacific in the Last seven Years	WHO/SEARO
9:45 – 10:00	Discussion on Topic 1	
10:30 – 11:00	Topic 2: Updates on Current Developments in the Field of World Health Statistics	WHO/HQ
11:00 – 11:15	Discussion on Topic 2	
11:15 – 11:45	Topic 3: HMN Update: HMN Proposals From SEAR Countries	HMN Secretariat
11:45 – 12:00	Discussion on Topic 3	
1:30 – 2:00	Topic 4: Proposed Regional HIS Strategic Plan for Strengthening HIS in SEAR Countries	Dr. Ophelia M. Mendoza
2:00 – 2:15	Discussion on Topic 4	
2:15 – 3:00	Group Work 1: Reactions to Proposed HIS Strategic Plan	
3:30 – 5:00	Plenary 1: Presentation and Discussion of Outputs of Group Work 1	
15 December	THEME: Main Challenges related to his to his strengthening	
	MODERATER: DR. Mirosław J. Wysocki	
8:30 – 9:00	Topic 5: Ensuring and Maintaining Data Quality at All Levels	WHO/HQ; Thailand
9:00 – 9:15	Discussion on Topic 5	
9:15 – 9:45	Topic 6: Vital Registration Systems	Indonesia; Sri Lanka
9:45 – 10:00	Discussion on Topic 6	

10:30 – 11:00	Topic 7: Using and Accessing External Data (Other Government Organizations, Academic, Private Sector)	Bangladesh; Nepal
11:00 – 11:15	Discussion on Topic 7	
11:15 – 11:45	Topic 8: Analyzing and Converting Health Information Into Policy and Action – Challenges of HFA and MDG	Dr. Steve Sapirie; Bhutan
11:45 – 12:00	Discussion on Topic 8	
1:30 – 2:30	Group Work 2: Identification of country-level challenges and strategies Related to Topics 5 -8	
2:30 – 3:00	Plenary 2: Presentation and discussion of outputs of Group Work 2	
3:30 – 5:00	Continuation of Plenary 2	
16 December	THEME: Partnerships and Technology MODERATOR: DR. Steve Sapirie	
8:30 – 9:00	Topic 9: Applying information and communication technology (Including GIS, SAM, eHealth, etc.)	Mr. Johan Lemarchand; Maldives; Thailand
9:00 – 9:15	Discussion on Topic 9	
9:15 – 9:45	Topic 10: Feedback mechanisms and marketing the products of HIS	India; Myanmar
9:45 – 10:00	Discussion on Topic 10	
10:30 – 11:00	Topic 11: Harmonizing HIS-related Initiatives at the Country Level (Including HMN, MDG, etc.)	Dr. Pinij Faramnuayphal; Timor-Leste
11:00 – 11:15	Discussion on Topic 11	
11:15 – 11:45	Topic 12: Implementing HIS in Decentralized Systems	Indonesia; Sri-Lanka
11:45 – 12:00	Discussion on Topic 12	
1:30 – 2:30	Group Work 3: Identification of country-level challenges and strategies related to Topics 9 -12	
2:30 – 3:00	Plenary 3: Presentation and discussion of outputs of Group Work 3	
3:30 – 5:00	Continuation of Plenary 3	

17 December	THEME: Development of Country Strategic Action Plans	
	MODERATOR: WHO/SEARO	
8:30 – 9:00	Synthesis of Inputs and Outputs From Days 1, 2 and 3	Dr. Ophelia M. Mendoza
9:00 – 10:00	Group Work 4: Development of country action plans for strengthening health information at national and sub-national levels	
10:30 – 12:00	Continuation of Group Work 4	
1:30 – 3:00	Plenary 4: Country Presentations on their HIS Strategic Action Plans	
3:30 – 4:30	Continuation of Plenary 4	
4:30 – 4:45	WHO/SEARO Response to Country Presentations	WHO/SEARO
4:45 – 5:00	Closing Ceremonies	

Annex 4

PROPOSED REGIONAL STRATEGIC PLAN FOR HIS STRENGTHENING WHO/SEAR: 2006–2015

GOAL AND OBJECTIVES OF HEALTH INFORMATION SYSTEM

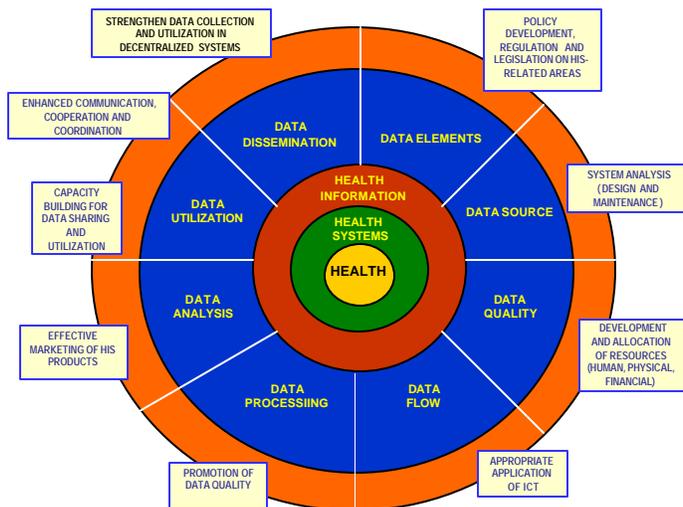
Goal:

To improve the availability, quality and use of health information for improved efficiency and effectiveness of health programmes.

Objectives:

- (1) To validate, analyze and disseminate information on the regional health situation and trends;
- (2) To support countries in their efforts to enhance national capacity and capability in health planning and management by strengthening country health information systems; and
- (3) To provide support to countries for the development of efficient and effective health policies based on sound evidence.

Conceptual Framework of the HIS Strategic plan



HIS STRATEGIC PLAN FOR SOUTH-EAST ASIA REGION: 2006-2015

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
1. Policy development, regulation and legislation on HIS-related issues	1.1 Advocate for HIS to be given higher global and national priority	Advocacy with governments in general, and health ministries in particular for greater political will and resource allocation for HIS development and strengthening	Number of countries which have increased resource allocation for activities related to HIS development and strengthening
	<p>1.2 Develop policies on HIS-related issues (IT policy, release of public information, confidentiality of medical records, electronic exchange of information, etc.)</p> <p>1.3 Provide /Strengthen the legal basis and define regulatory mechanisms for different HIS-related activities (ex., data collection from private health sector, vital registration system, release of public information, use of electronic medical records, etc. etc.)</p>	<p>Technical support in the development of HIS-related policies</p> <ul style="list-style-type: none"> • Advocacy with countries in the development of important HIS-related legislation, like those related to vital registration systems, collection of private health sector data, etc. • Technical support in the formulation/ development of legislation, regulatory mechanisms and operational guidelines for HIS-related issues • Financial support for the regulatory mechanisms and operational guidelines for HIS-related activities (ex., repro-duction of Manuals, etc.) 	<p>No. of countries which have developed and implemented policies on important HIS-related issues</p> <ul style="list-style-type: none"> • No. of countries which have passed legislation related to HIS • No. of countries which have developed and disseminated operational guidelines for different HIS-related legislation and policies

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	1.4 Develop and implement operational guidelines for HIS - related policies, regulations and legislation developed	<ul style="list-style-type: none"> • Technical support in the development of operational guidelines 	<ul style="list-style-type: none"> • Number of countries which have developed operational guidelines for HIS-related policies, regulations and legislation developed
	1.5 Advocate for more rigid/stricter implementation of HIS-related legislation and policies	Financial support for the conduct of meetings, seminars, and other venues for heightening awareness on the need for strict and rigid implementation of HIS-related legislation and policies	Number of countries which showed improvements in HIS performance as a result of stricter implementation of HIS-related legislation and policies (ex., increase in the % completeness of birth and death registration; increase in % coverage of reporting notifiable diseases by private physicians, etc.
2. System analysis (Health information system design/ set-up and maintenance)	2.1 Conduct periodic, in-depth and comprehensive assessment of HIS and its sub-systems	Technical support for the conduct of HIS assessment studies	Number of countries conducting periodic, comprehensive and in-depth HIS assessment
	2.2 Develop and implement systematic plans for HIS development and strengthening (HIS masterplan for the country; IT masterplan; short-term HIS action plans; HIS strategic plans; etc.), including well-defined resource allocation	Provision of technical support in the preparation of HIS masterplans/ strategic plans	No. of countries which have developed HIS strategic plans

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	2.3 Identification/ periodic review of minimum essential data sets and core health indicators to be used and shared by different programmes within and outside of MOH, and to meet international reporting requirements (ex., MDG)	Financial support for the conduct of national workshops to identify/review minimum essential datasets and core health indicators	No. of countries which have systematically identified and collected minimum essential data sets, and are regularly generating core health indicators, including those needed for international reporting requirements (ex., MDG)
	2.4 Link and harmonize, different information systems and sub-systems among programmes and other units within MOH	<ul style="list-style-type: none"> • Technical support for the development/ strengthening of HIS sub-systems • Technical support for the development/strengthening of a harmonized HIS • Financial and technical support for the conduct of training activities on the harmonized HIS • Financial and technical support for the pilot-testing, evaluation, modification and finalization of the design of the harmonized HIS, prior to nationwide implementation 	<p>No. of countries with the following HIS sub-systems in place: vital registration system; hospital information system; disease surveillance systems (for both communicable and non-communicable diseases); finance, health facilities and equipment, and human resource information systems</p> <p>No. of countries which have developed/ designed, pilot-tested, evaluated, and implemented a harmonized HIS</p>
	2.5 Develop linkage with/access to routinely produced health-related databases collected/ generated by agencies/ entities outside of the	Advocate for the establishment of inter-sectoral linkages to facilitate access to and sharing of information with external agencies	No. of countries in which the MOH have established linkages with other agencies like the National Statistics Office,

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	MOH (vital registration system, population data from the Census Office, private health sector, national health accounts, health insurance, socio-economic data, etc.)	collecting health and health-related data	Ministry of Finance, etc. for the sharing of health and health-related information
	2.6 Develop/strengthen capacity to conduct on a periodic basis, research and special studies to supplement routine data collection systems (ex., National Health Survey, Demographic and Health Survey, Sample Registration System, collection of biomarkers, etc.)	<ul style="list-style-type: none"> • Financial and technical support for staff training on research methodologies (ex., sampling designs, development of data collection tools, etc.) • Financial and technical support for the conduct of research and special studies 	No. of countries which have institutionalized the conduct of research and special studies to supplement routine data collection (ex., No. of countries which conduct a national health survey every 5/10 years, etc)
	2.7 Develop/strengthen/ implement maintenance plan for HIS-related resources (improvement and maintenance of physical facilities; upgrading and replacement of computer hardware and software, etc.)	<ul style="list-style-type: none"> • Technical support in the development of maintenance plans • Financial support for the improvement of physical facilities; upgrading and replacement of computer software and hardware 	<ul style="list-style-type: none"> • No. of countries which have developed, documented and disseminated maintenance plans for HIS-related resources • No. of countries which have regular budgetary allocation for the implementation of the maintenance plan for HIS resources • No. of countries which have implemented activities in accordance with the maintenance plan (ex., no. of computers upgraded/

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	2.8 Develop/enhance mechanisms for active involvement of different stakeholders in undertaking management functions for HIS (provide general directions; standardization of system inputs and outputs; clearinghouse for data collection forms; periodic and regular review of data requirements; periodic HIS performance assessment, etc.)	<ul style="list-style-type: none"> • Advocacy with countries in eliciting active stakeholder involvement in HIS management • Technical support in developing effective mechanisms and defining management functions for HIS 	<p>replaced using country maintenance budget, etc.)</p> <p>No. of countries which have developed functional mechanisms for stakeholder involvement in HIS management (ex., no. of countries with a functional multi-sectoral national HIS Committee)</p>
	2.9 Develop and disseminate User's Manuals for the HIS and its sub-systems.	<ul style="list-style-type: none"> • Technical support in the preparation of the HIS User's Manual • Financial support for the production/publication of the HIS User's Manual 	No. of countries which have developed, reproduced and disseminated their HIS User's Manual
3. Development and allocation of HIS resources (human, physical, financial)	3.1 Advocate for stronger development and greater allocation of HIS resources (a) strengthening of the HIS work force (b) greater budgetary allocation for HIS-related activities and needs (c) improvement of HIS-related facilities, including ICT	Advocacy with governments for greater allocation of resources for HIS-related activities	Number of countries which have increased their resource allocation for HIS-related activities
	3.2 Assess/review HIS human resource requirements at different	Technical and financial support for the conduct of the HIS human resource	No. of countries which have conducted an

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	levels in both public and private sectors (number and type of staff needed; job descriptions, staff qualifications, etc.) and implement corrective measures as needed	assessment at different levels	assessment of their HIS human resource requirements at different levels
	3.3 Develop/enhance and implement career development plan for HIS work force (development of career path; provision of benefits and incentives, etc.)	Advocacy for countries to develop career development plans for the HIS work force	Number of countries which have developed and implemented career development plans for the HIS work force (ex. Number of HIS positions created; number of countries which have developed and allocated budget for the implementation of incentive schemes for HIS staff, etc.)
	3.4 Develop and implement training programme on health information sciences and related fields (Bio-statistics, Epidemiology, Demography, etc.) and other forms of specialized training for data providers and data users at all levels	<ul style="list-style-type: none"> • Financial support for long and short term fellowships (both degree and non-degree, local and abroad) for training on health information sciences • Financial and technical support for the development of training materials to be used for local training on health information sciences • Financial and technical support for the conduct of in-country short-term non-degree training on health information sciences and related fields 	<ul style="list-style-type: none"> • No. of fellows trained on health information sciences and related fields by type of training and country • Number of in-country short-term non-degree training courses on health information sciences and related areas conducted, by country

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	<p>3.5 Assess/improve HIS-related physical facilities (ex., storage space for medical records, computer room, etc.)</p> <p>3.6 Allocate funds for HIS-related activities, including the conduct of special studies and sampler surveys</p>	<p>Financial support for the improvement of HIS-related physical facilities</p> <p>Advocacy for the regular allocation of funds from the country health budget, for HIS-related activities</p>	<p>No. of countries which have implemented improvement projects for HIS-related physical facilities</p> <p>No. of countries which have regular allocations in their country health budgets for HIS-related activities</p>
	<p>3.7 Resource sharing for HIS development, strengthening and maintenance by units within MOH, donor agencies, private organizations and NGOs</p>	<p>Advocacy with countries and donor agencies for the adoption of resource sharing mechanism for HIS development and maintenance</p>	<p>No. of countries which have implemented a resource sharing mechanism among units within MOH and among donors, for HIS development and maintenance</p>
<p>4. Appropriate application of information and communication technology (ICT)</p>	<p>4.1 Strengthen capacity to transmit, access and share information at different levels as well as between MOH and other public health and health-related institutions</p> <p>4.1.1 Conduct needs assessment</p> <p>4.1.2 Provide computer hardware, software and other information infrastructure (email and internet access, networking, eHealth, etc.) at appropriate levels</p>	<ul style="list-style-type: none"> • Financial support for the procurement/ installation of communication equipment/ infrastructure necessary for the rapid transmission and access of data from the peripheral to higher levels (radios, fax machines, modems, etc.) • Technical support for the assessment and design of ICT inputs appropriate for the country • Financial support for the procurement/ provision of computer hardware, software and other information infrastructure 	<p>No. of countries which have strengthened communication facilities for the rapid transmission and access of data from the peripheral to the higher levels</p> <p>No. of countries with computerized HIS at the national and sub-national levels</p>

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	4.2 Expand IT application (GIS, SAM, etc.)	<ul style="list-style-type: none"> • Technical and financial support for staff training on expanded IT application (GIS, SAM, etc.) • Financial support for the procurement of software and equipment necessary for expanded IT application (ex., GIS software, PDAs, etc.) 	No. of countries applying GIS, SAM, etc. as part of their HIS
	4.3 Develop and implement training programme on IT for HIS staff at different levels	Financial and technical support for the development and conduct of training programme on IT for HIS staff at different levels	No. of countries which have developed and conducted training programme on IT for HIS staff at different levels
	4.4 Coordinate donor requirements especially in relation to the use of specialized softwares	Establish mechanisms for the coordination of donor requirements	Number of countries which have coordinated donor requirements, especially in relation to specialized softwares
5. Promotion of data quality	5.1 Strengthen policy and legal framework for vital registration systems	Advocacy with countries for the development of policies/legislation for the establishment/strengthening of the vital registration system	No. of countries which have developed/strengthened their policies and legal framework for the vital registration system
	5.2 Develop, document, disseminate and implement data quality standards and data quality control mechanisms (ex., completeness of medical records, use of ICD)	<ul style="list-style-type: none"> • Technical support for the development of data quality standards and data quality control mechanisms • Financial support for the documentation, reproduction and dissemination of data quality standards and data quality control mechanisms 	No. of countries which have developed, documented and disseminated data quality standards and data quality control mechanisms

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	5.3 Produce and disseminate documents (Instruction Manuals, ICD Manual, Data Dictionary, etc.) which can be used as reference materials by staff in accomplishing data collection and reporting requirements.	<ul style="list-style-type: none"> • Technical support for the development of reference materials (Instruction Manuals, Data Dictionary, etc.), including translation services if necessary • Financial support for the reproduction/ purchase and dissemination/ distribution of reference materials (ex., ICD10 Manual) 	No. of countries which have developed, reproduced and disseminated reference materials (Data Dictionary, Instruction Manuals, etc.) for HIS staff in accomplishing data collection and data reporting requirements
	5.4 Develop/strengthen capacity of surveillance and early warning systems to produce real-time data, especially during disease outbreaks, epidemics and disasters	<ul style="list-style-type: none"> • Technical support for the design and development of early warning and rapid surveillance systems • Financial support for the installation of communication and other facilities needed for the rapid transmission and easy access of data • Technical and financial support for staff training on the early warning/ surveillance systems 	No. of countries with functional surveillance and early warning systems in place
	5.5 Provide staff training on data quality, including the use of ICD and other international classification systems, the vital registration system and international health regulations (IHR)	<ul style="list-style-type: none"> • Financial and technical support for the conduct of training on data quality, including ICD training • Financial support for the purchase and distribution of ICD Manuals 	No. of ICD training conducted by country and type of staff trained
	5.6 Design and implement a regular and institutionalized system for the monitoring and	<ul style="list-style-type: none"> • Technical support for the design and development of an institutionalized system 	<ul style="list-style-type: none"> • No. of countries which have developed an institutionalized

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	evaluation of data quality at all levels	for monitoring and evaluation of data quality at all levels, including the development and documentation of operational guidelines for such a system <ul style="list-style-type: none"> • Financial and technical support for training on the implementation of institutionalized system for monitoring and evaluation of data quality at all levels 	system for the monitoring and evaluation of data quality at all levels <ul style="list-style-type: none"> • No. of countries which have allocated budget for activities related to the monitoring and evaluation data quality control at all levels
	5.7 Conduct special studies in situations where data collection and data quality are big problems (e.g., sentinel surveillance system, sample vital registration system, etc.)	<ul style="list-style-type: none"> • Technical and financial support for the conduct of special studies 	<ul style="list-style-type: none"> • Number of countries conducting special studies to determine data quality
	5.8 Establish linkages with relevant institutions to improve coverage and timely transmission of information for the vital registration and disease surveillance systems	<ul style="list-style-type: none"> • Technical support for the planning and design of linkages with other institutions to improve coverage and timely transmission of data 	<ul style="list-style-type: none"> • Number of countries wherein the MOH have established linkages with other institutions to improve the coverage and timely transmission of information for vital registration and disease surveillance systems
	5.9 Conduct activities to heighten community awareness on the need for birth and death registration	<ul style="list-style-type: none"> • Technical and financial support for the implementation of activities to heighten public awareness on birth and death registration 	<ul style="list-style-type: none"> • Number of countries which have conducted activities to heighten public awareness on the need for birth and death registration

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	5.10 Provide incentives for the collection and reporting of good quality data	<ul style="list-style-type: none"> Financial support for the provision of incentives 	<ul style="list-style-type: none"> Number of countries providing incentives for the collection and reporting of good quality health information
6. Effective marketing of HIS products	6.1 Conduct needs assessment and situational analysis for the marketing of HIS products	Technical and financial support for the conduct of needs assessment and situational analysis for the marketing of HIS products	Number of countries which have conducted needs assessment and situational analysis for the marketing of HIS products
	6.2 Increase awareness of data users (both within and outside of MOH) on HIS products (types of health information available, how they can be accessed, etc.), using the services of professional for the marketing of such products, as needed	Financial support for the implementation of activities aimed to create awareness of HIS products	No. of countries implementing marketing strategies for HIS products
	6.3 Regularly publish integrated HIS summary reports covering the core health indicators, including the MDGs (ex., Annual Health Bulletins, Health System Profiles, etc.)	Technical and financial support for the preparation, publication and distribution of integrated HIS summary reports	Number of countries which regularly publish integrated HIS summary reports
	6.4 Improve quality and content of HIS -related reports and publications	<ul style="list-style-type: none"> Technical support in improving quality and content of HIS reports (doing comparative analysis, inclusion of analytic write-ups, including data and analysis on topics of current interest, etc.) 	No. of countries with regular HIS publications which include not only presentation (graphs and tables) but also critical analysis of the data

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
		<ul style="list-style-type: none"> Financial support for the publication and distribution of analytic reports 	
	6.5 Increase types/ modes, coverage and frequency of dissemination of HIS products for all types of audience, from the general public to the policy makers and national government officials (members of the Cabinet, Parliament, etc.), and the international community	<ul style="list-style-type: none"> Technical and financial support for the design and development of different modes of dissemination of HIS products appropriate for different types of audience and users Financial support for the reproduction and distribution/ conduct of different kinds of dissemination materials/ activities 	Number and types of dissemination materials/ activities for HIS products developed/ implemented by countries
	6.6 Develop, maintain and market MOH website	Technical and financial support for the development, maintenance and marketing of the MOH website	<ul style="list-style-type: none"> No. of countries which have developed, maintained and marketed the MOH website No. of countries posting updated health information on the MOH website
7. Strengthening of data sharing, analysis and utilization at all levels	7.1 Develop/strengthen mechanisms to facilitate vertical and horizontal transmission of information within the MOH	Technical and financial support for the design and installation of mechanisms to facilitate easy access/sharing/ interfacing of databases among different information sub-systems within MOH (ex., LAN for computerized systems)	No. of countries which have developed and implemented mechanisms to facilitate easy access/sharing/interfacing of databases among different information sub-systems within MOH
	7.2 Provide/facilitate access to relevant external data sources,	Advocacy for the establishment of linkages between MOH and other	No. of countries where MOH has established linkages

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	both local and international (Memorandum of Agreement with other agencies for the exchange and sharing of data; creation of/ membership in multi-sectoral technical working groups; membership in local and international health information networks, etc.)	local and international institutions for the exchange and sharing of health and health-related data	with local and international institutions for the exchange and sharing of health and health-related data
	7.3 Establish/enhance an integrated health database or "data warehouse" at national and sub-national (region, province, district, sub-district) levels	Technical and financial support for the design and development/ enhancement of a health "data warehouse" at the national and sub-national levels	No. of countries which have established/enhanced a health "data warehouse" at the national and sub-national levels
	7.4 Develop country-level capability for data analysis and the application of methodologies to address data problems (ex., use of census data to estimate mortality levels; derivation of country-level estimates for important parameters and indicators like the prevalence and incidence of diseases, etc.)	<ul style="list-style-type: none"> • Study fellowships for training on data analysis (ex. Degree and short-term training programmes on biostatistics, demography, etc.) • Financial and technical support for the conduct of short-term non-degree training on quantitative methods in the region and in the countries 	<ul style="list-style-type: none"> • No. of study fellowships given to countries • No. of training programmes on quantitative methods conducted in the region and in the countries
	7.5 Develop/apply appropriate data analysis techniques to address specific areas of interest to data users (ex., generation of specific morbidity and mortality rates according to geographic (by region, province, etc.) and demographic variables	Technical support for the application of appropriate data analysis techniques to address specific areas of interest to data users	No. of countries producing data or maintaining databases in a form amenable to further analysis to address specific areas of interest (ex., disaggregated data; time series data, risk factor data. etc.)

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	(by age, sex, cause), time series analysis for determination of trends, risk factors; gender sensitivity; equity; poverty reduction etc.)		
	7.6 Develop and implement training programmes on data utilization for programme planning, management, monitoring, evaluation, and policy formulation for MOH staff at different levels	<ul style="list-style-type: none"> • Technical and financial support for the development and reproduction of training materials on data utilization • Technical and financial support for the conduct of training programmes on data utilization for different types of data users at different levels 	No. of countries which have conducted training programmes on data utilization for different types of data users at different levels
	7.7 Develop mechanisms to facilitate the transmission of essential health information/ evidence to policy and law makers, and its transformation into policy and action (ex., creation of Technical Working Group, conduct of regular briefings with policy makers, etc.)	Technical support for the design and development of mechanisms to facilitate transformation of health information/evidence into policy and action	<ul style="list-style-type: none"> • No. of countries which have developed mechanisms for the transformation of health information/evidence into policy and action • No. of legislation enacted/ policies developed/ important decisions made based on data from the HIS
	7.8 Provide incentives to government units, organizations, etc. for good performance in utilization of health information for action	Technical support for the development of operational guidelines for the provision of incentives for good performance in utilizing health information for action	<ul style="list-style-type: none"> • No. of countries which provide incentives for good performance in utilizing health information for action

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
8. Enhancement of mechanisms for effective communication, cooperation and coordination	8.1 Advocate for the development and implementation of a harmonization mechanism among donors at the international level	Conduct of activities for the development and implementation of a harmonization mechanism among donors at the international level	Development and existence of a harmonization mechanism among donors at the international level
	8.2 Develop and implement a strong country policy on HIS coordination/partnerships among countries, donors, agencies and other stakeholders of the HIS	Technical support for the development and implementation of policies on HIS coordination/partnerships among countries, donors, and other stakeholders of the HIS	Number of countries which have developed and implemented policies on HIS coordination/partnerships among countries, donors and other stakeholders of the HIS
	8.3 Involve donors and other stakeholders in designing the HIS	Financial support for the conduct of activities involving donors and other stakeholders in designing the HIS	Number of countries where donors and stakeholders are involved in designing the HIS
	8.4 Develop/enhance strategies for effective communication between data providers and data users at all levels, including the provision of feedback mechanisms	Technical support in the development of strategies for effective communication between data users and data providers, including feedback mechanisms	Number of countries with operational and effective communication strategies between data users and data providers, including feedback mechanisms
9. Strengthen data collection and utilization in decentralized systems	9.1 Develop and implement mechanisms to improve the quality of district level data and its complete and timely transmission from the district to the provincial and national levels, under a decentralized system	Technical and financial support for the development and implementation of mechanisms to improve data quality at the district level, and ensure the timely transmission of data from the district to the provincial and national levels	Number of countries with decentralized systems, which have improved data quality at the district level Number of countries with decentralized systems which have developed mechanisms for the complete and timely transmission of data from the district to the provincial and national levels

Strategic Area	Actions and Initiatives	Possible Areas of WHO/Donor Assistance	Indicator
	9.2 Train district level staff on data analysis and utilization for programme planning, monitoring, management and evaluation	Technical and financial support for the training of district level staff on data analysis and utilization for programme planning, monitoring, management and evaluation	Number of countries which have trained district level staff on data analysis and utilization
	9.3 Develop and implement mechanisms for the proper dissemination of integrated district-level data	Technical and financial support for the development and implementation of mechanisms for the proper dissemination of integrated district-level data	Number of countries with decentralized systems which have widely disseminated integrated district-level data

Annex 5

OUTLINES OF COUNTRY ACTION PLANS

HIS-RELATED ISSUES/CHALLENGES AND PROPOSED STRATEGIES:

Bangladesh

HIS-Related Issues/Challenges	Proposed Strategies
1. HIS and sub-systems not comprehensively assessed	Comprehensive assessment of HIS and sub-systems
2. Existing HIS needs to be revisited	Revisiting existing HIS plan based on findings of comprehensive HIS assessment and development of new HIS plan
3. Inadequate coverage of public & private sectors in HIS report	Legislation, consultations, incentives for wider participation
4. Inadequate human resource	Assessment of human resources; identification of the number and type of human resources; and building up human resources through recruitment/training as applicable
5. Inadequate funds, logistics and ICT support	Mobilization of resources for logistics; funding special programmes such as surveys; ICT support
6. Indicators need to be revisited	Reviewing the indicators; and streamlining for all levels, keeping in view the country and international needs
7. Lack of data processing capacity at all levels	Training of existing HIS staff
8. Vital registration is not fully functional but government plans to make it so Challenge of recording exact cause of death for persons dying without medical attention	Strong commitment and monitoring for government's plan to be implemented Requesting WHO for technical assistance

HIS-Related Issues/Challenges	Proposed Strategies
<p>9. Poor quality medical record-keeping in hospitals</p> <p>10. Inadequate coordination between units of MoH, between HIS units of different ministries & with HIS units/activities of donors/NGOs</p>	<p>Preparation of standard guidelines and forms for medical record keeping; motivation to use ICD10</p> <p>Increased coordination through recently-formed Coordination Group of stakeholders for HIS</p>
<p>11. Data are often unreliable, incomplete or not available on time</p>	<ul style="list-style-type: none"> • Development of data quality and data flow guidelines clearly defining responsibility, frequency by fixed monthly date, and also feedback process • Adequate supportive supervision and monitoring for adherence to the guidelines
<p>12. Policy makers understand the need for health information, but ignore use of information with the perception that reliable data are unavailable</p> <p>Political considerations also play a role in decision priority setting and decision making</p>	<p>Advocacy and awareness campaigns for making systems available for collecting and providing quality and useful data and for evidence-based policy decisions</p>
<p>13. Academic institutions inadequately use HIS data</p>	<p>Appropriate communication programmes with relevant academic institutions/courses for involving them in HIS activities and encouraging them to teach students about values of health data</p>

Bhutan

Proposed Strategies	Proposed Activity
1. Policy Development	1. Develop a policy on data storage
	2. Develop operational guideline for data storage
2. Health Information design and adaptation	1. Review TB, Malaria and RWSS reporting system to find out feasibility of linking with HIS
3. Development of human resources	1. Review the human resource needs in HIS
	2. Develop human resource master plan for HIS
4. Strengthening vital registration	1. Review issuance of death certification (coordinate with Pension Board, Department of Civil Registration & NSB)
5. Promotion of data quality	1. Review the feedback mechanism of HIS to see the feasibility of institutionalizing feed back mechanism
6. Marketing and dissemination of HIS products	1. Identify the target audiences
	2. Review annual bulletin to identify areas for equipment
	3. Develop Bhutan Health Statistical Resource Centre (Software Library)
7. Communication and Coordination among stake holders	1. Form Health Information System Coordination Group (MOH, NSB, MOHCA, UNFPA, UNICEF, WHO, GOI, DANIDA, JICA)
	2. Review the current information flow and exchange, use of information and to determine clearly the responsibilities of the agencies involved in the HIS
8. Application of ICT	1. To look at the concept of "integrated data management" (PBM, BAS, PIS, Drug Inventory System) and how it will fit within the overall framework of HIS.
9. Promotion of data utilization	

India

His-Related Issues/Challenges	Proposed Strategies
Implementation of legislations by all states in the country	Advocacy
At periphery extra dataset resulting in overloading and delayed reporting affecting the data quality and delayed feedback	Continued Review of Updating of Reporting Mechanism
Linking of HIS of various national health programmes	National Disease Surveillance Authority Launch of Integrated Disease Surveillance Project (IDSP) from 2004 with IT applications at district/state/country while linking all national health programmes and strengthening Public Private Partnership (PPP), M&E, infrastructure development and capacity building at all levels

Other Strategic Areas to be Addressed:

- Prioritization of HIS with national commitments with legislative support along with complete decentralization and involvement of local governments and municipal bodies.
- Well defined health service providers at different levels from village/sub-centre/PHC/CHC/District/State/Country
- Well defined HIS framework at all levels
- Well defined health information and indicators at various levels with well-designed recording/reporting formats with time frames
- Feed back mechanism
- Response mechanism
- Basic and continued capacity building at various levels through well designed teaching modules.
- Well defined monitoring and evaluation (M&E) system and conducting periodic special surveys
- National Council for Health & Family Welfare for policy decisions and actions
- National Population Policy, 2000; National Health Policy 2002
- National Rural Health Mission (2005)
- State/District Health Societies

Indonesia

HIS-Related Issues/Challenges	Proposed Strategies	Activities
1. Functioning HIS in decentralize HS	Development of appropriate legislation and regulation to address HIS problem	Rational and clear allocation of responsibility of HIS staff at different levels
2. Conduct comprehensive HIS assessment	Obtain support from HMN to access national HIS	Carry out HIS assessment in t2006
3. Advocate with government and parliament for greater human resources and financial support	Convince the government and parliament	Prepare comprehensive plan for better implementation of human and financial resources
4. Introduce ICD10 and achieve better medical record keeping in sentinel hospitals and health centers	Implement ICD10 and come up with better medical records in sentinel areas	Training and evaluate progress in sentinel areas
5. More practical use of IT	Implement GIS at national, provincial, and district levels	Training people on how to use GIS in health system
6. Harmonizing of HIS consistent with donor expectations	Consultation with different program in MOH	Integrating the specific vertical surveillance system

Maldives

HIS-Related Issues/Challenges	Proposed Strategies
1. Lack of defined data set and indicators at all levels	Developing a minimum data needs for programme management
2. Lack of comprehensive HIS policy	Development of a National HIS Policy
3. No computerized overall monitoring system	Introducing a GIS
4. Lack of technical experts for data analysis	Capacity building
5. HIS functioning in decentralized structure 6. Further improvement of VRS	Planning for responsibility and resource allocation at regional and atoll levels Conduct surveys to verify the accuracy of the VRS
7. Further development of an early warning system	Improvement of surveillance system at regional, atoll and island levels
8. No effective marketing of HIS products	Strengthening information dissemination through media and publication of reports
9. Misclassification of causes of mortality and morbidity	Strengthening of medical records quality and use of ICD-10
10. Processing of available information weak	Strengthening the capability of information processing at MOH, line departments, hospitals and health centres

Myanmar

HIS-Related Issues/Challenges	Proposed Strategies
<p>1. Lack of appreciation of higher-level officials within and outside of MOH on the importance of HIS</p> <p>2. Lack of HIS policies and guidelines</p>	<p>Advocacy with national officials and top-level management of MOH on the importance of HIS</p> <p>2.1 Develop HIS policies</p> <p>2.2 Formulate operational guidelines for policies developed</p>
<p>3. Low capability and motivation among HIS work force</p>	<p>Strengthen the HIS work force</p> <p>(a) Review of the curriculum of medical, nursing, midwifery and public health schools in relation to courses related to health information</p> <p>(b) Capacity building for HIS staff, including use of ICT</p> <p>(c) Provision of incentives for HIS staff in all levels</p>
<p>4. Duplication of data collection systems; proliferation of forms</p>	<p>Link and harmonize different information systems within MOH</p>
<p>5. Weak implementation of the vital registration system</p>	<p>5.1 Enactment of law specific for vital registration system</p> <p>5.2 Conduct of joint projects between MOH, CSO and general administration to strengthen the vital registration system</p>
<p>6. Very poor ICT facilities</p>	<p>Develop mechanisms to fund the upgrading and maintenance of ICT facilities</p> <p>Upgrade computer hardware and software</p>

HIS-Related Issues/Challenges	Proposed Strategies
7. Inability to access data from the private sector, and NGOs	Establish linkages with private sector and NGOs for information access and sharing
8. Poor data quality	8.1 Define data quality standards 8.2 Implement data quality control mechanisms like implementing regular monitoring and supervision at every level 8.3 Conduct ICD training for hospital staff (only staff of 100 out of 824 hospitals have been trained so far)
9. Very limited extent of data utilization at the lower levels	Increase awareness of data users on HIS products Train staff on data analysis and utilization

Nepal

HIS-Related Issues/Challenges	Proposed Strategies
Evidence based decision making is not yet a culture	Policy development , regulation and legislation of HIS related issues
Weak coordination and linkage between different information sources and systems, e.g., service statistics and survey-based data, LMIS, FMIS & on HR and of other agencies (NGOs and private)	Enhancement of mechanisms foe effective communications cooperation and coordination
Weak planning, monitoring, evaluation, feed back for quality data and weak dissemination	Strengthen health information designs/set up and maintenance Promotion of data quality Effective marketing of HIS products Strengthening of data sharing, analysis and utilization at all levels
Inconsistencies and incomplete reporting, under reporting from hospitals particularly in central level and less reporting from private sector	Promotion of data quality Strengthening of data sharing, analysis and utilization at all levels
Less utilization data from external sources	Enhancement of mechanisms foe effective communications cooperation and coordination Health information design/set up and maintenance
Inadequacy of specific information such as poor population, gender and marginalized group and other data disaggregating	Promotion of data quality Strengthening of data sharing, analysis and utilization at all levels
Limited application of ICT due to resource and knowledge constraints	Appropriate application of information and communication technology Development and allocation of HIS resources

Sri Lanka

Health Related Issues/ Challenges	Proposed Strategies	Activities
<ul style="list-style-type: none"> • Lack of an explicit HIS and IT policy • Non availability of relevant legislation, regulations and guidelines • Non availability of a Data dictionary 	<p>Policy development, regulation and legislation</p>	<ol style="list-style-type: none"> 1. Develop a HIS policy 2. Develop an IT policy 3. Enact necessary legislation 4. Develop necessary regulations 5. Develop a data dictionary 6. Prepare and disseminate guidelines 7. Establish an advocacy programme
<ul style="list-style-type: none"> • Logistical issues • Non availability of adequate infrastructure for Medial Records Department (ICD10, uniformed printed forms etc) 	<p>Development of infrastructure for HIS development</p>	<ol style="list-style-type: none"> 1. Carryout a survey to identify the areas for logistical support 2. Develop infrastructure on a phased-out manner 3. Supply furniture, equipment, stationery etc. 4. Supply ICD volumes and printed forms
<ul style="list-style-type: none"> • The Human Resources not adequate • HR not trained • Lack of career development for HS staff 	<p>Ensuring the availability of competent Human Resources (HIS producers and users)</p>	<ol style="list-style-type: none"> 1. Recruit adequate HR 2. Identify Training Needs 3. Develop need based training programmes on IT, record keeping, Coding etc.

Health Related Issues/ Challenges	Proposed Strategies	Activities
		4. Establish a career development mechanism Develop
<ul style="list-style-type: none"> • The quality across HIS is poor • Record keeping standards poor • Usage of a manual system • Lack of standardized training materials, documents etc. 	Promotion of data quality	<ol style="list-style-type: none"> 1. Redesign record keeping formats at all steps 2. Provide regular in - service training on record keeping practices etc. 3. Introduce HIS and It training modules for undergraduate curricular fro HCW
<ul style="list-style-type: none"> • Manual systems are bring used causing problems in data transmission and analysis 	Introduction of ICT infrastructure	<ol style="list-style-type: none"> 1. Develop LANs in institutions in a phased out manner 2. Provide hardware and software for institutions 3. Conduct ICT training programmes for HIS staff 4. Develop maintenance and replacement plans
<ul style="list-style-type: none"> • Information is not used for decision making • Information is not shared among stakeholders 	Enhancement of mechanisms for effective communication, corporation, coordination and strengthen data sharing for decision making	<p>Carryout advocacy</p> <p>Develop opportunities for manages and policy makers to be exposed on evidence based decision making</p>

Issues not identified: Vital Registration, Population Census, Surveys etc.

Thailand

HIS-Related Issues/Challenges	Proposed Strategies
1. Unavailability of health data from private sectors	<ol style="list-style-type: none"> 1. Develop and implement legal framework and regulatory mechanisms for data collection from private health care providers 2. Build coordination mechanism with private sector
<ol style="list-style-type: none"> 2. Overlaps of various health surveys among different organizations 3. Lack of capacity of data analysis, synthesis and use at local level 	<ol style="list-style-type: none"> 1. Develop mechanism to link and harmonize existing household surveys related to health 2. Standardization and sharing methodologies and tools between organizations 1. Capacity building and technical support from experts 2. Provide appropriate tools and application for data analysis such as statistical package, GIS
<ol style="list-style-type: none"> 4. Lack of ICT personnel at local level (provincial level) 5. Low quality of cause of death data in VR 	<ol style="list-style-type: none"> 1. Develop career path for ICT personnel at local level 1. Develop and pilot R&D using PDA-based VA software for non-hospital death 2. Re-train medical doctors to improve cause of death data for in-hospital death 3. Regularly monitor accuracy of cause of death data
6. Low data quality and overloads of routine health service data collection	<ol style="list-style-type: none"> 1. Develop quality assessment mechanism at different levels 2. Optimize core data sets from health facilities among related programs 3. Develop data management for integrated electronic health records

HIS-Related Issues/Challenges	Proposed Strategies
	<ol style="list-style-type: none">4. Develop continuous training, supervision, monitoring, evaluation5. Link to some kinds of incentives for good data quality
7. Lack of national HIS related standard	<ol style="list-style-type: none">1. Develop core national health indicators2. Develop national standard of coding and health databases
8. Limited access to and utilization of health information products	<ol style="list-style-type: none">1. Design and develop products of health information relevant to various users2. Develop data warehouse accessible by various users3. Develop channel and communication mechanism to audiences

Timor-Leste

HIS-Related Issues/Challenges	Proposed Strategies
The available routine data is not able to fulfill the need of health sectors to improve the performance of health services	<ol style="list-style-type: none"> 1. Develop/strengthen capacity to conduct on a periodic special studies to supplement routine data collection system <p>Allocate funds for HIS related activities including the conduct of special studies and sample surveys</p>
Lack involvement of partners and potential users in the HIS development	<ol style="list-style-type: none"> 2. Develop mechanisms for active involvement of different stakeholders in undertaking management functions for HIS
Inadequate quality of data	<ol style="list-style-type: none"> 3. Develop documents, disseminate and implement data quality standards and data quality control mechanisms 4. Design and implement regular and institutional system for monitoring and evaluation of data quality at all levels
Inadequate dissemination of health data and information	<ol style="list-style-type: none"> 1. Regularly publish integrated HIS summary reports 2. Develop, maintain and market MoH website 3. Establish an integrated database at national and sub-national level, and encourage the participation of main partners and stakeholders 4. Develop strategies for effective communication between data providers and data users at all levels including the provision of feedback mechanisms
Inadequate capacity for data analysis and production of good health information	<ol style="list-style-type: none"> 1. Develop country level capability for data analysis and the application of methodologies to address data problems

HIS-Related Issues/Challenges	Proposed Strategies
Lack of use of data in decision making	1. Develop and implement training programs on data utilization for planning, management, monitoring, evaluation and policy formulation for MoH staff at different levels
Lack of coordination among donors and international agencies; and between them and MoH	1. Advocate for development and implementation of a harmonization among donors at the international level 2. Develop and implement strong country policy on HIS coordination/partnership among country, donor and agencies and other stakeholders of the HIS