

# Report on development of National Network on Non Communicable Disease (NCD) Surveillance in Nepal



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## Table of Contents

| Topics                                                                                   | Page |
|------------------------------------------------------------------------------------------|------|
| Epidemiological Transition of NCD: Global Perspective                                    | 1    |
| Epidemiological Transition in SEAR:                                                      | 2    |
| Non-communicable Diseases: growing Burden in Nepal                                       | 3    |
| Health Information Management System in Nepal: A tool of NCD surveillance                | 5    |
| Need of NCD surveillance in Nepal                                                        | 6    |
| Objectives of the NCD Surveillance                                                       | 9    |
| Preparation and proceeding: Integrated Surveillance Of Major NCD<br>And The Risk Factors | 10   |
| Analysis of existing NCD information                                                     | 11   |
| Scope and Methods of NCD Data Collection                                                 | 12   |
| The Activities: For National NCD surveillance                                            | 12   |
| <i>Preparatory meetings:</i>                                                             |      |
| <i>Pre-workshop meeting:</i>                                                             |      |
| National Workshop on "NCD Surveillance in Nepal":                                        | 15   |
| Major Area Covered By The Workshop                                                       | 18   |
| <i>Lack of reliable Information: A gap between need and use of information</i>           |      |
| <i>Draft national strategy and plan of action with activities</i>                        |      |
| Strategies:                                                                              |      |
| Support Activities                                                                       |      |
| Surveillance: A Mandatory Key Activity                                                   | 21   |
| <i>Management: An essential support to NCD surveillance</i>                              |      |
| Identification of most common NCDs identified in Nepal are-                              |      |
| <i>Approach for Disease surveillance -</i>                                               |      |
| <i>Approach for risk factor surveillance -</i>                                           |      |
| Conclusions                                                                              | 23   |
| Recommendations                                                                          | 24   |
| Annexes                                                                                  | 26   |
| Annex- 1: Workshop Working schedule                                                      |      |
| Annex 2: List of Participants                                                            |      |
| Annex 3: List of Resource Persons                                                        |      |
| Annex 4: Proposed calendar of operation sustainable surveillance of NCDs                 |      |
| <i>Plan of Action</i>                                                                    |      |
| Annex 5: Surveillance of NCDs, a framework For Working Group                             |      |
| Annex 6: List of Papers presented in the Workshop                                        |      |
| Annex 7: Members of working committee -                                                  |      |
| Annex 8: Participants of preworkshop meeting-                                            |      |
| Annex 9: Identified target institutions for surveillance -                               |      |

# Report on development of National Network on Non Communicable Disease (NCD) Surveillance in Nepal

## Epidemiological Transition of NCD: Global Perspective

For centuries infectious diseases were the main causes of death worldwide. Life expectancy was short and epidemics raged. In the 19<sup>th</sup> century public health measures, basic hygiene and antiseptics marked the beginning of a way to counter the scourge, but infection continued to be the main cause of death until the Second World War.

The emergence of epidemics of NCDs is the result of demographic and epidemiological transition, along with increases in levels of risk factors resulting from social and economic changes.

NCDs have been taken as subject of major importance in developed countries for several decades. Now they are becoming recognized as a major public health threat in the developing world. For example, over the next 30 years, the burden of disease from NCDs in developing and newly industrialized countries is expected to rise by more than 60%. In comparison, the increase in developed countries is expected to be less than 10%.

The increasing burden of NCDs threatens to overwhelm already stressful health services. The factors underlying the major NCDs, (stroke, diabetes, cancer, and respiratory disease) are well documented. Primary prevention based on comprehensive population-based programs is thought to be the most cost-effective approach to contain the emerging epidemic of NCDs.

Diabetes and Cardiovascular are the main chronic diseases to have reached at alarming proportion. Heart and chronic respiratory disease and Cancer are also increasing. As per the work of Murray and Lopez on the burden of diseases shows, the whole NCD cluster is a major problem in the middle income countries as a percentage of deaths, NCD accounted for 87% in developed countries, 73% in China, 40 % in India and 20 % in Sub Saharan Africa based upon 1990 data.

### The ten leading causes of mortality, estimates for 1999 :

|                                          | Mortality in all Member States |            |       |
|------------------------------------------|--------------------------------|------------|-------|
|                                          | Rank                           | % of total | (000) |
| Ischaemic heart diseases                 | 1                              | 12.7       | 7089  |
| Cerebro-vascular diseases                | 2                              | 9.9        | 5544  |
| Acute lower respiratory infections       | 3                              | 7.1        | 3963  |
| HIV / AIDS                               | 4                              | 4.8        | 2673  |
| Chronic obstructive pulmonary diseases * | 5                              | 4.8        | 2660  |
| Perinatal conditions                     | 6                              | 4.2        | 2356  |
| Diarrhoeal diseases                      | 7                              | 4.0        | 2213  |
| Tuberculosis                             | 8                              | 3.0        | 1669  |
| Road traffic accidents                   | 9                              | 2.2        | 1230  |
| Cancer of trachea/bronchus/lung          | 10                             | 2.1        | 1193  |

\* Noncommunicable diseases

Source: The World Health Report, 2000

In the developing countries infectious diseases remain a major cause of death. Malaria and Gastroenteritis continue to take high death toll. So there is a double-sided problem in the developing countries.

Why do the increases in NCDs take place and how can NCDs be prevented? Many of the risk factors for Heart Disease, Diabetes and Pulmonary Diseases are due to changes in life style, which can be modified. Physical inactivity, western diets and smoking are prominent causes. Strategies for preventing the risk factors should be explored as per the situation of the individual countries.

Support by WHO on the global basis is needed for primary prevention at the national and population level.

### Epidemiological Transition in SEAR

NCDs are known to be increasing at an alarming pace in SEAR countries. It is accepted beyond doubt that NCDs are increasing from year to year in terms of Morbidity, Mortality, Disability, Socio-economic losses and increasing health resource utilization in all countries.

The NCDs are the new pandemics of the 21<sup>st</sup> century. They threaten to swamp the meager health care resources. Therefore, fight against non-communicable diseases is needed to start today and be the prime focus tomorrow. Non-communicable diseases in SEAR account for 51.6% of total mortality, and 37.9% of the total diseases burden according to the World Health Report,

2000. Four major NCDs (Cardiovascular diseases, malignant neoplasms, diabetes mellitus and chronic pulmonary diseases), account for 43% of total mortality (83% of NCD-related mortality) and 14% of total disease burden (54% of NCD-related diseases burden). The region's contribution to the global NCD burden accounts for 22% in terms of mortality, and 25% in terms of disease burden. SEAR ranks fourth in prevalence of diabetes mellitus with a 20% contribution to the world total – which is expected to rise to 27% by 2025.

In spite of the growing evidence on this epidemiological transition, public health properties in the majority of the developing countries are still tied to communicable diseases, maternal and child health, and under-nutrition. Primary prevention is needed at the national and population level, though the allocation amount for NCDs, both by governments and donor agencies, is only a tiny fraction of the total budget.

In spite of growing evidence on rise of epidemic scale of NCDs, it is still not regarded as a public health priority in the majority of developing countries including SEAR. However, systematic data on the problem in its various dimensions is clearly known. Prioritized NCDs are COPD Cardiovascular diseases, Cancer, Diabetes Mellitus and condition arising out of injuries.

The growing burden of injuries, road accidents, suicides and violence is recognized but contributes considerably to morbidity to the Region. They are linked to common risk factors namely, tobacco use, alcohol abuse, unhealthy diet, and physical inactivity.

An appropriate cost effective; culture specific methodologies for obtaining basic information are still not been clearly established in SEAR countries. Therefore development of easy, inexpensive, feasible and sustainable system of surveillance of major NCDs and their risk factors should be recognized as one of the WHO priorities. The feasibility of strengthening existing national surveillance system with NCD component needs to be explored in the region.

The global strategy on prevention and control of NCDs recently adopted by WHO creates a comprehensive framework for development of cost effective and evidence based activities addressing NCD priorities including surveillance with focus on Developing Countries.

### **Non-communicable Diseases:** **Growing Burden in Nepal**

His Majesty's Government is committed to raise the health status of rural and urban people by delivering high quality health services at the central, district and village levels throughout the kingdom. Nepal in the last few decades

introduced many public health programs like Family Planning, Maternal and Child Health Program including curative outpatient and inpatient services.

Curative health service is being provided with appropriate diagnosis, treatment and referral through the health network from PHC outreach to the specified specialized hospitals of the kingdom. There is recording and reporting system of curative health services as well as NCDs by ICD-10 reporting formats.

Non communicable diseases are major global public health problems, an emerging epidemic in developing countries i.e. Malignant neoplasm, Cardiovascular diseases, Diabetes mellitus, Chronic respiratory diseases, Nutritional problems, Injuries and road traffic accidents.

Moreover, Non communicable diseases are double burden in Southeast Asia Regional (SEAR) countries. In Nepal there is a high prevalence of chronic obstructive pulmonary disease. It is estimated that 5.6% of people in the mountains, 1.5% in the hills and 5% in the terai suffer from hypertension. Cardiovascular diseases and Chronic-respiratory diseases are the major cause of mortality.

Recent studies have shown the overall increase in economic development and education level, introduction of newer vaccine to control deadly infectious disease, availability of safe drinking water, good maternal and child health program and availability of safe antibiotics. They helped to decrease the incidence of infectious diseases. Good nutrition also played vital role to decrease the over all death rate and ultimately increased the life expectancy and resulted in demographic changes.

Developing countries are facing the problem of emerging, re-emerging infectious diseases along with the increase of non-communicable diseases as a result of changing life styles. Thus developing world is facing with double burden of disease.

Nepal as other countries in the region is in a phase of prolonged epidemiological transition and a period in which the health problems of the affluent and the not-so-affluent societies co-exist. In this situation, Nepal has to bear a double burden of diseases.

The burden one is the burden of communicable diseases, which are associated with poverty, over population and deprivation arising out of malnutrition, ignorance and crowded, and unhygienic living conditions. Non-communicable diseases (NCDs) such as coronary heart disease, high blood pressure, cancer, Chronic respiratory diseases and diabetes associated with affluence, stress, changes in lifestyles and dietary habits and longer life span, compound this burden.

The growing population in the country as in other countries has become a crowded demographic problem, which is leading to growing problem of non-communicable diseases.

### **Health Information Management System:** **A tool of NCD Surveillance in Nepal**

After the integration of all vertical programs of Health Services in 1994, Department of Health Services (DoHS) adopted integrated management of health information to standardize data collection, processing and dissemination. The main objectives of Health Information Management System (HMIS) are:

- To monitor the achievements/coverage, continuity and quality of health services and to provide feedback to all categories of health service providers and managers
- To assess progress towards goals and target of District Health Programs
- To identify successful approaches and strategies and to replicate them in other area of health system
- To provide information that can be used to improve the quality of care for the service providers
- To provide gender specific information, which can be used to plan the most effective delivery of health services

At present Nepal has developed communicable disease surveillance mechanism. The Epidemiology and Disease Control Division of Department of Health Services acts as a focal point and information are collected through HMIS within the DOHS. HMIS in its 34 types of forms gathers some NCD information using ICD 10 format.

The current HMIS collects information on services on Child Health, Reproductive Health, communicable diseases and OPD and inpatients services including Non Communicable Diseases from various health service delivery points. Services on Child Health include EPI, CDD/ARI and Nutrition, while Reproductive health covers ANC, delivery and PNC services and family planning.

Disease Control covers TB, Leprosy, Malaria/Kala-ajar. Epidemiology and disease control divisions do surveillance on Polio, Measles, and Tetanus through Early Warning System from selected hospitals with the support of WHO.

DoHS provides these services through health institutions of different levels from Central level to Community level through Sub Health Post, Health Post, Primary Health Care Center, District, Zonal, Regional and Tertiary Hospitals at the National level. Services provided by NGO and INGOs (bilateral and

multilateral) are also included in the national reporting system. From these institutions information are collected on the monthly basis.

The information collected from the regular reporting includes both data on communicable and non-communicable diseases (NCDs). The information on NCD is collected separately from all types of hospitals. The coverage on hospital reporting needs to be strengthened in order to improve the coverage of services.

The current HMIS provides information on disease surveillance only and no information is collected on risk factors. Recently the information of hospital data on morbidity and mortality are analyzed using ICD-10. In total 37 tools (recording, reporting and various cards and tally sheets etc.) are in use for collection of data on health services.

Regarding information collection related to NCD and their risk factors, the sources could be population census or other detailed data collections in which related information are existing. Other than that some important questions can be included in relevant survey questionnaire to get intended information.

### **Need of Non Communicable Diseases surveillance in Nepal**

It is realized that the epidemiological transition of Non Communicable Diseases is becoming burden in Nepal as in other developing countries in accordance to communicable diseases. Nepal is experiencing not only scarcity of resources but also poor distribution of which is the major hindrance in strengthening prevention and control of diseases including major NCDs.

Therefore, The National Health Policy 1991 had indicated the need of addressing NCDs. As a result of this, 9th 5 Year plan introduced Essential Health Care Services (EHCS) and beyond EHCS package including prevention and control of NCDs by identifying actual disease burden and its risk factor through efficient surveillance mechanism in the country.

The Second Long Term Health Plan (1997-2017) has its policies on changing trends of Communicable Diseases and non-communicable diseases according to which EHCS and beyond EHCS are the key aspects of quality health service delivery to Nepalese people.

In this regard, WHO is providing support to its member countries in developing easy, inexpensive, feasible and sustainable systems of surveillance of major NCD and their risk factors.

Thus, WHO held an inter-country meeting in the region in early 2000 to collect its basic epidemiological data on major NCDs. The meetings reviewed and verified the data collected; provided guidelines on developing of a regional

profile of major NCDs and suggested measures to develop an integrated surveillance system for major NCDs and their risk factors.

As per the identified need of surveillance on NCD in WHO SEAR, Nepal was also selected as a surveillance venue including other six member countries.

Moreover, the experts member from SEAR countries discussed emerging issues related to the surveillance of non-communicable diseases and made recommendations.

The projected population by broad age group (in percentage) based on the population of 1991 Census by MOPE, June 1998 for the period 1996-2016 is in the following table -

| Age group | 1996 | 2001 | 2006 | 2011 | 2016 |
|-----------|------|------|------|------|------|
| <15       | 41.3 | 40.3 | 49.1 | 37.4 | 35.2 |
| 15-39     | 38.4 | 39.0 | 39.5 | 40.1 | 40.7 |
| 40-59     | 14.8 | 15.0 | 15.3 | 16.0 | 17.1 |
| 60&above  | 5.5  | 5.7  | 6.1  | 6.5  | 7.0  |
| 40 &above | 20.3 | 20.7 | 21.4 | 22.5 | 24.1 |

Projected urban population for Nepal 1996-2016 (in percentage)

| Year    | 1996 | 2001 | 2006 | 2011 | 2016 |
|---------|------|------|------|------|------|
| Percent | 10.6 | 11.9 | 13.0 | 14.2 | 15.4 |

The above table clearly shows that by the year 2016, the proportion of population of 40 years of age group and above, will be increased to 24.1 percent of the total population, which means an increase by 17% compared to 2001.

It indicates that, not only the size of population in the age group will increase, the age level of life expectancy will increase from the current level of 58 years to 67.6 years of age and mortality condition will be very much changed i.e. CDR will decline from the current level of 10.3 to 6.4 which means a decline of 38 percent during the projected period of 1996-2016.

During the projected period the current mortality condition mostly due to communicable diseases will be reduced considerably but non-communicable diseases can get higher for both morbidity and mortality. Based upon above projection, burden of diseases will considerably shift from communicable diseases to NCD. It is therefore, high time to take necessary actions for the control and management of NCD in immediate future.

There are two main sources of health data collection on MoH/DoHS, one being the regular / routine data collection system, which is known as Health

Management Information System (HMIS). This system collects and consolidates data at various levels. For example, the lowest level of institution is being sub- health post. The health post consolidates all the report sent to them and forwards to central HMIS section at the central office using HMIS 33. So far as NCDs reporting is concerned, all the institutions provide the morbidity report designed by department of health service where the number of out patient by sex and by disease is reported.

In these institutions, as there is no indoor services, inpatient data are not available. The morbidity and mortality pattern based on inpatient data are provided only from the hospitals at various levels i.e. from general district hospitals to specialized hospitals through HMIS 34 format, in a monthly basis.

The other source of data collection is done through regular national surveys like National Demographic health survey and BEHISM (Surveys between Census). But these types of surveys have not collected the information on non-communicable diseases but information on some common risk factor like smoking are collected.

The other sources of data collection of diseases is done through Epidemiology and disease control division system called EWARS- Early Warning System. from selected sentinel sites. But this system also does not collect the data of NCDs. BPK Cancer Hospital is planning to conduct a survey on Risk factor of NCDs like smoking.

According to annual report for the year 1999/2000, published by the Department of Health Services, in total numbers of new OPD visits, anaemia occupies first position and Chronic Obstructive Pulmonary Diseases (COPD) occupies second position out of 10 diseases.

The above statement proves that there is crucial need to perform qualitative and regular surveillance of NCDs to find strategies to reduce the burden of the disease problem.

The Health Management Information System (HMIS) is the main source of data on NCD associated morbidity and mortality regarding maintaining recording and reporting of curative health services. These services need to be sufficiently improved in phase-wise manner during Tenth Five Year Plan so that at the end of the plan period, we could be able to receive necessary information which will be significantly useful to design appropriate NCD control interventions.

## Objectives of the NCD Surveillance

Following the above justification, the APW package has to set appropriate methodology and modalities for NCD surveillance. So the NCD surveillance intervention objective is set as follows.

At the end of the 10<sup>th</sup> Five Year Plan -

### *Goal:*

Health problems due to NCDs prevalence are adequately addressed.

### *Purpose/s:*

1. Guideline to address prevalence of NCDs identified.
2. High-risk groups to NCDs screened.
3. Top ~~ten~~ NCDs and risk factors identified.

## Preparation and proceeding:

### Integrated Surveillance of Major Non Communicable Diseases And the Risk Factors

Towards the procedure of fulfillment of the above objectives a meeting was organized in the presence of Dr. J. Leowski, Regional Advisor, Non Communicable diseases, SEARO/WHO. In the briefing session Dr. Leowski, presented global and regional NCDs situation. He briefed about intervention and working procedure in the presence of local WHO staff and National Liaison Officer. Dr. D.B. Karki placed the identified activities assigned by APW under which the proposal of prepared activity package was okeyed by Dr. Leowski.

Professor Dr. D.B. Karki – Member secretary of PGMECC was appointed as focal point for the NCD surveillance. As per the terms of reference, he had to work for suggesting measures to develop/improve an integrated system for major NCDs and the risk factors associated with them, within the national health information system and providing support for the development of the Regional Profile on major NCDs.

As a Principal Investigator, Dr. D.B. Karki had to share the following terms of reference as responsibilities-

- Identify a NCDs focal point for major NCDs and their risk factors surveillance at MoH level.
- Identify institutions, NGOs, individuals and other partners with expertise and interest in NCD surveillance.
- Conduct workshop/ meetings to initiate/establish functional national NCD surveillance network.
- Assess national capacity and identify requirements for external/WHO support for further capacity building in NCD surveillance.
- Assess feasibility and discuss mechanisms for implementation of recommendations of the recent WHO inter-country consultation on NCD surveillance.
- Initiate development of national database on major NCDs and their risk factors.
- NCD Data collection and analysis.
- Develop draft on national strategy and plan of action with activities.
- Submit reports to SEARO.

In this respect, Dr. Karki formulated a small group to advise for successful design, development and implementation of the intervention activities. Dr. Karki. Organized several meetings with different hospital chief's, statisticians,

public health personnel, local WHO health planner and National Liaison officer.

After formation of the working committee, several meetings were held to discuss on issues and gaps, epidemiological surveillance and methodological approaches for collection of data on NCDs, risk factors, research and Management for successful intervention.

These meetings, and discussion with experts on emerging issues related to the surveillance of non-communicable diseases helped to plan surveillance, identify intervention institutions and review existing HMIS data and forms, lab facilities at the identified institutions. Specialists in the related subjects were requested to prepare papers to present in the workshop to facilitate surveillance.

### Analysis of Existing NCD Information

The general population and annual report analysis results are mentioned above. To make a specific identification of major NCDs, data were collected from different hospitals throughout the country. Among them, various levels of government, private and INGO run hospitals were included.

In order to avail the necessary information on major NCDs like Chronic Obstructive Pulmonary Diseases, Diabetes Mellitus, Stroke and Renal diseases etc, a separate form was devised and sent to the selected hospitals.

As per the result of the study, the following are the identified Top NCDs in descending order of prevalence.

- I. Chronic Obstructive Pulmonary Diseases
- II. Cardio vascular diseases
  - a. Hypertension
  - b. Rheumatic Heart Disease
  - c. Coronary Heart Disease
  - d. Cardiomyopathy
- III. Acid Peptic Disease
- IV. Cancer
- V. Stroke
- VI. Renal Diseases
- VII. Diabetes Mellitus

## Scope and Methods of NCD Data Collection

Surveillance of NCDs and their risk factors are essential element in planning and evaluating health program. Data should be collected, analyzed and used in a regular and systematic ways. Data on major risk factors on NCDs are scarce in many developing countries including Nepal. Lack of this information has seriously affected in prioritizing the focus of NCDs. This has necessitated for collection of data on NCDs.

A group for NCDs surveillance in Nepal initiated a meeting to identify methodology to proceed NCDs and STEPS approach to risk factor assessment.

Similarly, the NCDs surveillance methods, were as follows –

- Recording based surveillance (Urban registry)
- National Reporting Based surveillance (Road injury)
- National periodic survey
- Verbal Autopsy
- Follow up study
- National Death Registry

Data collection on NCDs was done from different hospitals selected in accordance with the recommendation of inter country consultation of Principal investigation on NCDs: (Delhi 2000)

- Standard reporting format to be developed and used.
- More discussion and, sharing of experiences- Survey reports, studies.
- Developing NCDs surveillance by establishing focal point in Nepal.

## The Activities: For national NCD surveillance

### *Preparatory meetings:*

During the preliminary meeting organized by chief investigator, the team of the researchers and WHO consultant including Prof. Mohan Das and Dr. Shailesh discussed on stepwise approach for Surveillance of risk factors for NCD.

A copy of the WHO approach was also distributed in the meeting. The national participants of Nepal presented information on prevailing Health Management Information System especially on contents, tools, information flow etc. It was noted that the existing HMIS contained disease surveillance but no information on risk factors.

A series of meetings took place among research team, WHO and other relevant experts for the study on NCD surveillance. It was suggested that the conventional morbidity reporting system, which is suitable for communicable disease surveillance, is not appropriate for NCD surveillance.

The basic reasons are multiple recording and reporting problem, both intra- and inter-health facilities, due to the long duration of NCD illness.

A number of population- based registries, periodic and incidental surveys to provide estimation of NCD magnitudes are still not an integral part of the health information system. It lack, sustainable funding also.

Therefore, it is high time to perform surveillance of NCDs in Nepal so that the Government could be suggested not only to standardize NCD reporting system but also develop program towards to address NCDs adequately.

#### *Pre-workshop meeting:*

The research team on NCD surveillance in Nepal organized a pre-workshop meeting. The objectives of the meeting were:

- To highlight the disease burden of NCD to participants
- To identify subject matter on NCDs for presenting papers in the workshop.
- To request the subject matter specialists to prepare the paper.
- To identify target institutions for surveillance of NCD on regular basis
- To identify the participants for the national workshop

The meeting was participated by Subject Matter Specialist/senior consultants, WHO and INGO representatives and the investigators.

The meeting began by highlighting the purpose and objective of the meeting and the importance of NCD in the context of present day Nepal . Assignment for scientific NCD related paper presentation during the National Workshop was confirmed amongst the Consultants.

The meeting also prepared the list of participants for the national meeting to be conducted.

The methodology of the national workshop, including duration, number and title of papers to be presented were finalized.

"NCD Surveillance in Nepal" pre-workshop meeting was organized on December 14, 2001.

The Objective of the program "To reduce the toll of morbidity, disability and premature mortality related to NCDs by preventive and control of NCDs" was explained in the meeting and further highlighting on the purpose of the meeting including developments of the previous working committee meetings.

Mr. Vinaya Ratna Dhakhwa, Statistician, presented a report on development of NCD surveillance network in Nepal. He highlighted on National capacity in the present context, including available facilities, further requirements, mode of operation and made recommendations for NCD surveillance as a priority activity to be carried on in the very near future.

The participants of the meeting discussed on the important issues related to NCD and decided to select the hospitals on the basis of activities based on following criteria:

- The hospital should have laboratory facility for diagnosis
  - Specialist doctors should be there to provide expert advice.
  - As a lot of NCD cases are treated outside of government hospitals, non-governmental, private and teaching hospitals were also included.
  - Hospitals were selected from different regions of the country
- (The list of hospitals selected for study are given in annex)*

Participants were invited from the targeted institutions for the workshop.

Correspondence was made to select appropriate participants who could be mobilized for systematic and regular surveillance of NCDs in Nepal.

It was decided to hold the workshop in Kathmandu from 26 December to 30 December, 2001. It was agreed to have 2 presentations per day, each of 30 minutes duration on NCD.

It was decided to identify top NCDs prevalent in Nepal and collect information about them from the following diseases :

- I. Cardio vascular diseases
  - a. Hypertension
  - b. Rheumatic Heart Disease
  - c. Coronary Heart Disease
  - d. Cardiomyopathy
- II. COPD + Asthma
- III. Renal Diseases
- IV. Diabetes Mellitus
- V. Acid Peptic Disease
- VI. Cancer
- VII. Stroke

## National Workshop on “NCD Surveillance in Nepal”

A five day long national workshop was conducted from December 26 to 30, 2001. With introductory activities, the workshop was presided by Prof. Dr. D.B. Karki. He highlighted on the purpose and objective of the program, expectations and possible outcomes of the workshop.

In the workshop the discussion was focused on surveillance, which, by definition includes a series of activities involving data collection, analysis, interpretation, action oriented intervention and feedback. In Nepal, the epidemiological data available at present has its limited usefulness for developing intervention programs and cannot be used for evaluation of any intervention activities.

Both the disease-oriented surveillance and risk factor surveillance were considered crucial for intervention activities. Therefore, It emphasizes the need of surveillance, since the ultimate objective of NCD intervention is to reduce morbidity and mortality.

The objectives of the workshop were as follows:

- To develop a draft for national strategy and plan of action for sustainable surveillance of major NCDs and their risk factors
- To initiate to develop national database on major NCDs and their risk factors
- To recommend standard methods and tools for sustainable surveillance on disease and risk factor.

The workshop, discussed on issues like chronic respiratory diseases, cancer, cardio vascular diseases, Neuropsychiatric disorders, diabetes mellitus, hypertension, renal diseases and other important medical problems and made the following suggestions:

1. Support the implementation of the surveillance tools;
2. Design effective communication strategies for providing data to policy makers and planners.
3. Share information within and between related authorities
4. Identify potential funding sources,
5. Develop a public health approach for the effective control of the NCDs
6. Emphasize on strengthening of already existing infrastructures rather than developing a new surveillance system
7. Increase coverage by the involvement of PHC infrastructure and communities.

8. Identify the changing trends of non- communicable diseases within the context of the essential health care at the district and beyond the district levels.
9. Develop reporting system to provide appropriate feedback.
10. Make an effort to reduce the number and degree of intensity in the prevalence of smoking with the emphasis on community education – school, work places, and media.
11. Develop a primary oral health program directed towards prevention and care to implement the program, combined with other health services or school health activities.
12. Develop standard protocols for early diagnosis, diagnosis of NCDs, long term treatment or long term follow-up.

Prof. Dr. D. B. Karki, the Principal Investigator, highlighted on the objectives of the workshop and burden of NCDs in general and specially in Nepal. He pointed out that MoH, in the present context had focused mainly on communicable diseases because of its immediate effect in terms of disease burden and feasibility of management in short period of time.

However, NCD being a life long disease, which is not curable, would cause suffering not only to the patient but also to the whole family. Again, all NCDs can not be tackled at the same time. So the NCDs having high prevalence and which can also be controlled by intervention of some key risk factors should be tackled in the initial phase. He also pointed out that NCDs were very much under reported because diseases of the patients seen in the OPD were not recorded and reported in the present system.

Prof. Mohan Das from WHO anticipated that the workshop would come up with a system to develop a surveillance network in Nepal with a strategic action plan.

Dr. K. Ananda, WHO consultant from AIIMS, in his remark said that he had attended similar meeting in India. He provided the framework for group work on surveillance of NCDs and the risk factors. He also shared the recently revised draft on Stepwise Approach to Risk Factors surveillance based on India's experience. Dr. Ananda stressed on the need of both disease surveillance and risk factor surveillance in a country like Nepal or India where up-to date data on NCDs were scanty.

After the opening session, papers on specific NCDs were presented. On the first day Dr. D. L. Singh and Prof. Dr. D. B. Karki presented papers on Diabetes Mellitus and Coronary Heart Diseases respectively.

On the second day, Prof. Dr. K. C. Rajbhandari and Dr. Murari Man Shrestha presented papers on Mental Disease and Cancer respectively.

On the third day, Dr. Madhur Dev Bhattarai, Dr. P. R. Satyal and Dr. Sudha Khakurel, Dr. David weaklium, and Dr. I. L. Acharya presented papers on COPD, Renal Disease, Surveillance and Control of NCD in Nepal, and Acid Peptic Disease respectively.

Each presentation was followed by clarification and general discussion.

The remaining time of the third day was spent on group division to work on development of strategy and action plan for NCDs Disease Surveillance and Risk Factor Surveillance. Instructions were provided for fulfilling the group assignments with examples along with the framework for the individual groups.

The participants were divided into two groups: Group I worked on Disease Surveillance and Group II on Risk Factor Surveillance. Guidelines for both the groups were distributed and explained prior to the actual performance of group work. The instructions for the group work, copies of presented papers and recommendations are annexed.

The surveillance of NCDs should be according to plan of action. WHO has provided simple but detailed guidelines, inexpensive and reliable methodology and a set of tools for monitoring and evaluation of ongoing and planned NCD intervention.

This is of a great value in order to facilitate systematic programs at the local, national and regional levels.

The workshop on NCD surveillance in Nepal, went on smoothly and the outcome of the workshop, workshop recommendations and allied descriptions such as list of Resource Persons, List of Participants, List of Technical and Administrative support staffs and List of Papers presented in the Workshop are in the Annex.

## Major Area Covered By The Workshop

The workshop discussed about the ongoing epidemiological transition in SEAR, in particular to Nepal. It was agreed that NCDs contributed to a significant proportion of morbidity, mortality and health related socio-economic losses, which is increasing. These diseases are on the increase reflecting the growing problems in Nepal.

Further NCDs place a heavy burden on the health care systems in terms of consuming hospital resources to a significant extent. The participants discussed at length on various aspects of non-communicable diseases in Nepal. The discussions focussed on a number of areas, which are summarized below.

### *Lack of reliable Information: A gap between need and use of information*

The need for reliable information on epidemiology of NCDs is existing. This is important in order to facilitate programs at the local, national and regional levels. It is identified as a crucial need to develop a systematic program to determine health problem, recognize its pattern at least for prioritized disorders like COPD, cardiovascular diseases, cancer, diabetes mellitus and injuries and utilize information as determinants: as to what factors contribute for the occurrence of diseases.

### *Draft for national strategy and plan of action with activities*

The workshop identified the following strategies and supporting activities to implement NCD and risk factor surveillance -

#### *Strategies:*

- ❑ Analysis of NCDs social, economic, behavioral and political determinants.
- ❑ Introduction of NCD control program at the national level.
- ❑ Establish / Refine government policies for NCD surveillance program implementation
- ❑ Advocacy for NCD surveillance at different levels.
- ❑ Surveillance findings should be timely analyzed and disseminated to all the appropriate level for immediate actions.
- ❑ Participation of all stockholders for NCD Adoption of community based risk factors surveillance approach.
- ❑ Identification of risk factors surveillance mechanisms on population base.
- ❑ Initiation to incorporate with the exiting surveillance mechanisms.
- ❑ Surveillance conduction relating to risk factors to meet local and regional needs.

- Adoption of WHO recommended steps approach.
- Surveillance for primary prevention of NCDs
- Little start with the aim of quality data and information.

*The following are the recommended bases to materialize the above mentioned Program Strategies:*

Past findings, experiences, theories, assumptions and change are desirable in accordance with time, place and program where as plan of action should be realistic, practical in all aspects (field, time-frame etc.)

The Plan of action has to be worked out in terms of:

- Risk factors assessment for NCDs: Follow of recommended strategies.
- Continuous monitoring & evaluation of surveillance of risk factors of NCDs.
- Intervention: follow of recommended strategies
- Defining short, medium and long-term objectives
- Community level - primary prevention, health Institution-cure
- Periodic/continuous follow up system.

Evaluation in-terms of:

1. Common risk factor for NCDs
2. Morbidity from NCDs (Long term)
3. Mortality from NCDs (Long term)

Important point for consideration while developing PoA:

- Time frame
- Training and commitment of personnel involved
- Continuity of program

Defining function of the focal point.center:

1. To work as semi autonomous body under MoH
2. To involve board members, advisory committee members and consultants: Govt. health institute, NGOs, INGOs, and related for the cause.
3. To conduct advocacy in relation to burden and control of NCDs.
4. To work on policy of the center and long term prog. plan
5. To avail resources : internal /external resource mobilization

Identification of physical Infrastructure:

- ❖ Hospitals, health institutions at central and periphery level
- ❖ Defined areas and communities

Identifications of the expertise who will be responsible for the surveillance activities entirely:

- Expert participants of this workshop (desirable )
- Give responsibility with clear-cut job description and avail budget.

Responsibility:

1. Collection and compilation of existing data on risk factors for NCDs
2. Proposal development for risk factors surveillance (Survey- for population based information)
3. Study/survey reports writing.
4. Central database data management at the focal point/center, and other as per the need of the program.
5. Implementation of program: i.e.
  - Conduct survey as planned
  - Complete survey as planned
  - Disseminate the results as planned
  - Store data in central database

Periodic data/ inf. collection: 5 yearly

- Methods- Surveys (Questionnaires as tool)
- Sentinel health facilities

Avail optimal resources: (Man, Money, Materials etc)

- Good coordination with related health institutions
- Emphasis on quality data /information
- Encourage researchers, clinicians and medical students

### *Support Activities for the sustainable NCD surveillance*

- Advocacy to Policy Makers, Ministry of Finance, Planning Commission & other health related agencies.
- Health promotion activities ( including media)
- Analysis of cost implication of NCD surveillance
- Survey
- Pilot study
- Training for NCD
- Consultants
- Periodic seminar on NCD
- Integration with existing HMIS
- Involvement of medical college, universities, private hospital etc.
- Support from WHO
- Donor's meeting.

(Recommended Plan of Action is in Annex )

### ***Surveillance: A Mandatory Key Activity***

The workshop participants discussed about various aspects of NCD surveillance and its present status and recognizing the importance of NCD surveillance in the country.

It was felt that a systematic approach is quite necessary in this connection. Participants and participating experts suggested a standardized methodology for NCD surveillance and risk factor assessment.

Surveillance by definition includes a series of activities involving data collection, analysis, interpretation, action oriented intervention and feedback. The group also debated the choice between disease-oriented surveillance and risk factor surveillance and felt that both were crucial for intervention activities.

The choice of indicators was related to mortality, morbidity, disability and behavior-related risk factors disease.

Risk factor surveillance is vital for NCD control, therefore, an integrated approach necessary because, for example, tobacco usage as a risk factor contributes to cardiovascular diseases, stroke, cancer, and other.

Further high-risk communities, groups, families and individuals should be identified and targeted for interventions, which is possible through surveillance activities.

### ***Management: An essential support to NCD surveillance***

The management strategy of NCDs should be designed and employed with the control of communicable diseases, nutrition and infectious disorders. Therefore, the authority need comprehensive countrywide planning to address this major problem.

The participants suggested developing strategic plan to avoid duplication of work and enable accurate and best use of resources for bringing the desired changes over a period of time. There should be a large-scale networking of leading institutions within the country to reduce NCDs burden in the country.

## *Approach for Disease surveillance*

To follow stepwise approaches with core, expanded & optional tests.

This process would be appropriate in the present Nepal context- (example):

| <u>Disease</u> | <u>Core</u>       | <u>Expanded</u>  | <u>Option</u>                                    |
|----------------|-------------------|------------------|--------------------------------------------------|
| COPD           | History           | Physical Exam.   | Physical Exam.<br>and other tests                |
| Diabetes       | History/<br>Urine | Blood<br>Sugar   | Special Tests<br>like Glycocolated<br>Hb (HbA1c) |
| Renal          | History<br>/Urine | Renal<br>profile | Special lab. tests<br>Ultra sound                |
| CVD            | History           | ECG              | Special lab. tests                               |

Frequent exchange of reports/ Activities among sentennial sites through NCD Section, including of -

- Committee/ sub committees
- Seminar /Workshop – Annually
- E-mail/ exchange of information/letters

Using social workers, teacher, leaders for NCD

- Private teaching Hospitals to support one region on NCD surveillance
- Death registry to be made mandatory

Improve referral system from bottom-top etc

Survey Vs. Surveillance

- Survey to be conducted once every five year
- Surveillance – collection

Analysis

Utilization

Feedback

*Most common risk factors on NCDs are following :*

Tobacco- Smoking and chewing

Alcohol

Indoor Smoke

Hypertension

Hyperglycemia

Dislipidaemia

Physical Inactivity Obesity

Under/ over Nutrition

Stress  
Migration  
Marriage at early age  
NSAID miss-use  
Deliberate Self Harm

### *Approach for risk factor surveillance*

As strategy plays deciding role in achieving goals of any programme of activity, following points have been considered in working out the strategies for surveillance of risk factors:

Established risk factors including causes of diseases. (Important)

Common risk factors for NCDs.

Comparable across countries: SEAR- Countries

- Possible to collect data by simple tools
- Possible to manage and store data using simple technologies
- Possible to control the risk factors identified

In the initial phase of NCD and risk factor surveillance program, the management of the program should be carried out either as a pilot project run by semi- autonomous body or a division in MoH.

Gradually, the function of the above unit should be integrated with the health management information system under MoH. Gradual involvement of private/ teaching hospitals and other health institutions run by NGO/INGO should be incorporated in the surveillance activities

### **Conclusions:**

Based on the collected data from the selected hospitals, the 10 Non-communicable Diseases were found in the top ten by rank.

At the end of the workshop, the participants unanimously decided to have NCD nodal point within the Ministry of Health. The participants also recommended to having surveillance on both disease and risk factors, which are mostly common. Proper linkage of NCD surveillance with the existing HMIS was mandatory.

In the initial period of the study, a separate unit should be established to deal on NCD surveillance at MoH. The detailed recommendations of the groups annexed.

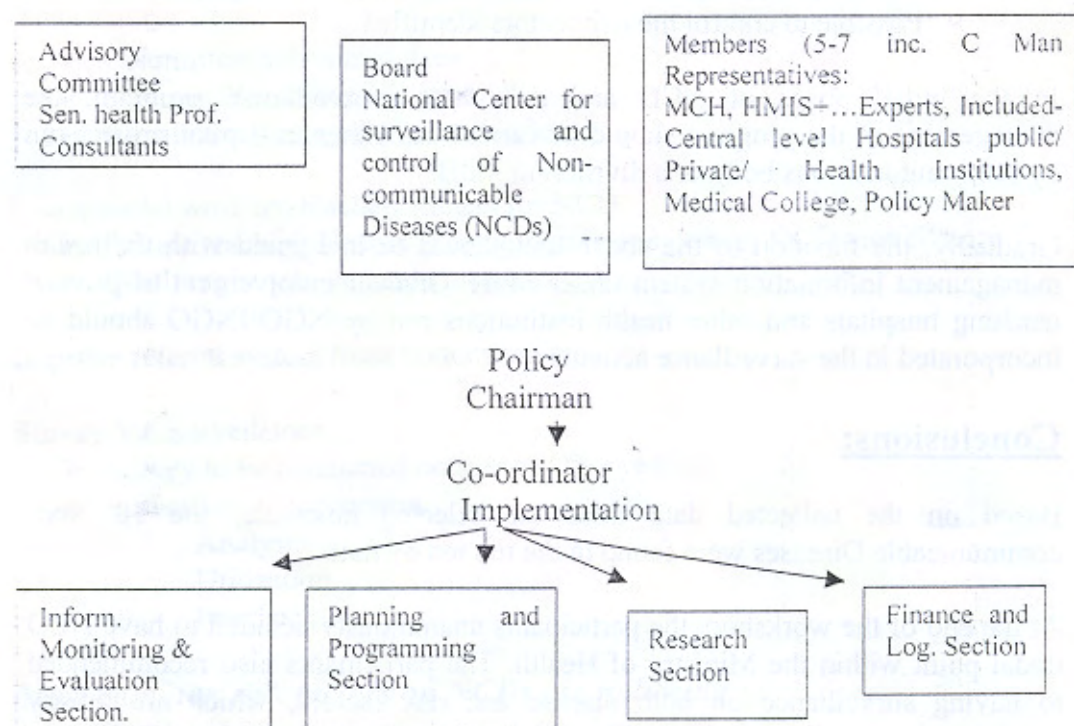
The strategically planned Surveillance of major NCDs will facilitate to assess NCD burden and cope the problem with available feasibility for control of major NCDs.

## Recommendations

Based on the study of NCD surveillance in Nepal, the following strategy and plan of action are recommended-

1. An efficient focal point should be identified in the MoH.
2. Mode of operation for NCD Surveillance for management-establishment of  
a board or a National Center for surveillance and control of NCD.  
The organization structure is given below.

### **Conceptual Framework of Sections and key positions**



Mode of operation for NCD Surveillance and management- Establish a NCD Division in Ministry of Health led by senior medical doctor with support staff.

Ministry of Health - By establishing NCD "Division"

- Senior Doctor to lead
- Support staff to include

2 Medical Officers  
Medical Record Assistant  
Computer assistants  
Administrative support staff

Formation of technical committee:

- WHO/HMG experts.
- Specialist from Pvt. Hospital.
- External Development Partners to direct/advise the surveillance team.

DoHS/MoH has a functional HMIS with-

- Trained human resource
- Computer system
- Network
- Several hospitals have MR/MRAS+ trained in ICD- 10
- Provision of training on ICD-10 in BPKIHS

MoH to provide/ maintain physical facilities in sentinel sites-

- Orientation/ training to be given to MOs and MRAs of sentinel sites
- Technical training /Orientations to NCD division staff as per the guidance of technical committee

Linking with exiting institutions like-

1. HMIS for data collections on regular Basis
2. DHS and other regular surveys risk factors
3. In-country training by NCD consultants/ staff members Provision of training / Workshops from External Development Parteners, specially WHO for standardization of surveillance system.
4. Expensive/ resources constraints Technical challenges  
Impact/out put seen after a lag of 5 years or more  
Difficulties to standardize due to regional variation of diseases
5. The Government should provide financial support, in order to carry out the NCD surveillance program. The study team highly recommended the financial and technical support of WHO for carrying out the program smoothly in the initial phase. Necessary equipment's and instruments for selected sentinel sites/ and at the center. Training on ICD 10 and other related training for different level of staff including divisional staff.
6. Data processing facilities like computer, printers and other accessories.  
To conduct advocacy workshop at various level
7. Logistic support for running the office in the initial phase.
8. Capacity building identify sufficient regular mechanism NCD surveillance in the people/ through HMIS
9. Community Death Registry -focused on the major leading chronic NC Diseases.

10. The Step 1, 2, 3 Modules appropriate for risk factor assessment, which include Questionnaire based, Physical Measurements and Biochemical analysis with core risk factors.

# Annexes

## Annex- 1

### Workshop Working Schedule

26<sup>th</sup> – 30<sup>th</sup> December 2001

The workshop started with welcome speech and introduction of the participants, which followed with highlight on objectives of the workshop with valuable remarks by Dr. D.B.Karki, Dr. K Ananda and Dr. Mohan Das. Accordingly the daily workshop sessions followed with paper presentations and discussion on:

- NCD in SEAR and Nepal
- HMIS in Nepal
- Identification of institutions for surveillance
- National Surveillance Strategies and Plan of Action
- Identification of external support for development of surveillance system
- Mechanism of implementation
- NCD surveillance
- Risk factors surveillance
- Plan of action
- Discussion and adaptation of recommendations

## Annex 2

### List of Participants

1. Dr. Murari Man Shrestha, B.P.Koirala Memorial Cancer Hospital, Bharatpur
2. Dr. Mohan Thapa, B.P. Koirala Institute of Health Sciences, Dharan
3. Dr. Rajesh Subedi, Koshi Zonal Hospital, Biratnagar
4. Dr. Shyam Sundar Yadav, Bheri Zonal Hospital, Nepalgunj
5. Dr. S.K. Pahari, Lumbini Zonal Hospital, Butawal
6. Dr. Martin Allabi, United Mission to Nepal
7. Prof. Dr. K. Anand, All India Institute of Medical Sciences, New Delhi, India
8. Prof. Dr. D. B. Karki, Kathmandu Medical College
9. Dr. Sudha Khakurel, Bir Hospital, Kathmandu
10. Mr. Binaya Ratna Dhakhwa, Statistician, Kathmandu
11. Dr. Paramita, WHO
12. Prof. Dr. A. Mohan Das, WHO
13. Dr. Shailesh Kumar Upadhyaya, WHO
14. Mr. Munishwar Mool, Department of Health Services, Kathmandu
15. Dr. D.L. Singh, Bir Hospital, Kathmandu
16. Dr. S.P. Bhattarai, Ministry of Health, Kathmandu
17. Dr. Madhav Dev Bhattarai Bir Hospital, Kathmandu
18. Prof. Dr. K.C. Raj Bhandari, Kathmandu Medical College Teaching Hospital, Kathmandu
19. Asso. Prof. Dr. Mathura K.C., Kathmandu Medical College Teaching Hospital, Kathmandu
20. <sup>Asst. Prof.</sup> Dr. Rabindra Shrestha, Kathmandu Medical College Teaching Hospital, Kathmandu
21. Dr. I.L. Acharya, Kathmandu Hospital,
22. Dr. Puskar Raj Satyal, Kathmandu
23. Dr. David Weklian, United Mission to Nepal
24. Mr. Krishna Raj Giri, National Health Training Center/DoHS

### Annex 3

#### Participants of Preworkshop Meeting

- Prof. Dr. D.B. Karki
- Dr. D.L. Singh
- Prof. Dr. K.C. Rajbhandari
- Dr. Dr. P.R. Satyal
- Dr. David Weaklian, UMN.
- Dr. I. L. Acharya
- Dr. S.P. Bhattarai
- Mr. Muniswor Mool
- Mr. Vinaya Ratna Dhakhwa
- Mr. K. R. Giri
- Asso. Prof. Dr. Mathura K.C.
- Asst. Prof. Dr. Ravindra Shrestha



## Annex 4

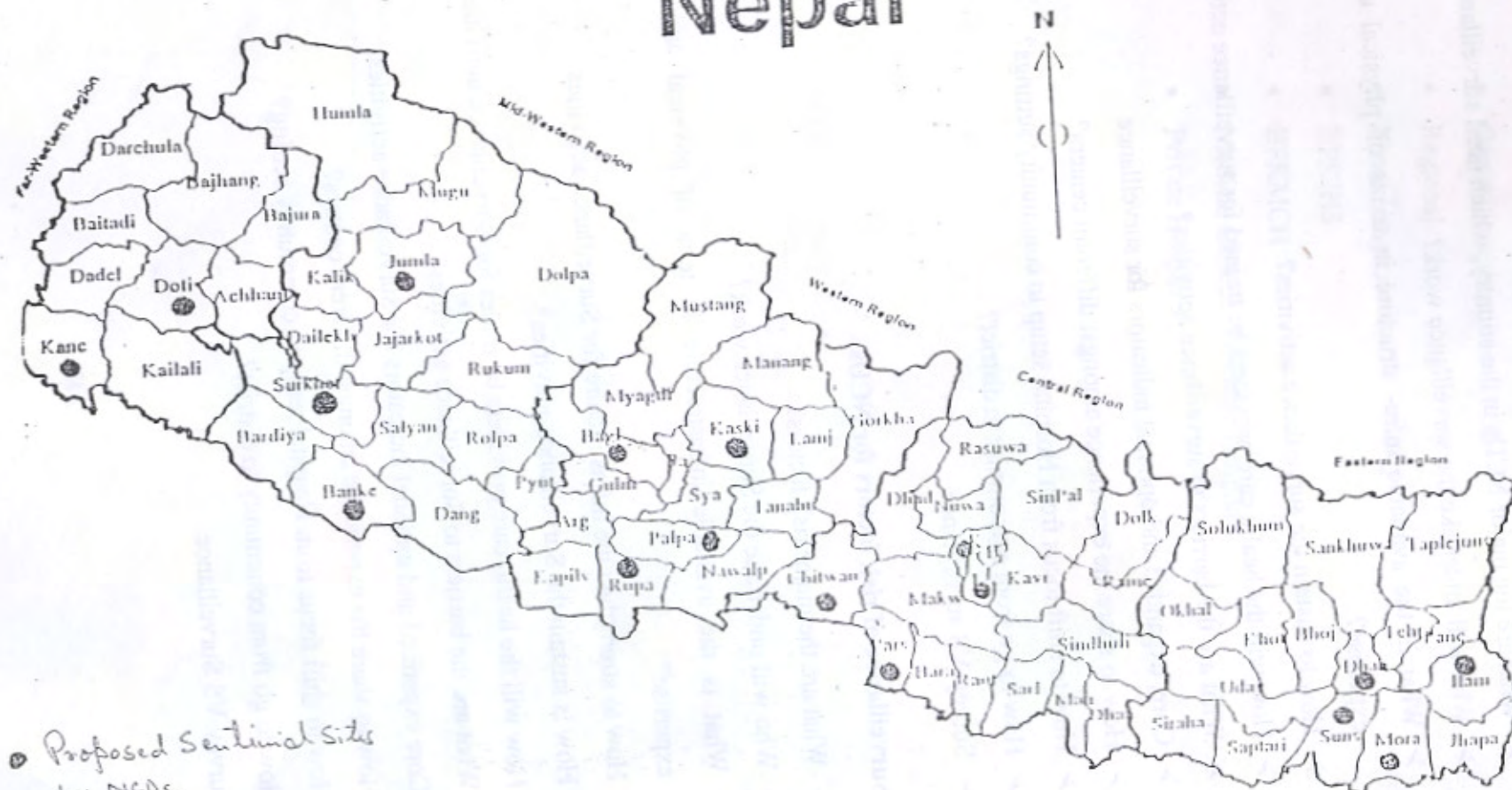
### Proposed operation calender of sustainable surveillance of NCDs

| Activities                                                                                                   | Year 2002<br>Month | Year<br>2003...2007<br>Month |
|--------------------------------------------------------------------------------------------------------------|--------------------|------------------------------|
| Establishment of focal point                                                                                 | Jan-April          |                              |
| Advocacy -<br>Press release<br>Interaction<br>Use of electronic and print media                              | Jan-June           |                              |
| Identification of-<br>Experts<br>Health institution                                                          | July               |                              |
| Data collection and Development Central<br>Database                                                          | July-Sept.         |                              |
| Developing PoA<br>for risk factor surveillance                                                               | Sept-Oct.          |                              |
| Program Implement<br>Survey at community level<br>Sentinel H. Clinic upto decision of report<br>and advocacy | Oct.....           | Sep (1 year)                 |
| Intervention-<br>Community level<br>H. Institution level                                                     |                    | Oct.-Dec. 2004               |
| Report Dissemination<br>Advocacy<br>National Seminar                                                         |                    | ”                            |
| Program Replanning                                                                                           |                    | Jan 2005                     |

## Annex 5:

### Map of Surveillance sites

# Nepal



● Proposed Sentinel Sites  
for NCDs.

## **Annex 6**

### **Surveillance of NCDs and a framework For Working Group**

#### **Surveillance of NCDs:**

- What are the major NCDs in the country, which need surveillance?
- Who will undertake the surveillance work?
- What is the available infra- structure in terms of physical and technical expertise?
- How to sustain the surveillance activities?
- How will the health care providers be trained for surveillance activities?
- What are the barriers to surveillance activities?
- Core, expanded and optional indicators for surveillance
- How to share the experience amongst different centers?
- How to shift focus from Hospital setup to community settings?
- How to go from community to district?
- Survey VS surveillance

#### **Surveillance of risk factors for NCDs**

- What are the major risk factors?
- Who will undertake the Surveillance work?
- What is the available infrastructure in term of physical and technical expertise?
- How to strengthen the infrastructure for Surveillance activities
- How is sustain the Surveillance activities?
- How will the health care providers be trades for Surveillance activities?
- What are the barriers to Surveillance activities?
- Core expended and optional indicators for Surveillance activities.
- How to share the experience amongst different centers?
- How to shift focus from Hospital setup to community setting?
- How to go from community to district?
- Survey VS Surveillance.

## Annex 7

### Identified target institutions for surveillance

- Central level hospitals 5
- Regional 1
- Zonal Hospitals 9+2
- BPKIHS
- BPKMCH
- Medical College, Teaching Hospitals
- Private Hospitals

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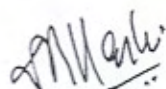
***Subject : Report on NCD Surveillance***

It is my great privilege to get the opportunity of being principal investigator of non communicable disease surveillance in Nepal and submit this report to you. I am grateful to the Ministry of Health, HMG of Nepal and SEARO for having confidence in me and giving such an important assignment to me.

In the process of producing a document on NCD Surveillance in our country. I have tried to include the topmost clinicians and health workers with many years experience in their specialities. I have tried my best to prepare a rough road of NCD Surveillance for Nepal and strongly believe that anybody interested can travel on it to reach the desired end point. In the mean time, I would like to strongly recommend the concerned authority in the Ministry of Health to put a black top of sincerity and dedication on this rough road of Surveillance so that Nepal could achieve her objectives in stipulated time frame mentioned in my report.

During the preparation of report on NCD Surveillance, I have noted that no record of diseases of patients attending outpatient department is kept by almost all the hospitals of HMG, Nepal. Under this circumstances it is very difficult to find the real disease burden of the nation. Many important decisions regarding the NCD Surveillance could only be based on the prevalence of non-communicable diseases. Therefore the Ministry of Health should introduce a strong mechanism of knowing the prevalence of non-communicable diseases in the country. However the ranking of top NCDS of our country based on inpatient records of major hospitals of Nepal and mentioned in the present report is expected to provide valuable guidelines.

At the end, I would like to express my sincere thanks to SEARO, Delhi, WHO experts of Nepal, Ministry of Health and all my colleagues without whose help I could not have prepared this report on NCD Surveillance. I hope this report will go a long way in helping those persons working on NCD Surveillance in Nepal in the years to come.



Prof. D.B. Karki FRCP (Ed)  
Principal Investigator, NCD Surveillance  
Member Secretary PGMECC