INTEGRATED DISEASE SURVEILLANCE PROJECT

TRAINING MANUAL FOR STATE & DISTRICT SURVEILLANCE OFFICERS

SURVEILLANCE OF RISK FACTORS OF NON-COMMUNICABLE DISEASES

Module -14

CONTENTS

1. INTRODUCTION

Non-communicable Diseases (NCDs), mainly cardiovascular diseases (like heart disease and stroke), diabetes mellitus, cancers, chronic obstructive disease, and injuries, have not only emerged in epidemic proportions in India, but are already well advanced. There is an urgent need to control this advancing epidemic of NCDs.

The key to the control of epidemics of Non Communicable Diseases (NCDs) is primary prevention. The basis of prevention of NCDs is identification of the major risk factors and their prevention and control. Population measurements of these risk factors are used to describe the distribution of future disease in a population, rather than predicting the health of a specific individual. Knowledge of risk factors can then be applied to shift population distribution of these factors. Emphasis has therefore been given to risk factors that are measurable under field conditions and that are amenable to intervention.

Surveillance data on risk factors for NCDs is crucial to set priorities, develop and monitor risk factor focused interventions and targeted Programmes. NCD surveillance under IDSP is aimed to provide this data for effectively meventing NCDs.

2. SPECIFIC LEARNING OBJECTIVES

At the end of the session you should be able to:

- ☞ Describe the importance and the need for NCD risk factor surveillance
- ☞ Enumerate the differences of NCD surveillance from CD surveillance
- ☞ List the NCD risk factors for surveillance
- ☞ List the steps involved in organisation and conduct of NCD risk factor surveillance
- ☞ Describe the role of DSO in NCD surveillance

3. MODULE AT A GLANCE

Duration of Session **1 Hour**

Unit No	CONTENT	METHODOLOGY DURATION	TENTATIVE	TEACHING AIDS
1.	The rationale and need for NCD risk factor surveillance Selection of risk factors under surveillance	Lecture Session 1 Question answer session	20 Minutes 10 minutes	Training modules/Slide Projector/overhead projector
2.	Methodology of NCD surveillance under IDSP Role of DSO in NCD surveillance	Lecture Session 2 Question answer session	20 Minutes 10 minutes	Training modules/Slide Projector/overhead projector

4. IMPORTANT POINTS TO REMEMBER

1. The burden of diseases due to NCDs in India became almost equal to that due to CDs in 1990.
2. This burden due to NCDs is progressively increasing rapidly in India while it is declining in the developed countries since 1980s.
3. The life style related modifiable risk factors for NCDs have been identified and the magnitude of their impact is well documented.
4. Which NCD risk factors will be measured under IDSP?
5. The major NCDs like cardiovascular diseases, cancer, chronic obstructive pulmonary disease and diabetes mellitus share common, preventable life style risk factors like, tobacco use, unhealthy diet and physical inactivity.
6. There is sound evidence that significant reduction in occurrence of NCDs can be achieved by implementation of an intervention package of simple, effective and feasible life style changes in the community.
7. The treatment of manifest NCDs like cardiovascular diseases, diabetes and cancers is expensive. The **key to control of this epidemic of NCDs is in its primary prevention.**
8. NCD surveillance is therefore considered a very important component of IDSP.
9. NCD surveillance will be done by periodic surveys of selected risk factors for NCDs and will be independent of regular surveillance for other conditions under IDSP.
10. **The NCD risk factors which will be measured in IDSP periodic surveys include:**
    - **Tobacco use, Alcohol consumption, Raised Blood Pressure (Systolic and Diastolic), Obesity (Height, weight, BMI, Waist circumference), Diet (Low fruit, high fat, added salt to served food), Physical Inactivity, Diabetes Mellitus (Fasting Plasma Glucose), High Serum Cholesterol.**

5. FREQUENTLY ASKED QUESTIONS

1. Why should we start NCD surveillance in our country at this stage when communicable diseases and under-nutrition are still very common?
2. Why in IDSP we are planning to survey of NCD risk factors rather than NCDs themselves?
3. What is the evidence that community intervention of NCD risk factors lead to reduction in NCDs?
4. Why is 'stress' not included in the list of NCD risk factors to be studied?
5. Do you think surveillance of NCD risk factors can ever be done as part of regular surveillance and if yes, when?

6. Does India have the resources to conduct regular NCD surveillance over long period of time and whether it would be cost effective for the nation?

6. HANDOUT ON RISK FACTORS FOR NON COMMUNICABLE DISEASE SURVEILLANCE'

6.1 Importance of non-communicable disease surveillance:

India is a diverse country and many states in India are passing through an **epidemiological health transition** characterised by decline in infectious and parasitic diseases and a rapid rise in non-communicable diseases (NCDs), mainly cardiovascular diseases (like heart disease and stroke), diabetes mellitus, cancers, chronic obstructive disease, and injuries. NCD related mortality and morbidity is increasing at an alarming rate in developing countries including India. NCDs have not only emerged in epidemic proportions in all but the very poorest countries, but are already well advanced. These diseases are not, now, considered to be diseases of the industrialized countries mostly confined to wealthy people; nor are they are caused by natural ageing and degenerative processes.

The burden of diseases due to NCDs in India became almost equal to that due to CDs in 1990. This NCD burden is progressively increasing rapidly in India while there is a substantial and sustained decline, especially of cardiovascular diseases in the developed countries since 1980s. (Harvard school of public health. Global Burden of Disease and Injury Series, volume 1, 1996 and World Health Report 2001). This growing burden of NCDs in India has real potential to hinder social and economic development. Cardiovascular disease and deaths in India affects the young productive population, causing human as well as economic loss for the household, family, society and country at large. Risk factors for NCDs are going to affect an increasingly large population due to nature of demographic transition. Medical and economic consequences of rising trend in CVD will prove to be expensive.

NCD risk factor surveillance is preferred over NCD surveillance since primary prevention is the key to control of this epidemic of NCDs. It is postulated that NCDs are communicable at risk factor level. Identification of major risk factors and their prevention and control form the basis of the prevention of NCDs. Risk factors of today are the diseases of tomorrow. A vast body of evidence now exists about the risk factors for NCDs and the experience in the prevention of them. The major NCDs like cardiovascular diseases, cancer, chronic obstructive pulmonary disease and diabetes mellitus share common, preventable life style risk factors like, tobacco use, unhealthy diet and physical inactivity. Population measurements of these risk factors are used to describe the distribution of future disease in population, rather than predicting the health of a specific individual. Knowledge of risk factors can then be applied to shift population distribution of these risk factors. Emphasis has been given to risk factors, which are measurable under field conditions and amenable to intervention. Identification of risk factors and its quantification is of great importance in order to calculate the avoidable burden of disease and framing of cost-effective strategies for prevention. There is sound evidence that significant

reduction in occurrence of NCDs can be achieved by implementation of an intervention package of simple, effective and feasible life style changes in the community. Hence it is imperative that NCD risk factor surveillance be started in India without further delay.

6.2 Criteria used for the selection of NCD risk factors?

Rationale for selection of core NCD risk factors for surveillance are:

- They have greatest impact on NCD mortality and morbidity;
- Their modification is possible and effective in primary prevention;
- Their measurement is easy, feasible and validated and can be obtained while following appropriate ethical standards.

6.3 NCD risk factors in IDSP?

The following major risk factors will be measured under IDSP by conducting periodic surveys in the population:

1. Tobacco use
2. Alcohol consumption
3. Raised Blood Pressure (Systolic and Diastolic)
4. Obesity (Height, weight, BMI, Waist circumference)
5. Diet (Low fruit, high fat, added salt to served food)
6. Physical Inactivity
7. Diabetes Mellitus (Fasting Plasma Glucose)
8. High Serum Cholesterol

In addition, demographic (age, sex, urban/rural residence), socio-economic variables (educational level, occupation, income), past and family history of cardiovascular diseases, diabetes, and hypertension will be measured,

6.4 Differences of NCD surveillance and CD surveillance

NCD are chronic diseases and have long latent period of exposure to risk factors and clinical manifestations. NCD risk factor surveillance is performed by determining the prevalence of risk factors as measured by periodic sample surveys in each State conducted once in 5 years. The frequency of reporting in NCD risk factor surveillance is much less as compared with CD surveillance.

The data generated by periodic surveys will provide information about prevalence and time trends of NCD risk factors and unhealthy life style behaviour among various populations.

Data from regular surveillance of CD and NCD could be used for evolving appropriate intervention strategies and for programme evaluation.

6.5 WHO STEPwise approach to NCD surveillance

The WHO STEPwise approach for NCD risk factor surveillance is a sequential process, starting with gathering information on key risk factors by the use of questionnaires (Step 1), then moving to simple, physical measurements (Step 2), and finally recommending the collection of blood samples for biochemical assessment (Step 3)

6.6 Method of NCD Surveillance in IDSP

It is costly, impractical and unnecessary to survey an entire population for NCD risks. A good picture of risk factors for NCD's in the population can be assessed from a sample of that population. The selected sample however would have to be representative of the whole population.

6.6.1 Types and Frequency of NCD Surveys

The prevalence of risk factors will be measured by periodic sample surveys in States conducted once in 5 years. Twenty percent of districts will be surveyed each year, so that the whole population is covered in 5 years. The survey would be conducted every year in randomly selected districts in a five-year cycle. Thus, the same district will be covered once again after five years and the changing trends observed (thus having a repeat coverage of the same cross-section of the population only once in five years).

6.6.2 Responsibility for NCD surveys

Director of Public Health of the State, State surveillance Officer, District Surveillance Officer of concerned districts and NCD Surveillance units of Medical Colleges of the state will closely coordinate and supervise the survey. The survey will be contracted out to the best bidders for this Programme who will be able to deliver the results in stipulated time. Financial resources will be allocated under IDSP for this activity.

6.6.3 Selection of samples

The target population for the survey will be from 15 years to 64 years. As a standard, 10-year age groups (15-24, 25-34, 35-44, 45-54, 55-64) will be used. The NFHS sampling technique will be used for selection of sample.

Proportionate to population cluster survey technique will be used to draw the sample. A minimum sample of 2500 persons across the recommended core age range of 15-64 years (equivalent to 250 participants in each 10-years age- and sex group) will be drawn. As it is important to detect urban-rural differences, hence 2500 individuals from urban area and further 2500 from rural area will be required.

6.6.4 Survey Instrument

A pre-tested simple questionnaire has been prepared for carrying out the survey. This questionnaire has already been developed by WHO (STEPS) and modified for the Indian scenario and is already in use for sentinel surveillance for cardiovascular

risk factors in 10 selected Industrial populations all over India. The questionnaire basically includes socio-demographic data of the participant, assesses the tobacco habits and alcohol consumption pattern and records the measured data (height, weight and Blood Pressure) and biochemical results (Fasting Blood Glucose and Serum Total Cholesterol). It is computer friendly and it can easily be led feed into the software Programmeme to generate the necessary analysis of trends and patterns of NCD risk factors in the community surveyed.

6.6.5 Timing of the survey

Both physiological and cultural considerations would influence the timing of the survey. A practical physiological consideration is that since the survey requires participants to fast overnight it would commence early in the morning and finish early in the afternoon (i.e. 6:00 am to 1:00 pm). The staff can use the rest of the day for coding the forms, dealing with the lab specimens and other documentation, as well as make preparations for the next day.

6.6.6 Validity of data

Ensuring valid data and hence valid conclusions would involve ensuring good practice at all stages of the process. This includes how the data is collected, the power of the study and how the data has been analysed. Relevant aspects of collection of the data include:

- ☞ The response fraction
- ☞ Having valid and reliable instruments for making the measurements (including sphygmomanometers, questionnaires, etc) and
- ☞ Attention to calibration of instruments and training of staff, and monitoring of the quality of measurements themselves.

Maximising participation of individuals selected for inclusion in the survey reduces the probability that those who do attend are unrepresentative of the sample that was originally drawn. *The active participation of DSO and other medical health personnel and utilisation of the existing infrastructure in the district will be very important in this aspect of the survey.*

6.6.7 Laboratory Issues

The district public health labs would arrange for carrying out the estimations for blood sugar and cholesterol. They will co-ordinate the collection, transport and receipt of the samples from the periphery to the lab for the analysis. They will plan their capacity so that the analyses are carried out quickly without any significant variations due to delay. Adequate quality control of biochemical assays is a key factor in ensuring that the results of the survey are useful. (Since the blood haemolyses very rapidly and effects blood glucose estimation, glucometers would be planned for use at the PHC itself as it would be more cost effective in the long run).

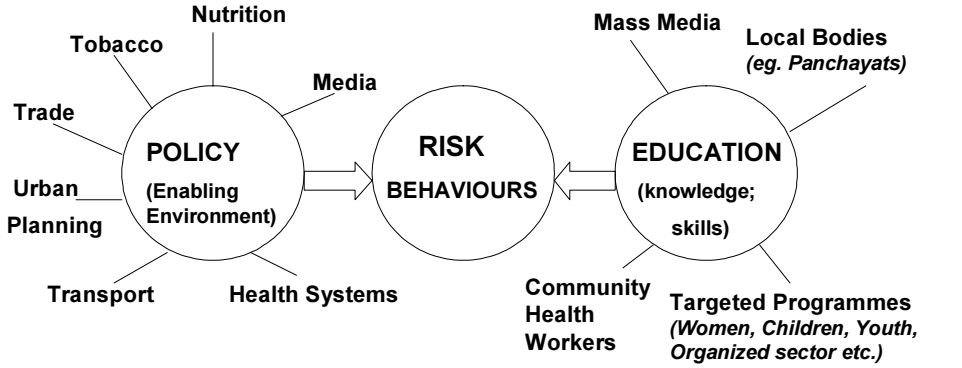
6.6.8 Ethical considerations

Questionnaires that deal only with lifestyle issues and not with potentially sensitive personal/medical information may not require ethical clearance and would be conducted on the basis of verbal consent alone. The same would also apply to simple non-invasive measurements also. Blood pressure is more medically significant, however as it has to be clarified whether persons with elevated readings would be followed up and treatment provided and hence written consent would have to be obtained. Also collection of blood through any means including pinprick must have prior ethical clearance and plans for treatment of those with raised levels, built-in. The questionnaire itself will have a built-in consent form.

Referral, diagnostic and treatment support to persons identified with NCD risk factor will be built into the system. The patient detected to have hypertension, diabetes etc will be referred to the next level, where facilities for treatment are available.

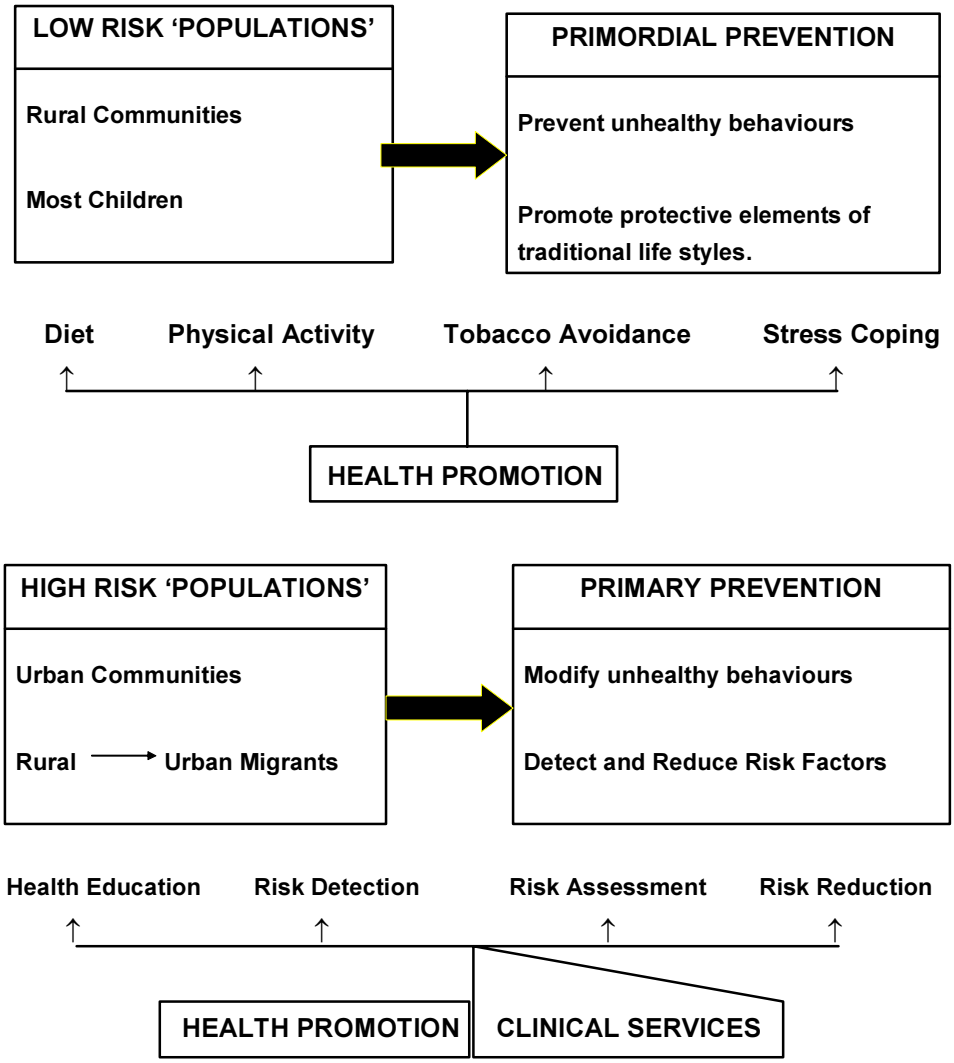
6.6.9 Dissemination and use of the findings

The data generated by periodic surveys will provide information about prevalence and time trends of NCD risk factors and unhealthy life style behaviour among various populations. This will underscore the need for NCD prevention and control Programmes in the community, influence policy makers and guide in financial allocation for Programmes in controlling NCDs in the community.



A coordinated approach will be undertaken to implement the risk factor intervention at community level involving medical colleges, state health departments, primary health care services and non-governmental organisations so as to have cost effective implementation of these Programmemes. Health education material on the causes and prevention of incentives will be developed and disseminated to enhance public awareness. A combination of Population based strategy for prevention of NCDs

targeting the whole population and the high-risk strategy targeting people with risk factors will be implemented as illustrated below:



As against the use of communicable disease surveillance, which is for immediate control and preventive action, data from NCD surveillance would be used for policy formulations (e.g. ban on tobacco use in specific places or for specific age,) or for Programmeme evaluation (e.g. number of people with hypertension detected/treated).

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