

SEA-HSD-269
Distribution: General

Comprehensive Assessment of National Surveillance Systems in Sri Lanka

*Joint Assessment Report
4-13 March 2003*



World Health Organization
Regional Office for South-East Asia
New Delhi
February 2004

© World Health Organization (2004)

This document is not a formal publication of the World Health Organization (WHO), and all rights are reserved by the Organization. The document may, however, be freely reviewed, abstracted, reproduced or translated, in part or in whole, but not for sale or for use in conjunction with commercial purposes.

The views expressed in documents by named authors are solely the responsibility of those authors.

CONTENTS

Page

ACRONYMS.....	vi
1. EXECUTIVE SUMMARY.....	1
1.1 Introduction	1
1.2 Major Findings.....	1
1.3 Detection, Registration and Confirmation.....	3
1.4 Data Reporting	3
1.5 Data Analysis.....	3
1.6 Outbreak Investigation	4
1.7 Epidemic Preparedness.....	4
1.8 Feedback	4
1.9 Supervision.....	4
1.10 Coordination of Surveillance Systems.....	5
1.11 Training.....	5
1.12 Resources.....	5
1.13 Laboratory.....	5
1.14 Opportunities for Integrated Surveillance	6
1.15 General Recommendations.....	6
2. INTRODUCTION: GENERAL INFORMATION AND BASIC FACTS.....	7
2.1 Urban-Rural Population.....	8
2.2 Age Composition	8
2.3 Health Indicators including Vital Statistics.....	8
2.4 Crude Birth Rate (CBR).....	9
2.5 Crude Death Rate (CDR)	9
2.6 Maternal Mortality Rate (MMR)	10
2.7 Child Mortality Rate (CMR).....	10
2.8 Infant Mortality Rate (IMR).....	11
2.9 Neonatal Mortality Rate (NNMR) and Under-five Mortality.....	11

2.10	Life Expectancy.....	11
3	SOCIAL INDICATORS	11
3.1	Literacy Rate.....	11
3.2	Level of Education.....	11
3.3	Economic Performance.....	12
3.4	Water Supply and Sanitation.....	12
4.	HEALTH CARE DELIVERY SYSTEM IN SRI LANKA	12
4.1	Organization of Health Services	12
4.2	National Health Policy.....	13
4.3	Health Administration	14
4.4	Health Facilities	14
4.5	Health Manpower.....	16
4.6	Health Finance	16
5	OVERVIEW OF THE EXISTING NATIONAL SURVEILLANCE SYSTEMS IN SRI LANKA.....	17
5.1	Data collection	18
5.2	Data Compilation and Analysis.....	26
5.3	Action	26
5.4	Feedback	26
6.	NEED TO INTEGRATE DISEASE SURVEILLANCE IN SRI LANKA.....	27
7.	ASSESSMENT OF THE NATIONAL SURVEILLANCE SYSTEM, AND EPIDEMIC PREPAREDNESS AND RESPONSE.....	28
7.1	Objectives	28
7.2	Elements of Surveillance Systems Assessed	29
7.3	Domains Assessed.....	30
7.4	Preparation for Assessment	31
7.5	Methods of Assessment.....	32
7.6	Procedures, Activities and Timetable of the Assessment.....	32
8.	LABORATORY SERVICES	47
8.1	General Considerations	47

8.2	Structure of Laboratory Services	47
8.3	Laboratory Assessment Findings.....	48
8.4	Laboratory Management and Hours of Service	48
8.5	Number of Trained and Skilled Laboratory Staff.....	48
8.6	Laboratory Quality Control	49
8.7	Laboratory Safety Procedures.....	49
8.8	Equipment Calibration and Maintenance/Reagents	49
8.9	Laboratory Services and Utilities.....	49
8.10	Laboratory Tests Performed	50
8.11	Recommendations for Laboratory Services	50
9	RECOMMENDATIONS.....	51
9.1	General Recommendations.....	51
9.2	Specific Recommendations.....	52
Annex	List of participants of the pre-assessment facilitated workshop	54

ACRONYMS

AFC	Anti Filaria Campaign
AFP	Acute Flaccid Paralysis
AIDS	Acquired Immunodeficiency Syndrome
ALC	Anti Leprosy Campaign
AMC	Anti Malaria Campaign
CBS	Case Based Surveillance
CFR	Case Fatality Rate
CSF	Cerebro-Spinal Fluid
DDHS	Divisional Director of Health Services
DMO	District Medical Officer
DPDHS	Deputy Provincial Director of Health Services
EPD	Epidemic Prone Disease
EPI	Expanded Program on Immunization
EPID	Central Epidemiology Unit
GDP	Gross Domestic Product
GNP	Gross National Product
HIS	Health Information System
HIV	Human Immunodeficiency Virus
IDS	Integrated Disease Surveillance
Lab	Laboratory
Min.Health	Ministry of Health
MOH	Medical Officer of Health
MW	Midwife
NGOs	Nongovernmental Organizations
NSACP	National STD/AIDS Control Programme
PDHS	Provincial Director of Health Services
PHI	Public Health Inspector
PM	Programme Manager

RDCP	Respiratory Disease Control Programme (TB)
RE	Regional Epidemiologist
SEARO	South-East Asia Regional Office
TB	Tuberculosis
TV	Television
UN	United Nations
UNICEF	United Nations Children's Fund
VCR	Video Cassette Recorder
VHF	Viral Haemorrhagic Fever

1. EXECUTIVE SUMMARY

1.1 Introduction

As part of the strengthening process of the National Disease Surveillance System, the Ministry of Health, Sri Lanka with WHO's technical and financial support, assessed the current surveillance, epidemic preparedness and response systems from 4-13 March, 2003. The purpose of the assessment was to review the existing surveillance systems, in order to identify strengths, weaknesses, opportunities and threats (SWOT) for integrated disease surveillance. Information was collected through site visits to national, district, and divisional health facilities using pre-designed data collection tools. Laboratory services were also assessed. All levels of health system were assessed by their core and support functions relating to integrated disease surveillance. The summary of major findings, as well as recommendations of the assessment are presented in this report.

1.2 Major Findings

A total of thirty two sites were visited and 9 national surveillance systems pertaining to Epid Unit; Malaria; Leprosy; Filaria; Laboratory; Health Information; Vaccine preventable diseases; National STD/AIDS Control Programme (NSCP), and Respiratory Disease Control Programme (TB) were assessed.

It was clear from the outset that Sri Lanka has a good surveillance system in place. This, coupled with the existence of a competent and well-staffed Epidemiology Unit, is a major strength and a sound base from which one can expect to progress to a strong, effective and integrated surveillance system. Also, an extremely positive aspect is the availability of a legal framework, namely the Quarantine and Prevention of Diseases Ordinance.

However the current assessment has brought several important factors to the fore. By design the current surveillance plan in Sri Lanka does not capture morbidity data from outpatient departments (OPD) and clinics. The OPD cases are not therefore reflected in the morbidity figures and there is no

surveillance for even the priority communicable diseases for patients who are not admitted into the wards. There is also no planned routine case-detection in the field. However, the Public Health Inspectors (PHIs) do cover field cases as well when investigating all reported cases. The current system will therefore only pick up cases that are severe enough to be admitted into a hospital, and a few cases from the field when PHIs detect them during field investigation.

From the inpatients too, a considerable proportion of the cases diagnosed as having any one of the notifiable diseases do not find their way into the notification system. This may vary from disease to disease and from one level of health facility to another. However in the case of EPI diseases, the notification rates are almost 100 per cent.

Another important shortcoming, inherent in the current plan, is the non-availability of most of the surveillance-related information from the private sector. In this context, this singular deficit applies not only to the large tertiary care institutions including the private laboratory facilities, but also to the widespread qualified private practice-providers, including government service doctors. There are government ayurvedic hospitals and practitioners of Ayurveda and other systems of medicine. These too do not form part of the surveillance network.

Another problem highlighted by the survey is the fact that there are, by design, multiplicities of reporting channels. A case can conceivably be reported both from the hospital ward and from the MRI laboratory. This has a potential for duplication if care is not taken to link reports with their respective sources. While for practical purposes duplication may not be important, or may even act as a safeguard against missing any case, it does involve an unnecessary effort. However, such duplicate data are cleaned and corrected at the Central Epidemiology Unit, Colombo.

In 1970, two regional epidemiologists were appointed for the first time to health regions in Kalutara and Karunagela. However this system has not developed adequately during the last 20 years due to non-availability of trained officers. There are about 30 per cent vacancies in the posts of regional epidemiologists and they are thus also not in the chain of reporting for the surveillance system. This can have serious implications for the supervisory role of this valuable technical resource.

1.3 Detection, Registration and Confirmation

Enquiries at the Central Epidemiology Unit revealed that no recently-updated surveillance manual for the health system in Sri Lanka is available, though the hospital and MOH/DHS manuals have a section on “surveillance” at the end. Moreover, several programmes have their own manuals, while the Epidemiology Unit has been issuing circulars in this regard from time to time. However, a composite surveillance manual is not available at any of the sites visited by the team. Several respondents voiced the opinion that it would be useful for them to have such a manual. All the sites visited (hospitals, MOH centres and PHI stations) are maintaining a current clinical and/or notification register for the past year. Standard case-definitions are available for only the following priority notifiable diseases: cholera; DHF; neonatal tetanus; whooping cough; polio; measles; tuberculosis, and malaria. Malaria is only reported after blood slide confirmation. These case-definitions are not available in any publication of national case-definitions but are found only in circulars issued by the Epidemiology Unit.

A review of clinical registers of health facilities showed that even these limited number of case-definitions are apparently not being used except for poliomyelitis (acute flaccid paralysis). Some respondents expressed the opinion that standard case-definitions for priority communicable diseases would help them in making correct diagnosis and in reporting.

The capacity for specimen collection, storage and transportation was assessed and found generally unsatisfactory except for AFP (suspected polio).

1.4 Data Reporting

The majority of the sites visited, except hospitals, had an adequate supply of appropriate reporting forms during the last six months. (Problems were primarily detected only in Jaffna district). The majority of district surveillance systems (62%) and 100 % of health facilities (hospitals) and MOHs submitted the required reports while only 37.5% of districts and 55% of hospitals (health facility) submitted all required reports on time. All MOHs submitted reports on time.

1.5 Data Analysis

It was observed that data analysis is almost confined to the central level. All too often the other levels confine themselves to collecting and transmitting

forms. Even the sites (such as the Regional Office) that are undertaking some amount of data analysis do not seem to be relating the analysed data adequately to interventions in the field.

1.6 Outbreak Investigation

Outbreak investigation and response, once an outbreak was reported to the team at the sites visited, was found to be a distinct strength of the system. The total numbers of suspected outbreaks reported to the team were 5 in the district sites visited and in 4 MOH areas out of which all (100%) were investigated within 48 hours. All the sites have experience of investigating outbreaks.

1.7 Epidemic Preparedness

There is an epidemic preparedness and response plan at national and district levels. It appears that in case of an outbreak, drugs and supplies have always been made available. None of the three districts experienced any significant shortage of drugs, vaccines or supplies during the most recent epidemic.

1.8 Feedback

In many ways the system has a strong element of feedback. The Epidemiology Unit publishes the Weekly Epidemiological Report and a Quarterly Epidemiological Bulletin. These are distributed to the periphery. There was no evidence of utilization of this feedback for action in most of the areas visited. However, several respondents expressed the need for more feedback. Only 11% of health facilities i.e. hospitals and 75 % of district surveillance systems visited, and 100 % of MOHs sites reported that they had received feedback from the higher level.

1.9 Supervision

Supervisory visits as such are not regularly planned activities at most senior levels. Supervision is generally carried out as part of visits to the field for any

purpose, such as outbreak investigation. Only 2 of the twenty three sites visited had written evidence of supervision. Of the reasons cited by the districts, lack of transport and lack of fuel were the commonest causes for not supervising health facilities. Preoccupation with other work was another reason expressed by several respondents.

1.10 Coordination of Surveillance Systems

The Advisory Committee on Communicable Diseases chaired by the Director General, Health Services, coordinates the surveillance system at the central level. However, the lack of coordination of surveillance systems was identified as one of the major problems at district and divisional levels. The respondents acknowledged that better coordination is required at the divisional, district, regional and central levels if the surveillance system is to be strengthened.

1.11 Training

All respondents at the central, district and divisional levels acknowledged receiving some form of training. The majority of respondents identified inadequate inservice training in surveillance and epidemic control as a major obstacle in the strengthening process.

Even though basic training is available as a rule, no evidence was found of adequate system of regular in-service training. Continuing education therefore has the potential for revitalising and updating the system.

1.12 Resources

There is a need to re-orient the current system to create an enabling situation for Integrated Disease Surveillance system and train appropriate personnel in disease surveillance. Although computers are available at the district level, there is a need to build basic skills into the use of computers with emphasis on data management and analysis. The non-availability of regular staff hampers this system.

1.13 Laboratory

Laboratory services are an integral part of the surveillance system. In Sri Lanka, microbiological support services are grossly inadequate in most of the

health facilities. Shortage of microbiologists in health facilities is a major lacuna. Laboratory services are mostly clinico-pathological. Microbiology is limited to routine microscopy, and to TB, malaria and filarial investigations. However, in MRI, medical colleges and large hospitals, higher-level diagnostic facilities exist. However, there is currently no national laboratory network for surveillance. Even medical colleges are generally not included in the resources for surveillance. They are included mainly during outbreaks or epidemics. These laboratories also require significant strengthening to make them more responsive to the needs of surveillance. Although there are currently 5 public health laboratories in the country, only the MRI is functioning as a Public Health Laboratory in addition to its main function as a research and service laboratory.

1.14 Opportunities for Integrated Surveillance

The system in Sri Lanka has the potential for being made even stronger and there are several entry points available for integrating not only priority communicable and non-communicable diseases but also for functional integration between the many vertical specific disease programmes. Surveillance systems for specialized campaigns such as Malaria/National STD/AIDS Control Programme/Respiratory Disease Control Programme should strengthen the multidisease surveillance mechanism. Their resources should be shared and better coordination mechanisms developed at all levels. It is very important to develop and strengthen all regional epidemiological units at the district level in order to strengthen integrated disease surveillance in Sri Lanka.

1.15 General Recommendations

The following are the general recommendations:

- (1) Sri Lanka should progress towards a system of surveillance that not only achieves integrated disease surveillance at the functional level for the various specific disease programmes but also starts monitoring priority non-communicable diseases. The several systems of surveillance, specifically for various vertical programmes need to be integrated functionally in order to suit the specific programme so that the data management and reporting systems are shared in a phased manner.

- (2) The position of laboratory services as an integral and essential element of the surveillance system needs emphasis. They need to be strengthened.
- (3) The laboratory system should also be strengthened through networking. Medical colleges and the private sector laboratories need to be an integral part of the Laboratory Network.
- (4) The surveillance system in Sri Lanka needs to be expanded to include outpatients and community-level case-finding using a suitable mechanism.
- (5) The private sector institutions, including private practitioners need to be brought into the ambit of the surveillance system.
- (6) Epidemic preparedness and response needs to be strengthened at all levels.
- (7) Notification procedures and practices should be consolidated through managerial and supervisory inputs at all levels of the health system.
- (8) The position of regional epidemiological units/ information units needs to be established in the mainstream of the surveillance system. They should act as a node in the flow of data from the periphery to the centre and in its analysis in a phased manner, and provide feedback in the reverse direction.
- (9) A formal system of continuing education and in-service training should be strengthened, and district-level training in surveillance established.
- (10) Sri Lanka should develop a case-definition manual for the priority communicable diseases in consultation with all concerned.
- (11) A revised composite surveillance manual should be produced and made available to all levels.

2. INTRODUCTION: GENERAL INFORMATION AND BASIC FACTS

Sri Lanka is a small island with a land area of approximately 62 705 square kilometers. The island stretches to a maximum length of 435 kilometers, and a width of 225 kilometers. It is situated in the Indian Ocean, close to the

southern end of the Indian peninsula, on 5° to 9° northern latitudes and between 79° and 81° eastern longitudes. Sri Lanka has a central mountainous region with peaks as high as 2 524 meters, and is surrounded by a plain.

Sri Lanka has a parliamentary democratic system of government in which, the sovereignty of the people and legislative powers are vested in the parliament. The executive authority is exercised by a Cabinet of Ministers, presided over by an Executive President. The President and Members of the Parliament are elected directly by the people.

2.1 Urban-Rural Population

In 1946, 15.4 per cent of the population was residing in the urban sector. This had gradually increased to 21.5 per cent in 1981. The Demographic Survey of 2000 however shows the urban population to be comprising 20.4 per cent of the total population.

2.2 Age Composition

One of the most clearly visible features in Sri Lanka's age composition is the increasing trend of the proportion of the older age groups. The median age had remained around 21.3 years in the 35-year period, from 1946 to 1981. In 2000, the median age was 28 years. The proportion of children (1-4 years) decreased from 12.2 per cent in 1981 to 7.9 per cent in 2000. Similarly, a reduction is observed in the percentage of children, between the ages of 5 and 14 years and the youth population (15 to 29 years). The proportion of the population in the age group: 30 - 59 years, increased from 29.0 per cent in 1981, to 37.3 per cent in 2000. The elderly population (60 and over) was 6.7 per cent in 1981. It increased to 10.1 per cent by 2000. The dependency ratio is the ratio of children (under 15 years), and elderly (65 years and over), to the number of persons between 15 and 64 years. The percentage of dependents decreased from 65 per cent in 1981, to 49 per cent in 2000. The reduction in the overall dependency is due to a large reduction in young dependency.

2.3 Health Indicators including Vital Statistics

The registration of births and deaths was made compulsory in 1897. For the purpose of registration of births and deaths, each administrative district is

divided into smaller units called registration divisions. Each registration division has one registrar of births and deaths. The registrars of births and deaths in certain towns, called 'the proclaimed towns', are medical personnel and are designated as Medical Registrars. Every live birth or death has to be registered within forty two days for a live birth, and 5 days for a death, from the date of occurrence. Still births are registered only in 'proclaimed towns'.

Although birth and death registrations are compulsory by law, a few events are missed and not registered for various reasons. The survey conducted by the Department of Census and Statistics in 1980, to assess the completeness of births and deaths registration found that, about 98.8 per cent of births and 94.0 per cent of deaths were being registered. More recent studies have revealed that some deaths are not registered, mainly in the rural areas. It is evident that early neonatal deaths are classified as still-births, which do not require registration except in 'proclaimed towns'. Births and deaths are registered at the place of occurrence, and not in the area of residence of the mother (in case of births), or the deceased (in case of death).

2.4 Crude Birth Rate (CBR)

The crude birth rate (CBR) in Sri Lanka between 1900 and 1951 was high, fluctuating between 33 in 1912 and 42 in 1926. The first significant decline in CBR began in 1952. However, the fertility decline gathered momentum in the 1960s, recording a 16 per cent drop in the CBR. In the 1970s, it remained more or less stable around 28. Subsequently, a drastic decline was recorded in fertility in the 1980s, where the CBR declined by about 25 per cent from 28.2 in 1981, to 20.7 in 1991. The initial fertility decline was mainly due to the change in the female age structure, and the rising age at marriage. Thereafter, increased contraceptive practice became the dominant factor. The crude birth rate was 17.3 in 2000.

2.5 Crude Death Rate (CDR)

The mortality level during 1900-1945 was generally high, fluctuating between 36.5 in 1935 and 18.5 in 1942. This was followed by a drastic fall of death rates in the immediate post-war years. Between 1946 and 1949, the crude death rate (CDR) fell from 19.8 to 12.4, mainly due to extension of health services in rural areas, and improved nutrition. Mortality continued to decline

during the last few decades, although the pace of decline become slower. The CDR was 5.7 in 2000.

2.6 Maternal Mortality Rate (MMR)

The maternal mortality rate (MMR) has been very high in the past, fluctuating between 265 in 1935 and 155 in 1946 per 10 000 live births. A dramatic fall in the MMR in the post world war period is observed. Between 1946 and 1949, MMR shows a general decline and the rate for 1996 is 2.3 per 10 000 live births.

On an average, about 85 per cent of the total registered live births in Sri Lanka occur in government medical institutions. MMR for the year 1996, based on hospital statistics was 3.9 per 10 000 hospital live births. This rate is higher than the official MMR released by the Registrar General's Department, which is derived by analyzing the cause of death recorded in the death certificates. The low MMR according to figures of the Registrar General's Department is probably due to incorrect recording of cause of death in the death certificates, and incorrect coding due to insufficient information given in the returns submitted by the Registrars. Recent studies indicate that a little over 50 per cent of the maternal deaths have not been identified as maternal deaths due to this reason.

A study carried out by the Family Health Bureau on maternal deaths during 1998, reveals a MMR of 5.8 per 10 000 registered births. The MMR for the year 2000, according to hospital statistics, is 3.5 per 10 000 hospital live births.

2.7 Child Mortality Rate (CMR)

The child mortality rate (CMR) is the number of deaths between the age of 1-4 years, per 1 000 children in that age group of the year concerned. The CMR reflects the adverse environmental health hazards e.g. malnutrition, poor hygiene, infections and accidents. It has declined steadily, from 24.7 in 1950 to 2.8 in 1980 and 0.9 in 1996.

2.8 Infant Mortality Rate (IMR)

The trend in infant mortality rate (IMR) is similar to the MMR. In 1935, a very high IMR (263) was recorded. A decline in the IMR was observed after 1946. It continued to decline during the past few decades, and in 1998 it remained at 15.4 per 1000 live births.

2.9 Neonatal Mortality Rate (NNMR) and Under-five Mortality

A decreasing trend is observed in the neonatal mortality rate (NNMR) and the rate recorded for 1996 is 12.9 per 1 000 live births. It is noteworthy that neonatal deaths accounted for 74.9 per cent of infant deaths registered in 1996. The under-five mortality rate in 1996 was 4.4.

2.10 Life Expectancy

Life expectancy at birth increased from 43 years in 1946, to 70 in 1981; 72 in 1991, and 73 in 2001: male 70.7 and female 75.4.

3 SOCIAL INDICATORS

3.1 Literacy Rate

The literacy rate is defined as the percentage of the population aged 10 years and over, who are able to read and write at least one language. The literacy rate has increased from 57.8 per cent in 1946 to 87.2 in 1981. The literacy rate derived from the Demographic Survey 1994, excluding the Northern and Eastern provinces, is 92.2. Males showed a higher rate of literacy than females at all ages.

3.2 Level of Education

The 1981 Census found that 18.0 per cent of the adult population (30 years and above) had never been to school and the Eastern province had the highest proportion (31.3%). The Demographic Survey of 2000 indicates that 5.3 per cent of the adult population (5.4 per cent males, and 13.7 per cent

females) had never been to school. Almost a quarter of the adult population had not progressed beyond the primary level.

3.3 Economic Performance

The GDP at current market price was estimated at Rs. 1 256 billion compared with Rs. 1,106 billion in 1999. With a mid-year population growth rate of 1.7 per cent, the per capita GDP rose to Rs. 64 855 (US dollars 856) in 2000 from Rs. 58 077 (US dollars 825) in 1999.

3.4 Water Supply and Sanitation

Source of Drinking Water Supply

In 2000, 75.4 per cent of housing units, (excluding Northern and Eastern provinces) used safe water source for drinking purposes while 10.5 per cent used the rivers, tanks or streams as their source of drinking water. Only 20.4 per cent of housing units received water from the main lines.

Toilet Facilities

In 1981, 33.5 per cent of houses in the country did not have a toilet. The Demographic Survey of 2000 showed that 6.1 per cent of housing units (excluding Northern and Eastern provinces) did not have toilets. The Survey further revealed that 5 per cent of housing units in the rural sector and 27.3 per cent in the estate sector did not have toilets.

4. HEALTH CARE DELIVERY SYSTEM IN SRI LANKA

4.1 Organization of Health Services

In Sri Lanka, both public and private sectors provide health care. The public sector provides health care for nearly 60 per cent of the population. The Department of Health Services and the Provincial Health Sector encompass the entire range of preventive, curative and rehabilitative health care provision.

The private sector mainly provides curative care, which is estimated to be nearly 50 per cent of the outpatient care of the population and is largely concentrated in urban and suburban areas. The One day General Practice Morbidity Survey in Sri Lanka, 1998 estimates that general practitioners in Sri Lanka handle at least 26.5 per cent of primary care consultations per year.

Ninety five per cent of inpatient care is provided by the public sector. In addition to the services provided by the Department of Health Services, Provincial Councils and the Local Authorities, special service provision has been made especially for the armed forces and police personnel, as well as the estate population.

The Western, Ayurvedic, Unani, Siddha and Homoeopathy systems of medicine are practised in Sri Lanka. Of these, Western medicine is the main sector catering to the needs of a vast majority of the people. The public sector comprises Western and Ayurvedic systems, while the private sector consists of practitioners in all types of medicine. This provides the people an opportunity to seek medical care from various sources, under the different systems of medicine.

Sri Lanka has an extensive network of health care institutions. As such, the majority of the population has easy access to a reasonable level of health care facilities provided by both the state and the private sector through extension of services to every corner of the country. A health care unit can be found on an average not farther than 1.4 km from any home, while free government (Western type) health care services are available within 4.8 km of a patient's home.

4.2 National Health Policy

The broad aim of the health policy of Sri Lanka is to increase life expectancy and improve the quality of life. This is to be achieved by controlling preventable diseases and by health promotion activities. However, the concern of the Sri Lankan Government is to address health problems like inequities in health services provision; care of the elderly and the disabled; non-communicable diseases; accidents and suicides; substance abuse, and malnutrition.

4.3 Health Administration

The health services of the government function under a Cabinet Minister. With the implementation of the Provincial Councils Act in 1989, the health services were devolved, resulting in the Ministry of Health at the national level and separate Provincial Ministries of Health in the eight provinces.

The central Ministry of Health is primarily responsible for the protection and promotion of people's health. Its key functions are setting policy guidelines; medical and paramedical education; management of teaching and specialized medical institutions, and bulk purchase of medical requisites. The eight Provincial Directors of Health Services (PDHS) are totally responsible for management and effective implementation of health services in the respective provinces. The PDHS is responsible for the management of hospitals (provincial, base and district hospitals, peripheral units, rural hospitals and maternity homes) and outpatient facilities, such as central dispensaries and visiting stations.

In 2003, there were twenty-five Deputy Provincial Directors of Health Services (DPDHS), to assist the eight Provincial Directors of Health Services. The DPDHS areas are similar to administrative districts. Each DPDHS area is sub-divided into several Medical Officers of Health areas (MOH/DDHS), which are congruent with administrative units, i.e. Divisional Secretariats. The MOH/DDHS is responsible for the preventive and promotional health care in a defined area, with a population ranging from 60 000 to 80 000 and has trained staff working at the field level.

The Director-General, Health Services, heads the Department and has immediate support from Deputy Directors-General (DDG), each in-charge of a special programme area. They have, under their jurisdiction, a number of directors responsible for different programmes and organizations.

4.4 Health Facilities

The network of curative care institutions ranges from the sophisticated National Hospital, Sri Lanka and teaching hospitals with specialized consultative services, to the small central dispensaries, which provide only outpatient services. The distinction between hospitals is basically made on the

size and the range of facilities provided. There are three levels of curative care institutions as shown below. However, patients can seek care in the medical institution of their choice: namely central dispensaries; maternity homes; rural hospitals; peripheral units, and district hospitals which are primary health care institutions, Base and Provincial Hospitals which are secondary care institutions, and the National Hospital, Sri Lanka, and teaching and specialized hospitals which are tertiary care institutions.

As of December 2000, there were 558 medical institutions with inpatient facilities and 404 central dispensaries compared to 556 and 383, respectively in 1999. The number of beds in hospitals increased from 55 195 in 1999 to 57 027 during 2000, indicating a 3.3 per cent increase. But, the national rate of beds for inpatient care remained unchanged at 2.9 per 1 000 persons.

In total, there are 15 teaching hospitals with 14 659 patient beds. There are few specialized hospitals for the treatment of chronic diseases like tuberculosis, leprosy, mental illnesses, cancer, chronic rheumatological diseases and infectious diseases.

The distinction between district hospitals (DH), peripheral units (PU) and rural hospitals (RH) is made on their size and the range of facilities provided. The total care available in DHs and PUs, is far superior to RHs because of the availability of nursing personnel in these institutions. Among the primary health care institutions, the DHs are the largest. During 2000, there were 156 DHs of which 100 hospitals had less than 100 patient beds.

During 2000, Sri Lanka had 93 PUs with a total of 4 586 patient beds and 167 RHs with a total of 4 382 patient beds. The average size of a RH in 2000 comprised 26 beds. Fifty three per cent of RHs had beds less than the average number. These institutions very often do not have a separate maternity ward. In the past, the RHs were manned by assistant/registered medical officers. During 2000, approximately 70 per cent of RHs were under the charge of medical officers. In order to improve the health conditions of estate workers, by the end of year 2000, 15 estate hospitals were acquired by the government and manned with qualified medical personnel. But, most of these hospitals were not functioning fully due to the lack of adequate buildings and equipment. These institutions are categorized as RHs.

The smallest type of institution with inpatient facilities is the Central Dispensary and Maternity Homes (CD & MH). During 1999, medical officers were posted to some CD & MHs. Many of these institutions have been upgraded by providing better facilities. Hence, in 2000 there were only 65 CD & MHs compared with 88 in 1986.

Two hundred and fifty two (252) Health Units (MOH offices) headed by medical officers of health, carry out preventive services in Sri Lanka. Of these, 4 are municipal MOH Offices. With the decentralization of health services in 1992, the number of health units almost doubled in number. The number increased from 131 in 1990 to 252 in 2000. Consequently, still many MOHs are faced with problems such as shortage of staff, buildings, vehicles, etc.

4.5 Health Manpower

In the area of health manpower, numbers in most categories have increased. The government has made a decision to absorb all medical graduates passing out from the universities. The total number of medical officers rose from 6 994 in 1999 to 7 963 in 2000. Accordingly, persons per doctor improved to 2 431 from 2 723 in 1999. The number of nurses per 100,000 population increased from 75 in 1997 to 77 in 1998 and gradually decreased to 76 in 2000.

A wide disparity in the regional distribution of health personnel is evident. The Colombo district has a high concentration of most categories of health personnel except public health staff. In Colombo, the municipal staff supplements these categories.

4.6 Health Finance

The health expenditure for 2000 was Rs 19 055 million, which is an increase of 5.8 per cent over the previous year. This increase is lower compared with the increase in 1999 (13%) over 1998. During 2000, the proportion of public expenditure on health services was 1.7 per cent of the GNP and 4.2 per cent of the national expenditure. This proportion is relatively low compared to the previous years. The per capita health expenditure increased by 4.0 per cent to Rs 984 in 2000 compared to Rs 946 in 1999.

Recurrent expenditure accounted for 81 per cent of the total expenditure. During 2000, the capital expenditure decreased by 5.7 per cent whereas the recurrent expenditure increased by 8.7 per cent compared with 1999.

A major proportion of health expenditure is utilized by the patient care services. In 2000, patient care services utilized 67 per cent of the health expenditure, while community health services utilized only 9 per cent. Of the balance, 22 per cent were for general administration and staff services, and 3 per cent was spent on training and scholarships.

The Ministry of Health and the Department of Health Services (central) utilized 74 per cent of the total health expenditure. It utilized 74 per cent of the expenditure on patient care services, 39 per cent of the expenditure on community health services and 86 per cent of the expenditure on general administration and staff services.

5 OVERVIEW OF THE EXISTING NATIONAL SURVEILLANCE SYSTEMS IN SRI LANKA

One of the roles of the MOH /DPDHS working in the field is the identification of specific causes of morbidity and mortality in a population so that effective interventions can be selected and implemented to reduce the incidence of diseases to the lowest possible levels within the constraints of available resources.

Functional Elements of Surveillance

Surveillance has four functional elements.

These are:

- (1) Data collection;
- (2) Data compilation and analysis;
- (3) Data interpretation for action, and
- (4) Feedback.

5.1 Data collection

The methods commonly used for data collection are:

- (1) Routine reporting of cases and deaths recorded at the treatment centres;
- (2) Active surveillance;
- (3) Epidemiological investigation of outbreaks;
- (4) Sentinel centres and;
- (5) Sample surveys.

Each of these methods has its advantages and limitations. The different methods can be used either separately or in combination with each other, depending on technical and administrative feasibility, as well as financial resources available.

The disease surveillance system in Sri Lanka is presented in figure1

Routine reporting

(1) Indoor morbidity and mortality reporting

Once the patient is discharged from the hospital, the BHT (Bed Head Ticket) is sent to the Medical Records Office. The diagnosis on the BHT is entered in the Indoor Morbidity and Mortality Register, according to the International Classification of Diseases (ICD). This register is utilized to compile the Indoor Morbidity and Mortality Quarterly Return which is sent to the Medical Statistician. These statistics are processed by the Medical Statistician to provide information on the morbidity and mortality statistics in government hospitals by health divisions.

There is no routine system of recording diseases of outpatients.

Figure 1: Disease surveillance system in Sri Lanka

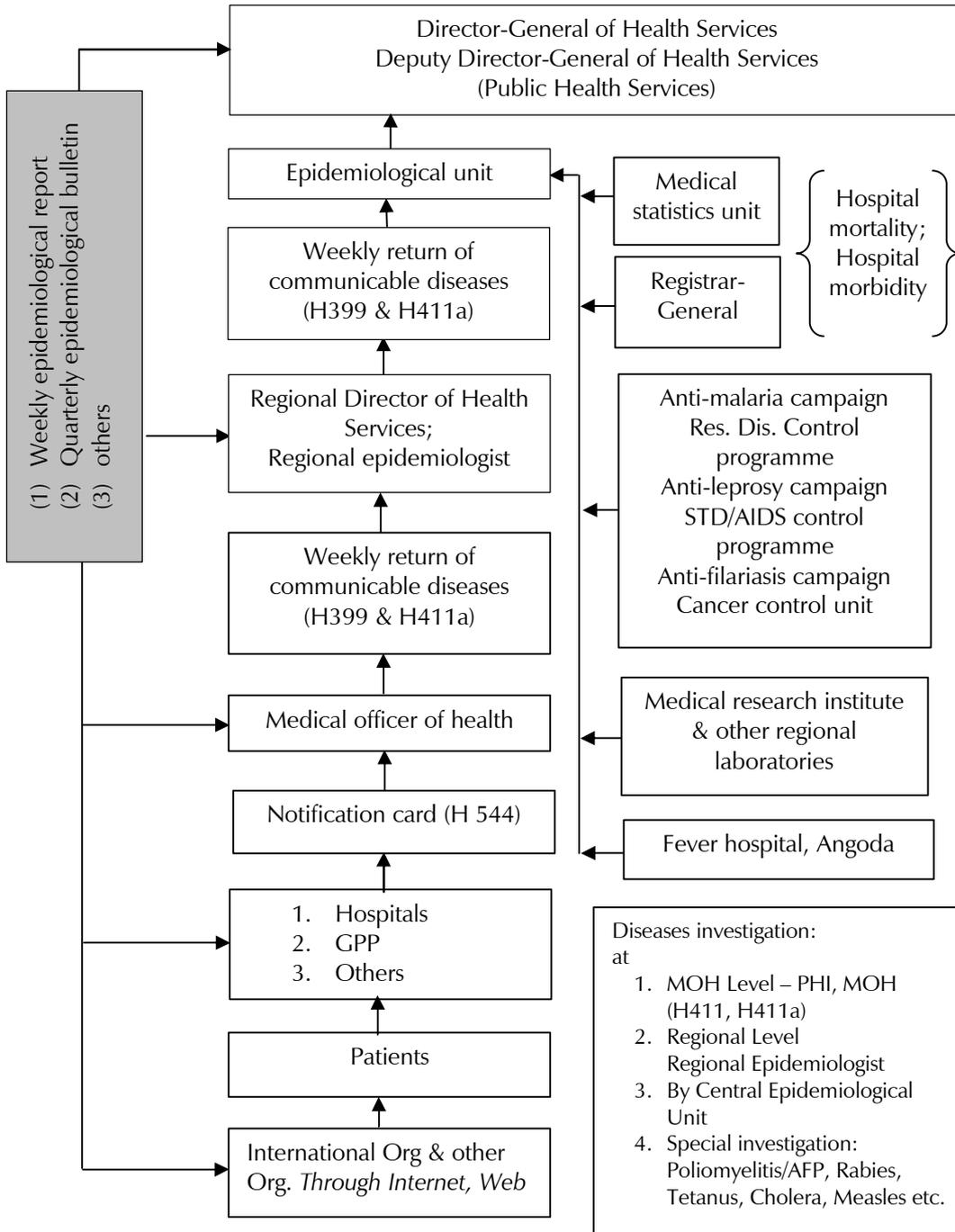
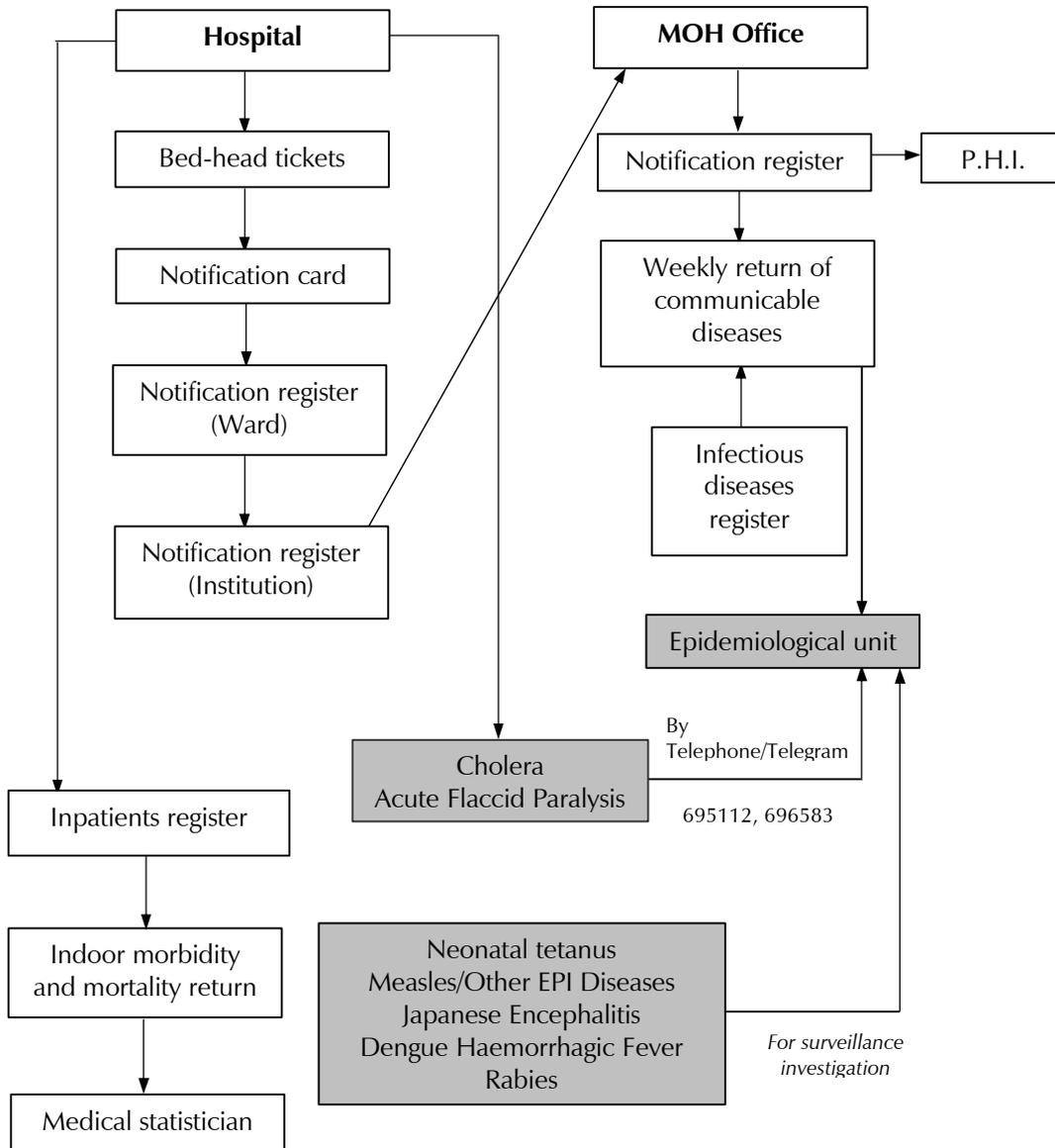


Figure 2: Mechanism for collection of data



(2) Notifiable diseases reporting system

Mechanism for Collection of Data

The surveillance of communicable diseases in Sri Lanka is based on the system of notification of certain diseases.

The Quarantine and Prevention of Diseases Ordinance of 1897 and its subsequent amendments provide the necessary legislation for the implementation of this system. According to this ordinance, every practising physician, paediatrician, MO, DMO, hospital director, and general practitioner treating a case of notifiable disease should notify such cases to the Medical Officer of Health of the area where the patient resides. The notifiable diseases are given below. It should be noted that diseases may be added to or removed from this list from time to time. This list gives the diseases that are notifiable at the time of publication.

Table 1: *Notifiable diseases list*

National /District/Divisional list	
1. Cholera	13. Malaria
2. Plague	14. Measles
3. Yellow fever	15. Rubella
4. AFP (polio)	16. Simple continued fever for 7 days and more
5. Dengue/DHF	17. Tetanus
6. Diphtheria	18. Typhus fever
7. Dysentery	19. Viral hepatitis
8. Encephalitis	20. Whooping cough
9. Enteric fever	21. Tuberculosis
10. Food poisoning	22. Any other syndrome in excess number (not gazetted)
11. Human Rabies	
12. Leptospirosis	

Cases are notified using a standard notification card (Form Health 544). These notification cards are forwarded to the MOH of the area. Most notifications originate from hospitals. The MOH maintains a notification

register and the notifications are referred to the Public Health Inspector for investigation and confirmation. All investigation cards are returned to the MOH and are recorded in the infectious diseases register (Form Health 700). The MOH submits a weekly return of communicable diseases (Form Health 399) to the Epidemiologist indicating the cases notified with detailed information on the confirmed cases (in Form Health 411a).

Special epidemiological investigation forms are used for surveillance of cholera, DF/DHF/DSS, human rabies, hepatitis, Japanese encephalitis, measles, poliomyelitis, tetanus (including neonatal tetanus) and whooping cough (see annexure on special investigation forms).

The specialized campaigns have separate and different surveillance systems. Morbidity and mortality data are collected by each of the specialized campaigns and a quarterly return is forwarded to the Epidemiological Unit.

Action at the Health Office (before investigation of the case)

On receipt of notification regarding a case of communicable disease (notification card, Form Health 544), the medical officer of health/district health officer should take necessary action to enter the following particulars in the notification register:

- (1) Serial number
- (2) Name of patient
- (3) Address
- (4) Age
- (5) Sex
- (6) Diseases
- (7) Date of notification
- (8) Notified by whom
- (9) Date notification card received
- (10) PHI area
- (11) Date notification card sent to PHI
- (12) Date notification card received from PHI
- (13) Remarks.

After entering these particulars, the MOH should send the notification card to the Public Health Inspector for investigation and reporting.

Action at PHI's Office and in the Field

On receipt of a notification card, the public health inspector should enter the serial number, name, age, sex, address, disease, date and other particulars of the patient in the letter inward register and he should visit, investigate and take action in all cases of communicable diseases reported to him and occurring within his range. Any cases reported direct to the PHI should also be investigated promptly.

All cases of infectious diseases detected and investigated by the PHI within his range should be entered in the infectious disease register (I.D. Register – Form Health 700). He should enter: (1) The Serial No.; (2) Case number (abbreviations and serial number for the year, e.g. typhoid fever 1, Dysentery 6); (3) Locality (Address) and (4) Name of patient, and other particulars of the patient in the infectious diseases register. He should also fill the communicable disease report Part I (Form Health 411) for any case of communicable disease investigated, and enter the necessary particulars of the patient in the outward register and return the notification card (Form Health 544) with the communicable disease report Part I (Form Health 411) to the MOH office within one week of receipt of the notification card.

He should also update the spot map and charts on communicable diseases maintained at his office.

Action at the Health Office (after investigating the case)

On receipt of the communicable disease report Part I (Form Health 411) with the notification card from the PHI (after investigating the case), the MOH should take necessary action to enter the date of notification card received from the PHI in the notification register, and the following particulars in the infectious disease register (I.D. Register Form Health 700):

- (1) Serial number;
- (2) Case number - Abbreviations and serial number for the current year, e.g. typhoid fever 1, dysentery 7);
- (3) Date of receipt of notification card (after investigation);
- (4) A.G.A. Division;

- (5) Locality – Address;
- (6) Name of patient;
- (7) Age;
- (8) Sex;
- (9) Race, occupation, religion;
- (10) Nature of disease etc.

He should also update the spot map and charts on communicable diseases maintained at the MOH office.

Every Saturday, he should complete the weekly return of communicable diseases (Form H 399), and the detailed information on the confirmed cases in Form Health 411a, and send them to the Epidemiologist, Colombo.

Epidemiological Investigation of Outbreak

The major objective of an epidemiological investigation of a disease outbreak is to help control the spread of the disease by indicating the most appropriate preventive measures, identifying where, to whom and how to apply these measures and subsequently monitoring the progress of the control efforts.

Outbreak investigation can also provide important supplementary information not often gained from other surveillance methods. This includes age-specific attack rates, case fatality rates, rates of serious disability and estimates of vaccine efficacy.

Epidemiological investigations are undertaken to:

- (1) Determine the extent of morbidity and mortality;
- (2) Determine the source of infection and pattern of transmission;
- (3) Determine the effectiveness of control measures, and
- (4) Identify methods for present and future prevention and control.

A characteristic of a well conducted outbreak investigation is that a few cases are laboratory confirmed and rest meet the case-definition.

Sentinel Reporting System

There is a proper sentinel reporting system for AFP, EPI diseases and dengue in Sri Lanka, but there is no sentinel system for other notifiable diseases.

Sentinel surveillance provides data on part of the population, whose representativeness is unknown. Thus sentinel centres can at best show the trend of disease incidence in a particular area. This information cannot be generalized to estimate the national or state incidence rate.

Sample Survey

The disease survey is an active and efficient method of surveillance, which can complement the other methods. Two surveys done at an interval of several years apart may be able to demonstrate changes in disease incidence.

A simple method using a cluster sampling technique (recommended for vaccine coverage survey by WHO) with necessary modifications has been used to determine the mortality and morbidity due to diarrhoeal diseases and acute respiratory infections in children under 5 years in Sri Lanka.

Early Warning System (EWS)

An Early Warning Reporting System helps to determine possible outbreaks of disease in their initial stages making it possible to initiate control measures immediately, thereby preventing the outbreak from developing into an epidemic. Not only the system is important for the prevention of epidemics, it is also a useful tool for the identification of emerging and re-emerging diseases. Moreover an in-built early warning system improves the quality of surveillance.

The Central Epidemiological Unit has employed several mechanisms to function as early warning reporting systems. These have been incorporated within the ongoing surveillance programme and are described below.

- Routine reporting of notifiable diseases (Manual and computer base) (in-built alert is generated when the data are entered /analysed)
- Sentinel surveillance
- Entomological surveillance
- News reports and rumour reports
- Web postings and e-mail alerts

Geographic Information Services about Sri Lanka

The Central Epidemiological Unit has developed vary basic maps using GIS software during the past few years. The digital map data for districts, divisions and some villages are available in the Central Epidemiological Unit. However epidemiologists and computer staff have little training to use this valuable resource.

5.2 Data Compilation and Analysis

In order to monitor the incidence (number of new cases in a defined population during a specific period of time) of a disease, it is necessary to maintain charts and graphs which show the number of cases of the disease for each reporting period. With charts and graphs it is easy to visualize the number of cases which occurred in each reporting period. Charts and graphs are useful for diseases which occur more often. A map is commonly used to monitor the location of disease during investigation.

After the data have been compiled for the most recent reporting period, it needs to be analysed. The number of cases reported during the period under review should be compared with the data reported during the previous week/month and corresponding period of previous years. Is the number higher, lower or nearly the same? Whatever the answer, the analysis is not complete until the most probable reason for the causation and spread of the disease is explained.

5.3 Action

Action has to be taken to correct any problem uncovered during routine reporting, epidemiological investigation or a survey.

5.4 Feedback

In order to ensure that reporting units at various levels remain motivated and involved in the surveillance process, there must be regular communication between the higher levels of programme management and its lower levels. The information is tabulated by health divisions and a feedback in the form of a weekly epidemiological report is forwarded to all medical and health

institutions by the Epidemiological Unit. Important information on surveillance is available at Central Epidemiology Unit's web site.

The primary reason for preparing and distributing periodic surveillance reports is to provide current information on disease occurrence to those who need it.

A quarterly epidemiological bulletin is also published by this unit. This gives epidemiological data for all important diseases for the quarter, annual surveillance reports for certain diseases, information from specialized campaigns and narratives on performance etc.

Reports

Reports are also useful in clarifying one's own mind with regard to the progress of the investigation. An orderly and planned report will help in one's understanding, thereby helping one to interpret the situation with lucidity. It is also important that one realizes that complex and advanced equipment (e.g. computers) is not necessary to produce a well-presented report. Even a neatly hand-written report, with hand-drawn graphics could be more than adequate to present the facts and conclusions. Reports vary in emphasis, depending upon the intended readership. A report on the outcome of a disease outbreak meant for the consumption of the general public, would not, generally dwell on the microscopic structure of the causative organism, but rather on the methods of prevention and management that will be useful to an average member of public. Similarly, an administrative report would not have much on technical details, but cover more on administrative issues, while a technical report without details of such would soon become useless. It is, therefore, important to know one's readership before writing the report.

6. NEED TO INTEGRATE DISEASE SURVEILLANCE IN SRI LANKA

In the country, in general, several disease prevention and control programmes are implemented through vertical approach using dedicated staff to provide specific services including surveillance. This approach facilitates the monitoring of programme operation and thus programme implementation as well. However, the overall disease surveillance activities suffer. Though efforts have been made to integrate all these systems into the periphery, they have

not yet become fully operational and areas of duplication still exist. Health personnel in the field are involved in a variety of systems using different surveillance methodologies, terminology, reporting frequencies and norms, and different forms to suit the different programmes etc. Proper co-ordination between different program elements often does not function well. The current global trend is moving towards implementation of integrated disease surveillance activities so as to continuously monitor the quality of prevention and control activities and assess their impact on various diseases, thereby enabling the updating and modernizing of the disease control programmes.

Essentially, the surveillance activities are very dynamic and form an integral part of any health care delivery system. Incorporating priority diseases of public health importance; deleting non-priority ones according to change in the epidemiological pattern, and availability of cost-effective interventions and resources, are regular and ongoing activities. Therefore, an integrated multidisease approach is considered the most cost-effective answer. Such an approach ensures sustainability, enhances accessibility and reduces cost. Certain diseases like EPI diseases, dengue, HIV, malaria, and water and sanitation-linked diseases, etc. may require certain additional inputs through multi-sectoral partnerships. The modern trend is moving towards establishing an integrated disease surveillance system. The same has been implemented in many other countries. Therefore there is a need to integrate selected disease surveillance activities in the country depending on the priority and availability of resources, in a phased manner.

7. ASSESSMENT OF THE NATIONAL SURVEILLANCE SYSTEM, AND EPIDEMIC PREPAREDNESS AND RESPONSE.

7.1 Objectives

(a) General Objective

The overall objective of the assessment is to bring together all players who have responsibility for surveillance, prevention and control of communicable diseases in the country and to formally measure the performance of the national disease surveillance activities.

(b) Specific Objectives

The specific objectives are to:

- (1) Obtain baseline information before implementing the IDS strategy, as adopted by the Member States. This information will help in planning, implementing, monitoring and evaluating disease control interventions.
- (2) Determine the strengths and weaknesses, and opportunities for the existing surveillance systems for communicable disease prevention and control.
- (3) Assess the country needs for strengthening the national surveillance system for communicable disease prevention and control, including epidemic preparedness and response.
- (4) Identify priority gaps and opportunities to be addressed in plans of action.
- (5) Build national capacity to periodically assess its overall surveillance and epidemic response.
- (6) Rapidly assess the functional laboratory capacity for diagnosis of priority diseases for disease surveillance in Sri Lanka.
- (7) Identify weaknesses in laboratory capacity for priority disease detection and devise improvements, thereby ensuring that clinical specimens and information flow smoothly from the periphery to the districts, and then on to national levels.

7.2 Elements of Surveillance Systems Assessed

(a) Structure

The organization of surveillance systems, and epidemic preparedness and response, have been assessed at the central, district and health facility levels. The relationship between the different levels has also been assessed.

(b) Process

The existing surveillance and epidemic preparedness and response procedures have been examined. The flow of information has been critically examined and its use for public health action assessed.

(c) Response

This assessment has also examined the effectiveness of the system(s) in monitoring communicable diseases for prevention and control.

7.3 Domains Assessed

The existing surveillance systems have been assessed in four domains: (i) priority diseases; (ii) capacity; (iii) integration, and (iv) the laboratory.

(a) Priority diseases

Surveillance should focus on the priority diseases within a country. The focus of these assessment guidelines has been on the regional IDS strategy and the country's priority diseases. While assessing the systems, it was limited to only the country's priority diseases already identified. However, the team members have also looked into whether some more could be considered.

(b) Capacity

The capacity of the public health surveillance system is determined by the ability of the system to adequately monitor and respond to priority health events. The core activities for effective surveillance of any health event are: detection; registry; reporting (immediate, early, and routine); confirmation; analysis, and response (including outbreak investigation, contact follow-up, policy development, and planning). These activities are made possible by a number of supporting activities that help in the performance of the core surveillance activities. These support activities include standards (e.g. case-definitions); training; supervision; communications and resources. The core and supporting activities of surveillance have been assessed at all levels of the public health system (central, district and the health facility).

(c) Integration

Integration refers to coordinating the core surveillance activities and the supporting functions common to all control programmes (e.g. resources, training, and supervision) while leaving the follow-up actions to the different specific intervention programmes. Many core and supporting functions in surveillance of most communicable diseases are similar and as such offer opportunities for integration and resource efficiencies. The

level of integration in the national surveillance system can affect its performance, cost and sustainability. The challenge is to identify and exploit where integration is possible, while at the same time recognizing the special needs of some programmes for supplementary information or alternative methods of surveillance. In some situations, surveillance that is well developed in one programme may act as a "driving force" leading to the improvement of other surveillance activities. It is important to identify these "driving forces" during the assessment and to take advantage of them.

(d) Laboratory

Laboratories are essential to disease surveillance; most surveillance systems require laboratory support for confirmation. The laboratory offers not only confirmation for suspected cases in an outbreak, but also provides a current and dynamic picture of the disease burden in the community and is often the first to detect abnormal disease activity. Most effective surveillance systems require a laboratory component. Some surveillance systems, such as that for antimicrobial resistance, are completely laboratory-based. Assessment of laboratory capacity (availability, functionality, level of sophistication and services provided) has been performed as part of the overall assessment of national surveillance and EPR.

7.4 Preparation for Assessment

The intercountry consultation held at Myanmar in 2002 recommended the initiation of an Integrated Disease Surveillance Programme to make the existing surveillance systems more responsive and cost-effective. As a first step towards, that the existing surveillance systems are required to be assessed in order to understand the strength, weaknesses, gaps and opportunities that exist at different levels of surveillance systems, so that an appropriate plan of action could be developed for subsequent implementation. The Government of Sri Lanka deserves to be congratulated to have taken the initiative to have a joint assessment undertaken in collaboration with WHO. This will enable the fine-tuning of the protocol of assessment and the tools which could then be used in other Member countries to generate similar information on surveillance systems.

7.5 Methods of Assessment

Assessment Tools

The assessment tool was adapted from the assessment protocol for national communicable disease surveillance system, and epidemic preparedness and response, which was developed by the World Health Organization-Regional Office for Africa (WHO/AFRO). It was examined and modified accordingly to reflect local concerns and needs. The questionnaires were designed to collect information on core surveillance functions (case detection and registration, confirmation, reporting, analysis, and response) and support functions (standards, training, supervision, feedback/communication and resources). A separate questionnaire was administered for each of the central, district and health institution levels.

A standardized questionnaire was also administered to laboratory staff in a representative sample of laboratories at the central, district, and health facility levels, at the sites selected for the overall surveillance assessment. The factors assessed were: building facilities and utility services; laboratory equipment; laboratory staff number, training, and supervision; laboratory reagents; tests performed, and laboratory management.

Assessment Teams

External and national team members participated in the assessment. The members included six external (WHO) and thirteen national (Ministry of Health) personnel comprising epidemiologists, public health specialists and laboratory experts. The national team leader assumed the overall responsibility for the mission. The international counterpart supported the team leader. The WHO Representative (WR), Sri Lanka was also involved at various stages.

7.6 Procedures, Activities and Timetable of the Assessment

The total duration of the assessment was 10 days and the activities that took place during this time are outlined below.

Date	Activities
4–5 March	Pre-assessment workshop to examine surveillance priorities and objectives. Regional IDS strategy, existing surveillance systems, national priority disease list, adoption the draft assessment protocol, agreement on tools and plan fieldwork. This was attended by the assessment team members and programme heads; briefing of team members, making copies of the assessment tools for various levels, finalizing assessment teams and site visits and logistical requirements for travel to assessment sites.
6-9 March	Field assessment and travel.
10–12 March	Data entry and preparation for the preliminary report on the assessment findings including SWOT(Strength, Weakness, Opportunity and Threat) analysis.
13 March	Post-assessment debriefing meeting conducted to present preliminary findings, discuss and agree on a follow-up schedule, including the date for plan of action development.

Pre-Assessment Workshop

The aim of the pre-assessment workshop was to present the IDS strategy and build consensus. This was made possible by taking the participants through a process of systematically examining disease priorities and surveillance objectives, in light of the IDS strategy, to agree on the protocol and adapt the generic tool for field assessment of surveillance system(s) performance.

During the pre-assessment, the participants did not discuss on the list of diseases. The existing 22 diseases, including SARS, were adhered to.

Briefing of Assessment Teams

Briefing of the assessment teams followed the workshop and comprised consensus-building, and agreement on the tool. During this session, team members thoroughly examined the data collection tools, question by question, and got a clear understanding of the essence of the questions and what exactly to look for while conducting the interview.

The contents of the briefing session were as follows:

- Arrival and first contacts on the site;
- Information meeting with local team;
- Detailed organization of the assessment, and
- Data collection process: questionnaire use (filling, quality control).

Field Assessment

The main aim of the field visits was to gather information using the pre-designed tools. The field assessment took 4 days including travel.

The approach followed by each assessment team included the following:

- Have an initial meeting to introduce the objectives of the assessment;
- Obtain feedback on problems and issues that workers themselves have identified with regards to surveillance;
- Identify examples of good and bad practice;
- Consult reports of outbreaks or other investigations;
- Make sure that the questionnaires are filled in legibly;
- Record any problems or ambiguities concerning the questionnaires, and
- Enter data from questionnaires into a pre-designed database.

Selection of sites visited

Three provinces out of 8 were selected, taking one each from high-performing, medium-performing and less-performing provinces. The disturbed north-eastern province was also taken up. In each of the selected provinces, one district was selected. Each province comprises 3-8 districts. Therefore, the results should be viewed against this limitation.

North-Eastern Province: Jaffna district

North-Central Province: Anuradhapura district

Western Province: Colombo

- Central level** National laboratory (MRI)
 National disease surveillance systems
 (Epidemic-prone diseases, HIV/AIDS/STD, TB, Leprosy, Malaria, Vaccine preventable diseases, and HIS)
- District level** Dy. PD Health Office
 (HIS, TB, Malaria and Epidemic-prone diseases)
- Health facilities** District Hospital
 Teaching Hospital
 General Hospital
 Base hospital
- Public health Inspector facility**

Major Findings: Sites visited

The team decided to assess 9 different disease surveillance systems, namely HIS; epidemic-prone disease; TB; malaria; leprosy; STD/ HIV/AIDS; filaria, Vaccine preventable diseases and laboratory at various levels.

Table 2: Number of sites included in the assessment, Sri Lanka, March 2003

	Central	District level	Health facility	Divisional level	PHI	Total
Jaffna		3	2	2	1	8
Anuradhapura		4	4	3	1	12
Colombo		1	2	1		4
Central	8					8
Total	8	8	8	6	2	32

Existence of a Legal Tool for Mandatory Surveillance and National Manual

A legal mechanism for notification of 22 (including SARS) notifiable diseases exists in Sri Lanka, as does an established mechanism for its administration. However there is no printed composite disease surveillance manual covering all notifiable diseases observed in any health facility. Several respondents however voiced the opinion that it would be useful for them to have such a manual. Instead of a manual, some instructions through circulars are available

particularly for diseases like cholera, dengue, neonatal tetanus, whooping cough, polio, measles, TB and malaria, etc. For STD/AIDS, a printed guideline is available though it is not to be seen in all the health facilities. A manual for PHI in English is available. The same was last updated in 1989 and is currently under revision. A surveillance manual for PHI in Sinhalese is also available. Enquiries at the Central Epidemiology Unit revealed that there is currently no surveillance manual in Sri Lanka though the hospital manual carries a section on 'surveillance' at the end.

Case-detection and Registration

Table 3: Case-detection and registration at the health facility, Sri Lanka, 2003

Variables	Hospital (n=9)	Per cent(%)
Observed availability of ward admission and discharge register	9	100
Observed correct filling of ward admission and discharge register	5	56
Observed sites using standard case-definition	0	0

Standard case-definition is a helpful tool for accurate identification of cases for reporting purposes. In addition, they allow comparison at higher levels. Standard case definitions for few priority diseases were circulated to the lower levels for reference and use. The assessment indicated that a standard case definition was observed in 100 % of health facilities for tuberculosis and AFP only. A review of clinical registers of health facilities showed that even a limited number of case definitions are not being used. It was observed that only in 56% health facilities, the admission and discharge registers were appropriately filled. Some respondents expressed the opinion that standard case definitions for all notifiable diseases would help them in making correct diagnosis and in reporting. Malaria is reported only after receipt of results from microscopists. For HIV/AIDS, the case-detection and registration are purely central, and a standard case-definition exists. For STD, the diagnosis is clinical, except for syphilis, and the diagnosis of syphilis is central.

Case Confirmation

Case-confirmation is usually achieved using laboratory techniques, with possible exception of a few diseases like neonatal tetanus. The capacity for specimen collection, storage and transportation was also assessed. It was

found that there is major weakness in this area, especially at the health facility level. All health facilities either have diagnostic support for malaria and TB or have easy access to it. Some of the facilities have some form of higher-level diagnostic support services for cholera, dysentery and enteric fever, etc. Laboratory services are an integral part of a surveillance system providing confirmatory diagnosis. In Sri Lanka microbiological support services are grossly inadequate in most of the health facilities. Shortage of microbiologists in health facilities is a major lacuna. Laboratory services are mostly clinico-pathological. However, the details of laboratory support services will be given separately.

Table 4: Capacity for case-confirmation, Sri Lanka, March 2003

Variables	Health facility (n=9)	Per cent (%)
Have capacity to collect Sputum	6	67
Have capacity to collect Stool	6	67
Have capacity to collect Blood	9	100
Have capacity to collect CSF	5	56
Observed transport media for stool	3	33
Observed functional cold chain	3	33
Observed packing material for shipment	3	33

The capacity for specimen collection, storage and transportation was not up to the mark except for AFP. This is because AFP cases are admitted in large health facilities. Even if the microbiological support facilities are not adequate, at least the health personnel could be appropriately trained in collection of clinical materials, and their handling, storage and transportation to a higher level. The Medical Research Institute, Colombo, are believed to have developed some guidelines in this regard, but the same were not available at the sites visited during assessment.

Data Reporting

Health facilities are required to submit health information system (HIS) reports to the districts monthly/ quarterly. They are also required to send notifications within 48 hours to MoH. MoHs are required to consolidate notifications and

send a weekly report to the Central Epidemiology Unit directly for data tabulation, analysis and interpretation, while a copy is sent to the Regional Epidemiologist. Special programmes like malaria and TB send quarterly reports to the Regional Epidemiologist. Monthly reports are also expected to be submitted monthly, by district, to the Centre for HIS. Currently, the districts forward the reports of HMIS received from health facilities to the centre. The District TB Officer submits quarterly reports to the Respiratory Disease Control Programme at the Centre. The District Malaria Officer (Regional Malaria Officer) sends both monthly and quarterly reports to the Centre.

Table 5: Sites that reported completely and timely, Sri Lanka, March 2003

Variables	District* (n=8)	Health facility (n=9)	MOH (n=6)
Availability of appropriate reporting form in %	50	33	100
Received all required reports in %	100	Not Applicable	66
Submitted all required reports in %	62	100	100
Submitted all required reports on time in %	37.5	55	100

*number of existing surveillance systems (HIS, EPI, EPR and TB) at the district level.

While all MOHs had adequate forms, several district and health facilities reported shortage of forms. Shortage was particularly noticed in Jaffna, the conflict-affected district. All district surveillance systems received reports in time but their onward submission, and timely submission to higher authorities needed improvement. It was 62 and 37.5%, respectively. All the health facilities submitted all required reports while only 55 % submitted all required reports on time. On the other hand, 100 % of the divisional health facilities (MOH) submitted all required reports on time.

Data Analysis

There is little or no analysis of data at the local level to detect any irregularity in the reports. Observation of the assessment team revealed that only 35% of the sites analyse data by person. None of the hospitals observe data by person or place. Only 44% of the sites describe data by place. Trend (data analysis by

time) was observed in only 56% of the sites. Except for malaria, the data analysis was almost confined to the central level. Even the sites such as the Regional Epidemiologist Unit that did undertake some amount of analysis, did not seem to relate the analysed data adequately to interventions in the field.

Table 6: Number of sites analysing surveillance data, Sri Lanka, March 2003

Variables	District (n=8)	Health facility (n=9)	MOH (n=6)	Total (n=23)	%
Observed sites describing data by person	5	0	3	8	35
Observed sites that describe data by place	6	0	4	10	44
Observed sites that describe data by time	6	2	5	13	56
Observed sites with visible line graph	6	0	4	10	44
Observed presence of demographic data	7	5	6	18	78

The purpose of the question was to find out if health facilities at different levels have the tradition and skill of performing analysis of surveillance data for local use. The impression of the assessment teams is that at the district level attempts are made to analyse surveillance data by person, place and time. However, the same requires much more attention. A division-wise break-up is not available in most of the places. The reason being that even at the MOH level this does not receive adequate attention. The primary reason is that most of the MOHs are fresh graduates and recruits and have hardly any training in the matter. In most sites what was shown as person and place analysis was the aggregated reporting forms. A small proportion of the sites visited made use of surveillance data to monitor trends of diseases in their catchment areas so that changes are recognized to initiate public health action and this is mostly in areas where trained epidemiologist is available.

Outbreak Investigation

Table 7: Number of sites that were involved in outbreak investigation, Sri Lanka, March 2003

Variables	Districts (n=8)	MOH (n=6)
Number of outbreaks suspected last year	5	4
Of the suspected outbreaks, No. investigated in %	100	100
Has ever investigated in %	100	100
Observed case distribution of notifiable diseases in the last year	0	0
Looked for risk factor during investigation in %	40	33
Used data for action in %	50%	50%

The outbreak investigation and response, once an outbreak was reported to the team at the sites visited, was found to be a distinct strength of the system. Of the 8 district sites visited, 5 sites reported outbreaks during the last one year and all were investigated. Similarly, out of 6 MOH sites visited, 4 reported outbreaks during the last one year and all were investigated. However, none of the sites observed case distribution of all the notifiable diseases. Only a few looked for risk factors (33-40%). Some of the district sites did not use or link the data to action.

Epidemic Preparedness

Table 8: Districts preparedness for epidemic, Sri Lanka, March 2003

Variables	Districts (n=8)
Observed written report in %	12.5
Availability of emergency stocks of drugs and supplies in %	50
Observed stocks of drugs and supplies at times of assessment in %	37.5
Experienced shortage of drugs during recent epidemic	12.5
Presence of budget line for epidemic response in %	12.5
Observed epidemic management meetings minutes in %	37.5
District has rapid response team in %	50

There is an epidemic preparedness and response plan at the national and district level. It appears that in case of an outbreak, drugs and supplies have always been made available. None of the districts including Jaffna experienced any significant shortage of drugs, vaccines and supplies in recent times. However in Jaffna, some shortage was observed. Some of the districts have established rapid response teams (50%). However, no guideline for the same was observed; neither the rapid response teams had any formal training in epidemic preparedness.

Epidemic Response

The assessment teams were able to observe documentation for epidemic response. It indicated that 75% of the visited sites responded within 48 hours of the most recently reported outbreaks. All districts reported that some form of community disease prevention activity has taken place in their district. Although all districts reported that they have implemented prevention activities based on surveillance data, the fact that little systematic surveillance data analysis was observed in the district goes against this finding. There was no record of the type of activities the district initiated for epidemic response, for them to be properly evaluated.

Table 9: *Number of districts that have responded to epidemic, Sri Lanka, 2003*

Variables	Districts (n=8)
District conducted community disease prevention activity in %	100
District implemented prevention activities based on local data in %	87.5
Observed reports indicating response within 48 hours in %	75
Observed reports indicating achievement of acceptable CFR in %	50

At 50 % of the sites, the assessment team observed acceptable case fatality rates. A standard management protocol (as in the case of DOTS for TB and malaria, etc.) for each of the notifiable diseases, if available, is likely to

bring down the case fatality rate through uniform standardized response measures.

Table 10: Summary of main findings of the assessment at various levels, Sri Lanka, March 2003

Variables	Health facility (n=9)	MOH (n=6)	District (n=8)
Epidemic preparedness			
Observed written case management guidelines in %	0	0	12.5
Epidemic response			
Observed sites that achieved acceptable CFR in %	11	0	50
Feedback			
Sites with observed feedback bulletin in %	11	100	75
Sites with observed minutes of meeting with community	0	0	0
Supervision			
Sites with observed supervision report	0	0	25
Training			
Respondents who received training on surveillance and EPR	44	100	75

Feedback

In a well-functioning surveillance system, the national level routinely provides feedback to the lower level. Consequently, the district and the divisional level should provide feedback to the generators of data for the system to function properly. The feedback could be in the form of written material (newsletter, bulletin, report, letter etc.) or verbal during field visit or review meetings.

Table 11: Summary of major findings at the district level, Sri Lanka, March, 2003

Variables	Districts (n=8)
Feedback	
Observed presence of written report regularly produced in %	25
Surveillance coordination	
Surveillance coordination focal point in %	50
Supervision	
Observed report/evidence of review of surveillance practices in %	37.5

During this assessment, the team paid particular attention to written feedback. In many ways the system has a strong element of feedback. The Epidemiology Unit publishes the Weekly Epidemiological Report and the Quarterly Bulletin. These are distributed to the periphery. The assessment team found written feedback documents, either in the form of reports or bulletins for 11% of health facilities i.e. hospitals; 100% of MOH facilities, and 75% of district surveillance systems. There was no evidence of utilization of this feedback for action. However, several respondents, particularly the hospital doctors, expressed the need for more feedback

Supervision

Supervision is an important support function that ensures success in the implementation of a surveillance system. A well-functioning system is frequently backed up by regular and purposeful supervisory support. In this assessment, no evidence of systematic and regular supervision targeted to surveillance was observed. Supervisory visits were as such not regularly planned activities at most senior levels. Supervision was generally carried out as a part of visits to the field for any purpose such as outbreak investigation. Only 2 out of the thirty two sites visited had evidence of supervision and only one site had the supervisory report available sent to it from the higher authority.

Reasons for not supervising the health facilities are shown below.

Reasons for not undertaking the required supervisory visits to health facilities, Sri Lanka, March 2003

- Lack of transport/vehicle
- Lack of fuel
- Busy with other work (including epidemics)
- Inadequate per diem for field visits
- Lack of funds
- Inadequate feedback
- Lack of computer
- Lack of understanding that supervision is an important tool

Coordination of Surveillance Systems

Lack of coordination of surveillance systems was identified as one of the major problems. The vertical programmes have established their own surveillance systems and the district focal person is responsible for its coordination. At the district level, the Regional Epidemiologist is responsible for surveillance. The respondents acknowledged that better coordination is required at divisional, district and national levels if the surveillance system is to be strengthened. The established position for surveillance at the district level is a major strength of the system. But his role in coordinating all surveillance systems is not clear. Though a surveillance coordination point has been established in 50% of the district sites visited, functional coordination in the real sense requires more attention.

Training

It is important that key personnel participating in disease surveillance and control are trained in basic epidemiology and surveillance. All of the respondents at central, district and divisional levels acknowledged receiving some training. Forty four per cent of the respondents at the health facility level confirmed that they had received some form of training on surveillance and epidemic preparedness and response. Seventy five per cent of the district respondents had been trained on surveillance. The majority of respondents

indicated inadequate inservice training for all categories of staff involved in surveillance and epidemic response as a major obstacle in the strengthening process. It was observed that 100% of the MOH sites visited confirmed to have received some training in surveillance. The respondents at the district level were not satisfied with the current surveillance system. The reasons for not being satisfied with the existing surveillance system are shown below.

Reasons for not being satisfied with the existing surveillance system, Sri Lanka, March 2003

- Lack of training
- Shortage of trained personnel
- Too busy to concentrate on surveillance activities
- Lack of transport/vehicle
- Lack of funds
- Different forms used
- No feedback/follow-up
- Lack of coordination/focal person at district level
- Lack of staff interest
- Lack of computer

Resources

The availability of human, material and financial resources is essential for the successful implementation of surveillance systems. The assessment teams collected information on the availability of critical resources essential for the implementation of surveillance and epidemic preparedness. Table 12 summarizes the information on selected resources collected from health facilities and district offices.

Overall, it seems that human and material resources are more or less available to start implementation of integrated disease surveillance both at the central and district level. However, there is need to reorient the current system to create enabling situation for IDS to take off and also to train appropriate personnel in disease surveillance, basic epidemiological analytical skills, and epidemic preparedness and response. Although computers are available at the district level, there is a need to build basic skills in the use of computers with emphasis on data management and analysis.

Table 12: Availability of resources for surveillance at the district, hospital and health centre, Sri Lanka, March 2003

Type of resources	District (n=8)	Health facility (n=9)	MOH (n=6)
Sites having the following in %			
Electricity	100	100	100
Motor cycle	62	0	0
Vehicle	62	55	83
Adequate Stationery	87.5	55	83
Calculator	100	55	83
Computer	75	33	0
Printer	62	33	0
Telephone service	100	100	83
Fax	75	44	17
Radio call	12.5	0	0
Posters	62.5	66	83
Megaphone	62.5	44	0
Flipcharts or image box	62	22	66
VCR and TV set	62	77	50
Generator	37.5	77	33
Movie projector with screen	25	44	50

Opportunities for Integrated Surveillance

The system in Sri Lanka has the potential for being made even stronger and there are several entry points available for integrating not only priority communicable and noncommunicable diseases but also for functional integration between the many vertical and specific disease programmes. The present separate systems of reporting and data collection for each of the national disease programmes, like malaria, STD/HIV-AIDS/ epidemic-prone diseases, and NCDs etc., need to be brought under the broad umbrella of the Integrated Disease Surveillance Programme in order to reduce costs, to modernize and update each of the surveillance systems, and to make them

sustainable. Administratively, all the systems converge together at the PHI and MOH levels, but actually an effective and functional integration needs to be promoted and strengthened through an effective integration process at district and higher levels.

8. LABORATORY SERVICES

8.1 General Considerations

Laboratory services are essential to disease surveillance and need to be integrated into the national disease prevention and control infrastructure and epidemiological programme. The role of the laboratory in providing rapid diagnosis of etiologic agents provides support for most surveillance systems requiring confirmation of clinical diagnosis for endemic and epidemic-prone communicable diseases in order to guide an effective public health response while using the minimum amount of resources. In addition, monitoring of antimicrobial susceptibility is completely laboratory based, and this role is critical in the rational treatment and control of diseases. Therefore, assessment of the national laboratory diagnostic capacity as part of the overall assessment of national surveillance and epidemic preparedness and response was one of the central components of the integrated disease surveillance [IDS] assessment of public health services in Sri Lanka.

8.2 Structure of Laboratory Services

In Sri Lanka, most of the public health laboratory services are affiliated to the government under the Ministry of Health. The microbiology laboratory services are mainly offered by hospital-based laboratories affiliated to teaching hospitals, general hospitals and some of the base hospitals. Other smaller health facilities such as district hospitals and lower levels do not offer microbiological services and their specimens are sent to either the nearest microbiology laboratory or to the Medical Research Institute (MRI). The MRI acts as the national reference centre for all microbiology laboratory services in the country. It offers specialized tests which are not performed in other laboratories and is also involved in EQA programmes. The specialized control programmes such as STD-AIDS, malaria, tuberculosis, filariasis and leprosy have their own *independent* laboratory network. There are 5 food and water microbiology laboratories in the country. In addition, there is good private

sector laboratory service in main cities where a significant *proportion of the population* seek laboratory services.

8.3 Laboratory Assessment Findings

Eight Laboratories were selected from 3 different provinces. These consisted of 1 reference laboratory (MRI); 4 teaching/general hospital laboratories (one from the northern province, 2 from the western province, and one – north-central province); 2 laboratories attached to special campaigns (STD and AIDS Control Programme and National Tuberculosis Control Programme) and 1 food hygiene laboratory.

All (100%) laboratories visited were government health facilities.

8.4 Laboratory Management and Hours of Service

The normal working hours per day for the majority of laboratory staff are 8 hours. All the laboratories visited provide 5-1/2 days regular laboratory services per week and provide off-hours emergency services.

There were no supervisory staff (medical microbiologists) present, except for MRI and STD-AIDS Control Programme. All technical staff (100%) had undergone a comprehensive certificate course at the School of Medical Laboratory Technology, organized and run by the Department of Health. However, there was shortage of technical staff at all institutions visited. The support staff in the form of laboratory orderlies and labourers was found to be adequate.

8.5 Number of Trained and Skilled Laboratory Staff

All Sri Lankan microbiology laboratories except 4 (MRI, STD-AIDS, National Hospital of Sri Lanka, and Cancer Institute and Teaching Hospital, Kandy) lacked staff at the supervisory level. Although all technical staff are qualified, there is no opportunity to undergo in-service training programmes in order to upgrade their skills and knowledge. Almost all technical staff in the private sector laboratories have not undergone formal training but have received training on the bench under skilled senior staff.

8.6 Laboratory Quality Control

Of the visited laboratories apart from MRI and STD AIDS control programme, none of the laboratory test results were reviewed before release.

Of the hospital laboratories visited, 50% participated in local EQA programmes conducted by MRI. The STD/AIDS Control Programme and MRI participate in IEQA programme. However, it was felt that there was limited follow-up corrective action taken on the results of the quality control programme. The Central Laboratory of National Tuberculosis Control Programme conducts quality control programme for sputum microscopy.

Internal QC is not practised at any of the laboratories visited, except at MRI and STD/AIDS Control Programme. In these institutes too, internal QC is practised only to a limited extent.

8.7 Laboratory Safety Procedures

Safety procedures are not practised adequately at majority of the laboratories visited. Awareness regarding the safety among staff is unsatisfactory. No safety manuals were available at any of the laboratories visited. Most laboratories are provided with gloves; they are used only at the discretion of technicians (e.g. handling blood and blood products). None of the laboratories is provided with other protective material apart from gowns. Waste disposal is not satisfactory in general even at the highest level. This aspect could be improved. Incinerators are available only at MRI and STD/AIDS Control Programme.

8.8 Equipment Calibration and Maintenance/Reagents

The calibration and maintenance of equipment is totally unsatisfactory. Reagents were not quality controlled in 90% of laboratories, while labelling of reagents was incomplete in majority of laboratories visited. Most laboratories have basic equipment for bacteriological and parasitological microscopy. The necessary reagents were available but their supply was not consistent in all laboratories.

8.9 Laboratory Services and Utilities

The majority of laboratories are able to provide basic services in bacteriology, parasitology and serology. No mycological tests are carried out. Molecular

microbiology facilities are not available at any of the laboratories except at MRI and STD/AIDS Control Programme. However, these facilities need to be further improved. The electronic data entry facilities are not available even at the national level (MRI). The microbiology department needs to be strengthened so as to meet the additional burden envisaged in carrying out an effective surveillance system. In particular, it was observed that the food microbiology section which is housed in one room needs immediate strengthening with respect to space as well as staff. This section is at present the only functioning food microbiology laboratory in the country.

8.10 Laboratory Tests Performed

Most of the laboratories assessed were able to perform culture of specimens such as CSF, blood, stools, sputum, pus and urine. Antibiotic sensitivity testing facilities were also available. Microscopy for malaria was performed in all hospitals visited and AFB staining was performed in 75% of institutes. TB culture and sensitivity were only done at the Central Laboratory, National TB Control Programme. Except for dengue serology, all virological investigations were done at MRI.

8.11 Recommendations for Laboratory Services

- (1) All the hospitals visited were provided with laboratories. However, the microbiological services necessary for an effective surveillance system are not up to the required standard. It is important that microbiological services are introduced at the district hospital level for an effective surveillance programme.
- (2) There is an urgent need for medical microbiologists. This is a glaring lapse even at the teaching hospital level. A medical microbiologist should supervise the investigations performed up to the district hospital level.
- (3) The MRI Microbiology Department should also function as the data collection centre for other laboratories for surveillance purposes. It should collect, analyse and monitor the detection of pathogens for disease surveillance. In order to carry out these activities, therefore, the MRI Microbiology Department should be strengthened. Additionally, the MRI should function as centre for training, and dissemination of information regarding the laboratory aspects, it should act as a liaison institute for

distribution (and monitoring) of special reagents needed for laboratory diagnosis of the diseases in question.

- (4) The MRI should also undertake characterization of pathogens after identification and isolation. In certain rare instances where this may be not be possible, it is suggested that there should be official liaison with centres of excellence, possibly with WHO recognition. In order to carry out these activities effectively, the MRI Microbiology Department should be strengthened.

9 RECOMMENDATIONS

9.1 General Recommendations

- (1) Sri Lanka should progress towards a system of surveillance that not only achieves integrated disease surveillance at the functional level for the various specific disease programmes but also starts monitoring priority noncommunicable diseases. The several systems of surveillance, specifically for various vertical programmes, need to be integrated functionally so that the data management and reporting systems are unified in a phased manner.
- (2) The position of laboratory services as an integral and essential element of the surveillance system needs emphasis. They need to be strengthened.
- (3) The laboratory system should also be strengthened through networking. Medical colleges and the private sector laboratories need to be an integral part of the laboratory network.
- (4) The surveillance system in Sri Lanka needs to be expanded to include outpatients. The community-level case-finding should also be strengthened.
- (5) The private sector institutions and private practitioners need to be brought into the ambit of the surveillance system.
- (6) Epidemic preparedness and response needs to be strengthened at all levels.
- (7) Notifications should be consolidated by managerial and supervisory inputs especially at divisional, district and provincial levels of the health system.

- (8) The position of the regional office needs to be established in the mainstream of the surveillance system to act as a node in the flow of data from the periphery to the centre, and to provide feedback in the reverse direction.
- (9) The formal system of continuing education and in-service training should be strengthened.
- (10) Sri Lanka should develop a case definition manual for the priority communicable diseases.
- (11) A composite surveillance manual should be produced and made available to all levels.

9.2 Specific Recommendations

(A) Case-detection and registration

- Establish standard case definitions for all the selected priority diseases and promote their use by all health personnel attending to the patients.

(B) Case confirmation

- Strengthen and involve the laboratories for disease surveillance.
- Establish a network of laboratories.
- Strengthen the collection and transportation of specimens and test result reports.

(C) Reporting

- Review the surveillance reporting forms and revise them according to the recommendations of the Expert Group
- Strengthen the functional involvement of the private sector for surveillance data reporting.
- Enhance the participation of the community and health staff in surveillance.

(D) Analysis

- Upgrade the analytical skills of district and health facility staff.

(E) Outbreak investigation: epidemic preparedness and response

- Develop standard/generic outbreak investigation tools.
- Improve the documentation and reporting of outbreak investigation.
- Improve the national epidemic preparedness and response plan.
- Establish an epidemic management committee.
- Establish a rapid epidemic response team in all districts.

(F) Supervision and feedback

- Provide supervisory support to district health offices and MOHs to ensure successful implementation of IDS.
- Provide timely feedback.

(G) Training

- Improve management skills at district, division and health facility levels.
- Prepare a comprehensive training plan.
- Provide training on surveillance, basic analysis skills and epidemic management.
- Develop a training plan for surveillance and EPR.
- Improve the quality of training (adequate time, more practical exercises).
- Give priority to those who are doing the job.
- Identify and mobilize resources for training and follow-up.

Annex

**LIST OF PARTICIPANTS OF THE PRE-ASSESSMENT
FACILITATED WORKSHOP 4-5 MARCH 2003**

Name	Agency	Position	Telephone
1. Dr Dula de Silva	Min.Health	Dy.DGHS (PHS I)	
2. T A Kulatilaka	Central Epidemiology Unit	Epidemiologist	695112
3. Dr Nihal Abeysinghe	-do-	Assistant Epidemiologist	-do-
4. Dr T S R Peiris	-do-	-do-	-do-
5. Dr (Mrs) P Paliwahadana	-do-	-do-	-do-
6. Dr Ananda Amarasingha	-do-	-do-	-do-
7. Dr Risintha Premaratna	-do-	Medical officer	-do-
8. Dr R Abeysinghe	Antimalaria campaign	Medical officer	
9. Dr Sunil Senanayaka	Min.Health	Director, Information	
10. Dr Karvan Coorey	MRI	Microbiologist	693532
11. Dr (Mrs) Geethani Wickremasinghe	MRI	Virologist	-do-
12. Dr (Mrs) Sunethra Gunasena	MRI	Virologist	-do-
13. Dr (Mrs) Philomina Chandrasiri	MRI	Bacteriologist	-do-
14. Mrs Padmini de Silva	Min.Health	Medical Statistician	
15. Dr Lulu Rashid	MRI	Acting Director	
16. Dr Agata	AFRO/WHO	Medical Officer	
17. Dr MVH Gunaratne	SEARO/WHO	Regional Adviser	

Name	Agency	Position	Telephone
18. Dr Prof LM Nath	SEARO/WHO	Temporary Adviser	
19. Dr S R Salunke	SEARO/WHO	DGHS, Govt. of Maharashtra/Temporary Adviser	
20. Dr Maya Attapatu	WR, Sri Lanka	Consultant	
21. Dr Meliala	SEARO/WHO	STP	
22. Dr K K Datta	WR, Sri Lanka	STC	
23. Dr Kan Tun	WHO	WR, Sri Lanka	502841