

THAILAND'S MID-DECADE GOALS FOR CHILDREN :
MONITORING AND EVALUATION PROGRAMME

PHASE 1 :
NATIONAL MONITORING
AND EVALUATION SYSTEM
AND CURRENT MID-DECADE
GOALS STATUS

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Forward

Thank to the high priority given to the betterment of the children's health status, the situation of children in the Kingdom has undergone significant improvement in the past decades. The Royal Thai Government has demonstrated her further commitment by the early action taken as a follow-up to the *1990 World Summit for Children* to ensure that all goals for the survival, protection and development of children by the year 2000 were included in the *Seventh National and Economic Development Plan* for the period 1992-1996 and Thailand's accession to the *Convention on the Rights of the Child* in 1992.

However, the needs and challenges towards those goals are quite formidable and should not be underestimated. Not only the challenge of sustaining the excellent progress and maintaining the implementing capacities but also the gaps in the equity network to be corrected if Thailand is to succeed the promise goals. Certainly, the much needed strategy is probably that of monitoring, evaluation and the application of lessons learned in order to improve strategies and plans. The UNICEF/RTG's then jointly proposed the five-year Programme on Monitoring and Evaluation which clearly addressed the need to improve the quality and efficiency of the reporting key indicators and to find ways for consolidating information from many different exist monitoring systems and sharing it.

The Health Systems Research Institute (HSRI), an organization that has been established to ensure that essential and relevant information would be made available, sees this as the most important strategies to bring about better informed and judicious decisions. In response to the need, *Thailand's Mid-Decade Goals for Children: Monitoring and Evaluation Project* was proposed and being supported by UNICEF. The Phase 1 on the National Monitoring and Evaluation System and Current Mid-Decade Goals Status was carried out to review the strength, weakness and pitfalls of the current monitoring and evaluation information system for the 10 Mid-Decade Goals and to report on progress towards the 10 Mid-Decade Goals based on the most update data and information available from various sources. In the process, several persons have been heavily involved and HSRI is especially indebted to Associated Professor Yongyout Kachondham, who has been the driving force in the first phase of this project. Sincerest appreciation also goes to UNICEF Thailand for their generous agreement to support this project.

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EXECUTIVE SUMMARY

1. The Phase 1 project on "*National Monitoring and Evaluation System and Current Mid-Decade Goals Status*" is the first part of the **Thailand's Mid-Decade Goals Monitoring and Evaluation Project** carried out by the Health Systems Research Institute and supported by UNICEF.
2. The objectives of the study of the first phase are to review the strength, weakness and pitfalls of the current monitoring and evaluation information system for the 10 Mid-Decade Goals (Annex 1), to report on the progress towards goals, and to recommend for a framework and technical consideration for the M/E system development for the Phase 2 & 3 in this project.
3. The activities included a critical scrutiny in all aspects of the information system including personnel involved, data collection forms, compilation procedures, utilization, and reporting system up the hierarchy from sub-district to the national level and a review on the most up-date data of the 10 Mid-Decade Goals. Several technical meetings and a conference attended by high- and middle-level health managers were organized to criticize the preliminary report and recommend on the framework for further development of the monitoring and evaluation information system.
4. Conclusions from the review and technical meetings regarding the existing information system in health are that there are enormous workload and redundancy in the system and the data are predominantly activities or output related rather than effect or impact information. The systems are also characterized as "vertical" and "compartmentalized" more than "horizontal" and "integrated" and, in many areas, information generated have questionable validity and reliability. Utility from the huge information system is inadequate especially at the provincial level and currently fail to cope with the dynamicity of the present situation. However, the system has its strength in terms of coverage, manpower involved, and the potential to utilize computer technology.

5. The detailed information system for monitoring and evaluation, current status, and points for consideration in each of the Mid-Decade Goals are in Annex 2.1-2.10. The types of data being collected for monitoring and evaluation in each of the Mid-Decade Goals are summarized in Table 3.
6. Among many types of information systems, the most up-to-date one is the daily diseases surveillance system which include diseases related to 6 of 10 goals. The system is most beneficial for polio, tetanus and other rare but fatal diseases. However, for common diseases like that measles, diarrhea and ARI, the system has not been utilized to its full potential.
7. The most common and reporting most frequently but oftentimes irrelevant in the current information system is the routine actions and activities report. Although it may serve budgetary purpose and for local managers to monitor the output, it can not be utilize as a tool for monitoring the situation.
8. Special surveys are usually vertical or problem specific. The most critical issue is the justification of current coverage-based which consumed tremendous amount of work by local health personnel rather than sampling basis. Current use of many rapid surveys employing principally by the 30-clusters sampling method may be a good alternative. The information obtained is also quite valid and reflect the true situation because it is a community-based rather than institutional-based.
9. The current status of the Mid-Decade Goals is summarized in Table 4 and the more detailed information are in Annex 2.1-2.10. The highly achievable goals are the eradication of poliomyelitis, the maintenance of a high level of immunization coverage and the elimination of iodine deficiency disorders. The probable achievable goals include the elimination of vitamin A deficiency and its consequences, the empowerment of all women to breastfeed their children, the reduction of iron deficiency anemia in pregnant women, the reduction in the deaths due to acute respiratory infections and the elimination of neonatal tetanus. *However, the reduction of measles morbidity and the*

reduction of diarrhea cases and deaths in children under the age of five years by increase ORT user rate have an unlikely achievement prospect.

10. Several recommendations are the need to identify the utility of the information system for monitoring and evaluation at each level and a more "horizontal" and "integrated" information system at the provincial level. The utility of the current daily should be maximized especially at the provincial level. A comprehensive and integrated rapid survey which is a challenge for the conventional information system should be developed and implemented, preferably together with software development and appropriate use of computer technology. Furthermore, efforts should be made to monitor some specific groups especially those in outreach areas or temporary migrants.

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ACRONYMS

(in alphabetical order)

AFP	<i>Acute flaccid paralysis</i>
AIDS	<i>Auto-immune deficiency syndrome</i>
ANC	<i>Antenatal care</i>
ARI	<i>Acute respiratory tract infection</i>
BCG	<i>Bacillus Calmette and Guérin (Anti-tuberculosis vaccine)</i>
BFHI	<i>Baby friendly hospital initiative</i>
BMN	<i>Basic minimum needs</i>
DPT	<i>Diphtheria, pertussis and tetanus toxoid</i>
EPI	<i>Expanded programme for immunization</i>
HIV	<i>Human Immuno Deficiency Virus</i>
HSRI	<i>Health System Research Institute</i>
ICD9	<i>International Classification of Diseases version 9</i>
IDA	<i>Iron deficiency anemia</i>
IDD	<i>Iodine deficiency disorders</i>
IMR	<i>Infant mortality rate</i>
MMR	<i>Measles, mump and rubella</i>
MMWR	<i>Mortality and Morbidity Weekly Report</i>
MOPH	<i>Ministry of Public Health</i>
M/E	<i>Monitoring and evaluation</i>
OPV	<i>Oral polio vaccine</i>
ORS	<i>Oral rehydration salt</i>
ORT	<i>Oral rehydration therapy</i>
RTG	<i>Royal Thai government</i>
TT2	<i>2 doses of tetanus toxoid during pregnancy</i>
UNICEF	<i>United Nations Children's Fund</i>
U5	<i>Children aged under 5</i>
VAD	<i>Vitamin A deficiency</i>

THAILAND'S MID-DECADE GOALS FOR CHILDREN : MONITORING AND EVALUATION PROGRAMME

PHASE I: NATIONAL MONITORING AND EVALUATION SYSTEM AND CURRENT MID-DECADE GOALS STATUS

I. INTRODUCTION

Rationale

Thailand, in the past decade, has earned the reputation as one of the leading less developed countries where significant progress in improvement in the welfare of children and women parallels by impressive economic growth and health care services. The strong political commitment, available resources and technical potential also constitute a favorable position from which Thailand begins the momentous leap to achieve the 1995's eight (plus two) mid decade goals. Obviously Thailand is poised to become a prime example among the less developed countries and certainly on the path to achieving all of the Goals for Children before the turn of the next century.

However, there are some looming threats that should be properly addressed. Imbalanced growth pattern and large disparity of wealth amid extreme rapid growth is one of the highest in the agenda. The traditionally oriented, extended family structure and kinship which are the vital consolidate force of the Thai society is gradually disintegrated as a consequences of internal migration for economic opportunity and self fulfillment instead of mutual assistance and gratitude obligation. Thailand also starts to pay the high price of industrialization in terms of environment degradation and its health impact. Materialism and consumerism that come along with extensive communication and transportation system have also nurtured the face value on "form", "status", and "face" over the more important "content", "need" and "true value" resulted in phenomena such as spending beyond means and increasing accumulated debts among the poor in Thailand.

Thus, the needs and challenges towards those goals are quite formidable and should not be underestimated. Not only the challenge of sustaining the excellent progress and maintaining the implementing capacities but also the gaps in the equity network to be corrected if Thailand is to succeed the promise goals. To meet these challenges, four general, cross-cutting strategies i.e. the goal orientation; the need to sustain past and future success, the need to reduce disparities; and the need for monitoring, evaluation and learning lessons have been clearly stated.

Of the four strategies, the much needed one is probably that of monitoring, evaluation and the application of lessons learned in order to improve strategies and plans. Since monitoring is of paramount concern in the attainment of Mid-Decade Goals, developing good and viable information bases, the monitoring system and how to analyze it will not only give a major input for appropriate and powerful public advocacy and social mobilization, but realistic actions and prompt responsiveness in programme management as well. However, the current health reporting system need to be strengthened and oriented towards the effect and impact levels rather than main emphasis on the output status. Moreover, surveillance systems to monitor the plight of marginalized groups such as the hill tribes, displaced groups and the urban poor also needs to be developed. The quality and efficiency improvement of reporting key Mid-Decade Goals indicators and management information system for consolidating information from many different existing monitoring systems and sharing it in a timely manner are utmost important.

The UNICEF/RTG's then jointly proposed the five-year Programme on Monitoring and Evaluation which clearly addressed:

- the need to review and find out processes of consolidating, sharing and maximizing the utility of information from the many different existing *monitoring and evaluation (M/E) systems*;
- emphasis on *impact evaluation* of the programmes on children and women, so as to assess accomplishment towards national socio-economic development goals, particularly those in the ***Convention on the Rights of the Child*** and in the ***Plan of the World Summit for Children***; and
- evaluation of what has worked and obstacles confronted in projects and programmes (i.e strength, weakness, opportunities and threats) so as to learn lessons from them.

The Health Systems Research Institute (HSRI)

The Health Systems Research Institute (HSRI) has been established to ensure that essential and relevant information would be available to assist decision makers at different level of the health administration. Working to improve the present health recording and reporting system is one of the crucial activities that would help towards that end. Finding alternative means of making information available not necessarily through the reporting and recording system is also imperative for good decision making. With regards to information about the health of the Thai children, it has long been accepted that the available information through existing registration and reporting system needs to be supplemented by alternative sources especially through some types of sampling surveys or specific research studies. The HSRI sees this as the most important strategies to bring about better informed and judicious decisions.

In order to lay a foundation for future UNICEF/RTG collaboration, a document on the health status of the Thai children has been developed by UNICEF based on mostly from the existing report systems. It is essential that the Thai government take up the responsibility of closely monitoring the future progress and success. The Mid-Decade Goals are mostly within the mandate of the health sectors. It is therefore crucial that the Ministry of Public Health (MOPH) look into details on how the information supports for such important endeavors be better improved and established. Monitoring the ongoing situation from various sources including the introduction of certain rapid surveys could be developed to provide better insight into the situation and thus guide the decision making process. The quality of the information support is expected to gradually improve along with the monitoring system. Such development would be best done on the basis of research and development efforts with participation of the HSRI along with the Bureau of Health Planning and other relevant units in the MOPH.

In response to the need, the objectives of the proposed Mid-Decade Goals monitoring and evaluation project by HSRI are as follows:

- A. Based on the UNICEF situation analysis document and additional data sources, the current scenario and trend of the Thai children health status would be analyzed with special efforts being given to providing better picture, and if possible, on differential between regions, urban/rural, and especially those in the marginalised settings. The development of the M/E system would be formulated.
- B. Assuming the existing report does not provided adequately relevant data for the M/E, alternatives to the data gathering would be considered. Tentatively, a rapid survey would be a cost-effective way of data acquisition.

- C. The M/E at the national level would be strengthened as well as that at the local (provincial) level. The latter would be assisted so provincial profiles with respect to the Mid-Decade Goals would be monitored closer to the operational situation.

The three related projects are proposed during the 1993-94 period, as follows:

PHASE 1: The National Monitoring and Evaluation System and Current Mid-Decade Goals Status

PHASE 2: Provincial Information System for Monitoring Child Health

PHASE 3: Rapid Survey on Thai Child Health

II. OBJECTIVES

Accordingly, based on the proposal submitted to UNICEF and subsequent dialogue with the programme officer, the objectives of the first phase are as follows:

- A. to review the strength, weakness and pitfalls of the current monitoring and evaluation information system for the 10 Mid-Decade Goals (Annex 1) from the sub-district, district, provincial up to the central level;
- B. to report on progress towards the 10 Mid-Decade Goals based on the most update data and information available from various sources;
- C. the information obtained from II.(B). will be input in collaboration with the MOPH's Policy and Planning Bureau to produce for the Prime Minister a Report on Thai Children's Health with respect to the Thailand's Mid-Decade Goals for Children; and
- D. to recommend for a framework and technical consideration for the M/E system development for coordinating/collaborating information for monitoring children's health in the Phase 2 & 3 in this programme.

III. ACTIVITIES

To achieve the stated objectives, the HSRI organized and conducted several activities that can be summarized as follows.

- A. A review on the existing information system at the provincial level on monitoring and evaluation of Mid-Decade Goals and other health care activities related to child and women health development was conducted. Smutprakarn Provincial Health Office was selected for this activity. All aspects of the information system including personnel involved, data collection forms, compilation procedures, utilization, and reporting system up the hierarchy from sub-district to the national were scrutinized. Indicators and relatec parameters were then classified into output, effect and impact especially the

emphasis on the indicators of the mid-decade goals. A full report in Thai was published and submitted as a part of this report.

- B. The most up-date data of Thailand's 10 Mid-Decade Goals from the current health information system at the central level were retrieved and also data from specific areas collected by small scale research activities.
- C. The data and information collected were analyzed to sort out critical items and their implications to child health problems. Pertinent but missing information were identified. The mid-decade goals were appraised against the existing data and trend projections were made if possible. Based on the data for the past-year period, alert also were given to any critical deviations from allowable ranges in order to provide sound adjustments for the short- and medium-term courses.
- D. Those materials above were compiled as a preliminary report. A round-table discussion on the report was subsequently organized wherein identification of program improvements and the need for a comprehensive monitoring system is discussed by identified child-health program managers and academics.
- E. A conference composed of high- and middle-level health managers was organized in an attempt to create attention on the mid-decade goals. The current status of the Mid-Decade Goals was presented and discussed. The development of the monitoring system was also discussed to arrive at a framework for the development.

IV. PUBLIC HEALTH INFORMATION SYSTEM FOR MONITORING AND EVALUATION

Before going into the detailed information system for monitoring and evaluation of the Mid-Decade Goals, it is quite necessary to understand the whole picture of the system itself. Based on this study and the Provincial Health Information System Development Project in Smutprakarn supported by HSRI, the situation and problems of public health information system for monitoring and evaluation can be summarized as follows:

A. Enormous workload and redundancy in existing data collection system

The most obvious phenomenon in the current information system at the provincial level is that data collection activities consume enormous amount of time and energy from health personnel at all levels. There are more than two hundred and fifty data collection forms (63, 47 and 172 at provincial, district and sub-district levels respectively) (Table 1). Furthermore if we combine all data items in these data collection form altogether, the figure is definitely over one thousand data items. Health personnel from the grass root (sub-district) to the national level have to spend considerable amount of time, energy and material for data collection, compilation and writing reports.

Furthermore, there are a lot of redundancy in the current forms. Health personnel have to write down names, age, and even address in some forms that create needless redundancy. Frequency of data compilation and reports is another dimension of the superfluosness in the system. For example, a comprehensive report that consists of approximately two hundred data items has to be sent up the hierarchy on the monthly basis. Justification for such frequent monitoring is obviously unclear to personnel who have shouldered the workload.

Table 1 Number of indicators, parameters, data collection forms in the current provincial health reporting system by sections in the provincial health office

Section	Programs	Activities	Number of indicators	Number of variables	Number of data collection forms		
					Provincial	District	Sub-district
Communicable diseases control	11	50	86	130	13	19	72
Dental Health	6	30	45	77	1	2	18
Public Health Pharmacy	1	10	10	11	2	3	8
Training and Development	1	5	5	8	1	2	2
Health Promotion	7	30	45	69	14	8	37

Sanitation and Hygiene	5	25	24	29	17	4	13
Health education	2	6	8	9	-	-	3
Planning	2	7	7	10	15	9	19
All sections	35	163	230	327	63	47	172

B. The validity and reliability of the current health information system

It is fair to say that information generated from the current system is institutional-based, not population-based. Since data are mostly output and activities of the public sectors, interpretation have to be made with caution. For example, vaccination coverage indicator at the provincial level have the number of vaccinated children by public health institutions divided by the target population estimated from registered population base. Since there are a lot of target population receiving vaccination from the private sector, the numerator is in fact underestimating the true coverage. On the other hand, there are many children who actually reside in the area with out official registration, the denominator then is smaller than the true situation. Thus, the biases are quite unpredictable because of the questionable validity of both the numerator and the denominator of this indicator. Recognizing this pitfall, the Division of General Communicable Diseases which is responsible for EPI advocates and currently is implementing the 30 cluster survey to evaluate EPI at the provincial level. On the average, each province conduct the 30-clusters survey once every 3 years.

Another example regarding validity of the information system is the birth rate. According to the data collection procedure, the number of birth which is the numerator of birth rate has been routinely counted from the number of birth certificate issued by the local registration offices. Since there were a great number of mothers who resided in Smutprakarn opt to giving birth in the nearby Bangkok, those infants who were born and issued the birth certificate in Bangkok would not be counted as numerator. Thus, the birth rate reported by the provincial health office is oftentimes grossly underestimated. On the contrary, the infant mortality rate is usually overestimated because the denominator is smaller than the actual population.

C. Predominantly activities or output related rather effect or impact information system

If indicators are classified into 3 level, namely output, effect and impact. Output indicators are related to activities or services carried out by the providers especially the MOPH eg. number of ORS sachets distributed. Effect indicators usually tell us about intermediate changes especially behavioral changes in target groups eg. ORS user rate. The third level is impact indicators which reflect achievement in objectives or ultimate goals eg. reduction in diarrheal case fatality rate. However, output and effect indicators sometimes are mentioned as process indicators.

Of the 230 indicators generated from more than three hundred variables, 62% can be categorized as output or activities related indicators (Table 1 and 2). Indicators that reflect the impact or effect as the results of health programs are approximately two-fifth of all indicators. Current information system is mainly designed for monitoring quantitatively whether the planned activities are carried out or not rather than what happen afterwards from these activities. Thus, existing information system may help local managers to monitor activities whether they are carried out according to the plan or not. But the system may not enable managers to evaluate in terms of effectiveness or efficiency and to utilize the information for health services quality improvement.

Table 2 Number of Output, Effect and Impact Indicators in the Current Provincial Health Reporting System by Sections in the Provincial Health Office

Section	Number of Indicators			
	Output	Effect	Impact	Total
Communicable diseases control	58	50	23	86
Dental Health	19	16	10	45
Public Health Pharmacy	6	4	-	10
Training and Development	2	3	-	5
Health Promotion	33	1	11	45
Sanitation and Hygiene	19	5	-	24
Health education	4	4	-	8
Planning	1	1	5	7
All sections	142	39	49	230
Percentage	62%	17%	21%	100%

D. Failure to cope with the dynamicity of the current situation

The existing information system reflects the static population, total coverage, and *de jure* concept. Recent economic and social development has resulted in a surge of population mobility in the past decade. As the result, there is an increasing difference between *de facto* and *de jure* especially the size of population in each particular area. Unregistered population can be as high as 30-40% in urban or economic booming areas such as Smutprakarn province, whereas economically-active age group who registered themselves in the rural areas, in fact, stay for time to time in the areas. For example, if any rates (i.e prevalence or incidence) require a size of population whether total or a particular age group as denominator, biases will go in opposite directions when we try to compare urban and rural areas. If there is no attempt to redesign the current information system to cope with this challenge, the information generated by the existing system may eventually be regarded as irrelevant and can not lend itself as input for good management.

Another important issue is the role of private sector. Existing information system has minimal built-in data input from private medical and health services. Thus, service-based data from public sector alone can not and should not guide planners on policy and planning of the Ministry of Public Health.

E. More "vertical" and "compartmentalized" rather than "horizontal" and "integrated" information system

Although the monitoring information system in health has been regarded the best developed compared to monitoring systems in other social sectors, the system still tend to be compartmentalized and also characterized as being more vertical than horizontal. Generally, the system is conducted in such a way that data are aggregatedly flowed from sub-district levels to district to province and then to central and permitting certain national monitoring. However, it also implies that the system do not often lend itself adequately to the needs for planning and management of the local levels. The data is usually collated but not always analyzed. The recent effort by the Information Section, Policy and Planning Bureau to consolidate the system by a few data collection forms and comprehensive reports (eg. Rep. 401/402) is not only can not mitigate the so called *system fatigue*, but unintentionally add more burden on health personnel. The reason is that this comprehensive reporting system has so far failed to abolish vertical data collection request from various divisions in every Departments at the central level.

F. Minimal utility from the huge information system and data collection apparatus

It is quite clear that health personnel from the grass root (sub-district) to the national level have to spend considerable amount of time for data collection as indirectly shown by numbers of forms, variables and indicators in the provincial information system, let alone the frequency of those reports. Chongsuwiwatwong in 1990 estimated that data management consumed around 30% of total working time of health personnel at sub-district level. Recent request from the central level for data on the status of health insurance coverage *by census method* is another good example of inefficient mobilization of health manpower. Furthermore, the confusing data collection format interpreted differently by local health personnel thus rendered invalid information for planners.

Utility of such a huge amount of information and frequent reporting systems are questionable. Since most data are public sector only and output-related, albeit relevancy for local management, information obtained have less utilities for monitoring and evaluation of the situation especially the terms of effect and impact.

G. Strength in its coverage, manpower involved, and the potential to utilize computer technology

However, the strength of the system is its coverage, the number of the manpower involved, and the potential to utilize computer technology in the system. It is a norm at present that provincial health offices or even district hospitals and district health office use computers to process the data. Some provinces also have the capability to develop their own software. The challenge is how well these independent system can be integrated into or communicate with the central system.

V. INFORMATION SYSTEM FOR MONITORING AND EVALUATION OF THE MID-DECADE GOALS

The detailed information system for monitoring and evaluation, current status, and points for consideration in each of the Mid-Decade Goals are in Annex 2.1-2.10. The following provides overview and analysis of the information system of these 10 goals. The types of data being collected for monitoring and evaluation in each of the Mid-Decade Goals are summarized in Table 3.

Daily Diseases Surveillance

6 out of 10 Mid-Decade Goals have daily disease surveillance report. Data inflow starts at grass root level when health personnel notify cases and death caused by certain communicable diseases to the district and then to the provincial office on the daily basis. There are 34 diseases categories under this surveillance. Although it takes around one week for the provincial office to compile and send out to the central level, the Epidemiological Division which is responsible for this surveillance needs about 1 to 2 months to release the the Mortality and Morbidity Weekly Report (MMWR). However, the up-to-date information can be accessed on-line.

For rare and fatal disease such as polio, cholera and tetanus, the system serve quite well in alerting the local authorities and prompt response usually follow. However, for rather common and low case fatality diseases, the data is just been sent up the hierarchy without being adequately analyzed, and thus pass up the chance to monitoring the situation closely.

Routine Action or Activity Reports

This type of data is the most common one in the current information system. Although it may serve budgetary purpose and for local managers i.e the Provincial Chief Health Officer to monitor the output whether it has been done according to the plan or not, it can not be utilize as a tool for monitoring the situation. Frequency of such report is too frequent and may cause fatigue in the system. Validity is also of concern. The most obvious one is the immunization coverage. It has been considered as under-reporting the true vaccination coverage. Because the numerator is only those who are vaccinated in public health facilities whereas the denominators are the estimated target population based on population registration statistics. Since those who are vaccinated by private sectors are omitted in the numerator, the result is under-reporting or negative bias. The shortcoming from this information system is its validity and the data utilization is rather limited and oftentimes irrelevant.

Table 3 Information system for monitoring and evaluation of Thailand's Mid-Decade Goals

Thailand's Mid-Decade Goals	Disease Surveillance report	Routine output report	Mortality Statistics	Special report	Rapid survey		
					Output	Effect	Impact
Virtual elimination of iodine deficiency disorders.	-	-	-	annual goiter prevalence survey TSH screening	-	Urine iodine survey	-
Virtual elimination of vitamin A deficiency	-	-	-	only in 5 provinces upon request	-	-	prevalence
Empowerment of all women to breastfeed	-	-	-	periodic BFH announcement	-	BMN bi-annual survey	-
Global eradication of poliomyelitis	daily prompt response	monthly validity-low utility-low	monthly utility-low	-	30-cluster coverage survey	-	-
Elimination of neonatal tetanus	daily moderate response	monthly validity-low utility-low	monthly utility-low	-	30-cluster coverage survey	-	-
Reduction in measles deaths and cases	daily low response	monthly validity-low utility-low	monthly utility-low	-	30-cluster coverage survey	-	-
Maintenance of a high level of immunization coverage	daily (cases)	monthly validity-low utility-low	-	-	30-cluster coverage survey	-	-

Reduction of diarrhea cases and deaths	daily usually no response	monthly validity-mod utility-low	monthly utility-low	-	-	ORT user rate	incidence
Reduction of iron deficiency anemia	-	-	-	prevalence quarterly validity-mod	-	-	prevalence
Reduction of deaths due to acute respiratory infections	daily low response	-	monthly utility-low	sentinel in 17 province	-	Health facility survey	-

Vital and Mortality Statistics Reports

This is another routine monthly report that provincial health offices have to forward to the Health Information Section, Policy and Planning Bureau at central to compile. In fact, the mortality statistics in this system can be regarded as a cross check for the daily surveillance system of many Mid-decade Goals, i.e. polio, tetanus, measles, diarrhea and ARI. Because it usually take more than one year for the Bureau to publish the annual report and no feedback reporting system to the provincial level, the utility for monitoring situation and response by local authorities is low. However, this report provide the backbone data for the vital health statistics for a rather long term evaluation purpose such birth and death rates, causes of deaths that can be breakdowns by gender, age groups, and provinces or regions..

Special Reports

This type of data is usually vertical or problem specific. Some are based on the annual basis such as goiter prevalence survey in school children or quarterly such as anemia prevalence among pregnant women. The main purpose of this type of data collection is to monitor the situation.

Although these reports contain incredible amount of data, the validity may be questionable. Data on anemia in pregnancy come only from the ANC visits in almost all public hospitals i.e district, provincial and regional (in 1993, 706 from 718 hospitals) not from the private sector. This information system captures approximately 40% of all pregnant in Thailand (340,202) mainly in the provincial cities and district towns excluding Bangkok, rural areas and those who attended in private health sector. Thus, the magnitude shown here may reflect somewhat positive bias. On the other hand, the most critical weakness is that pregnant women in the rural areas, urban poor, temporary migrated agricultural laborers are usually left out.

The reason that the system involves so many data collectors also poses some reliability problem. Prevalence of IDD has been determined on the basis of physical examination of children in rural primary school where teachers have been trained to screen for goiters. Reliability in terms of inter-rater agreement among thousands of teachers involved should be taken into consideration when interpreting the data.

Rapid Surveys

There are many rapid surveys employing principally by the 30-clusters sampling method carried out routinely eg. immunization coverage (annually) and periodically eg. ORT coverage and incidence of diarrhea. Most of them are population-based and collect output indicators (eg. immunization coverage etc.), effect indicators (eg. ORT user rate and urine iodine etc), and impact indicators (eg. prevalence of anemia in pregnancy or incidence of diarrhea etc.). These surveys, although conducted by local health personnel, they are highly "vertical" and the responsible divisions at central level are heavily involved. However, the information obtained is quite valid and reflect the true situation. It also cut across the public-private issue that is the major weakness in the routine activities only from the public institutions. Another problem is only some provinces that often be assigned to conduct the survey and also not randomly selected.

VI. CURRENT STATUS OF THE MID-DECADE GOALS

The current status of the Mid-Decade Goals is summarized in Table 4 and the more detailed information are in Annex 2.1-2.10. The following provides an overview of achievement so far and the future prospect.

Highly Achievable Goals

Global eradication of poliomyelitis is obviously the highest in the list. There were only 10 indigenous and 4 imported cases in 1993. Almost all of them confined in bordered provinces. In 1994, there are more than 50 AFP cases and no confirmed polio case so far (January-June). The national campaign in August and September to provide 2 additional doses for children under 6 will certainly boost up herd immunity.

Maintenance of a high level of immunization coverage (at least 90% of children under one year of age by the year 2000) against diphtheria, pertussis, tetanus, poliomyelitis, tuberculosis have already been achieved since early 1990's. and against tetanus for women of child-bearing age. According to the 1993's 30 clusters sampling surveys in 24 provinces the estimated EPI coverage of two doses of tetanus toxoid in pregnant women was 86% and measles vaccination was 71% among the target group. Although both vaccination coverage are more than 10 percentage points from the goals, the prospect is high that the goals will be achieved.

Virtual elimination of iodine deficiency disorders by reducing goiter prevalence in school children to less than 5% is also highly achievable since the annual decrease in goiter among the target group has been around 2-3 percent and only less than 5 percentage points away from 9.8% in 1993. Current interventions include the distribution of iodized salt, iodate concentrated stock solution drops in community wells, drinking water tanks at school and at home in villages are the keys.

Table 4 Indicators, description of the indicators and latest status of Thailand's Mid-Decade Goals

Thailand's Mid-Decade Goals	Indicator	Criteria and cut-off-point	1995 Goal	Latest Status	Achievement Prospect
Virtual elimination of iodine deficiency disorders	Goiter in school children	Proportion of children age 6-11 with any size of goiter	< 5%	3.8% (1993)	High
Virtual elimination of vitamin A deficiency	Serum retinol	Less than 5% of low serum retinol (< 20mg/dl) among pre-school children	< 5%	11% (1992)	Probable
	Xerophthalmic case	Proportion of children 6 months to 6 years of age with xerophthalmia	0	1.37% (1993)	Probable
Empowerment of all women to breastfeed	Proportion of baby friendly hospitals	Proportion of all hospitals and maternal facilities which are baby friendly according to 10-step BFHI criteria.	100% (757)	30% (228)	Probable
Global eradication of poliomyelitis	Polio cases	Annual number of cases of polio (* 10 indigenous and 4 imported cases)	0	14* (1993) 0 (1994-so far)	High
Elimination of neonatal tetanus	Neonatal tetanus cases	Annual number of neonatal tetanus cases ** Revised goal is 1 per 1,000 new born in each district	0**	52 (1993)	Unlikely (High)**
	Neonatal tetanus deaths	Annual number of under 5 deaths due to neonatal tetanus	0	18 (1993)	Probable

Thailand's Mid-Decade Goals	Indicator	Criteria and cut-off-point	1995 Goal	Latest Status	Achievement Prospect
Reduction in measles deaths and cases	Under 5 Measles cases	Annual number of cases of measles	2,700	16,524 (1993)	Unlikely (1995)
	Under 5 Measles cases	Annual number of under 5 deaths due to measles	0	0	High
Maintenance of a high level of immunization coverage	BCG vaccination coverage	Proportion of one year old children immunized against tuberculosis	90%	98.1% (1993)	Already achieved
	DPT vaccination coverage	Proportion of one year old children immunized against DPT(3)	90%	92.2% (1993)	Already achieved
	Measles vaccination coverage	Proportion of one year old children immunized against measles	90%	92.1% (1993)	Already achieved
	Oral polio vaccination coverage	Proportion of one year old children immunized against poliomyelitis (OPV3)	90%	71.1% 86.4%* (1993)	Probable
	Tetanus toxoid vaccination coverage among pregnant women	Proportion of pregnant women immunized against tetanus (TT2)	100%	86.4% (1993)	Probable
Reduction of diarrhea cases and deaths	Under 5 deaths from diarrhea	Annual number of U5 deaths due to diarrhea	80	329 (1992)	Unlikely
	ORT user rate	Proportion of all diarrhea episodes (cases) in under-fives treated with ORT	80%	47.6% (1992)	Unlikely

Thailand's Mid-Decade Goals	Indicator	Criteria and cut-off-point	1995 Goal	Latest Status	Achievement Prospect
Reduction of iron deficiency anemia	Pregnant women with low hemoglobin	Proportion of pregnant women with low hemoglobin (11 gm%) or hematocrit (33%)	12%	15.3% (1993)	Probable
Reduction of deaths due to acute respiratory infections	U5 deaths from acute respiratory infections	Annual number of deaths due to respiratory tract infections (ICD9, 460-466, 480-487)	550	909 (1992)	Probable

* This coverage figure included children who received vaccine before 9 months and more than 12 to 24 months old. The most strictest criteria counted only those who received vaccines between 9 to 12 months only (71.1%)

Probable Achievable Goals

Virtual elimination of vitamin A deficiency and its consequences is regarded as a probable goal. In the 1992 survey of 871, 0-6 year old children in 5 southern provinces (Yala, Songkhla, Pattani, Narathiwat and Satun) by the Nutrition Division, MOPH indicated that 11% of them had low serum retinol (the goal is less than 5%). Physical examination shown that 0.87% corneal lesion, 0.43% keratomalacia, and 2.8% history of night blindness. Such prevalence of clinical manifestation may suggest greater extent in terms of sub-clinical vitamin A deficiency. In 1993 survey in the same provinces, xerophthalmic cases was 1.37% in preschool children.

Empowerment of all women to breastfeed their children by means of BFHI is also a probable achievable goal. In July 1994, there are approximately 30% (228/757) of hospitals that have been designated as baby friendly. Moreover, there is definite plan to speed up the activities so that all regional and provincial hospitals and 50% of district hospitals will be declared baby friendly by the end of 1994. Furthermore, the new Baby Friend Province Initiative is the inclusion of exclusive 4 months breastfeeding and continued breastfeeding practice in the Basic Minimum Needs campaign (BMN). The movement is an endeavor to expand BFHI from the institutional based to community based.

Reduction of iron deficiency anemia in pregnant women by one third of the 1990 levels or not more than 12% in pregnant women is a probable goal. Iron-deficiency anemia among pregnant women from hospital-based information system in 1993 were 15.34% that was not so far away from the goal. However, the population-based data that indicated higher prevalence reflect the more realistic situation, and thus, make this goal a probable one instead of a highly achievable one.

Reduction in the deaths due to acute respiratory infections is considered to be a probable achievable goal. According to the Division of Health Statistic, MOPH, there were 909 U5 deaths caused by acute respiratory tract infections or 15.7/100,000 in 1992. However, the mortality from ARI has shown no decreasing trend in the past 5 years may suggest that it is quite uncertain for Thailand to achieve this particular goal. It is also quite likely that some newborns with HIV may end up by ARI, thus make it more difficult to achieve the goal.

Elimination of neonatal tetanus is considered to be highly achievable if the achievement criteria is lower to not more than one case for every 1,000 newborns in each district. However, in 1993, there were 52 cases and 18 deaths which indicated rather high case fatality rate, the achievement in terms of 0 deaths is quite uncertain and thus lower the prospect.

Improbable Goals

Reduction of measles morbidity to less than 2,700 cases is quite doubtful. There were 7,892 and 16,524 cases in 1992 and 1993 respectively. In 1994, there are more than 20,000 cases so far (January-June). However, according to experts in view of the secular trend and anticipated herd immunity, it is quite likely that measles cases in 1995 will be less than 10,000 but lower than 2,700 is quite unlikely. Besides, although Thailand had no measles mortality in the last couple years as mentioned in the death certificate, it is extremely likely that measles deaths may be reported in other categories especially pneumonia, diarrhea and encephalitis.

Reduction of diarrhea cases and deaths in children under the age of five years by increase ORT user rate to 80% is also an unlikely achievable goal. There were 329 U5 deaths due to diarrhea in 1992 (5.73/100,000 U5 population) and the ORT user rate was only 47.6% in the 1992 household survey.

VII. RECOMMENDATIONS

As the results of several technical meetings and a conference to review the preliminary report on the information system for monitoring and evaluation of the Mid-Decade Goals and current status, the recommendation on a framework for the monitoring and evaluation information system development has been agreed upon. This recommendations will also serve as the guidelines for the plan of actions for the second phase of this project. The recommendation are as follows.

A. The need to identify the utility of the information system for monitoring and evaluation at each level.

The most obvious problem is that the system has created enormous data collection and compilation workload at all levels, but the utilities of the information generated are not well described. There is a great need to know exactly who will use what information for what purpose and when and how frequently that they need to know. Those who need to know the information range from health personnel at the grass root level who collect data themselves, district health officers, provincial staff and the Provincial Chief Health Officer, planners, administrators and policy-makers at central level. Each one need to know different format of information generated from the same set of data. The purpose of using the information can be alerting the response actions to control, local intervention adjustment and budgetary purpose. Frequency requirement and speed of information flow is also quite different in each particular goal. The activities in the second phase should explore and identify explicitly as possible the utility aspect of the information system. Focus group discussion method among users at each level is recommended.

B. More "horizontal" and "integrated" information system at the provincial level.

The recent effort by the Information Section, Policy and Planning Bureau to consolidate the system by a few data collection forms and comprehensive reports (eg. Rep. 401/402) need further development. Data items or variables should be categorized into groups based on the frequency needs and streamline. Only those variables or indicators that are definitely needed should be forwarded up the hierarchy. Most output and activities related should mainly be kept at provincial level for activities monitoring purpose. It is quite clear that central level does not need to know this type of information so frequently, and definitely not on the

present monthly basis. The decision-makers should utilize this integrated reporting system and should pursue the task of abolishing enormous amount of vertical report forms which cause *system fatigue* and compromising the reliability of the information system at present.

C. Maximizing the utility of the current surveillance and reporting system at provincial level.

Although the daily diseases surveillance serves very well especially some rare and fatal diseases such as polio and cholera by alerting the local authorities to response by swiftly mobilizing the efforts, the system do not lend itself adequately for more common diseases such as measles, diarrhea and ARI. The provincial health staff should make more use of the existing daily surveillance system. It should be possible based on epidemiological method to determine certain threshold level taking into account the secular and seasonal variation in each locality preferably at the district or sub-district level to alert health personnel to response promptly to the rising trend such as diarrhea and ARI cases. On the job training may prove to be more effective to train health personnel than formal epidemiological training in this regard.

D. A comprehensive and integrated rapid survey : a challenge for the conventional information system.

Although there are many rapid surveys employing principally by the 30-clusters sampling method as mentioned earlier, they are highly "vertical" and separately carried out by are mostly responsible by various divisions at the central level. However, if properly designed, the method can be more efficient with less burden on local health personnel. The method can be not only a tool to monitor the effect and impact in a community, but also reflecting the national situation as well. Based on this study, a set of indicators is proposed (Table 5) as the basis for Phase 2 of this project.

Table 5 Suggested indicators in the rapid survey for monitoring and evaluation of Thailand's Mid-Decade Goals

Thailand's Mid-Decade Goals	Rapid survey		
	Output	Effect	Impact
Virtual elimination of iodine deficiency disorders.	Iodized salt availability	Iodized salt consumption	Goiter prevalence in target groups
Virtual elimination of vitamin A deficiency	-	Green leafy vegetable consumption	Xerophthalmic symptoms
Empowerment of all women to breastfeed	-	Exclusive breastfeeding practice for 4 months Continued breastfeeding at one year	-
Global eradication of poliomyelitis	Vaccine coverage	-	-
Elimination of neonatal tetanus	Vaccine coverage	-	-
Reduction in measles deaths and cases	Vaccine coverage	-	-
Maintenance of a high level of immunization coverage	Vaccine coverage Proportion of public service	-	-
Reduction of diarrhea cases and deaths	-	ORS access ORS, ORT use	Incidence during the last 2 week
Reduction of iron deficiency anemia	Iron tablet availability	Iron tablet consumption	Prevalence of anemia in target groups
Reduction of deaths due to acute respiratory infections			Incidence or period prevalence

- E. Effect and impact indicators should be "*community-based*" rather than "*public service based*".**

Validity of information from routine reporting system is questionable in certain cases, such as vaccination coverage. Because the numerator is only those who are vaccinated in public health facilities or "*public service based*" whereas the denominators are the estimated target population based on population registration statistics. The data utilization is only limited to local managers to monitoring the planned activities but irrelevant and invalid in terms of monitoring the true coverage in the target population.

- F. Efforts should be made to monitor some specific groups especially those in outreached areas and temporary migrants that are always on the move.**

Because they are usually not cover by normal health services and need different intervention strategy, specific or "*ad hoc*" survey should be conducted periodically in some underprivileged, *floating population* such as construction workers or plantation laborers and their family.

- G. Software development and appropriate use of computer technology.**

To facilitate and speed up the information flow, software development and appropriate use of computer technology should be encouraged. If a comprehensive and integrated rapid survey prove to be an valuable tool, data processing and analysis should be make it easy by computer technology.

Annex 1 Thailand's Mid-Decade Goals

1. Virtual elimination of iodine deficiency disorders.
2. Virtual elimination of vitamin A deficiency and its consequences, including blindness.
3. Empowerment of all women to breastfeed their children exclusively for four to six months and to continue breastfeeding, with complimentary food, well into the second year. Certification of all hospitals as baby friendly.
4. Global eradication of poliomyelitis.
5. Elimination of neonatal tetanus by 1995.
6. Reduction in measles deaths to none and reduction of measles cases to less than 50 per 100,000 in children under five years cases by 1995, as a major step to the global eradication of measles.
7. Maintenance of a high level of immunization coverage (at least 90% of children under one year of age by the year 2000) against diphtheria, pertussis, tetanus, measles, poliomyelitis, tuberculosis and against tetanus for women of child-bearing age.
8. Reduction of diarrhea cases and deaths in children under the age of five years by increase ORT user rate to 80%.
9. Reduction of iron deficiency anemia in women by one third of the 1990 levels or less than 12% of the pregnant women.
10. Reduction by one third in the deaths due to acute respiratory infections in children under five years or less than 35 per 100,000 children under five years.

Annex 2.1 Virtual elimination of iodine deficiency disorders (IDD)

Mid Decade Goal

- Goiter in school children < 5%

Indicators and Criteria

- Proportion of children age 6-11 with any size of goiter

Current Status

- A national iodine deficiency disorders (IDD) control program has been launched since 1989.
- Currently 57 provinces (17 in the north, 19 in the northeast, 13 in the central and 8 in the south) has been declared as provinces under IDD control program.
- The overall goiter rate has been gradually declined from 19.3% in 1989, 16.8% in 1990, 15.3% in 1991, 12.2% in 1992 to 9.8% in 1993 or 0.4 million goitrous students among 4.1 million school children (Table 6). Of those who had goiter, 78.0% were mild (grade 1a) and 20.4% moderate (grade 1b). Only 1.6% (approximately 6 thousand students) are considered severe cases (grade 2 and grade 3).
- Districts that had more than 30% goiter rate among school children has been reduced from one third (47/151) to one tenth (51/487) in 1992. In 1993, there were 589 districts under annual surveillance.

Annex 2.1 Virtual elimination of iodine deficiency disorders (IDD)

- Current control measures include distribution of iodized salt, iodate concentrated stock solution drops in community wells, drinking water tanks at school and at home in villages that goiter rates exceed 30%. According to the school survey regarding drinking water fortification by iodine concentrated solution, only 40 % of schools in endemic areas routine add the solution in their drinking water system for school children.
- Since the annual decrease in goiter prevalence in the target group has been around 2-3 percent and only less than 5 percentage points away from 9.8% in 1993, it is quite likely that Thailand will achieve this mid-decade goal on time.

Current Information System

- The present information system is based on annual primary school children survey covering 57 provinces. On the average, it usually takes around 5 to 6 months after year end for the Nutrition Division, Department of Health to release the national figure of the preceding year. There is still a potential to speed up the process.
- Prevalence of IDD has been determined on the basis of physical examination of children in rural primary school where teachers have been trained to screen for goiters. Reliability in terms of inter-rater agreement among thousand of teachers involved should be taken into consideration when interpreting the data.
- Current institutionalization of additional monitoring system based on TSH level from umbilical cord blood of those babies born in public hospitals commenced in 1992 should be encouraged. It has been implemented on a trial basis in districts where goiter rate exceed 20%. In 1994, the Nutrition Division is testing a urine iodine survey based on 30 clusters sampling technique in 57 provinces.

Annex 2.1 Virtual elimination of iodine deficiency disorders (IDD)

- The division is also considering a monitoring system using TSH on a sampling basis stratified by goiter prevalence level. Goiter prevalence survey based on 30 clusters sampling survey method is being considered as an alternative to the current school children survey.
- Since inter-rater agreement on goiter is not always reliable, these data are subjected to verification by better methods i.e. urinary iodine, cord blood Thyroid Stimulating Hormone (TSH) and other tests.
- The Nutrition Division also carries out an annual survey on iodized salt availability and salt route in some salt producing districts

Points for Consideration

- Since inter-rater agreement on goiter is not always reliable, these data are subjected to verification by better methods i.e. urinary iodine, cord blood Thyroid Stimulating Hormone (TSH) and other tests.
- Although current goiter prevalence survey among school children is only once a year, 57 goiter provinces should be classified into several goiter prevalence level and the survey should be scheduled on a quarterly and take turn basis in one fourth of these provinces spreading among several goiter prevalence levels. The information obtained then will be more up to date with the same amount of work.
- Rapid 30 clusters survey employing various methods should be considered as an alternative to the goiter prevalence survey.
- Monitoring system should consider iodine level of local available salt especially in those high goiter prevalence districts.

Annex 2.1 Virtual elimination of iodine deficiency disorders (IDD)

Table 6 Goiter prevalence survey in school children in Thailand 1989-1993.

<i>Year</i>	1989	1990	1991	1992	1993
<i>Number of Provinces surveyed</i>	15	15	39	39	53
<i>Prevalence of Goiter</i>	19.3%	17.2%	15.3%	12.2%	9.8%
<i>Total district under surveillance</i>	151	154	467	487	589
<i>Number of districts with goiter rate < 10%</i>	52 34.44%	52 33.12%	174 37.26%	214 43.94%	n.a.
<i>Number of districts with goiter rate 10-30%</i>	52 34.44%	54 35.06%	207 44.33%	222 45.59%	n.a.
<i>Number of districts with goiter rate > 30%</i>	47 31.13%	49 31.82%	86 18.42%	51 10.47%	n.a.

SOURCES: IDD annual reports B.E. 2535. The Nutrition Division, Department of Health, Ministry of Public Health.

Annex 2.2 Virtual elimination of vitamin A deficiency

Mid Decade Goal

- Less than 5% of low serum retinol among pre-school children
- Xerophthalmic case = 0

Indicators and Criteria

- Proportion of children 6 months to 6 years of age with serum retinol < 20mg/dl
- Proportion of children 6 months to 6 years of age with xerophthalmia

Current Status

- The existence of vitamin A deficiency as a public health problem is not clear. Information on vitamin A deficiency's magnitude and geographical distribution is obtainable only through accumulated small scale surveys and research studies.
- Nonetheless, studies have shown the decline of vitamin A deficiency prevalence over the last two decades as follows. A 1977 survey in Ubon Ratchatani province in the Northeast demonstrated that 17% of 146 preschool children showed deficient serum retinol levels (less than 10 mcg/dl) and as much as 70% of the children studied had marginal serum vitamin A (10-20 mcg/dl)¹. In 1987 the prevalence of deficiency level and marginal level in school children in the same areas reduced to 1.3% and 16.8% respectively².

¹. Dhanamitta S, Stoecker B and Valyasevi A. Community Approaches to the Prevention of Vitamin A Deficiency. Paper presented at the IVACG Meeting, Jarkarta, Indonesia, 11-13 October 1980.

². Dhanamitta S, Viriyapanich T and Kachonpadunkitti Y. Vitamin A deficiency in Thailand. In : Proceedings of the Fifth Asian Congress of Nutrition. Yasumoto K et al., eds. Center for Academic Publications. Tokyo, 1987.

Annex 2.2 Virtual Elimination of Vitamin A Deficiency

Current Status

- In 1990 survey in the North and the Northeast, marginal serum retinol between 10-20 mcg/dl were found in 14% and 7% of the pre-school children in the dry and the rainy seasons, respectively, due largely to an increase in vitamin A-rich foods during the latter period³. Thus, it may be concluded that, although xerophthalmia and deficient serum levels existed during the 1960's to mid 1970's, the problem declined to marginal levels, rather than severe, during the mid-1980's. At present, the Nutrition Division, MOPH acknowledge that sub-clinical vitamin A deficiency is approximately 20% in pre-school children in the north and the northeast.
- In the 1992's survey of 871, 0-6 year old children in 5 southern provinces (Yala, Songkhla, Pattani, Narathiwat and Satun) by the Nutrition Division, MOPH indicated that 11% of them had low serum retinol. Physical examination shown that 0.87% corneal lesion, 0.43% keratomalacia, and 2.8% history of night blindness. Such prevalence of clinical manifestation may suggest greater extent in terms of sub-clinical vitamin A deficiency. In 1993's survey in the same provinces, xerophthalmic cases was 1.37% in preschool children.
- If these 5 southern provinces represent high risk areas in Thailand, it is likely that Thailand will achieve this goal.

Current Information System

- Only special activity report twice annually regarding vitamin A capsule distribution in high risk areas in 5 southern provinces were sent to the Nutrition Division.

³. Nutrition Division and the Institute of Nutrition at Mahidol University. Report on Prevalence of Inadequate Vitamin A Nutriture in Pre-school Children of the North and Northeast Thailand. Department of Health, Ministry of Public Health. Bangkok, 1991.

Annex 2.2 Virtual Elimination of Vitamin A Deficiency

- Since serum retinol test is prohibitively expensive, vitamin A status survey based on serum retinol test is not routinely scheduled.

Points for Consideration

- Impression cytology, a less expensive indicator to evaluate vitamin A status that required investment in training, has been considered as an alternative but no definite plan at present.
- History of night blindness is not sensitive enough in low prevalence areas in Thailand and physical examination based on xerophthalmia is poor in terms of sensitivity, specificity and reliability.
- Monitoring system should consider behavioral indicators in terms of green leafy vegetable consumption.
- Blanket supplementation in high risk areas incorporated in EPI activities should be considered.

Annex 2.3 Empowerment of all women to breastfeed their children

Mid Decade Goal

- All hospitals are baby friendly hospitals

Indicators and Criteria

- Proportion of all hospitals and maternal facilities which are baby friendly according to 10-step BFHI criteria.

Current Status

- Thailand has been honored as one of twelve nations which have strong commitment for BFHI. The movement commenced in 1991 and has gained momentum ever since. In 1993, there were 125 hospitals declared as baby friendly facilities according to 10-step BFHI criteria. In July 1994, there are approximately 30% (228/757) of hospitals that have been designated as baby friendly. Moreover, there is definite plan to speed up the activities so that all regional and provincial hospitals and 50% of district hospitals will be declared baby friendly by the end of 1994.
- The activities include manpower development by training of the trainer courses and subsequently in-house training in each hospital; baby friendly assessment and certification, revising marketing code for infant formula; inter-sectoral BFHI seminars including governors and provincial officers from the formal and non-formal education sectors; and cessation of all free and subsidized distribution of infant formula.
- The new Baby Friend Province Initiative is the inclusion of exclusive 4 months breastfeeding and continued breastfeeding practice in the Basic Minimum Needs campaign (BMN). The movement is an endeavor to expand BFHI from the institutional based to community based.
- According to the current status, it is quite likely that Thailand may achieve this goal, if based only by BFHI indicator.

Annex 2.3 Empowerment of all women to breastfeed their children

Current Information System

- There are no routine report to monitor this goal at present. For BFHI, hospitals would voluntarily request for assessment and certification for time to time. The BFH official announcements have been twice a year. The Family Health Division, Department of Health is the responsible agency in this regard.
- The effort to include breastfeeding practice indicator in the BMN information system once every two years is still in the planning process.

Points for Consideration

- To sustain the BFHI in the long run is the major concern. Current socio-economic development has some negative impact regarding breastfeeding. Marketing codes of conduct for infant formulas need constant vigilance from the public and individual alike.
- Efforts should be made to encourage private hospitals to be baby friendly.
- Exclusive 4 month breastfeeding rate, continue breastfeeding rate at one year and timely complementary feeding rate should be include in the information system to monitor and evaluate this goal. Realistic and differential achievement criteria in different localities (rural vs. urban) should be considered.
- The provincial health officers should be encouraged to carry out their own rapid sampling surveys in the community to monitor these behavioral indicators.

Annex 2.4 Global eradication of poliomyelitis

Mid Decade Goal

- Poliomyelitis cases = 0

Indicators and Criteria

- Annual number of cases of poliomyelitis

Current Status

- There were 10 indigenous and 4 imported cases in 1993. Almost all of them confined in bordered provinces. In 1994, there are more than 50 AFP cases and no confirmed polio case so far (January-June).
- There are more than 49 provinces that have no polio cases in at least the last 4 years.
- Since the institutionalization of Acute Flaccid Paralysis (AFP) surveillance in 1992, the number of polio cases tripled from 4 cases in 1991 to 12 cases in 1992 (7 indigenous and 5 imported). The surge may not reflect true increase but rather the better diagnosis and case identification.
- According to the 30 clusters surveys, the estimated 3 doses OPV coverage in 1993 was 92% compared to 76% in 1989.
- The Ministry of Public Health will carried out a campaign to give oral polio vaccines to all children under 6 nation-wide in August and September as a step-up effort to eradicate poliomyelitis in Thailand.
- According to the current status, it is the most promising goal that Thailand will be able to eliminate indigenous cases in 1995.

Current Information System

- Routine reportable diseases daily surveillance (Rep. 506/507) including polio has been developed over two decades and currently in full gear. New cases

Annex 2.4 Global eradication of poliomyelitis

will be reported immediately on the daily basis to provincial health offices for prompt response. National situation of the last 3-4 weeks can be retrieved from the MOPH computer system on-line. The whole information system is vital for immediate outbreak control and mop-up operation (children in the two layers of adjacent sub-district will be given additional oplio vaccines). It is quite clear that the information system for this particular Mid-decade Goal is exemplary and the most advance of all goals.

- The AFP monthly reports were initially responsible by provincial hospitals and were able to identify more cases in addition to the daily surveillance system that may miss the cases. To better serve this purpose, the AFP monthly report are currently extending to be sent by all district hospitals.
- Routine coverage report (Rep. 401/402) can not reflect the true coverage situation. The numerator of this indicator is the number of children vaccinated at the public institutions and the denominator is estimated from the residential registration. Although this indicator may serve for the purpose of monitoring the activities, validity of this indicator for impact or effect evaluation is in doubt because there are many children who have got OPV from private institutions and not counted (negative bias) and non-registered target population may be as high as 30% especially in urban areas (positive bias).
- Recognizing this short-coming, population-based 30 cluster sampling surveys have been institutionalized. One-third of all provinces would randomly take turn to conduct the survey once every three years and serve as the basis for program evaluation.

Points for Consideration

- Polio vaccination requirement especially children should be carefully considered as an additional immigration procedure at ports of entry.
- To successfully eliminate polio cases, vaccination efforts both on the routine basis and mop-up operations may have to extend beyond Thailand's jurisdiction.

Annex 2.5 Elimination of neonatal tetanus

Mid Decade Goal

- Neonatal tetanus cases = 0
(The revised goal is not more than one case per 1,000 newborn in each district)
- Neonatal tetanus deaths = 0

Indicators and Criteria

- Annual number of neonatal tetanus cases
- Annual number of under 5 deaths due to neonatal tetanus

Current Status

- There were 52 cases and 18 deaths in 1993. A great number of cases and deaths were from bordered and southern provinces. Most cases came also from remote areas where accessibility to health care was difficult.
- The neonatal tetanus cases and deaths have been gradually reduced over the last decade. In the last 3 years, the number of cases have been only in double digits and slowly decreasing.
- From the 30 clusters surveys, the estimated 2 doses of tetanus toxoid in pregnancy plus booster coverage in 1993 was 86.4% compared to 63.6% in 1989.
- According to the current status and the original goal (0 case), it is quite unlikely that Thailand will eliminate tetanus neonatorum in 1995. However, if Thailand adopt the new goal, the chance to achieve the less ambitious goal is high.

Annex 2.5 Elimination of neonatal tetanus

Current Information System

- The daily surveillance report (Rep. 506/507) also includes tetanus. Since tetanus neonatorum is rather rare at present and it is also a fatal disease, surveillance data is relatively complete when compared with measles.
- Routine action report (Rep. 401/402) can not reflect the true coverage situation. The numerator of this indicator is the number of children vaccinated at the public institutions and the denominator is estimated from the residential registration. Although this indicator may serve for the purpose of monitoring the activities, validity of this indicator for impact or effect evaluation is in doubt.

Points for Consideration

- To achieve and to attain close to the level of mid-decade goal depends largely on improving vaccine coverage among the pregnant women and birth delivery by qualified personnel preferably in side public or private medical setting. There is a tendency that delivery will be more and more in the institution rather than at home. However, tetanus toxoid vaccination should not be viewed by some obstetricians who regard tetanus vaccination as an insult to their practice.
- Since tetanus neonatorum has been considered as rare event at present, response to new cases based on the surveillance system should be prompt and as swiftly as possible the same as polio cases albeit difference in terms of interventions. Efforts should be targeted to the underprivileged groups and those in the outreach areas.

Annex 2.6 Reduction in measles deaths and reduction of measles cases

Mid Decade Goal

- Under 5 Measles cases = 2,700 cases or 50 per 100,000 under 5 population
- Under 5 Measles deaths = 0

Indicators and Criteria

- Annual number of cases of measles
- Annual number of under 5 deaths due to measles

Current Status

- There were 7,892 and 16,524 cases in 1992 and 1993 respectively. The current trend is definitely on the rise. In 1994, there are more than 20,000 cases so far (January-June). However, according to experts in view of the secular trend and anticipated herd immunity, it is quite likely that measles cases in 1995 will be less than 10,000.
- Although Thailand had no measles mortality in the last couple years as mentioned in the death certificate and compiled by the Health Statistics Division, MOPH, it is extremely likely that measles deaths may be reported in other categories especially pneumonia, diarrhea and encephalitis. According to the MOPH experts, measles mortality is markedly higher among hill-tribe ethnic minorities and severe malnourished children.
- According to the current status and secular trend of this disease, it is unlikely that Thailand will achieve the mid-decade goal even though the year 1995 has been anticipated that measles will hit the trough of the secular cycle due to herd immunity.

Annex 2.6 Reduction in measles deaths and reduction of measles cases

- According to the 30 clusters surveys, the measles coverage by the strictest criteria (children received the vaccine during 9 to 12 months) was estimated at 71.1% in 1993 compared to 58% in 1989. If the number included those children who received vaccine before 9 months (10.4%) and more than 12 to 24 months (4.9%), the measles vaccine coverage in 1993 was 86.4%.

Current Information System

- The daily surveillance report (Rep. 506/507) also includes measles. However, unlike polio and tetanus which are more serious and fatal; conventional perception regarding this disease is rather docile no matter how contagious measles is. Thus, reports from the private health sector are considerably incomplete.
- Routine coverage report (Rep. 401/402) can not reflect the true coverage situation. The numerator of this indicator is the number of children vaccinated at the public institutions and the denominator is estimated from the residential registration. Although this indicator may serve for the purpose of monitoring the activities, validity of this indicator for impact or effect evaluation is in doubt. For measles vaccination, middle and upper class children are usually vaccinated in the form of MMR vaccine in private institutions and are not counted. Thus measles coverage from this action or activity report is more often under-report the true coverage in the community.

Points for Consideration

- To achieve and to attain close to the level of mid-decade goal depends largely on measles vaccination especially among the underprivileged groups and in the outreached areas.
- Incentive measures should be developed to encourage private sector to report less serious and common reportable diseases.

Annex 2.7 Maintenance of a high level of immunization coverage

Mid Decade Goal

- 90% BCG vaccination coverage
- 90% DPT vaccination coverage
- 90% Measles vaccination coverage
- 90% Oral polio vaccination coverage
- 100% Tetanus (tetanus toxoid) vaccination coverage among pregnant women

Indicators and Criteria

- Proportion of one year old children immunized against diphtheria, pertussis and tetanus (DPT3)
- Proportion of one year old children immunized against measles
- Proportion of one year old children immunized against poliomyelitis (OPV3)
- Proportion of one year old children immunized against tuberculosis
- Proportion of pregnant women immunized against tetanus (TT2)

Current Status

- According to the 1993's 30 clusters sampling surveys in 24 provinces and data from 1981-1989, the estimated EPI coverage and their trend are shown in Table 7. Except for tetanus toxoid and measles vaccination, the BCG, OPV3 and DPT3 have already achieved the mid-decade goals. The other two goals for tetanus toxoid and measles vaccination are considered achievable.

Annex 2.7 Maintenance of a high level of immunization coverage

Current Information System

- There are two information system regarding EPI, i.e the vaccination activity monthly reporting system and the 30 clusters sampling surveys conduct annual in one-third of the provinces randomly selected.
- The first reporting system has been considered as under-reporting the true vaccination coverage while in fact the bias can go both ways. Because the numerator is only those who are vaccinated in public health facilities whereas the denominators are the estimated target population based on population registration statistics. On one hand, since those who are vaccinated by private sectors are omitted in the numerator, the result is under-reporting or negative bias. On the other, the denominator, the target population based on population registration, may be smaller than the true size especially in urbanized provinces where people just move in without official registration. The result is over-reporting because these non-registered children when vaccinated will contribute themselves as numerator but not denominator. In the rural area can be even more complicated due to both *de facto* temporary and permanent migration with out bother to change their residential registration. The shortcoming from this information system is its validity and the data utilization is rather limited and oftentimes irrelevant.
- The more realistic information system based on 30 cluster sampling survey is infrequently conducted. Each year, only 24 provinces would take turn carry out the survey. If assuming that these provinces represented all level of coverage achievement, it is an efficient information system to monitor the situation from the national point of view. However, it is so infrequently conducted for provincial health officers to utilize the data for planning and activity monitoring.

Annex 2.7 Maintenance of a high level of immunization coverage

Points for Consideration

- The provincial health officers should be encouraged to carry out their own rapid surveys especially in the urban areas and response accordingly. Proportion of vaccination from public and private sectors are indispensable indicators for better logistic planning and output monitoring.
- Special efforts should be made to monitor based on rapid survey or just extra mop-up operation to cover underprivileged population groups such as construction workers and non-registered family in urban poor areas who are always on the move.
- Current frequent but rather invalid activities report should be revised and substitute with the more valid ones mentioned earlier.

Table 7 Immunization coverage based on 30 clusters sampling survey

VACCINE TARGET POPULATION	BUDGET YEAR					
	1981	1983	1985	1987	1989	1993
CHILDREN < 1 YR						
BCG	71.40	75.71	79.50	96.24	93.32	98.10
DTP2	52.20	64.70	67.20	79.19	79.13	
DPT3	-	48.54	75.09	62.35	74.35	92.21
OPV3	19.10	46.39	61.78	73.71	76.21	92.12
MEASLES	-	-	25.83	51.50	58.45	71.08
PREGNANT WOMEN						
TT2 + BOOSTER	28.60	34.56	48.24	59.45	63.58	86.40

* 86.4% if included those who received before 9 months old and more than 12 to 24 months old which is a less strict criteria.

SOURCES: The Genral Communicable Diseases Division, Department of Communicable Diseases Control, Ministry of Public Health.

Annex 2.8 Reduction of diarrheal deaths and its incidence rate**Mid Decade Goal**

- Under 5 deaths from diarrhea = 80 deaths or 1.33 per 100,000 population under 5
- ORT user rate = 80 %

Indicators and Criteria

- Annual number of U5 deaths due to diarrhea
- Proportion of all diarrhea episodes (cases) in under-fives treated with ORT and continue feeding

Current Status

- There were 329 U5 deaths due to diarrhea in 1992 (5.73/100,000 U5 population) according to the Health Statistics Division compiled from death certificates.
- According to the 1991 survey by the General Communicable Diseases Division, Department of Communicable Diseases Control, MOPH; the average diarrheal episode per child per year was 1.33 (down from 1.8 in 1985 and 2.0 in 1988). The ORS accessibility was around 80% and ORS use rate in household case management was 27% in 1991-1992 household survey. The use of ORT has been increasing from 27% in 1987 to 47% in 1991 from the household survey conducted by the General Communicable Diseases Division, MOPH.
- Accordingly, it is quite unlikely that Thailand will achieve this particular Mid-decade goal in 1995.

Annex 2.8 Reduction of diarrheal deaths and its incidence rate

Current Information System

- The daily surveillance report (Rep. 506/507) includes certain type of diarrheal diseases. If it is the cholera, the response to control the disease is rather prompt. However, for other diarrheal diseases that are less severe, the surveillance system is usually slow and not noticeable until the situation is so obvious.
- The national mortality rate data and causes of death released by the Health Statistics Division currently need one year to process. Feedback mechanism regarding mortality from the central level is too late to guide provincial activities. However, routine reportable diseases daily surveillance including certain type of diarrhea is well in place.
- The current information system include number and proportion of health centers that have established ORT corner. Although this activity intends to create awareness and having local advocacy role. Information regarding this matter has limited utilization to guide further action to control diarrhea.
- Information system regarding proportion of all diarrhea episodes (cases) in under-fives treated with ORT and continue feeding at the community level has not yet formulated.

Points for Consideration

- The provincial health officers should be encouraged to carry out their own rapid sampling surveys in the community to monitor behavioral aspect especially ORT user rates and diarrhea incidence.
- The provincial health officers should make use of the existing daily surveillance system. It should be possible based on epidemiological method to determine certain threshold level in each locality preferably at the district or sub-district level to alert health personnel to response promptly to the rising trend in diarrhea cases.

Annex 2.9 Reduction of iron deficiency anemia

Mid Decade Goal

- Reduction of iron deficiency anemia in women by one third of the 1990 levels or not more than 12% in pregnant women.

Indicators and Criteria

- Proportion of pregnant women with low hemoglobin (11 gm%)/hematocrit (33%)

Current Status

- Iron-deficiency anemia among pregnant women from hospital-based information system in 1993 (Table 8, 9) were 15.34%, highest in the southern region (19.45%) and lowest in the North (11.66%). Iron deficiency anemia by the same information system has been declining from 28.5% in 1987 to 15.3% in 1993.
- The population-based Health Examination Survey conducted by the National Epidemiology Board of Thailand in 1991 indicated that 21.7% of Thai population aged over 15 are anemic. Women (25.5%) are 1.45 time more likely to be anemic than men (17.3%) and the prevalence is highest in the south (26.4% in men and 38.2% in women). Anemia is also increased with age. More than one third of men aged over 65 and women aged over 60 are anemic. In recent national population-based survey among non-supplementary, second trimester pregnant women in 1993, the anemic prevalence was 38.7%.
- People in the South seem to have the highest prevalence of anemia. This may be the climatic, occupational and life style conditions (i.e. tropical forest and not wearing shoe while working in rubber plantation) that may be conducive to higher hook worm infestation among people in the South. Since Thalassemia and Thalassemia trait are inherent problems among the Thai in the North and the Northeast, iron deficiency anemia prevalence may be over estimated due to inclusion of thalassemic cases.

Annex 2.9 Iron Deficiency Anemia

- Current intervention include 4-months special report on anemic prevalence among pregnant women, iron supplementation of pregnant women in ANC clinics, iron supplementation and deworming in school children with Hct lower than 36%
- Whether or not Thailand will achieve this goal depend on which data base we use as reference. If we use population based rather than hospital base data, it is quite unlikely that Thailand will succeed in doing so

Current Information System

- Data on anemia in pregnancy come from the ANC visits in almost all public hospitals i.e district, provincial and regional (in 1993, 706 from 718 hospitals). This information system captures approximately 40% of all pregnant in Thailand (340,202) mainly in the provincial cities and district towns excluding Bangkok, rural areas and those who attended in private health sector. Thus, the magnitude shown here may reflect somewhat positive bias.
- Data were collected in all 3 trimesters combined and may cause positive bias. However, the most critical weakness is that pregnant women in the rural areas, urban poor, temporary migrated agricultural laborers are usually left out. These groups also have the higher risk of iron deficiency anemia in pregnancy.
- Additional monitoring system include a population-based survey in 17 provinces by the Nutrition Division, MOPH and the Institute of Nutrition, Mahidol University on a trial basis and the 1993 national survey collecting blood sample from 4,500 pregnant women and 7,200 children.

Annex 2.9 Iron Deficiency Anemia

Points for Consideration

- Monitoring system should include data from Bangkok Metropolitan Area.
- Each province should collect Hb data from sub-district ANC visits on a sampling basis and/or areas with high prevalence. Data utilization should be encouraged to adjust provincial plan of action at least twice annually.
- Status report should be compiled up the hierarchy based on the third trimester data rather all trimesters combined because it will also reflect the intervention outcome.
- Population based information system employing appropriate sampling technique should be considered as an alternative for current information system.
- Since anemic cases are quite wide spread in the entire population regardless of sex and age group, conventional monitoring system only in pregnant women should be revised. However, pregnant women pose greater risk of adverse consequence from anemia, they should still be the major target group for interventions.

Annex 2.9 Iron Deficiency Anemia

Table 8 *Prevalence of anemia among pregnant women in Thailand, 1988-1993 by region.*

Region	Prevalence of anemia (%)					
	1988	1989	1990	1991	1992	1993
South	30.6	22.9	23.0	21.1	20.3	19.5
East	30.5	16.2	19.6	18.3	16.9	16.6
Central	29.7	25.6	19.3	18.9	18.7	17.8
North-east	26.6	17.8	17.1	18.0	14.0	12.8
North	20.7	18.4	16.0	14.6	11.7	11.7
Whole country	27.3	21.6	18.8	18.3	16.1	15.3

Table 9 *Prevalence of anemia among pregnant women and school children in Thailand, 1993.*

Region	Pregnant women*		School children	
	sample	% anemia	sample	% anemia
East	38,318	16.60	10,556	19.61
Northeast	113,352	12.77	63,453	20.22
Central	54,480	17.83	22,512	14.11
North	48,227	11.66	24,990	16.57
South	54,487	19.45	25,172	18.41
Whole country	340,202	15.34	146,683	18.30

NOTES: * Hospital-based data from 706 hospitals in 72 provinces..

SOURCES: 1. Pregnant women and school children iron deficiency anemia surveillance report, 1993. Nutrition Division, Department of Health, Ministry of Public Health.

Annex 2.10 Reduction of deaths due to acute respiratory infections**Mid Decade Goal**

- U5 deaths from acute respiratory infections < 35/100,00 (from the National Strategic Plan to Achieve Mid-Decade Goals for Children 1995, MOPH).
- U5 deaths from acute respiratory infections = 550 or to reduce U5 ARI mortality by one-third compared to 1990 or < 10/100,000 (from Programme Plan of Operation 1994-1998, the RTG and UNICEF, September 1993).
- There is a marked discrepancy between this 2 indicators. The first one, the U5 deaths from acute respiratory infection < 35/100,00 is obviously higher than the level in 1990 which was around 15/100,000 and thus, should be regarded as an incorrect statement.

Indicators and Criteria

- Annual number of deaths due to respiratory tract infections (ICD9, 460-466, 480-487).

Current Status

- According to the Division of Health Statistic, MOPH, there were 909 U5 deaths caused by acute respiratory tract infections or 15.7/100,000 in 1992. Of which, 839 or 92% were due to pneumonia and influenza (ICD9, 480-487), the rest (70 or 8%) were caused by upper respiratory infections such as acute laryngitis etc. (ICD9, 460-466).
- According to the Tuberculosis Division, MOPH, the responsible agency to monitor ARI especially deaths from pneumonia and influenza, the mortality from ARI has shown no decreasing trend in the past 5 years (Table 10). Most deaths were under one year of age (71.3%). However, the current mortality level is much lower than a population-based survey in 1985-1986 conducted by Mahidol University (53.8/100,000).

Annex 2.10 Reduction of deaths due to acute respiratory infections**Current Status**

- From the sentinel surveillance data from 17 provinces, the U5 mortality from ARI in 1990-1992 were 15, 19.2 and 12 per 100,000 and the hospital-based case-fatality during the same period were 3.9%, 4.3% and 2.6% respectively. Annual morbidity prevalence declined from 4.7% of U5 children in 1990 to 4.5% in 1991 and 4% in 1992. Unnecessary use of antibiotic is of concern among experts, according to the sentinel surveillance, unnecessary antibiotic prescription dropped slightly from 60% and 56% in 1990 to 48% and 44% in 1992 in health centers and regional hospitals respectively. During the same period, antibiotic overuse was around 62-63% in the district hospital setting.
- According to the ARI Health Facility Survey in 2 provinces conducted by the Tuberculosis Division in December 1993, 66.4% of ARI cases obtained the standard case management.
- The current mortality trend suggests that it is quite uncertain for Thailand to achieve this particular goal. It is also quite likely that some newborns with HIV may end up by ARI, thus make it more difficult to achieve the goal.

Current Information System

- The daily surveillance report (Rep. 506/507) also includes ARI. However, the system has not been fully utilized for local management. Since ARI is rather common and less serious compared to polio and tetanus, action in response to the system is rare.
- Mortality statistics compiled by Health Statistics Section, Policy and Planning Bureau, MOPH that usually released one to two years afterwards can only be used for evaluation but not monitoring purpose.
- The Tuberculosis Division which is responsible for the sentinel surveillance data from 17 provinces has added 2 additional provinces in the information system. The data obtained is considered to capture more cases than the routine daily disease surveillance system.

Annex 2.10 Reduction of deaths due to acute respiratory infections**Points for Consideration**

- To achieve or to attain close to the level of mid-decade goal depends largely on providing standard case management. Monitoring system should have some indicators in this regard.
- The provincial health officers should make use of the existing daily surveillance system. It should be possible based on epidemiological method to determine certain threshold level in each locality preferably at the district level to alert health personnel to response promptly to the rising trend in ARI cases.

Table 10 *Mortality rate and number of deaths in children under 5 from acute respiratory infections*

Year	1988	1989	1990	1991	1992
Number of U5 deaths	890	857	825	821	909
Rate per 100,000	14.0	13.6	13.2	14.0	15.7