Regional and National Database for Selected Diseases

Report of an Intercountry Workshop
SEARO, New Delhi, 26 April – 7 May 2004

WHO Project No.: ICP CSR 001

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

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1. INTRODUCTION

The Regional Director established a High Level Task Force (HLTF). HTLF identified "Multidisease Surveillance and Response" as one of the 14 priority areas for support under the intercountry programme during the biennium 2002-2003. It recommended immediate implementation of the plan of work to support and assist Member States to develop a multidisease surveillance and response for priority communicable and epidemic-prone diseases through an integrated approach. Towards this, a regional strategic plan for integrated disease surveillance 2002-2010 was formulated. One of the significant elements under the strategic plan is to establish a regional database for identified priority diseases as indicated in the strategic plan during 2002-2004.

In the above context, a regional database has been designed and developed in consultation with Information System Management unit (ISM) and the same was demonstrated at an Intercountry consultation, held in Yangon, from 20-23 August 2002. The regional database envisages obtaining information on identified priority diseases from the eleven countries of the region in the electronic format. The database that has been developed can accommodate a large number of both communicable and noncommunicable diseases and can analyse daily/weekly/monthly and annual information in the same reporting format. The database can be linked with geographic mapping and can handle district/ provincial/national-level information. It can also be linked with regional/national basic health indicators.

The course curriculum for the above regional database has been developed. During 2004, it was planned to organize an intercountry workshop for national data managers in the Regional Office from 26 April to 7 May 2004, to familiarize them with the regional database manager with reference to selected priority diseases, and its linkages with national database.

The workshop focused on operationalization of the regional database and its linkage with the database of countries of the SEA Region with reference to selected priority diseases. Orientation to the national data managers to get regular information, and gathering, analysis and reporting (in an electronic format) of priority diseases as identified in regional strategic plans, will facilitate regular exchange and transmission of data for effective surveillance and response. This would provide a valuable source of information to enable regular publication of the Regional Bulletin on Integrated Disease Surveillance and Response.

The programme was designed and conducted in two parts. The first part, spread over two days, related to orientation of participants to basic computer skills. This comprised brief programmes on Windows, MS Office Word, Excel, Power Point, Access, Internet, E-Mail and Arc View, followed by EPI INFO 2002. For sharing critical core information by various surveillance programme managers, Epi Info Software is a useful, simple, and cost-effective means, which is easily available. The second part was for seven days on EPI INFO 2002, in which the participants were briefed on developing a new questionnaire, entry data, analysis data through various commands, graph, map and programmes; followed by a one-day briefing on Integrated Disease Surveillance (IDS). The use of this software will facilitate the establishment of a national database for epidemic alert and response. It also has wider applications for epidemiological studies. The participants were told that proper use of this software needed good hands-on-experience.

National Institute of Communicable Diseases (NICD) being a WHO collaborating centre was requested for hands-on training for the participants in collaboration with WHO/SEARO. NICD is also the WHO collaborating centre for Epidemiology and Training. The institute is also involved in conducting such training programmes for country officials on a regular basis.

There were 10 participants from 9 countries (Annex 1). The workshop brought all national database managers together and provided them standardized skill and knowledge to facilitate bringing uniformity in the surveillance mechanism and understanding each other's strengths, weaknesses and opportunities in establishing regional and national databases on priority diseases through an integrated approach. After the first two days of initial briefing at SEARO the participants were given training at NICD for remaining eight days (for programme, see Annex 2).

2. OBJECTIVE

The objectives of the workshop were as follows:

(1) To review national data collection, handling and management system in operation in each country;

(2) To develop core competencies in data collection, handling and management at the national level, and

(3) To ensure the generation of uniform data from the countries and their transmission for effective response and feedback, as applicable, for the functioning regional database.

3. OPENING REMARKS

Welcoming the participants, Dr Jai P. Narain, Ag. Director, Communicable Diseases, WHO/SEARO, said "Efficient data management is the key to effective surveillance and response. It is an essential component in the mechanism of identifying, anticipating and forecasting outbreaks and epidemics. The process of developing and strengthening disease surveillance and efficient data management skills has been a continuous effort of WHO for more than three decades.

"The Regional Strategic Plan, while describing the goal, objectives, essential elements, guiding principles, strategic framework, priority diseases and health conditions, time-frame, implementation and management framework, underlined the importance of establishing improved communications and data management skills. You are aware that skill in handling computer and data management is essential to strengthen the surveillance mechanism. The availability of electronic tools has totally changed the outlook of modern surveillance. Therefore, electronic reporting of surveillance data is becoming more and more common. If properly designed, it could be linked easily with the Geographical Information System (GIS), which will further improve the understanding on disease dynamics and response mechanism. It also provides the opportunity for multi-level and multisectoral integrated surveillance, covering the entire range of diseases of public health importance", emphasized Dr Narain.

Dr Narain went on to add that the training workshop had been designed to facilitate uniformity in surveillance mechanisms. This will also enable national data managers of the countries to understand each other's strengths, weaknesses and opportunities in establishing national and regional databases for priority communicable diseases. "This is primarily a hands-on training and is intended to strengthen core competencies in data collection, handling and management at the national level", concluded Dr Narain.

4. COUNTRY PROFILE

4.1 Bangladesh

A National Institute of Epidemiology and Research is providing leadership to the disease surveillance programme. Countrywide network of surveillance infrastructure and legal back-up tools for notifying the disease is available. The Institute of Epidemiology receives monthly morbidity profile from all static health units such as specialized hospitals, medical college hospitals, union sub-centres, district hospitals, general hospitals and Thana health complexes. Health assistants in all the Thana areas collect weekly community-based information on certain identified diseases.

4.2 Bhutan

Bhutan has a three-tier reporting system where the basic health unit or BHU is the lowest level source for collecting community-level information. The monthly data then go to the district from where quarterly report is submitted to the central health information unit at headquarters.

At the BHU level, information is recorded manually in registers and transmitted in the prescribed reporting format, and necessary interventions are taken at their level on confirmation to the district authority.

The district health supervisor receives BHU reports and enters them in the computer (all districts have installed a computer along with standard software based on MS Access). The quarterly data are transmitted both in hard copy as well as in electronic form, which is consolidated at the centre at the national level. With the help of an in-built system of checking for missing data, completeness and timeliness is ensured for efficiency of reporting at the

centre and follow-up actions taken accordingly. The consolidated data, after necessary scrutiny, is analysed and published in the form of an "Annual Health Bulletin". The quarterly data are summarized and the output shared among programmes, which in turn critically review the data in line with their strategy and goals. This review normally takes place annually in a national forum represented by districts.

4.3 India

The National Surveillance Programme for Communicable Diseases (NSPCD) was initiated in 1997-98 following recommendations of various high-powered committees:

➢ Central Sector Health Scheme with NICD as the nodal agency

➢ States/UTs as implementing agency

➢ Currently in operation in 101 districts of 28 States and 7 UTs

Its broad objective is to strengthen the surveillance system and improve district and state capabilities to identify and respond to outbreaks due to epidemic-prone diseases. The specific objectives of NSPCD were to an establish early warning mechanism, laboratory strengthening and networking for rapid confirmation of diagnosis, effective use of surveillance data using rapid means for communication and institute appropriate and timely response for prevention and control of outbreaks. Its programme strategies include training, modernization of office and laboratory equipment, strengthening of linkages and networking through electronic means of communication and IEC activities.

CBHI is responsible for collecting the data and NICD is responsible for the development of Rapid Response Team (RRT) guidelines, laboratory and computer manuals, and training materials, training of state rapid response teams, strengthening and networking of national and regional laboratories, establishing rapid communication network and technical review, coordination, monitoring and evaluation.

In a short time, NSPCD has achieved improved quality of detection, investigation and response to outbreaks. RRTs with requisite knowledge and skills are in place. Technical material on outbreak investigation, surveillance

and specific diseases, guidelines for RRT and a manual on computer and laboratory procedures have been developed and made available in the field. Training in computer application for data processing and communication (130 trained), feedback mechanism in the form of "Outbreak News" and "CD Alert" and by frequent letters through e-mail/post, have improved the capability of laboratories for etiological diagnosis and rapid transmission of information by using the latest technology i.e. NICD Website, which is used for data collection on a regular basis.

Future Plans

➢ Expansion of programme to cover all the districts in the country under the Integrated Disease Surveillance Programme (IDSP).

➢ Strengthening of NICD and other National laboratories (P3 Laboratory and Bioterrorism cell).

➢ Networking of national and regional laboratories.

➢ To expand the scope of work of 23 regional and 101 district laboratories.

➢ To enhance computer literacy among disease surveillance professionals.

4.4   Indonesia

The notifiable disease list is available. Island-wide coverage through WAN (wide area network) exists. The special surveillance system provides good quality data. In the event of significant increase in the incidence of a disease, outbreak information from the health centre meeting the criteria established must reach within 24 hours health centre. The information must be verified and investigated and details reported on by the district. Special surveillance of diseases under eradication/elimination as well as HIV/AIDS, TB, leprosy etc. taken care of regularly. A routine integrated surveillance system has been established and data are collected periodically from province, district, health centres and hospitals.

4.5   Maldives

Data are collected passively from all kinds of health facilities including the most peripheral level. Also from the private sector. Daily surveillance report

and weekly case-based data (according to weekly epidemiological calendar) are prepared. Vertical programmes also collect data for TB/leprosy/malaria/filaria. The central unit in DPH mainly analyses data. A report is prepared based on the daily surveillance report, and sent to concerned authorities on a daily basis. Data are also analysed on a weekly basis. An epidemiological monthly report is prepared by the unit and sent to all the health care facilities and higher authorities as well. Data are collected specifically for outbreaks and based on that a report is prepared. A quarterly report is produced which is sent to the WHO Regional Office.

Obstacles encountered

➢ Sometimes the reports reach the department late due to technical problems (fax, phone etc).

➢ Analysis can not be done in the Region due to lack of skilled personnel.

➢ Centres without a telecommunication facility provide information to the Region by walkie-talkie – errors possible in this method.

➢ Feedback reports from the department do not reach the island level.

➢ Weekly reports received by the department are not analysed due to limited staff.

4.6   Myanmar

Disease surveillance in Myanmar consists of many sub-systems.

They are:

(1)   Principle epidemic disease surveillance system

(2)   Sentinel disease under national surveillance

(3)   Laboratory surveillance system

(4)   Sentinel surveillance system

(5)   Daily hospital surveillance system

(6)   Active hospital surveillance system

(7)   Entomological surveillance system

(8)   Community-based surveillance system

Case definitions and guidelines are available for national disease surveillance, laboratory surveillance, vector surveillance and environmental surveillance. Immediate reporting, weekly reporting and monthly reporting take place depending on the type of surveillance. Monthly feedback reports for service delivery points, quarterly feedbacks for project managers and annual evaluation reports for all the officers concerned are also provided.

Confirmation of outbreaks is usually made with laboratory support. Technical assistance as well as supplies is usually provided to township medical officers. Multisectoral collaboration and cooperation are available during disease outbreaks. Suspected cases are reported by lay person in the community and confirmed by township medical officers.

Utilization of data at the data collection site is grossly lacking because of inadequate training of basic health staff in epidemiology and disease reporting. That leads to poor supervision, feedback and monitoring. The electronic communication media, supply and transport facility should be strengthened to avoid delay in reporting due to difficult terrain in some parts of the country.

To develop core competencies, the existing data collection needs to be reviewed. Training at different levels involving data management, supportive supervision and monitoring on the job training, data compilation, cleaning at the RHC level are required.

4.7   Nepal

Data collection is done in 33 forms and registers, and reporting done in four forms for service statistics of all programme divisions. Data are submitted but need to be improved further by check on re-supply of record keeping and reporting forms and by providing training to newly-recruited staff and in-service training (both in HMIS and computer), especially at the service delivery points.

4.8   Sri Lanka

Sri Lanka has a surveillance system based on notification of communicable diseases, sentinel surveillance system, disease-specific surveillance and routine surveillance using hospital morbidity and mortality data. There is a central unit responsible for long-standing and well-established surveillance system. A list of 21 notifiable diseases, legal backing, dedicated public health staff and PHI to investigate, weekly feedback mechanism and rapid response team are available and act promptly to make the surveillance system strong. The surveillance system has some weaknesses such as under reporting, and late reporting is very common. Outpatient morbidity and notification from private hospitals and general practitioners and laboratory surveillance are poor. Investigations by PHIs are delayed. Manual reporting and data analysis system need improvement.

4.9   Thailand

During the last decade, a new concept of health information system was adopted. MoPH lessened the reporting of unnecessary activity items and promoted data collection system based on provincial health surveys and national health examination.

Disease notification to the Provincial Health Office and Bureau of Epidemiology is required. Weekly data from the district level are sent to the Bureau using the surveillance report; Epi Info 6 is currently implemented in most parts of the country.

An integrated data system is being developed and it is expected that all the disease-specific report will be put into a common database and then relevant variables be sent to each department at the central level.

A provincial data bank is being developed to pool the data from health facilities to be managed at the provincial level for the purpose of disease control. Regular data will be fed to the provincial data office, analysed and managed for disease control at the provincial level. Regional network facilities close networking of disease surveillance system.

The Bureau of Epidemiology produces weekly report on disease surveillance. A case investigation system promptly responds to disease

outbreaks and case reports from health personnel in the field, together with the investigation team from the Bureau of Epidemiology. The Bureau of Epidemiology publishes an annual report on disease notification data. In addition, the Health Information Division under the Bureau of Health Policy and Strategy publishes an annual report on mortality and morbidity every year.

5. RECOMMENDATIONS

Realizing the importance of strengthening regional and national capacity in the handling and management of database for selected diseases, the participants made the following recommendations:

5.1 For Member States

(1) Countries should organize similar workshops to develop core capacity in data handling and management at key levels of surveillance and response.

(2) Countries should designate a national focal point (national data manager) to facilitate the establishment of a national database linked with the regional database for prompt epidemic response.

(3) Participants should use a set of country morbidity/mortality/case study data for hands-on-exercises.

(4) Countries should organize and support annual periodic reviews of national and regional databases through intercountry meetings of NFPs/NDMs.

(5) Countries should encourage and support exchange visits.

(6) Countries should support visits to public health units (two visits per year).

(7) Countries should support the development of feedback reports from central and regional levels.

(8) Countries should support annual meetings of disease surveillance personnel for information sharing and feedback.

(9) Countries should provide epidemiology training to data managers.

(10) Countries should support implementation of national plan of action on integration surveillance of communicable diseases.

5.2 For WHO

(1) There should be a module on basic DOS commands in the training programme to support basic skills.

(2) There should be a module in epidemiology and biostatistics in the training programme in relation to interpretation of analysed data.

(3) WHO should regularly support national efforts to develop an appropriate capacity in the Region for epidemic alert and response, data sharing, data transmission, establishing uniform flow of data between the countries and the region, strengthening and enlarging the network of data managers.

(4) WHO should organize periodic reviews of country and regional databases through inter-country meetings of NFPs/NDMs.

(5) WHO should support the development of GIS maps in disease surveillance in countries that have not yet developed digitized maps. WHO also should facilitate sharing of digitized maps of those countries that have already been developed. This will strengthen regional database, surveillance, and response.

Annex 1

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Annex 2

PROGRAMME

Monday, 26 April 2004

0800-0830	Registration
0830-0900	Initial Briefing Session (Venue: Thai Room)
	• Remarks
	• Technical briefing of the Workshop
0930-1030	Regional IDS strategy and framework of regional database (Venue: Computer Training Room till 27 April 2004)
1030-1130	Introduction to computer and its role in data management for public health action
1130-1230	Introduction to documentation software (Microsoft Word)
1330-1430	Spreadsheet software (Microsoft Excel)
1500-1600	Orientation to multimedia presentation software (Microsoft Power Point)
1600-1700	Hands-on training on MS Office

Tuesday, 27 April 2004

0900-1000	Internet and its role as health professionals including its application in regular data collection from countries
1030-1230	An overview of database management software (Microsoft Access) including hands-on training session
1330-1500	Introduction to Geographical Mapping software and overview on Arc view software
1530-1700	Overview and introduction and demonstration of SIDAS system

Venue: Computer Training Hall, NICD, Delhi (From 28 April to 7 May 2004)

Wednesday, 28 April 2004

0930-1100   **Technical Session – I**

                 Moderator: Dr Shiv Lal

                 Integrated Disease Surveillance Programme – NICD Experience

                 Country presentations highlighting data collection, handling and data management system in operation in each country
- Bhutan
- Bangladesh
- India
- Indonesia

1130-1300   **Technical Session – II**

                 Moderator: Dr K.K. Datta and Dr S.K. Satpathy

                 Country presentations (contd.)
- Myanmar
- Maldives
- Nepal
- Sri Lanka
- Thailand

1400-1530   Introduction to specialized data management and statistical software for Health Managers (Epi-Info 2002)
- Overview of Epi info 2002
- Using Epi info 2002
- Components of Epi info 2002
- System requirements
- Software installation

1600-1700   Concepts of developing a Proforma and creating a questionnaire for Epi-Info
- Create a new questionnaire
- Creating fields in the questionnaire
- Moving fields

                 Exercise 1 – Creating a questionnaire

Thursday, 29 April 2004

0930-1100   Advanced features of developing questionnaire
- rename current page
- edit a field and create legal values
- change background colour
- customize alignment grid
- manual tab order
- align fields
- calculating values
- using check code
- assign country and disease code
- validate fields/data

Exercise 2 – Developing a questionnaire for disease surveillance system

1130-1300   Introduction to data entry process in Epi-Info
- Opening an existing project
- Data entry using check code
- Saving a file

Exercise 3 – on data-entry using country data

1400-1530   Exercise 4 – Data entry using country data

1600-1700   Exercise – 4 (contd.)

Friday, 30 April 2004

0930-1100   Advanced features of data entry
- Navigating through the questionnaire
- Finding a record
- Editing and deletion of records
- Data cleaning
- Printing a record

1130-1300   Basic data management in analysis
- Opening analysis
- Reading an existing project
- Obtaining a line listing
- Sorting the line listing

Exercise 5 - basic data analysis using dummy data

1400-1530	Intermediate Analysis
	• Selecting a subset of records
	• Canceling sort and select criteria
	• Creating headers
	• Tables
	• Frequencies
	• Means
	Exercise 5 (contd.)
1600-1700	Creating table
	Defining new variable
	Assigning value to a new variable based on conditions
	Exercise 5 (contd.)

Saturday, 1 May 2004

Sunday, 2 May 2004

Monday, 3 May 2004

0930-1100	Producing outputs
	• Routing output to a specific file
	• Printing the output
	Exercise 5 (contd.)
1130-1300	More on analysis
	Exporting
	Importing
	Merging
	Exercise using dummy data
1400-1530	Exercise (contd)
1600-1700	Creating graphs and charts
	Exercise

Tuesday, 4 May 2004

0930-1100	Programming in Epi Info

- Saving a programme file
- Opening a existing programme
- Running the programme

Exercise

1130-1300	Introduction to Epi Map

- Using Epi Map interactively
- Downloading a .SHP file (shape file)

Exercise 6 – Exploring Epi Map programme

1400-1530	Opening Epi Map

Adding layers to the map

Exercise 7 - Displaying data on map

1600-1700	Changing the colour of the OBG layer

Changing the displaying order

Hiding, showing and removing layers

Maximizing/minimizing the map

Wednesday, 5 May 2004

0930-1100	Displaying labels

Changing background of map

Clearing all layers

1130-1300	Displaying labels

Changing the background of the map

Clearing all layers

Saving maps in different file formats

- Saving map as image
- Saving map as an interactive (map)
- Sending an image to clipboard

1400-1700   Designing a questionnaire for integrated disease surveillance
- Creating a project in IDSP
- Creating a questionnaire
- Creating a field in questionnaire
- Edit a field and create legal values
- Assign country and disease code
- Validate field/data

Thursday, 6 May 2004

0930-1100   Entering data
- Opening the IDSP project
- Adding data to the questionnaire Navigating and finding records

1130-1300   Entering data (contd.)

1400-1530   Data management
- Opening analysis
- Reading an existing project
- Cleaning and updating the data
- Obtaining line list
- Sorting out the list
- Select a sub set of records
- Cancelling sort and select criterion

1600-1700   Intermediate analysis
- Routine outputs
- Merging and demerging dummy data
- Exercise on merging and demerging
- Sending data through e-mail
- Exercise on e-mail

Friday, 7 May 2004

0930-1100   Review and course evaluation and recommendations for follow-up group work

1130-1300   Review and course evaluation and Recommendations for follow-up group work

1400   Concluding session